VERMILION
Oil & Gas
Australia Pty. Ltd.

VERMILION OIL & GAS AUSTRALIA

WELL CONSTRUCTION ENVIRONMENT PLAN

WPA-7000-YH-0001

Revision	Date	Originator	Checker	Checker	Approver
15	25 February 2026	Xodus	Environmental Advisor	Well Construction Manager HSE Manager	Managing Director

Revision History

Revision	Date	Description
3	15.11.11	Issue for use 2012 Wandoo Infill Campaign
4	17.08.12	Issued for NOPSEMA acceptance
5	09.10.12	Revised for NOPSEMA feedback
6	29.11.12	Issued for NOPSEMA acceptance
7	14.07.14	Issued for Wandoo Well Construction Campaign(s) – five years
8	16.10.14	Issued for NOPSEMA acceptance
9	01.04.15	Revised via VOGA Management of Change. Issued for Wandoo Well Construction Campaign(s)
10	08.02.16	Revised via VOGA Management of Change. Issued for Wandoo Well Construction Campaign(s)
11	14.09.18	Revised via VOGA Management of Change. Issued for Wandoo Well Construction Campaign(s)
12	24.01.20	Revised for resubmission to NOPSEMA under Reg 19
13	14.08.20	Revised to include RFFWI
14	25.02.21	Revised to include NOPSEMA OMR comments
15	25.02.26	Issued for NOPSEMA acceptance

Distribution List

No.	Position	Hard Copy	Electronic Copy
1	VOGA Perth Office Document Control		X
2	Wandoo B Platform		X
3	VOGA Intranet		X
4	Mobile Offshore Drilling Unit	X	X
5	VOGA Managing Director		X
6	VOGA Well Construction Manager		X
7	VOGA HSE Manager		X
8	VOGA Engineering Manager		X
9	Manager Assessment and Compliance NOPSEMA – Perth		X
10	Wandoo Control Room	X	X

Table of Contents

Revision History **2**

Distribution List **3**

Table of Contents **4**

Abbreviations and Definitions **13**

Section 1 Introduction **21**

1.1 Background 21

1.2 Environment Plan Summary 22

1.3 The Proponent 22

1.4 Scope and Purpose of the Environment Plan 23

1.5 Corporate Environmental Performance Philosophy 24

1.6 Applicable Legislation and Codes 24

1.6.1 Commonwealth Requirements 25

1.6.2 Western Australian Legislation 47

1.6.3 Codes of Practice 50

Section 2 Description of the Petroleum Activity **51**

2.1 Background and Scope 51

2.2 Location and Operational Area 52

2.3 Activity Duration and Timing 53

2.4 Reservoir Properties 53

2.4.1 Hydrocarbon Composition 53

2.4.2 Geology and Reservoir Characteristics 54

2.4.3 Flow Rate 55

2.5 Drilling Activities 55

2.5.1 Background 55

2.5.2 Drilling a Development Well from a New Slot 56

2.5.3 Drilling a New Well from a Recovered Slot 57

2.5.4 Conversion of Existing Wells and Side-tracks 58

2.5.5 MODU Based Well Interventions 59

2.5.6 Drilling Fluids and Cuttings Handling and Disposal 60
2.5.7 Cementing Operations 64
2.6 Temporary Suspension 66
2.7 Plug & Abandonment (P&A) 66
2.8 Blowout Preventer Installation and Testing 68
2.9 Contingency Activities 68
2.9.1 Well Re-spud 68
2.9.2 Sidetrack 68
2.9.3 Well Suspension 68
2.9.4 Cementing Operations 69
2.9.5 Response to a Loss of Well Control 69
2.10 Emissions and Discharges Summary 71
2.11 Support Operations 72
2.11.1 Mobile Offshore Drilling Unit 72
2.11.2 Support Vessels 74
2.11.3 Helicopter Support 75
2.11.4 Remotely Operated Vehicles 76

Section 3 Description of the Environment 77

3.1 Overview 77
3.1.1 Project Areas 77
3.1.2 Relevant Receptors 80
3.2 Regional Context 81
3.2.1 Marine Regions 81
3.2.2 IMCRA Bioregion 82
3.3 Physical Environment 84
3.3.1 Climate 85
3.3.2 Ambient Water Quality 85
3.3.3 Ambient Sediment Quality 86
3.3.4 Ambient Air Quality 87
3.3.5 Ambient Underwater Noise 87
3.3.6 Ambient Light 87
3.4 Ecological Environment 87
3.4.1 Key Benthic Habitats 87
3.4.2 Key Coastal Communities 91
3.4.3 Key Marine Fauna 96
3.4.4 Biologically Important Areas 137
3.5 Social and Economic Environment 140

3.5.1 Fisheries and Aquaculture 140
3.5.2 Commercial Shipping 158
3.5.3 Defence 160
3.5.4 Other Users 161
3.5.5 Offshore Oil and Gas Industry 161
3.6 Protected and Significant Areas 165
3.6.1 World Heritage Properties 165
3.6.2 Commonwealth Heritage Places 166
3.6.3 National Heritage Places 167
3.6.4 Underwater Cultural Heritage 171
3.6.5 Australian Marine Parks 174
3.6.6 State Marine Protected Areas 179
3.6.7 Wetlands of International Importance 180
3.6.8 Nationally Important Wetlands 180
3.6.9 Key Ecological Features 182
3.6.10 Threatened Ecological Communities 187
3.7 First Nations 187
3.7.1 Methodology to Identify Cultural Values and Sensitivities 187
3.7.2 Recognition of First Nations Groups 187
3.7.3 Native Title 187
3.7.4 Indigenous Protected Areas 193
3.7.5 Aboriginal Cultural Heritage 193
3.7.6 Cultural Values and Sensitivities 193

Section 4 Risk Assessment Methodology 207

4.1 Overview 207
4.2 Framework 208
4.3 Impact Assessment 210
4.3.1 Cumulative Impacts 210
4.4 Catastrophic Environmental Events and Critical Controls 210
4.4.1 Identifying Catastrophic Environmental Events 210
4.4.2 Identifying Critical Controls 211
4.5 Determination of Likelihood 211
4.6 VOGA Risk Ranking 211
4.7 Determining Acceptability 215
4.8 Demonstrating ALARP of Impact and Risk 215
4.8.1 Demonstration of ALARP 215
4.8.2 Concept Evaluation ALARP Demonstration 216

4.9 Evaluating Acceptability of Residual Impacts or Risks 219
4.10 Environmental Performance Outcomes, Environmental Performance Standards and Measurement 220
4.11 Criteria Hazard Report Template 221

Section 5 Hazard Assessment 222

5.1 Planned: Physical Presence – Interaction with Other Marine Users 225
5.1.1 Hazard Report 225
5.1.2 Description of Hazard 225
5.1.3 Impact and Risk Evaluation 225
5.1.4 Risk Ranking 228
5.1.5 ALARP Demonstration 228
5.1.6 Acceptability Demonstration 229
5.2 Planned: Seabed Disturbance 230
5.2.1 Hazard Report 230
5.2.2 Description of Hazard 230
5.2.3 Impact and Risk Evaluation 231
5.2.4 Risk Ranking 233
5.2.5 ALARP Demonstration 233
5.2.6 Acceptability Demonstration 235
5.3 Planned: Noise Emissions 235
5.3.1 Hazard Report 235
5.3.2 Description of Hazard 236
5.3.3 Noise Modelling 237
5.3.4 Impact and Risk Evaluation 239
5.3.5 Risk Ranking 249
5.3.6 ALARP Demonstration 249
5.3.7 Acceptability Demonstration 253
5.4 Planned: Atmospheric and Greenhouse Gas Emissions 253
5.4.1 Hazard Report 253
5.4.2 Description of Hazard 254
5.4.3 Impact and Risk Evaluation 255
5.4.4 Risk Ranking 257
5.4.5 ALARP Demonstration 257
5.4.6 Acceptability Demonstration 259
5.5 Planned: Light Emissions 260
5.5.1 Hazard Report 260
5.5.2 Description of Hazard 260
5.5.3 Impact and Risk Evaluation 261

5.5.4 Risk Ranking....265
5.5.5 ALARP Demonstration....266
5.5.6 Acceptability Demonstration....268
5.6 Planned: Vessel Discharges....269
5.6.1 Hazard Report....269
5.6.2 Description of Hazard....269
5.6.3 Impact and Risk Evaluation....271
5.6.4 Risk Ranking....273
5.6.5 ALARP Demonstration....274
5.6.6 Acceptability Demonstration....277
5.7 Planned: Drilling Material Discharges – Drill Cuttings and Drilling Fluids....278
5.7.1 Hazard Report....278
5.7.2 Description of Hazard....278
5.7.3 Impact and Risk Evaluation....280
5.7.4 Risk Ranking....283
5.7.5 ALARP Demonstration....283
5.7.6 Acceptability Demonstration....285
5.8 Planned: Non-drilling Material Discharges – Cement, Cementing Fluids, and Unused Bulk Products....286
5.8.1 Hazard Report....286
5.8.2 Description of Hazard....286
5.8.3 Impact and Risk Evaluation....287
5.8.4 Risk Ranking....290
5.8.5 ALARP Demonstration....290
5.8.6 Acceptability Demonstration....292
5.9 Unplanned: Accidental Discharge of Waste and Solid Objects....293
5.9.1 Hazard Report....293
5.9.2 Description of Hazard....294
5.9.3 Impact and Risk Evaluation....294
5.9.4 Risk Ranking....296
5.9.5 ALARP Demonstration....296
5.9.6 Acceptability Demonstration....298
5.10 Unplanned: Introduction of Invasive Marine Species....299
5.10.1 Hazard Report....299
5.10.2 Description of Hazard....300
5.10.3 Impact and Risk Evaluation....301
5.10.4 Risk Ranking....303
5.10.5 ALARP Demonstration....303
5.10.6 Acceptability Demonstration....305
5.11 Unplanned: Physical Presence – Interaction with Marine Fauna....306

5.11.1 Hazard Report 306
5.11.2 Description of Hazard 307
5.11.3 Impact and Risk Evaluation 308
5.11.4 Risk Ranking 311
5.11.5 ALARP Demonstration 311
5.11.6 Acceptability Demonstration 313

5.12 Unplanned: Ancillary Hydrocarbons or Chemical Spills 314
5.12.1 Hazard Report 314
5.12.2 Description of Hazard 315
5.12.3 Impact and Risk Evaluation 315
5.12.4 Risk Ranking 316
5.12.5 ALARP Demonstration 317
5.12.6 Acceptability Demonstration 319

5.13 Unplanned: Accidental Release – Marine Diesel Oil 320
5.13.1 Hazard Report 320
5.13.2 Description of Hazard 321
5.13.3 Impact and Risk Evaluation 328
5.13.4 Risk Ranking 367
5.13.5 ALARP Demonstration 367
5.13.6 Acceptability Demonstration 369

5.14 Unplanned: Accidental Release – Loss of Well Containment 371
5.14.1 Hazard Report 371
5.14.2 Description of Hazard 371
5.14.3 Impact and Risk Evaluation 373
5.14.4 Risk Ranking 373
5.14.5 ALARP Demonstration 374
5.14.6 Acceptability Demonstration 378

5.15 Unplanned: Environmental Impact of Oil Spill Response 379
5.15.1 Hazard Report 379
5.15.2 Description of Hazard 379
5.15.3 Impact and Risk Evaluation 380
5.15.4 Risk Ranking 384
5.15.5 ALARP Demonstration 385
5.15.6 Acceptability Demonstration 391

Section 6 Cumulative Impact Assessment 393

6.1 Methodology 393

6.2 Scoping the Cumulative Impact Assessment 393
6.2.1 Part 1: Identify Reasonably Foreseeable Future Projects and Activities 394
6.2.2 Part 2: Identify Relevant Key Environmental Matters 407

Section 7 Environmental Performance Outcomes 413

Section 8 Implementation Strategy 442

8.1 Overview 442

8.2 HSE Management System 443

8.2.1 Overview 443
8.2.2 Structure 443
8.2.3 HSE Policy 444
8.2.4 Contents 444
8.2.5 Review of the HSE ME 446

8.3 Implementation of Controls 446

8.3.1 Well Construction Management System 446
8.3.2 Well Control 449
8.3.3 Operational Controls and Recovery Mechanisms 451
8.3.4 Contractor Management and Procurement 451
8.3.5 Key Roles and Responsibilities 453
8.3.6 Training and Competency 457
8.3.7 Chemical Assessment Process 459
8.3.8 Biofouling Risk Assessment Process 460
8.3.9 Managing Critical Controls 462
8.3.10 Ongoing Hazard Identification and Evaluation 465

8.4 Monitoring and Review 466

8.4.1 Overview 466
8.4.2 Commitments Register 466
8.4.3 Environmental Monitoring 467
8.4.4 Monitoring Impacts from Oil Pollution 467
8.4.5 Review of Environment Plan and Oil Spill Contingency Plan 468

8.5 Management of Change 468

8.5.1 Overview 468
8.5.2 Regulatory Compliance 469

8.6 Continuous Improvement 470

8.7 Emergency Management 471

8.7.1 Emergency Training, Testing and Drills 471
8.7.2 Wandoo Field Source Control Emergency Response Plan 471

8.8 Oil Pollution Response 472

8.8.1 Overview 472
8.8.2 Spill Management Arrangements 477
8.8.3 Interface with Other Plans 478
8.8.4 Approach to Response Planning 479

8.8.5 Incident Management Process 485
8.8.6 Logistics Management Plan 493
8.8.7 Assurance and Capability Management 496
8.9 Inspection and Auditing 503
8.9.1 Audit Process 503
8.9.2 Inspection Process 503
8.9.3 Inspections and Audits 503
8.9.4 Inspection and Audit Plan 503
8.9.5 Follow-up and Action Item Close Out 504
8.10 Reporting 504
8.10.1 Records 504
8.10.2 Routine Internal Reporting 506
8.10.3 Routine External Reporting 507
8.11 Internal Incident Reporting 507
8.12 External Incident Reporting 508
8.12.1 Reportable Incidents 508
8.12.2 Recordable Incidents 509
8.12.3 Management of Non-conformances 510
Section 9 Relevant Person Consultation 511
9.1 Overview 511
9.2 Consultation Approach 511
9.2.1 OPGGS(E)R Consultation Requirements 511
9.2.2 NOPSEMA Consultation Guideline 512
9.2.3 Government and Industry Guidance 512
9.2.4 Applicable Case Law and Guidance 513
9.3 Consultation Summary 513
9.4 VOGA's Consultation Methodology and Process 514
9.4.1 Overview 514
9.4.2 Identifying Relevant Persons 517
9.4.3 Public Awareness Campaign and Self-identification Opportunities 518
9.4.4 Identification and Consultation with First Nations People and Organisations 519
9.4.5 Relevant Persons Consultation Process 527
9.4.6 Provision of Sufficient Information 529
9.4.7 Providing a Reasonable Period for Consultation 539
9.4.8 Approach to Consulting Relevant Persons 539
9.4.9 Consultation Opportunities/Channels 540
9.4.10 Unplanned Event 540
9.4.11 Ongoing Consultation 540

References **547**

Appendices **579**

Appendix A **VOGA Health, Safety and Environment (HSE) Policy** **580**

Appendix B **Oil Spill Modelling Report [GOC367176]** **581**

Appendix C **Protected Matters Search Report** **582**

Appendix D **Aboriginal Cultural Heritage Inquiry System (ACHIS)** **583**

Appendix E **Wandoo Field OSCP [WAN-2000-RD-0001]** **584**

Appendix F **Stakeholder Consultation** **585**

Appendix G **Greenhouse Gas (GHG) Assessment Technical Note** **586**

Abbreviations and Definitions

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ACHIS	Aboriginal Cultural Heritage Inquiry System (WA)
ACN	Australian Company Number
AEP	Australian Energy Producers
AFC	Anti-fouling coatings
AFMA	Australian Fisheries Management Authority
AFZ	Australian Fishing Zone
AHTS	Anchor Handling Tug Supply / Anchor Handling and Tow Support Vessel
AIATSIS	Australian Institute of Aboriginal and Torres Strait Islander Studies
AIS	Automatic Identification System
ALARP	As Low as Reasonably Practicable
AMOS	Australian Marine Oil Spill Plan
AMOSC	Australian Marine Oil Spill Centre
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
API	American Petroleum Institute
APPEA	Australian Energy Producers
AS	Australian Standard
AUD	Australian Dollar
bbl	Barrel
BHA	Bottom Hole Assembly
BHP	Broken Hill Proprietary Company Limited
BIA	Biologically Important Area
BKO	Breeding Known to Occur
BLO	Breeding Likely to Occur
BOP	Blow-Out Preventer
BP	British Petroleum
BRS	Bureau of Rural Sciences
BTAC	Buurabalayji Thalanyji Aboriginal Corporation
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
BWM	Ballast Water Management / Blackwatch Manifold
BWMS	Ballast Water Management System
CAES	Catch and Effort Statistics
CALM	Conservation and Land Management Act 1984
CASA	Australian Civil Aviation Safety Authority

CBA	Cost Benefit Analysis
CCT	Corporate Command Team
CD	Conservation Dependent
CE	Critically Endangered
CEE	Catastrophic Environmental Event
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CGS	Shark Gillnet Sub-Sector
CHARM	Chemical Hazard Assessment and Risk Management
CIA	Cumulative Impact Assessment
CKO	Congregation Known to Occur
CM	Control Measure
CMS	Convention on Migratory Species / Competency Management System
CO	Carbon Monoxide
CO^2	Carbon Dioxide
CoP	Cessation of Production
CPF	Central Production Facility
CSIRO	Commonwealth Scientific and Industrial Research Organisation
Cth	Commonwealth
DAFF	Department of Agriculture, Fisheries and Forestry
DAWE	Department of Agriculture, Water and the Environment
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DEE	Department of the Environment and Energy
DEMIRS/DMIRS	Department of Mines, Industry Regulation and Safety (WA)
DEWHA	Department of Environment, Water, Heritage and the Arts
DNA	Deoxyribonucleic Acid
DNP	Director of National Parks
DP	Dynamic Positioning
DPAW	Department of Parks and Wildlife
DPIE	Department of Planning and Environment / Department of Planning, Infrastructure and the Environment
DPIRD	Department of Primary Industries and Regional Development (WA)
DPLH	Department of Planning, Lands and Heritage
DWH	Deepwater Horizon
EEZ	Exclusive Economic Zone
EMBA	Environment that May Be Affected
EP	Environment Plan
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EPIP	Environment Protection Impact of Proposals Act

EPO	Environmental Performance Outcomes
EPS	Environmental Performance Standards
ERP	Emergency Response Plan
ESD	Ecologically Sustainable Development
ETL	Export Trunkline
FEWD	Formation Evaluation While Drilling
FITs	Formation Integrity Tests
FKO	Foraging Known to Occur
FLO	Foraging Likely to Occur
FMO	Foraging May Occur
FPU	Floating Production Unit
FWRAM	Full Waveform Range-dependent Acoustic Model
GDEM	US Generalised Digital Environmental Model
GHG	Greenhouse Gases
GOR	Gas Oil Ratio
H^2S	Hydrogen Sulphide
HAFS	Harmful Anti-fouling Systems
HAZID	Hazard Identification
HAZOP	Hazard and Operability Analysis
HF	High Frequency
HFO	Heavy Fuel Oil
HMA	Hazard Management Agency
HMCS	OSPAR Harmonised Mandatory Control Scheme
HMS	His/Her Majesty's Ship
HP	High Pressure
HQ	Hazard Quotient
HSE	Health, Safety and Environment
HSE MS	Health, Safety and Environment Management System
HSES	Health, Safety, Environment and Sustainability
IADC	International Association of Drilling Contractors
IAP	Incident Accident Plan
IAPP	International Air Pollution Prevention
IBC	Intermediate Bulk Container
ICC	Incident Control Centre
ID	Internal Diameter
IFC	International Finance Corporation
IMCRA	Integrated Marine and Coastal Regionalisation of Australia
IMMR	Inspection, Monitoring, Maintenance and Repair
IMO	International Maritime Organisation

IMP	Cooper Energy Incident Management Plan
IMS	Invasive Marine Species
IMT	Incident Management Team
IOGP	International Association of Oil and Gas Producers
IPIECA	International Petroleum Industry Environmental Conservation Association
ISO	International Organisation for Standardisation
IUCN	International Union for Conservation of Nature
IWC	International Whaling Commission
IWCF	International Well Control Forum
JASCO	Jasco Applied Science
JSCC	Joint Strategic Coordination Committee
KEF	Key Ecological Feature
KLC	Kimberley Land Council
KO	Species or Habitat Known to Occur
KPI	Key Performance Indicator
LAT	Lowest Astronomical Tide
LCM	Lost Circulation Materials
LE	Equivalent Sound Level
LF	Low Frequency
LNG	Liquefied Natural Gas
LO	Species or Habitat Likely to Occur
LOR	Lowest Observable Reading / Limit of Reporting
LOTs	Leak Off Tests
LOWC	Loss of Well Control
LWD	Logging While Drilling
MAA	Mutual Assistance Agreement
MARPOL	International Convention for the Prevention of Pollution from Ships
MARS	Maritime and Aircraft Reporting System
MBES	Multibeam Echo Sounder
MDO	Marine Diesel Oil
MEPC	Marine Environment Protection Committee
MGO	Marine Gas Oil
MGPS	Marine Growth Prevention System
MKO	Migration Known to Occur
MMO	Marine Management Organisation
MNES	Matters of National Environmental Significance
MO	Marine Order
MoC	Management of Change
MODU	Mobile Offshore Drilling Unit

MOP	Marine Oil Pollution
MOU	Mobile Offshore Unit
MP	Marine Park
MPA	Marine Protected Area
MS	Management System
N^2O	Nitrous Oxide
NEBA	Net Environmental Benefit Analysis
NEPM	National Environment Protection Measure
NERA	National Energy Resources Australia
NGER Act	National Greenhouse and Energy Reporting Act 2007
NMFS	National Marine Fisheries Service
NNTT	National Native Title Tribunal
NOAA	National Oceanic and Atmospheric Administration
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOPTA	National Offshore Petroleum Titles Administrator
NRC	National Research Council
NSW	New South Wales
NT	Northern Territory
NW	North-west
NWMR	North-west Marine Region
NWS	North West Shelf
NWXA	North-West Exercise Area
O^3	Ozone
OCNS	Offshore Chemical Notification Scheme
ODS	Ozone-Depleting Substance
OHSAS	Occupational Health & Safety Management Systems
OPEP	Oil Pollution Emergency Plan
OPGGS(E)R	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023
OPGGSA	Offshore Petroleum and Greenhouse Gas Storage Act 2006
OPP	Oil Pollution Plan
OSAT	Oil Science Advisory Team
OSCP	Oil Spill Contingency Plan
OSM	Operational and Scientific Monitoring
OSPAR	Oslo-Paris Convention 1992
OSR	Oil Spill Response
OSRA	Oil Spill Risk Analysis
OSRL	Oil Spill Response Limited
OSRO	Oil Spill Response Organisations
OSTM	Oil Spill Trajectory Modelling

OWR	Oiled Wildlife Response
P&A	Plug and Abandonment
PAH	Polycyclic Aromatic Hydrocarbons
PBC	Prescribed Body Corporate
PEC	Predicted Effect Concentration
PFOS	Perfluorooctane Sulfonic Acid
PHG	Pre-hydrated Gel
PLONOR	Pose Little or No Risk to the Environment
PMS	Planned Maintenance System
PMST	Protected Matters Search Tool / Species Tool
PNEC	Predicted No Effect Concentration
POB	Persons on Board
POTS	Prevention of Pollution from Ships
PSZ	Petroleum Safety Zone
PTS	Permanent Threshold Shift
QHSE	Quality, Health, Safety and Environment
QLD	Queensland
QRA	Quantitative Risk Assessment
RATSIB	Representative Aboriginal/Torres Strait Islander Bodies
RKO	Roosting Known to Occur
RLO	Roosting Likely to Occur
RNTBC	Registered Native Title Body Corporate
ROV	Remote Observation Vehicle / Remotely Operated Vehicle
RR	Residual Risk
RWP	Relief Well Plan
SBT	Southern Bluefin Tuna
SCERP	Source Control Emergency Response Plan
scf	Stress Concentration Factor
SDS	Safety Data Sheet
SE	South-East
SEEMP	Ship Energy Efficiency Management Plan
SEL	Sound Exposure Level
SIMAP	Spill Impact Mapping Analysis Program
SIMOPS	Simultaneous Operations
SMPEP	Shipboard Marine Pollution Emergency Plan
SO^2	Sulphur Dioxide
SOLAS	Safety of Life at Sea
SOPEP	Shipboard Oil Pollution Emergency Plan
SPL	Sound Pressure Level

SSS	Side Scan Sonar
SW	South-West
SWMR	South-West Marine Region
TD	Total Depth
THC	Total Hydrocarbons
TPH	Total Petroleum Hydrocarbons
TTS	Temporary Threshold Shift
TVDRT	True Vertical Depth referenced to Rotary Table
UCH	Underwater Cultural Heritage
UK	United Kingdom
UKOOA	United Kingdom Offshore Operators Association
UNCLOS	United Nations Convention on the Law of the Sea
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
USA/US	United States of America
UXO	Unexploded Ordnance
VHF	Very High Frequency
VOGA	Vermilion Oil & Gas Australia Pty Ltd
WA	Western Australia
WAFIC	Western Australian Fishing Industry Council
WAOMPRMA	Western Australia Oil Marine Pollution Risk Management Areas
WBM	Water Based Mud
WCD	Worst Case Discharge
WCMS	Well Construction Management System
WCPM	Well Construction Process Manual
WCSM	Well Construction Standards Manual
WGS	World Geodetic System
WHP	Wellhead Platform
WOMP	Well Operations Management Plan
WWII	World War Two

Section 1 Introduction

1.1 Background

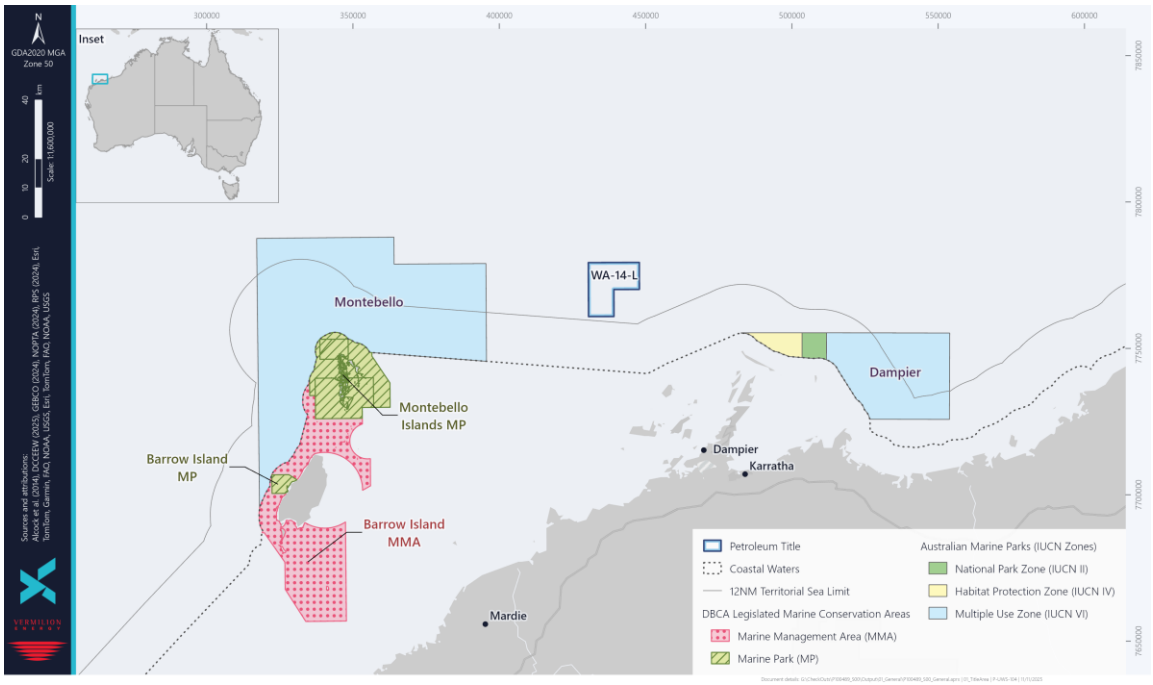
Vermilion Oil & Gas Australia Pty Ltd (VOGA) periodically conducts well construction operations in WA-14-L using a Mobile Offshore Drilling Unit (MODU). Well construction operations planned over the next five years involve the drilling and, possibly, completing of new wells, the re-entering, side-tracking and recompleting of existing wells, closing off side branches of wells that are no longer needed and re-using old drilling slots for new wells.

The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take up to 150 days to complete. The reservoir targeted during the campaigns will be the *M. australis* Sandstone within the Wandoo Field. The work scope, MODU and Anchor Handling Transport Supply (AHTS) vessel activities are summarised in Section 2.

As MODU availability is unable to be predicted for the five-year period of operation of this Environment Plan (EP), well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

WA-14-L is located in Commonwealth waters in the Carnarvon Basin off the northwest coast of Western Australia (WA), approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island (Figure 1-1).

Figure 1-1: WA-14-L location



1.2 Environment Plan Summary

This Well Construction EP summary has been prepared from material provided in this EP. The summary consists of Table 1-1, as required by Regulation 35(7) of the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (OPGGS(E)R).

Table 1-1: Summary of material required for an EP

Material Requirement	Section of EP containing material requirement
The location of the activity	Section 2.2
A description of the receiving environment	Section 3
A description of the activity	Section 2
Details of the environmental impacts and risks of the activity	Section 5
The control measures for the activity	Section 7
The arrangements for ongoing monitoring of the titleholder's environmental performance	Section 8
Response arrangements in the oil pollution emergency plan	Section 8.8 Appendix E: Wandoo Field Oil Spill Contingency Plan (OSCP) [WAN-2000-RD-0001]
Consultation already undertaken and plans for ongoing consultation	Section 9 Appendix F
Details of the titleholder's nominated liaison for the activity	Section 1.3

1.3 The Proponent

VOGA is the titleholder of production licence WA-14-L, which contains the Wandoo Production Facilities. VOGA is a wholly owned subsidiary of Vermilion Energy Inc., a Canadian-based oil and gas exploration and production company. VOGA acquired operatorship of the permit at the beginning of 2005 after purchasing the share of the permit from the previous operator, ExxonMobil.

VOGA titleholder details are:

Ryan Carty
Managing Director
Vermilion Oil & Gas Australia Pty Ltd
Australian Company Number (ACN): 113 023 591
Level 5, 30 The Esplanade
Perth, Western Australia 6000

Phone: +61 (08) 9215 0300
Fax: +61 (08) 9215 0333
Email: info.australia@vermilionenergy.com

VOGA's nominated liaison person details are:

Barry Goodin
Engineering Manager
Vermilion Oil & Gas Australia Pty Ltd
Level 5, 30 The Esplanade
Perth, Western Australia 6000

Phone: +61 (08) 9215 0300
Fax: +61 (08) 9215 0333
Email: voga.environment@vermilionenergy.com

1.4 Scope and Purpose of the Environment Plan

The purpose of this EP is to document the potential environmental impacts and risks and planned mitigation and management measures associated with well construction activities within Australian Commonwealth waters, adjacent to the existing Wandoo Production Facilities.

The activities covered in this EP include MODU-based well construction activities:

- Mobilisation and positioning of a Mobile Offshore Drilling Unit (MODU) within the Operational Area of the well construction activity
- Well interventions and side-tracks
- Construction of new wells
- Isolation of existing laterals and well bores
- Well slot recoveries for drilling of new wells
- Temporary suspension of wells
- Plug and Abandonment (P&A) activities.

Activities excluded from the scope of this EP are:

- Exploration drilling activities
- Aspects relating to Section 572 of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* as they will be addressed in the Wandoo Facility Environment Plan (WPA-7000-YH-0007). Aspects relating to operation, use and maintenance/inspection of any equipment remaining at the location after each well construction campaign is covered under the Wandoo Facility EP
- Mobilisation of a MODU from either international waters or an alternate location in Australian territorial waters, given this remains the responsibility of the MODU operator and is managed under the *Navigation Act 2012,* as administered by the Australian Maritime Safety Authority (AMSA)
- Vessel operations within Port Boundaries or State waters given they are managed under the *Shipping and Pilotage Act 1967* (WA), as administered by the relevant Port Authority under the *Port Authorities Act 1999* (WA)

- Vessel operations within Commonwealth waters outside of the Operational Area given they are managed under the *Navigation Act 2012* (Cth), as administered by the Australian Maritime Safety Authority (AMSA)
- Aviation activities given they are managed under the *Civil Aviation Act 1988* and Civil Aviation Regulation 1998, as administered by the Australian Civil Aviation Safety Authority (CASA).

The EP details the arrangements in place for ensuring that the potential environmental impacts and risks associated with well construction activities are reduced to As Low As Reasonably Practicable (ALARP) and are of an acceptable level. This EP has been prepared in accordance with the requirements of the OPGGS(E)R.

The implementation strategy contained in this EP will ensure that the well construction campaigns carried out over the next five years comply with all statutory requirements and the requirements of the VOGA Health, Safety and Environment Management System (HSE MS). The EP has been prepared to address campaign activities for the next five years. To ensure its continued suitability, a review of this EP will be undertaken after each well construction campaign. Any significant departure from the activity, environment, risks, control measures, etc. detailed in the EP, will be identified and assessed. If required, the EP will be revised and resubmitted in accordance with Regulation 39 of the OPGGS(E)R.

Table 1-1 illustrates how this EP addresses each of the key requirements for the content of an EP, ensuring fulfilment of Part 4 of the OPGGS(E)R.

1.5 Corporate Environmental Performance Philosophy

VOGA is committed to minimising the adverse environmental impacts of its operations and to meeting all regulatory requirements associated with those operations. As stated in the Company Health, Safety and Environment (HSE) Policy, VOGA will:

- Accept responsibility and accountability for providing leadership, visible commitment, direction and resources to meet HSE performance targets
- Maintain a strong HSE management system to identify and manage risks
- Integrate HSE into business objectives
- Make a positive contribution to the protection of the environment in which it operates
- Respond promptly and effectively to emergencies
- Focus on continual improvement in HSE performance
- Communicate openly and fairly on a timely basis with fellow employees and contractors, the public, governments, management and other relevant persons.

A copy of the VOGA HSE Policy is included in Appendix A.

1.6 Applicable Legislation and Codes

This section details the requirements that apply to the activity including relevant legislation, codes, other approvals and conditions. The Commonwealth *Offshore Petroleum and Greenhouse*

Gas Storage Act 2006 (OPGGSA) controls exploration and production activities. The OPGGS(E)R stipulate the requirements for EPs to ensure that petroleum activities are carried out in an acceptable manner. VOGA carries out a review of applicable legislation each year, including recovery plans, conservation advices and management plans.

1.6.1 Commonwealth Requirements

The Operational Area lies within Commonwealth waters. Commonwealth legislation and other requirements relevant to the activity area are described in Table 1-2. Related international conventions are included.

This EP considers the impacts to matters of national environmental significance (MNES) protected under Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Table 1-3 summarises relevant species conservation advices and recovery plans issued by the Department of Climate Change, Energy and the Environment (DCCEEW).

Table 1-2: Relevant Commonwealth legislation and other requirements

Legislation	Scope	Related International conventions	Administering authority
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	The Act enables the Australian Government to protect important Indigenous areas and objects under immediate threat. Areas and objects protected under this Act are included in the National Heritage List and Commonwealth Heritage List. **Application to activity:** Areas or objects protected under this Act may be present within the Project Areas.	-	DCCEEW
Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters – Guidelines on the application of the Underwater Cultural Heritage Act 2018 (DCCEEW, 2024a)	Provides guidance on applying the *Underwater Cultural Heritage Act 2018* in relation to assessing impact and mitigation measures of offshore developments. **Application to activity:** The guidelines will inform impact assessment and mitigation strategies required in this EP.	-	DCCEEW
Australian Maritime Safety Authority Act 1990	This Act facilitates international cooperation and mutual assistance in preparing and responding to a major oil spill incident and encourages countries to develop and maintain an adequate capability to deal with oil pollution emergencies. Requirements are affected through AMSA who administers the National Plan for Maritime Environmental Emergencies (NatPlan). **Application to activity:** AMSA is the designated Control Agency for oil spills from vessels in Commonwealth waters.	International Convention on Oil Pollution Preparedness, Response and Cooperation 1990 Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances, 2000 International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties 1969	Australian Maritime Safety Authority (AMSA)

Legislation	Scope	Related International conventions	Administering authority
		Articles 198 and 221 of the United Nations Convention on the Law of the Sea 1982	
Australian Ballast Water Management Requirements (DAWE, 2020)	The Australian Ballast Water Management Requirements set out the obligations on vessel operators with regards to the management of ballast water and ballast tank sediment when operating within Australian seas. **Application to activity:** Provides requirements on how vessel operators should manage ballast water when operating within Australian seas to comply with the *Biosecurity Act 2015*.	International Convention for the Control and Management of Ships' Ballast Water and Sediments (adopted in principle in 2004 and in force on 8 September 2017)	Department of Agriculture, Fisheries and Forestry (DAFF) (formerly DAWE)
Australian Biofouling Management Requirements (DAFF, 2023)	The Australian biofouling management requirements set out vessel operator obligations for the management of biofouling when operating vessels under biosecurity control within Australian waters. **Application to activity:** Provides requirements on best practice for biofouling management and applies to all operators of vessels subject to biosecurity control.	-	DAFF
Biosecurity Act 2015 Biosecurity Regulations 2016	This Act is the primary legislation for the management of the risk of diseases and pests that may cause harm to human, animal or plant health, the environment and the economy. The objects of this Act are to: a) Manage biosecurity risks; human disease; risks related to ballast water; biosecurity emergencies and human biosecurity emergencies b) Give effect to Australia's international rights and obligations, including under the	International Convention for the Control and Management of Ships' Ballast Water and Sediments (adopted in principle in 2004 and in force on 8 September 2017)	DAFF

Legislation	Scope	Related International conventions	Administering authority
	International Health Regulations, the Sanitary and Phytosanitary Agreement and the Biodiversity Convention. **Application to activity:** The *Biosecurity Act 2015* and regulations apply to 'Australian territory' which is the airspace over and the coastal seas out to 12 nm from the coastline. For the activity the Act regulates vessels entering Australian territory regarding ballast water and hull fouling.		
Climate Change Act 2022	This Act outlines Australia's greenhouse gas emissions reduction targets and codifies Australia's net 2030 and 2050 greenhouse gas (GHG) emissions reductions targets under the Paris Agreement. It also requires the minister to prepare an annual climate change statement and requires the Climate Change Authority to give the minister advice in relation to the annual statement and future emissions reductions targets. **Application to activity:** While industry is not directly subject to these obligations, this Act legislates Australia's emissions net zero targets.	Paris Agreement on Climate Change 2015 (ratified by Australia)	DCCEEW
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The EPBC Act applies to actions that have, will have or are likely to have a significant impact on matters of national environmental or cultural significance. The Act protects MNES and provides for a Commonwealth environmental assessment and approval process for actions. There are nine MNES: • World Heritage Areas • National Heritage Places • Ramsar wetlands	1992 Convention on Biological Diversity and 1992 Agenda 21 Convention on International Trade in Endangered Species of Wild Fauna and Flora 1973 Agreement between the Government and Australia and the Government of Japan for the Protection of Migratory Birds and	DCCEEW

Legislation	Scope	Related International conventions	Administering authority
	• Listed Threatened species and communities • Listed Migratory species under international agreements • Nuclear actions • Commonwealth marine areas • Great Barrier Reef Marine Park • Water resources for coal seam gas and coal mining developments. **Application to activity:** Petroleum activities are excluded from within the boundaries of a World Heritage Area (Sub regulation 10A(f)). *The activity is not within a World Heritage Area.* The EP must describe matters protected under Part 3 of the EPBC Act and assess any impacts and risks to these. The EP must assess any actual or potential impacts or risks to MNES from the activity.	Birds in Danger of Extinction and their Environment 1974 Agreement between the Government and Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment 1986 Agreement between the Government of Australia and the Government of the Republic of Korea on The Protection of Migratory Birds 2006 Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971 (Ramsar) International Convention for the Regulation of Whaling 1946 Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) 1979	
Environment Protection and Biodiversity Conservation Regulations 2000 (DCCEEW, 2024c)	Part 8 of the regulations provide distances and actions to be taken when interacting with cetaceans. **Application to activity:** The interaction requirements are applicable to the activity in the event a cetacean is sighted.	-	DCCEEW
Environmental Reform (Consequential Provisions) Act 1999	This Act allowed the transition of legislation from the *Environment Protection Impact of Proposals Act 1974* (EPIP Act) to the EPBC Act. The Environmental Reform (Consequential Provisions) Act clarifies that	-	DCCEEW

Legislation	Scope	Related International conventions	Administering authority
	projects approved under the EPIP Act are exempt from being assessed under the EPBC Act. The Wandoo Full Field Development was approved under the EPIP Act.		
Fisheries Management Act 1991	This Act provides for the protection of Australia's offshore commercial fish resources from 3 nm to the extent of the Australian Fishing Zone (200 nm). There are no fisheries within the Operational Area, however, there are several within the Environment that May Be Affected (EMBA). **Application to Activity:** Fishermen in Commonwealth-managed fisheries will be informed by VOGA (via AMSA) of program activity as required by legislation.		Australian Fisheries Management Authority (AFMA) DAFF
Maritime Legislation Amendment Act 2022	This Act amends the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (POTS Act) and the *Protection of the Sea (Harmful Anti-fouling Systems) Act 2006* (HAFS Act). The Maritime Legislation Act implements amendments made by the IMO to international conventions that concern pollution from ships and the use of certain anti-fouling systems. The Act contains 4 schedules: • Schedule 1 amends the POTS Act to implement requirements in relation to the discharge of persistent floaters • Schedule 2 amends the POTS Act to implement a prohibition on the use of heavy fuel oil (HFO) in Arctic waters • Schedule 3 amends the HAFS Act to implement a prohibition on the use of cybutryne in anti-fouling systems on ships	Various parts of MARPOL Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (also known as the London Protocol) International Convention on the Control of Harmful Anti-fouling Systems on Ships 2001	AMSA

Legislation	Scope	Related International conventions	Administering authority
	• Schedule 4 makes minor amendments to the POTS Act and HAFS Act to provide a consistent definition of 'Marine Orders' across relevant legislation.		
Maritime Legislation Amendment (Prevention of Air Pollution from Ships) Act 2007	This Act implements the requirements of MARPOL 73/78 Annex VI for shipping in Commonwealth waters.	-	AMSA
Marine Pest Plan 2018–2023: National Strategic Plan for Marine Pest Biosecurity (DAWR, 2018)	Australia's national strategic plan for marine pest biosecurity. It outlines a coordinated approach to building Australia's capabilities to manage the threat of marine pests. It represents agreed priorities and actions of governments, marine industries, and other stakeholders to achieve a common purpose: to manage the risks posed by marine pests and minimise their potential harm to marine industries, communities and the environment. The implementation period for Marine Pest Plan 2018-2023 concluded on 30 June 2023 and a formal review of the document is underway. Until a new document or strategy is published, this document will continue to be consulted. **Application to activity:** Applying the recommendations within this document and implementing effective biofouling controls can reduce the risk of the introduction of Invasive Marine Species (IMS).	-	DAFF
Minamata Convention on Mercury	Australia ratified the Minamata Convention on 7 December 2021. It is an international treaty that seeks to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds. The Convention includes controls on:	Minamata Convention on Mercury	DCCEEW

Legislation	Scope	Related International conventions	Administering authority
	• Mercury mining • The manufacture and trade of mercury and products containing mercury • Disposal of mercury waste • Emissions of mercury from industrial facilities • Countries that have ratified the Convention are bound by international law to put these controls in place. **Application to activity:** Provides requirements for how mercury waste must be treated and disposed.		
National Biofouling Management Guidelines for the Petroleum Production and Exploration Industry (MPSC, 2018)	The guidance document provides recommendations for the management of biofouling risks by the petroleum industry. **Application to activity:** Applying the recommendations within this document and implementing effective biofouling controls can reduce the risk of the introduction of IMS.	International Maritime Organisation (IMO) Guidelines for the Control and Management of Ships Biofouling to Minimize the Transfer of Invasive Marine Species (2023)	DAFF
National Greenhouse and Energy Reporting Act 2007 (NGER Act) National Greenhouse and Energy Reporting Regulations 2008 National Greenhouse and Energy Reporting (Measurement) Determination 2008 (DCCEEW, 2025a)	This Act introduces a single national reporting framework for the reporting and dissemination of information about the greenhouse gas emissions, greenhouse gas projects, and energy use and production of corporations. Under the NGER Act, businesses who are very large emitters of greenhouse gases will be required by law to measure and report their emissions to the government. National Pollutant Inventory reporting is covered by this Act.	United Nations Framework Convention on Climate Change (UNFCCC) 1992 Vienna Convention for the Protection of the Ozone Layer 1985 and the Montreal Protocol on Substances that Deplete the Ozone Layer 1987	DCCEEW/Clean Energy Regulator
National Light Pollution Guidelines for Wildlife (DCCEEW, 2023d)	The Guidelines outline the process to be followed where there is the potential for artificial lighting to affect wildlife.	-	DCCEEW

Legislation	Scope	Related International conventions	Administering authority
	Application to activity: Applying the recommendations within this document and implementing effective controls can reduce the impact of light to sensitive receptors.		
National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna (DCCEEW, 2017)	The overarching goal of the strategy is to provide guidance on understanding and reducing the risk of vessel collisions and the impacts they may have on marine megafauna. **Application to activity**: Implementing the recommendations and controls can reduce the risk of vessel collisions with megafauna.	-	DCCEEW
Native Title Act 1993 *Native Title Legislation Amendment Act 2021*	The main objects of this Act are: a) To provide for the recognition and protection of native title b) To establish ways in which future dealings affecting native title may proceed and to set standards for those dealings c) To establish a mechanism for determining claims to native title d) To provide for, or permit, the validation of past acts intermediate period acts, invalidated because of the existence of native title. **Application to activity:** Native Title are present within the EMBA.	-	Attorney-General's Department
Navigation Act 2012	This Act regulates ship-related activities and invokes certain requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) relating to equipment and construction of ships.	Certain sections of MARPOL International Convention for the Safety of Life at Sea (SOLAS) 1974 Convention on the International Regulations for Preventing Collisions at Sea 1972 (COLREGs)	AMSA

Legislation	Scope	Related International conventions	Administering authority
	Several Marine Orders (MOs) are enacted under this Act relating to offshore petroleum activities, including: • MO 21: Safety of navigation and emergency arrangements • MO 30: Prevention of collisions • MO 31: Vessel surveys and certification. **Application to activity:** The relevant vessels (according to class) will adhere to the relevant MO regarding navigation and preventing collisions in Commonwealth waters.	United Nations Convention on the Law of the Sea 1982 (UNCLOS)	
Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGSA) Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (OPGGS(E)R)	The Act addresses all licensing, health, safety, environmental and royalty issues for offshore petroleum exploration and development operations extending beyond the 3 nm limit. Part 4 of the OPGGS(E)R specifies that an EP must be prepared for any petroleum activity and that activities are undertaken in an ecologically sustainable manner and in accordance with an accepted EP. **Application to activity:** The OPGGSA provides the regulatory framework for all offshore petroleum exploration and production activities in Commonwealth waters, to ensure that these activities are carried out: • Consistent with the principles of ecologically sustainable development as set out in section 3A of the EPBC Act • So that environmental impacts and risks of the activity are reduced to ALARP	-	National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA)

Legislation	Scope	Related International conventions	Administering authority
	• So that environmental impacts and risks of the activity are of an acceptable level.		
Ozone Protection and Synthetic Greenhouse Gas Management Act 1989	This Act regulates th import, export and manufacture of ozone depleting substances (ODS).	-	DCCEEW
Ozone Protection and Synthetic Greenhouse Gas Management Reform (closing the hole in the Ozone layer) Act 2022	This act amends the *Ozone Protection and Synthetic Greenhouse Gas Management Act 1989* in relation to the Ozone Protection and Synthetic Greenhouse Gas Program by: • Imposing controls that are currently imposed through licence conditions, such as the ban on import of bulk gas in non-refillable containers • Clarifying licence and exemptions requirements • Increasing the time allowed for submitting reports and payment levies • Adopting the standard provisions of the *Regulatory Powers (Standard Provisions) Act 2014*, including certain minor modifications • Updating the offence and civil penalty provisions • Introducing information gathering powers including the ability to issue a notice to produce; providing the option of licence suspension as an alternative to immediate cancellation of financial penalties • Providing for an internal review mechanism for reviewable decisions • Allowing the use or disclosure of certain information.	-	DCCEEW

Legislation	Scope	Related International conventions	Administering authority
Protection of the Sea (Prevention of Pollution from Ships) Act 1983	This Act regulates Australian regulated vessels with respect to ship-related operational activities and invokes certain requirements of the MARPOL Convention relating to discharge of noxious liquid substances, sewage, garbage, air pollution, etc. **Application to activity:** All ships involved in petroleum activities in Australian waters are required to abide to the requirements under this Act. Several MOs are enacted under this Act relating to offshore petroleum activities, including: • MO 91: Marine Pollution Prevention – Oil • MO 93: Marine Pollution Prevention – Noxious Liquid Substances. • MO 94: Marine Pollution Prevention – Packaged Harmful Substances • MO 95: Marine Pollution Prevention – Garbage • MO 96: Marine Pollution Prevention – Sewage • MO 97: Marine Pollution Prevention – Air Pollution.	Various parts of MARPOL Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (also known as the London Protocol)	AMSA
Protection of the Sea (Harmful Antifouling Systems) Act 2006	Under this Act, it is an offence for a person to engage in negligent conduct that results in a harmful anti-fouling compound being applied to or present on a ship. The Act also provides that Australian ships must hold 'anti-fouling certificates', provided they meet certain criteria. **Application to activity:** All ships involved in offshore petroleum activities in Australian waters are required to comply with Act. The MO 98: Marine Pollution Prevention – Anti-fouling Systems is enacted under this Act.	International Convention on the Control of Harmful Anti-fouling Systems on Ships 2001	AMSA

Legislation	Scope	Related International conventions	Administering authority
Underwater Cultural Heritage Act 2018	Protects the heritage values of shipwrecks, sunken aircraft and relics (older than 75 years) in Australian Territorial waters from the low water mark to the outer edge of the continental shelf (excluding the State's internal waterways). The Act allows for protection through the designation of protection zones. Activities/conduct prohibited within each zone will be specified. **Application to activity:** In the event of removal, damage or interference to shipwrecks, sunken aircraft or relics declared to be historic under the legislation, activity is proposed with declared protection zones, or there is the discovery of shipwrecks or relics.	Agreement between the Netherlands and Australia concerning old Dutch Shipwrecks 1972	DCCEEW

Table 1-3: Relevant recovery plans and species conservation advices relevant to the Well Construction EP

Relevant plan/advice	Applicable threats or management advice	Addressed in EP section
Threat Abatement Plan for the Impacts of Marine Debris on Vertebrate Wildlife of Australia's Coasts and Ocean (DEE, 2018)	The objectives of the plan include seeking to understand the scale of marine plastic and microplastic impact on key species, ecological communities and locations.	Section 5.9
Birds		
National Recovery Plan for albatrosses and petrels (2022) (DCCEEW, 2022b)	The recovery plan is a co-ordinated conservation strategy for albatrosses and petrels. **Threats:** • Marine pollution • Marine debris • Marine infrastructure interactions (including lighting).	Section 5.5 Section 5.9 Section 5.13 Section 5.15
National recovery plan for the red goshawk *Erythrotriorchis radiatus* (DCCEEW, 2012)	Recovery plan provides management actions to ensure the conservation of the red goshawk. **Threats:** • Habitat degredation • Climate change.	Section 5.12 Section 5.13 Section 5.14 Section 5.15
National Recovery Plan for the Australian Fairy Tern (*Sternula nereis nereis*) (DAWE, 2020a)	The recovery plan is a co-ordinated conservation strategy for the Australian fairy tern. **Threats:** • Marine pollution.	Section 5.12 Section 5.13 Section 5.14 Section 5.15
Approved Conservation Advice for *Sternula nereis nereis* (Fairy Tern) (TSSC, 2011)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the fairy tern. **Threats:** • Marine pollution: evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented.	Section 5.12 Section 5.13 Section 5.14 Section 5.15

Relevant plan/advice	Applicable threats or management advice	Addressed in EP section
Approved Conservation Advice for *Calidris canutus* (Red Knot) (DCCEEW, 2024b)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the red knot. **Threats:** • Marine pollution: evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented.	Section 5.12 Section 5.13 Section 5.14 Section 5.15
Approved Conservation Advice for *Calidris frruginea* (Curlew sandpiper) (DCCEEW, 2023a)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the curlew sandpiper. **Threats:** • Habitat loss and degradation: maintain undisturbed feeding and roosting habitat at sites on the northwest coast used during migration for the species • Marine pollution: evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented	Section 5.12 Section 5.13 Section 5.14 Section 5.15
Approved Conservation Advice for *Ptodroma mollis* (soft-plumaged petrel) (TSSC, 2015a)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the soft-plumaged petrel. **Threats**: • No relevant threats identified.	N/A
Approved Conservation Advice for *Papasula abbotti* (Abbott's booby) (TSSC, 2020a)	Conservation advice provides management actions that can be undertaken to ensure the conservation of Abbott's booby. **Threats:** • Loss of breeding habitat on Christmas Island • Marine debris.	Section 5.12 Section 5.13 Section 5.14 Section 5.15
Approved Conservation Advice for *Anous tenuirostris melanops* (Australian lesser noddy) (TSSC, 2015)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the Australian lesser noddy. **Threats:** • No relevant threats identified.	N/A
Commonwealth Listing Advice on *Ardenna*	Conservation advice provides management actions that can be undertaken to ensure the conservation of the flesh-footed shearwater. **Threats:**	N/A

Relevant plan/advice	Applicable threats or management advice	Addressed in EP section
carneipes (flesh-footed shearwater) (TSSC, 2014)	• No relevant threats identified.	
Conservation Advice for *Calidris acuminata* (sharp-tailed sandpiper) (DCCEEW, 2024o)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the sharp-tailed sandpiper. **Threats:** • Marine pollution: Oil or chemical spills can degrade wetland and coastal habitats critical for foraging and roosting.	Section 5.12 Section 5.13 Section 5.14 Section 5.15
Conservation Advice for *Charadrius leschenaultii* (greater sand plover) (DCCEEW, 2023e)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the greater sand plover. **Threats:** • Marine pollution: Oil or chemical spills can degrade wetland and coastal habitats critical for foraging and roosting.	Section 5.12 Section 5.13 Section 5.14 Section 5.15
Conservation Advice for *Erythrotriorchis radiatus* (red goshawk) (DCCEEW, 2023f)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the red goshawk. **Threats:** • No relevant threats identified	N/A
Conservation Advice *Falco hypoleucos* Grey Falcon (TSSC, 2020b)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the grey falcon. **Threats:** • No relevant threats identified.	N/A
Conservation Advice for *Limnodromus semipalmatus* (Asian dowitcher) (DCCEEW, 2024m)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the Asian dowitcher. **Threats:** • Marine pollution: evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented.	Section 5.12 Section 5.13 Section 5.14 Section 5.15
Approved Conservation Advice for *Malurus leucopterus edouardi* (White-winged Fairy-wren	Conservation advice provides management actions that can be undertaken to ensure the conservation of the white-winged fairy-wren (Barrow Island). **Threats:** • No relevant threats identified.	N/A

Relevant plan/advice	Applicable threats or management advice	Addressed in EP section
(Barrow Island)) (DEWHA, 2008a)		
Conservation Advice for *Numenius madagascariensis* (far eastern curlew) (DCCEEW, 2023g).	Conservation advice provides management actions that can be undertaken to ensure the conservation of the far eastern curlew. **Threats:** • Marine pollution: evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented.	Section 5.12 Section 5.13 Section 5.14 Section 5.15
Conservation Advice for *Pezoporus occidentalis* (night parrot) (DCCEEW 2025f).	Conservation advice provides management actions that can be undertaken to ensure the conservation of the night parrot. **Threats:** • No relevant threats identified.	N/A
Conservation Advice *Phaethon lepturus fulvus* white-tailed tropicbird (Christmas Island) (DoE, 2014).	Conservation advice provides management actions that can be undertaken to ensure the conservation of the white-tailed tropicbird (Christmas Island). **Threats:** • Marine threats: Vulnerability to oil spills, shipping activity, and interactions with fishing vessels near Christmas Island.	Section 5.11 Section 5.12 Section 5.13 Section 5.14 Section 5.15
Conservation Advice for *Phaethon rubricauda westralis* (Indian Ocean red-tailed tropicbird) (DCCEEW, 2023h)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the Indian Ocean red-tailed tropicbird. **Threats:-** • Climate change: Declining marine productivity and changes in ocean temperature and salinity may reduce food availability, forcing longer foraging trips and increasing nestling vulnerability.	N/A
Approved Conservation Advice for *Rostratula australis* (Australian painted snipe) (DSEWPC, 2013a).	Conservation advice provides management actions that can be undertaken to ensure the conservation of the Australian painted snipe. **Threats:** • No relevant threats identified.	N/A

Relevant plan/advice	Applicable threats or management advice	Addressed in EP section
Conservation Advice for *Sternula albifrons* (little tern) (DCCEEW, 2025g).	Conservation advice provides management actions that can be undertaken to ensure the conservation of the little tern. **Threats:** • No relevant threats identified.	N/A
Conservation Advice for *Tringa nebularia* (common greenshank) (DCCEEW, 2024p).	Conservation advice provides management actions that can be undertaken to ensure the conservation of the common greenshank. **Threats:** • Marine pollution: evaluate risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented.	Section 5.12 Section 5.13 Section 5.14 Section 5.15
Wildlife Conservation Plan for Migratory Shorebirds – 2015 (DoE, 2015b)	The conservation plan outlines strategies to protect and manage migratory shorebirds and their habitats across Australia and the East Asian–Australasian Flyway. **Threats:** • Marine pollution • Anthropogenic disturbances • Habitat loss.	Section 5.11 Section 5.12 Section 5.13 Section 5.14 Section 5.15
Wildlife Conservation Plan for Seabirds (CoA, 2020)	**Threats:** • Light pollution.	Section 5.5 Section 5.11
Fish, sharks and rays		
Approved Conservation Advice for *Rhincodon typus* (whale shark) (TSSC, 2015b)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the whale shark. **Threats:** • Habitat loss and degradation from pollution, changes to water regimes and invasive plants • Boat strike from large vessels and habitat disruption from mineral exploration, production and transportation • Marine debris.	Section 5.7 Section 5.8 Section 5.9 Section 5.11
Recovery Plan for the White Shark (*Carcharodon*	The overarching objective of this recovery plan is to assist the recovery of the white shark in the wild throughout its range in Australian waters.	Section 5.5 Section 5.7

Relevant plan/advice	Applicable threats or management advice	Addressed in EP section
carcharias) (DSEWPC, 2013)	**Threats:** • Habitat modification as a result of changes in sea temperature, ocean currents and acidification if required, appropriate mitigation measures are implemented.	Section 5.8
Recovery Plan for the Grey Nurse Shark (*Carcharias Taurus*) west coast population (DoE, 2014)	The recovery plan considers the conservation requirements of the grey nurse shark across its range and identifies the actions to be taken to ensure the species long-term viability.	Section 5.5 Section 5.7 Section 5.8
Approved Conservation Advice for *Pristis zijsron* (green sawfish) (DEWHA, 2008b) Sawfish and River Sharks Multispecies Recovery Plan: (*Pristis, Pristis zijsron, Pristis clavata, Glyphis and Glyphis garricki*) (DoE, 2015c)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the green sawfish. **Threats:** • Habitat loss and degradation.	Section 5.7 Section 5.8 Section 5.9 Section 5.10 Section 5.12 Section 5.13 Section 5.14 Section 5.15
Approved Conservation Advice for *Pristis clavata* (dwarf sawfish) (DEWHA, 2009) Sawfish and River Sharks Multispecies Recovery Plan: (*Pristis pristis, Pristis zijsron, Pristis clavata, Glyphis glyphis and Glyphis garricki*) (DoE, 2015c)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the dwarf sawfish. **Threats:** • Habitat loss and degradation.	Section 5.7 Section 5.8 Section 5.9 Section 5.10 Section 5.12 Section 5.13 Section 5.14 Section 5.15
Marine Reptiles		

Relevant plan/advice	Applicable threats or management advice	Addressed in EP section
Recovery Plan for Marine Turtles in Australia, 2017-2027 (Commonwealth of Australia, 2017)	The long-term recovery objective for marine turtles is to minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so that they can be removed from the EPBC Act Threatened species list. **Threats:** • Chemical and terrestrial discharge/marine debris • Light pollution • Habitat modification • Vessel strike/disturbance • Noise interference.	Section 5.3 Section 5.5 Section 5.7 Section 5.8 Section 5.9 Section 5.11 Section 5.13 Section 5.15
Approved Conservation Advice for *Dermochelys coriacea* (Leatherback Turtle) (DEWHA, 2008c)	See above for Recovery Plan for Marine Turtles in Australia, 2017-2027.	Section 5.3 Section 5.5 Section 5.9 Section 5.11
Approved Conservation Advice for short-nosed sea snake (*Aipysurus apraefrontalis*) (DSEWPC, 2011b)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the short-nosed sea snake. **Threats:** • Degradation of reef habitat: no anthropogenic disturbance in areas where the short-nosed sea snake occurs.	Section 5.13 Section 5.15
Approved Conservation Advice for *Aipysurus foliosquama* (Leaf-scaled Sea Snake) (DSEWPC, 2011c)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the Leaf-scaled Sea Snake. **Threats:** • Oil and gas exploration activities (including seismic surveys and drilling)	Section 5.13 Section 5.15
Marine Mammals		
Conservation Management Plan for the Blue Whale, 2015-2025 (DoE, 2015)	The long-term recovery objective for blue whales is to minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list. **Threats:**	Section 5.3 Section 5.4 Section 5.6 Section 5.8

Relevant plan/advice	Applicable threats or management advice	Addressed in EP section
	• Noise interference: evaluate risk of noise impacts and, if required, appropriate mitigation measures are implemented • Vessel disturbance: evaluate risk of vessel strikes and, if required, appropriate mitigation measures are implemented.	Section 5.11
Approved Conservation Advice for *Balaenoptera borealis* (Sei Whale) (TSSC, 2015c)	Conservation advice provides threat abatement activities that can be undertaken to ensure the conservation of the sei whale. **Threats:** • Noise interference: evaluate risk of noise impacts to cetaceans and, if required, appropriate mitigation measures are implemented • Vessel disturbance: evaluate risk of vessel strikes and, if required, appropriate mitigation measures are implemented • Marine pollution: evaluate risk of oil spill impact, if required, appropriate mitigation measures are implemented • Habitat loss and degradation as a result of climae change, marine pollution, vessel interaction and coastal developments.	Section 5.3 Section 5.4 Section 5.6 Section 5.7 Section 5.8 Section 5.11
National Recovery Plan for the Southern Right Whale (*Eubalaena australis*) (DCCEEW, 2024l)	The recovery plan provides threat abatement activities that can be undertaken to ensure the conservation of the southern right whale. **Threats**: • Habitat degradation: including offshore development • Anthropogenic underwater noise: including vessel noise • Collision: including vessel strikes.	Section 5.3 Section 5.4 Section 5.6 Section 5.11
Approved Conservation Advice for *Balaenoptera physalus* (Fin Whale) (TSSC, 2015d)	Conservation advice provides threat abatement activities that can be undertaken to ensure the conservation of the fin whale. **Threats**: • Noise interference: evaluate risk of noise impacts to cetaceans and, if required, appropriate mitigation measures are implemented • Vessel disturbance: evaluate risk of vessel strikes and, if required, appropriate mitigation measures are implemented	Section 5.3 Section 5.4 Section 5.6 Section 5.7 Section 5.8 Section 5.11

Relevant plan/advice	Applicable threats or management advice	Addressed in EP section
	• Marine pollution: evaluate risk of oil spill impact, if required, appropriate mitigation measures are implemented • Habitat loss and degradation as a result of climae change, marine pollution, vessel interaction and coastal developments.	
Conservation Advice for *Orcaella heinsohni* (Australian snubfin dolphin) (DCCEEW, 2025d)	The recovery plan provides threat abatement activities that can be undertaken to ensure the conservation of the Australian Snubfin Dolphin. **Threats:** • Habitat loss and degradation as a result of climae change, marine pollution, vessel interaction and coastal developments.	Section 5.3 Section 5.4 Section 5.6 Section 5.7 Section 5.8 Section 5.9 Section 5.11
Conservation Advice for Sousa sahulensis (Australian humpback dolphin) (DCCEEW, 2025h)	Conservation advice provides management actions that can be undertaken to ensure the conservation of the Australian humpback dolphin. **Threats:** • Habitat loss and degradation as a result of climae change, marine pollution, vessel interaction and coastal developments • Anthropogenic underwater noise as a result of industrial and vessel noise	Section 5.3 Section 5.4 Section 5.6 Section 5.9 Section 5.11

1.6.2 Western Australian Legislation

While the scope of this activity is limited to the Operational Areas within Australian Commonwealth waters, there are a number of State legislative requirements relevant to the potential impact of an oil spill in State jurisdiction. Table 1-4 summarises the principal, relevant WA legislative requirements.

Table 1-4: Relevant Western Australian legislation

Legislation	Scope	Related International conventions	Administering authority
Aboriginal Heritage Act 1972	Protects and manages Aboriginal heritage by requiring approval for activities that may impact or cause harm.	Sites and objects protected under the Act may be present in the EMBA.	Department of Planning, Lands and Heritage (DPLH)
Aboriginal Heritage Legislation Amendment and Repeal Act 2023	This act repeals the *Aboriginal Cultural Heritage Act* 2021 and the regulations made under that Act. The *Aboriginal Legislation Amendment and Repeal Act* allows for ammendments to the *Aboriginal Heritage Act 1972* and to make consequential and related amendments to other written laws.	-	DPLH
Biodiversity Conservation Act 2016	Provides for the conservation and protection of biodiversity and biodiversity components and the ecologically sustainable use of biodiversity components in Western Australia.	Biodiversity Conservation Regulations 2018 sets out separation distances for whale sharks and other marine fauna.	Department of Biodiversity, Conservation and Attractions (DBCA)
Maritime Archaeology Act 1973	Provides for the preservation of the remains of ships lost before 1900.	May be triggered in the event of impacts to a known or previously un-located shipwreck.	WA Museum
Marine Safety (Domestic Commercial Vessel National Law Application) Act 2023	This Act adopts a national approach to the regulation of marine safety in relation to domestic commercial vessels.	-	AMSA
Pollution of Waters by Oil and Noxious Substances Act 1987	Provides for the protection of the sea from pollution by oil and other noxious substances. Gives effect to MARPOL in state waters.	Triggered in the event of vessels operating in state waters.	Department of Transport (DoT) Relevant Port Authority
Western Australian Marine Act 1982	Regulates navigation and shipping.	Triggered in the event of vessels operating in state waters.	DoT

Legislation	Scope	Related International conventions	Administering authority
Western Australian Marine (Transitional Provisions) Regulations 2023 (DoT, 2023)	These regulations provide transitional provisions for *Marine Safety (Domestic Commercial Vessel National Law Application) Act 2023* section 99 comes into operation.	-	DoT

1.6.3 Codes of Practice

The Australian Energy Producers (AEP) Code of Environmental Practice (APPEA, 2008) is the most relevant Code of Practice for offshore petroleum activities. Specific requirements of the AEP Code of Environmental Practice include:

- Compliance with applicable laws, regulations, standards and guidelines and, in their absence, adopting the most practical means to prevent or minimise adverse environmental impacts.
- Ensuring that waste management practices minimise the potential impact on the environment. Practices are based on the prevention, minimisation, recycling, treatment and safe disposal of wastes.
- Providing adequate training to enable employees and contractors to adopt environmentally responsible work practices.
- Developing emergency plans and procedures so that incidents can be responded to in a timely and effective manner.
- Developing and maintaining management systems to identify, control and monitor risks.

VOGA is an AEP member and, when undertaking its projects and activities, adheres to the provisions of its Code of Environmental Practice (APPEA, 2008).

Additionally, the International Finance Corporation (IFC) Environmental, Health, and Safety Guidelines for Offshore Oil and Gas Development (IFC, 2015) are technical reference documents with general and industry-specific examples of Good International Industry Practice.

Both the Code of Environmental Practice (APPEA, 2008) and the IFC Environmental, Health, and Safety Guidelines (IFC, 2015) were key references in preparing for the environmental risk assessment process associated with this EP and in the development of the environmental performance outcomes contained within it.

Section 2 Description of the Petroleum Activity

2.1 Background and Scope

VOGA currently operates the Wandoo Field within WA-14-L and has performed numerous infield development drilling campaigns. The scope of the well construction operations planned for the Wandoo Field over the next five years includes:

- Drilling activities:
  - Construction of new wells
  - Isolation of existing laterals and well bores
  - Well slot recoveries for drilling of new wells
  - Well interventions and side-tracks
- Temporary suspension
- Plug and Abandonment (P&A)
- Blowout Preventer (BOP) installation and testing
- Support operations.

No vertical seismic profiling is planned during well construction activities.

The primary purpose of these activities will be to add new production intervals to access undrained oil in the Wandoo reservoir. A secondary aim will be to continue the evaluation of the Field boundaries to determine the extent of the Wandoo reservoir in the areas that the new trajectories will access. This evaluation process will provide critical information for the updating of VOGA's geological and reservoir models for the field, allowing both future development and production processes to be optimised.

Drilling of a new well is undertaken either by installing a new conductor on Wandoo A or Wandoo B or from a recovered slot if an existing well is first abandoned (Section 2.5.3). In addition, the existing wells at Wandoo are also candidates for conversion into multi-lateral wells (Section 2.5.4) and well interventions (Section 2.5.5).

Temporary suspension, P&A and BOP operations are described in Sections 2.6, 2.7 and 2.8 respectively. The use of MODUs and supporting activities within the Operational Area such as AHTS vessels, helicopters and Remotely Operated Vehicles (ROV) are described in Section 2.11 Sections 2.11.2, 2.11.3, and 2.11.4. Section 2.10 described the emissions, waste and discharge streams.

A summary of the key parameters of the activity is detailed in Table 2-1.

Table 2-1: Key parameters of well construction activities

Production Licence	WA-14-L
Reservoir	*M. australis* Sandstone
Type of well	Production
Oil type	Medium density crude
Well depth	Up to 6,000 mMD
Well duration	~30–50 days for each well
Campaign frequency	Generally, 2 to 3 years
Campaign duration	Up to 150 days
MODU type	Jack-up Drilling Rig
Helicopter flights into Operational Area	2-7 return flights per week
Vessel transit into Operational Area	Daily

2.2 Location and Operational Area

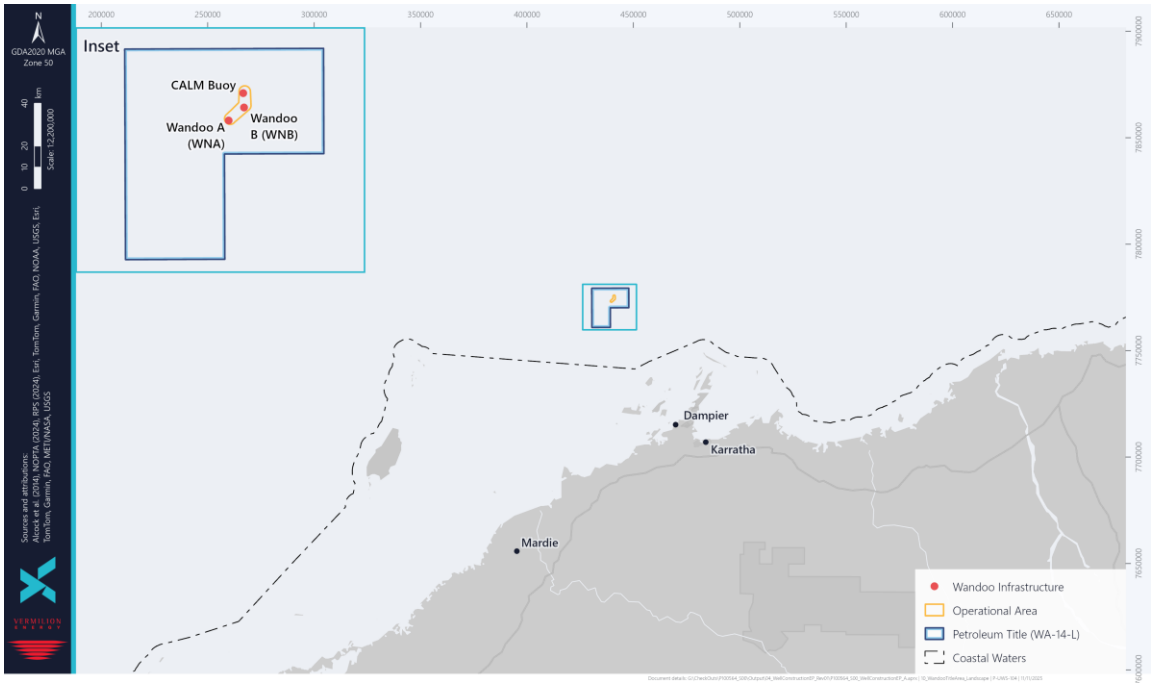
The Wandoo Field is located approximately 80 km northwest of the port of Dampier. Geographical coordinates of the various facilities at Wandoo are given in Table 2-2. The location of the Wandoo Field and existing Petroleum Safety Zone (PSZ) is shown in Figure 2-1.

Table 2-2: Coordinates of Wandoo facilities

Facility	Latitude	Longitude
Wandoo A	20° 08’ 14.61” S	116° 25’ 22.43” E
Wandoo B	20° 07’ 37.12” S	116° 26’ 08.23” E
Anchorage	20°05' 00" S	116°23' 48" E
CALM Buoy	20° 06’ 57.43” S	116° 26’ 06.51” E

The Operational Area is the area within which planned activities occur. The Operational Area is the existing PSZ, which is defined as a 500 m radius around Wandoo A, Wandoo B and the CALM Buoy, or within a 2 km radius of any potential relief well location during emergency conditions. It is approximately 65 km northwest of the port of Dampier and is located within the Production Licence Area of WA-14-L (Figure 2-1). The Operational Area is located in water depths of approximately 55 m.

Figure 2-1: Location of Operational Area



2.3 Activity Duration and Timing

Timing is based on MODU availability and not restricted to any specific months or seasons. Assessment in this EP have considered all relevant seasonal conditions and factors that may influence the activity and associated environmental impact.

Well construction is performed in campaigns, which will involve up to 3 wells. Typical durations are between 30 and 50 days per well, giving a maximum campaign duration of 150 days. Up to 3 campaigns will be completed within the life of the EP.

The above duration does not include vessel transit times, potential delays caused by ocean conditions, weather downtime, standby and equipment failure or other delays to the petroleum activity plan, as these factors are difficult to predict or quantify. Should additional time be required to complete the drilling, VOGA will assess the situation in accordance with the VOGA Management of Change (MoC) Procedure (Section 8.5).

Activities covered within this EP will be conducted 24 hours per day and may occur 7 days a week at any time of the year.

2.4 Reservoir Properties

2.4.1 Hydrocarbon Composition

Wandoo Crude, having lost the majority of its lighter fractions due to microbial biodegradation in the reservoir, is a 19.8° API crude, and is similar to other medium crude produced on the North West Shelf (NWS). It has a low pour point, virtually no paraffin wax and low asphaltene content. Modelling undertaken by RPS (RPS, 2024) shows that for Wandoo Crude, approximately

1.7% (by mass) of volatile hydrocarbons will evaporate within the first 12 hours. A further 10.2% of the oil is characterised as semi-volatile hydrocarbon compounds and will evaporate within the first 24 hours while an additional 33.1% represent the low volatiles and will typically evaporate over several days. A relatively high proportion (55%) of hydrocarbon compounds are persistent and are unlikely to evaporate but will decay over time.

A summary of reservoir oil specification is contained in Table 2-3 and Table 2-4.

Table 2-3: Physical properties for Wandoo Crude

Properties	Wandoo Crude
Density (kg/m^3)	0.937 (at 16°C)
API	19.4
Dynamic viscosity [centipoise (cP)]	161 (at 25°C)
Pour point (°C)	-24
Hydrocarbon property category	Group IV
Hydrocarbon property classification	Persistent

Table 2-4: Boiling point ranges for Wandoo Crude

Characteristic oil type	Volatiles (%)	Semi-volatiles (%)	Low volatiles (%)	Residual (%)
Boiling point (°C)	< 180	180-265	265-380	> 380
	Non persistent			Persistent
Wandoo Crude	1.7	10.2	33.1	55

2.4.2 Geology and Reservoir Characteristics

The seabed at Wandoo is approximately 50 m below mean sea level. The lithological sequence of interest in the Wandoo Field:

- Sea floor to 300 m Total Vertical Depth Rotary Table (TVDRT) – Tertiary age: The upper 300 m is highly uncompacted calcareous mudstone. No hydrocarbon indications have been seen on any wells drilled in the Field. There has been no evidence of porosity in samples or logs.
- 300 to 480 m TVDRT – Cretaceous age “Santonian”: Claystone and calcareous claystone. These rocks are non-porous and form the main sealing formation in the area. Traces of siderite and sandstone occur in a few wells in the Field. No hydrocarbon indications have been seen on any wells drilled in the Field. No porosity or hydrocarbon shows have been observed.
- 480 to 540 m TVDRT – Cretaceous age “Cenomanian”: Claystone with minor silty claystone interbeds. No hydrocarbon indications have been seen on any wells drilled in the Field. No porosity or hydrocarbon shows have been observed.
- 540 to 580 m TVDRT – Cretaceous age “Albian”: Claystone with minor silty claystone interbeds. No hydrocarbon indications have been seen on any wells drilled in the Field. No porosity or hydrocarbon shows have been observed.
- 580 to 750 m TVDRT - Cretaceous age “Barremian” (Upper Muderong Shale Formation): 100% glauconitic claystone. It has calcareous cement with abundant interspersed glauconitic fine peletal glauconite. No porosity with minor patchy oil stains on cuttings is observed. This

unit is the regional top seal for most hydrocarbon accumulations in the Carnarvon Basin, including the Wandoo Field.

- 620 to 690 m TVDRT – Cretaceous age "*M. australis* Sandstone": Comprised of an upper and lower unit, Unit A and Unit B, respectively. Unit A is a fine to medium-grained glauconitic sandstone (greensand), whilst Unit B is a fine to medium-grained massive sandstone. Together, Units A and B are the main producing formations of the Wandoo Field.

Currently, the only producing reservoir in the Operational Area is the *M. australis* Sandstone. The *M. australis* Sandstone is subdivided into an upper unit (the A sand) and lower unit (the B sand). The A sand is a fine-grained highly glauconitic sandstone (greensand) with a porosity of approximately 30% and permeability ranging from 50 to 3000 millidarcy (mD) with reservoir characteristics that improve markedly with depth. The A sand is subdivided into three units, the uppermost being the A1 and the lowermost the A3. The B sand is a relatively clean, fine to medium-grained, quartzose sandstone of exceptional reservoir characteristics with porosities ranging from 35% to 40% and permeability ranging from 5 to 15 darcy (D). The B sand is also subdivided into a number of units based on reservoir quality (B1, B2, etc.).

Both the A and B sands are effectively unconsolidated. An important feature of the A sand is the presence of laterally discontinuous and coleratable siderite beds. These siderite beds are primarily concentrated in the A2 unit. Due to the unconsolidated nature of the sand and its high glauconite content, drill cuttings from the reservoir do not consist of rock chips and fragments that would otherwise be expected if a harder substrate or more consolidated substrata was drilled. Consequently, cuttings from this reservoir consist essentially of loose grains of sand and dispersed clays rather than rock fragments.

Prior to the start of production, the Wandoo Field had a 22.1 m oil column overlain by an 18 m gas column at the crest of the Field. The oil is heavily biodegraded and viscous (19.4 API gravity, 14.5 centiPoise (cP) viscosity, -24°C pour point) and has a low Gas Oil Ratio (GOR) (99 standard cubic feet per barrel (scf/bbl)). The sulphur and wax contents are also low.

2.4.3 Flow Rate

VOGA has undertaken reservoir modelling to determine the flow rate and likelihood of a loss of well control (LOWC) scenario during the activity. Due to the reservoirs being sub-hydrostatic with low reservoir pressure, all the production wells require artificial lift (gas or Electric Submersible Pumps in particular wells) for production. The reservoir modelling conducted on Wandoo Field has determined that the wells to be drilled under this activity will not naturally flow (refer Section 5.14.2.1 for further detail).

2.5 Drilling Activities

2.5.1 Background

VOGA became the Licence Holder in 2005. Since that time VOGA has carried out multiple workovers and drilled six new wells and eight new side-track laterals into the reservoir. An outline of previous VOGA well construction campaigns is presented in Table 2-5.

Table 2-5: Previous VOGA well construction campaigns

Well	Date
Wandoo B13 drill and complete	2008
Wandoo B14 drill and complete	2008
Wandoo B8 ST1 re-enter, side-track and complete	2010
Wandoo B12 ST3 re-enter, side-track and complete	2010
Wandoo A6 H3 re-enter, side-track and complete	2010
Wandoo B5 ST1 re-enter, side-track and complete	2013
Wandoo B9 ST1 re-enter, side-track and complete	2013
Wandoo A5ST1 re-enter, side-track and complete	2015
Wandoo B4ST1 re-enter, side-track and complete	2016
Wandoo B11ST1 re-enter, side-track and complete	2016
Wandoo B15 drill and complete	2018/2019
Wandoo B16 drill and complete	2018/2019
Wandoo B17 drill and complete	2022
Wandoo B18 drill and complete	2022

The well construction operations planned for the Wandoo Field over the next 5 years includes:

- Construction of new wells
- Isolation of existing laterals and well bores
- Well slot recoveries for drilling of new wells
- Well interventions and side-tracks
- Temporary suspension
- P&A
- BOP installation and testing.

Due to MODU availability it is possible that well construction activities could occur at any time during the calendar year. Each campaign will include one or more of the above operations (for up to 3 wells).

2.5.2 Drilling a Development Well from a New Slot

Drilling and completing a new well may take approximately 30 to 50 days, depending upon specific complexities. The basic sequence to drill a new development well is as follows:

- Drill a sufficient diameter hole (to accommodate the conductor) to approximately 25 m below the seabed (if a new conductor is required)
- Set a conductor approximately 25 m below the seabed and cement it in place (if the well will be a producer)
- Drill 445 mm or 416 mm hole directionally to approximately 300–350 m below sea level
- Set 340 mm casing, cement it in place and install BOPs

- Drill 311 mm hole directionally building to 90° inclination in the *M. australis* Sandstone reservoir (the depth will depend on specific well requirements)
- Set 244 mm casing, cementing it in place
- Drill 229 mm hole horizontally in the reservoir
- Install sand exclusion screens
- Complete the well
- Plug the completion (temporary suspension) to allow safe removal of the BOPs
- Remove BOPs and install a production Xmas tree
- Remove suspension plugs
- Formal handover of the well from Well Construction to Production.

2.5.3 Drilling a New Well from a Recovered Slot

New wells are possible if an existing well is first abandoned and the slot recovered for use in a new well. Drilling and completing a new well may take approximately 30 to 50 days, depending upon specific complexities.

The basic sequence to drill a new Wandoo development well from a recovered slot is as follows:

- Formal handover of the well from Production to Well Construction
- Kill the existing well by displacing oil in the existing completion tubing and annulus with a completion brine, to create an exceedance of hydrostatic pressure above reservoir fluids and prevent the flow from the reservoir
- Temporarily suspend the well with downhole plug/s
- Install BOPs on the existing wellhead
- Remove the existing completion tubing from the well
- Set and verify isolation plugs in the well near the reservoir
- Displace the well to a corrosion inhibited kill density brine
- Mechanically cut and recover the 244 mm casing above the selected kick-off point
- Set cement kick-off plug, or mechanically cut and recover the 340 mm casing above the selected kick-off point and set a shallow kick-off plug, drill 406 mm directional hole and set and cement 340 mm casing
- Drill 311 mm hole directionally building to 90° inclination in the *M. australis* Sandstone reservoir (the depth will depend on specific well requirements)
- Set 244 mm casing, cementing it in place
- Drill 229 mm hole horizontally in the reservoir
- Install sand exclusion screens
- Complete the well

- Plug the completion (temporary suspension) to allow safe removal of the BOPs
- Remove BOPs and install a production Xmas tree
- Remove suspension plugs
- Formal handover of the well from Well Construction to Production.

2.5.4 Conversion of Existing Wells and Side-tracks

When the Wandoo wells were first drilled, they were drilled such that each well provided one production interval. It is now possible to drill multilateral wells in which more than one production interval is accessed with a single oil well at surface. Some of the existing wells at Wandoo are suitable candidates for conversion into multi-lateral wells. The duration of a single well side-track or the installation of a new production interval is approximately 20 to 40 days.

To convert an existing, single producing well bore into a multilateral well, the basic sequence is as follows:

- Formal handover of the well from Production to Well Construction
- Kill the existing well by displacing oil in the existing completion tubing and annulus with a completion brine, to create an exceedance of hydrostatic pressure above reservoir fluids and prevent the flow from the reservoir
- Temporarily suspend the well with downhole plug/s
- Install BOPs on the existing wellhead
- Remove the existing completion tubing from the well
- Install-tie back equipment to enable the original well bore to be retained
- Mill a window in the casing above the tie-back equipment
- Drill a new horizontal production interval
- Install sand exclusion screens in the new production interval
- Form a sealing junction at the milled window
- Run a new completion into the well
- Plug the completion to allow safe removal of the BOPs
- Remove BOPs and install a production Xmas tree
- Remove suspension plugs
- Formal handover of the well from Well Construction to Production.

In some cases, it is not economic to convert the well into a multi-lateral well as the existing production interval may not have sufficient remaining reserves to justify the conversion. In this case, the existing production interval is isolated within the reservoir or the Muderong formation, and a single lateral is drilled as a side-track from the 244 mm casing.

To convert an existing, single producing well bore into a new single producing well, the basic sequence is as follows:

- Formal handover of the well from Production to Well Construction
- Kill the existing well by displacing oil in the existing completion tubing and annulus with a completion brine, to create an exceedance of hydrostatic pressure above reservoir fluids and prevent the flow from the reservoir
- Temporarily suspend the well with downhole plug/s
- Install BOPs on the existing wellhead
- Remove the existing completion tubing from the well
- Install a side-track kick off device (such as a whipstock), this will generally include a mechanical isolation plug
- Mill a window in the casing
- Drill a new horizontal production interval
- Install sand exclusion screens in the new production interval
- Run a new completion into the well
- Plug the well to allow safe removal of the BOPs
- Remove the BOPs and install a production Xmas tree
- Remove suspension plugs
- Formal handover of the well from Well Construction to Production.

2.5.5 MODU Based Well Interventions

Well interventions are workover-type well repairs or modifications and are designed to improve reservoir access or to rectify a problem in an existing well. The duration of a well intervention is highly dependent on what operation is required. The duration of a single well intervention is typically 5 to 15 days.

A typical sequence of operations is as follows:

- Formal handover of the well from Production to Well Construction
- Kill the existing well by displacing oil in the existing completion tubing and annulus with a completion brine, to create an exceedance of hydrostatic pressure above reservoir fluids and prevent the flow from the reservoir
- Temporarily suspend the well with downhole plug/s
- Install BOPs on the existing wellhead
- If required, remove the existing completion tubing from the well
- Carry out the planned change and if required install a new completion in the well
- Plug the completion to allow safe removal of the BOPs
- Remove the BOPs and install a production Xmas tree
- Remove suspension plugs

- Formal handover of the well from Well Construction to Production.

Note: rig-less well intervention activities (i.e. from the Wandoo Facility) are provided for within the Wandoo Facility Environment Plan [WPA-7000-YH-0007].

2.5.6 Drilling Fluids and Cuttings Handling and Disposal

Drilling fluids (also referred to as drill muds) will be used during the drilling program to provide a range of functions, including:

- Control of formation pressures (i.e. providing hydrostatic head to prevent influxes and providing wellbore stability)
- Transport of drill cuttings out of the hole to the MODU
- Maintenance of drill bit and assembly (i.e. lubrication, cooling and support)
- Sealing of permeable formations to prevent formation invasion.

There are five drilling and completions fluids planned for use at Wandoo:

- Seawater with bentonite sweeps: used for drilling the tophole section(s), discharged to the seabed. Formulated from fresh water, bentonite clay, xanthium gum or guar gum and a small addition of sodium hydroxide.
- KCL/PHPA/Glycol: used to drill the intermediate hole section after BOPs have been installed. This fluid is recycled via the MODU shale shakers and solids control systems.
- Drilling fluid: used for drilling the Wandoo reservoir section. Formulated to minimise long-term damage to the formation and provide hole cleaning.
- Solids free fluid: After drilling has been completed, the well is displaced to a polymer-based solids free completion fluid before sand exclusion screens are run.
- Completion brine: After the completion has been run, the well bore is displaced with completion brine treated with a small amount of biocide to prevent souring of the reservoir. This is a filtered inhibited potassium chloride brine.

No synthetic-based mud will be used.

Milling of casing generates steel shavings which are captured and disposed of onshore.

2.5.6.1 Drilling Fluid Program

Only water-based mud (WBM) will be used for the well/s.

The conductor hole section will be drilled using seawater and Pre-Hydrated Gel (PHG) (bentonite) sweeps to clean the hole, and the hole will be displaced to PHG to provide stability for running the conductor casing. This fluid will exit the well at the seabed while the hole is drilled, and the conductor casing is installed. As with the drilling fluids, cuttings for the conductor hole section will exit the wellbore at the seabed.

The surface hole section will be drilled using seawater and PHG sweeps to clean the hole, and the hole will be displaced to PHG to provide stability for running the surface casing. This fluid will exit the well at the top of the conductor and is discharged to the sea while the hole is

drilled. As with the drilling fluids, cuttings for the surface hole section will exit the wellbore at the top of the conductor and discharged to the sea.

Once the surface casing is installed, and a closed circulating system is established, the remainder of the well will be drilled with WBM systems, as outlined in Table 2-7. WBM will be discharged from the MODU at the sea surface.

Cuttings for the remaining hole sections to total depth (TD) will be discharged at sea level after being removed from the WBM system through the solids control system. The solids control system comprises shale shakers, desanders and desilters.

Aqueous-based Lost Circulation Material (LCM) will be available to pump should downhole losses occur.

The selection of drilling fluids to be used during the drilling program is undertaken through an evaluation of the technical, safety and environmental attributes. A well-specific Drilling Fluid Program will be prepared by the drilling fluids contractor and endorsed by VOGA prior to spud.

The Drilling Fluid Program will contain details of the well data, drilling fluid-related risk assessment, load out list, logistics plan, execution plan and procedures. This Drilling Fluid Program will be implemented by the wellsite mud engineers (24 hour coverage).

The calculated volumes of drill cuttings to be generated and drilling and completion fluid solids discharged are outlined in Table 2-7.

2.5.6.2 Drill Fluid Additives

Seawater or drill water is the primary constituent of drilling fluids. Inert drilling fluid additives are added to the seawater or drill water to form a WBM. The WBM additives (by name/brand and volume) likely to be used in the drilling program, and their toxicity ratings, are not available at this stage. However, the key additives used in WBM at Wandoo are xanthum gum (viscosifier), bentonite (viscosifier), KCl (a salt for shale inhibition), Calcium Carbonate ($CaCO_3$ - a weighting and bridging agent), and barite (weighting agent), which are all inert substances (they have no toxicity, Section 2.5.6.3).

2.5.6.3 Drill Fluid Toxicity

In the absence of Australian standards (AS) regarding the suitability of drilling mud chemical additives, the Offshore Chemical Notification Scheme (OCNS) is used as a basis for selecting environmentally acceptable chemicals in the Australian offshore petroleum industry. The OCNS manages chemical use and discharge by the United Kingdom (UK) and Netherlands offshore petroleum industries. The scheme is regulated in the UK by the Department for Energy Security and Net Zero (DESNZ) (formally the Department of Energy and Climate Change) using scientific and environmental advice from the UK's Centres for Environment, Fisheries and Aquaculture Science (CEFAS) and Marine Scotland.

The OCNS uses the Harmonised Mandatory Control Scheme (HMCS) developed through the Oslo-Paris (OSPAR) Convention 1992. This ranks chemical products according to Hazard Quotient (HQ), calculated using the Chemical Hazard and Risk Management (CHARM) model. The CHARM model requires the biodegradation, bioaccumulation and toxicity data of the product to be

provided. Products not applicable to the CHARM model are assigned an OCNS grouping A–E, with 'A' having the greatest potential environmental hazard and 'E' having the least. Products that only contain substances termed PLONORs (Pose Little or No Risk to the environment) are given the OCNS 'E' grouping. Data used for the assessment includes toxicity, biodegradation and bioaccumulation. Refer to Section 8.3.7 for more information on these classifications.

VOGA will specify in the drilling fluid tender that only chemicals highly ranked under the OCNS rating system (i.e. 'Gold' or 'Silver' [CHARM] and 'E' or 'D' [non-CHARM], or equivalent) may be used in the drilling fluid design. Where a chemical has not been ranked under OCNS, the drilling fluids contractor will conduct a 'pseudo rating' using toxicity and environmental data for the individual substances of a product. The rating is conducted following the hazard assessment process outlined by CEFAS for the OCNS scheme. This will aim to understand the potential environmental impacts that may occur from discharge of the chemical. VOGA will provide final approval for use of chemicals with those that have been risk assessed by the contractor.

Chemical Substitution

Chemicals that are hazardous to the marine environment are subject to substitution warnings under the HMCS. The UK follows and applies the OSPAR harmonised pre-screening scheme and complies with Registration, Evaluation and Authorisation of Chemicals (REACH) recommendation to replace chemical substances identified as candidates for substitution. These substances are flagged with a substitution warning on the product template.

CEFAS recommends that during the selection of chemical products, operators consider the magnitude of their Risk Quotient (RQ) and the presence of hazardous substances and encourages operators to select products without a substitution warning. Chemicals that have a substitution warning will only be used if a justification for their use is provided, along with an assessment of the environmental impact from the chemical. VOGA will provide final approval for use of chemicals with a substitution warning.

Chemical Review Process

VOGA will review all chemicals nominated by the drilling fluids contractor against the Definitive Ranked Lists of Approved Products (current at the time) to ensure that only 'Gold' or 'Silver' [CHARM] and 'E' or 'D' [non-CHARM] rated chemicals are nominated and that none of the chemicals nominated have a substitution warning.

Where for technical reasons a chemical does not meet the requirements regarding its hazard rating or has a substitution warning in place, VOGA will review and assess the chemical proposed to ensure environmental risks are reduced to ALARP and acceptable levels. This will be managed using VOGA's MoC Process (Section 8.5). The risk assessment will consider the chemical's end fate, volumes, concentrations and environmental impacts.

2.5.6.4 Fluids Disposal

Where applicable, drilling fluids will be carried over between hole sections.

At the end of the drilling program, any drilling fluid (mud and brine) remaining in the mud tanks will be discharged overboard. This volume will be minimised through careful mud management.

2.5.6.5 Chemical Disposal

Any dry, unopened sacks of chemicals or unopened drums/containers of liquid additives left over at the end of drilling will be left on board for the next operator to use or returned to shore. The decision on the end fate of leftover materials will be documented to ensure the final decision is environmentally acceptable. The decision list in order of preference is provided in Section 2.5.6.6.

2.5.6.6 Bulk Material Disposal

Following completion of drilling activities, leftover barite, bentonite, cement and calcium carbonate will be managed in accordance with a decision framework featuring options in order of preference (Figure 2-2). This decision will be finalised prior to commencing the drilling activity to ensure adequate preparedness activities have been completed. This also ensures that adequate time is given to consider the alternative for onshore disposal.

Figure 2-2: Bulk material disposal options framework

1. Sell or transfer stock to next operator on the MODU

Any remaining bulk powder barite, bentonite and cement would be retained on board the MODU and provided to the next operator taking the MODU from VOGA. This option eliminates the potential impacts associated with disposal to sea.

2. Sell or transfer stock to another operator after transferring to a vessel

If option 1 is not viable, the bulk powders may be transferred back to support vessels to be retained and transported to another operator. The powders may be transferred from MODU to vessel and then onto another MODU or vessel offshore for use. This will be dependent on whether another operator can use the stock on another MODU, the travel distance and cost associated with transferring the stock to another MODU and the storage capacity of the alternative MODU.

3. Transport onshore for alternative disposal

VOGA will continue discussions with suppliers as solutions for this issue have recently been successfully utilised by industry participants and suppliers. In the event that this option is available to VOGA and is considered to be a feasible ALARP option prior to commencing drilling, VOGA would undertake this alternative option.

4. Following a complete ALARP assessment, discharge bulks to sea

If options 1, 2 and 3 are not viable, an ALARP workshop would be completed including discussion with suppliers of bulks to ensure that all feasible disposal alternatives have been assessed. If the above options are not available, and the potential impact of the bulk discharge is considered acceptable by the workshop attendees, bulk powders would be mixed into a slurry and discharged to sea. It is anticipated that in the worst-case scenario of no other feasible alternatives, the remaining bulks would be mixed into a slurry and discharged overboard with an anticipated volume of 45 m^3 each for cement, bentonite, barite and calcium carbonate per campaign.

2.5.7 Cementing Operations

Cementing operations will be undertaken to:

- Provide zonal isolation between different formations as required
- Maintain well integrity
- Provide structural support of the casing
- Set a temporary suspension plug or P&A plugs to abandon the well.

New wells will require casing strings to be run and cemented. The cementing process used for the installation of a conductor results in the return of minor volumes (approximately 5 m^3) of cement slurry to the seabed to ensure that the conductor is fully cemented, and structural integrity is achieved.

Cement will provide the main barrier for isolation of the wellbore from reservoir conditions whether the well is P&A or temporarily suspended. The final cement plan will be confirmed once

a cement service provider has been selected. It is currently planned that wells will use Class G cement. The notional cement program is outlined below:

- 13⅜" surface casing – the 13⅜" casing is planned to be cemented from section TD (± 350–400 m) to the base of the loss zone (+/- 150–200 m). Due to the likelihood of losses, cement returns are unlikely to be able to be monitored at surface. It is planned that 50% excess cement will be pumped during this cement job to account for hole washout and losses that may occur during the cementation job.
- 9⅝" production casing (if run) – the 9⅝" casing is planned to be cemented back to 50 m above the surface casing shoe, with returns monitored at surface. Top of cement for this casing string may change through the well design phase. It is planned that 10-25% excess cement will be pumped during this cement job to account for hole washout and losses that may occur during the cementation job.

Abandonment cement plugs will be set as required to safely temporarily suspend or P&A the well. The final abandonment program will ensure moveable hydrocarbons (if identified while drilling) are isolated in line with a NOPSEMA-accepted Well Operations Management Plan (WOMP).

During cementing operations, surface cementing equipment and lines will need to be flushed, washed and cleaned with water to prevent hard setting. The residual cement and wash water will be discharged at the sea surface after each cement job.

Cement spacer in well returns and residual surface tank volumes will also be discharged to sea during cementing operations.

Contingency discharges of cement may be required if a cementing job does not meet technical and safety standards and needs to be circulated out of the well (up to approximately 18 m^3).

2.5.7.1 Cement Disposal

Cement will be discharged overboard as part of the cement program, with only required cement mixed to ensure minimal wastage. If no loss zone is encountered while drilling the surface hole section there may be some excess cement discharged directly at the seabed during the cementing of the surface casing string.

After each cement job, left over cement slurry in the cement pump unit and the surface lines is flushed and minor volumes (2 m^3) discharged to the seabed to prevent clogging of the lines and equipment.

Excess dry cement will either be used for subsequent wells, provided to the next operator at the end of the drilling program (as it remains on the rig), transported onshore for alternative disposal, or, if these options aren't practicable, discharged to the marine environment as a slurry (up to approximately 45 m^3) (Section 2.5.6.6).

Modelling of cement discharges from BP's Shah Deniz 2 offshore drilling project (BP, 2013) provides a conservative assessment of the potential extent of cement exposure.

Indicative volumes of discharges from cementing operations are provided in Table 2-7.

At the end of the drilling program, bulk cement remaining on board will be disposed of in the same manner as barite and bentonite (Section 2.5.6.6).

2.6 Temporary Suspension

Temporary well suspensions are required for a range of activities, such as to allow the removal of the BOP stack or production tree for operational reasons, or as a result of weather during well construction activities.

The barriers utilised to temporarily suspend a well during well construction operations will typically include cement plugs, removable suspension packers, tubing suspension plugs and/or kill weight fluid. These barriers will allow for the safe re-entry of the well.

A single barrier may be used for temporary suspension. However, two temporary or permanent independently verified barriers must be in place in the annulus and well bore above any intersected hydrocarbon zone or over-pressured zone.

This operation may take up to 1-2 days per well.

2.7 Plug & Abandonment (P&A)

Wells undergoing work by the MODU may also require, plugging and/or abandonment. The following activities may be conducted:

- Well P&A
- Plugging of reservoir section
- Plugging of well slot/s for reclamation.

2.7.1.1 Well Plug & Abandonment

P&A activities are required to permanently abandon the well. This process permanently seals a well to stop the migration of fluids, such as hydrocarbons or saltwater.

The notional sequence of operations for well P&A is:

- Set mechanical plugs
- Remove Christmas Tree
- Nipple up High-Pressure (HP) Riser and BOP
- Run thru-tubing cement evaluation tool (if required)
- If sufficient annulus cement, perforate tubing and set internal cement plug adjacent to annulus cement
- If insufficient annulus cement:
  - recover upper and straddle (if applicable) completion
  - cut lower completion tubing and recover screen hanger packer if required
  - run and set isolation valve (or similar)

  - section mill window or alternate technology (e.g. perf and wash)
  - pump abandonment cement plug
- Cut, recover and layout casing
- Pump final well abandonment cement
- Nipple down BOP and HP Riser
- Recover wellhead
- Cut casing below the mudline
- Cut and recover conductor at mudline.

Section milling generates steel shavings which are captured and disposed of onshore.

Well P&A may take 20-25 days per well.

2.7.1.2 Plugging the Reservoir Section

If required, plugging of the reservoir section involves the following steps:

- Set mechanical plug in lower completion screen hanger
- Recover upper and straddle (if applicable) completion
- Cut lower completion tubing and recover screen hanger packer if required
- Run and set isolation valve (or similar).

The operation may take 5-10 days per well.

2.7.1.3 Plugging of Wells for Slot Reclamation

If required, plugging of well/s for slot reclamation involves the same steps as well P&A (Section 2.7.1.1) up the point of cutting, recovering and layout of casing. Following this, drilling a new well from below the 13⅜" shoe would commence.

Alternatively, if reclaiming a slot at the conductor shoe, the following steps are required:

- Pump final well abandonment cement plug from below cut point to above cut point inside the 13⅜" shoe
- Nipple down BOP and HP Riser
- Recover wellhead
- Cut 13⅜" casing below the conductor
- Commence drilling new well from below the conductor.

This operation may take up to 20-25 days per well.

2.8 Blowout Preventer Installation and Testing

A BOP is a mechanical device designed to seal off a well at surface when required. The system is made up of a number of different types of closing mechanisms consisting of:

- Rams: opposing pistons that move horizontally across the top of the well, creating a seal around the drill string, casing or completion tubing
- Blind shear rams: capable of shearing drill pipe and sealing the wellbore
- Annular preventers: deploy an elastomer donut-like device and used to close off the well around various sizes of pipe.

A BOP rated to the maximum anticipated wellhead pressure will be installed, and pressure tested prior to deployment and upon initial latch-up with the wellhead.

There are no discharges during BOP installation.

The BOP design is based on API standards, best practice and anticipated formation pressures. This is discussed in detail in the WOMP.

2.9 Contingency Activities

In the event of technical or operational issues during the drilling activity, contingency activities may be required. The activities are not expected to cause additional risks or impacts but may generate additional volumes of drilling fluids, cuttings, cement or seabed disturbance.

2.9.1 Well Re-spud

If technical or operational issues are encountered while drilling, such as a failure to meet installation criteria, a well re-spud may be required. This activity would not involve moving the rig legs. The cantilever may be moved to a new position before drilling is recommenced. A well re-spud would result in an increase in the volume of cuttings and cement generated. Cuttings and cement volumes would be the same as a new well (Table 2-7).

2.9.2 Sidetrack

A sidetrack is an alternative to a well re-spud, which involves drilling a secondary wellbore away from the primary wellbore. This may be done to avoid an unusable section of the primary wellbore, or if it is otherwise inaccessible. A sidetrack would be expected to result in an increase of cuttings generated and potentially cement discharges. Indicative volumes are provided in Table 2-7.

2.9.3 Well Suspension

Well suspension involves the application of suitable barriers, to suspend the well. Well suspension activities would be undertaken in accordance with the NOPSEMA-accepted WOMP. In some cases, the BOP may be left in place. Well suspension may be required in the instance of extreme weather events. The process of a planned removal of the BOP's and riser would result

in the riser being displaced with seawater prior to disconnection and therefore no planned discharge of drilling fluids and cuttings.

2.9.4 Cementing Operations

Additional cementing operations may be required as a contingency activity due to unplanned events (e.g. kick-off plugs, failed formation integrity test, lost circulation remediation). The discharges are expected to be no different from those described in cementing operations (Section 2.5.7).

2.9.5 Response to a Loss of Well Control

The nature of the Loss of Well Control (LOWC) leading to a hydrocarbon release will determine the type of source control activities required and the duration of the response. Source control activities evaluated for these prospects include:

- Containment
- Relief well drilling.

VOGA has undertaken reservoir modelling to determine the flow rate and likelihood of a LOWC scenario during the activity. Due to the reservoir being sub-hydrostatic with low reservoir pressure, all the production wells require artificial lift (gas or Electric Submersible Pumps in particular wells) for production. The reservoir modelling conducted on Wandoo Field has determined that the wells to be drilled under this activity will not naturally flow (refer Section 5.14.2.1 for further detail). However, the planning for source control will remain in the event a LOWC occurs. As per VOGA's standard response to a LOWC, the mobilisation process for a MODU would be commenced and progressed until proven that it is not required, based on event outcomes.

VOGA has a contract in place with a well control service provider (Wild Well Control) that allows it to access personnel and equipment to respond to a well control response. VOGA also has a contract in place with Oil Spill Response Limited (OSRL) and a contract with the Australian Marine Oil Spill Centre (AMOSC) for hydrocarbon spill response resources that allows VOGA to access personnel and equipment to respond to a hydrocarbon spill.

Capping and Containment

A capping stack is a piece of equipment that can be placed over a blown out well and act as a cap. The purpose is to prevent the flow of hydrocarbons to the environment and thus establish a barrier to the flow of hydrocarbons to the ocean.

For this activity, a subsea capping and containment approach is not feasible because these systems are designed for subsea wellhead applications and therefore not suitable for jack-up MODU surface stack systems (which will be used for this activity). A surface wellhead capping stack is theoretically feasible however requires installation from the MODU, which is generally evacuated in the case of a loss of well control.

Relief Well

A relief well is a longer-term response option to stop uncontrolled flow from a well (i.e. 'kill' a well) and to permanently abandon the well. A relief well is drilled to intersect the well that is flowing out of control to provide a conduit to pump high density fluid into the well, and thus stop well flow. VOGA will execute its Relief Well Plan (RWP).

Relief Well Planning

A relief well requires the mobilisation of a suitable MODU and the drilling of an interception well through which the failed well can be killed and made safe.

The scope of activities involved with drilling a relief well is the same as drilling a standard well, though it would be a highly deviated well due to the need to drill from outside a safety zone. VOGA will prepare a RWP as part of the Source Control Emergency Plan (SCERP) for each well to be drilled under this EP. This plan/s will:

- Describe industry guidelines relevant to relief well drilling
- Describe the process in place to monitor for and rapidly source a suitable MODU
- Provide a proposed relief well location and alternate location and trajectories for well interception
- Provide a relief well casing design
- Provide a relief well drilling program and schedule
- Provide a list of long lead equipment and sourcing arrangements if not in stock.

Relief Well Rig Specification and Provision for Procurement

The selection of a suitable MODU to undertake relief well activities will be based on the closest available unit that meets the criteria listed in Table 2-8. Given the water depth in the vicinity of the proposed well locations (50-60 m), it is assumed only jack-up MODUs would be capable of undertaking the activities. Suitable jack-up MODUs working within the region will be identified prior to the planned drilling window for any well drilled under this EP.

Any relief well schedule will be driven largely by the rig mobilisation period. It is assumed that the most likely location of a jack-up MODU for drilling the relief well would be from Australia or South East Asia, which is approximately 10-14 days mobilisation time away from the Operational Area. It is expected that any ongoing operations can be safely suspended and the relief well MODU can be mobilised to the Operational Area within the timeframe for the Safety Case Revision to be developed and accepted by NOPSEMA, assumed to be 50 days. The availability of suitable MODUs will continue to be monitored and their status updated within the RWP on a monthly basis to ensure any assumptions on the timely execution of relief well remain valid.

Relief Well Project Schedule

The process associated with planning and drilling of a relief well, if required, is estimated to take 78 days. Table 2-6 estimates the timing for each high level phase.

Table 2-6: Relief well schedule

Task activities	Duration (in days)
Event reported – begin mobilisation of rig for relief well drilling.	1
The following three tasks being completed simultaneously: • Well design and engineering completed – 30 days • Relief well rig onsite (via NWS or SE Asia) – 35 days • Regulatory submissions and approvals – 50 days.	50
Spud and drill relief well to intersect wellbore and bottom kill well to control source	27
Total duration	**78 days**

AEP Mutual Assistance Agreement

The Australian Energy Producers (AEP) developed the Memorandum of Understanding for Mutual Assistance (known as the Mutual Assistance Agreement, MAA) that facilitates the transfer of a MODU between operations in the event of a drilling emergency that requires a relief well to be drilled.

VOGA has signed up to the MAA.

2.10 Emissions and Discharges Summary

A summary of indicative discharges associated with the proposed well construction activities are provided in Table 2-7.

Table 2-7: Summary of estimated planned and contingent discharges

Discharge type	Indicative volume	Discharge location
Drilling fluids and cuttings		
Seawater and bentonite sweeps	14,000 m^3 per well	Seabed and surface
Drilling fluids (including KCL/ PHPA/Glycol)	1,250 m^3 per well during drilling 100-450 m^3 per well on completion	Surface
Solids free completion fluid	620 m^3 per well	Surface
Well completion fluids (brine with biocide)	250 m^3 per well	Surface
Drill cuttings (riserless)	77 m^3 per well	Seabed
Drill cuttings (after processing onboard)	135-380 m^3 per well	Surface
Cementing operations		
Cement slurry	5 m^3 per well	Seabed
Contingency for cement not meeting spec	18 m^3 per well	Surface or seabed
Left over cement slurry	2 m^3 per cement job (up to 4 cement jobs per well)	Surface

Discharge type	Indicative volume	Discharge location
Cement spacer	20 m^3 per well	Surface
Sidetrack contingency		
Seawater and bentonite sweeps	8,500 m^3 per well	Seabed and surface
Drilling fluids	1,250 m^3 per well	Surface
Drill cuttings (riserless)	45 m^3 per well	Seabed
Drill cuttings	215 m^3 per well	Surface
Other		
Seawater/cooling water	80-100 m^3/hour	Surface
Steel shavings	500 kg per campaign	Onshore**
Dry bulk – cement*	45 m^3 per campaign	Surface
Dry bulk – barite*	45 m^3 per campaign	Surface
Dry bulk – bentonite*	45 m^3 per campaign	Surface
Dry bulk – calcium carbonate*	45 m^3 per campaign	Surface
Steel shavings (P&A section milling) (if required)	10,500 kg per well	Onshore**

Note: *As needed (refer to Section 2.5.6.6).
**As steel shavings are not discharged to the marine environment, they have not been assessed further within this EP.

2.11 Support Operations

2.11.1 Mobile Offshore Drilling Unit

2.11.1.1 Operation

The MODU is fitted with various equipment to support drilling activities including:

- Power generation systems
- Fuel storage
- Cooling water and freshwater systems
- Drainage, effluent, and waste systems
- Primary and secondary (cuttings dryer etc.) solids control equipment.

Non-drilling activities occurring on the MODU include:

- Bunkering or bulk transfer of fuel, chemicals, and supplies
- Transfer of waste to supply vessels
- Helicopter operations
- Discharge of:
  - sewage, greywater, food waste

- cooling water, reverse osmosis brine
- deck drainage and bilge.

Example specifications for a MODU suitable for operating at Wandoo are provided in Table 2-8. The example MODUs are those typically used on the NWS, with minor variations in jack up size not considered to result in any material changes in environmental impact. The anticipated routine operational discharges from the MODU during well construction activities are detailed in Table 5-23.

Table 2-8: Example specifications for a MODU suitable for operating at Wandoo

Rig type	Jack-up – Keppel FELS KFELS MOD V Super B Class or Friede & Goldman JU3000N designs or similar
Personnel on board	Up to 150 persons
Rig dimensions (typical)	Length ~75 to 85 m Breadth ~70 m Depth ~8 to 10 m 3 legs in triangular format up to 150 m long Leg Spacing Longitudinal centre ~37 to 45 m, transverse centre ~40 to 45 m Spud-cans ~15 m diameter x ~6 m high
BOP system	Manufactured and maintained to API standards and meeting VOGA well construction standards. Minimum specification 5,000 psi working pressure with 3 rams and one annular preventer with redundant control systems. BOP control system does not vent fluid to the environment.
Fuel volumes on site	Typical – ±850 m^3
Fuel consumption	Typical – 12 to 18 m^3/day
Fuel transfer hose	Typical – 3” to 4” flexible hose fitted with dry-break couplings
Method of crew change	Helicopter from Dampier

It is expected the MODU will operate with up to 150 persons on board (POB). Estimates of sewage and grey water volumes are ~0.04–0.45 m^3 per person per day, and estimates of putrescible food waste are in the order of ~1–2 kg per person per day (NERA, 2017). Based on an indicative 150 POB, this gives an estimated discharge of sewage and greywater of up to ~67.5 m^3/day and ~300 kg/day for food waste from the MODU.

Several different materials will be transferred from support vessels to the MODU for the drilling campaign. For example, cement, barite, and bentonite are transported as dry bulk, and are pneumatically blown from the support vessels to the MODU storage tanks using compressed air. The MODU dry bulk storage tanks vent excess compressed air to atmosphere and this venting process also discharges small amounts of solids. Based upon previous programs it is estimated that during each bulk transfer a dry bulk loss in the order of ~0.005% is expected to be recorded. Based on an estimated storage capacity for bulk cement, barite, and bentonite on the MODU, this equates to <0.05 m^3 of solids discharged for the entire exploration program.

2.11.1.2 Positioning

The MODUs that will be used by VOGA in its Wandoo well construction campaigns will be jack-up drilling rigs. They have three legs fabricated in a lattice structure terminating with a spud-can or foot at the base. Each spud-can is approximately 15 m in diameter and terminates in a point. Each of the three MODU legs is individually controlled.

A MODU is typically towed between two locations with its legs well clear of the seabed. Mobilisation of the MODU from either international or Australian territorial waters remains the responsibility of the contracted MODU Operator. Once the MODU is in waters adjacent to the Operational Area, the MODU is moved into the PSZ under the direction of VOGA in accordance with the rig move plan. Once in the Operational Area, the management of the MODU is within scope of this EP. As it nears the planned drilling location the tow speed will be slowed to allow the MODU to be positioned over the desired location, at which time the move is stopped, and the legs are jacked down to contact the seabed. Within the Operational Area, the MODU will be towed by 3 vessels, one on each corner of the MODU.

After confirming the integrity of the seabed, the MODU hull will be jacked up to working height. At the completion of operations, arrangements will be made for the MODU to move off location and, when ready, the hull will be jacked down into the water, and hull integrity tests are carried out while two vessels are connected to the hull (three vessels will be connected if the MODU is being moved to a location alongside another Wandoo facility). The legs will then be raised clear of the seabed and the tow vessels will move the MODU to its next location. At the desired location the legs will be lowered, and process repeated.

The seabed disturbance caused by the MODU legs may be up to 435 m^2 per location. The MODU legs will be placed within a few metres of the positions occupied in previous campaigns.

2.11.2 Support Vessels

Two AHTS vessels are typically contracted for the duration of each campaign. A third vessel of similar or lesser specifications may also be used during rig moves and to provide additional logistical support. The general specifications for AHTS vessels suitable for supporting well construction operations at Wandoo are provided in Table 2-9.

Table 2-9: General specifications for AHTS vessels suitable for supporting well construction operations at Wandoo

Vessel type	Dynamic positioned AHTS vessels
Personnel on board	Typical crew 15 persons per vessel (up to a maximum of 52)
AHTS dimensions (typical)	Length ± 95 m Breadth ± 25 m Draft ± 8.7 m
Main engines	23,000 bhp
Fuel volumes on site	Up to ± 2,325 m^3 (cargo fuel) ± 290 m^3 (fuel) Largest single tank size 300 m^3
Fuel consumption	Standby in field ± 6.0 m^3/day Economical speed ± 16.0 m^3/day

	Maximum speed ± 50 m^3/day
One-way voyage to or from Dampier	Economical speed ± 4½ hours Maximum speed ± 3½ hours

The AHTS vessels contracted to support the MODU operations will provide the following services under the scope of this EP:

- Tow the MODU onto and off location, including positioning it within the Operational Area
- Transfer of supplies to the MODU whilst on location in the Operational Area (including food, water, bulk materials, hardware, drilling mud material and diesel fuel)
- On location support duties, including maintaining watch of surrounding AHTS activity
- Emergency response, including rescue
- On-site oil spill response support.

The AHTS vessels will also provide the following services during the campaigns:

- Tow the MODU to and from waters adjacent to the Operational Area
- Transport of supplies between Dampier and the Operational Area.

Vessel operations within Australian Commonwealth waters outside of the Operational Area are managed under the *Navigation Act 2012* as administered by the Australian Maritime Safety Authority (AMSA), and are therefore out of scope of this EP.

All AHTS vessels will be required, under contract, to comply with all State and Commonwealth legislation for the control of all sources of pollution and of discharges at sea and to comply with MARPOL 73/78.

Cargo will be transferred to or from the MODU using the MODU cranes. Bulk powdered mud products, liquid mud products and diesel will be transferred to the MODU using MODU supplied transfer hoses. Diesel fuel transfers from AHTS vessels to the MODU will take place approximately once a week during the period spent on location. All refuelling operations and cargo transfer activities will be conducted in strict accordance with company and industry requirements.

The anticipated routine operational discharges from the AHTS vessels during well construction activities are detailed in Table 5-23.

2.11.3 Helicopter Support

VOGA will contract specialist aviation service contractors to provide helicopter services to support well construction campaigns. Helicopter services provide the following support:

- Personnel and minor cargo transfers between Karratha and the MODU
- Medivac
- Emergency evacuation of the MODU
- Night standby duty, with the helicopter and flight crews capable of flying under instrument flight rules, i.e. capable of flying at night and during low cloud.

It is expected there will be approximately 6 to 7 helicopter flights to the MODU each week during well construction activities.

Routine helicopter operations will be limited to daylight hours.

The Wandoo production operations helicopter will provide backup to the helicopter contracted for the MODU operations.

Helicopter refuelling on the MODU is not planned while it is jacked up on location in the Operational Area.

Crew changes will occur via helicopter. Helicopter operations will be based out of the Karratha Airport. Personnel will travel between Perth and Karratha on commercial fixed wing aircraft.

Aviation activities are managed under the *Civil Aviation Act 1988* and Civil Aviation Regulation 1998 as administered by the Australian Civil Aviation Safety Authority (CASA), and are therefore out of scope of this EP.

2.11.4 Remotely Operated Vehicles

Underwater ROVs will be deployed and controlled from either the MODU or support vessel to support or undertake:

- Pre- or post-activity site surveys
- Mooring/anchoring placement
- Equipment deployment, monitoring, or retrieval
- Tool deployment and operation.

ROVs are generally equipped with a video camera and lighting. ROVs are also used to deploy specialist tooling and equipment. ROVs are closed systems, such that hydraulic fluids are circulated to move components, but these are not released to the environment.

ROVs will typically be stored on the deck of the vessels and/or MODU, but may be wet parked between activities, resulting in a temporary disturbance to a small area of the seabed. The footprint of the ROV is likely to be no bigger than 1.7 m^2.

Section 3 Description of the Environment

3.1 Overview

The OPGGS(E)R define 'environment' as the ecosystems and their constituent parts, natural and physical resources, qualities and characteristics of areas, the heritage value of places and includes social, economic and cultural features of those matters. In accordance with the Regulations, the Description of the Environment describes the ecological and social components of the environment relevant to the activity and achieves the following:

- Provides adequate information about the Environment that May Be Affected (EMBA) by the activity in sufficient detail to inform the evaluation of environmental impacts and risks. This includes the environment that may be affected by planned components of the activities, and the area that may be exposed during unplanned events such as a hydrocarbon spill.
- Adequately defines the environment that may be exposed to hydrocarbons in the event of a significant incident and the geographic extent of response and monitoring activities.
- Provides sufficient detail regarding relevant threatened or migratory species and their defined Biologically Important Areas (BIA) and/or habitat critical for species survival.
- Identifies all values and sensitivities (if any) within the environment including matters protected under Part 3 of the EPBC Act.
- Enables relevant persons and members of the public to understand the environmental values and sensitivities that may be affected by the activity.

Environmental hazards have the potential to result in impacts or risks to environmental receptors if they are present within the spatial or temporal boundaries of the environmental hazard. Receptors are defined as any component of the EMBA by the proposed activities.

By using the defined Project Areas below (Section 3.1.1), it is possible to identify receptors which may typically be impacted, depending on behaviour. The details of receptors within the existing environment of each Project Area provided in this section is sufficient to undertake the impact assessment.

3.1.1 Project Areas

Project Areas are the different areas defined for this EP as areas of potential hazard or exposure to receptors. The existing environment within the Project Areas are described in this section. The nature and scale of the information provided in the description of the environment depends on the potential environmental hazards which may occur within that Project Area, and their scope for exposure to affected receptors.

For this EP, the following Project Areas have been defined:

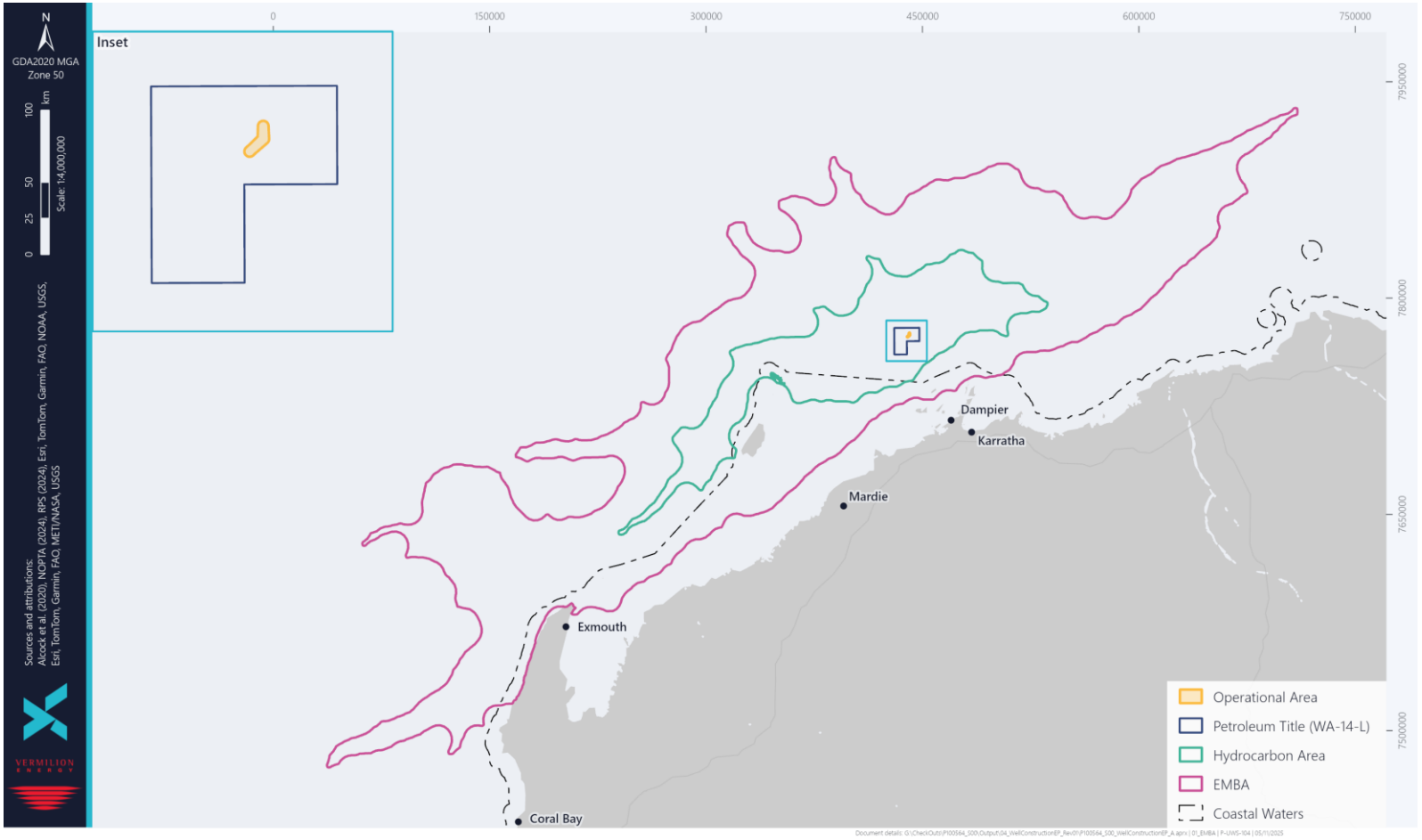
- Operational Area – The Operational Area (Figure 2-1) is within the existing PSZ, which is defined as a 500 m radius around Wandoo A, Wandoo B and the CALM Buoy, or within a

2 km radius of any potential relief well location during emergency conditions. This is located within WA-14-L (Section 2.2).

- Hydrocarbon Area – The Hydrocarbon Area has been defined to include the worst-case extent of predicted hydrocarbon exposure from planned and unplanned activities at exposure values that may have ecological impacts (Figure 3-1). The Hydrocarbon Area has been defined based on the combined outcomes of stochastic modelling for the loss of Marine Diesel Oil (MDO) scenario (i.e. cumulative extent of a total of 100 model simulations per season) using moderate exposure values for each of the modelled oil components (10 g/m^2 floating, 50 ppb dissolved, 100 ppb entrained, 100 g/m^2 shoreline). These are the threshold levels anticipated to result in behavioural changes and sub-lethal and lethal effects to biota and includes all probabilities of exposure.
- EMBA – The EMBA for the well construction activities has been defined by a spatial area within which a change to the ambient environmental conditions may occur as a result of planned or unplanned activities (Figure 3-1). It is noted that changes in ambient conditions, as defined for the EMBA, does not imply that an adverse impact will occur, but at these thresholds, there may be socio-economic impacts. The EMBA is defined based on the combined outcomes of stochastic modelling for the loss of MDO scenario (i.e. cumulative extent of a total of 100 model simulations per season) using low exposure values for each of the modelled oil components (1 g/m^2 floating, 10 ppb dissolved, 10 ppb entrained, 10 g/m^2 shoreline). These threshold levels are used to establish the range of socio-economic effects and establish planning area for scientific monitoring based on potential for exceedance of water quality triggers. The EMBA for well construction activities within the Wandoo Field extends approximately 170 km northeast of the coast of Port Hedland, and south to approximately 115 km east of Frazer Island, in the Ningaloo Reef area.

The EMBA and Hydrocarbon Area are defined based on the modelling of the loss of MDO scenario because the loss of well control scenario was not deemed credible. The wells are sub-hydrostatic with low reservoir pressure and will not flow naturally (Section 2.4.3). Although all vessels in the Wandoo field use MGO, modelling using MDO is considered more conservative as it is a heavier hydrocarbon.

Figure 3-1: Environment that May Be Affected (EMBA)



3.1.2 Relevant Receptors

Protected matters in the Project Areas were determined using the EPBC Act Protected Matters Search Tool (PMST) (Appendix C). For each receptor or receptor group known to occur within the defined Project Areas, their presence/absence is identified in Table 3-1 This, combined with the understanding of how each receptor is affected by environmental hazards guides the nature and scale of information provided throughout Section 3.

Table 3-1: Receptor presence or absence within Project Areas

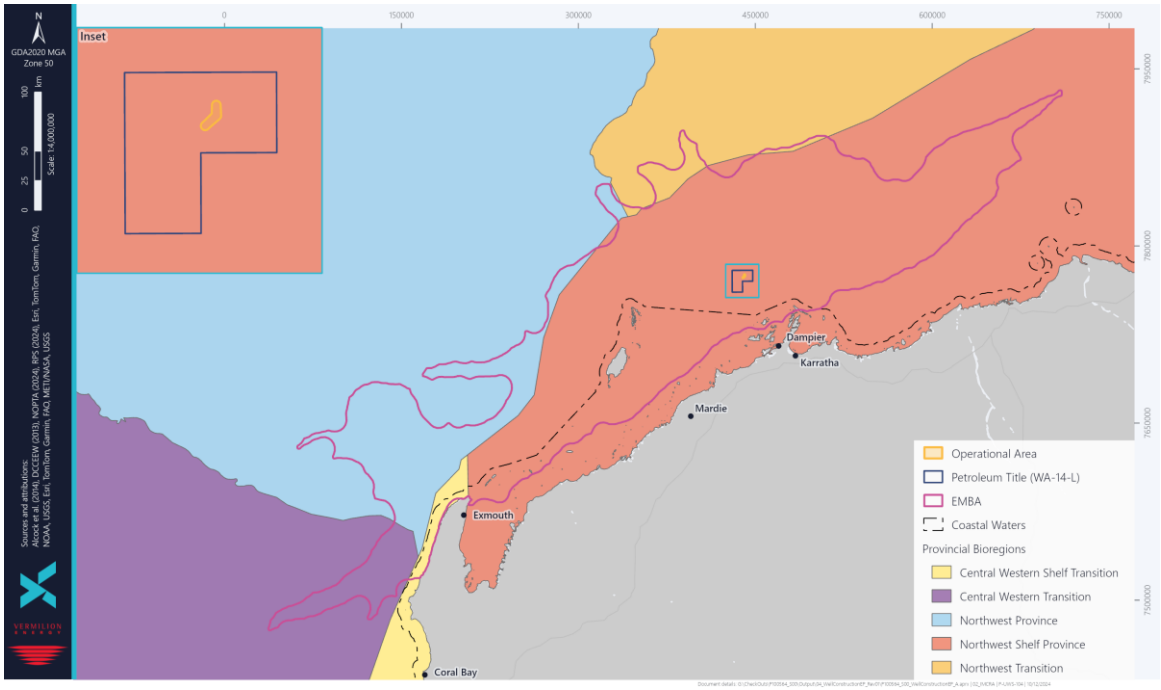
Receptor group	Operational Area	Hydrocarbon Area	EMBA
Physical environment	• Climate • Ambient water quality • Ambient sediment quality • Ambient air quality • Ambient noise • Ambient light.	• Climate • Ambient water quality • Ambient sediment quality • Ambient air quality • Ambient noise • Ambient light.	• Climate • Ambient water quality • Ambient sediment quality • Ambient air quality • Ambient noise • Ambient light.
Key benthic habitats	• Subtidal soft sediment and benthic fauna.	• Subtidal soft sediment and benthic fauna • Corals • Macroalgae.	• Subtidal soft sediment and benthic fauna • Corals • Seagrasses • Macroalgae.
Key coastal communities	• None	• Mangroves • Sandy beaches • Rocky shorelines/ intertidal reef platforms • Intertidal beaches/ mudflats.	• Mangroves • Saltmarsh • Sandy beaches • Rocky shorelines/ intertidal reef platforms • Intertidal beaches/ mudflats.
Key marine fauna	• Benthic invertebrates • Marine reptiles • Birds • Fish, sharks and rays • Marine mammals.	• Benthic invertebrates • Marine reptiles • Birds • Fish, sharks and rays • Marine mammals.	• Benthic invertebrates • Marine reptiles • Birds • Fish, sharks and rays • Marine mammals.
Protected and significant areas	• None identified	• Underwater cultural heritage • Australian Marine Parks • State Marine Protected Areas	• World Heritage properties • National Heritage places

Receptor group	Operational Area	Hydrocarbon Area	EMBA
		• Key Ecological Features (KEFs).	• Underwater cultural heritage • Australian Marine Parks • State Marine Protected Areas • KEFs.
First Nations Cultural Heritage	• None identified	• Marine Park Cultural Heritage Values.	• Registered Aboriginal Cultural Heritage sites • Marine Park Cultural Heritage Values.

3.2 Regional Context

The Operational Area and EMBA overlap one marine region and five Integrated Marine and Coastal Regionalisation of Australia (IMCRA) provincial bioregions, as displayed in Figure 3-2. Descriptions of these regions are provided in the sections below.

Figure 3-2: IMCRA provincial bioregions



3.2.1 Marine Regions

3.2.1.1 North-west Marine Region

The Operational Area lies within the North-west Marine Region (NWMR). The NWMR lies within Commonwealth waters from the border of WA and the Northern Territory (NT) to Kalbarri, covering approximately 1.07 million km^2 of tropical and sub-tropical waters. The region is

characterised by shallow-water tropical marine ecosystems and high species richness, thought to be associated with the diversity of habitats available (DSEWPC, 2012a).

Sixty-one percent of the seafloor within the region is continental slope, of which extensive terraces and plateaux make up a large proportion. A majority of shallow waters are focused adjacent to the Pilbara and Kimberly regions (~30% of the total region) with the narrowest shelf margin of the region and Australia located at Ningaloo Reef. A majority of the region is relatively shallow with over 50% having water depths of less than 500 m. The sections of the Argo and Cuvier plains which lie within the region make up 10% of its total area and are the deepest sections of the region reaching depths of almost 6,000 m (DEWHA, 2012).

3.2.2 IMCRA Bioregion

The Integrated Marine and Coastal Regionalisation of Australia (IMCRA) is a biogeographic regionalisation of oceanic waters within Australia's Exclusive Economic Zone (EEZ). IMCRA further classifies Australia's marine regions into smaller scale bioregions based on fish, benthic habitat and oceanographic data at a scale that is useful for regional conservation planning and management (DEWHA, 2012).

The Operational Area is located within the NWS province. The EMBA overlaps a further four provincial bioregions:

- Northwest Transition
- Northwest Province
- Central Western Transition
- Central Western Shelf Transition.

3.2.2.1 North-West Shelf Province

The Operational Area is located within NWS Province. The NWS Province lies predominantly on the continental slope, extending from the North-West Cape to Cape Bougainville, covering an area of 238,759 km^2. The width of the bioregion varies along its length from approximately 50 km at the Exmouth Gulf to more than 250 km off Cape Leveque. About half the bioregion has water depths between 50 m and 100 m, with maximum depths reaching 200 m (DEWHA, 2012).

The bioregion is a dynamic oceanographic environment and is influenced by cyclonic storms, strong and internal tides and long period swell. Its waters derive from the Indonesian Throughflow and are warm, oligotrophic and circulate throughout the bioregion via branches of the South Equatorial and Eastern Gyral currents (DEWHA, 2012).

Fish communities in the bioregion are diverse, comprising of both benthic and pelagic fish. Humpback whales migrate through the area with the Exmouth Gulf considered an important resting area, particularly for mothers and calves on their southern migration. Several important breeding sites for seabirds are located within the region (outside Commonwealth waters), including Eighty Mile Beach and the Montebello, Barrow and Lacepede islands (DEWHA, 2012).

Industries that utilise the resources found in bioregion include the petroleum industry, commercial fishers and shipping, with nationally significant ports of Dampier and Port Hedland present (DEWHA, 2012).

3.2.2.2 Northwest Transition

The Northwest Transition Province covers an area of 184,424 km^2 and predominantly occurs on the continental slope (52%), with smaller areas in the north-west located on the Argo Abyssal Plain and continental rise (DEWHA, 2012). Water depths vary, generally ranging from 200 m depths at the shelf break to more than 1,000 m over the continental slope with a maximum depth of 5,980 m (DEWHA, 2012).

The seafloor topography of the bioregion is complex with a range of features including carbonate banks, submerged terraces, pinnacles, sand banks and reefs. The pinnacles and carbonate banks of the Joseph Bonaparte Gulf are distinctly different in morphology and character to other parts of the Region and are believed to support a high diversity of marine species (DEWHA, 2012).

Biological communities of the region are typical to that of Indo-west Pacific tropical flora and fauna. Marine environments include a range of soft bottom and hard substrate habitats. The WA population of humpback whales mate and give birth in the inshore waters off the Kimberley. In addition, the NWS Transition is important for commercial fisheries, defence, and the petroleum industry (DEWHA, 2012).

3.2.2.3 Northwest Province

The Northwest Province lies offshore between Exmouth and Port Hedland, entirely on continental slope. The region covers an area of 178,651 km^2 with water depths ranging from 1,000–3,000 m (DEWHA, 2012).

The dominant geomorphic feature is the Exmouth Plateau. The Montebello Trough and Swan Canyon are also important features of the region. The Exmouth Plateau contains the steepest shelf break in the Marine Region along the Cape Range Region near Ningaloo Reef. Dominant surface flow of the region includes circulation and recirculation (via the South Equatorial Current) of the Indonesian Throughflow. As a result of the predominantly southward moving surface waters, waters consolidate along the narrow shelf break adjacent to Cape Range Peninsular to form the Leeuwin Current which is a significant feature for the bioregion and areas further south (DEWHA, 2012).

Canyons in the bioregion are thought to aid in the channelling of water onto the Exmouth Plateau and certainly into the shelf along Ningaloo Reef, which aids in enhancing localised biological production. The Northwest Province represents the beginning of a transition between tropical and temperate marine species with high endemism in demersal fish communities on the slope evident in this bioregion. Commercial fishing and petroleum are important industries in some parts of the bioregion (DEWHA, 2012).

3.2.2.4 Central Western Transition

The Central Western Transition Province is located between Shark Bay and North-West Cape covering 162,891 km^2 of continental slope and abyss. Almost half of the region has water depths of more than 4,000 m, with maximum recorded water depths within the region of 5,330 m. As a result of the proximity of deep ocean areas to the continental slope and shelf, distinctive biological communities may have developed. The major geomorphic features of the bioregion

are Carnarvon Terrace, Wallaby Saddle, the Cuvier Abyssal Plain and the Cloates and Cape Range Canyons (DEWHA, 2012).

The Leeuwin Current, flowing south along the slope, is the dominant oceanographic feature in the region. Interactions between the Leeuwin Current, Leeuwin Undercurrent and the nearshore Ningaloo Current facilitate vertical mixing of water layers and are thought to be linked with bursts in productivity (particularly during summer). This bioregion also lies within the biogeographic transition between tropical and temperate marine species. The level of endemism within demersal fish communities on the slope is less than that in bioregions further north. Major industries in the bioregion are commercial fishing and petroleum (DEWHA, 2012).

3.2.2.5 Central Western Shelf Transition

Of all the provincial bioregions, the Central Western Shelf Transition is the smallest, covering an area of 9,698 km^2, located entirely on the continental shelf between the North-West Cape and Coral Bay. The maximum water depth in the region is 100 m (DEWHA, 2012).

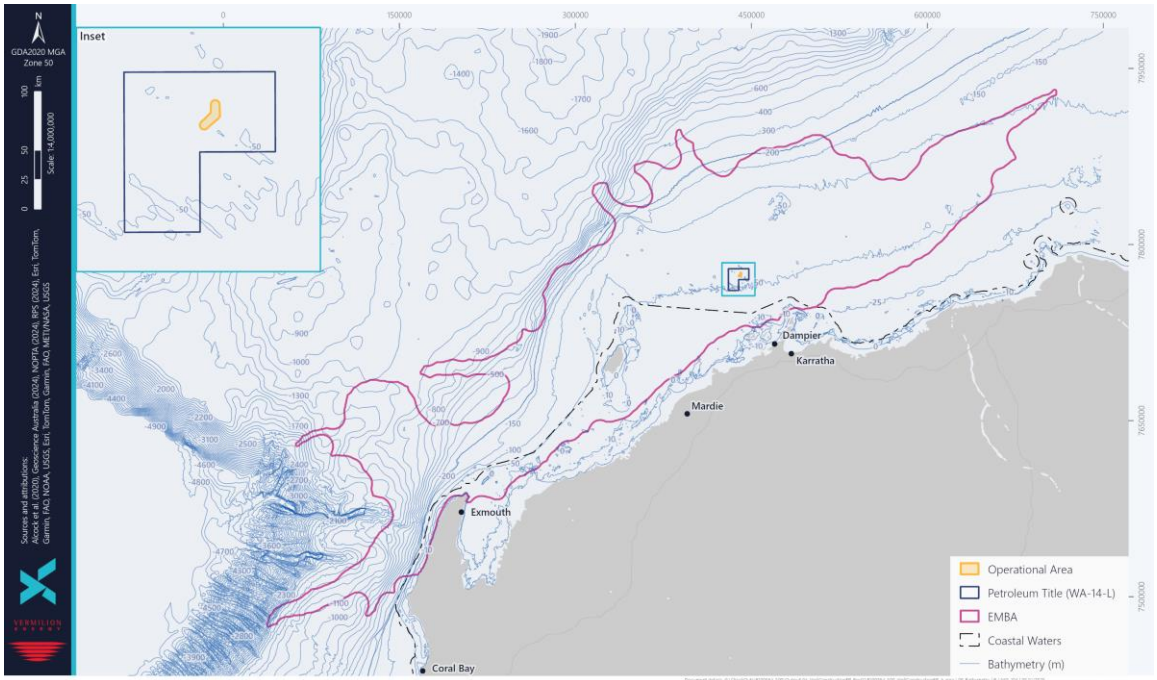
This bioregion is strongly influenced by the Leeuwin Current and Leeuwin Undercurrent interacting with the northward flowing Ningaloo Current. It lies within a significant biogeographic transition between tropical and temperate species. The bioregion is largely covered by the Ningaloo Marine Park and Ningaloo Reef. Ningaloo Reef is an area of high biodiversity with over 200 species of coral and more than 460 species of reef fish. Other fauna which may occupy the reef environments within the region include marine turtles, dugongs and dolphins with the potential for whale sharks and manta rays to occupy outer reef areas. Commercial fishing and petroleum are important industries in some parts of the bioregion (DEWHA, 2012).

3.3 Physical Environment

Table 3-1 identifies that the physical environment includes receptors within the Operational Area, Hydrocarbon Area and EMBA that may be relevant to aspects of the well construction activities. The descriptions below provide sufficient details to assess all impacts and risks to these receptors.

The Operational Area lies within the NWS approximately 39 km northwest of the nearest shoreline (i.e. the islands of Dampier), in water depths of approximately 55 m (Figure 3-3).

Figure 3-3: Seabed bathymetry



3.3.1 Climate

The climate of the Pilbara region of WA is classified as arid tropical with two distinct seasons: a hot, wet summer (October to April); and a mild, dry winter (May to September) (Bureau of Meteorology, 2024).

Based on long-term climatic data from the nearest Bureau of Meteorology weather station at Karratha Airport (Station 004083), approximately 79 km south-southeast of the Operational Area, the mean annual rainfall since 1972 is 288.5 mm. The mean maximum temperatures range between 26.5°C in July and 36.2°C in December, and average above 30°C for much of the year (Bureau of Meteorology, 2024). Minimum temperatures range between 13.9°C in July and 26.9°C in January.

Winds vary seasonally, with a tendency for westerly winds in summer and southerly winds in winter (Pearce et al., 2003). There are often distinct 'transition' periods between the summer and winter regimes, which are characterised by calmer periods. Rainfall is low and unpredictable, with most rainfall occurring between January and May, often associated with the passage of tropical cyclones (Pearce et al., 2003).

3.3.2 Ambient Water Quality

Water quality within the EMBA is expected to be representative of the typically pristine water found offshore WA. Variations to this state (e.g. increased turbidity) may occur in coastal regions that are subject to large tidal ranges, terrestrial runoff or anthropocentric factors (i.e. ports, industrial discharges, etc.).

Water quality surveys undertaken around the Wandoo facility within the Operational Area in February and June of 2003 and October 2024 (Worley, 2025) show that:

- The concentration of total recoverable hydrocarbons in the end of the pipe sample onboard the Wandoo Facility was 6,842 µg/L but this rapidly diluted in receiving waters
- There were slightly elevated levels of zinc recorded at Wandoo Facility with a value of 5 µg/L (above the guideline value of 3.3 µg/L)
- Water quality sampling in waters surrounding the Wandoo Production Facility indicated that copper and zinc were elevated above the Default Guideline Value (DGV) but only within 70 m of the Facility
- Water quality profiles showed warm saline, low turbidity surface layer, with no evidence of thermoclines or upwelling/downwelling within surveyed layers of water
- Water quality in the coastal waters of the NWS is generally of very high quality (Wenziker et al., 2006).

3.3.3 Ambient Sediment Quality

Several surveys have been undertaken within the vicinity of the Operational Area. In addition to the Bowman Bishaw Gorham (BBG) (1996) baseline sediment survey, a post-commissioning sediment survey was undertaken by Sinclair Knight Merz (SKM) in 1996. BBG (1996) found the sediments were comprised of a mixture of fine, medium, coarse and very coarse sands. This is consistent with sediments found throughout the NWS Province where sediment is dominated by sand (Baker et al., 2008). Particle size data from the study undertaken by SKM (1996) indicated that sediments are typically comprised of unconsolidated to coarse sands. This shift towards a coarser grain size is indicative of discharge received from drilling at Wandoo.

Sediment metal, petroleum hydrocarbon and Polycyclic Aromatic Hydrocarbons (PAH) levels were also tested during both studies (BBG, 1996; SKM, 1996). Sediment metal levels have increased since the baseline survey; however, they were within the trigger values outlined in the former ANZECC/ARMCANZ (2000) sediment quality guidelines which have since been revised in the Water Quality Guidelines (ANZG, 2018). These metal concentrations reflect background levels of the region (Long et al., 1995). Petroleum hydrocarbons and PAH levels were below detection limits in all samples collected during the surveys (BBG, 1996; SKM, 1996).

An additional survey for the Wandoo Facility was undertaken in 2015 and in 2024 to assess changes that may have occurred since the original baseline and post-commissioning surveys undertaken in the 1990s (Worley, 2025). Hydrocarbons in sediments at all sites were below the laboratory Limit of Reporting (LOR) or below the available Sediment Quality Guideline for the highest level of protection in the former ANZECC/ARMCANZ (2000) guidelines. Sediment metal/metalloid concentrations at all sites were below the former respective trigger values, or where no guidelines existed lower or similar to previous studies with the exception of Barium. This was likely due to the presence of residual drilling muds (containing barium) at the time of the post-commissioning survey.

There was an overall increase in sediment metal concentrations compared to the baseline survey 20 years ago (BBG, 1996), however, no trend has been identified in direction or distance from the Wandoo B platform. Furthermore, of the metals that have increased in sediments since the baseline survey, none are currently at concentrations exceeding the recommended guideline for the 99% species protection level.

In 2015 and 2024, sediment infauna abundance and species richness were significantly higher than during the baseline survey in 1996 and the post-commissioning survey in 1998.

3.3.4 Ambient Air Quality

The majority of the offshore NWS Province region is relatively remote and therefore air quality in the Operational Area is expected to be high. Anthropogenic sources (e.g. vessels, industry developments) would contribute to local variations in air quality. However, results of previous monitoring within the region suggest that the concentration of air quality parameters remains low. Measured levels of nitrogen dioxide and ozone during a Pilbara air quality study were found to be below the National Environment Protection Measure (NEPM) standards (DoE, 2004).

More recently, Chevron published results of air quality monitoring on Barrow Island (within the EMBA, 116 km southwest of the Operational Area) which showed no values that exceeded the NEPM standards for nitrogen oxide (NO_2), ozone (O_3), sulphur dioxide (SO_2), carbon monoxide (CO), hydrogen sulphide (H_2S) or Aromatic Hydrocarbons (BTEX) (Chevron Australia, 2022). Chevron's monitoring showed exceedances of PM_{10} levels (particulate matter less than 10 µm) around some facilities on the island, however, these were attributed to localised unsealed road dust and regional events (Chevron Australia, 2022).

3.3.5 Ambient Underwater Noise

The Operational Area is relatively remote and therefore ambient underwater noise levels are expected to be low. Ambient noise within the NWS Province region is expected to be dominated by natural physical (e.g. wind, waves, rain) and biological (e.g. echo location and communication noises generated by cetaceans and fish) sources. Anthropogenic noise sources that are also likely to be experienced in the area include low-frequency noise from vessels.

3.3.6 Ambient Light

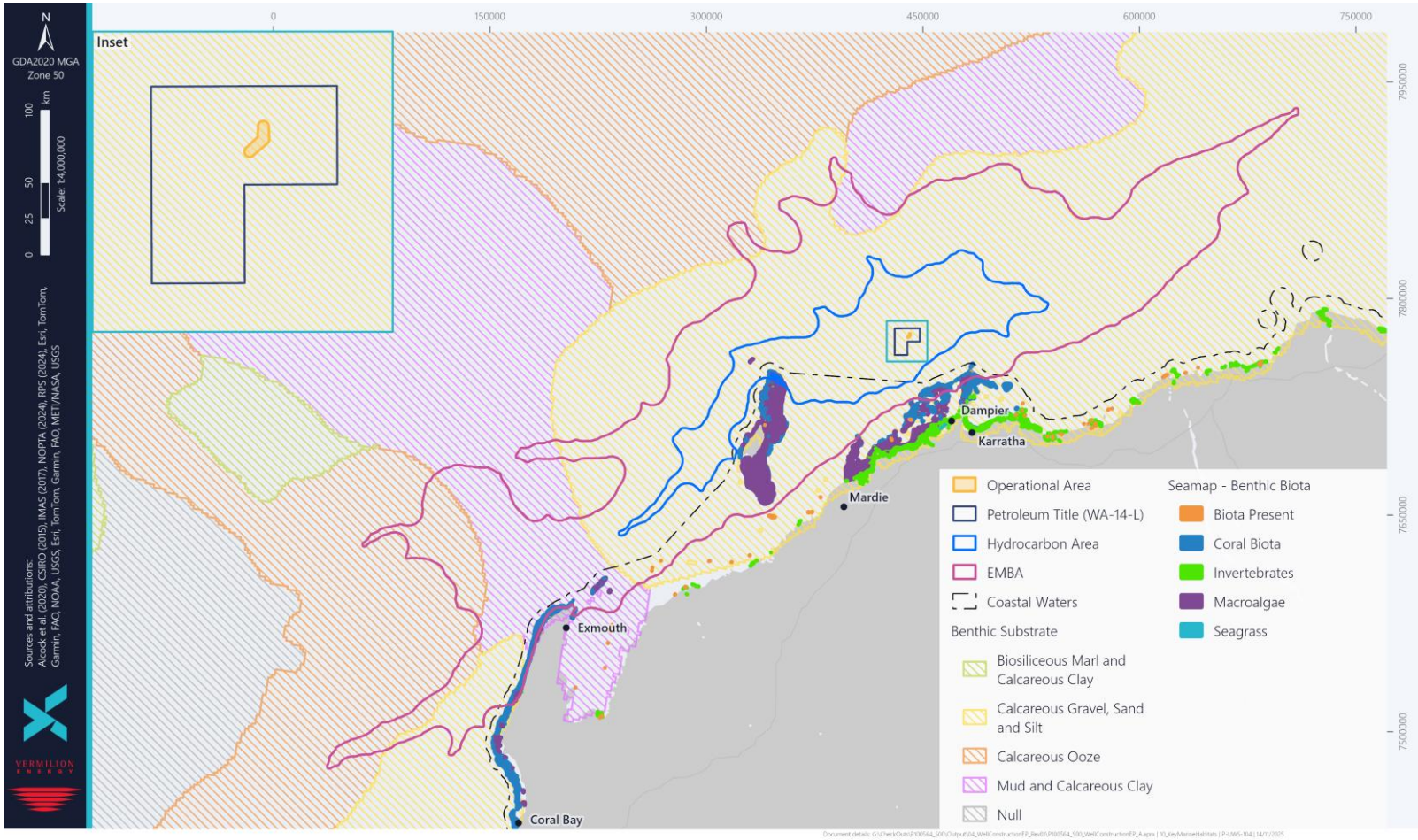
Ambient light within the NWS Province region is expected to predominantly be from solar/lunar luminance due to the remote location of the Operational Area (80 km northwest of Dampier). However, ambient light is expected to be slightly elevated due to artificial light sources associated with anthropogenic activities, including both permanent (e.g. onshore/offshore developments) and temporary (e.g. vessels) light sources. These include light sources associated with Wandoo facilities and petroleum activities, and the Jadestone Energy Stag A facility located 22 km southwest of the Operational Area.

3.4 Ecological Environment

3.4.1 Key Benthic Habitats

Table 3-1 identifies the key benthic habitats within the Operational Area, Hydrocarbon Area and EMBA that may be relevant to aspects of the well construction activities. Four key marine habitats are described below. The description provides sufficient details to assess all impacts and risks to key marine habitats. Figure 3-4 shows benthic biota and benthic substrate within the EMBA.

Figure 3-4: Key benthic habitats



3.4.1.1 Subtidal Soft Sediment and Benthic Fauna

ROV surveys on the NWS, at similar water depths to those in the Operational Area, indicate the sea floor is comprised of fine silt/sand substrates (RPS, 2012 unpublished data). The sediments were variously bioturbated, however benthic communities were generally sparse with low densities of organisms (e.g. crustaceans, molluscs, and polychaetes). According to the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Marine Benthic Substrate Database (CSIRO, 2015), the sea floor sediment type within the Operational Area is calcareous gravel, sand and silt (Figure 3-4).

Unconsolidated sediments support diverse benthic fauna living both in the sediments (infauna) and on the sediment surface (epifauna). Infauna species consist predominantly of mobile burrowing species including molluscs, crustaceans (crabs, shrimps and smaller related species), polychaetes, sipunculid and platyhelminth worms, asteroids (sea stars), echinoids (sea urchins) and other small animals. Epifauna species include small crustaceans and molluscs, echinoderms and larger sessile organisms such as sponges, corals, sea whips and sea squirt (DEC, 2007).

Soft sediment habitats that support infauna are widespread in deeper offshore areas and in more protected environments throughout the region (CALM and MPRA, 2005; DEC, 2007a). The sediments range from clays to silts and fine sands. The depths of the Argo Abyssal Plain support sparsely distributed sessile organisms such as filter-feeding and deposit-feeding species (DEWHA, 2012). The spatial and temporal distribution and density of infauna depends not only on sediment composition but also on factors such as season, water depth, water temperature and wave-induced currents (Ward and Rainer, 1988; Rainer, 1991; Kinhill, 1997). Communities in shallower areas (less than 30 m deep) are likely to be dominated by sessile filter-feeding species such as sponges, sea pens and ascidians. Sediments in deeper water are typically finer (muddier) and the benthic community is dominated by benthic scavengers and deposit feeders including polychaete worms, crustaceans, molluscs and echinoderms (DEWHA, 2012).

The sea floor of the deeper waters of the NWS is primarily a soft sediment habitat that can support scavengers, benthic filter feeders and epifauna communities (Brewer et al., 2007). Any areas of exposed hard substrate are likely to be colonised by deep water filter-feeding organisms, such as hydroids and sponges.

A monitoring survey undertaken in 2024 using box coring samples showed benthic infauna increases in species richness and abundance at sites further away from the Wandoo Production Facility, which may be influenced by sediment composition and particle size distribution with higher proportions of silt and clay at sites 500 m or more from the Facility (Worley, 2025). Benthic infauna composition was considerably different from previous surveys with amphipods being the most abundant infauna group. In comparison, a 1996 survey showed the most abundant taxon was crustaceans, polychaete was the most abundant taxon in a 1998 survey, and nematodes the most dominant group in a 2015 survey (Worley, 2025).

3.4.1.2 Corals

No naturally occurring coral reef communities are found in the Operational Area. The nearest areas of significant coral reef are the Glomar Shoals (approximately 45 km northeast), Dampier Archipelago (approximately 39 km southeast), Barrow/Montebello Islands (approximately 92 km

southwest) and Ningaloo Reef (approximately 296 km southwest). Coral reef communities are widespread throughout the EMBA.

Corals are generally divided into two broad groups: the zooxanthellate ('reef-building', 'hermatypic' or 'hard') corals and the azooxanthellate ('ahermatypic' or 'soft') corals. The hard corals contain symbiotic microalgae (zooxanthellae) that enhance growth and allow the coral to secrete large amounts of calcium carbonate. The soft corals are generally smaller and often solitary (Tzioumis and Keable, 2007). Hard corals are generally found in shallower (<50 m) waters while the soft corals are found at most depths, particularly those below 50 m (Tzioumis and Keable, 2007).

Hard corals are widespread within the EMBA, with significant coral reefs occurring at a number of sites including within the Ningaloo Marine Park near Exmouth (Section 3.6.4), the Montebello/Barrow/Lowendal islands, Muiron island, the Dampier Archipelago, Glomar Shoals and Rankin Bank. The upwelling of cooler, nutrient-rich water from the Indian Ocean along the continental shelf break provides preferential conditions for the development of hard corals (DEWHA, 2012). In the NWS region, coral reefs in clearer, offshore waters typically have higher coral density and diversity than reefs associated with turbid near-shore waters (Woodside, 2006).

The Ningaloo Reef is unique in that it is a mainland fringing coral reef, the largest of its kind in Australia (CALM and MPRA, 2005). The Ningaloo Reef extends over 260 km and is the only large reef in the world found so close to the western coast of a continental land mass (within 100 m at closest point). The Ningaloo Reef includes intertidal and deeper sub-tidal corals, with over 300 species representing 54 genera recorded (UNESCO, 2025).

In addition to the larger coral reefs that have regional significance, smaller reefs and individual coral colonies are found throughout areas where water quality and benthic substrate are conducive to coral survival. Intertidal hard corals also occur within the EMBA, typically as individual colonies on rocky shores. These intertidal corals do not form a large habitat class within the region, with beaches/mudflats and mangroves the most common shoreline habitat.

Significant coral spawning occurs in autumn for a number of species, although some taxa such as Porites and Acropora spp. may spawn in spring and summer (Baird et al., 2011; Rosser and Gilmour, 2008). Spawning events have been observed throughout the Dampier Archipelago in March and April (Stoddart and Gilmour, 2005) and along the Ningaloo Coast during March (Simpson et al., 1993).

3.4.1.3 Seagrasses

Seagrasses are widespread throughout the shallower areas of the EMBA. No seagrasses are present within the Operational Area (Figure 3-4).

Seagrasses are marine flowering plants, with about 30 species found in Australian waters (Huisman, 2000). Seagrass generally grows in soft sediments within intertidal and shallow subtidal waters where there is sufficient light and are common in sheltered coastal areas such as bays, lees of islands and fringing coastal reefs (McClatchie et al., 2006; McLeay et al., 2003). Seagrasses are important primary producers in tropical in-shore waters as they provide energy and nutrients for detrital grazing food webs. Seagrass meadows are important in stabilising seabed sediments, and providing nursery grounds for fish and crustaceans, and a protective

habitat for the juvenile fish and invertebrates species (Huisman, 2000; Kirkman, 1997). Seagrasses also provide important habitat for fish and dugongs within the NWS Province (DEWHA, 2012).

Seagrass species within the EMBA exhibit seasonal trends in abundance and distribution (Orth et al., 2006). Natural disturbance events such as cyclones and dugong grazing can also affect local seagrass distribution and abundance.

Ideal conditions for seagrasses include clear waters, low nutrients, protection from heavy seas and swells, and sandy substrate. Many seagrass species are perennial (grow all year round) and cover extensive areas, such as those of Shark Bay and Exmouth Gulf. Seagrasses can also be found adjacent to offshore islands, including Dampier Archipelago and the Montebello and Barrow islands (CALM and MPRA, 2005; DEC, 2007a).

Coastal shallow-water seagrass habitats account for only 0.2% of Australia's coastlines (Duke et. al., 2010). Montebello and Barrow Islands contain sparse seagrass habitat (McMahon et al., 2017), however, the closest known key areas of seagrass habitat to the Operational Area are the Exmouth Gulf and Ningaloo Reef area.

3.4.1.4 Macroalgae

Macroalgae are not found within the Operational Area, however, are widespread within shallower areas within the EMBA (Figure 3-4). Macroalgae are generally found where hard substrates occur; although macroalgae such Caulerpa, Halimeda, Udotea and Penicillus can anchor in soft sediments or attach to shell fragments or rubble. Subtidal macroalgae often occur with coral reefs, colonising dead coral and coral rubble for attachment. Intertidal macroalgae may also occur throughout the EMBA, as there is widespread intertidal hard substrate and intertidal rock platforms suitable for macroalgal growth. Macroalgae are important primary producers and support diverse and abundant fauna of small invertebrates that are the principal food source for many in-shore fish species.

A large number of tropical macroalgal species have been recorded from the region, with over 200 species documented in the Pilbara alone (Huisman, 2004; Huisman and Borowitzka, 2003). Macroalgal habitat within the region may occur in subtidal or intertidal areas of hard substrate where sufficient light is available for photosynthesis. Such areas are likely to include shallow (<25 m) subtidal reefs and rocky intertidal shores and be widespread throughout the region.

Due to the widespread nature of macroalgal habitat within the EMBA, there are no identified areas of significant environmental value.

3.4.2 Key Coastal Communities

Table 3-1 identifies the key coastal communities within the Hydrocarbon Area and EMBA that may be relevant to aspects of the well construction activities. The description below provides sufficient details to assess all impacts and risks to key coastal communities.

3.4.2.1 Mangroves

The closest regionally significant mangroves to the Operational Area occur within the Dampier Archipelago (39 km southeast). Other areas of mangrove habitat occurring within the EMBA

include Barrow Island, and the Montebello Islands (Figure 3-5) (EPA, 2001). No mangrove communities occur within the Operational Area.

WA does not support any unusual, endemic or restricted mangrove species. All mangrove species within WA are common and widespread elsewhere, either in northern Australia or in the Indo-Pacific region near northern Australia.

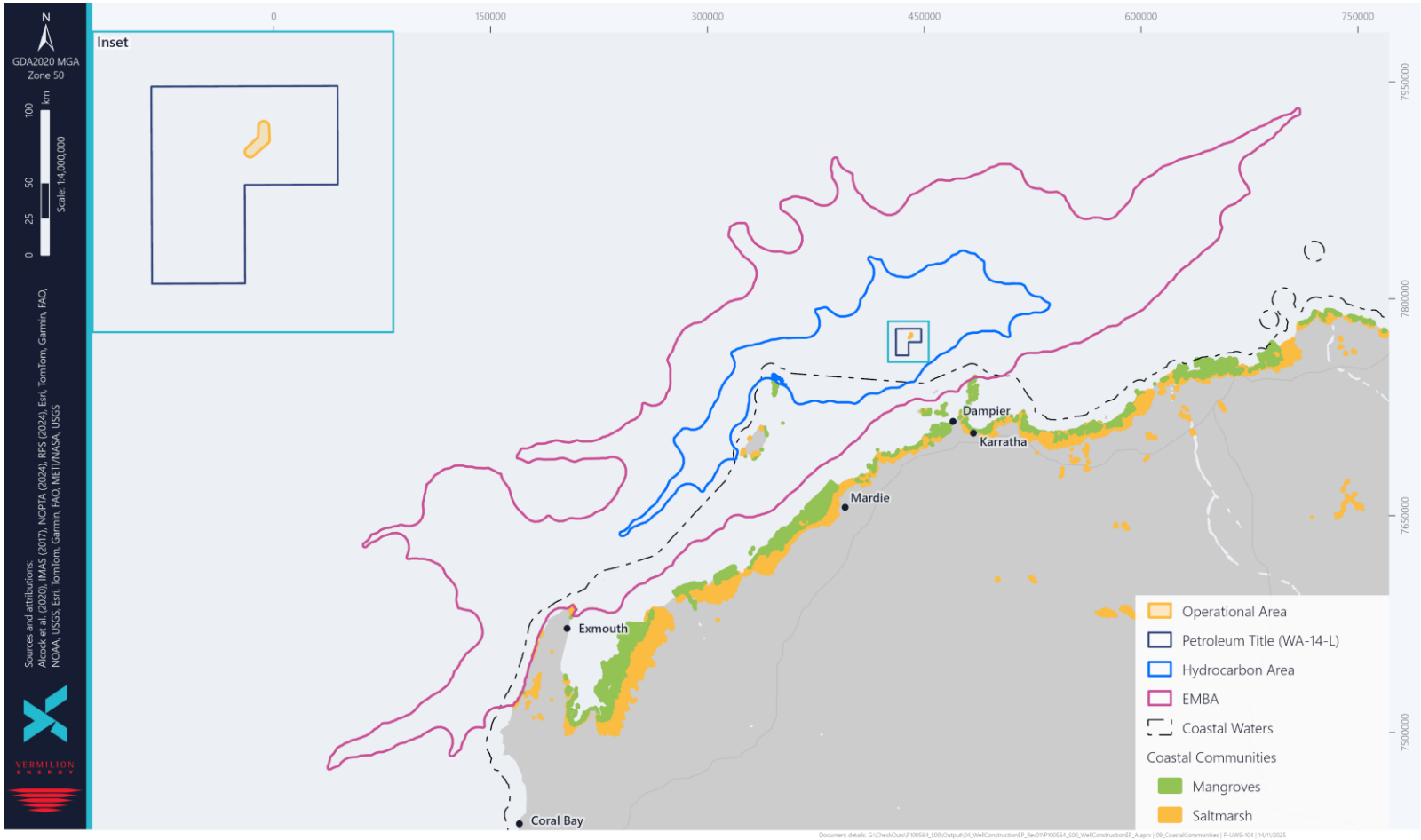
Mangroves are recognised as significant because they are productive coastal forest systems, providing habitat and shelter for infauna, epifauna, gastropods, crustaceans, fish and other marine species. Mangroves are important nursery areas for fish, lobster and prawn species, some of which are targeted by recreational and commercial fishers (Nagelkerken et al., 2008; DEC, 2007). Mangroves may also provide shelter for other species such as juvenile turtles (DEC, 2007). Ospreys (*Pandion haliaetus*) and white-bellied sea eagles (*Haliaeetus leucogaster*) roost in mangroves, while brahminy kites (*Haliastur indus*) and a range of smaller birds nest in them (DEC, 2007). Mangroves are also recognised for their capacity to protect coastal areas from erosion due to storms and storm surge.

3.4.2.2 Saltmarsh

Saltmarsh habitat is common within tidal flats or wetland habitats along the Pilbara coast. Within the EMBA, the closest saltmarsh communities in proximity to the Operational Area are located on Barrow Island (115 km southwest) (Figure 3-5). No saltmarsh communities occur within the Operational Area or Hydrocarbon Area.

Saltmarshes are terrestrial halophytic (salt-adapted) ecosystems that mostly occur in the upper-intertidal zone. They are typically dominated by dense stands of halophytic plants such as herbs, grasses and low shrubs. The diversity of saltmarsh plant species increases with increasing latitude (in contrast to mangroves). The vegetation in these environments is essential to the stability of the saltmarsh, as they trap and bind sediments. The sediments supporting saltmarsh are generally sandy silts and clays and can often have high organic material content. Saltmarshes provide a habitat for a wide range of both marine and terrestrial fauna, including infauna and epifaunal invertebrates, fish, and birds (DEE, 2016).

Figure 3-5: Key coastal communities



3.4.2.3 Intertidal Beaches/Mudflats

Intertidal beaches and mudflats are widespread in the region, due to limited shoreline contact they only occur on Montebello Islands (~92 km southwest of the Operational Area) and Barrow Island (~115 km southwest of the Operational Area) within the Hydrocarbon Area and EMBA (Figure 3-6). Intertidal beaches and mudflats host a range of infauna, including molluscs and polychaetes that are likely to be an important food source for wading birds (DoE, 2015b). No intertidal beaches or mudflats are located within the Operational Area.

One intertidal beach/mudflat area of international conservation significance occurs within the Hydrocarbon Area, Bandicoot Bay on Barrow Island. These habitats are recognised as an important resource for a diverse range of migratory bird species, the majority of which feed in the area after migrating from the northern hemisphere (DoE, 2015b). Bandicoot Bay is a Conservation Reserve within the Montebello/Barrow Islands Marine Management Area.

3.4.2.4 Rocky Shoreline/Intertidal Reef Platforms

Rocky shorelines and intertidal reef platforms are present within the Hydrocarbon Area and EMBA, occurring on island shores, including at Montebello Islands (~92 km southwest of the Operational Area) and Barrow Island (~115 km southwest of the Operational Area) (Figure 3-6).

Rocky shoreline formations offer habitat to a range of intertidal species including invertebrates and shorebirds. Rocky shorelines are often indicative of high-energy areas (wave action) where sediment deposition is limited or restricted. They are formed from limestone pavement extending out from the beach into subtidal zones, e.g. along the Ningaloo Coast and North-West Cape. Higher relief platforms (>0.5 m off the high-water mark) are also present at several headlands along the North-West Cape (DEC, 2007).

3.4.2.5 Sandy Beaches

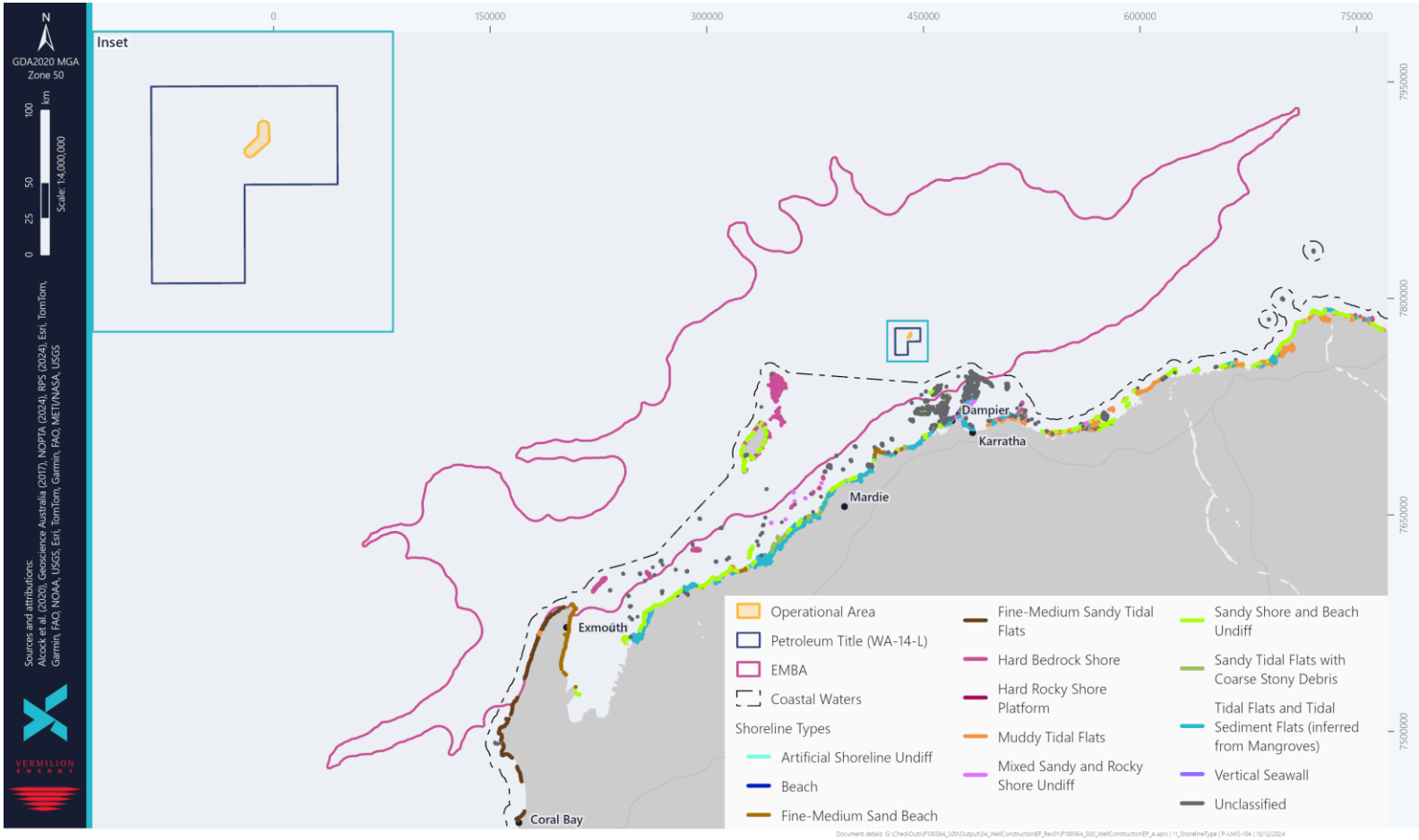
Sandy beaches are found within the Hydrocarbon Area and EMBA on some islands, including Montebello Islands (~92 km southwest of the Operational Area) and Barrow Island (~115 km southwest of the Operational Area) (Figure 3-6).

Sandy beaches are those areas within the intertidal zone where unconsolidated sediment has been deposited by wave and tidal action. Sandy beaches can vary from low to high energy zones which will influence the profile of each beach through varying rates of erosion and accretion. They are generally interspersed among areas of hard substrate (e.g. sandstone) that form intertidal platforms and rocky outcrops.

Sandy beaches provide habitat for a variety of burrowing invertebrates and subsequently provide foraging areas for seabirds. Crested terns are known to nest on sandy beaches. Further detail on breeding and nesting sites for seabirds and shorebirds is provided in Section 3.4.3.3.

Sandy beaches can also provide a turtle nesting habitat, particularly at the Barrow/Montebello/ Lowendal islands and Ningaloo Coast. Further information on turtle nesting areas is provided in Section 3.4.3.6.

Figure 3-6: Shoreline types



3.4.3 Key Marine Fauna

Table 3-1 identifies key marine fauna that may occur within the Operational Area, Hydrocarbon Area and/or EMBA. The descriptions below provide sufficient details to assess all impacts and risks to key marine fauna.

3.4.3.1 Plankton

Plankton species, including both phytoplankton and zooplankton, are a key component in oceanic food chains. Phytoplankton are autotrophic planktonic organisms living within the photic zone; and reside at the start of the food chain in the ocean (McClatchie et al., 2006). Phytoplankton communities are largely comprised of protists, including green algae, diatoms, and dinoflagellates (McClatchie et al., 2006). There are three size classes of phytoplankton: microplankton (>20 µm), nanoplankton (2–20 µm) and picoplankton (<2 µm) (Broatas et al., 2022). Diatoms and dinoflagellates are the most abundant of the micro and nanoplankton size classes and are generally responsible for the majority of oceanic primary production (McClatchie et al., 2006). Phytoplankton are dependent on oceanographic processes (e.g. currents and vertical mixing), that supply nutrients needed for photosynthesis. Thus, phytoplankton biomass is typically variable (spatially and temporally), but greatest in areas of upwelling, or in shallow waters where nutrient levels are high.

Zooplankton is the faunal component of plankton, comprised of small protozoa, crustaceans (e.g. krill) and the eggs and larvae of other taxa such as fish, corals, and molluscs. Zooplankton includes species that drift with the currents and those that are motile. Zooplankton within the EMBA may include organisms that complete their lifecycle as plankton (e.g. copepods, euphausiids) as well as larval stages of other taxa such as fishes, corals, and molluscs (CALM and MPRA, 2005). Peaks in zooplankton can occur from mass coral spawning events (typically occurring in March – April and September – November) (Rosser and Gilmour, 2008). Fish larvae abundance occurs throughout the year (Harris et al., 2005; Rosser and Gilmour, 2008; Simpson et al., 1993). Some of these taxa are commercially and recreationally important species in the region.

Primary productivity of the NWMR is generally low and appears to be largely driven by offshore influences (Brewer et al., 2007), with periodic upwelling events and cyclonic influences driving coastal productivity through nutrient recycling and advection. Within the region, peak primary productivity along the shelf edge occurs in late summer/early autumn. Variation in productivity can also be linked to higher biologically productive period in the area (e.g. mass coral spawning events).

3.4.3.2 Benthic Invertebrates

The benthic invertebrates of the NWS region are of low abundance but highly diverse and comprised largely of burrowing polychaete worms and crustaceans (Rainer, 1991). Echinoderms and molluscs are also common on the continental shelf and slope in this region. The diversity and abundance of benthic invertebrates decreases with distance from the coast over most of the NWS, which may be attributed to increasing depth or increasing distance from terrestrial and coastal organic input (SKM, 1996).

A baseline survey, conducted in May 1996 (BBG, 1996) prior to installation of the Wandoo facilities, concluded that the infauna assemblage was depauperate, with low numbers of species and low abundance. Most of the common species (small crabs, shrimps and polychaetes) are detritivores, feeding on organic matter in the surface layers of the sediment. This survey also found that most areas were bare of epifauna but occasional epifauna mainly sponges and corals were observed.

Subsequent environmental surveys conducted in 1998 (SKM, 1998), 2015 (Aurecon, 2016) and 2024 (Worley, 2025) showed benthic infauna composition that was considerably different, with amphipods being the most abundant infauna group. In the 1996 survey, the most abundant taxon was crustaceans, the 1998 survey showed polychaete was the most abundant taxon, and nematodes the most dominant group in the 2015 survey. The overall abundance and richness of infauna was higher in the 2024 survey than the previous surveys (Worley, 2025). On a regional scale, the infauna community in the vicinity of the Operational Area is also comparable to those at similar sites on the NWS.

It is unlikely that the infauna community would have changed significantly from the baseline survey as the infauna assemblage was depauperate, with low numbers of species and low abundance.

3.4.3.3 Seabirds and Shorebirds

Seabird and shorebird species presence within the Project Areas are shown in Table 3-2. The presence of most species, particularly within the Operational Area are expected to be of a transitory nature only. Table 3-7 identified BIAs for five species that overlap EMBA. The wedge-tailed shearwater has a breeding BIA that overlaps the Operational Area. These species are discussed further below.

Table 3-2: Seabird and shorebird species or species habitat that may occur within the Project Areas

Scientific name	Common name	EPBC Act Status			Project Areas		
		Threatened Species	Migratory Species	Listed Marine Species	Operational Area	Hydrocarbon Area	EMBA
Actitis hypoleucos	Common Sandpiper	-	✓(W)	✓	MO	KO	KO
Anous stolidus	Common Noddy	-	✓((M)	✓	MO	LO	LO
Apus pacificus	Fork-tailed Swift	-	✓ (M)	✓	-	LO	LO
Ardenna carneipes	Flesh-footed Shearwater	-	✓ (M)	✓	-	MO	LO
Ardenna pacifica	Wedge-tailed Shearwater	-	✓ (M)	✓	-	BKO	BKO
Bubulcus ibis	Cattle Egret	-	-	✓	-	-	MO
Calidris acuminata	Sharp-tailed Sandpiper	V	✓ (W)	✓	MO	MO	KO
Calidris canutus	Red Knot	V	✓(W)	✓	MO	MO	KO
Calidris ferruginea	Curlew Sandpiper	CE	✓(W)	✓	MO	KO	KO
Calidris melanotos	Pectoral Sandpiper	-	✓(W)	✓	MO	MO	MO

Scientific name	Common name	EPBC Act Status			Project Areas		
		Threatened Species	Migratory Species	Listed Marine Species	Operational Area	Hydrocarbon Area	EMBA
Calonectris leucomelas	Streaked Shearwater	-	✓(M)	✓	LO	LO	LO
Chalcites osculans	Black-eared Cuckoo	-	-	✓	-	-	KO
Charadrius leschenaultii	Greater Sand Plover	V	✓ (W)	✓	-	-	KO
Charadrius veredus	Oriental Plover, Oriental Dotterel	-	✓ (W)	✓	-	-	MO
Chroicocephalus novaehollandiae	Silver Gull	-	-	✓	-	BKO	BKO
Erythrotriorchis radiatus	Red Goshawk	E	-	-	-	-	MO
Falco hypoleucos	Grey Falcon	V	-	-	-	-	KO
Fregata ariel	Lesser Frigatebird	-	✓(M)	✓	LO	LO	KO
Fregata minor	Great Frigatebird	-	✓(M)	✓	MO	MO	MO
Glareola maldivarum	Oriental Pratincole	-	✓ (W)	✓	-	-	MO
Haliaeetus leucogaster	White-bellied Sea-Eagle	-	-	✓	-	LO	KO
Hirundo rustica	Barn Swallow	-	✓ (T)	✓	-	MO	MO
Hydroprogne caspia	Caspian Tern	-	✓ (M)	✓	-	BKO	BKO
Limnodromus semipalmatus	Asian Dowitcher	V	✓ (W)	✓	-	-	KO
Limosa lapponica	Bar-tailed Godwit	-	✓ (W)	✓	-	KO	KO
Limosa lapponica menzbieri	Northern Siberian Bar-tailed Godwit	E			-	KO	KO
Macronectes giganteus	Southern Giant-Petrel	E	✓(M)	✓	MO	MO	LO
Malurus leucopterus edouardi	White-winged Fairy-wren (Barrow Island)	V	-	-	-	-	MO
Merops ornatus	Rainbow Bee-eater	-	-	✓	-	-	MO
Motacilla cinerea	Grey Wagtail	-	✓ (T)	✓	-	MO	MO
Motacilla flava	Yellow Wagtail	-	✓ (T)	✓	-	MO	KO
Numenius madagascariensis	Eastern Curlew	CE	✓(W)	✓	MO	KO	BKO
Onychoprion anaethetus	Bridled Tern	-	✓ (M)	✓	-	BKO	BKO
Onychoprion fuscatus	Sooty Tern	-	-	✓	-	BKO	BKO
Pandion haliaetus	Osprey	-	✓(W)	✓	MO	BKO	MO
Papasula abbotti	Abbott's Booby	E	-	✓	-	-	MO
Pezoporus occidentalis	Night Parrot	CE	-	-	-	-	KO
Phaethon lepturus	White-tailed Tropicbird	-	✓(M)	✓	MO	LO	MO
Phaethon lepturus fulvus	Christmas Island White-tailed Tropicbird	E	-	✓	MO	MO	LO

Scientific name	Common name	EPBC Act Status			Project Areas		
		Threatened Species	Migratory Species	Listed Marine Species	Operational Area	Hydrocarbon Area	EMBA
Phaethon rubricauda westralis	Red-tailed Tropicbird (Indian Ocean)	E	-		LO	LO	FLO
Phaethon rubricauda	Red-tailed Tropicbird	-	✓(M)	✓	LO	LO	
Pterodroma mollis	Soft-plumaged Petrel	V	-	✓	-	-	LO
Rostratula australis	Australian Painted Snipe	E	-	✓	-	MO	BKO
Sterna dougallii	Roseate Tern	-	✓(M)	✓	-	BKO	BKO
Sternula albifrons	Little Tern	V	✓(M)	✓	-	MO	BKO
Sternula nereis	Fairy Tern	-	-	✓	-	BKO	BKO
Sternula nereis nereis	Australian Fairy Tern	V	-	-	FLO	BKO	BKO
Sula leucogaster	Brown Booby	-	✓(M)	✓	-	-	MO
Thalassarche carteri	Indian Yellow-nosed Albatross	V	✓(M)	✓	-	MO	MO
Thalassarche impavida	Campbell Albatross	V	✓(M)	✓	-	-	BKO
Thalasseus bengalensis	Lesser Crested Tern	-	-	✓	-	BKO	BKO
Thalasseus bergii	Greater Crested Tern	-	✓ (W)	✓	-	BKO	LO
Tringa nebularia	Common Greenshank	E	✓ (W)	✓	-	-	KO

Threatened species:
V Vulnerable
E Endangered
CE Critically Endangered

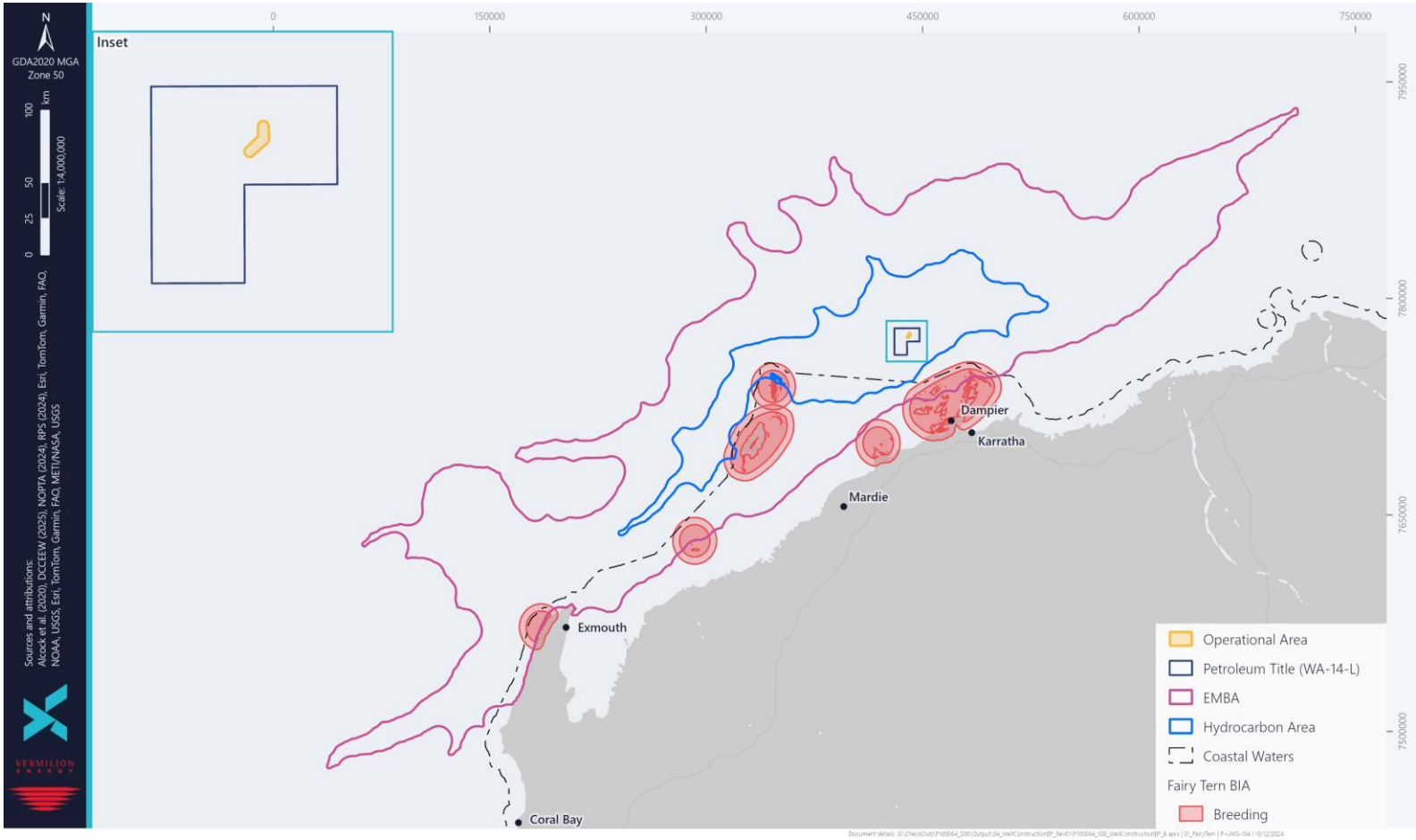
Migratory species:
M Marine
W Wetland
T Terrestrial

Type of presence:
MO Species of species habitat may occur within area
LO Species or species habitat likely to occur within area
KO Species or species habitat known to occur within area
FMO Foraging, feeding or related behaviour may occur within area
FLO Foraging, feeding or related behaviour likely to occur within area
FKO Foraging, feeding or related behaviour known to occur within area
BLO Breeding likely to occur within area
BKO Breeding known to occur within area
RLO Roosting likely to occur within area
RKO Roosting known to occur within area
CKO Congregation or aggregation known to occur within area

Fairy Tern

Breeding BIAs for the fairy tern (*Sterna nereis*) (Figure 3-7) intersect the Hydrocarbon Area and EMBA. The fairy tern is Marine-listed under the EPBC Act and the subspecies Australian fairy tern (*Sterna nereis nereis*) is listed as vulnerable. The WA breeding population (approximately 5,000–6,000 mature individuals) is dispersed over approximately 2,500 km of coastline (Greenwell, 2021). Within WA, the subspecies comprises a sedentary Pilbara population and a partially-migratory population extending from Exmouth to Point Malcolm. Individuals of the partially-migratory population may occasionally migrate into the southern region of the NWMR during the winter months (Greenwell, 2021).

Figure 3-7: BIA for the fairy tern



The partially-migratory population is widely distributed and winters primarily around the northern Houtman Abrolhos Islands (Greenwell, 2021). These birds migrate to breeding areas as far south as Point Malcolm on the eastern south coast and as far north as the Ningaloo coast, while others remain within the Houtman Abrolhos Archipelago (Greenwell, 2021).

Within the NWMR breeding occurs in small colonies between June and September on offshore islands, including Simpson Island, Barrow Island, the Montebello Islands, the Lowendal Islands, Thevenard Island, Serrurier Island, the islands in the Dampier Archipelago, Maryanne Shoals and Egret Island (Dunlop, 2018; Johnstone et al., 2013). Colonies tend to occupy areas rather than fixed sites, and nest sites can be abandoned after one or more years, even if they have been successful (Saunders and de Rebeira, 1985).

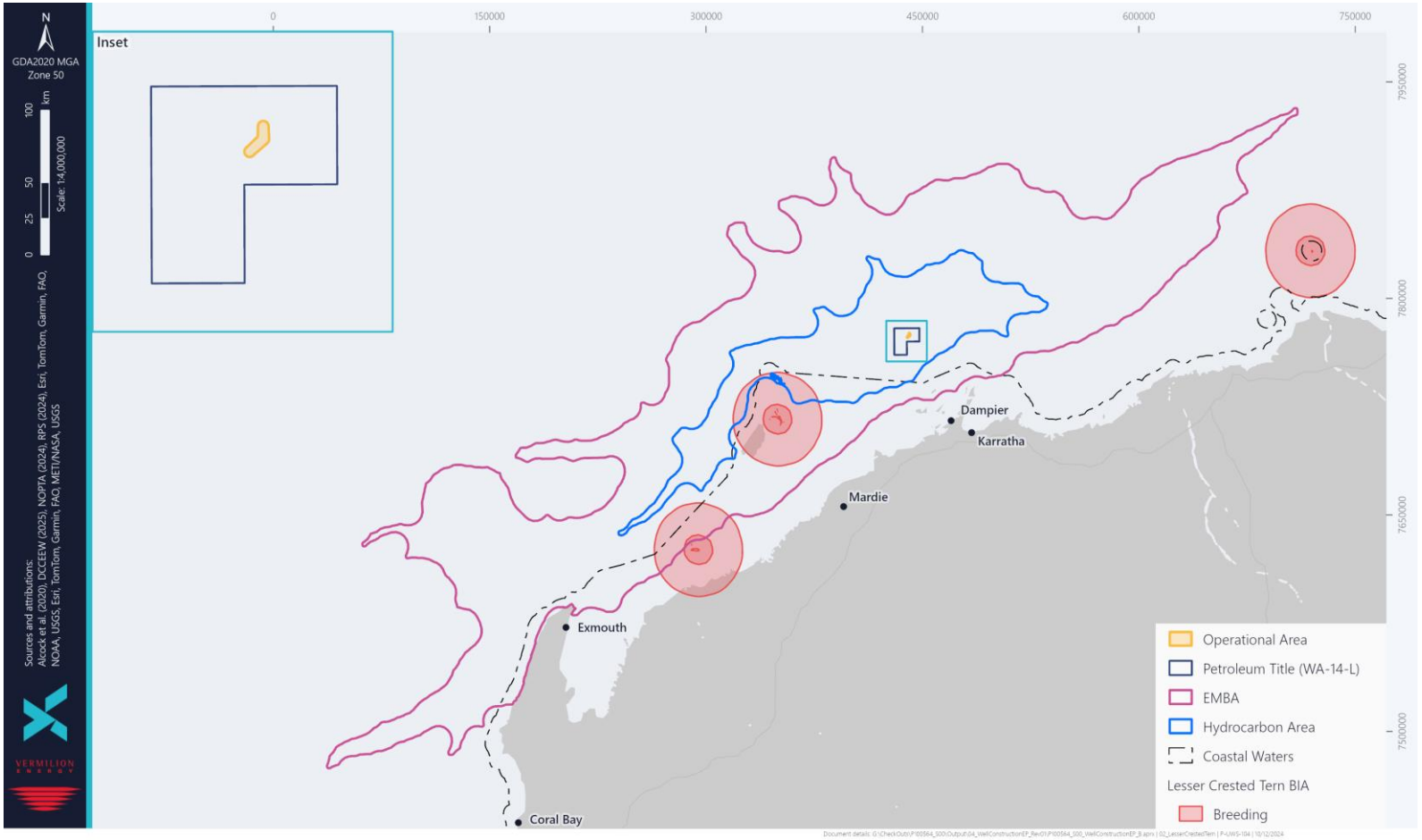
While information regarding foraging ecology of this species within the NWMR is lacking, the fairy tern has been studied in South Australia. Here, the species typically forages in inshore waters and has been reported to rarely travel beyond 2 km during the breeding season in South Australia (Paton and Rogers, 2009).

Fairy terns are diurnal plunge diving, feeding exclusively on small (<60 mm) surface schooling bait fishes throughout their range. Prey include species of sprats, hardy heads and larval prey of some demersal fish species. Unlike many other terns, fairy terns are not dependent upon large pelagic fishes to drive their prey to the surface (Paton and Rogers, 2009).

Lesser Crested Tern

Breeding BIAs for the lesser crested tern (*Thalasseus bengalensis*) (Figure 3-8) intersect the Hydrocarbon Area and EMBA. There is no conservation listing for this species.

Figure 3-8: BIA for the lesser crested tern



Many populations remain sedentary in their breeding areas or disperse locally (del Hoyo et al., 1996), although some are more migratory (Urban et al., 1986). The species breeds in large, dense colonies, or in small groups of fewer than 10 pairs amidst colonies of other species, such as silver gull (del Hoyo et al., 1996). Colonies are located on islands, including those as far offshore as Bedout, Legendre and the Montebello and Lowendal islands (Johnstone et al., 2013). Adult breeders have shown both high site fidelity and also flexibility in their breeding localities, depending upon the spatial and temporal reliability of food resources (Crawford et al., 2002).

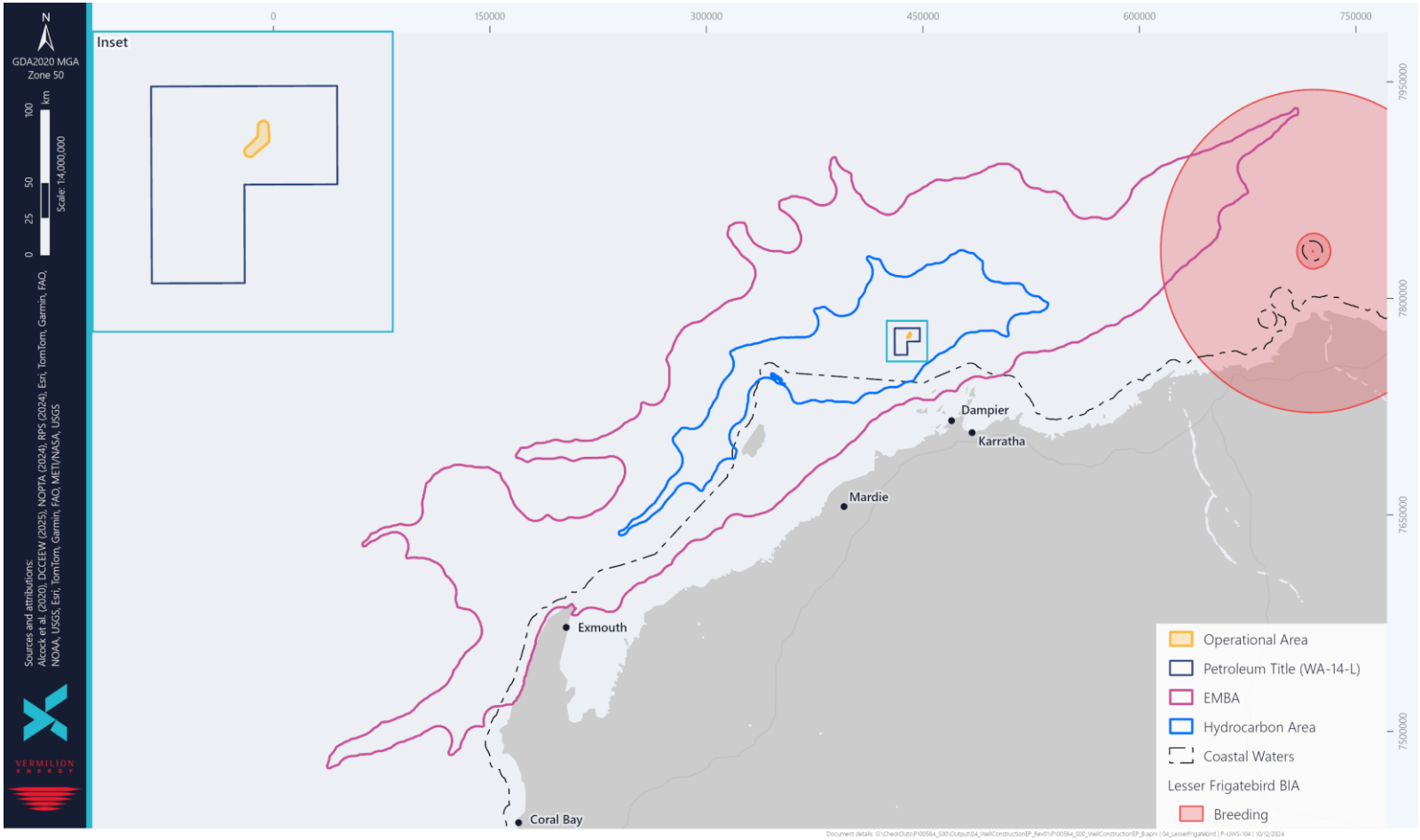
Breeding occurs from late March to May (Johnstone et al., 2013). During breeding, crested terns conduct short, diurnal foraging trips close (<40 km) to the colony (Surman and Wooller, 2003; Rock et al., 2007; Mcleay et al., 2010) with most foraging behaviour displayed by individuals at distances >5 km (Mcleay et al., 2010).

The chicks are predominantly fed pelagic fish, a diet that varies among colonies and years (Chiaradia et al., 2002; McLeay et al., 2009). Adults may forage more widely on inshore reef fish (Surman and Wooller, 2003), crustaceans and cephalopods using a plunge diving method (Commonwealth of Australia, 2020).

Lesser Frigatebird

Breeding BIAs for the lesser frigatebird (*Fregata ariel*) (Figure 3-9) intersect the EMBA. The lesser frigatebird is listed migratory under the EPBC Act. The species is typically found throughout tropical waters with breeding populations on small, remote tropical and sub-tropical islands, in mangroves or bushes, and on bare ground (Commonwealth of Australia, 2020).

Figure 3-9: BIA for lesser frigatebird



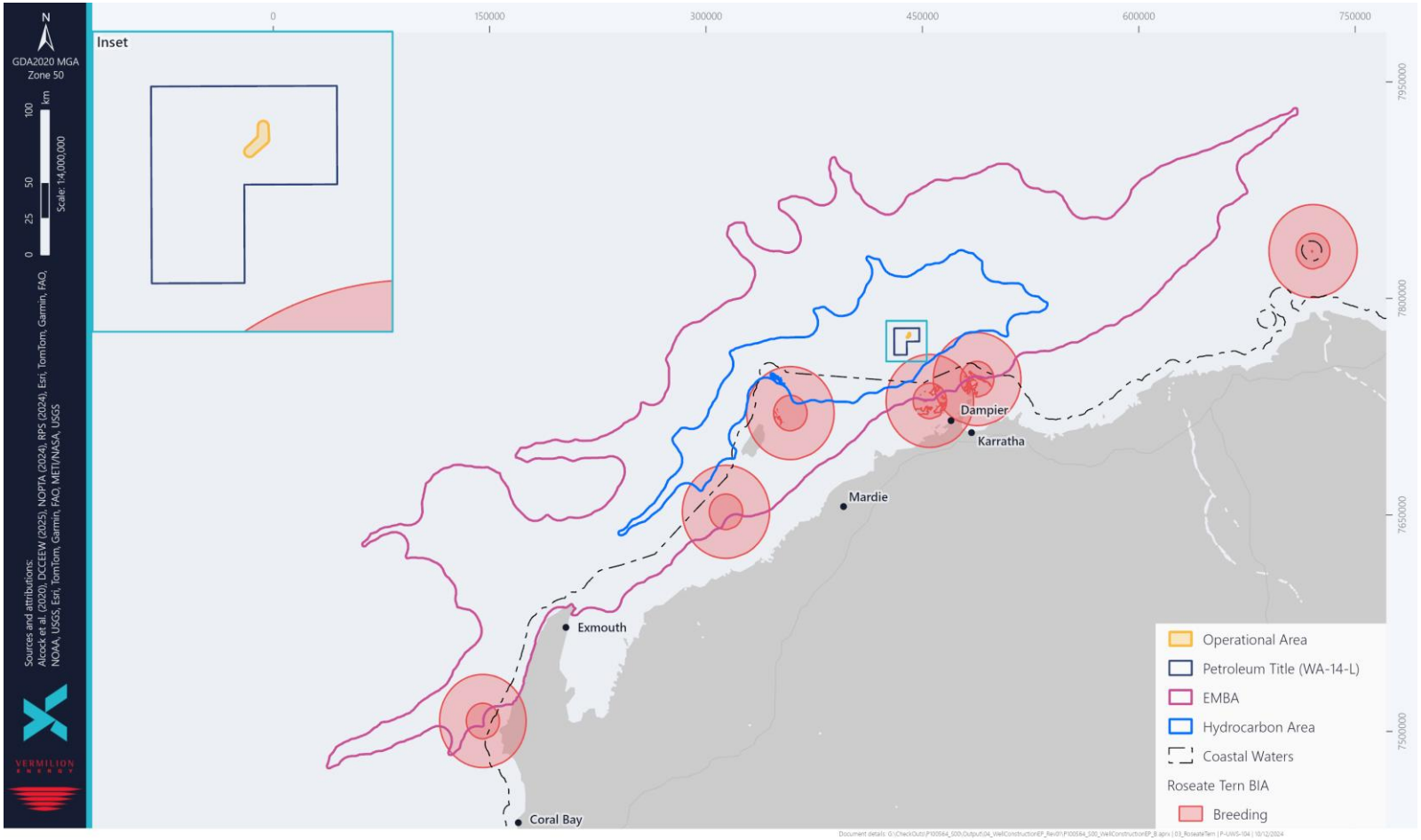
The lesser frigatebird is observed to remain further out to sea during the day and move to inshore waters during rough weather or in the late evening (Chatto, 2001). The species is known to breed on Bedout island between March and September and may also be present during the non-breeding season (Marchant and Higgins, 1990; Mustoe and Edmunds, 2008). The lesser frigatebird generally forages close to breeding colonies feeding on fish and squid in flight (Jaquemet et al., 2005; Marchant and Higgins, 1990).

Roseate Tern

Breeding BIAs for the roseate tern (*Sterna dougallii*) (Figure 3-10) intersect the Hydrocarbon Area and EMBA. The roseate tern is listed migratory under the EPBC Act. This species is generally sub-tropical in distribution and there are many breeding populations in the NWMR, including Ashmore Reef, Bonaparte Archipelago, Lacepede Islands, Dampier Archipelago and the Lowendal Islands.

The largest roseate tern breeding colony in WA is in the Houtman Abrolhos Islands (Surman and Nicholson, 2009). Large colonies breed within the Lowendal Island and Montebello Island region where there is a stronghold for this species (Higgins and Davies, 1996). A large breeding colony has also been recorded on Goodwyn Island on the Dampier Archipelago (Higgins and Davies, 1996). Peak breeding times across the NWMR area are between May to August.

Figure 3-10: BIA for the roseate tern



Birds are known to move away from breeding colonies following breeding, but their non-breeding range is not well defined (Higgins and Davies, 1996). Roseate terns will forage diurnally, up to 60 km from their colonies and always over deeper shelf waters, rather than shallow coastal areas (Surman and Wooller, 2003). Roseate terns will also readily raft (roost in flocks on the sea surface) after foraging episodes (Commonwealth of Australia, 2020).

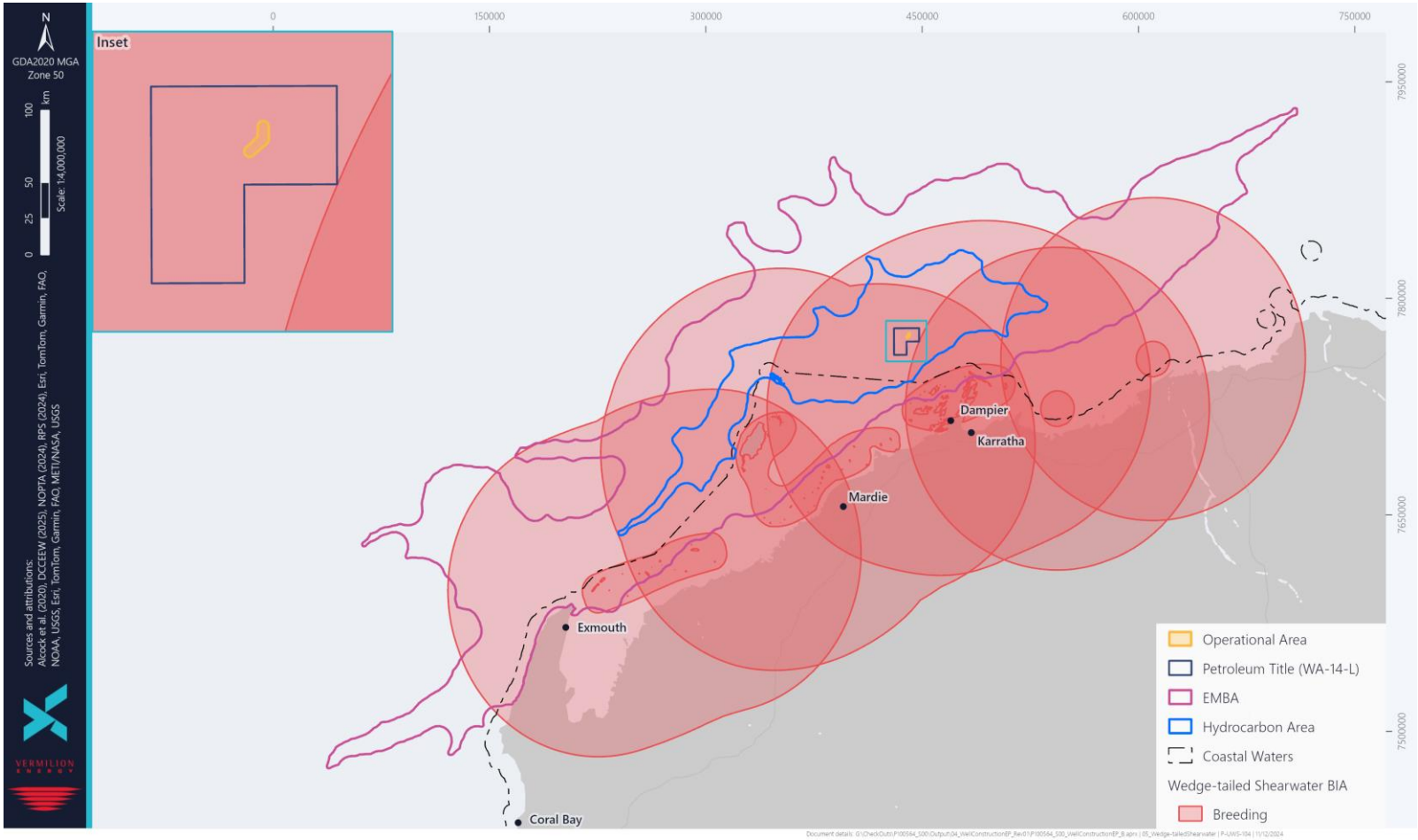
Roseate terns predominately eat small pelagic fish taken by plunge diving or surface dipping, typically foraging in dense flocks overflying predatory fishes that push their prey to the surface. Roseate terns may plunge to 20 cm depth.

Wedge-tailed Shearwater

A Breeding BIA for the wedge-tailed shearwater (*Ardenna pacifica*) (Figure 3-11) intersects with the Operational Area, Hydrocarbon Area and the EMBA. This BIA is based on buffer areas surrounding the offshore islands (e.g. within Dampier Archipelago) that are used for nesting by this species.

The wedge-tailed shearwater is a pelagic species, listed as migratory under the EPBC Act and has widespread distribution across the Indian and Pacific oceans with a global population of 2.6 million pairs. Of this population, approximately 1 million pairs breed in Australia, predominantly on islands off the coast of WA between Ashmore Reef and Rottnest Island. The largest breeding populations are found on the Houtman Abrolhos (~600,000 pairs) (Surman and Nicholson, 2009) and throughout the NWS region of the NWMR, where large populations exist on Muiron Islands (300,000 pairs) and Serrurier Island (60,000 pairs) (Surman and Nicholson, 2009; 2015).

Figure 3-11: BIA for the wedge-tailed shearwater



Adults are absent from their breeding colonies during the interbreeding period and return from their tropical Indian Ocean over-wintering grounds from late June onwards to re-excavate their burrows. This species is highly synchronous in timing of breeding; all eggs within a colony are laid within a 10-day period. Once hatched, adults leave the burrows to forage locally during the day returning at night to feed chicks until they are ready to fledge (Nicholson, 2002). Due to the high synchronicity in egg laying, fledging is restricted to the first two weeks of April (Nicholson, 2002).

Following breeding, wedge-tailed shearwaters on the Houtman Abrolhos Islands and Varanus Island migrate 4,500 km northwest to equatorial waters of the Indian Ocean around 90°E (Surman et al., 2018), traversing the NWMR.

3.4.3.4 Fish, Sharks and Rays

Fish, shark and ray species presence within the Project Areas is shown in Table 3-3. Table 3-7 identified a foraging BIA for the whale shark that overlaps the Operational Area. The whale shark is discussed further below.

Table 3-3: Shark and ray species or species habitat that may occur within the Project Areas

Scientific name	Common name	EPBC Act Status			Project Areas		
		Threatened Species	Migratory Species	Listed Marine Species	Operational Area	Hydrocarbon Area	EMBA
Sharks and rays							
Anoxypristis cuspidata	Narrow Sawfish	-	✓(M)	✓	MO	LO	KO
Carcharhinus longimanus	Oceanic Whitetip Shark	-	✓(M)	✓	LO	LO	LO
Carcharias taurus (west coast population)	Grey Nurse Shark (west coast population)	V	✓(M)	✓	LO	LO	CKO
Carcharias taurus	Grey Nurse Shark	-	✓(M)	✓	LO	LO	
Carcharodon carcharias	White Shark	V	✓(M)	✓	MO	MO	KO
Isurus oxyrinchus	Shortfin Mako	-	✓(M)	✓	LO	LO	LO
Isurus paucus	Longfin Mako	-	✓(M)	✓	LO	LO	LO
Lamna nasus	Porbeagle, Mackerel Shark	-	✓ (M)	✓	-	-	MO
Mobula alfredi	Reef Manta Ray	-	✓(M)	✓	KO	KO	KO
Mobula birostris	Giant Manta Ray	-	✓(M)	✓	LO	LO	KO
Pristis clavata	Dwarf Sawfish	V	✓(M)	✓	KO	KO	KO
Pristis pristis	Freshwater Sawfish	E	✓(M)	✓	MO	LO	LO
Pristis zijsron	Green Sawfish	V	✓(M)	✓	KO	KO	KO
Rhincodon typus	Whale Shark	V	✓(M)	✓	FKO	FKO	FKO
Sphyrna lewini	Scalloped Hammerhead	CD	-	-	LO	KO	KO

Scientific name	Common name	EPBC Act Status			Project Areas		
		Threatened Species	Migratory Species	Listed Marine Species	Operational Area	Hydrocarbon Area	EMBA
Other							
Acentronura larsonae	Helen's Pygmy Pipehorse	-	-	✓	MO	MO	MO
Bulbonaricus brauni	Braun's Pughead Pipefish	-	-	✓	MO	MO	MO
Campichthys tricarinatus	Three-keel Pipefish	-	-	✓	MO	MO	MO
Choeroichthys brachysoma	Pacific Short-bodied Pipefish	-	-	✓	MO	MO	MO
Choeroichthys latispinosus	Muiron Island Pipefish	-	-	✓	MO	MO	MO
Choeroichthys suillus	Pig-snouted Pipefish	-	-	✓	MO	MO	MO
Corythoichthys flavofasciatus	Reticulate Pipefish	-	-	✓	MO	MO	MO
Cosmocampus banneri	Roughridge Pipefish	-	-	✓	MO	MO	MO
Doryrhamphus dactyliophorus	Banded Pipefish	-	-	✓	MO	MO	MO
Doryrhamphus excisus	Bluestripe Pipefish	-	-	✓	MO	MO	MO
Doryrhamphus janssi	Cleaner Pipefish	-	-	✓	MO	MO	MO
Doryrhamphus multiannulatus	Many-banded Pipefish	-	-	✓	MO	MO	MO
Doryrhamphus negrosensis	Flagtail Pipefish	-	-	✓	MO	MO	MO
Festucalex scalaris	Ladder Pipefish	-	-	✓	MO	MO	MO
Filicampus tigris	Tiger Pipefish	-	-	✓	MO	MO	MO
Halicampus brocki	Brock's Pipefish	-	-	✓	MO	MO	MO
Halicampus grayi	Mud Pipefish	-	-	✓	MO	MO	MO
Halicampus nitidus	Glittering Pipefish	-	-	✓	MO	MO	MO
Halicampus spinirostris	Spiny-snout Pipefish	-	-	✓	MO	MO	MO
Haliichthys taeniophorus	Ribboned Pipehorse	-	-	✓	MO	MO	MO
Hippichthys penicillus	Beady Pipefish	-	-	✓	MO	MO	MO
Hippocampus angustus	Western Spiny Seahorse	-	-	✓	MO	MO	MO
Hippocampus histrix	Spiny Seahorse	-	-	✓	MO	MO	MO
Hippocampus kuda	Spotted Seahorse	-	-	✓	MO	MO	MO
Hippocampus planifrons	Flat-face Seahorse	-	-	✓	MO	MO	MO
Hippocampus spinosissimus	Hedgehog Seahorse	-	-	✓	MO	MO	MO
Hippocampus trimaculatus	Three-spot Seahorse	-	-	✓	MO	MO	MO
Micrognathus micronotopterus	Tidepool Pipefish	-	-	✓	MO	MO	MO

Scientific name	Common name	EPBC Act Status			Project Areas		
		Threatened Species	Migratory Species	Listed Marine Species	Operational Area	Hydrocarbon Area	EMBA
Milyeringa veritas	Cape Range Cave Gudgeon	V	-	-	-	-	KO
Ophisternon candidum	Blind Cave Eel	V	-	-	-	-	KO
Phoxocampus belcheri	Black Rock Pipefish	-	-	✓	MO	MO	MO
Solegnathus hardwickii	Pallid Pipehorse	-	-	✓	MO	MO	MO
Solegnathus lettiensis	Gunther's Pipehorse	-	-	✓	MO	MO	MO
Solenostomus cyanopterus	Robust Ghostpipefish	-	-	✓	MO	MO	MO
Syngnathoides biaculeatus	Double-end Pipehorse	-	-	✓	MO	MO	MO
Trachyrhamphus bicoarctatus	Bentstick Pipefish	-	-	✓	MO	MO	MO
Trachyrhamphus longirostris	Straightstick Pipefish	-	-	✓	MO	MO	MO

Threatened species:
V Vulnerable
E Endangered
CE Critically Endangered

Migratory species:
M Marine
W Wetland
T Terrestrial

Type of presence:
MO Species of species habitat may occur within area
LO Species or species habitat likely to occur within area
KO Species or species habitat known to occur within area
FMO Foraging, feeding or related behaviour may occur within area
FLO Foraging, feeding or related behaviour likely to occur within area
FKO Foraging, feeding or related behaviour known to occur within area
BLO Breeding likely to occur within area
BKO Breeding known to occur within area
RLO Roosting likely to occur within area
RKO Roosting known to occur within area
CKO Congregation or aggregation known to occur within area

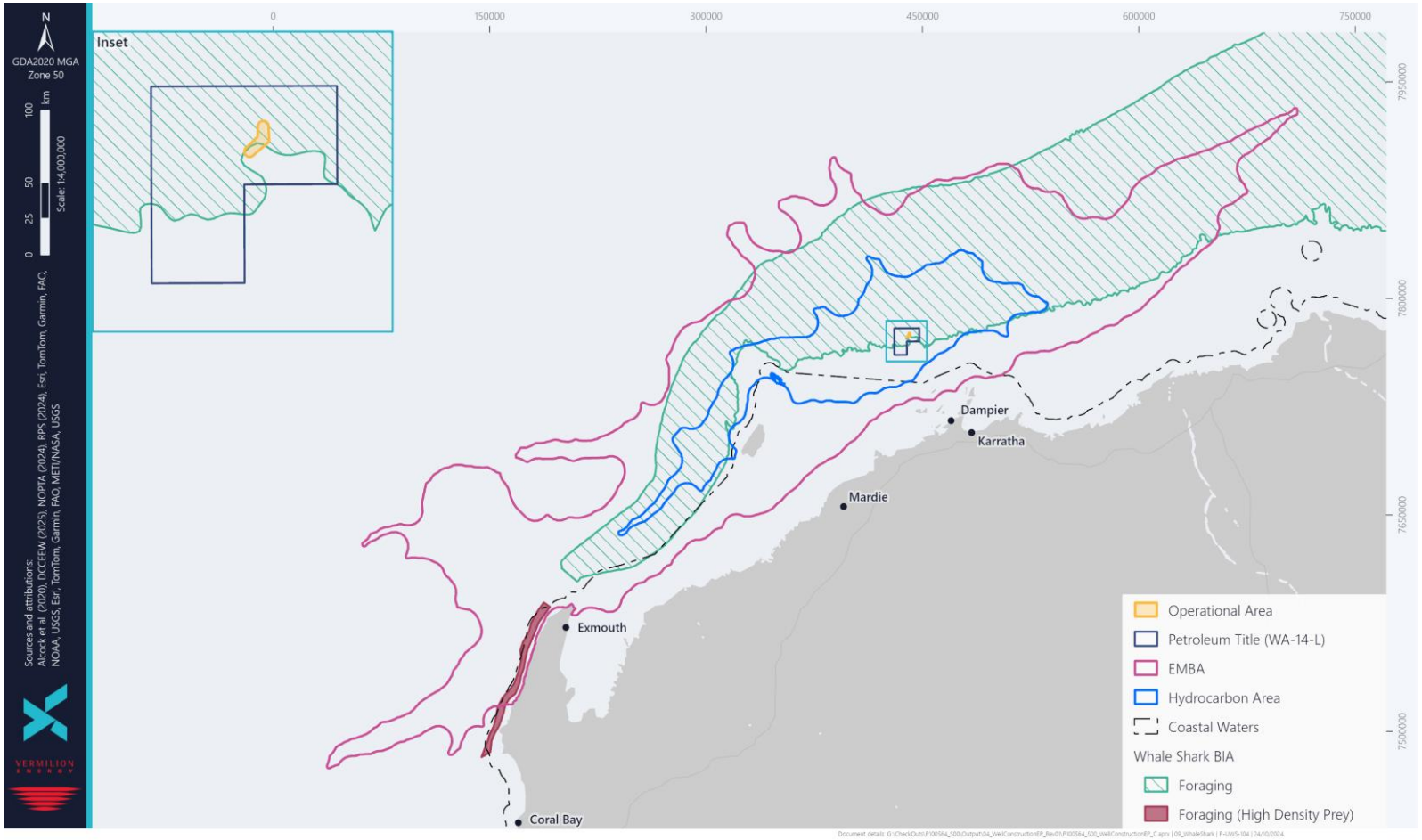
Whale Shark

A Foraging BIA for the whale shark (*Rhincodon typus*) intersects the Operational Area (Table 3-7, Figure 3-12). However, it is known that the whale sharks are more common migrating along the 200 m depth contour, which is further offshore from the Operational Area (TSSC, 2015b). The whale shark is widely distributed in Australian waters; but Ningaloo Reef is the main known aggregation area in WA. Whale sharks aggregate at Ningaloo between March and July each year to feed. Aggregations occur due to seasonal concentrations of planktonic prey such as krill and zooplankton which are a source of food for the whale shark. The whale shark also aggregates in the coastal waters off Christmas Island between December and January. The whale shark is a filter feeder and feeds at or close to the water's surface by swimming forward with mouth agape, sucking in prey. While the species is generally encountered close to or at the surface, it will regularly dive and move through the water column (DoE, 2024).

An observational study by D'Antonio et al. (2025) investigated the influences of geomorphological features and oil and gas platforms on whale shark movement patterns and habitat connectivity. Natural geomorphological features such as pinnacles, canyons, and

seamounts were identified to promote habitat connectivity and strongly influence habitat use by whale sharks across regional and local spatial scales. Offshore oil and gas platforms were also observed to have a similar effect, enhancing habitat connectivity. The offshore oil and gas platforms most visited by whale sharks were located close to the edge of the continental shelf and near natural geomorphological features. Through the study by D'Antonio et al. (2025) it is possible that these offshore oil and gas platforms act like 'stepping-stones' during migration and may increase vessel collision risks.

Figure 3-12: BIAs for the whale shark



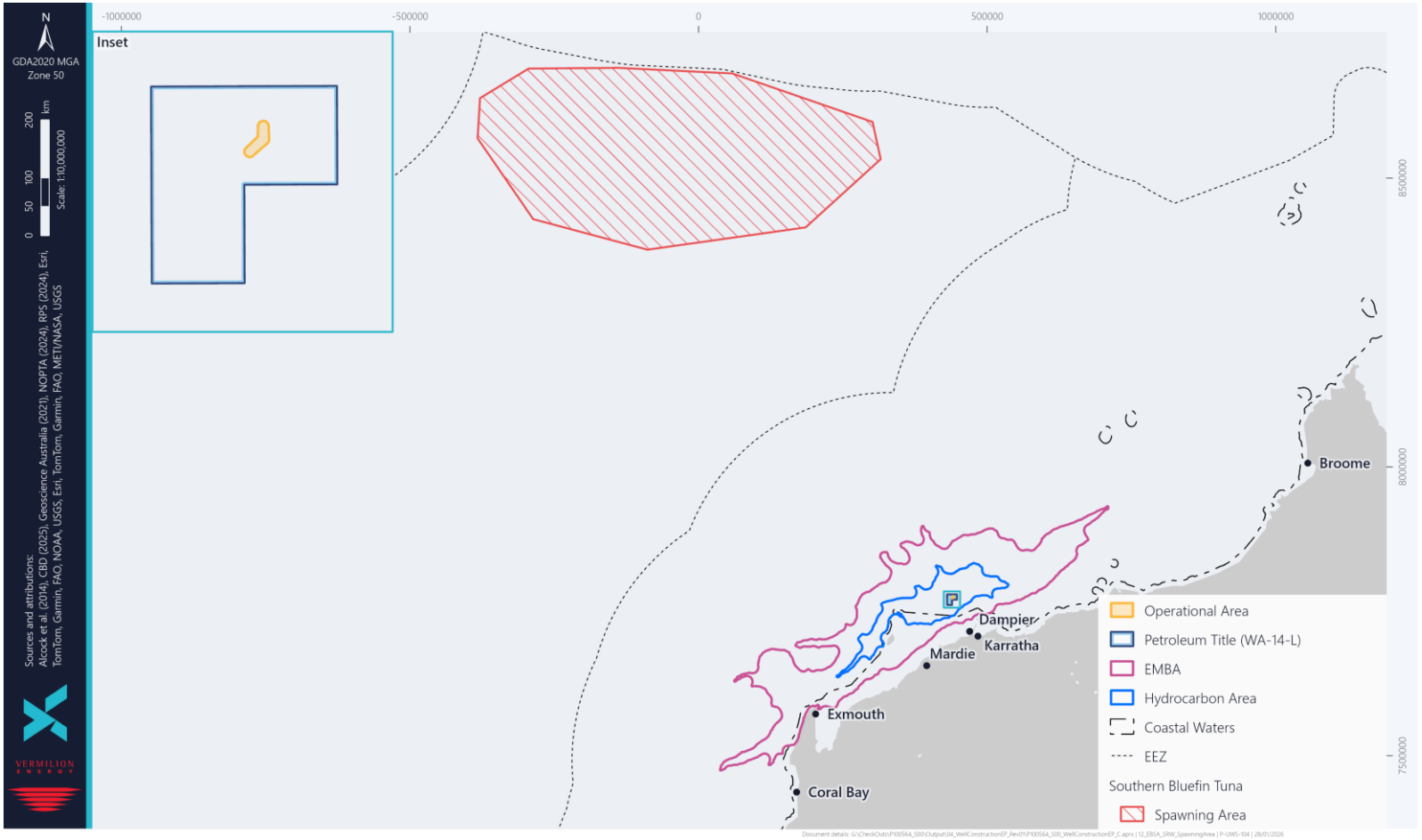
Commercially Significant Fish – Southern Bluefin Tuna

Southern bluefin tuna (SBT) (*Thunnus maccoyii*) are a long-lived species that live upwards of 40 years and mature between 11-12 years of age. The SBT are a highly migratory species found in southern hemisphere waters primarily between 30° and 50°S. SBT are suggested to congregate at seamounts, lumps and reefs in the Great Australian Bight where prey species also congregate. Congregation is also influenced by water masses such as nutrient rich sub-Antarctic waters and sea temperatures. SBT range is associated with age and feeding patterns with adult SBT waters ranging widely from northern WA to the southern Australian coastlines, including Tasmania to northern NSW (DoE, 2026).

The only known spawning area, as shown in Figure 3-13, is located south-east of Java, Indonesia in the Indian Ocean between 12°S -17°S and 107° - 117°E, 555 km and 687 km northwest of the EMBA and Operational Area, respectively (CBD, 2025). Spawning occurs between August and April with a peak occurring between October and February. Spawning occurs close to the water surface in temperatures of 24°C and above, which is suggested to be critical for egg and larvae survival. Females can release up to 15 million eggs during a spawning period. The females move to cooler waters to feed and regain body condition post spawning. Juvenile SBT move away from spawning grounds within a few months of hatching, likely using the Leeuwin current to migrate south down the west coast of Australia (DoE, 2026). The juvenile SBT are known to congregate near the surface off the southern Australian coastlines during summer months (December to April), while spending winter months in deeper, temperate oceanic waters (CCSBT, 2025). Tagging data has shown that juvenile SBT undertake a seasonal migration between the southern coastlines of Australia and the central Indian Ocean (CCSBT, 2025; DoE, 2026). After the age of 5, SBT are rarely found in nearshore surface waters, with their distribution extending over the southern circumpolar area throughout most of the Pacific, Indian and Atlantic Oceans (CCSBT, 2025).

Global data shows that between 1952 and 2024, 76.6% of SBT catch was collected using longline, 10.5% by purse-seine, and 12.9% using other gears. Majority of the catch (78%) was recorded in the Indian Ocean, with 17% in the Pacific Ocean, and 5% recorded in the Atlantic Ocean. Since 1968, the reported catch in the Indian Ocean has declined from approximately 45,000 t to less than 10,000 t (CCSBT, 2025).

Figure 3-13: Southern bluefin tuna spawning area ecologically or biologically significant marine area (CBD, 2025)



3.4.3.5 Marine Mammals

Marine mammal species presence within the Project Areas is shown in Table 3-4. Table 3-7 identified BIAs for four species that overlap the EMBA and one of those species (the humpback whale) has a migration BIA within the Operational Area and Hydrocarbon Area. These species are discussed further below.

Table 3-4: Marine mammal species or species habitat that may occur within the Project Areas

Scientific name	Common name	EPBC Act Status			Project Areas		
		Threatened Species	Migratory Species	Listed Marine Species	Operational Area	Hydrocarbon Area	EMBA
Cetaceans							
Balaenoptera acutorostrata	Minke Whale	-	-	-	MO	MO	MO
Balaenoptera bonaerensis	Antarctic Minke Whale	-	✓(M)	-	-	LO	LO
Balaenoptera borealis	Sei Whale	V	✓(M)	-	MO	LO	FLO
Balaenoptera edeni	Bryde's Whale	-	✓(M)	-	MO	LO	LO
Balaenoptera musculus	Blue Whale	E	✓(M)	-	LO	MKO	MKO
Balaenoptera omurai	Omura's Whale	-	✓(M)	-	LO	LO	-
Balaenoptera physalus	Fin Whale	V	✓(M)	-	MO	LO	FLO
Delphinus delphis	Common Dolphin	-	-	-	MO	MO	MO
Eubalaena australis	Southern Right Whale	E	✓(M)	-	-	MO	LO
Feresa attenuata	Pygmy Killer Whale	-	-	-	-	MO	MO
Globicephala macrorhynchus	Short-finned Pilot Whale	-	-	-	-	MO	MO
Grampus griseus	Risso's Dolphin	-	-	-	MO	MO	MO
Kogia breviceps	Pygmy Sperm Whale	-	-	-	-	MO	MO
Kogia sima	Dwarf Sperm Whale	-	-	-	-	MO	MO
Lagenodelphis hosei	Fraser's Dolphin	-	-	-	-	MO	MO
Megaptera novaeangliae	Humpback Whale	-	✓(M)	-	BKO	BKO	BKO
Mesoplodon densirostris	Blainville's Beaked Whale	-	-	-	-	MO	MO
Orcaella heinsohni	Australian Snubfin Dolphin	V	✓(M)	-	MO	LO	KO
Orcinus orca	Killer Whale	-	✓(M)	-	MO	MO	MO
Peponocephala electra	Melon-headed Whale	-		-	-	MO	MO
Physeter macrocephalus	Sperm Whale	-	✓(M)	-	-	MO	MO
Pseudorca crassidens	False Killer Whale	-	-	-	LO	LO	LO
Sousa sahulensis	Australian Humpback Dolphin	V	✓(M)	-	MO	LO	KO
Stenella attenuata	Spotted Dolphin	-	-	-	MO	MO	MO

Scientific name	Common name	EPBC Act Status			Project Areas		
		Threatened Species	Migratory Species	Listed Marine Species	Operational Area	Hydrocarbon Area	EMBA
Stenella coeruleoalba	Striped Dolphin	-	-	-	-	MO	MO
Stenella longirostris	Long-snouted Spinner Dolphin	-	-	-	-	MO	MO
Steno bredanensis	Rough-toothed Dolphin	-	-	-	-	MO	MO
Tursiops aduncus	Indian Ocean Bottlenose Dolphin	-	-	-	LO	LO	LO
Tursiops aduncus (Arafura/Timor Sea populations)	Spotted Bottlenose Dolphin (Arafura/Timor Sea populations)	-	✓(M)	-	LO	KO	KO
Tursiops truncatus s. str.	Bottlenose Dolphin	-	-	-	MO	MO	MO
Ziphius cavirostris	Cuvier's Beaked Whale	-	-	-	-	MO	MO
Sirenia							
Dugong dugon	Dugong	-	✓(M)	✓	-	KO	BKO

Threatened species:
V Vulnerable
E Endangered
CE Critically Endangered

Migratory species:
M Marine
W Wetland
T Terrestrial

Type of presence:
MO Species of species habitat may occur within area
LO Species or species habitat likely to occur within area
KO Species or species habitat known to occur within area
FMO Foraging, feeding or related behaviour may occur within area
FLO Foraging, feeding or related behaviour likely to occur within area
FKO Foraging, feeding or related behaviour known to occur within area
BLO Breeding likely to occur within area
BKO Breeding known to occur within area
RLO Roosting likely to occur within area
RKO Roosting known to occur within area
CKO Congregation or aggregation known to occur within area

Pygmy Blue Whale

A Foraging and Migration BIA for the pygmy blue whale (*Balaenoptera musculus*) intersects the EMBA, noting that the Operational Area and Hydrocarbon Area do not overlap with either BIA (Figure 3-14).

During the northern migration, pygmy blue whales are generally around the Perth Canyon area from January to May prior to transiting north past the North-West Cape between April to August. The southern migration typically occurs from October to late-December (DEWHA, 2008c). The migratory path for the pygmy blue whales generally occurs in deeper waters, typically 500–1,000 m (Thums et al., 2022a) with the whales being reported as far as 400 km offshore during their southern migration (McCauley et al., 2018).

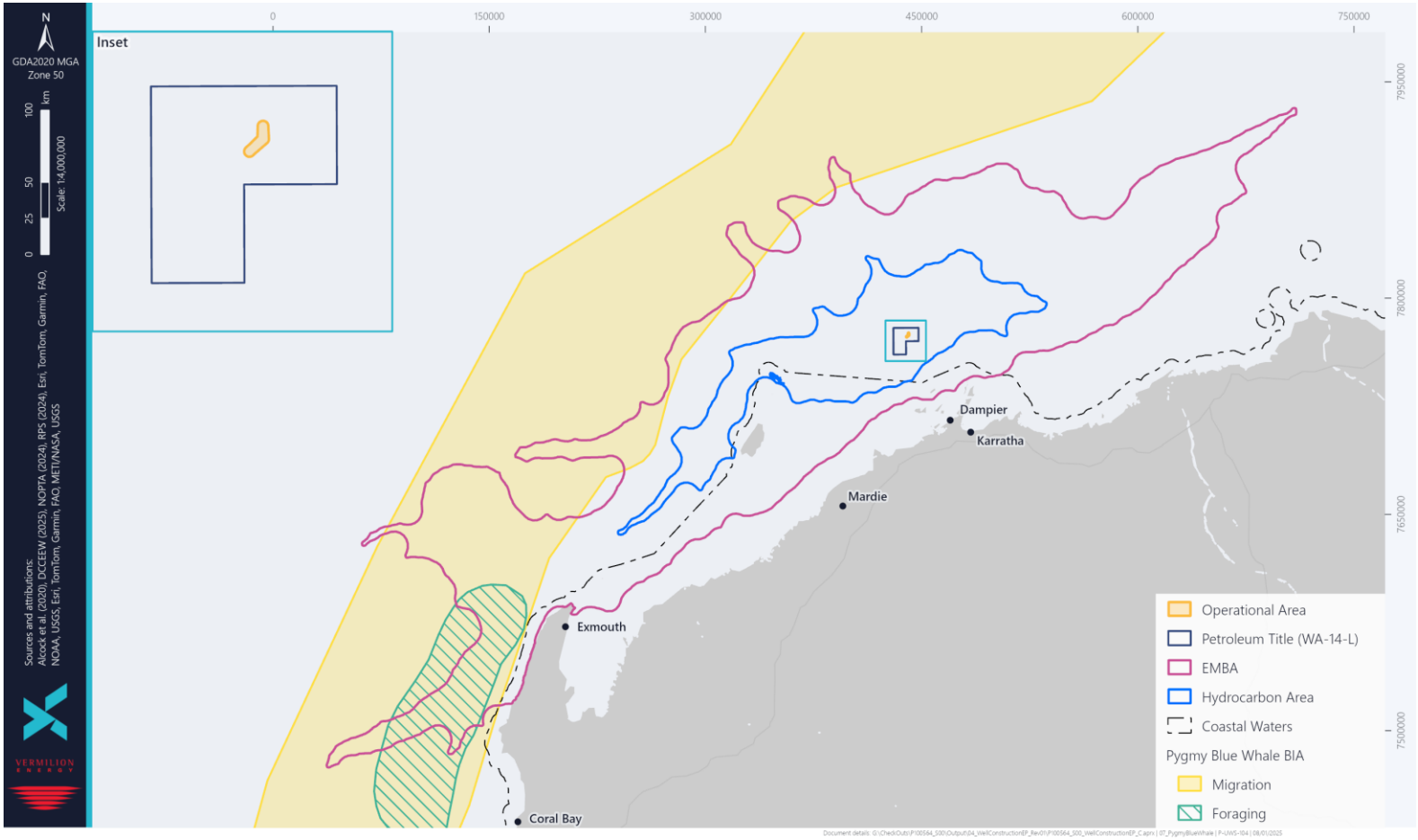
Pygmy blue whales appear to feed regularly along their migration route (i.e. at least once per week or more frequently) and are likely to have multiple food caches along their migratory route (e.g. Rowley Shoals and Ningaloo Reef) (ConocoPhillips, 2018).

Recognised feeding areas of significance to this species, include Ningaloo Reef (DoE, 2015). The Ningaloo Reef area has the capacity to offer feeding opportunities to pygmy blue whales through unique biophysical conditions able to support large biomasses of marine species (Double et al., 2014).

Surface lunge feeding of pygmy blue whales has been observed at North-West Cape and Ningaloo Reef in June (Double et al., 2014). Outside of the recognised feeding areas, possible foraging areas for pygmy blue whales include the greater region off Exmouth (DoE, 2015a). The steep gradient features tend to stimulate upwelling and therefore increased productivity (seasonally variable) (ConocoPhillips, 2018). Hence, they provide a favourable foraging area.

It is likely that migratory individuals may transit through the Operational Area during the north and south bound migratory seasons. Individuals migrating northbound predominantly display fast and direct travel interspersed with short rest periods of low move persistence indicating foraging (Thums et al., 2022).

Figure 3-14: BIAs for the pygmy blue whale



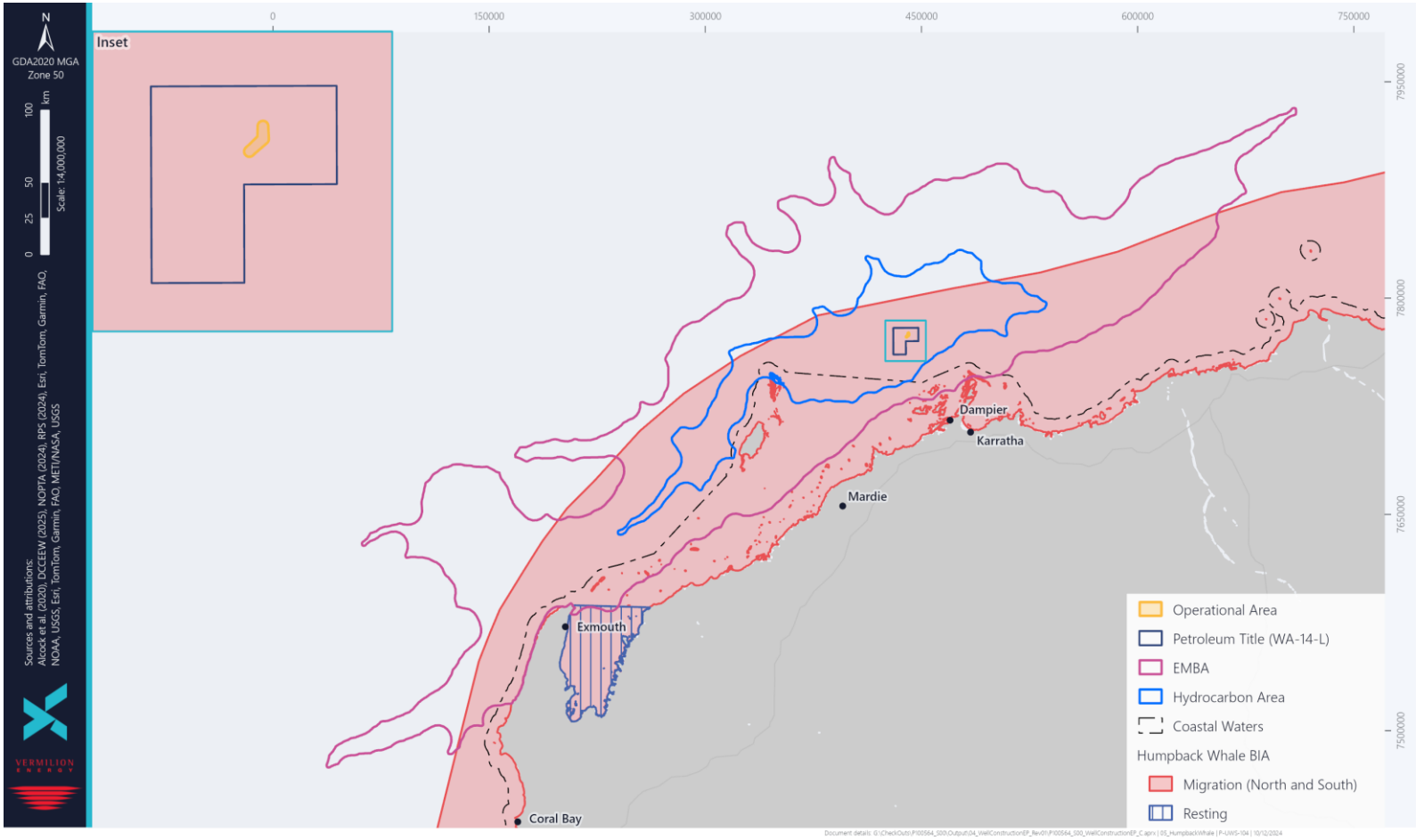
Humpback Whale

The humpback whale (*Megaptera novaeangliae*) has a Migration BIA that intersects the Operational Area, Hydrocarbon Area and EMBA, and a Resting BIA that intersects the EMBA (Figure 3-15). Listing advice details that the humpback whale is no longer listed as vulnerable and has been removed from the threatened species list. However, the species remains a matter of national environmental significance under the EPBC Act as a Migratory listed species (DCCEEW, 2024k).

The species migrates north through the EMBA from their Antarctic feeding grounds around May each year, reaching the waters of the NWMR in early-June (DoE, 2024b). However, the exact timing of the migration period can vary from year to year. From the North-West Cape, northbound humpback whales travel along the edge of the continental shelf passing to the west of the Muiron, Barrow and Montebello Islands, peaking in late July (Jenner et al., 2001).

Breeding and calving grounds are estimated to extend south from Camden Sound to at least North-West Cape (Irvine et al., 2018); with breeding and calving occurring between August and September (DEWHA, 2008c). This also coincides with the start of the southern migration. Exmouth Gulf and Shark Bay are both important resting areas for migrating humpbacks, particularly for cow-calf pairs on the southern migration (DoE, 2024b). The southerly migration, from around the Lacepede Islands (north of Broome) extends parallel to the coast on approx. the 20–30 m depth contour (Jenner et al., 2001; DoE, 2024b). Southbound migration is more diffuse and irregular, lacking an obvious peak. An increase in southerly migrating individuals may be observed between the North-West Cape and the Montebello Islands around November (Jenner et al., 2001).

Figure 3-15: BIAs for the humpback whale



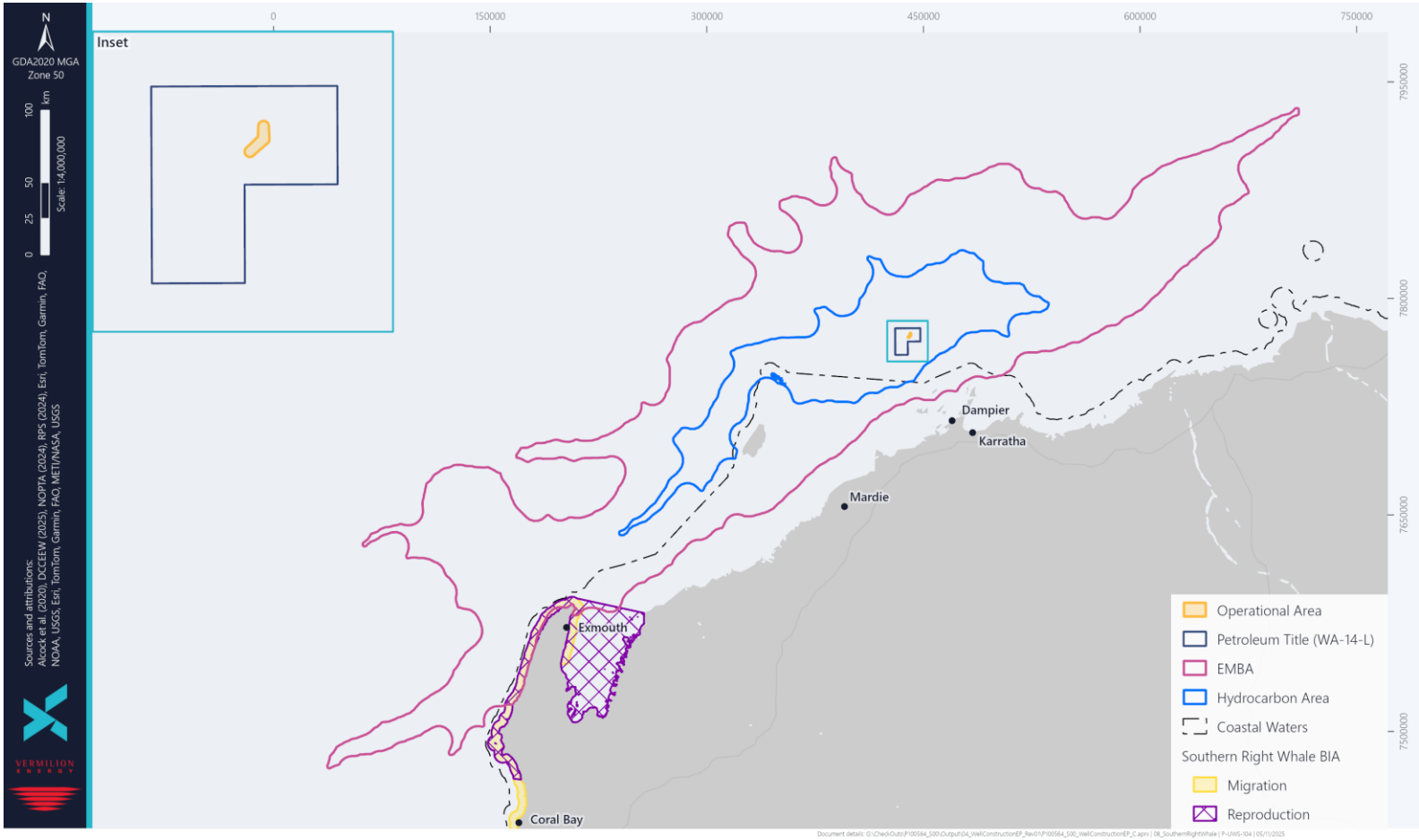
Southern Right Whale

The southern right whale (*Eubalaena australis*) has a migratory and reproduction BIA that intersect the EMBA (Figure 3-16). Listing advice confirms that the southern right whale remains listed as Endangered under the EPBC Act and is also recognised as a Migratory species (2024k).

Breeding and calving for this species occur in near shore water during the austral winter and spring, between June and October (Bannister, 1979–2005; Burnell, 1999). The major reproduction area occurs in Doubtful Island Bay (WA), with smaller aggregations being recorded at Twilight Cove, Flinders Bay, and the Albany/Cape Riche area (Burnell & McKenna, 1996; Kemper et al., 1994). These areas provide shallow, sheltered conditions suitable for breeding and nursing, and females exhibit strong site fidelity to these habitats (Pirzl, 2008).

Southern right whales migrate seasonally between mid-latitude breeding grounds and higher-latitude feeding areas. They are regularly present along the southern coast of Western Australia from mid-May to mid-November, with movements within coastal habitat often exceeding 200 km in a single season (Burnell, 2001).

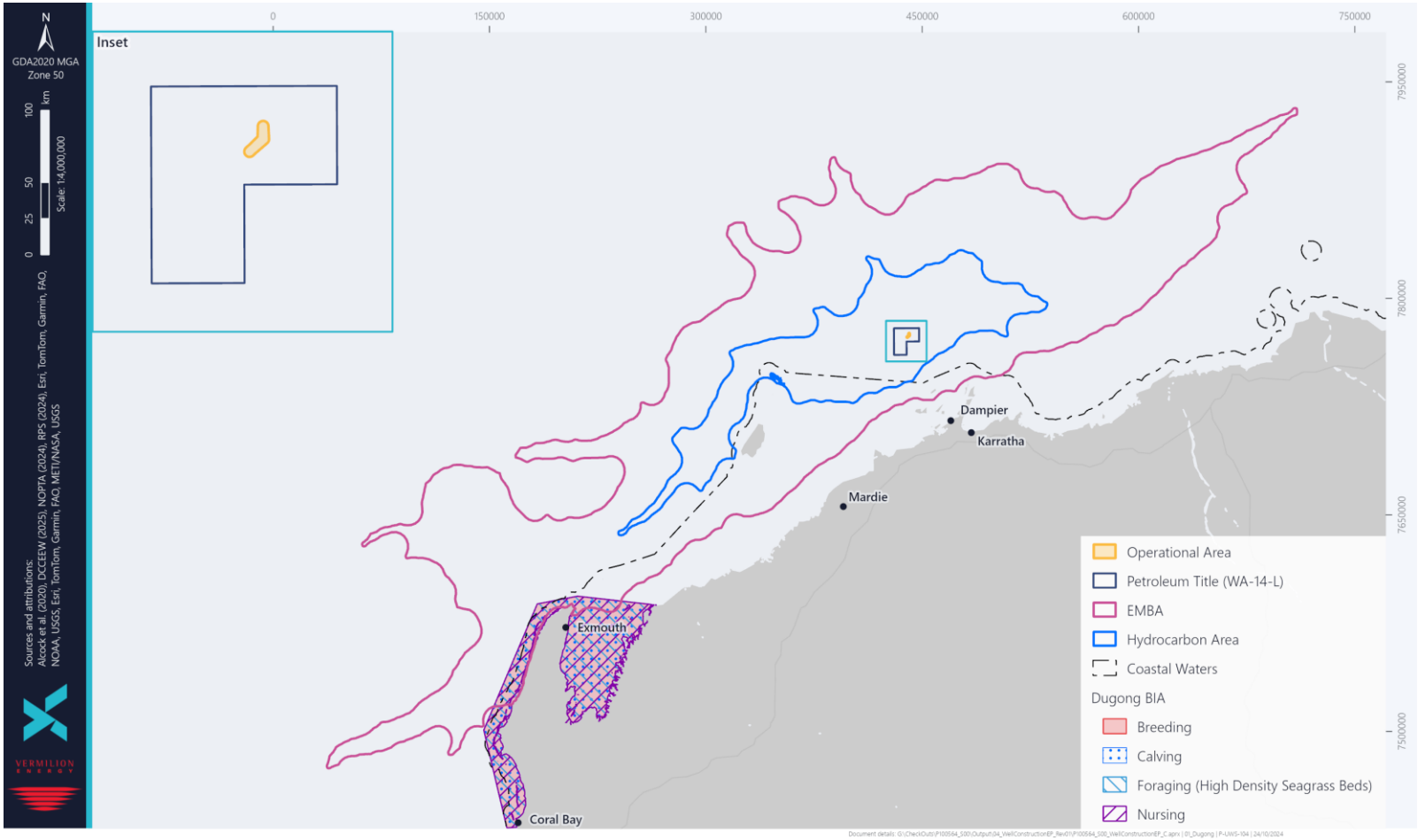
Figure 3-16: BIAs for the southern right whale



Dugong

Breeding, Calving, Foraging and Nursing BIAs for the dugong intersect the EMBA (Figure 3-17). A significant proportion of the world's dugong (*Dugong dugon*) population occurs in coastal waters from Shark Bay (WA) to Moreton Bay (Queensland) (DoE, 2024c). Shark Bay occurs outside of the EMBA and supports a significant population of dugongs, with an estimated 10,000 individuals (DoE, 2024c). Dugongs are also known to feed and migrate through the NWS Province, including regions within the Exmouth Gulf, around North-West Cape and offshore on the NWS (DoE, 2024c). The Exmouth Gulf dugong population is considered stable and the only one not in decline. Exmouth Gulf is important to this species, as it has been recorded as providing significant breeding and feeding habitat (Jenner and Jenner, 2005). Seagrass meadows are the preferred habitat and food for dugongs; however, they are also known to graze on algae and macroinvertebrates (DoE, 2024c).

Figure 3-17: BIAs for the dugong



3.4.3.6 Marine Reptiles

Marine reptile species presence within the Project Areas are shown in Table 3-5. Table 3-7 identified BIAs for four species that overlap the Operational Area, Hydrocarbon Area and EMBA, including the flatback turtle internesting BIA that overlaps the Operational Area. These species are discussed further below.

Table 3-5: Marine reptile species or species habitat that may occur within the Project Areas

Scientific name	Common name	EPBC Act Status			Project Areas		
		Threatened Species	Migratory Species	Listed Marine Species	Operational Area	Hydrocarbon Area	EMBA
Marine turtles							
Caretta caretta	Loggerhead Turtle	E	✓(M)	✓	KO	FKO	BKO
Chelonia mydas	Green Turtle	V	✓(M)	✓	KO	FKO	BKO
Dermochelys coriacea	Leatherback Turtle	E	✓(M)	✓	LO	KO	FKO
Eretmochelys imbricata	Hawksbill Turtle	V	✓(M)	✓	KO	FKO	BKO
Natator depressus	Flatback Turtle	V	✓(M)	✓	CKO	FKO	BKO
Sea snakes							
Aipysurus apraefrontalis	Short-nosed Sea Snake	CE	-	✓	-	KO	KO
Aipysurus duboisii	Dubois' Sea Snake	-	-	✓	MO	MO	MO
Aipysurus foliosquama	Leaf-scaled Sea Snake	CE	-	✓	-	KO	KO
Aipysurus laevis	Olive Sea Snake	-	-	✓	MO	MO	MO
Aipysurus mosaicus	Mosaic Sea Snake	-	-	✓	MO	MO	MO
Aipysurus tenuis	Brown-lined Sea Snake	-	-	✓	MO	MO	MO
Emydocephalus annulatus	Eastern Turtle-headed Sea Snake	-	-	✓	-	MO	MO
Ephalophis greyae	Mangrove Sea Snake	-	-	✓	MO	MO	MO
Hydrelaps darwiniensis	Port Darwin Sea Snake	-	-	✓	MO	MO	MO
Hydrophis czeblukovi	Fine-spined Sea Snake	-	-	✓	MO	MO	MO
Hydrophis elegans	Elegant Sea Snake	-	-	✓	MO	MO	MO
Hydrophis kingii	Spectacled Sea Snake	-	-	✓	MO	MO	MO
Hydrophis macdowelli	MacDowell's Sea Snake	-	-	✓	MO	MO	MO
Hydrophis major	Olive-headed Sea Snake	-	-	✓	MO	MO	MO
Hydrophis ornatus	Spotted Sea Snake	-	-	✓	MO	MO	MO
Hydrophis peronii	Horned Sea Snake	-	-	✓	MO	MO	MO
Hydrophis platura	Yellow-bellied Sea Snake	-	-	✓	MO	MO	MO

Scientific name	Common name	EPBC Act Status			Project Areas		
		Threatened Species	Migratory Species	Listed Marine Species	Operational Area	Hydrocarbon Area	EMBA
Hydrophis stokesii	Stokes' Sea Snake	-	-	✓	MO	MO	MO
Crocodile							
Crocodylus porosus	Salt-water Crocodile	-	✓(M)	✓	MO	MO	MO
Threatened species: V Vulnerable E Endangered CE Critically Endangered Migratory species: M Marine W Wetland T Terrestrial	Type of presence: MO Species of species habitat may occur within area LO Species or species habitat likely to occur within area KO Species or species habitat known to occur within area FMO Foraging, feeding or related behaviour may occur within area FLO Foraging, feeding or related behaviour likely to occur within area FKO Foraging, feeding or related behaviour known to occur within area BLO Breeding likely to occur within area BKO Breeding known to occur within area RLO Roosting likely to occur within area RKO Roosting known to occur within area CKO Congregation or aggregation known to occur within area						

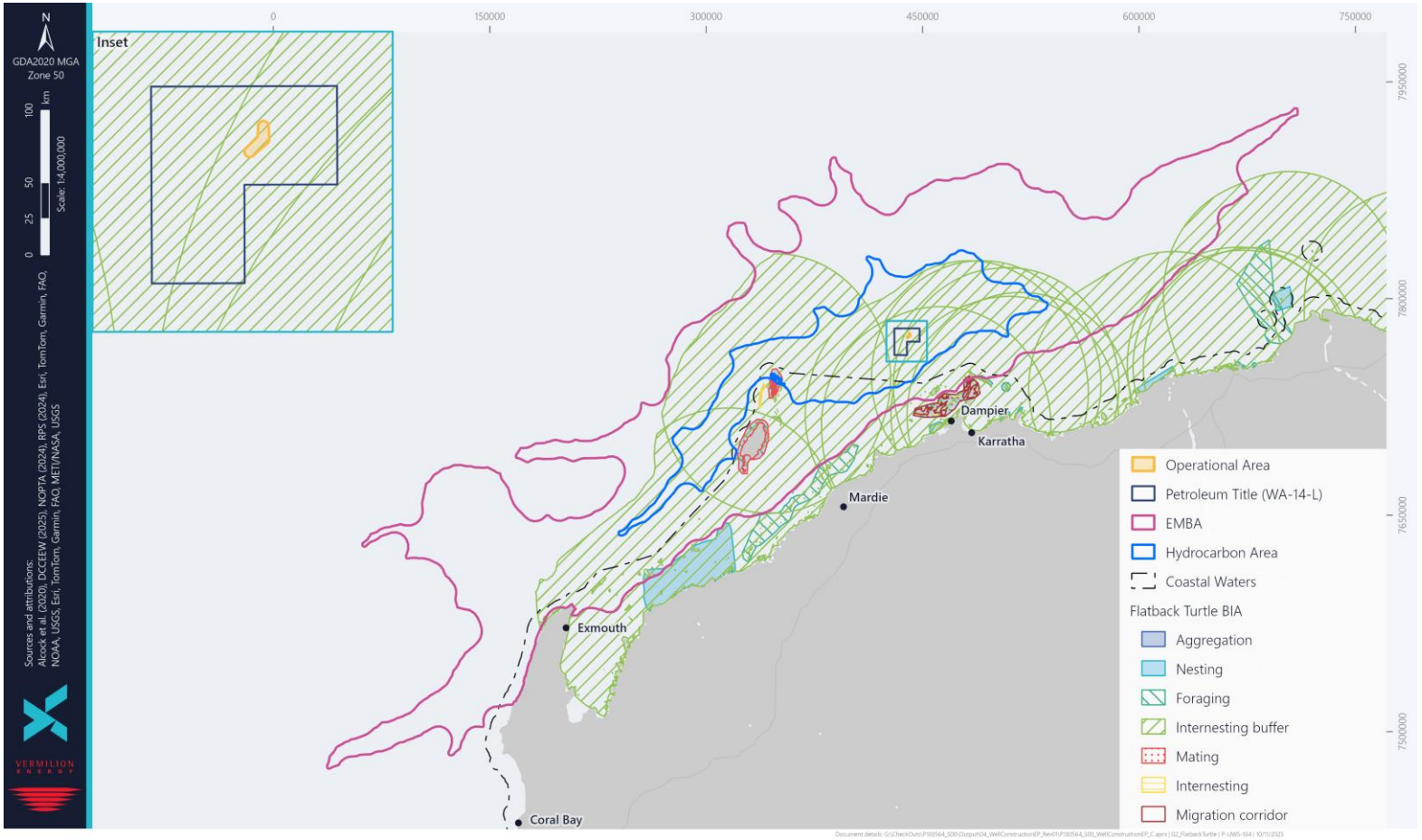
Flatback Turtle

The flatback turtle (*Natator depressus*) has Inter-nesting Buffer BIAs that intersect with the Operational Area, Hydrocarbon Area and EMBA. Inter-nesting, Nesting, Mating and Foraging BIAs intersect the Hydrocarbon Area and EMBA. Aggregation, Inter-nesting, Migration, and Nesting BIAs intersect with the EMBA (Figure 3-18).

The flatback turtle has an Australasian distribution, with all recorded nesting beaches occurring within tropical to sub-tropical Australian waters. One third of the total breeding for the species occurs in WA (Limpus, 2007). The Pilbara stock nests throughout the NWS and is characterised by summer nesting (October to March) (Commonwealth of Australia, 2017). On the NWS, significant rookeries are centred on Barrow Island especially the east coast beaches (DSEWPC, 2012a). Montebello Islands, Thevenard Island, Varanus Island, the Lowendal Islands, King Sound and Dampier Archipelago are also significant rookeries (Pendoley, 2005; Limpus, 2007; Pendoley Environmental, 2011).

Delambre Island is an important turtle rookery for flatback turtles with an estimated population size of approximately 2,700–3,900 nesting females per season and nesting from late October to mid-February (Thums et al., 2020). There have also been occasional records of nesting by flatback turtles on the Jurabi Coast and Muiron Islands (CALM, 2005). During turtle surveys for Santos, WA flatback turtle nesting was recorded on Bessieres Islands (Astron, 2014), Serrurier, Flat and Table Island in previous surveys (Pendoley Environmental, 2009). Previously, the status of the flatback population(s) was undetermined and although not well quantified, it was estimated to be many thousands of females (Limpus, 2007). However, Pendoley et al. (2014) reported both Barrow Island and Mundabullangana flatback turtles as substantial reproductive populations with estimates of 1,512 and 1,461 nesting females annually respectively.

Figure 3-18: BIAs for the flatback turtle



Flatback turtles are thought to return to the same small beach for successive clutches both within and between seasons (Thums et al., 2020; Bannister et al., 2014). Thums et al. (2020) identified 4,369 sightings of tagged flatback turtles that were sited more than once at Delambre Island during beach monitoring between November and January from 2010 to 2016. About 40% of the turtles identified to revisit Delambre Island occurred during an interval of two years (Thums et al., 2020). Satellite tracking of adult (female) flatback turtles shows they use a variety of inshore and offshore marine areas off the east and west coasts of Barrow Island. Females inter-nest close to their nesting beaches, typically in 0–10 m of water (Chevron, 2008). However, flatback turtles also travel approximately 70 km and inter-nest in shallow nearshore water off the adjacent mainland coast, before returning to Barrow Island to lay another clutch of eggs. The average inter-nesting period is 13–16 days.

From long-term tagging studies on Varanus Island and Pendoley's observations, it appears that the nesting season for flatback turtles' peaks in December and January with subsequent peak hatchling emergence in February and March. Flatbacks have been observed to nest on Varanus Island between November and February (Chevron, 2008; Pendoley Environmental, 2011, 2013). Population monitoring of flatback turtles on Varanus Island, calculated from 16 seasons, indicates a mean population estimate of 226 (±97). Modelled flatback turtle populations have shown a slight decline from 2008–09 to 2016–17, which is considered to be part of fluctuations in the natural cycle (Astron, 2017). Flatback turtles tend to nest on all beaches on Varanus Island (Astron, 2017). Flatback hatching and emergence success is noted as higher compared to that reported for other WA rookeries (Pendoley et al., 2014).

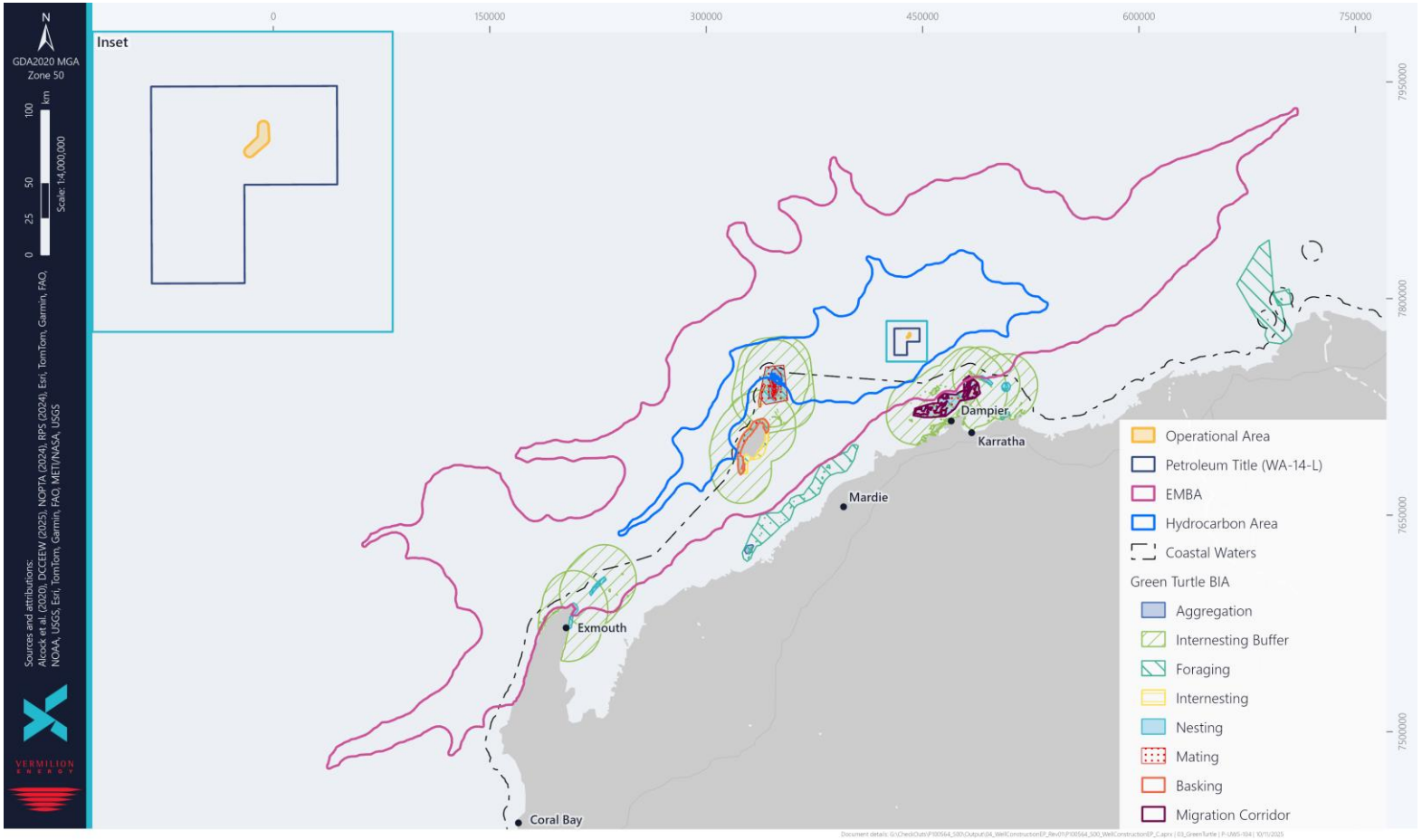
Green Turtle

The green turtle (*Chelonia mydas*) has Foraging, Nesting, Inter-nesting Buffer and Mating BIAs that intersect with the Hydrocarbon Area and the EMBA. Aggregation, Inter-nesting, Nesting and Migration BIAs intersect with the EMBA (Figure 3-19). No green turtle BIAs intersect the Operational Area.

The NWS population of green turtles is one of the largest in the world and the most significant rookery is the western side of Barrow Island (Prince, 1994; Limpus, 2008a). Other principal rookeries include the Lacepede Islands, Montebello Islands, Dampier Archipelago, Browse Island and North-West Cape (Prince, 1994; Limpus, 2008a; DSEWPC, 2012d).

Surveys by Waayers (2010) within the Ningaloo Marine Park and Muiron Islands Marine Management Area estimated up to 7,500 female green turtles used these areas. In 2014, Santos commissioned a survey of the islands in the Exmouth Region which found that North and South Muiron Islands were significant nesting sites for green turtles with over 100 green turtles nesting overnight on one beach at North Muiron Island (Astron, 2014). The green turtle is also known to breed in large numbers in the dunes above the extensive beaches found on Serrurier Island, with counts indicating the island supports the second largest rookery in the Pilbara (Oliver, 1990).

Figure 3-19: BIAs for the green turtle



The green turtle is one of the more predominant species nesting in the Pilbara region (Pendoley et al., 2016). In the Pilbara region, the species nest over ~4–6 months with inter-nesting intervals varying among location (Pendoley et al., 2016). Green turtle nesting abundance and timing fluctuates significantly from year to year depending on environmental variables, locality and food availability (Pendoley Environmental, 2011). Nesting activity is primarily located on outer islands away from mainland coastline (Pendoley et al., 2016). Pendoley et al. (2016) recorded 55 nesting green turtles at 36% of all survey locations at Port Hedland, Onslow, Dampier, and Barrow Group between 1992 and 2012.

Nesting of green turtles has been recorded from August to March on Serrurier Island (Woodside, 2002) and from October to February on Varanus Island (Pendoley Environmental, 2011). On Barrow Island, mating aggregations may commence from October with peak nesting from December to January, with hatchlings emerging through summer and early autumn. However, nesting on Barrow Island has been recorded all year round (Chevron, 2005, 2008; Pendoley, 2005). Nesting on the Scott Reef-Sandy Islet and Browse Island has been observed all year round with peaks between December and January (Commonwealth of Australia, 2017).

Green turtles spend the first 5 to 10 years of their life drifting on ocean currents, before moving to reside in shallower benthic habitats, including tropical coral and rocky reefs and seagrass beds. Green turtles have been known to migrate more than 2,600 km between feeding and breeding grounds (Limpus, 2008a).

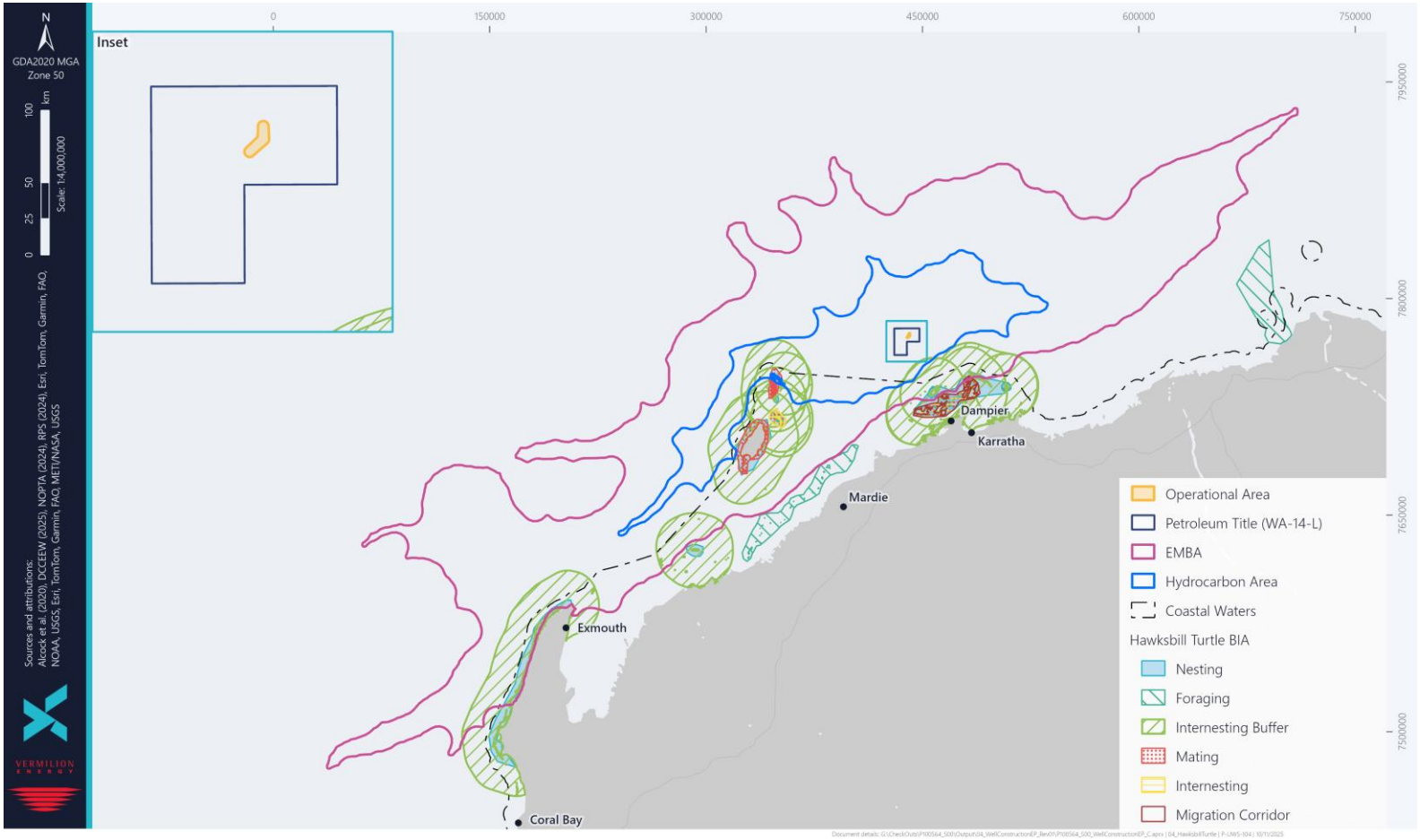
Hawksbill Turtle

The hawksbill turtle (*Eretmochelys imbricate*) has Foraging, Nesting, Inter-nesting Buffer and Mating, BIAs that intersect with the Hydrocarbon Area and EMBA. Inter-nesting, Foraging, Migration, and Nesting BIAs intersect the EMBA (Figure 3-20).

Hawksbill turtles (Eretmochelys imbricata) have a global distribution throughout tropical and sub-tropical marine waters. The Western Australian stock is concentrated on the NWS (Dampier Archipelago) (Limpus, 2009) and is considered to be one of the largest hawksbill populations remaining in the world. In WA, their nesting range is relatively small and extends from the Muiron Islands to the Dampier Archipelago, a distance of approximately 400 km. The most significant breeding areas, that support hundreds of nesting females annually, are around sandy beaches within the Dampier Archipelago, Montebello Islands, Lowendal Islands and Barrow Island (Pendoley, 2005; Limpus, 2009).

The largest known nesting area for the NWS population is the sandy shoreline of Rosemary Island, within the EMBA, particularly on the northwestern side of the Island. The Rosemary Island rookery may support up to 1,000 nesting females annually (Limpus, 2009). Low density nesting is also known from Barrow Island, Airlie Island, Muiron Islands and North-West Cape/ Ningaloo coast (Cape Range) (Limpus, 2009). Hawksbill turtles have been observed breeding on the NWS between July and March with peak nesting activity around the Lowendal Islands between October and December (Limpus, 2009).

Figure 3-20: BIAs for the hawksbill turtle



On Varanus Island, hawksbill turtle nesting activity is predominantly distributed on the island's east coast, including Pipeline, Harriet, and Andersons beaches (Pendoley Environmental, 2019). Individual hawksbill turtles appear to show a strong fidelity to these beaches, often returning to the same beach to nest within the season (Pendoley Environmental, 2019). Between 1986 and 2019, a total of 571 individual hawksbill turtles were tagged on Varanus Island. Recent baseline data was collected at the Montebello and Dampier Australian Marine Parks (AMPs) by Keesing, 2019 showing that only one hawksbill turtle was identified during the survey at the Dampier AMP only. No marine turtle species were identified during the survey at Montebello AMP.

Individuals may migrate up to 2,400 km between their nesting and foraging grounds (DSEWPC, 2012c), however, a recent tagging study showed that turtles migrating from WA rookeries remain on the continental shelf (<200 m depth) and within Australian waters during their inter-nesting, migrating and foraging phases (Fossette et al., 2021). Satellite tracking of nesting turtles on Varanus Island and Rosemary Island has shown adult turtles to feed between 50 km and 450 km from their nesting beaches (Pendoley, 2007).

Adults tend to forage in tropical tidal and sub-tidal coral and rocky reef habitat where they feed on an omnivorous diet of sponges, algae, jelly fish and cephalopods (DSEWPC, 2012a). Hawksbill turtles are unlikely to spend significant time within offshore waters as it is too deep to act as a feeding ground. However, it is likely they may migrate through those areas. A Foraging BIA was identified within the EMBA; however, the existing BIA does not include the majority of foraging areas calculated (AIMS, 2021). While approximately 23% of the hawksbill turtles foraging distribution occurred within MPAs, the existing BIAs are largely underestimating the important foraging areas for the turtles (AIMS, 2021). This supports the results of a joint study conducted by Fossette et al. (Fossette et al., 2021), which found only 10% of foraging areas utilised by 42 nesting turtles (between 2000 and 2017) were encompassed by the designated foraging BIA. Fossette et al. (2021) found that the highest overlap of individual turtles occurred within the Migratory BIA corridor.

Loggerhead Turtle

An inter-nesting Buffer BIA for the loggerhead turtle (*Caretta caretta*) intersects the Hydrocarbon Area. Inter-nesting Buffer, Foraging and Nesting BIA intersects the EMBA (Figure 3-21). The Recovery Plan for Marine Turtles in Australia (2017) identifies the Muiron Islands (as a principal rookery), and all waters within a 20 km radius as habitat critical to the survival of loggerhead turtles (Commonwealth of Australia, 2017). The Muiron Islands, within the EMBA, is one of the major nesting locations (Limpus, 2008a).

Estimates of up to 5,000 female loggerhead turtles have been predicted within the Ningaloo Marine Park and Muiron Islands Marine Management Area (Waayers, 2010). Loggerhead nesting and breeding occurs from November to March, with a peak in late December/early January (Limpus, 2008b).

Habitat Critical for the Survival of Sea Turtles

Habitat critical to the survival of the green turtle, loggerhead turtle, leatherback turtle and the hawksbill turtles located within the Operational Area and Hydrocarbon Area are described in Table 3-6 and displayed in Figure 3-22.

Figure 3-21: BIAs for the loggerhead turtle

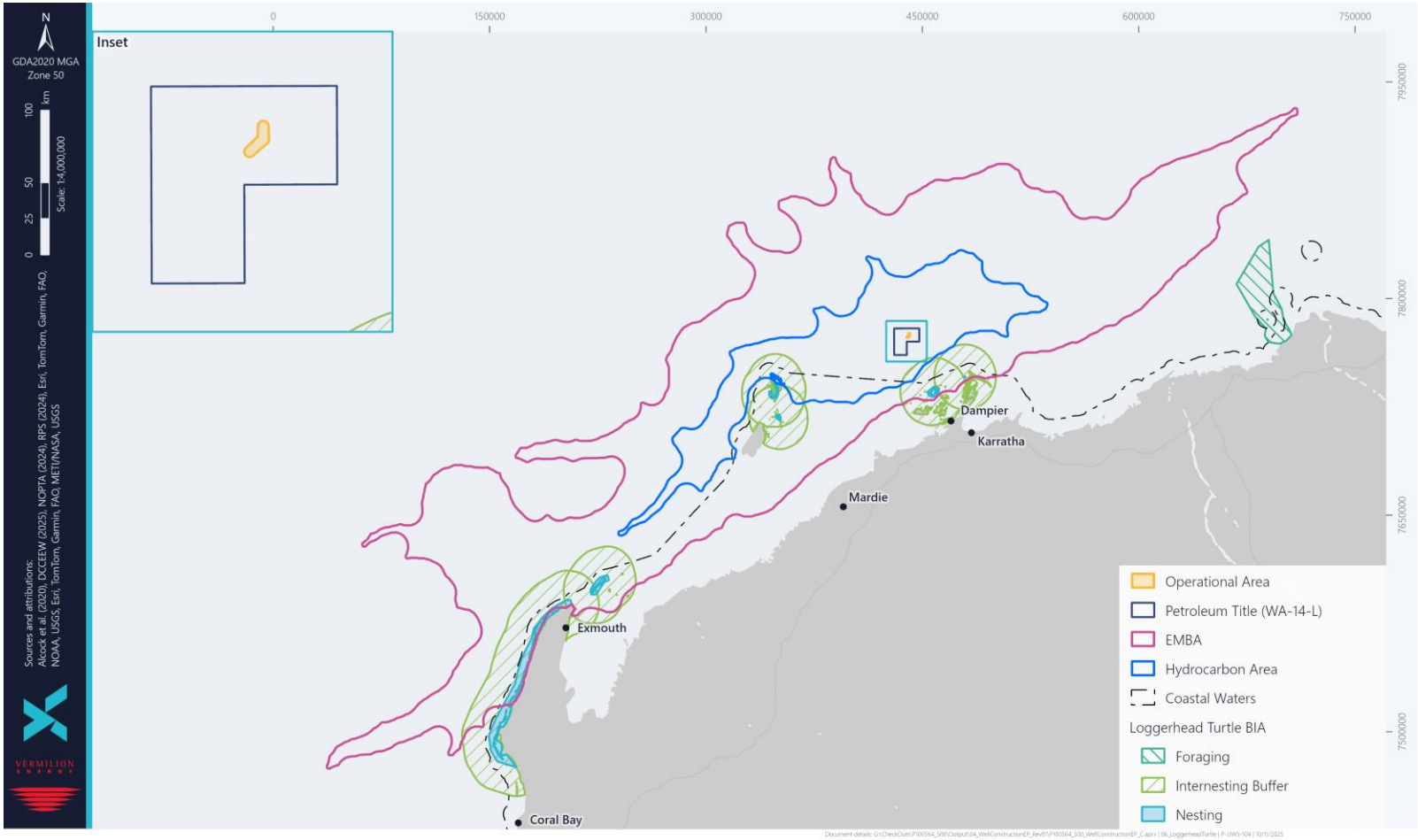
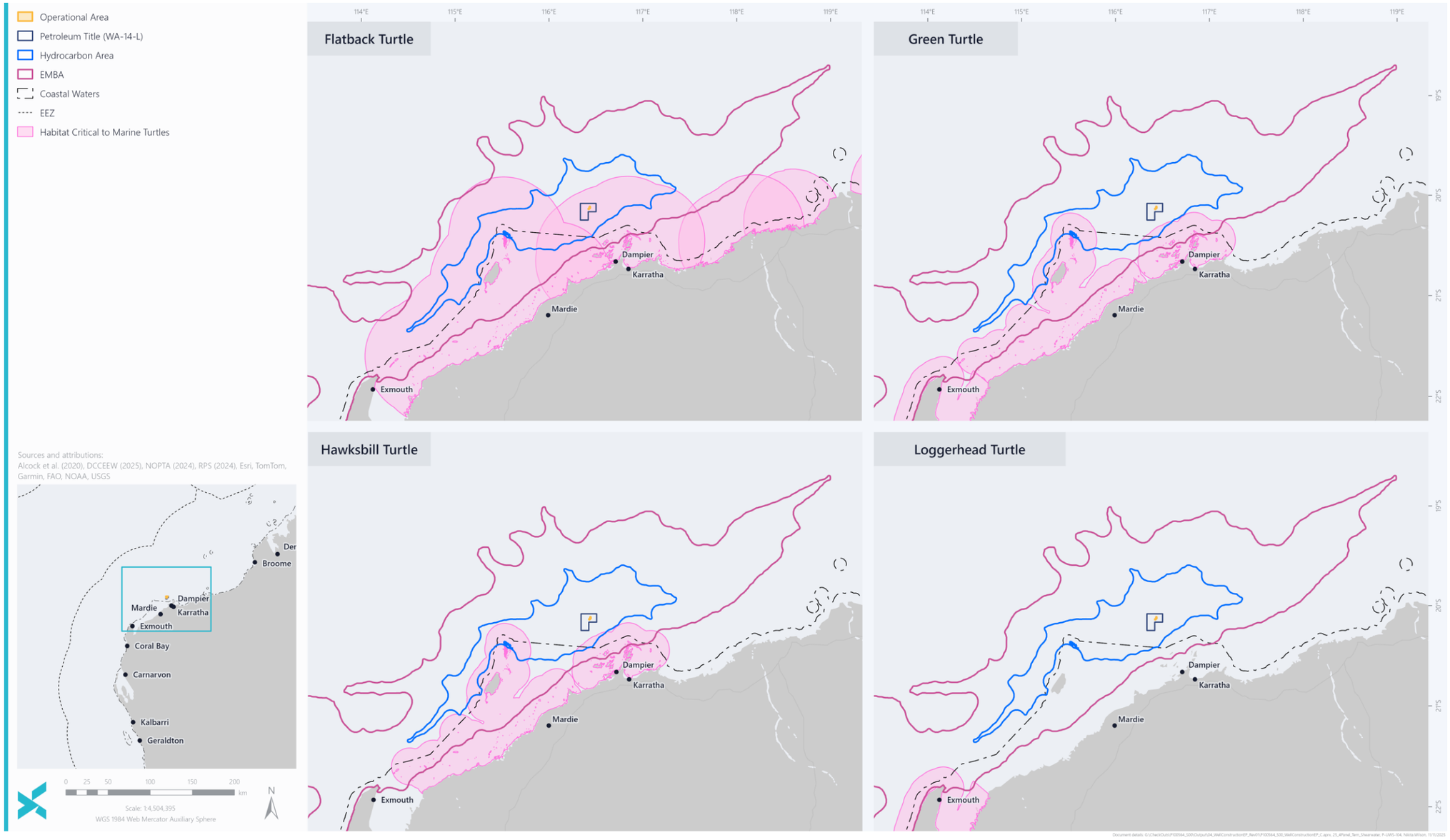


Table 3-6: Habitat critical to the survival of marine turtles occurring within the Operational Area, Hydrocarbon Area and EMBA

Species	Genetic stock	Nesting locations	Approximate distance and direction of habitat critical buffer from Operational Area (km)	Inter-nesting buffer	Nesting period	Hatching period
Flatback Turtle	Pilbara	Barrow Island, Montebello Islands, coastal islands from Cape Preston to Locker Island	22.4 km SW	60 km	Oct–Mar (peak: Nov–Jan)	Feb–Mar
		Dampier Archipelago, including Delambre Island and Hauy Island	Overlap			
		Mundabullangana Beach	103 km SE			
Green Turtle	NWS	Barrow Island, Montebello Islands, Serrier Island and Thevenard Island	62.2 km SW	20 km	Nov–Mar (peak: Dec–Feb)	Jan–May (peak: Feb–Mar)
		Dampier Archipelago	19.2 km SE			
		Exmouth Gulf and Ningaloo coast	269.3 km SW			
Hawksbill Turtle	WA	Cape Preston to mouth of Exmouth Gulf including Montebello Islands and Lowendal Islands	62.2 km SW	20 km	All year (peak: Oct–Jan)	All year (peak: Dec–Feb)
		Dampier Archipelago, including Delambre Island and Rosemary Island	19.2 km SE			
Loggerhead Turtle	WA	Exmouth Gulf and Ningaloo coast	269.3 km SW	20 km	Nov–Mar (peak: Jan)	Jan–May

Figure 3-22: Habitat critical to the survival of marine turtles



3.4.4 Biologically Important Areas

Table 3-7 summarises BIAs that intersect with the Operational Area, Hydrocarbon Area and EMBA.

Table 3-7: BIAs within the Operational Area, Hydrocarbon Area and EMBA

Species	BIA presence			Summary description
	Operational Area	Hydrocarbon Area	EMBA	
Seabirds and shorebirds				
Fairy Tern (*Sterna nereis*)	-	br	br	Breeding grounds and buffer area around offshore islands in Gascoyne and Pilbara. Breeding may occur late-July to September.
Lesser Crested Tern (*Thalasseus bengalensis*)	-	br	br	Breeding grounds and buffer area around offshore islands in Gascoyne, Pilbara and Kimberley (including Lowendal Islands and Bedout Island). Breeding may occur March to June.
Lesser Frigatebird (*Fregata ariel*)	-	-	br	Breeding grounds and buffer area around coasts and islands in Kimberley and Pilbara.
Roseate Tern (*Sterna dougallii*)	-	br	br	Breeding grounds and buffer area around offshore islands in Gascoyne, Pilbara and Kimberly. Breeding presence may occur mid-March to July.
Wedge-tailed Shearwater (*Ardenna pacifica*)	br	br	br	Breeding grounds and buffer area around offshore islands including Bedout Island, Dampier Archipelago, Forestier Islands, Montebello and Lowendal Islands. Breeding presence may occur between mid-August to April (Pilbara) or to mid-May (Shark Bay).
Fish, sharks and rays				
Whale Shark (*Rhincodon typus*)	f	f	f	Foraging occurs northwards from Ningaloo along the 200 m isobath, and foraging in high density occurs in the Ningaloo Marine Park due to seasonal concentrations (March to July) of krill and other zooplankton which whale sharks forage upon.
Marine mammals				
Pygmy Blue Whale (*Balaenoptera musculus*)	-	-	f, m	Offshore migration corridor, typically along shelf-edge at depths 500–1,000 m, occurring close to the coast around Exmouth. Presence may occur during northern migration past Exmouth area during April to August (whereas January to May past Perth Canyon area). Southern migration presence may occur October to late-December. Foraging along outer continental shelf from Cape Naturaliste to south of Jurien Bay (November to June, with peak in March to May).

Species	BIA presence			Summary description
	Operational Area	Hydrocarbon Area	EMBA	
Humpback Whale (*Megaptera novaeangliae*)	m	m	m, r	Migration corridor extends out to ~50–100 km from the coast. Migration north and south along the WA coast occurs between May and late November. Winter resting areas identified within Exmouth Gulf and Shark Bay.
Southern Right Whale (*Eubalaena australis*)	-	-	m, re	Breeding grounds and buffer area around Ningaloo to Exmouth. Breeding occurs between May and September. The coastal region near Carnarvon, Western Australia, forms part of the migration corridor, used approximately between April and October.
Dugong (*Dugong dugon*)	-	-	br, c, f, n	Breeding, calving, nursing and foraging (high density) grounds within the Exmouth Gulf and North-West Cape regions. Presence may occur throughout the year.
Marine reptiles				
Flatback Turtle (*Natator depressus*)	ib	ib, ma, f, n	a, br, f, i, ib, ma, m, n	Nesting and inter-nesting areas around rookeries, including Barrow and Montebello Islands, Thevenard (and other Pilbara inshore islands) and Dampier Archipelago with the potential for presence during summer. Oceanic foraging area around the inshore islands between Cape Preston and Onslow; and De Grey River and Bedout island.
Green Turtle (*Chelonia mydas*)	-	i, ib, ma, f, n	a, b, br, r, f, i, ib, ma, n	Nesting and inter-nesting areas and rookeries including Barrow and Montebello Islands, North-West Cape and Dampier Archipelago. Oceanic foraging grounds around the inshore islands between Cape Preston and Onslow; and De Grey River and Bedout Island.
Hawksbill Turtle (*Eretmochelys imbricate*)	-	ib, ma, f, n	f, i, ib, ma, m, n	Nesting and inter-nesting areas around rookeries, including Montebello and Lowendal Islands, Ningaloo Coast, Thevenard, Barrow and Dampier Archipelago. Oceanic foraging area around the inshore islands between Cape Preston and Onslow; and De Grey River and Bedout Island
Loggerhead Turtle (*Caretta caretta*)	-	ib	ib, n, f	Nesting and internesting areas around rookeries, including Lowendal and Montebello islands, Ningaloo Coast, Muiron and Dampier Archipelago. Oceanic foraging area between De Grey River and Bedout Island may be used throughout the year by multiple turtle species.
BIAs a Aggregation		ib Inter-nesting Buffer		c Calving and/or Nursing d Distribution

Species	BIA presence			Summary description
	Operational Area	Hydrocarbon Area	EMBA	

b	Basking	m	Migration	r	Resting
f	Foraging	ma	Mating	re	Reproduction
i	Inter-nesting	n	Nesting	n	Nursing
		br	Breeding	p	Pupping and/or Juvenile

3.5 Social and Economic Environment

Table 3-6 identifies the social and economic receptors within the Operational Area, Hydrocarbon Area and EMBA that may be relevant to aspects of the well construction activities. The descriptions below provide sufficient details to assess all impacts and risks to the social and economic environment.

3.5.1 Fisheries and Aquaculture

Table 3-8 identifies the Commonwealth and State managed fisheries that have a defined management area or historical catch data overlapping the Operational Area, Hydrocarbon Area and the EMBA. The description below provides sufficient details to assess all impacts and risks to Commonwealth and State managed fisheries.

Commonwealth fisheries are those managed by the AFMA and typically extend from 3 nm to 200 nm, which is the extent of the Australian Fishing Zone (AFZ). Commonwealth-managed fisheries data includes fishing intensity from 2010 to 2022 provided by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) (Summerson, 2024).

There are three Commonwealth managed commercial fisheries that have a defined management area overlapping the Operational Area. Of these, zero have historical fishing intensity intersecting the Operational Area, Hydrocarbon Area or EMBA.

Western Australian fisheries are managed by the WA Department of Primary Industries and Regional Development (DPIRD). Data on state-managed fisheries in WA includes maximum vessel count over 10 years (2013 to 2023) within 10 nm and 60 nm Catch and Effort Statistics (CAES) blocks provided by FishCube Data (DPIRD, 2023a).

The FishCube database indicates there are 10 state managed commercial fisheries that have a defined management area overlapping the Operational Area.

There are a total 11 WA-managed commercial fisheries that have historical fishing effort overlapping the Operational Area. These fisheries are listed in Table 3-8.

Fisheries with active fishing effort recorded within the past 5 year period (2018 to 2023) are displayed in figures from Figure 3-23 to Figure 3-35.

Table 3-8: Commonwealth and WA managed fisheries with management areas overlapping the Operational Area, Hydrocarbon Area and EMBA

Commercial fishery	Operational Area	Hydrocarbon Area	EMBA	Fishing Effort	Figure
Commonwealth managed fisheries					
North-West Slope Trawl Fishery	X	X	✓	No fishing effort recorded within the Operational Area, Hydrocarbon Area and EMBA.	-
Southern Bluefin Tuna Fishery	✓	✓	✓	No fishing effort recorded within the Operational Area, Hydrocarbon Area and EMBA.	-

Commercial fishery	Operational Area	Hydrocarbon Area	EMBA	Fishing Effort	Figure
Western Deepwater Trawl Fishery	X	X	✓	No fishing effort recorded within the Operational Area, Hydrocarbon Area and EMBA.	-
Western Skipjack Tuna Fishery	✓	✓	✓	No fishing effort recorded within the Operational Area, Hydrocarbon Area and EMBA.	-
Western Tuna and Billfish Fishery	✓	✓	✓	No fishing effort recorded within the Operational Area, Hydrocarbon Area and EMBA.	-
WA State managed fisheries					
Abalone Managed Fishery	✓	✓	✓	No fishing effort recorded within the Operational Area, Hydrocarbon Area and EMBA. The management area intersects the Operational Area, Hydrocarbon Area and EMBA.	-
Exmouth Gulf Prawn Managed Fishery	X	X (a)	✓ (a)	Up to 7 vessels active between 2013 and 2023 within the 60 nm CAES blocks that intersect the Hydrocarbon Area and EMBA. The management area intersects the EMBA.	Figure 3-25
Mackerel Managed Fishery	✓ (a)	✓ (a)	✓ (a)	Up to five vessels active between 2013 and 2023 within the 60 nm CAES blocks that intersect the Operational Area, Hydrocarbon Area and EMBA. The management area intersects the Operational Area, Hydrocarbon Area and EMBA.	Figure 3-26
Marine Aquarium Fish Managed Fishery	✓ (a)	✓(a)	✓(a)	Up to seven vessels active between 2013 and 2023 within the 60 nm CAES blocks that intersect the Operational Area, Hydrocarbon Area and EMBA.	Figure 3-27

Commercial fishery	Operational Area	Hydrocarbon Area	EMBA	Fishing Effort	Figure
				The management area intersects the Operational Area, Hydrocarbon Area and EMBA.	
Nickol Bay Prawn Fishery	X (a)	✓ (a)	✓ (a)	Up to eight vessels active between 2013 and 2023 within the 60 nm CAES blocks that intersect the Operational Area, Hydrocarbon Area and EMBA. The management area intersects the Hydrocarbon Area and EMBA.	Figure 3-28
Onslow Prawn Limited Entry Fishery	✓ (a)	✓ (a)	✓ (a)	Less than three vessels active between 2013 and 2023 within the 60 nm CAES blocks that intersect the Operational Area, Hydrocarbon Area and EMBA. Last active in 2021–2022. The management area intersects the Operational Area, Hydrocarbon Area and EMBA.	Figure 3-29
Pilbara Crab Managed Fishery	✓ (a)	✓ (a)	✓ (a)	Less than three vessels active between 2018 and 2023 within the 60 nm CAES blocks that intersect the Operational Area, Hydrocarbon Area and EMBA. The management area intersects the Operational Area, Hydrocarbon Area and EMBA.	Figure 3-30
Pilbara Fish Trawl Interim Managed Fishery	✓ (a)	✓ (a)	✓ (a)	Up to four vessels active between 2013 and 2023 in the Operational Area in the 10 nm CAES block. The management area intersects the Operational Area, Hydrocarbon area and EMBA.	Figure 3-23
Pilbara Line Fishery (Condition)	X (a)	X (a)	X (a)	Less than three vessels active between 2013 and 2023 within the 60 nm CAES	Figure 3-31

Commercial fishery	Operational Area	Hydrocarbon Area	EMBA	Fishing Effort	Figure
				blocks that intersect the Operational Area, Hydrocarbon Area and EMBA. Last active in 2019–2020. There is no spatially defined management area for this fishery.	
Pilbara Trap Managed Fishery	✓ (a)	✓ (a)	✓ (a)	Three vessels active between 2013 and 2023 within the 60 nm CAES blocks that intersect the Operational Area, Hydrocarbon Area and EMBA. The management area intersects the Operational Area, Hydrocarbon Area and EMBA.	Figure 3-32
South-west Coast Salmon Fishery	✓	✓	✓	No fishing effort recorded within the Operational Area, Hydrocarbon Area and EMBA. The management area intersects the Operational Area, Hydrocarbon Area and EMBA.	-
Specimen Shell Managed Fishery	✓ (a)	✓ (a)	✓ (a)	Less than 3 vessels active between 2013 and 2023 within the 60 nm CAES blocks that intersect the Operational Area, Hydrocarbon Area and EMBA. The management area intersects the Operational Area, Hydrocarbon Area and EMBA.	Figure 3-33
Tour Operator*	(a)	(a)	(a)	Less than three licences active in the Operational Area between 2013 and 2023 within in the 10 nm CAES block. Up to seven licences active between 2013 and 2023 within the 60 nm CAES blocks that intersect the Operational Area. There is no spatially defined management area for this fishery.	Figure 3-24

Commercial fishery	Operational Area	Hydrocarbon Area	EMBA	Fishing Effort	Figure
West Coast Deep Sea Crustacean Managed Fishery	✓	✓ (a)	✓ (a)	Less than three vessels active between 2013 and 2023 within the 60 nm CAES blocks that intersect the Hydrocarbon Area and EMBA. The management area intersects the Operational Area, Hydrocarbon Area and EMBA.	Figure 3-33
West Coast Rock Lobster Managed Fishery	X	X	✓	No fishing effort recorded within the Operational Area, Hydrocarbon Area and EMBA. The management area intersects the EMBA.	-
Western Australian Sea Cucumber Fishery*	X (a)	X (a)	X (a)	Less than three vessels active between 2013 and 2023 within the 60 nm CAES blocks that intersects the Hydrocarbon Area and EMBA. There is no spatially defined management area for this fishery.	Figure 3-35

✓= Management area present within area; X = management area not present within area
(a) = Active fishing intensity recorded between 2018 to 2023
* Does not have a spatially defined management area

Figure 3-23: WA Pilbara Fish Trawl Managed Fishery activity within the EMBA

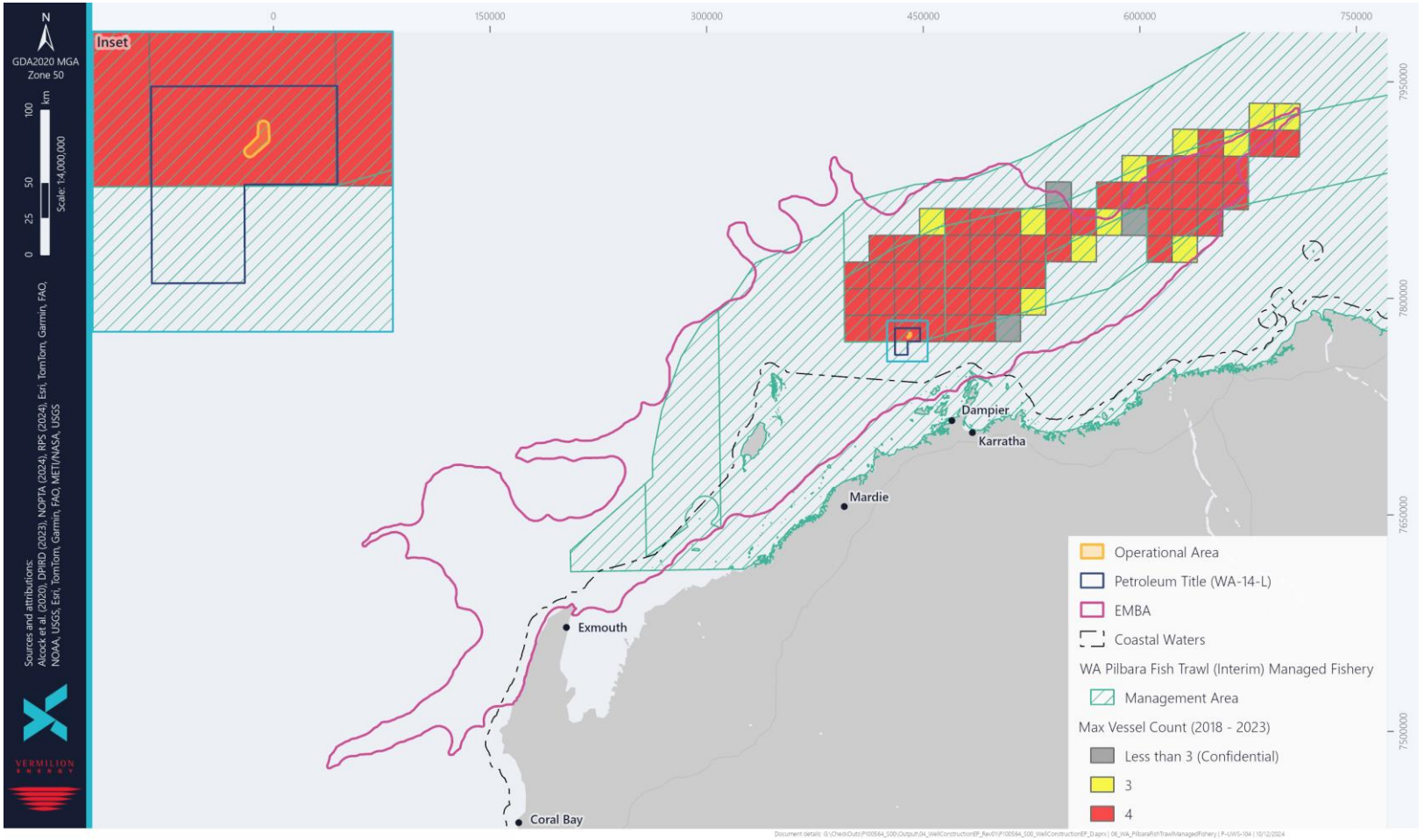


Figure 3-24: WA Tour Operator activity within the EMBA

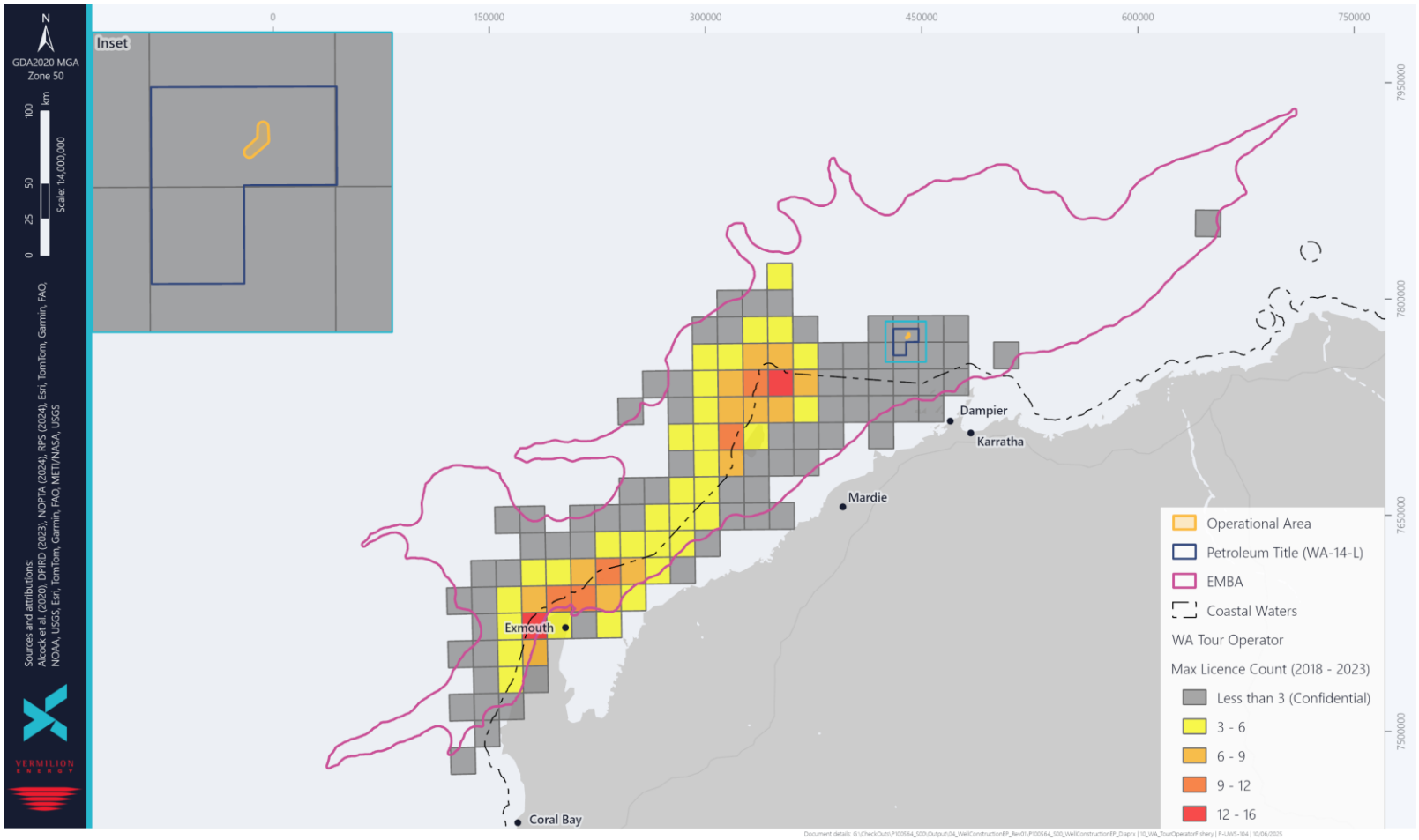


Figure 3-25: Exmouth Gulf Prawn Managed Fishery activity within the EMBA

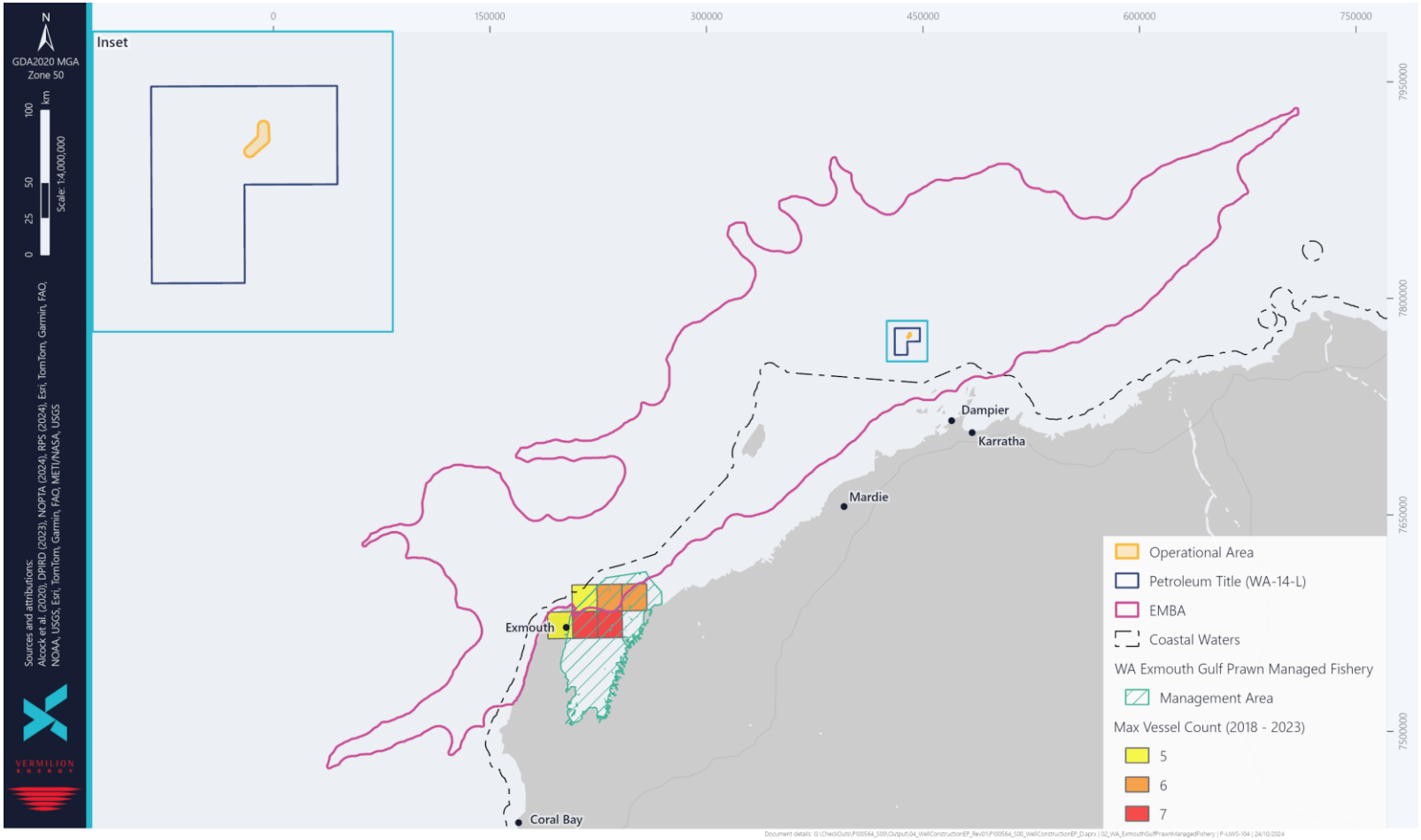


Figure 3-26: WA Mackerel Managed Fishery activity within the EMBA

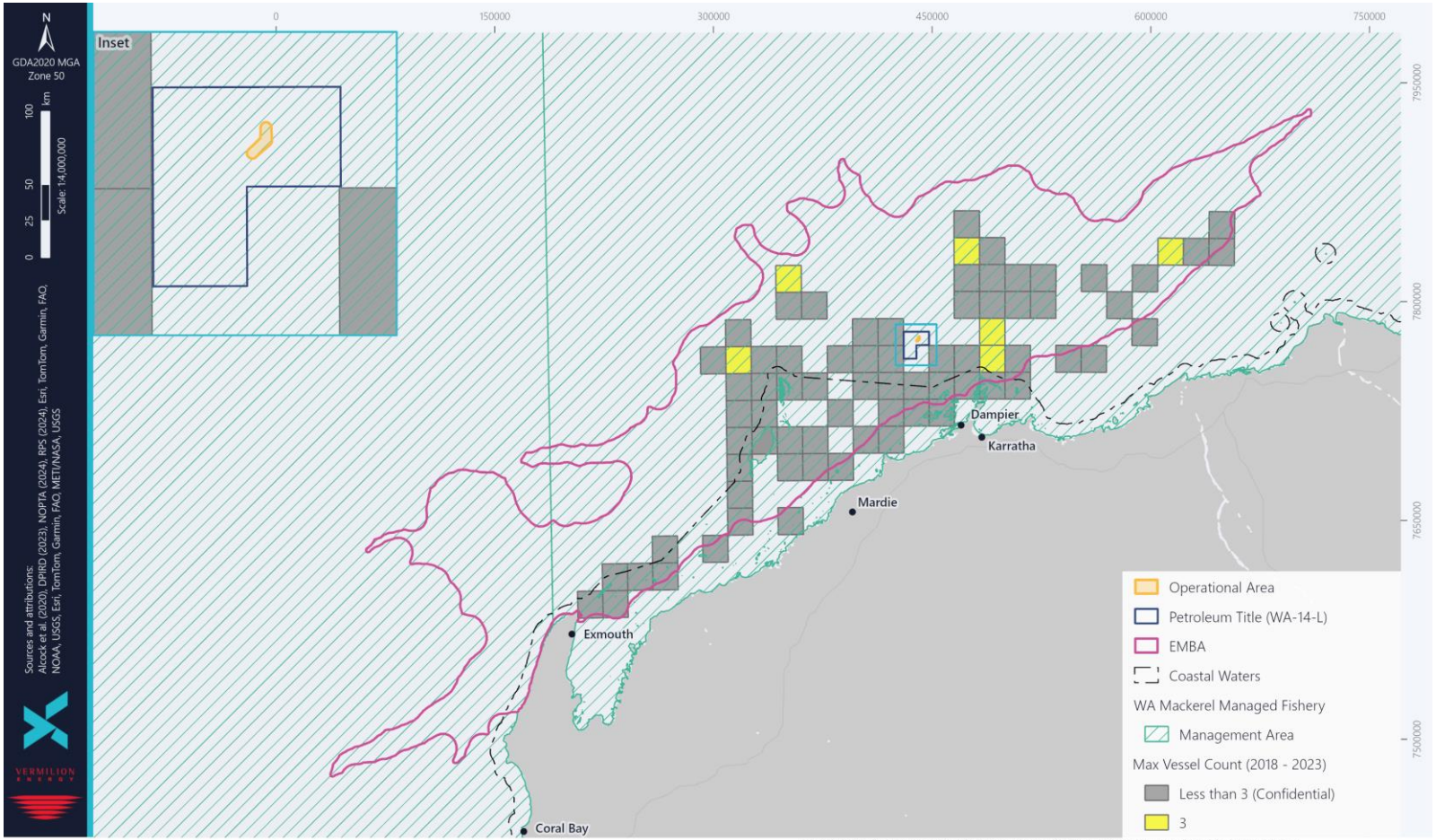


Figure 3-27: WA Marine Aquarium Fish Managed Fishery activity within the EMBA

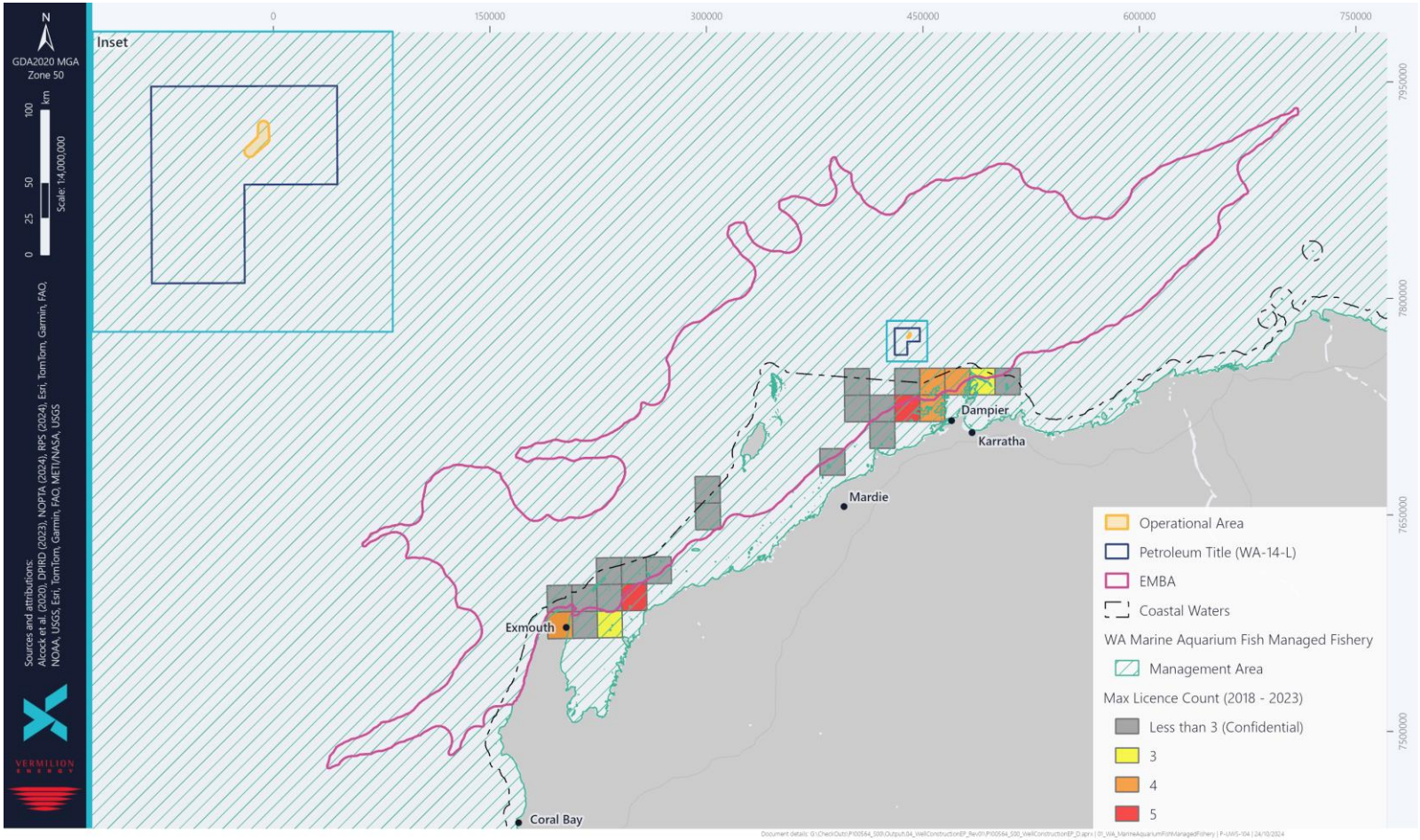


Figure 3-28: WA Nickol Bay Prawn Managed Fishery activity within the EMBA

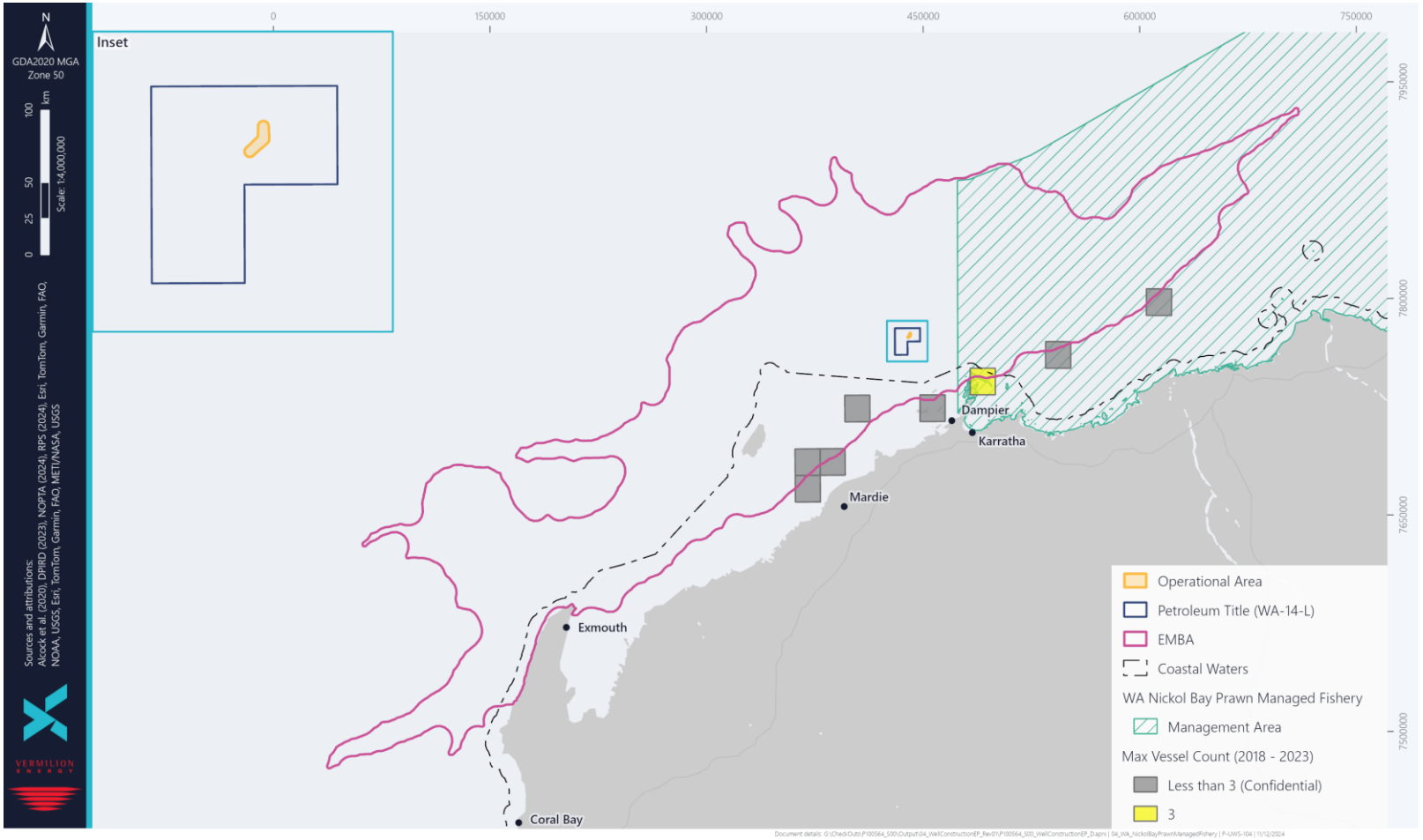


Figure 3-29: WA Onslow Prawn Managed Fishery activity within the EMBA

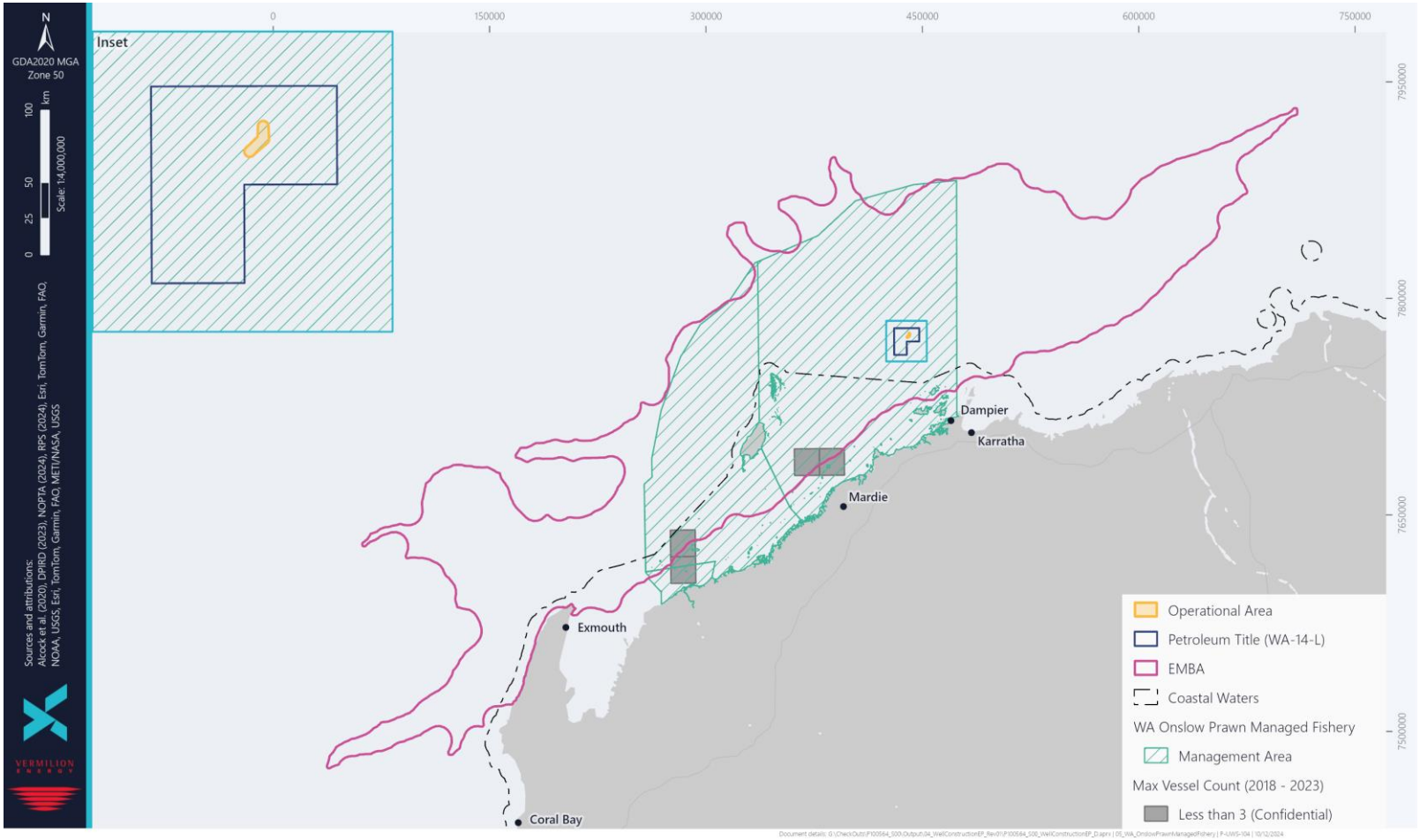


Figure 3-30: WA Pilbara Crab Managed Fishery activity within the EMBA

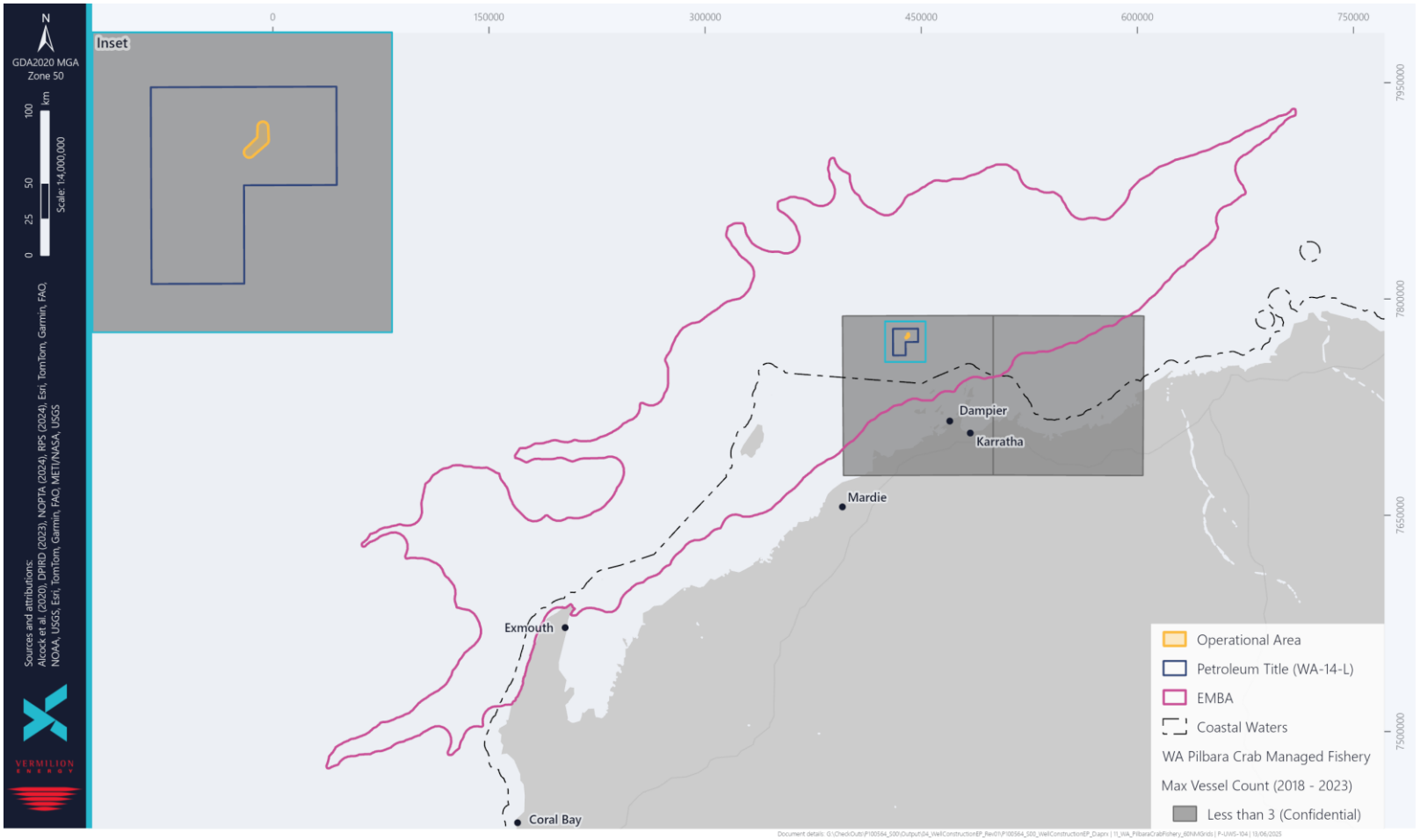


Figure 3-31: WA Pilbara Line Fishery (Condition) activity within the EMBA

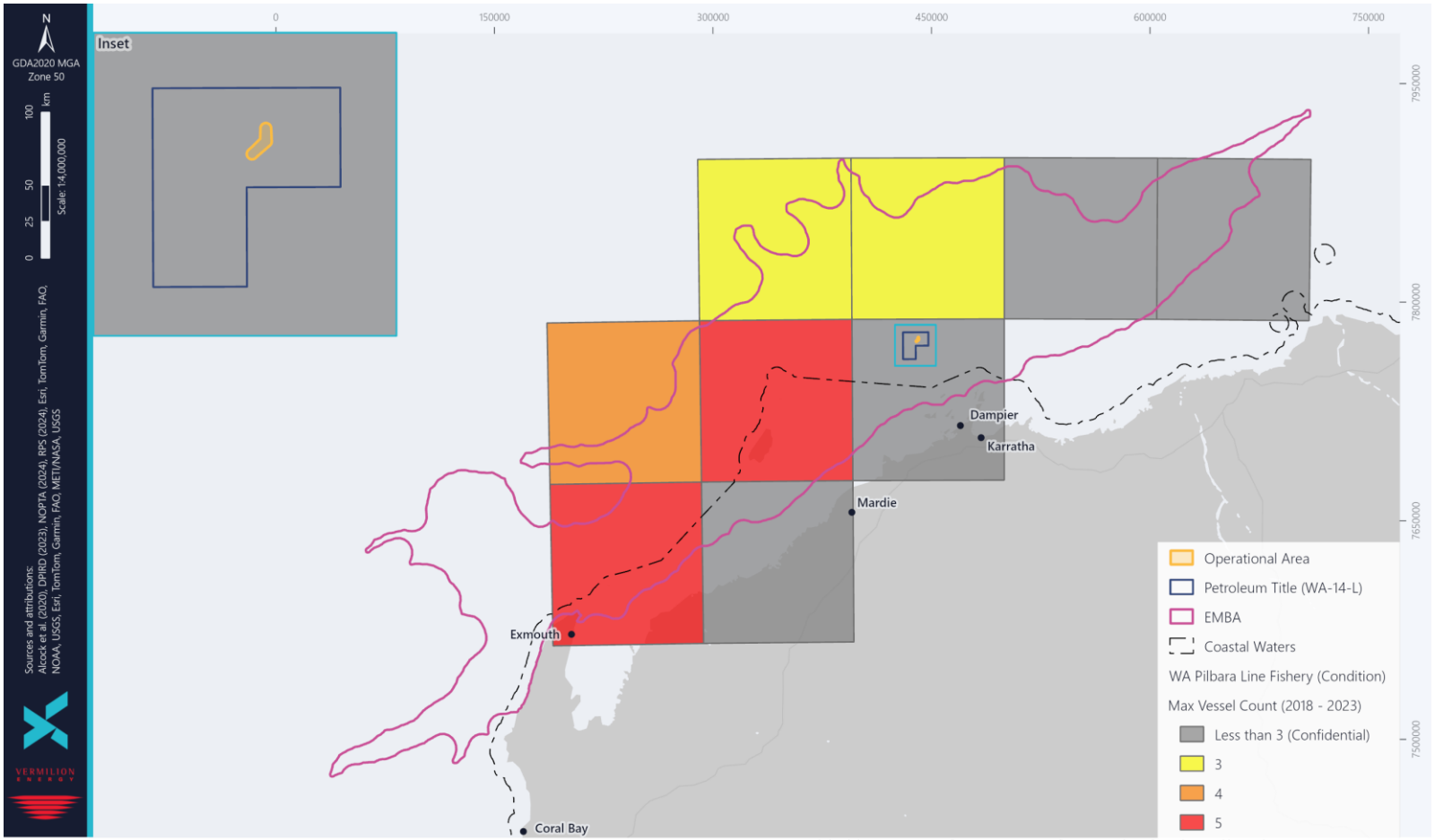


Figure 3-32: WA Pilbara Trap Managed Fishery activity within the EMBA

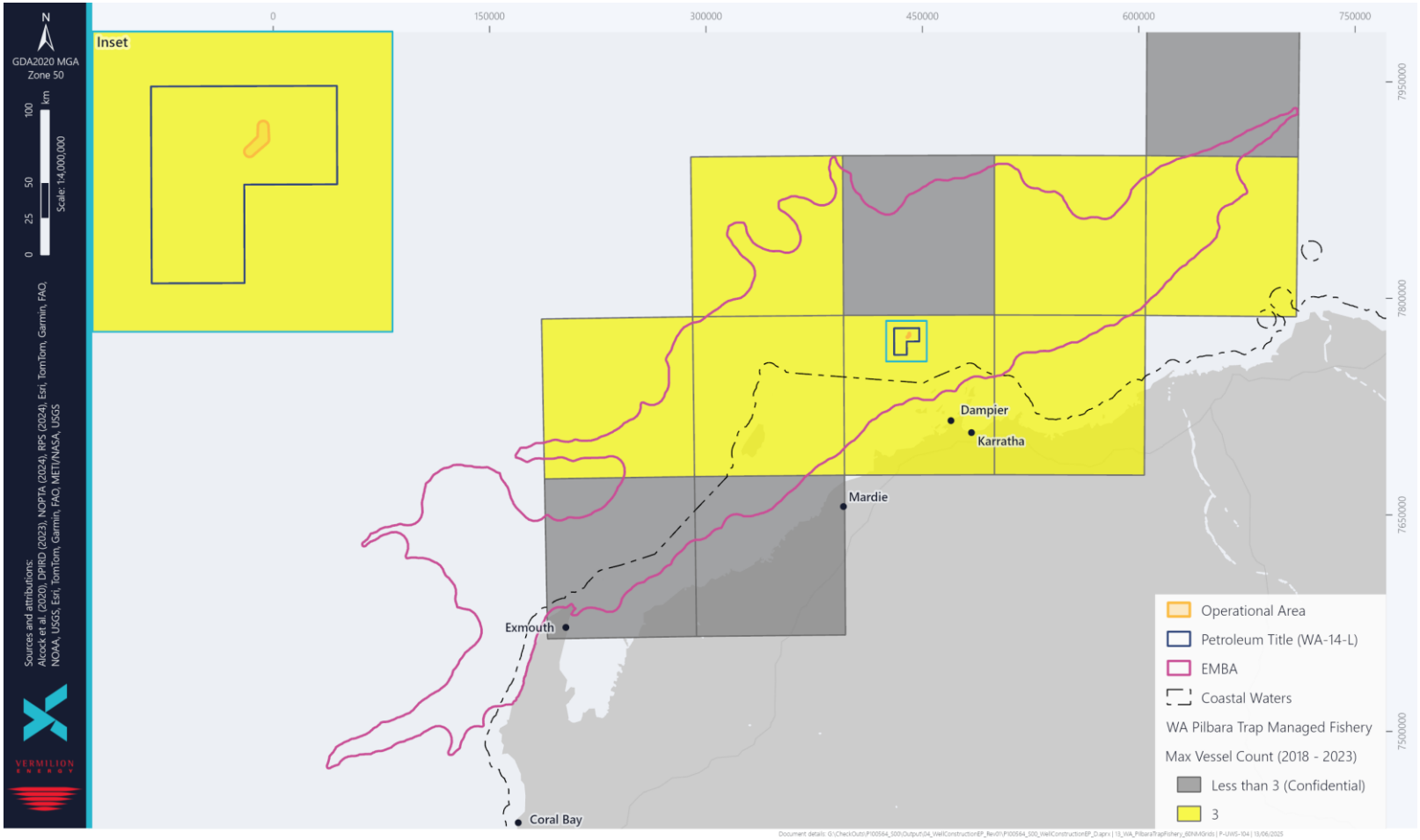


Figure 3-33: WA Specimen Shell Managed Fishery activity within the EMBA

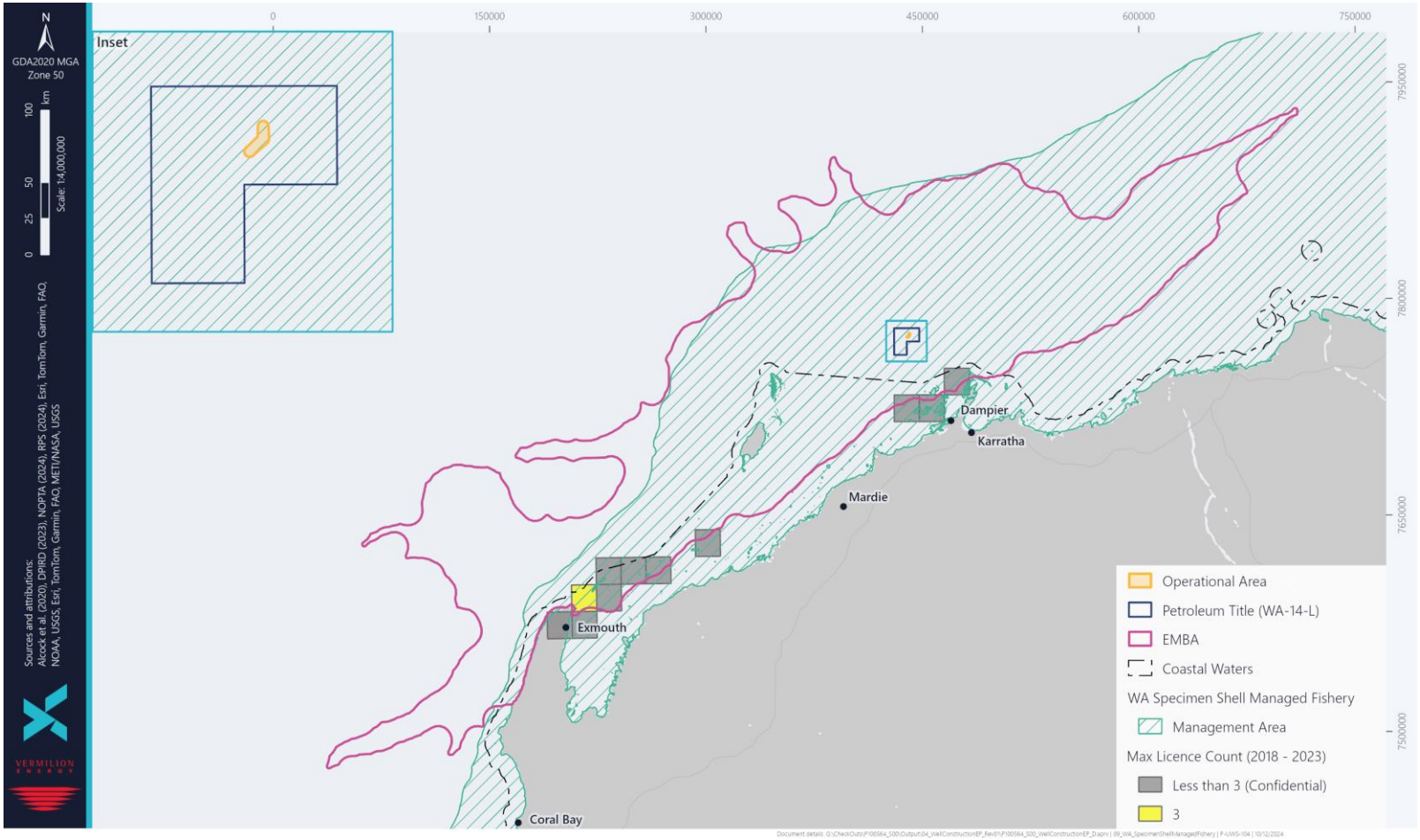


Figure 3-34: West Coast deep Sea Crustacean Managed Fishery activity within the EMBA

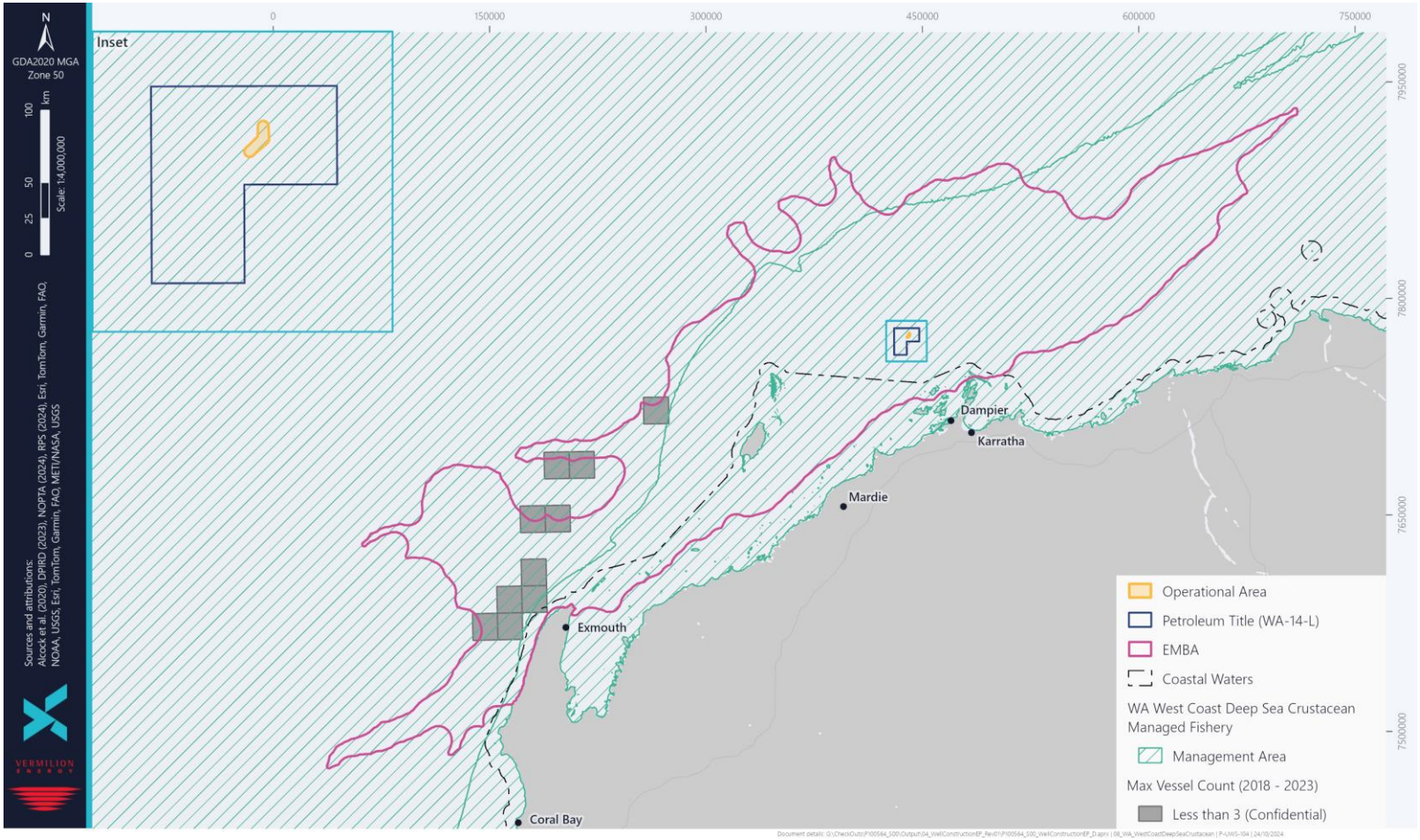
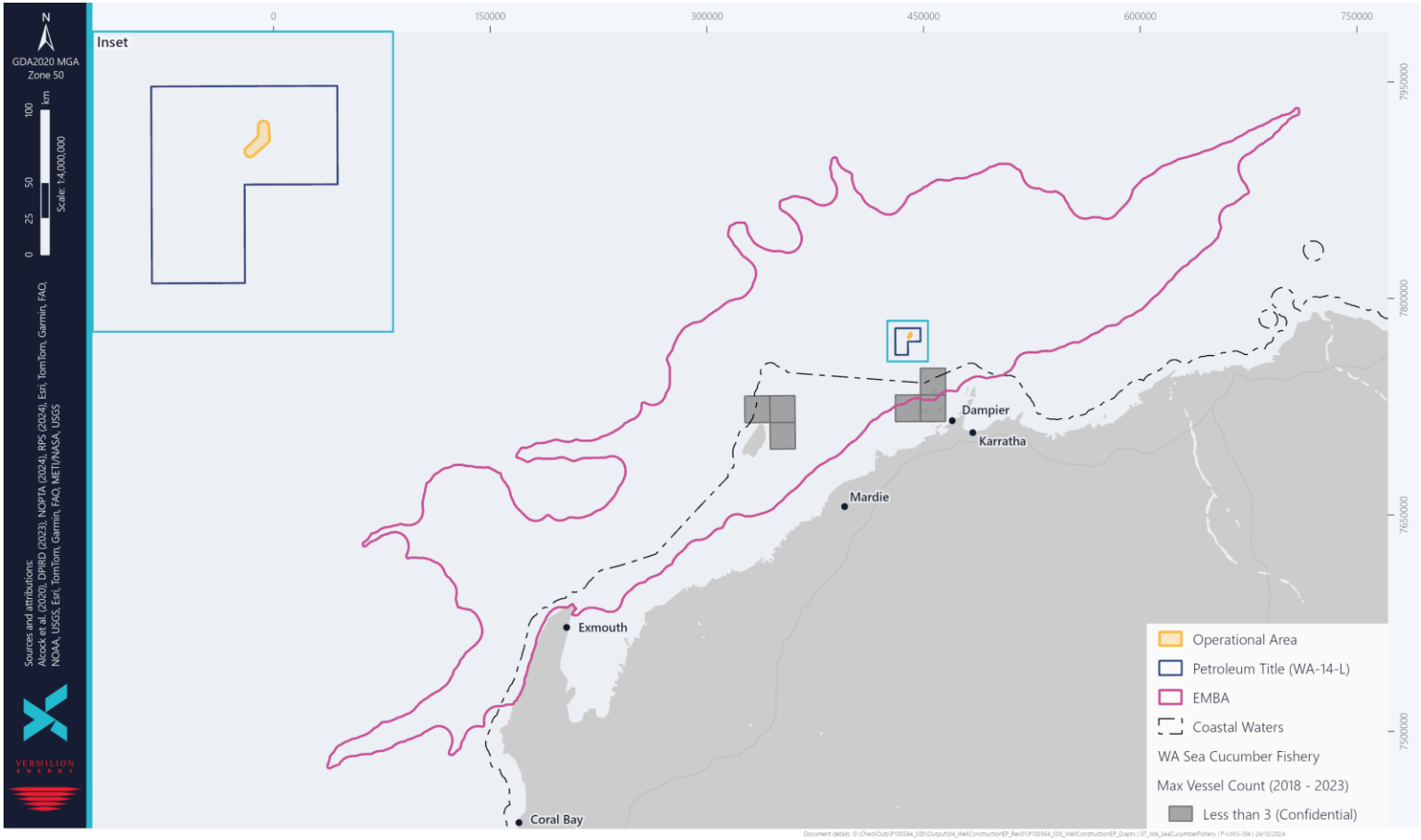


Figure 3-35: WA Sea Cucumber Fishery activity within the EMBA



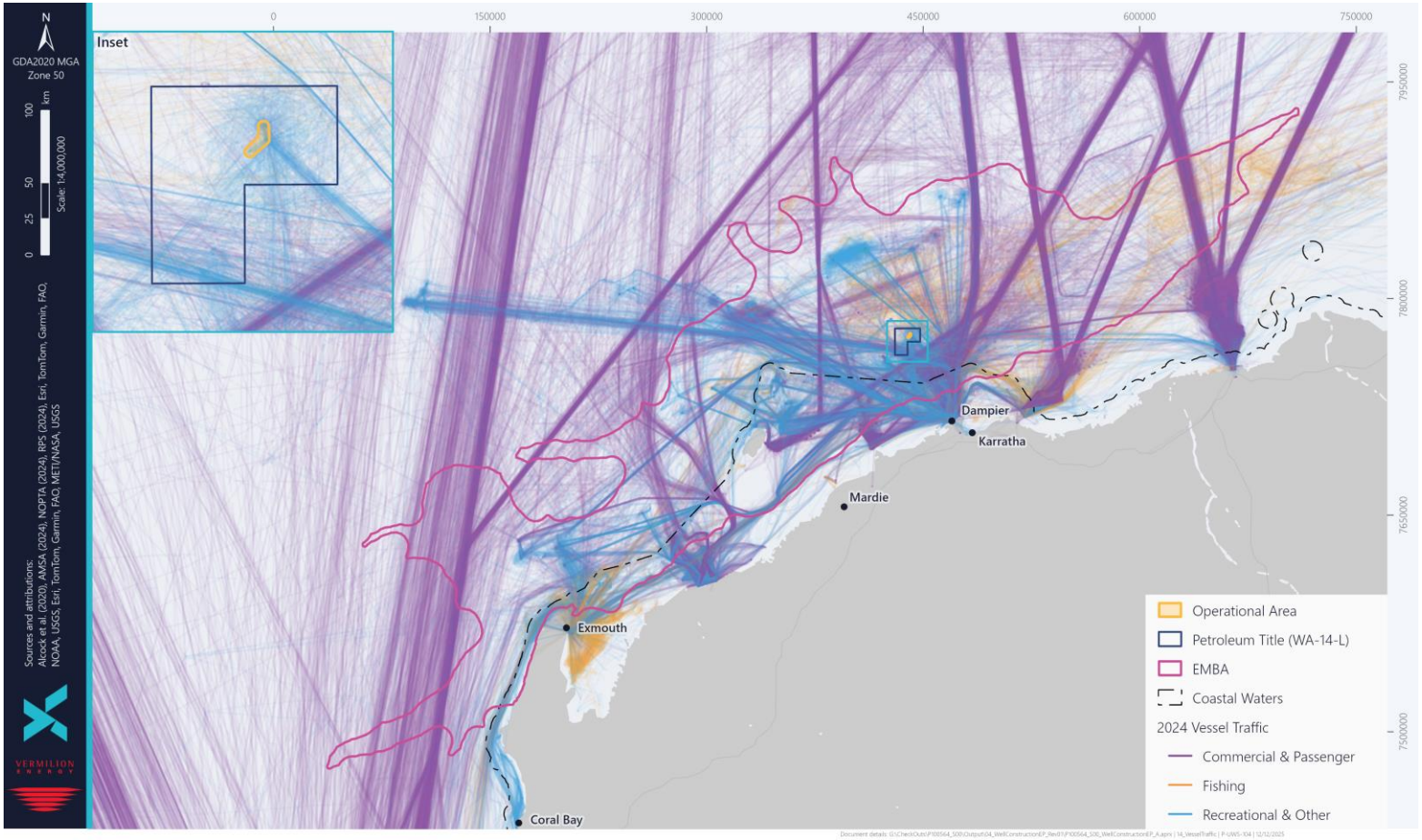
3.5.2 Commercial Shipping

Significant commercial shipping activity occurs within the EMBA, the majority of which is associated with the WA oil and gas and mining industries.

AMSA has established a network of shipping fairways for the NWS with the aim to reduce the risk of collision between transiting vessels and offshore infrastructure (AMSA, 2012). The fairways are intended to direct large vessels such as bulk carriers and LNG ships trading to the major ports into pre-defined routes to keep them clear of existing and planned offshore infrastructure.

The closest AMSA shipping fairway is ~9 km south of the Operational Area (Figure 3-36).

Figure 3-36: Vessel traffic within the EMBA



3.5.3 Defence

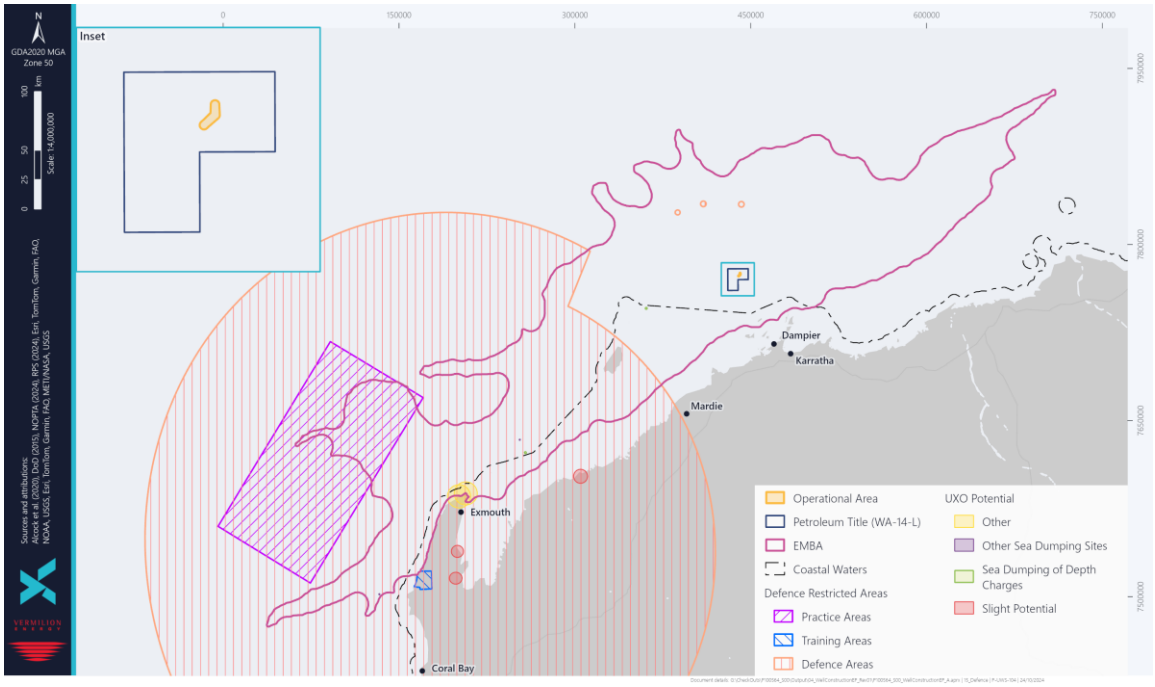
There are no defence related uses within the Operational Area (Figure 3-37). The EMBA encompasses military installations near Exmouth, including a naval communication station. The Department of Defence has several offshore training areas, including the North-West Cape which is around 57 km north of the Operational Area at its closest. The EMBA also overlaps the North-West Exercise Area (NWXA) defence area, and Learmonth Air Weapons Range practice and training areas. These areas are used for Defence Force training exercises, including live firing.

There are six Unexploded Ordnance (UXO) sites that overlap the Hydrocarbon Area and EMBA. These include:

- The Exmouth Gulf, which was used strategically during World War II by Allied forces and continues to be used for defence activities post WWII, may contain historical unexploded ordnance (UXO).
- Northwest of the Bessieres Island and East of the Montebello Islands are areas where depth charges were used in WWII and where some failed to function.
- Ningaloo and Anchor Island are areas where dumping at sea of ordnance and other items occurred.

No UXO sites have been identified within the Operational Area.

Figure 3-37: Defence Areas within the EMBA



3.5.4 Other Users

3.5.4.1 Tourism

Tourism plays a significant role in the NWS region. Popular water-based tourism activities include:

- Whale watching
- Recreational boating and fishing
- Charter fishing
- Snorkelling/diving
- Surfing.

Popular land-based activities include bushwalking, camping, bird watching and four-wheel driving.

Recreational fishing is an integral part of the Pilbara lifestyle. The region's unique coastline includes some of Australia's prime fishing locations and an array of offshore islands, coral reef systems and offshore habitats. These experiences make recreational fishing a key driver of visitation to the region, attracting visitors from around the state and country. Recreational fishing has increased offshore in recent years, as the area is accessed for deepwater fishing by the charter sector and fishers in larger boats. The DPIRD recreational fishing location guide (DPIRD, 2023b) names the Wandoo Production Facility as a fishing location, however no unauthorised vessels are permitted within the 500 m PSZ.

The Ningaloo Coast tourism precinct occurs within the EMBA. In 2018–19, the Ningaloo region (Ningaloo Reef and the surrounding coastal region Exmouth Gulf, communities of Exmouth and Coral Bay, and adjacent proposed southern coastal reserves and pastoral leases) contributed an estimated $110 million in value added to the WA economy (DBCA, 2020b). Ningaloo's economic contribution to WA is attributed to four key types of economic activity, tourism expenditure by international, interstate and WA visitors to the Ningaloo region, commercial fishing in the Exmouth Gulf, recreation activity involving the Reef by residents of the Ningaloo region and management and research relating to the Reef (DBCA, 2020b). More than 90% of this value added is attributed to the domestic and international tourists who visit Ningaloo each year (DBCA, 2020b).

3.5.5 Offshore Oil and Gas Industry

The petroleum exploration and production industry is a significant stakeholder in the region. Petroleum companies have been undertaking exploration and production activities on the NWS for decades.

Petroleum infrastructure within the Operational Area includes the Wandoo B platform and Wandoo A unmanned monopod. Petroleum infrastructure within the vicinity of the Operational Area includes the Reindeer platform (~16 km northwest), and the Dampier Spirit (20 km southwest). There are also several submerged pipelines associated with petroleum fields and facilities with onshore processing hubs. Nearby pipelines include the TL1 and TL2 export

pipelines from the North Rankin Complex to the the Karratha Gas Plant (4.6 km from the Operational Area) and the Devil Creek Pipeline (~10 km from the Operational Area).

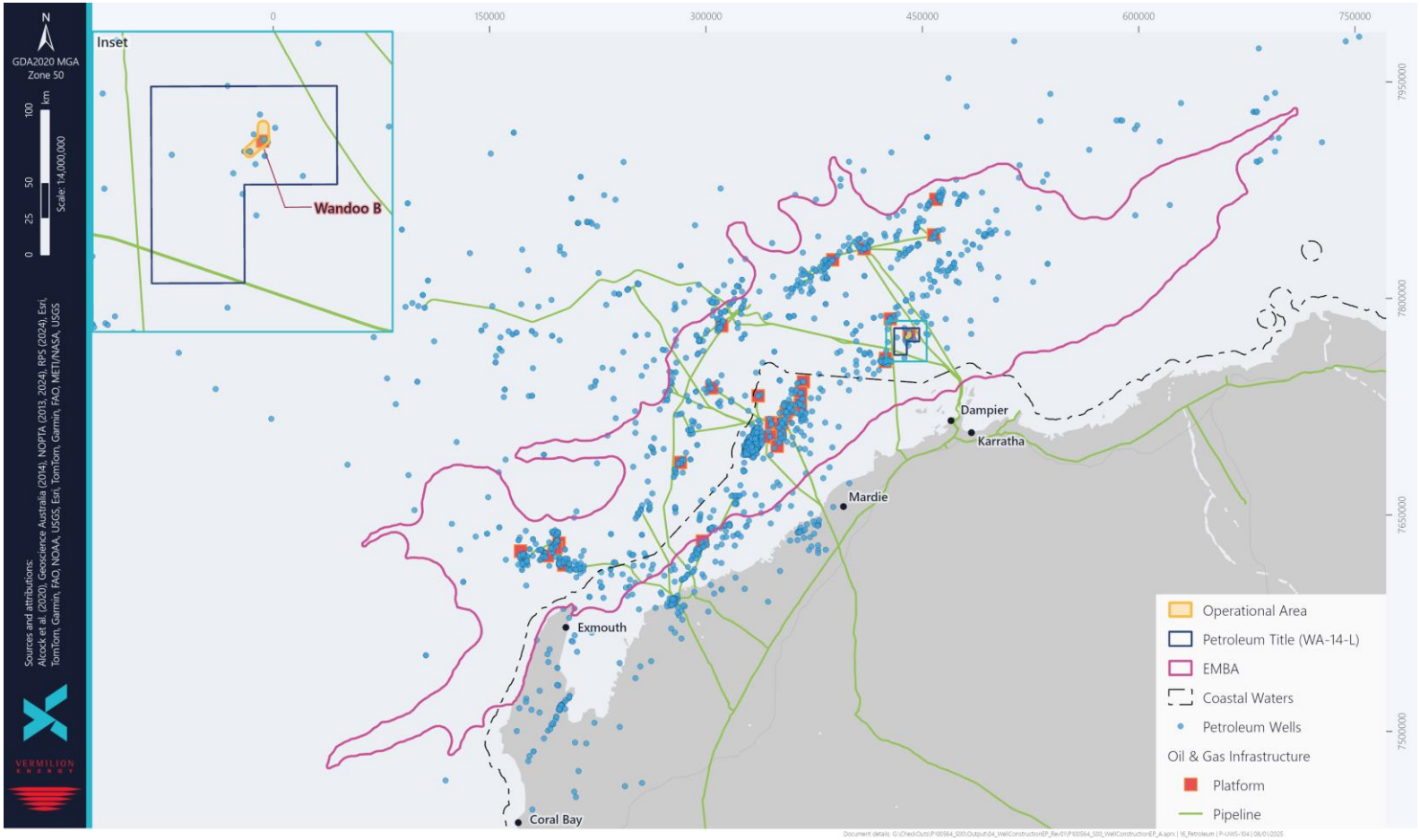
Figure 3-38 shows the proximity of oil and gas infrastructure to the Operational Area. Table 3-9 identifies other oil and gas facilities that overlap with the Hydrocarbon Area and the EMBA.

Table 3-9: Offshore oil and gas facilities overlapping the Hydrocarbon Area and EMBA

Offshore oil and gas facilities	Project Areas			Distance from the Operational Area (km)
	Operational Area	Hydrocarbon Area	EMBA	
Agincourt (Apache Energy Ltd)	-	-	✓	109 km southwest
Angel (Woodside Energy Ltd)	-	-	✓	69 km northeast
Armada Claire (Apache Energy Ltd)	-	-	✓	127 km northwest
Barrow Island Marine Export Terminal (Chevron)	-	-	✓	115 km southwest
Campbell (Apache Energy Ltd)	-	✓	✓	75 km southwest
Dampier Spirit (Teekay Shipping Pty Ltd)	-	✓	✓	20 km southwest
Double Island (Santos)	-	-	✓	118 km southwest
Four Rainbow (AFPSOM)	-	✓	✓	176 southwest
Gibson (Santos)	-	-	✓	109 km southwest
Goodwyn Alpha (Woodside Energy Ltd)	-	-	✓	73 km northwest
Gorgon (Chevron)	-	-	✓	155 km southwest
Harriet A (Santos)	-	-	✓	99 km southwest
Harriet B (Santos)	-	-	✓	95 km southwest
Harriet C (Santos)	-	-	✓	97 km southwest
John Brookes (Santos)	-	-	✓	143 km southwest
Linda (Santos)	-	-	✓	88 km southwest
Modec Venture 11 (Woodside Energy Ltd)	-	-	✓	95 km northeast
Nganhurra (Woodside Energy Ltd)	-	-	✓	288 southwest
Ngujima-Yin (Woodside Energy Ltd)	-	-	✓	285 km southwest
Ningaloo Vision (Santos)	-	-	✓	280 km southwest
North Rankin Complex (Woodside Energy Ltd)	-	-	✓	66 km northwest
Pyrenees Venture (Woodside Energy Ltd)	-	-	✓	286 km southwest
Reindeer (Santos)	-	✓	✓	16 km northwest

Offshore oil and gas facilities	Project Areas			Distance from the Operational Area (km)
	Operational Area	Hydrocarbon Area	EMBA	
Simpson A (Santos)	-	-	✓	105 km southwest
Simpson B (Santos)	-	-	✓	105 km southwest
Sinbad (Santos)	-	✓	✓	83 km southwest
Stag A (Jadestone Energy)	-	✓	✓	22 km southwest
Stybarrow Venture (BHP)	-		✓	303 km southwest
Thevenard Island Marine Export Terminal (Chevron)	-	-	✓	198 km southwest
Twickenham (Apache Energy Ltd)	-	-	✓	115 km southwest
Varanus Island Marine Export Terminal (Santos)	-	-	✓	101 km southwest
Victoria (Santos)	-	-	✓	111 km southwest
Wandoo A	✓	✓	✓	Overlaps
Wandoo B	✓	✓	✓	Overlaps
Wheatstone (Chevron)	-	-	✓	95 km west
Wonnich (Santos)	-	-	✓	111 km southwest

Figure 3-38: Oil and gas infrastructure within the EMBA.



3.6 Protected and Significant Areas

Table 3-1 identifies that several protected and significant areas within the Hydrocarbon Area and EMBA are receptors that may be relevant to aspects of the well construction activities. The descriptions below provide sufficient details to assess all impacts and risks to protected and significant areas. There are no protected or significant areas within the Operational Area.

3.6.1 World Heritage Properties

World Heritage status is awarded by the UNESCO World Heritage Committee to sites that are deemed to possess 'Outstanding Universal Value' cultural and/or natural significance.

There are two World Heritage Properties located within the EMBA (Figure 3-39), as discussed in Table 3-10. No World Heritage Properties overlap the Hydrocarbon Area or Operational Area.

Table 3-10: World Heritage Properties that overlap the Project EMBA

World Heritage Places	Heritage class	Project Areas		
		Operational Area	Hydrocarbon Area	EMBA
Murujuga Cultural Landscape	Criteria (i) (iii) (v)	-	-	✓
Murujuga Cultural Landscape was inscribed to the World Heritage List in 2025. It is a landscape of ancient rocks encompassing the Burrup Peninsula, Dampier archipelago's 42 islands, and nearby marine areas. The site is shaped by First Nations Lore, rules and narratives that were put in place to create Country, and the enduring presence of the Ngarda-Ngarli people who are the Traditional Owners and custodians of the site. This property hold profound cultural and spiritual significance which reflects over 50,000 years of continuous care and use by Traditional Custodians. The site is renowned for its dense concentration of petroglyphs, which provide a record of traditional use by First Nations people over thousands of years. The engravings depict human figures, bird, marine and animal life, including some extinct species. The area also features middens, fish traps, rock shelters, ceremonial places, spiritual and sacred sites, and stone arrangements (UNESCO, 2025).				
Ningaloo Coast	Natural Criterion vii and Criterion x	-	-	✓
The Ningaloo Coast World Heritage Property has been included in the World Heritage list since 2011. spans over 705,015 hectares of marine and terrestrial areas on the western coast of Australia. The marine area features the Ningaloo Reef, one of the longest fringing reefs in the world. An estimated 300 to 500 whale sharks (Rhincodon typus) aggregate annually on the reef coinciding with mass coral spawning events. The marine area has a high diversity of habitats which include lagoon, reef, open ocean, and the continental slope and continental shelf. Intertidal systems include rocky shores, sandy beaches, estuaries, and mangroves. The most dominant marine habitat is the Ningaloo Reef. The reef supports both tropical and temperate marine fauna and features annual gatherings of whale sharks and sea turtles. The terrestrial area of this site features an extensive karst system with substantial cave networks, and groundwater streams. Universal values of this site include high terrestrial species endemism and high marine diversity and abundance. Criterion (vii): The landscapes and seascapes of the Ningaloo Coast are mostly intact, large-scale marine, coastal and terrestrial environments. The property supports rare and large aggregations of whale sharks and other fish species, marine mammals and reptiles. The aggregations in Ningaloo follow the mass seasonal coral spawning and nutrient upwelling which leads to increased productivity and the largest gathering of whale sharks in the world.				

World Heritage Places	Heritage class	Project Areas		
		Operational Area	Hydrocarbon Area	EMBA
Criterion (x): The Ningaloo reef is home to a high diversity of coral, fish, mollusc, crustacean, algae, sponge, and echinoderm species. Many species that occur in the region are rare or threatened. It is estimated that 10,000 nests of marine turtles occur annually along the coastline. There are rare aquatic species found in the flooded caves on land which are rare, taxonomically diverse and not found anywhere else in the southern hemisphere. The subterranean fauna and flora of the Ningaloo peninsula is highly diverse (IUCN, 2011).				

3.6.2 Commonwealth Heritage Places

The Commonwealth Heritage list comprises natural, indigenous and historic heritage places which are either entirely within a Commonwealth area, or outside the Australian jurisdiction and owned or leased by the Commonwealth or a Commonwealth Authority. A Commonwealth Heritage Place might also be on the National Heritage List or the World Heritage List.

The PMST searches indicated there are two Commonwealth Heritage places within the EMBA, as discussed in Table 3-11 and shown in Figure 3-40. No Commonwealth Heritage Places overlap the Hydrocarbon Area or Operational Area.

Table 3-11: Commonwealth Heritage Places within the EMBA

Commonwealth Heritage Places	Heritage class	Project Areas		
		Operational Area	Hydrocarbon Area	EMBA
Ningaloo Marine Area - Commonwealth Waters	Natural	-	-	✓
Description Ningaloo Marine Park stretches for 260 km along Western Australia's Cape Range Peninsula, encompassing both State and Commonwealth waters. Its diverse habitats support rich marine life, including whale sharks, turtles, pelagic fish, and marine mammals, influenced by the Leeuwin and Ningaloo currents that sustain high productivity in this low-nutrient system (DCCEEW, 2025c) **Values** The Ningaloo Marine Area is an ecologically significant region that supports key marine processes and species. It is one of the few places in the world where whale sharks aggregate in large numbers and forms part of the annual migration route for humpback whales, tuna, and many migratory seabirds protected under international treaties. The area provides important feeding and breeding grounds for manta rays, billfish, and marine turtles, and supports numerous threatened and migratory species listed under the EPBC Act. It also offers exceptional opportunities for scientific research into marine ecology and oceanography. The Ningaloo Marine Area Commonwealth heritage listing criteria a, b, and c (DCCEEW, 2025c).				
Learmonth Air Weapons Range Facility	Natural	-	-	✓
Description Learmonth Air Weapons Range lies within Cape Range and adjacent coastal plains, a nationally listed heritage area near Ningaloo Reef. The site features coastal sand plains, limestone terraces, and unique subterranean ecosystems such as Bundera Sinkhole, which hosts ancient stygofauna with origins dating back to the Tethys Sea. Several reptile species with highly restricted distributions also occur in this region (DCCEEW, 2025b).				

Commonwealth Heritage Places	Heritage class	Project Areas		
		Operational Area	Hydrocarbon Area	EMBA
Values The Cape Range and Learmonth Range Facility are ecologically and geologically significant areas that support rare subterranean ecosystems and highly endemic species. Bundera Sinkhole, located within the facility, is the only deep continental anchialine system in the southern hemisphere and hosts ancient stygofauna with origins tracing back to the Tethys Sea, including endangered crustaceans and the nationally vulnerable Blind Gudgeon (*Milyeringa veritas*). The region's geomorphology, featuring emergent reef terraces, provides critical evidence of sea-level and landform changes since the late Cenozoic. It also supports numerous endemic flora and reptile species with restricted distributions and offers exceptional opportunities for scientific research into evolutionary history, climate change, and biogeography. The Cape Range and Learmonth Range Facility Commonwealth heritage listing criteria a, b, and c (DCCEEW, 2025b).				

3.6.3 National Heritage Places

The National Heritage List is Australia's list of natural, historic and Indigenous places of outstanding significance to Australia.

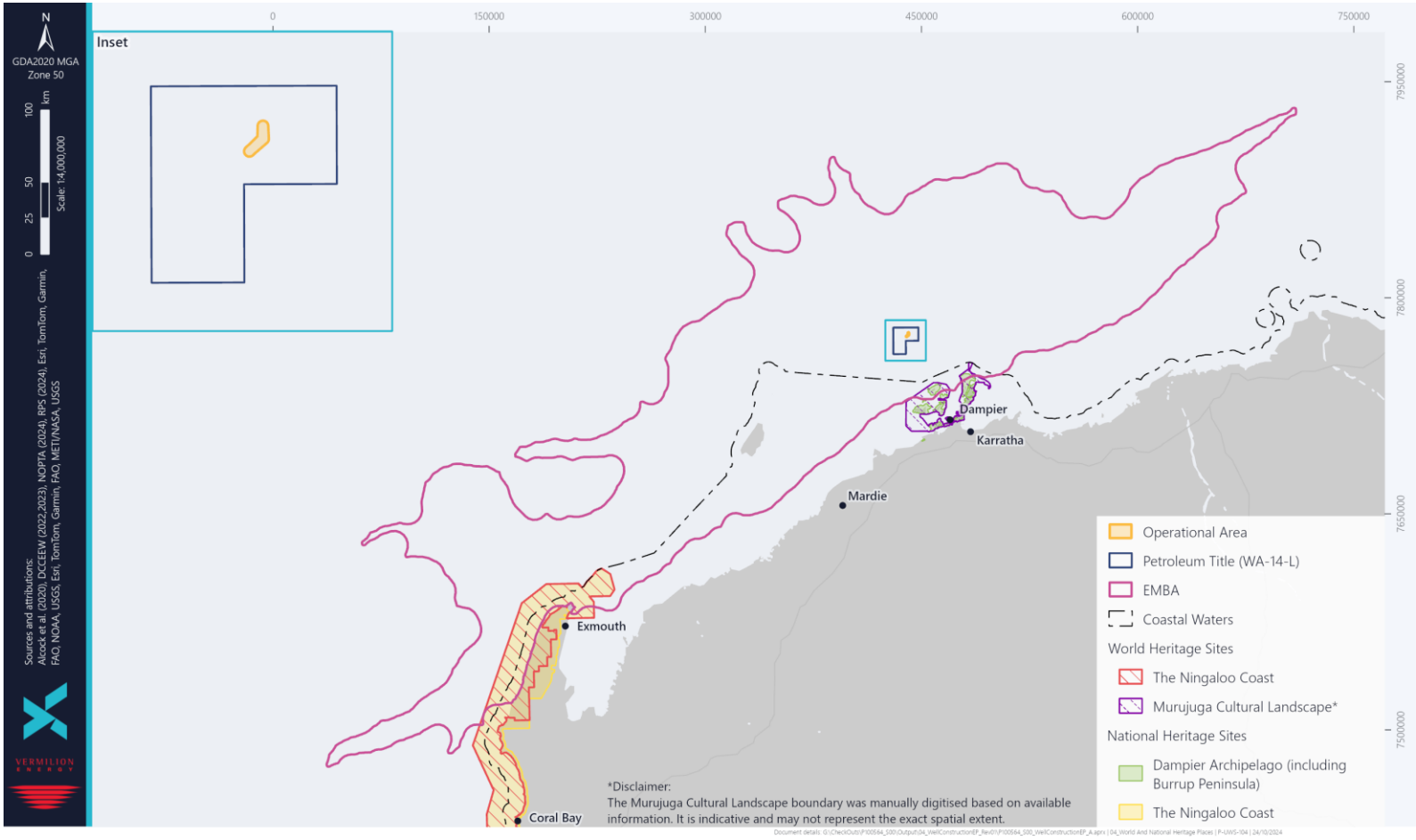
The PMST searches indicated there are two National Heritage places within the EMBA, as discussed in Table 3-12 and shown in Figure 3-39. No National Heritage Places overlap the Hydrocarbon Area or Operational Area.

Table 3-12: National Heritage Places within the EMBA

National Heritage Places	Heritage class	Project Areas		
		Operational Area	Hydrocarbon Area	EMBA
Dampier Archipelago (including Burrup Peninsula)	Indigenous	-	-	✓
Description The Dampier Archipelago is located 1,550 km north of Perth and was listed for inscription in 2007. This site is home to one of the most remarkable collections of rock art in Australia. The archipelago was formed 6,000-8,000 years ago and is made up of islands, reefs, shoals, channels, and straits and spans over approximately 400 km^2. Many significant species of flora and fauna are found in the area. **Values** The Dampier Archipelago is a culturally significant area which has been home to the Ngarda-Ngarlie people for tens of thousands of years. There is great richness and diversity of rock art in the area and culturally significant site types ranging from quarries, middens, fish traps, rock shelters, ceremonial sites, artefact scatters, and stone arrangements. Engravings are the most numerous site types with sites ranging in the potential millions. The Dampier Archipelago (including Burrup Peninsula) national heritage listing criteria a, b, c, d, and f (Commonwealth of Australia, 2007).				
Ningaloo Coast	Natural	-	-	✓
Description The Ningaloo Coast National Heritage Place consists of the same area included in the Ningaloo Coast World Heritage Property (refer Section 3.6.1) and was established on the National Heritage List in 2010. **Values**				

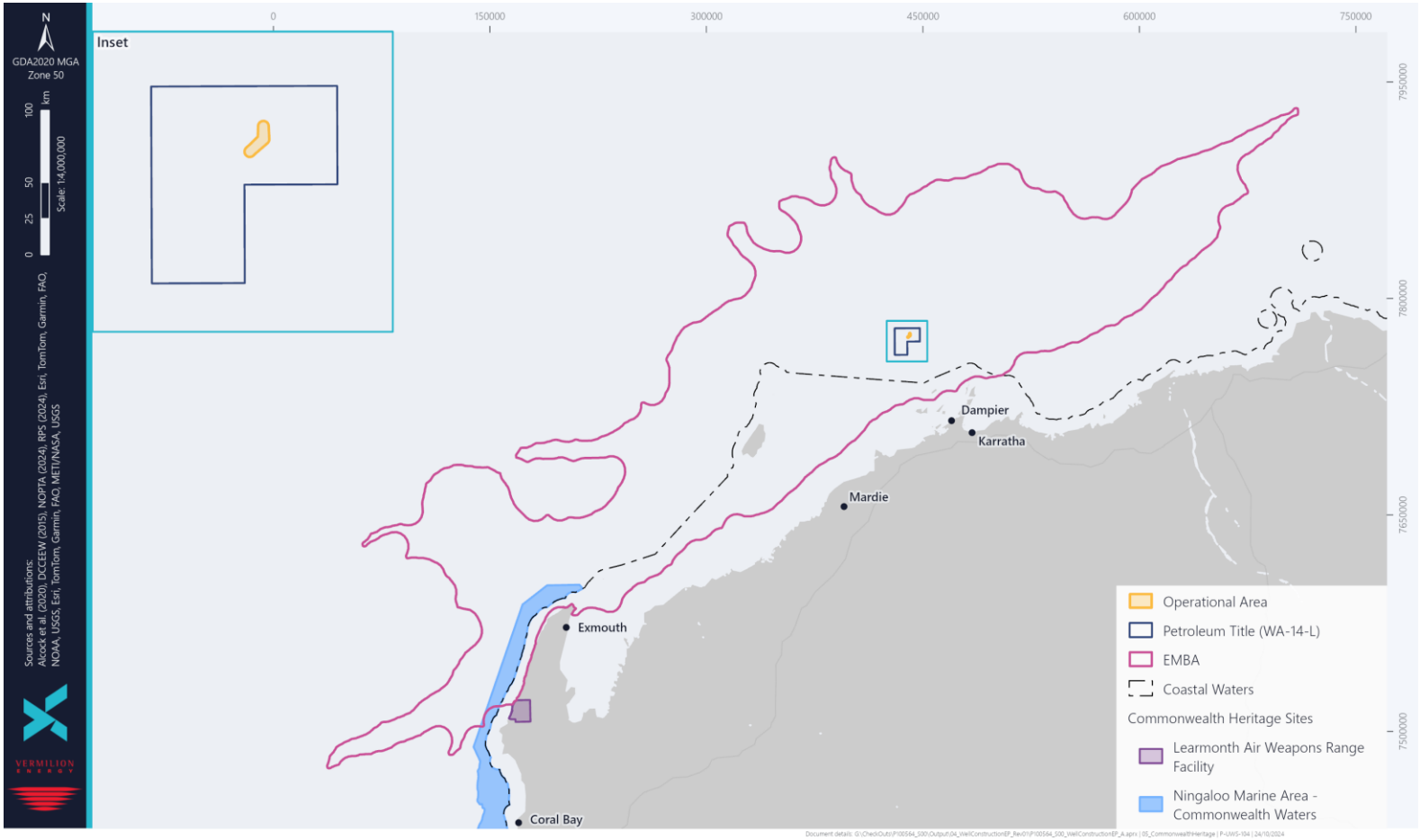
National Heritage Places	Heritage class	Project Areas		
		Operational Area	Hydrocarbon Area	EMBA
The Ningaloo Coast contains one of the best developed near-shore reefs in the world, being home to rugged limestone peninsulas, spectacular coral and sponge gardens and the whale shark (Rhincodon typus). The Ningaloo Coast meets the national heritage listing criteria a, b, c, d, and f (ICUN, 2011).				

Figure 3-39: World Heritage Properties and National Heritage Places within the EMBA[1]



[1] The Murujuga World Heritage listed area is yet to be listed in Australian Government spatial defining software. The spatial location has been digitised according to the nominated listing for the Murujuga Cultural landscape Nominated World Heritage Property listing (CoA, 2023).

Figure 3-40: Commonwealth Heritage Places within the EMBA



3.6.4 Underwater Cultural Heritage

Australia's underwater cultural heritage is protected under the *Underwater Cultural Heritage Act 2018* (Cth). This legislation protects shipwrecks, sunken aircraft and other types of underwater heritage, including Aboriginal underwater cultural heritage (Section 3.7.5 for Aboriginal cultural heritage) in Australian waters, including state and Commonwealth waters.

The remains of vessels and aircrafts located in Commonwealth waters, along with certain associated articles, are automatically protected under the *Underwater Heritage Act 2018* after 75 years. This is applicable whether the existence or location of the article is known or unknown. Remains and relics of any ship that is lost, wrecked, or abandoned in WA waters before 1900 are protected by the *Maritime Archaeology Act 1973* (WA).

Known historical shipwreck sites in WA waters are listed in the WA Maritime Museum Shipwreck Database. Known historical shipwreck sites listed under the Underwater Heritage Act 2018 in Australian waters are listed in the Australasian Underwater Cultural Heritage Database. These databases only cover known historical sites.

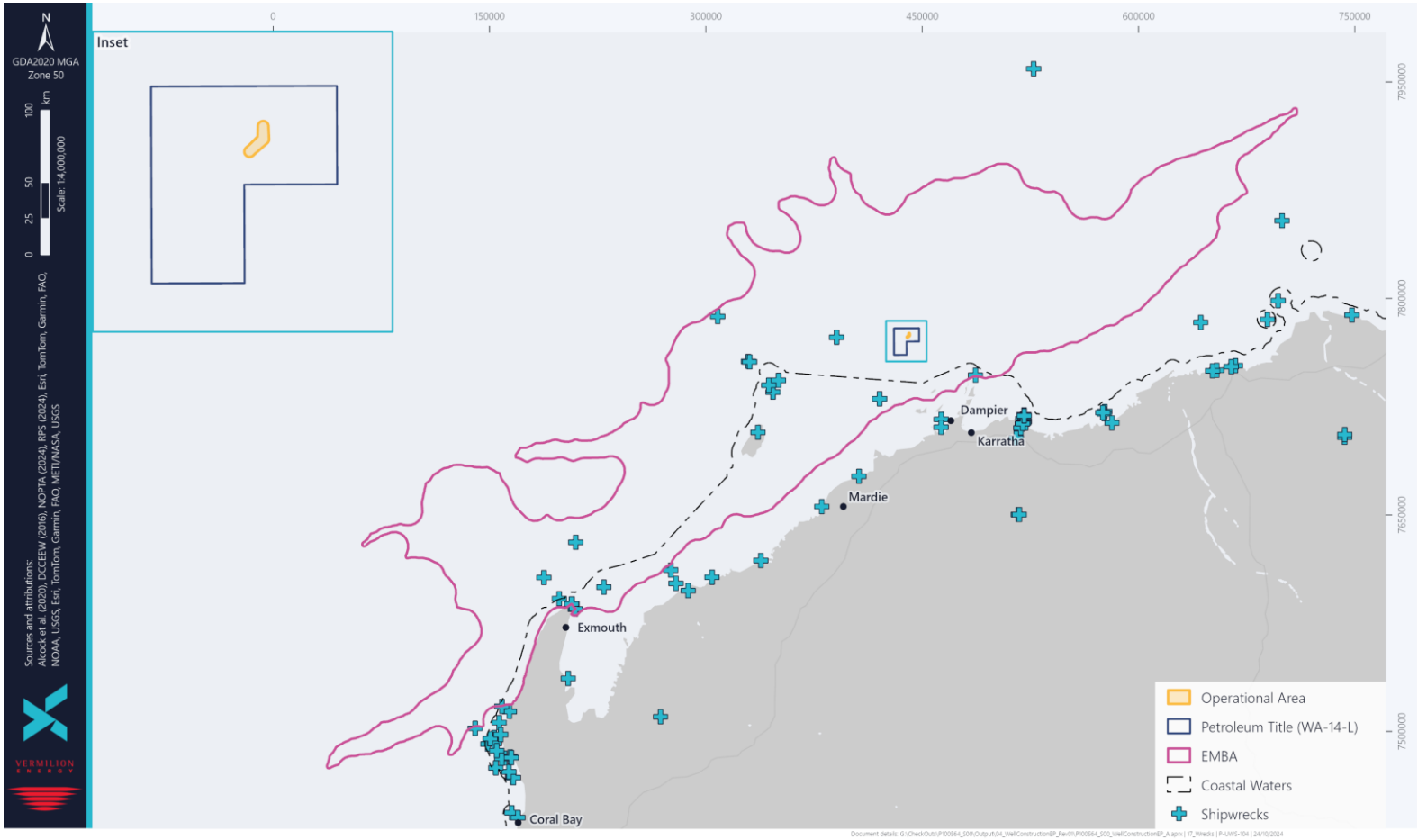
There are 41 shipwreck and shipwreck artefacts identified within the EMBA. There are no shipwrecks or artefacts located within the Operational Area. The closest shipwreck is located 46.46 km from the Operational Area, near Enderby Island (*The Dampier*) (Table 3-13, Figure 3-41).

Table 3-13: Known shipwrecks and artefacts located within the Project Areas

Shipwrecks or artefacts	Year wrecked	Project Areas			Distance from Operational Area (km)
		Operational Ara	Hydrocarbon Area	EMBA	
Agnes	1893	-	-	✓	300.2
Beatrice	1899	-	-	✓	301.6
Bell	1893	-	-	✓	301.3
Curlew	1911	-	-	✓	131.4
Dampier	-	-	-	✓	46.5
Elizabeth	1893	-	-	✓	301.3
Ellen	1893	-	-	✓	301.1
Emlyn Castle	1960	-	-	✓	296.9
Fairy Queen	1875	-	-	✓	297.1
Florence	1893	-	-	✓	301.3
Gem	1893	-	-	✓	301.6
Kapala	1964	-	-	✓	301.3
Lady Ann	1982	-	-	✓	269.9
Lamareaux	1893	-	-	✓	301.3
Leave	1893	-	-	✓	301.3
Lily of the Lake	1875	-	-	✓	301.3
Mabel	1893	-	-	✓	301.3

Shipwrecks or artefacts	Year wrecked	Project Areas			Distance from Operational Area (km)
		Operational Ara	Hydrocarbon Area	EMBA	
Marietta	1905	-	-	✓	132.0
Marutta	1905	-	-	✓	122.06
McCormack	1989	-	✓	✓	48.7
McDermott Derrick Barge No. 20	1989	-	✓	✓	48.7
Mildura	1907	-	-	✓	296.6
Nellie	1893	-	-	✓	301.3
Olive	1893	-	-	✓	301.3
Parks Lugger	Abandoned beginning of World War I	-	-	✓	100.2
Pearl	1896	-	-	✓	301.3
Perentie	1976	-	-	✓	123.77
Plym HMS	1952	-	✓	✓	93.8
Ruby	1893	-	-	✓	301.3
Sea Queen	1893	-	-	✓	301.3
Smuggler	1893	-	-	✓	301.3
Tanami	1935	-	✓	✓	111.0
Trial	1622	-	✓	✓	110.3
Tropic Queen	1975	-	-	✓	101.2
Unidentified Lugger	1893	-	-	✓	301.3
Veronica	1928	-	-	✓	272.1
Vianen	1628	-	-	✓	132.0
Wild Wave	1875	-	-	✓	301.3
Wild Wave (China)	1873	-	-	✓	132.0
Zelma	1990	-	-	✓	53.1

Figure 3-41: Underwater cultural heritage within the EMBA



3.6.5 Australian Marine Parks

AMPs, proclaimed under the EPBC Act in 2007 and 2013, are located in Commonwealth Waters that start on the outer edge of State and Territory waters, generally 3 nm from shore, and extend to the outer boundary of Australia's EEZ, 200 nm from the shore. There are four AMPs within the EMBA, one of which also overlaps the Hydrocarbon Area. There are no AMPs within the Operational Area (Table 3-14, Figure 3-42). The nearest AMPs are detailed in Table 3-14.

Table 3-14: AMPs within the Hydrocarbon Area and EMBA

AMP	Area type	Project Areas			Distance and direction from Operational Area
		Operational Area	Hydrocarbon Area	EMBA	
Dampier	Habitat Protection Zone (IUCN IV) Multiple Use Zone (IUCN VI) National Park Zone (IUCN II)	-	-	✓	45 km SE
Description The Dampier Marine Park is located approximately 10 km northeast of Cape Lambert and 40 km from Dampier, extending from the WA state water boundary. The Marine Park covers an area of 1,252 km² and a water depth range between less than 15 m and 70 m. **Natural values** The Marine Park includes ecosystems representative of the NWS Province – a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. The Marine Park supports a range of species listed under the EPBC Act. BIAs within the Marine Park include breeding and foraging habitat for seabirds, inter-nesting habitat for marine turtles and a migratory pathway for humpback whales. **Cultural values** Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Ngarluma, Yindjibarndi, Yaburara, and Mardudhunera people have responsibilities for sea country in the Marine Park. The Native Title holders for these people are represented by the Ngarluma Aboriginal Corporation and Yindjibarndi Aboriginal Corporation. These Prescribed Body Corporates represent Traditional Owners with Native Title over coastal area adjacent to the Marine Park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Pilbara and Yamatji regions. **Social and economic values** Port activities, commercial fishing and recreation, including fishing, are important activities in the Marine Park (DNP, 2018).					
Gascoyne	Habitat Protection Zone (IUCN IV) Multiple Use Zone (IUCN VI)	-	-	✓	286 km SW

AMP	Area type	Project Areas			Distance and direction from Operational Area
		Operational Area	Hydrocarbon Area	EMBA	

Description

The Gascoyne Marine Park is located approximately 20 km off the west coast of the Cape Range Peninsula, adjacent to the Ningaloo Reef Marine Park and the WA Ningaloo Marine Park and extends to the limit of Australia's exclusive economic zone. The Marine Park covers an area of 81,766 km² and water depths between 15 m and 6,000 m.

Natural values

Ecosystems represented in the Marine Park are influenced by the interaction of the Leeuwin Current, Leeuwin Undercurrent and the Ningaloo Current. The Marine Park supports a range of species listed under the EPBC Act. BIAs within the Marine Park include breeding habitat for seabirds, inter-nesting habitat for marine turtles, a migratory pathway for humpback whales, and foraging habitat and migratory pathway for pygmy blue whales.

Cultural values

Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Gnulli people have responsibilities for sea country in the Marine Park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region.

Heritage values

- The Ningaloo Coast was listed as an area of outstanding universal value under the World Heritage Convention in 2011, meeting world heritage listing criteria vii and x. The Ningaloo Coast World Heritage Property is adjacent to the Marine Park.
- The Ningaloo Marine Area (Commonwealth waters) meets the Commonwealth heritage listing criteria A, B and C. The Ningaloo Marine Area is adjacent to the Marine Park.
- The Ningaloo Coast meets the national heritage listing criteria A, B, C, D, and F and is adjacent to the Marine Park.
- The Marine Park contains more than five known shipwrecks listed under the *Underwater Cultural Heritage Act 2018*.

Social and economic values

Commercial fishing, mining and recreation are important activities in the Marine Park (DNP, 2018).

Montebello	Multiple Use Zone (IUCN VI)	-	✓	✓	44 km W

Description

The Montebello Marine Park is located offshore of Barrow Island and 80 km west of Dampier extending from the WA state water boundary and is adjacent to the Barrow Island and Montebello Islands Marine Parks. The Marine Park covers an area of 3,413 km² and water depths from less than 15 m to 150 m.

Natural values

The Marine Park includes examples of ecosystems representative of the NWS Province – a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities. A key ecological feature of the Marine Park is the ancient coastline at the 125 m depth contour.

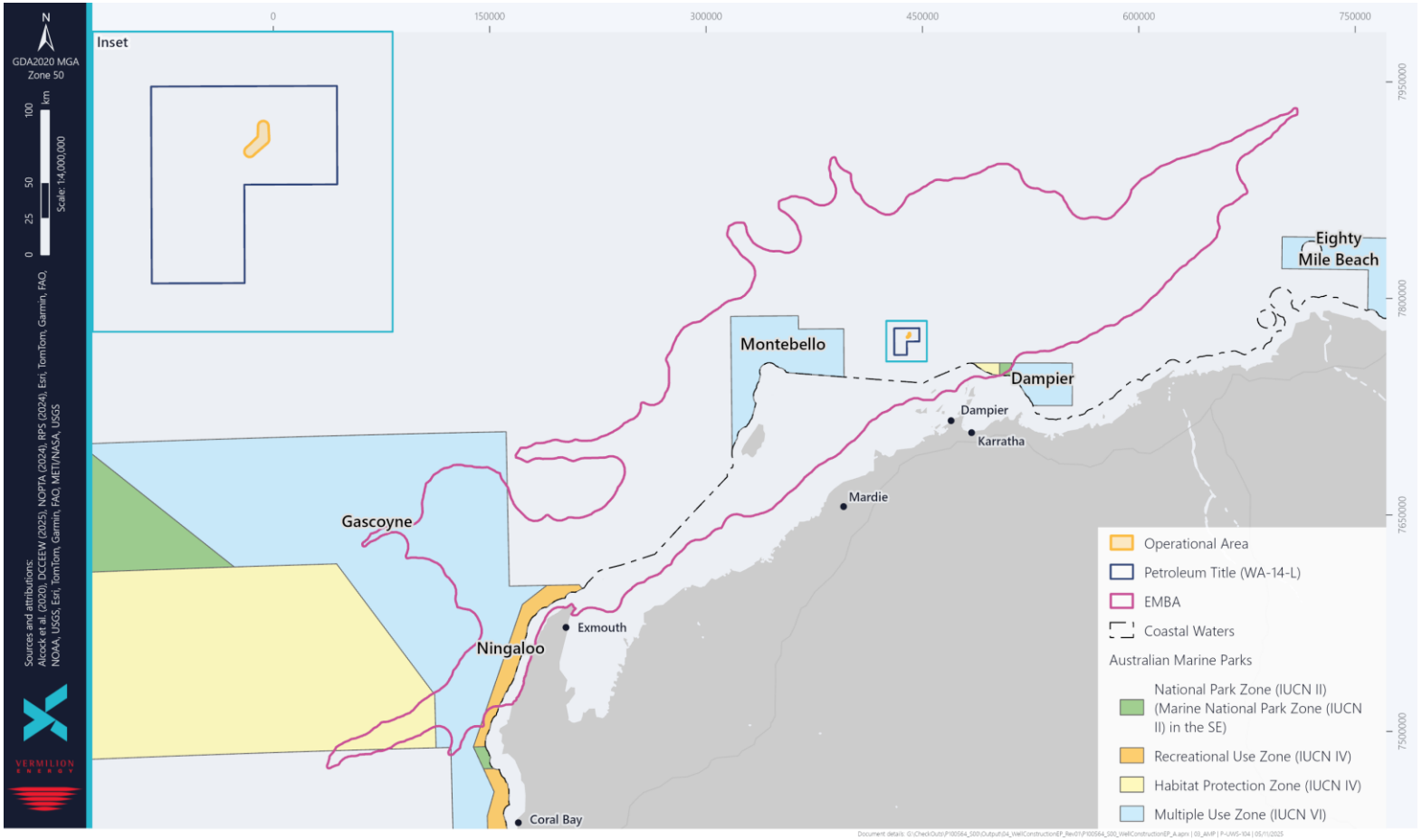
The Marine Park supports a range of species listed under the EPBC Act. BIAs within the Marine Park include breeding habitat for seabirds, inter-nesting, foraging, mating, and nesting habitat for marine turtles, a migratory pathway for humpback whales and foraging habitat for whale sharks.

Cultural values

AMP	Area type	Project Areas			Distance and direction from Operational Area
		Operational Area	Hydrocarbon Area	EMBA	
The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Pilbara region. Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. As noted in the 'North-west Marine Park Management Plan', there is limited information about the cultural significance of this Marine Park. **Heritage values** The Marine Park contains two known shipwrecks listed under the Underwater Cultural Heritage Act 2018: Trial (wrecked in 1622), the earliest known shipwreck in Australian waters and Tanami (unknown date). **Social and economic values** Tourism, commercial fishing, mining and recreation are important activities in the Marine Park (DNP, 2018).					
Ningaloo	Recreational Use Zone (IUCN IV)	-	-	✓	285 km SW
Description The Ningaloo Marine Park stretches approximately 300 km along the west coast of the Cape Range Peninsula and is adjacent to the WA Ningaloo Marine Park and Gascoyne Marine Park. The Marine Park covers an area of 2435 km² and a water depth range of 30 m to more than 500 m. The Marine Park provides connectivity between deeper offshore waters of the shelf break and coastal waters of the adjacent WA Ningaloo Marine Park. It includes some of the most diverse continental slope habitats in Australia, including the continental slope area between North-West Cape and the Montebello Trough. Canyons in the Marine Park are important for sustaining the nutrient conditions that support the high diversity of Ningaloo Reef. **Natural values** Ecosystems represented in the Marine Park are influenced by interaction of the Leeuwin Current, Leeuwin Undercurrent and the Ningaloo Current. The Marine Park supports a range of species listed under the EPBC Act. BIAs within the Marine Park include breeding and or foraging habitat for seabirds, inter-nesting habitat for marine turtles, a migratory pathway for humpback whales, foraging habitat and migratory pathway for pygmy blue whales, breeding, calving, foraging and nursing habitat for dugong and foraging habitat for whale sharks. **Cultural values** Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Gnulli people have responsibilities for sea country in the Marine Park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region. **Heritage values** • The Marine Park is within the Ningaloo Coast World Heritage Property, meeting world heritage listing criteria vii and x. The area is valued for high terrestrial species endemism, marine species diversity and abundance, and the interconnectedness of large-scale marine, coastal and terrestrial environments. The area connects the limestone karst system and fossil reefs of the ancient Cape Range to the nearshore reef system of Ningaloo Reef, to the continental slope and shelf in Commonwealth waters. • The Ningaloo Coast overlaps the Marine Park, meeting the national heritage listing criteria A, B, C, D, and F.					

AMP	Area type	Project Areas			Distance and direction from Operational Area
		Operational Area	Hydrocarbon Area	EMBA	
• The Ningaloo Marine Area (Commonwealth waters) meets Commonwealth heritage listing criteria A, B and C. The Ningaloo Marine Area overlaps the Marine Park. • The Marine Park contains more than 15 known shipwrecks listed under the *Underwater Cultural Heritage Act 2018*. **Social and economic values** Tourism and recreation, including fishing, are important activities in the Marine Park (DNP, 2018).					

Figure 3-42: Australian Marine Parks within the EMBA



3.6.6 State Marine Protected Areas

There are no state marine protected areas that intersect with the Operational Area. The EMBA intersects with three WA State Marine Protected Areas, as described in Table 3-15.

Table 3-15: State Marine Protected Areas within the Hydrocarbon Area and EMBA

Protect area name	Area type	Project Areas			Distance and direction from Operational Area
		Operational Area	Hydrocarbon Area	EMBA	
Montebello Islands and Barrow Islands (jointly managed)	Marine Park Conservation Park Marine Management Area	-	✓	✓	84 km SW
Description The Montebello Islands Marine Park and Barrow Islands Marine Park is located off the north-west coast of WA, ~1,600 km north of Perth, and cover areas of ~583 km^2, 42 km^2 and 1,147 km^2, respectively. **Conservation values** The Montebello/Barrow islands marine conservation reserves have very complex seabed and island topography, resulting in a myriad of different habitats subtidal coral reefs, macroalgal and seagrass communities, subtidal soft-bottom communities, rocky shores and intertidal reef platforms, which support a rich diversity of invertebrates and finfish. The reserves are important breeding areas for several species of marine turtles and seabirds, which use the undisturbed sandy beaches for nesting. Humpback whales migrate through the reserves and dugongs occur in the shallow warm waters (DEC, 2007).					
Ningaloo and Muiron Islands Marine Management area (jointly managed)	Marine Management Area Marine Park	-	-	✓	264 km SW
Description The Ningaloo Marine Park and Muiron Islands Marine Management Area are located off the North-West Cape of WA, ~1,200 km north of Perth, and cover areas of ~2,633 km^2 and 286 km^2, respectively. **Ecological values** Ningaloo Reef is the largest fringing coral reef in Australia. Temperate and tropical currents converge in the Ningaloo region resulting in highly diverse marine life including spectacular coral reefs, abundant fishes and species with special conservation significance such as turtles, whale sharks, dugongs, whales and dolphins. The region has diverse marine communities including mangroves, algae and filter-feeding communities and has high water quality. These values contribute to the Ningaloo Marine Park being regarded as the State's premier marine conservation icon. The Muiron Islands Marine Management Area is also important, containing a very diverse marine environment, with coral reefs, filter-feeding communities and macroalgal beds. In addition, the Islands are important seabird and green turtle nesting areas. **Cultural values**					

Protect area name	Area type	Project Areas			Distance and direction from Operational Area
		Operational Area	Hydrocarbon Area	EMBA	
The Ningaloo Reef has a long history of occupancy by aboriginal communities and aboriginal heritage sites. The Jinigudira and Baiyungu people have lived on this region for thousands of years and use coastal areas for fishing, camping and hunting of turtles and dugongs. **Social and economic values** The Ningaloo region has a high number of visitors enjoying the area who come to appreciate nature-based tourism which is brings important economic value to the communities of the area (CALM, 2005).					
Pilbara Islands Nature Reserve (Great Sandy Island)	Nature Reserve	-	-	✓	71 km SW
Description Located between the Ningaloo Coast World Heritage Area and the Dampier Archipelago, the Pilbara Islands Nature Reserve includes 174 small islands with a combined area of over 130 km2 and a total coastline of over 500 km. Islands within this management area are characterised by foredunes surrounding a central depression and less than 12 m in elevation. Great Sandy Island nature reserve was identified to be within the EMBA. **Conservation values** The island provides a refuge for threatened and migratory species including the critically endangered eastern curlew, great knot, curlew sandpiper. The island provides nesting beaches for the green, flatback, hawksbill and loggerhead turtles. Mangrove thickens are found on some of the islands which provide essential habitat for coastal species and shorebirds. **Cultural values** The Nganhurra Thanadri Garrbu Aboriginal Corporation and the Wirrawandi Aboriginal Corporation have native title determinations over parts of the planning area. The area holds significant cultural value to First Nations people. Culturally significant sites, places and species are found within the area. Customary activities including hunting, ceremonies and sharing of traditional knowledge is practiced in the region. Thevenard Island contains one registered site under the Aboriginal Heritage Act 1972, which includes a midden scatter with three baler shell containers. Aboriginal artefacts have been found on some of the islands including a burial site, stone and glass flakes, brunt shell and bone and baler shells. Some of the islands were possibly occupied by First Nations people of the region. **Social and economic values** Visitation to the island is low and only is by private boat. Recreational fishing is undertaken around the island.					

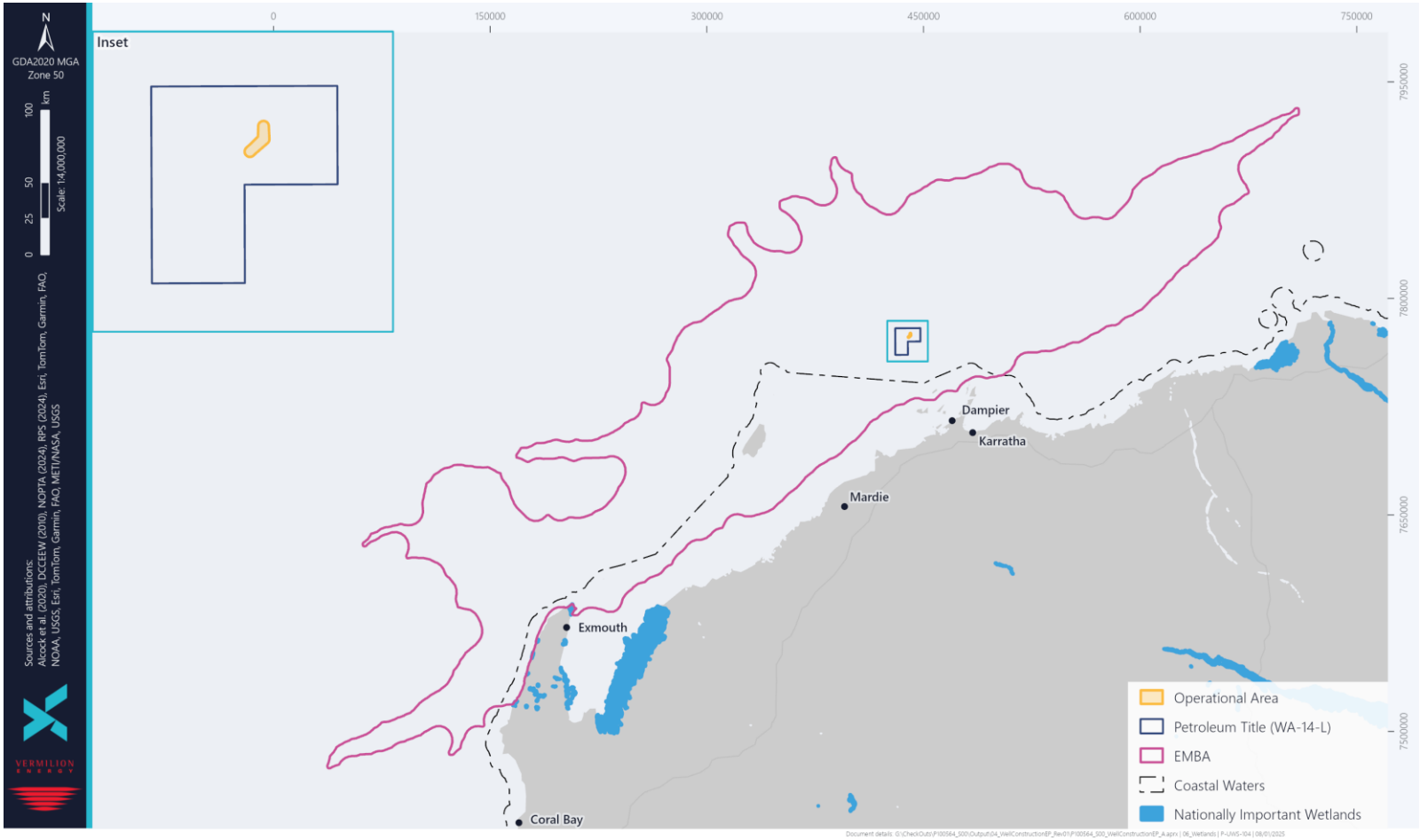
3.6.7 Wetlands of International Importance

There are no Ramsar wetlands of international importance that intersect the EMBA, Hydrocarbon Area or Operational Area.

3.6.8 Nationally Important Wetlands

There are no nationally important wetlands that intersect the EMBA, Hydrocarbon Area or Operational Area (Figure 3-43).

Figure 3-43: Nationally important wetlands in the vicinity of the EMBA



3.6.9 Key Ecological Features

The EMBA intersects six Key Ecological Features (KEFs), as described in Table 3-16. The Operational Area does not intersect any KEFs (Figure 3-44).

Table 3-16: KEFs within the Hydrocarbon Area and EMBA

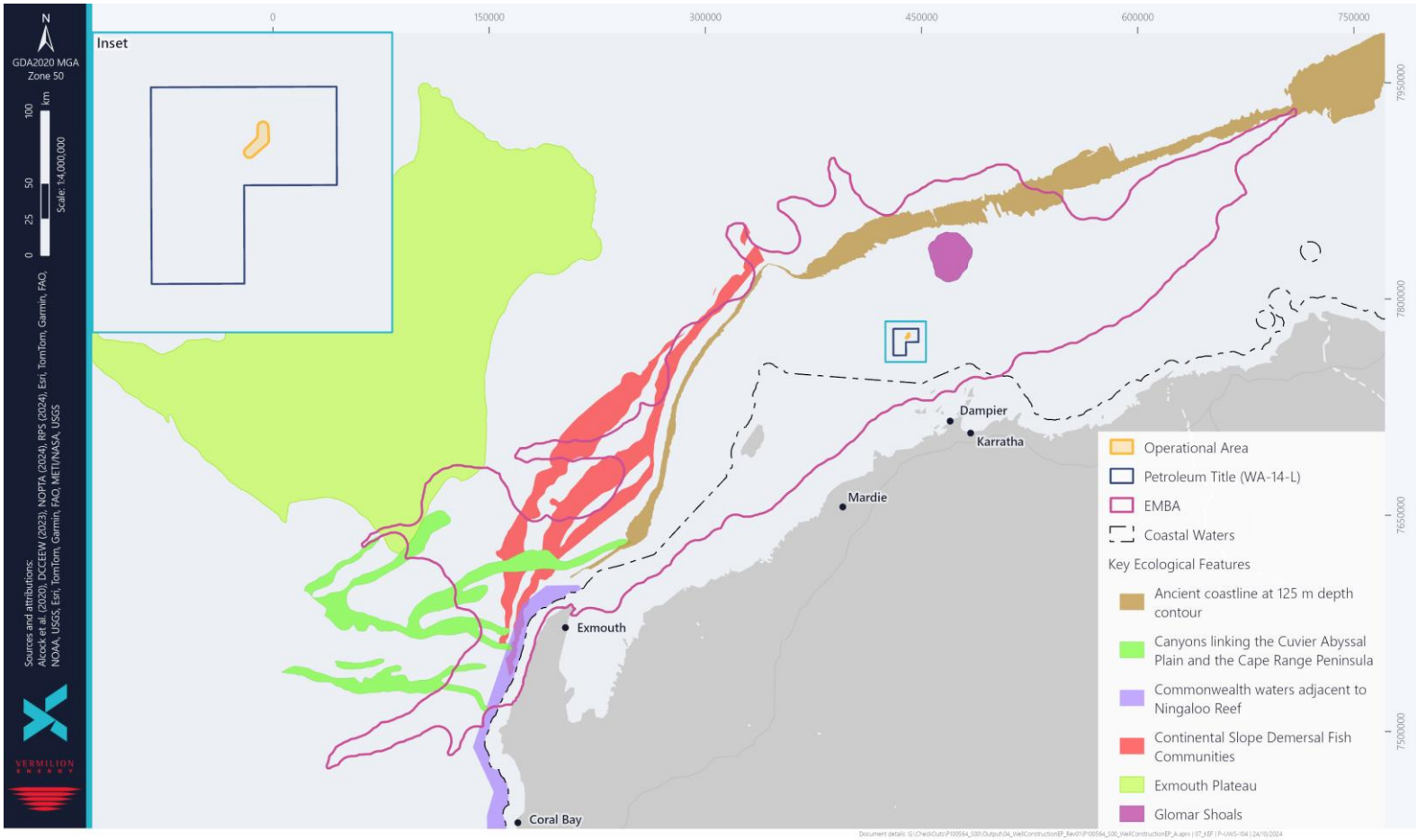
KEF	Project Areas			Distance and direction from Operational Area
	Operational Area	Hydrocarbon Area	EMBA	
Ancient coastline at 125 m depth contour	-	✓	✓	60 km NW
National and/or regional importance The ancient coastline at 125 m depth contour is defined as a key ecological feature as it is a unique seafloor feature with ecological properties of regional significance. **Location** The shelf of the NWMR contains several terraces and steps which reflect changes in sea level that occurred over the last 100,000 years. The most prominent of these features occurs as an escarpment along the NWS and Sahul Shelf at a depth of 125 m. The spatial boundary of this KEF is defined by depth range 115–135 m in the NWS Province and NWS Transition IMCRA provincial bioregions. **Description and values** The ancient submerged coastline provides areas of hard substrate and therefore may provide sites for higher diversity and enhanced species richness relative to surrounding areas of predominantly soft sediment. Little is known about fauna associated with the hard substrate of the escarpment, but it is likely to include sponges, corals, crinoids, molluscs, echinoderms and other benthic invertebrates representative of hard substrate fauna in the NWS bioregion. The escarpment may also facilitate increased availability of nutrients off the Pilbara by interacting with internal waves and enhancing vertical mixing of water layers. Enhanced productivity associated with the sessile communities and increased nutrient availability may attract larger marine life such as whale sharks (Rhincodon typus) and large pelagic fish. Humpback whales (Megaptera novaeangliae) appear to migrate along the ancient coastline, using it as a guide to move through the region (DCCEEW, 2024e).				
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	-	-	✓	239 km SW
National and/or regional importance The Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula are defined as a key ecological feature as they are unique seafloor features with ecological properties of regional significance, which apply to both the benthic and pelagic habitats within the feature. **Location** The largest canyons on the slope linking the Cuvier Abyssal Plain and Cape Range Peninsula are the Cape Range Canyon and Cloates Canyon which are located along the southerly edge of Exmouth Plateau adjacent to Ningaloo Reef. The canyons are unusual because their heads are close to the coast of North-West Cape. **Description and values** The canyons on the slope of the Cuvier Abyssal Plain and Cape Range Peninsula are connected to the Commonwealth waters adjacent to Ningaloo Reef and may also have connections to Exmouth Plateau. The canyons are thought to interact with the Leeuwin Current to produce eddies inside the heads of				

KEF	Project Areas			Distance and direction from Operational Area
	Operational Area	Hydrocarbon Area	EMBA	
the canyons, resulting in waters from the Antarctic intermediate water mass being drawn into shallower depths and onto the shelf; these waters are cooler and richer in nutrients and strong internal tides may also aid upwelling at the canyon heads. The narrow shelf width (approx. 10 km) near the canyons facilitates nutrient upwelling and this nutrient-rich water interacts with the Leeuwin Current at the canyon heads. Aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, large predatory fish and seabirds are known to occur in this area and are related to productivity. The canyons, Exmouth Plateau and Commonwealth waters adjacent to Ningaloo Reef operate as a system to create the conditions for enhanced productivity seen in this region (DCCEEW, 2024f).				
Commonwealth waters adjacent to Ningaloo Reef	-	-	✓	284 km SW
National and/or regional importance The Commonwealth waters adjacent to Ningaloo Reef are defined as a KEF for their high productivity and aggregations of marine life, which apply to both the benthic and pelagic habitats. **Location** Ningaloo Reef extends >260 km along Cape Range Peninsula with a landward lagoon 0.2–6.0 km wide. Seaward of the reef crest, the reef drops gently to depths of 8–10 m; the waters reach 100 m depth, 5–6 km beyond the reef edge. Commonwealth waters over the narrow shelf (10 km at its narrowest) and shelf break are contiguous with Ningaloo Reef and connected via oceanographic and trophic cycling. **Description and values** Ningaloo reef is globally significant as the only extensive coral reef in the world that fringes the west coast of a continent; it is also globally significant as a seasonal aggregation site for whale sharks. The Commonwealth waters adjacent to Ningaloo Reef and associated canyons and plateau are interconnected and support the high productivity and species richness of Ningaloo Reef. The Leeuwin and Ningaloo currents interact on the seaward side of the reef, leading to areas of enhanced productivity which support aggregations and migration pathways of whale sharks (Rhincodon typus), manta rays (Manta alfredi), humpback whales (Megaptera novaeangliae), sea snakes, sharks, large predatory fish and seabirds. Detrital input from phytoplankton production in surface waters and from higher-trophic consumers cycles back to the deeper waters of the shelf and slope. Deepwater biodiversity includes fish, molluscs, sponges, soft corals and gorgonians. Some of these sponge and filter-feeding communities appear to be significantly different to those of the Dampier Archipelago and Abrolhos Islands, indicating that the Commonwealth waters of Ningaloo Marine Park have some areas of potentially high and unique sponge biodiversity. The outer reef is marked by a well-developed spur and groove system of fingers of coral formations penetrating the ocean with coral sand channels in between. The spurs support coral growth, while the grooves experience strong scouring surges and tidal run-off and have little coral growth (DCCEEW, 2024g).				
Continental Slope Demersal Fish Communities	-	-	✓	112 km NW
National and/or regional importance This species assemblage is recognised as a KEF because of its biodiversity values, including high levels of endemism. **Location** This KEF is defined as the area of slope found in the North-West Province and Timor Province provincial bioregions, at the depth ranges of 220–500 m and 750–1,000 m. **Description and values**				

KEF	Project Areas			Distance and direction from Operational Area
	Operational Area	Hydrocarbon Area	EMBA	
The diversity of demersal fish assemblages on the continental slope in the Timor Province, the North-West Transition and the North-West Province is high compared to elsewhere along the Australian continental slope. The continental slope between North-West Cape and the Montebello Trough has >500 fish species, 76 of which are endemic, which makes it the most diverse slope bioregion in Australia. The slope of the Timor Province and the North-West Transition also contains >500 species of demersal fish of which 64 are considered endemic. The Timor Province and North-West Transition bioregions are the second-richest areas for demersal fish across the entire continental slope. The demersal fish species occupy two distinct demersal community types (biomes) associated with the upper slope (water depth of 225–500 m) and the mid-slope (750–1,000 m). Although poorly known, it is suggested that the demersal-slope communities rely on bacteria and detritus-based systems comprised of infauna and epifauna, which in turn become prey for a range of teleost fish, molluscs and crustaceans. Higher-order consumers may include carnivorous fish, deepwater sharks, large squid and toothed whales. Pelagic production is phytoplankton based, with hot spots around oceanic reefs and islands. Bacteria and fauna present on the continental slope are the basis of the food web for demersal fish and higher-order consumers in this system. Loss of benthic habitat along the continental slope at depths known to support demersal fish communities may lead to a decline in species richness, diversity and endemism associated with this feature (DCCEEW, 2024h).				
Exmouth Plateau	-	-	✓	220 km NW
National and/or regional importance The Exmouth Plateau is defined as KEF as it is a unique seafloor feature with ecological properties of regional significance, which apply to both the benthic and pelagic habitats. **Location** The Exmouth Plateau is located in the North-West Province and covers an area of 49,310 km² in water depths of 800–4,000 m. **Description and values** Although the seascapes of this plateau are not unique, it is believed that the large size of Exmouth Plateau and its expansive surface may modify deep-water flow and be associated with the generation of internal tides; both these features may contribute to the upwelling of deeper, nutrient-rich waters closer to the surface. The topography of the plateau (with valleys and channels), in addition to potentially constituting a range of benthic environments, may provide conduits for the movement of sediment and other material from the plateau surface through the deeper slope to the abyss. The Exmouth Plateau is generally an area of low habitat heterogeneity; however, it is likely to be an important area of biodiversity as it provides an extended area offshore for communities adapted to depths of around 1,000 m. Sediments on the plateau suggest that biological communities include scavengers, benthic filter feeders and epifauna. The plateau's surface is rough and undulating; the northern margin is steep and intersected by large canyons (e.g. Montebello and Swan canyons), the western margin is moderately steep and smooth, and the southern margin is gently sloping and virtually free of canyons. Satellite observations suggest that productivity is enhanced along the northern and southern boundaries of the plateau and along the shelf edge, which in turn suggests that the plateau is a significant contributor to the productivity of the region. Whaling records from the 19th century suggest that the Exmouth Plateau may have supported large populations of sperm whales (Physeter macrocephalus) (DCCEEW, 2024i).				
Glomar Shoals	-	✓	✓	45 km NE
National and/or regional importance				

KEF	Project Areas			Distance and direction from Operational Area
	Operational Area	Hydrocarbon Area	EMBA	
The Glomar shoals are defined as a KEF for their high productivity and aggregations of marine life. **Location** The Glomar Shoals are a submerged littoral feature located approx. 150 km north of Dampier on the Rowley Shelf at depths of 33–77 m. **Description and values** While the biodiversity associated with the Glomar Shoals has not been studied, the shoals are known to be an important area for a number of commercial and recreational fish species such as rankin cod (Epinephelus multiinotatus), brown striped snapper (Lutjanus vitta), red emperor (Lutjanus sebae), crimson snapper (Lutjanus erythropterus), bream (Sparidae) and yellow-spotted triggerfish (Pseudobalistes fuscus). These species have recorded high catch rates associated with the Glomar Shoals, indicating that the shoals are likely to be an area of high productivity. The shoals consist of a high percentage of marine-derived sediments with high carbonate content and gravels of weathered coralline algae and shells. The area's higher concentrations of coarse material in comparison to surrounding areas are indicative of a high-energy environment subject to strong sea-floor currents. Cyclones are also frequent in this area and stimulate periodic bursts of productivity due to increased vertical mixing (DCCEEW, 2024j).				

Figure 3-44: KEFs within the EMBA



3.6.10 Threatened Ecological Communities

The EPBC Act provides for the listing of Threatened Ecological Communities (TECs), and these are considered as Matters of National Environmental Significance (MNES) under the EPBC Act. There are no EPBC listed TECs that occur within the EMBA, Hydrocarbon Area or Operational Area.

3.7 First Nations

Table 3-1 identifies that First Nations receptors within the Hydrocarbon Area and EMBA may be relevant to aspects of the well construction activities. The descriptions below provide sufficient details to assess all impacts and risks to First Nations. No First Nations receptors are identified within the Operational Area.

3.7.1 Methodology to Identify Cultural Values and Sensitivities

The definition of environment in the OPGGS(E)R includes the people and communities, heritage value of places, and their social, economic, and cultural features. For First Nations peoples, this includes cultural heritage and sea country values which hold a spiritual and cultural connection that may be affected by the Petroleum Activity.

VOGA recognises First Nations Groups and their spiritual and cultural connection to the environment. Identification of First Nations cultural values and sensitivities was developed through consultation with First Nations groups with connection to Sea Country in the Operational Area and EMBA (refer to Section 9 for VOGA's consultation and methodology process).

3.7.2 Recognition of First Nations Groups

First Nations groups and Traditional Owners and connection to Country is recognised through contemporary legislation such as the Commonwealth *Native Title Act 1993* as well as various State laws such as the WA *Aboriginal Heritage Act 1972* (WA).

A review of the statutory laws, rights and recognition conferred to First Nations peoples relevant to the Project is summarised in the below sections.

3.7.3 Native Title

Native Title is the formal recognition that Aboriginal and Torres Strait Islander people continue to have rights to land and waters according to their traditional laws and customs.

The Commonwealth *Native Title Act 1993* has the following objectives:

- Provide for the recognition and protection of Native Title
- Establish a mechanism for determining claims to Native Title
- Establish ways in which future dealings affecting Native Title (future acts) may proceed

- Provide for the validation of past acts and intermediate period acts invalidated because of the existence of native title.

Native Title determination requires First Nation's people to establish and prove an unbroken and current connection to lands and waters and cultural practices from the time of European settlement.

Native Title can be granted with exclusive or non-exclusive rights to lands and waters. Exclusive rights can only be granted over limited parts of Australia, including areas already held by or for the use of Indigenous Australians, or unallocated/vacant Crown land. Non-exclusive native title can include, for example, the right to live on or hunt in an area co-existing with the rights of other land users. In tidal and sea areas, only non-exclusive native title can be recognised. Exclusive Native Title is considered inconsistent with other common law rights regarding marine access and navigation (NNTT, 2010).

The *Native Title Act 1993* appoints Representative Aboriginal/Torres Strait Islander Bodies (RATSIB) as regional organisations with prescribed functions relating to facilitation and assistance, certification, dispute resolution, notifications and agreement making (NNTT, 2024). The EMBA overlaps the following RATSIB Areas:

- Kimberley: Kimberley Land Council Aboriginal Corporation
- Pilbara: Yamatji Marlpa Aboriginal Corporation
- Gascoyne-Midwest: Yamatji Marlpa Aboriginal Corporation.

The Federal Court of Australia first recognised Native Title over the sea for the Traditional Owners of Croker Island in Arnhem Land in 1998 (Tribunal File No. DCD 1998/001). Since the Croker Islands Seas Native Title determination, native title in Sea Country has been recognised along Australia's coastline through numerous claims and determinations under the *Native Title Act 1993*.

The First Nations groups identified as overlapping with the EMBA, or coastally adjacent, have been identified and discussed in Table 3-17 and Figure 3-45. These are the First Nation groups that were identified as relevant for consultation (Section 9.3.4).

Figure 3-45: Native Title determination areas within and coastally adjacent to the EMBA

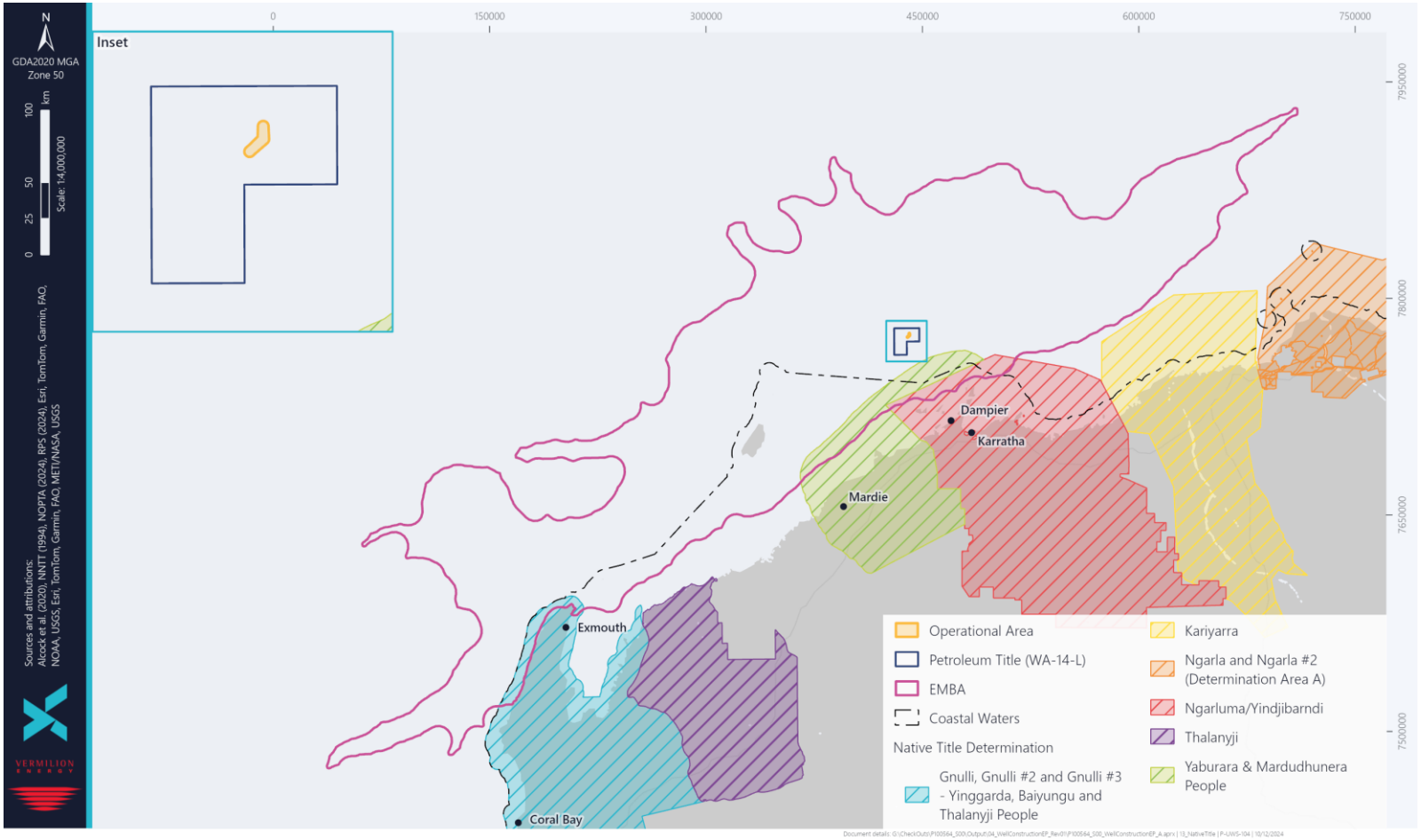


Table 3-17: Native Title Determinations areas within and coastally adjacent to the EMBA

Native Title Tribunal ID	Native Title Party	Prescribed Body Corporate	Description	EMBA overlap	Coastally adjacent
WCD2005/001	Ngarluma/Yindjibarndi	Yindjibarndi Aboriginal Corporation RNTBC	The Ngarluma/Yindjibarndi Determination Area overlaps the city of Karratha, shire of Ashburton and town of Port Hedland. It contains several protected areas both onshore and offshore including Millstream Chichester National Park and parts of Murgaroona Range Nature Reserve and Dampier Marine Park.	Yes	Yes
WCD2015/007	Ngarluma People	Ngarluma Aboriginal Corporation	The Ngarluma People Native Title claim overlaps the EMBA, which the Ngarluma Aboriginal Corporation is the Registered Native Title Prescribed Body Corporate.	No	Yes
WCD2018/006	Yaburara & Mardudhunera People	Wirrawandi Aboriginal Corporation	The Yaburara and Mardudhunera People determination area is west of Karratha to Mardie extending offshore east of Barrow Island and west and north of the Dampier archipelago.	Yes	Yes
WCD2019/016	Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People	Nganhurra Thanardi Garrbu Aboriginal Corporation, Yinggarda Aboriginal Corporation	The Gnulli, Gnulli #2 and Gnulli #3 – Yinggarda, Baiyungu and Thalanyji People determination area is located north of Shark Bay along the coast to Exmouth encompassing the North-West Cape, including Learmonth and coastal waters of the Exmouth Gulf past Tent Island, and overlapping Ningaloo Marine Park (Section 3.6.4).	Yes	Yes
WCD2008/003	Thalanyji People	Buurabalayji Thalanyji Aboriginal Corporation RNTBC	The Thalanyji Native Title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which BTAC is the Registered Native Title Body Corporate.	No	Yes
WCD2018/015	Kariyarra People	Kariyarra Aboriginal	The Kariyarra Native Title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA,	No	Yes

Native Title Tribunal ID	Native Title Party	Prescribed Body Corporate	Description	EMBA overlap	Coastally adjacent
		Corporation RNTBC	for which the Kariyarra Aboriginal Corporation is the Registered Native Title Prescribed Body Corporate.		
WCD2012/001	Ngarla and Ngarla #2 (Determination Area A)	Wanparta Aboriginal Corporation RNTBC	The Ngarla and Ngarla #2 (Determination Area 2) determined Native Title claim does not overlap the EMBA. The determined native title claim is coastally adjacent to the EMBA, which the Wanparta Aboriginal Corporation is the Registered Native Title Prescribed Body Corporate.	No	Yes

3.7.4 Indigenous Protected Areas

Indigenous Protected Areas (IPAs) are areas of land and sea managed by Indigenous groups as protected areas for biodiversity conservation through voluntary agreements with the Australian Government. IPAs are an essential component of Australia's National Reserve System, which is the network of formally recognised parks, reserves and protected areas across Australia. No IPAs are located in the EMBA, Hydrocarbon Area or Operational Area.

3.7.5 Aboriginal Cultural Heritage

The *Aboriginal Heritage Act 1972* (WA) was amended and reinstated in 2023. The Act aims to ensure recognition, protection and preservation to all Aboriginal cultural heritage (including sites and objects) within WA. It is an offence to excavate, destroy, damage, conceal or in any way alter Aboriginal heritage under s.17 of the Act.

The WA Aboriginal Cultural Heritage Inquiry System (ACHIS) was searched for the Operational Area, Hydrocarbon Area and the EMBA. There are no registered Aboriginal Cultural Heritage sites within the Operational Area or Hydrocarbon Area. There are 51 registered sites present within the EMBA. However, none of these sites will be disturbed by planned activities. The closest sites to the Operational Area are located on Rosemary Island, approximately 35 km from the Operational Area. VOGA have consulted with First Nations groups within the EMBA and no feedback or concerns about impacts to specific Aboriginal Heritage sites were raised. The full results of the ACHIS searches are presented in Appendix D.

3.7.6 Cultural Values and Sensitivities

3.7.6.1 Sea Country

First Nations people are the oldest surviving culture in the world and have been sustainably using and managing Sea Country for over 60,000 years (AIATSIS, 2026), and in some cases before rising sea levels created marine environments (Smyth, 2007). 'Country' is the term often used by First Nations people to describe the lands, waterways, and seas to which they are connected. The term contains complex ideas about law, place, custom, language, spiritual belief, cultural practice, material sustenance, family, and identity (AIATSIS, 2026). Archaeologists have confirmed that First Nations people have lived on Australian lands including now submerged Sea Country (also known as Saltwater Country), for tens of thousands of years and at a time when the sea level was 100 m lower than present times. Sea levels began to rise approximately 18,000 years ago, flooding the coastal plain and forcing coastal dwellers to move further inland (Smyth, 2007).

Country is a cultural landscape which includes both tangible values (i.e. cultural heritage sites) and intangible values (i.e. Creation stories and cultural practices). First Nations cultural concepts are directly connected with Country. Country describes all aspects of place, environment, spirituality, law and identity. Values of Country differ between First Nations groups, and not all First Nations groups and communities in Australia hold the same belief systems or spirituality (AIATSIS, 2026). Differences can sometimes be attributed to aspects of post-colonialism such as dispossession, genocide and restrictions on cultural practices (Tatz, 1991).

Due to the varied cultures and histories of First Nations groups across Australia and various degrees of dispossession, removal from Country, loss of connection and continuation of culture, the responses of First Nations communities to caring for Country can vary widely. As a result, a varied approach to managing cultural (both tangible and intangible) values is required.

A 'cultural landscape' refers to pre-colonial and contemporary interactions between humans and the physical environment including non-human animals, plants, physical structures, ancestors, song lines, trade routes and other significant cultural connections to Country. Cultural landscapes are reflections of how First Nations people engage with Country, intrinsically connecting the past and the present to people, stories and history (McConnel, et al., 2021).

Sea Country is Country that extends into the ocean. Smyth and Isherwood (2016) describe Sea Country as all estuaries, beaches, bays, and marine areas collectively, within a traditional estate. Sea Country contains evidence of the ancient mystical events by which all geographic features, animals, plants and people were created. Sea Country contains sacred sites and tracks (or 'Songlines') along which mythological beings travelled during the creation period (or 'Dreamtime') (Smyth and Isherwood, 2016). The sea, like the land, is integral to the identity of First Nations groups. Connection to Sea Country is accompanied by a complexity of cultural rights and responsibilities. Coastal areas traditionally were amongst the most densely populated areas due to the abundance of resources available. Formal recognition of Sea Country rights is significantly slower compared to land rights. This could be for a range of reasons including conflicting perspectives and opinions on traditional custodianship of land and how far it extends (Smyth and Isherwood, 2016).

Sea County extends to include submerged cultural landscapes which are culturally significant to First Nations people, as they contain history of First Nations occupation and cultural connections to the now submerged continental shelf. At the last glacial maximum, the sea levels were approximately 125 m below the current sea level. Over time, sea levels rose which inundated approximately 2 million km^2 of the Australian continental shelf, which submerged cultural heritage sites spanning back to the first arrival of First Nations people to Australia approximately 65,000 years ago (O'Leary et al., 2020; Benjamin et al., 2023).

The first tangible evidence for human occupation of Australia's submerged landscape was reported by Benjamin et al. (2023), who located stone tool artefacts within the waters of Cape Bruguieres in Dampier Archipelago (Murujuga). The shallow site (2.4 m below sea level) is located within what would have been a shallow swale (now known as Cape Bruguieres channel), located between two low relief rocky hills (now Middle and North Gidley Islands). The shallow waters of the subtidal channel contained 270 artefacts for a range of different purposes. A second site which identified a stone artefacts was located in Flying Foam Passage, which was significantly deeper than the Cape Bruguieres site at 14 m below sea level. This site was associated with a seabed depression which was possibly a submerged water hole. These submerged features are known to have an intangible connection passed down by oral traditions by the Ngarda-Ngarli (which is a collective term used for Yabuarra, Marthudunera, Ngarluma, Tindjibarndi and Wong-Goo-Tt-Oo people), who recognise these features as part of a known Songline (Benjamin et al., 2023).

A study using 3D seismic datasets on bathymetry data on the mid to outer shelf regions in proximity to Barrow Island showed a highly complex geomorphically mature coastal landscape which was preserved at depths of 70-75 m below sea level, revealing coastal barrier dunes,

lagoonal systems, tidal flats, and estuarine channels. The coastal landforms are dated to the Marine Isotope Stage 3 at 57,000 to 29,000 years ago, which corresponds with the known onset of human occupation at Barrow Island and the wider Carnarvon bioregion, adjacent to the Pilbara region (O'Leary et al., 2020).

These submerged Sea Country environments would have provided abundant resources and areas for human occupation prior to the inundation of the continental shelf. This is supported through evidence from oral stories dating back to more than 7,000 years ago which were passed down through Australian Aboriginals, telling of a time that the former coastline of Mainland Australia was inundated by rising sea levels (Nunn and Reid, 2016). During consultation with First Nations groups, feedback on cultural values and interests of First Nations groups and individuals that are within or adjacent to the EMBA have been identified in Table 3-18. Cultural values and interests identified in public literature relevant to the First Nations groups within or adjacent to the EMBA are listed in Table 3-19. VOGA will continue to consult with First Nations groups to further identify potential cultural values and interests within and surrounding the EMBA, as described in Section 9.4.11.

Table 3-18: Feedback received via consultation to inform values and interests for First Nations existing environment description

Relevant First Nation Group/ individuals	Description of value/interest	Potential for overlap	
		Operational Area	EMBA
Kariyarra Aboriginal Corporation	Value: On Country access – visiting offshore 'Kariyarra Island' at low tide. Has cultural significance to the Kariyarra people for intergenerational knowledge transfer and is a place of cultural importance.	No	Yes
	Value: Cultural obligations to care for Kariyarra Country.	Yes	Yes
	Feature: Tangible cultural heritage (sites) with engravings on the coast, considered fragile.	No	Yes
	Interest: Co-protecting Kariyarra country in the event of a hydrocarbon spill. A ranger program is being developed to address potential environmental impacts of offshore operations.	No	Yes
Ngarluma Aboriginal Corporation	Value: Strong connection to tangible cultural heritage, system, and cultural protocols. Cultural connection to the World Heritage-listed Dampier Archipelago, including Whim Creek and Delambre Island.	No	Yes
	Value: Importance of local wildlife, primarily on sea turtle nesting, marine migration, and culturally significant areas, including particular importance of the Maitland River.	No	Yes
	Interest: The Sea Rangers program has been developed, and there is an interest in upskilling for a potential offshore impact event.	No	Yes
Wanparta Aboriginal Corporation	Interest: Particular interest in potential noise impacts on migrating whales and turtle migration patterns.	Yes	Yes
	Interest: Co-protecting Wanparta Country in the event of a hydrocarbon spill. A ranger program is being developed and Wanparta is interested in capacity building for offshore operations and incident response.	No	Yes
	Value: Cultural connection to the marine environment and fauna, with stingrays being a significant animal totem to the group. Additional importance is placed on Sharks, octopus, fish and birds.	No	Yes
	Feature: Cultural heritage (sites) with the presence of song lines between three islands within the native title area, which were once accessible on foot.	Yes	Yes

Relevant First Nation Group/ individuals	Description of value/interest	Potential for overlap	
		Operational Area	EMBA
	Interest: Species of bird of high importance and was impacted on the islands due to a recent cyclone.	No	Yes
	Value: Detailed lore, culture and customs with a strong spiritual connection to the sea country. Protection and management of marine life are significant to the group.	Yes	Yes
Murujuga Aboriginal Corporation	Feature: Recent World Heritage Listing of importance to the group with cultural heritage sites on the coastline.	Yes	Yes
	Value: Whilst the protection of environmental values is a significant aspect of protecting cultural values, the nature and threshold of impact must be assessed separately. A standard of protection that is considered to minimise impact to an acceptable level by scientific or environmental standards may still have consequences for Aboriginal people.	Yes	Yes
	Value: The deviation of marine mammal migration paths, for example may have no significant environmental impact, but any change to the sighting of whales at a particular point in the landscape would impact the seasonal calendar that marks the transition between seasons.	Yes	Yes
	Value: Any development that could potentially affect the natural movement, migration and/or other behaviour of marine species may have an impact on the cultural interpretation of the seasonal landscape and seascape and associated cultural behaviours.	Yes	Yes
	Value: Some parts of the Murujuga landscape and seascape within the EMBA have strict gender restrictions and cultural safety restrictions that would need to be considered in the event of managing any unexpected environmental incident.	No	Yes
	Interest: In the event of an environmental incident whereby any of the Murujuga World Heritage Property landscape or seascape falls within the possible impact zone, Murujuga Aboriginal Corporation must be immediately contacted for consultation on management of cultural values.	No	Yes
Buurabalayji Thalanyji Aboriginal Corporation	Value: Thalanyji people have cultural and spiritual connection to, and undertake activities in, land and waters that include but are not limited to the Thalanyji Native Title Determination and Thalanyji/Nhuwala claim and extend to offshore areas that include: Monte Bello Islands; Barrow Island; Thevenard Island, Mackeral Islands, Direction Island, Airlie Island, Weld Island, North and South Islands, Ashburton Islands, Twin Island, any island or atoll proximate to the	No	No

Relevant First Nation Group/ individuals	Description of value/interest	Potential for overlap	
		Operational Area	EMBA
	above islands and a general radius of 150 km from the mouth of the Ashburton River. Together, this is Thalanyji Country.		
	Value: Thalanyji Country encompasses both the native title determination and claim and broader Sea Country.	No	Yes
	Feature: Tangible cultural heritage sites along the coastline.	No	No
	Feature: Culturally significant islands within the Thalanyji determination area that Traditional Owners seek to be protected.	No	Yes
	Interest: Co-protecting Thalanyji Country in the event of an operational incident (i.e. hydrocarbon spill). BTAC seeks to be contacted so it can coordinate with its community to activate in an incident and protect culturally significant areas.	No	Yes
	Interest: BTAC would like the Thalanyji rangers to be involved in emergency response. BTAC was also interested in ranger training opportunities and emergency exercises.	No	Yes

Table 3-19: Cultural values and interests identified in publicly available literature

Relevant First Nation Group/Individual	Description of values/interest	Potential for overlap	
		Operational Area	EMBA
Kariyarra Aboriginal Corporation/Kariyarra people	Value/feature: Areas of cultural, spiritual, historical and environmental significance. Estimated to be 15,000 engravings in the Port Hedland Area depicting hunting of dugongs, turtles and fish (KAC, 2024).	No	Yes
	Value: Cultural connection to Country which continuous to be a source of identity, shaping beliefs, customs, and practices (KAC, 2024).	Yes	Yes
Wanparta Aboriginal Corporation/Ngarla people	Value: Unbroken and deep spiritual connection to Sea Country, with traditional practices continued today. Sea Country is culturally significant and important to identity and access to Sea Country by Nyangumarta, Karajarri and Ngarla people is important for maintaining cultural traditions, liveilihoods and future socio-economic opportunities (DNP, 2018).	Yes	Yes

Relevant First Nation Group/Individual	Description of values/interest	Potential for overlap	
		Operational Area	EMBA
	Feature: Culturally significant food sources include saltwater fish, turtles, dugong, crabs, and oysters (DNP, 2018).	Yes	Yes
Murujuga Aboriginal Corporation/Ngarluma, Yaburara, Mardudhunera, Yindjibarndi, and Wong-Goo-Tt-Oo peoples	Feature: Traditional owners and caretakers of the Murujuga National Park and Murjuga World Heritage Area which contains one of the largest, densest and most diverse collections of rock art petroglyphs in the world The area also features middens, fish traps, rock shelters, ceremonial places, spiritual and sacred sites, and stone arrangements (UNESCO, 2025).	No	Yes
Yamatji Marlpa Aboriginal Corporation/Yinggarda, Baiyungu, Thalanyji, and Jinigudira people	Feature: Ningaloo Reef and adjacent shorelines have a long continuous history of Aboriginal occupancy (32,000–38,000 years) with the foreshore and hinterland of North West Cape Range containing cultural heritage sites including burial grounds, middens and fish traps (CALM, 2005). Feature: Aboriginal artefacts including a burial site, Shell midden scatters, stone and glass flakes, burnt shell and bone and baler shells, and possible fireplaces, grinding stones and evidence of shell tool manufacture (DBCA, 2020). Archaeological evidence of human occupation in coastal rock shelters and midden sites on Cape Range, dating back to at least 32,000 years ago in Holocence times. (Morse, 1993). Open air and rock shelter sites with middens of predominantly shell, shell beads, lithic artefacts and terrestrial mammal bones. Most of the midden sites are located on or close to the coast (DBCA, 2022). The earliest known shell middens (in Coral Bay Area) are evidence or mangroves and intertidal area during the middle Holocene period (DBCA, 2022).	No	Yes
	Feature: History and present use of coastal and Sea Country for camping, fishing and hunting of turtle and dugong in North West Cape (CALM, 2005). Customary activities including ceremonial and hunting activities (DBCA, 2022). Conservation of significant plants, animals and habitats including karst, turtle nesting areas, seabird and shorebird roosting and breeding areas, and cave fauna (DBCA, 2022).	No	Yes

Relevant First Nation Group/Individual	Description of values/interest	Potential for overlap	
		Operational Area	EMBA
	Value: Connection to Country (CALM, 2005; DBCA, 2022) "Under traditional law, Aboriginal people are responsible for, and obliged to protect, preserve and manage areas, sites and objects of Aboriginal significance associated with their Country" (CALM, 2005).	No	Yes
	Feature/Value: Plants or animals that are culturally significant or totems related to creation stories, ceremonies or used as medicine or food. Significant *thalu* sites along the coast which are places for ceremonies and rituals that are used for the spiritual regeneration of culturally significant species (DBCA, 2022). *Thalu* sites include *majun* (turtles), *nhuga* (shark), *yambarna* (rays), *bilyguru* (fish), *wuruwurugaja* (squid), *manimanira* (octopus), *bigurda* (euro/hill kangaroo Macropus robustus), *gajalbu* (emu Dromaius novaehollandiae), and *bilygurumarda* (osprey) (DBCA, 2022).	No	Yes
Wirrawandi Aboriginal Corporation/Yaburara and Mardudhunera people	Value: Moral, legal and cultural obligation to obtain, own and protect our cultural materials, including evidence trail of continued cultural connection to Country and the kinship of people (WAC, 2023).	Yes	Yes

3.7.6.2 Country in the North-West Marine Region

Northern Australia was one of the first areas of Indigenous occupation in Australia. Archaeologists have concluded that Indigenous people arrived in the northwest at least 50,000 years ago when sea level was at least 100 m lower than present (Smyth, 2007). As a result, First Nations communities in the NWMR have maintained special links with Sea Country for many thousands of years through occupation, resource utilisation and other cultural practices (including stories, dance, management practices and ceremonies). Pre-colonial use of Australia's oceans by coastal First Nations groups varied over time and between regions. Patterns of use at the time of colonisation included hunting, fishing and gathering as well as extended sea voyages by canoe to exploit resources and manage clan Sea Country, sometimes out of sight of the mainland (Smyth, 2007).

First Nations people of the NWMR continue to assert inherited rights and responsibilities over Sea Country. It is understood that spiritual corridors and Songlines extend from terrestrial areas into nearshore and offshore waters, including a number of marine animals as totems (DNP, 2018).

Indigenous communities own the majority of land adjacent to the NWMR (DEWHA, 2012). Native title determinations in the NWMR recognise in law that native title exists over Sea Country and preserve continuing rights to access sea country to hunt, fish, gather and use the resources of the waters for personal, domestic, communal, cultural and spiritual needs. Traditional Indonesian fishers have also visited and used the northern coast of Australia and its islands and reefs since at least the early eighteenth century. Evidence of this (i.e. grave sites) is found within the Ashmore Reef Marine Park (DNP, 2018).

Indigenous people in the NWMR have continued their traditions of caring for Country in a contemporary manner. Contemporary industry activities apply pressure to Sea Country values, including (Smyth, 2007):

- The transit and use of Commonwealth waters by dugongs, turtles and fish important to Aboriginal people
- The transit and control of illegal foreign fishers
- The transit and control of foreign shipping
- The transit and control of unauthorised immigrants
- The management of oil and gas exploration and extraction
- Cultural stories, sites and Songlines/Dreaming lines that may extend into Commonwealth waters
- Knowledge that the flooded countries of ancestors lie beneath Commonwealth waters
- Aboriginal participation in commercial fishing
- Aboriginal involvement in tourism and charter fishing enterprises.

3.7.6.3 Marine Parks

Cultural values within AMPs are broadly defined as living and cultural heritage recognising Indigenous beliefs, practices and obligations for country, places of cultural significance and cultural heritage sites. Table 3-20 lists cultural heritage values identified within State and Commonwealth marine parks within the Hydrocarbon Area and EMBA. Cultural heritage values are from the AMPs North-West Network Management Plan (DNP, 2018) unless otherwise stated.

Table 3-20: State and Commonwealth Marine Protected Areas within the EMBA and identified cultural heritage values

Marine Park	Marine Park types	Project Areas			Identified cultural heritage values
		Operational Area	Hydrocarbon Area	EMBA	
Dampier	Habitat Protection Zone (IUCN IV)	-	-	✓	• The Ngarluma, Yindjibarndi, Yaburara and Mardudhunera people have responsibilities for sea country in the Marine Park. • The Native Title holders for these people are represented by the Ngarluma Aboriginal Corporation and Yindjibarndi Aboriginal Corporation. • These Prescribed Body Corporates represent Traditional Owners with native title over coastal area adjacent to the Marine Park are the points of contact for their respective areas of responsibility for sea country in the Marine Park. • Murujuga National Park is Western Australia's 100th national park and the first to be co-managed by Traditional Custodians and the WA Department of Biodiversity, Conservation and Attractions (DBCA). Murujuga Aboriginal Corporation holds the freehold title to Murujuga National Park which overlaps the EMBA. Murujuga Aboriginal Corporation is made up of members from five traditional custodial groups: the Ngarluma, Mardudhunera, Yaburara, Yindjibarndi, and Wong-Goo-Tt-Oo peoples. DBCA staff and Murujuga Aboriginal Corporation National Park Rangers work closely together to jointly manage Murujuga National Park. Murujuga Cultural Landscape was recently named a World Heritage Place by UNESCO (Section 3.6.1). • The Bardi and Djawi people of the Dampier Peninsula and Buccaneer Archipelago have a deep connection to the Sea Country in the region which has been shared through Dreaming stories. These stories tell of ancestral beings who travelled the seas and created the islands, reefs, sandbanks and marine fauna found within the area. Ritual sites were established by ancestral beings throughout the islands and remain culturally significant to the First Nations people of the area today who have a cultural responsibility

Marine Park	Marine Park types	Project Areas			Identified cultural heritage values
		Operational Area	Hydrocarbon Area	EMBA	
					to manage and protect these culturally significant places (Smyth, 2007). • Early records of First Nations maritime use have been documented in the Dampier Archipelago. These records include travel to the islands for ceremonial purposes or for resource collection, such as turtle eggs during breeding season, as well as the use of rafts to travel across marine waters, and baler shells used to carry water for long journeys. There are also early record describing of the preparation of mangrove seeds for propagation, spearing of turtles, and the use of fishing nets and traps made from spinifex, which were used for a wide range of target species areas (Smyth, 2007).
Gascoyne	Habitat Protection Zone (IUCN IV) Multiple Use Zone (IUCN VI) National Park Zone (IUCN II)	-	-	✓	• The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative body for the Gascoyne Marine Park and Ningaloo Marine Park (DNP, 2018). • The Ningaloo Marine Park encompasses inshore reef along the coast and to the south of the Exmouth Gulf. The foreshore and hinterland of the North-West Cape have a long history of First Nations occupation. The coastline contains numerous culturally significant and protected Aboriginal sites including burial grounds, shell middens, and fish traps which provide tangible evidence of First Nations culture in the region (CALM, 2005). • The archaeological records from the Cape Range Peninsula are significant in that they provide the earliest confirmed record of Pleistocene marine resource use in Australia (Smyth, 2007). Current uses of the area by First Nations people includes camping, fishing including the fishing of culturally significant species such as turtle and dugong (CALM, 2005).

Marine Park	Marine Park types	Project Areas			Identified cultural heritage values
		Operational Area	Hydrocarbon Area	EMBA	
Montebello	Multiple Use Zone (IUCN VI)	-	✓	✓	• The Montebello Islands Marine Park and Barrow Islands Marine Park includes complex seabed and island topography, sheltered lagoons, reefs, macroalgal and seagrass communities. There is limited information on the cultural significance of these areas (DNP, 2018), and there are no recorded Aboriginal sites in the waters of the reserves. • However, it is possible that there are Aboriginal archaeological sites on the seabed that were created before the most recent sea level rise (DEC, 2007).
Montebello Islands and Barrow Islands (jointly managed)	Marine Park Conservation Park Marine Management Area	-	✓	✓	
Ningaloo	Recreational Use Zone (IUCN IV)	-	-	✓	• Ningaloo Reef and the adjacent foreshore have a long history of occupancy by Aboriginal communities. The foreshore and hinterland of North-West Cape contain numerous Aboriginal sites such as burial grounds, middens and fish traps that provide a historical account of the early habitation of the area and a tangible part of the culture of local Aboriginal groups. • The earliest Aboriginal groups to inhabit the peninsula were the Jinigudira and the Baiyungu people. The Jinigudira inhabited most of the land adjacent to the reef and northern cape, while the Baiyungu inhabited the southern areas of foreshore adjacent to the reef. The archaeological record of the Cape Range Peninsula is significant in that it provides the earliest confirmed record of Pleistocene marine resource use in Australia. Aboriginal habitation of the North-West Cape and Exmouth is thought to have commenced at least 32,000 years (with some reports of 38,000 years before present and continues up to the present (WA Planning Commission, 2004 as cited in CALM and MPRA, 2005). • Although the majority of local Aboriginal people live in towns such as Carnarvon and Onslow, individuals and families retain strong ties to particular sites. The Jinigudira and the Baiyungu still maintain and associate with the North-West Cape and are

Marine Park	Marine Park types	Project Areas			Identified cultural heritage values
		Operational Area	Hydrocarbon Area	EMBA	
					recognised as the traditional owners of these lands (Gnulli Park Council, pers. comm.). Cardabia pastoral station surrounding Coral Bay is owned and managed by the Baiyungu community. Despite disruptions to traditional life, Aboriginal people seek to retain social, religious and personal bonds with their traditional lands. Current Aboriginal usage of the area includes camping and fishing, as well as limited hunting of turtle and dugong (CALM and MPRA, 2005).
Pilbara Islands Nature Reserve (Little Rocky Island and Thevenard Island)	Nature Reserve	-	-	✓	Not recorded.

Section 4 Risk Assessment Methodology

4.1 Overview

Environmental risk assessment is a key component of the environmental risk management process. Environmental risk is assessed by determining the consequence (impact) of an environmental hazard and the likelihood that the consequence will occur, taking consideration of both existing and additional proposed control measures.

Key terminology used in this section of the EP includes:

- **Acceptable:** a tolerable level of impact or risk (either quantitative or qualitative) when assessed in relation to the principles of Ecologically Sustainable Development (ESD), internal and external contextual consideration and other relevant requirements (Section 4.9).
- **Activity:** An activity is a 'Petroleum Activity' as defined within Section 5 of the OPGGS(E)R. Specifically, in the context of this EP, 'Activity' relates to a well construction activity.
- **ALARP:** A level of risk that is tolerable, where the cost of reducing it further (e.g. financial, time, effort) is grossly disproportionate to any risk reduction gained (as per VOGA Risk Management Manual VOG-2000-MN-0001). The methodology for demonstrating ALARP is described in further detail below (Section 4.8).
- **Catastrophic Environmental Event (CEE):** any event which has an environmental impact ranked as "5 – Catastrophic" on the VOGA risk matrix (Section 4.6).
- **Cause:** The cause of a particular environmental impact. The cause may be an 'activity', or the cause could be an unplanned event, e.g. "vessel collision with facility".
- **Consequence ranking:** A measure of the severity of the environmental impact in accordance with the VOGA risk matrix (Section 4.6).
- **Control measures:** A means of reducing environmental risk by prevention, frequency reduction, or impact reduction. Control measures take many forms including systems, procedures, people and equipment.
- **Critical Control:** a control that has a key role in preventing, detecting, controlling or mitigating a CEE (as assessed on the VOGA risk matrix [Section 4.6]).
- **Environment:** is and includes the social, economic and cultural features of:
  - ecosystems and their constituent parts, including people and communities
  - environmental assets such as:
    - natural and physical resources
    - the qualities and characteristics of locations, places and areas
    - the heritage value of places.
- **Environmental hazard:** A situation with the potential for causing an environmental impact.
- **Environmental impact:** Any change to the environment arising from an environmental hazard.

- **Likelihood ranking:** A measure of the chance of an environmental impact occurring (expressed as chance, probability or frequency) in accordance with the VOGA risk matrix (Section 4.6).
- **Measurement criteria:** Tangible indicators, quantifiable where possible, that will be used to evaluate the achievement (or otherwise) of environmental performance standards and objectives.
- **Mitigation controls:** Controls which will be utilised in the event that the environmental hazard, requires steps to be taken to return the activity and/or the environment to an acceptable state, i.e. consistent with the environmental objective.
- **Environmental performance outcome:** A measurable level of performance required for the management of environmental aspects of the activity to ensure that environmental impacts and risks of the activity will be of an acceptable level.
- **Performance standard:** A statement of the performance required of a control.
- **Preventive controls:** Controls which will prevent an environmental impact.
- **Residual risk:** The residual risk rating considering the effectiveness and availability of controls (existing and additional).
- **Risk:** A change to the environment that may occur as a result of an unplanned event.

4.2 Framework

The environmental risk assessment was undertaken in accordance with VOGA Risk Management Manual [VOG-2000-MN-0001] and in line with the requirements of the OPGGS(E)R. The framework adopted by VOGA in compiling this EP is consistent with the methodology described in AS/NZS ISO 31000 and NOPSEMA Guidance Note [N04750-GN1344]. Figure 4-1 depicts this methodology with reference to relevant sections of this EP where the requirements are addressed.

Figure 4-1: Content requirements of this EP (within the Framework Outlined in AS/NZ ISO 31000)

The scope of activities covered by this EP was confirmed in terms of its timing(s), extent, and the nature of the activities included within it. This scope is reflected in the activities described in Section 1.4.

Potential environmental hazards associated with activities and unplanned events were identified, and impacts determined in a qualitative manner in an environmental hazard review workshop. Existing controls were identified in the same workshop. Each hazard employs a hierarchy of controls which relies on the following (in order of preference):

- Elimination: Refers to the elimination of a hazard, for example the use of a renewable energy source eliminates the emissions associated with power generation.
- Substitution: This refers to scenarios where an alternative arrangement is used to reduce the risk levels. For example, using a lower emission fuel type.
- Prevention: removing the causes of a particular impact or decrease their likelihood. As an example, a simpler plant with fewer leak points.
- Reduction: Limits the scale and consequence of a particular impact. For example, changes to process systems to reduce the size of hazardous inventories.
- Mitigation: Controls in place to respond to an incident, such as oil spill contingency planning.

In the case of complex or high hazard risks, environmental impact modelling was carried out to ensure that the impacts were thoroughly understood.

The severity, frequency, and subsequently the initial risk ranking was allocated to each hazard in accordance with the VOGA Risk Management Manual [VOG-2000-MN-0001]. The risk rankings were reviewed, and additional controls were considered to reduce the residual risk to ALARP and acceptable levels.

The Environmental Performance Outcomes (EPOs), Environmental Performance Standards (EPSs) and measurement criteria associated with the controls were developed in a series of performance standard workshops. The residual risk score for each environmental hazard was assigned considering the risk reduction from both the existing and any additional controls. The implementation strategy (Section 8) describes how the additional controls will be implemented.

4.3 Impact Assessment

An assessment of impact for each identified hazard was conducted by:

- Defining impact assessment criteria
- Quantifying magnitude of the stressor, including where applicable, quantity, concentration of contaminant and level of disturbance
- Consideration of timing and duration of the impact and other factors affecting the impact and risk (depth, temperature, tides, etc.)
- Consideration of environmental features affected either directly or indirectly
- Evaluation of the acceptability of the impact and risk.

4.3.1 Cumulative Impacts

In the context of offshore petroleum activities, cumulative environmental impacts are defined by NOPSEMA as successive, additive, or synergistic impacts of collectively significant activities or projects with material impacts on the environment that have the potential to accumulate over temporal and spatial scales (NOPSEMA, 2024a).

VOGA has assessed the cumulative impacts of the well construction activities in relation to other current or foreseeable activities, including other petroleum and greenhouse gas activities, that could realistically result in overlapping temporal and spatial extents. Assessment of these impacts from concurrent or parallel activities has been included in Section 6.

4.4 Catastrophic Environmental Events and Critical Controls

In the context of the Wandoo well construction activity, an event with a consequence ranking of Catastrophic (5) as per Table 4-1 is defined as a CEE. A physical control, measure or procedure that has a key role in preventing, detecting, controlling or mitigating a CEE is defined as a Critical Control. Although EPOs are developed for all environmental controls, Critical Controls are subjected to more stringent management. Management of critical controls is discussed in the Implementation Strategy (Section 8.3.9).

4.4.1 Identifying Catastrophic Environmental Events

Environmental hazards for the Wandoo well construction activities are discussed in Section 5. It is important to note that there will usually be a range of possible impacts resultant from each hazard and only some of these may have catastrophic potential. The overview of all environmental hazards (Section 5) and each individual hazard report identify the worst credible impact resultant from each hazard.

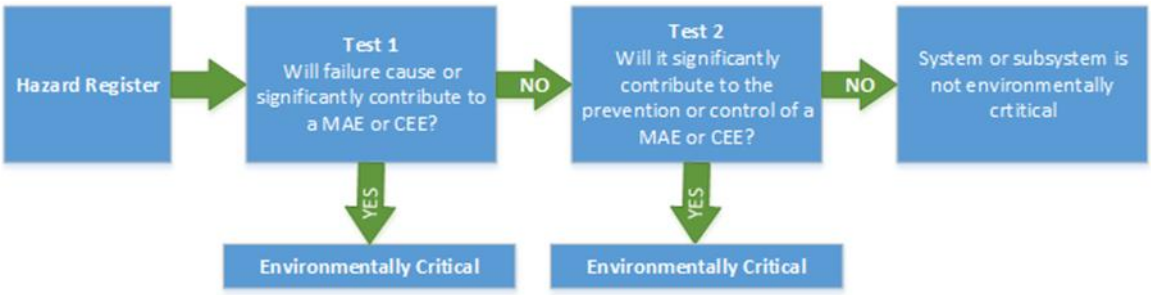
Based on the description of the hazard and the range of possible impacts for each hazard in Section 5 it is possible to determine those circumstances where a release would have catastrophic potential. It is only under these circumstances that a CEE would result. These events have been designated as a CEE and a CEE-XX numerical designator allocated.

4.4.2 Identifying Critical Controls

Once an event has been identified as a CEE the controls associated with that event must be assessed to determine which controls are considered critical. To confirm the applicability of a control measure as critical, it is necessary to apply a reasoned process as depicted in Figure 4-2.

For identified CEEs, the controls associated with those events have been subjected to the above process and Critical Controls identified. No CEEs have been identified for the well construction activities.

Figure 4-2: Critical Element identification process



4.5 Determination of Likelihood

The VOGA Environmental Risk Matrix (Table 4-1) provides for the likelihood of an impact (consequence) occurring to be determined on the basis of either chance, probability or frequency.

For higher-order risks, the probability of the impact occurring should be evaluated (where possible) on industry data of previous events that have caused impacts to occur. Where statistical industry data is not available, the frequency of events should be determined via other means such as corporate knowledge.

For lower-order risks, or where historical industry information may be unavailable, either frequency or chance may be used to determine likelihood of the impact occurring.

The determination of likelihood should only be evaluated using a single evaluation technique, i.e. either probability, frequency or chance in decreasing order of precedence.

4.6 VOGA Risk Ranking

The risk ranking was carried out in accordance with VOGA Risk Management Manual [VOG-2000-MN-0001] and utilised throughout Section 5.

Table 4-1 is the VOGA corporate risk matrix representing the environmental consequence evaluation in relation to the frequency rating of the occurrence of the environmental hazard, assuming identified controls are in place. The residual risk level is used to establish the actions required to manage potential impacts and risks to ALARP and acceptable levels, and provides environmental consequence definitions in the context of the nature of receptors potentially impacted by the petroleum activity as described in Section 2 of this EP.

The risk action table defines risk levels and the actions required to reduce the risk (Table 4-2). VOGA considers residual environmental risks to be acceptable when at a Residual Risk (RR) level of RRIV (Low) or RRIII (Medium). Table 4-3 details the criteria for socio-economic impacts.

Table 4-1: VOGA environmental risk matrix

				LIKELIHOOD					
			Chance	Rare	Unlikely	Possible	Likely	Almost Certain
			Probability	1 in 10 000 - 100 000 (10^-5)	1 in 1 000 - 10 000 (10^-4)	1 in 100 - 1 000 (10^-3)	1 in 10 - 100 (10^-2)	1 in 1-10 (10^-1)
			Frequency	Not known to have occurred, but believed to be a credible scenario	Has occurred within our own industry	Has occurred within Vermilion, or has occurred multiple times per year within our own industry	Has occurred several times within Vermilion	Has occurred typically once or more per year within Vermilion
	Environment			A	B	C	D	E
POTENTIAL CONSEQUENCE	Irreversible effects on habitat, ecological communities, land, air or water Persistent reduction in sensitive ecosystem function (extends beyond area abandonment timeframe) Effects extend beyond regional scale and/or operating area/district	5	Catastrophic					
	Persistent but reversible, long-term (>10 years) effects on habitat, ecological communities, land, air or water Effects are widespread within region and/or specific operating area	4	Major					
	Reversible, medium-term (5-10 years) effects on habitat, ecological communities, land, air or water Effects extend into the immediate surroundings of the operating area/lease and/or localized off-lease	3	Moderate					
	Reversible, short term (1-5 years) effects on habitat, ecological communities, land, air or water Effect within operating area/lease boundaries or localized off-lease	2	Minor					
	Reversible, short term (<1 year) effects on habitat, ecological communities, land, air or water Effect within operating area and/or contained on-lease	1	Incidental					

Table 4-2: Risk action table

Risk Level (includes inherent risk in the event no safeguards are available)	Inherent Risk Action to Reduce Risk to an Acceptable Level	Residual Risk Action to Reduce Risk to an Acceptable Level
RRI or Extreme	Immediate implementation of temporary safeguard. Stop activities until risk controls/safeguards that will reduce the risk are implemented Implement permanent safeguard to reduce risk to acceptable level.	Review Environment Acceptability criteria (Section 4.7)
RRII or High	Immediate implementation of temporary safeguard. Establish a team for the: a) Evaluation of permanent safeguards b) Implementation of permanent safeguards to reduce risk to an acceptable level.	
RRIII or Medium	Safeguards are re-evaluated to determine suitability and acceptability. Establish a team for the evaluation and maintenance of current safeguards. Evaluate for ALARP. Implement permanent safeguards or accept risk as per defined authority.	
RRIV or Low	Controls are reviewed to ensure effectiveness. No further risk treatment if ALARP.	

Table 4-3: Wandoo-specific supplementary environmental consequence definitions

Term Used	Definition in the context of this EP
Geographical extent of impact	
Regional scale	Extent of impact across multiple bioregional provinces (EMBA).
Widespread	Extent of impact beyond the Operational Area (<200 km).
Localised off lease	Extent of impact mostly within the Operational Area with some effect extending beyond the boundaries of the area (<40 km).
Within operating area	Extent of impact limited to the Operational Area (2 km from the well location).
Socio-economic criteria: Environment criteria applies for impact and duration. Below are a range of examples for socio-economic impacts and how they are applied to environment consequence ranking in the context of this EP	
5 Catastrophic	Widespread damage to or exclusion from commercial enterprise or collapse of commercial enterprise.
4 Major	Damage to or long-term exclusion (>10 years) from large proportion of commercial or recreational enterprise (e.g. fishery closure).

Term Used	Definition in the context of this EP
3 Moderate	Medium-term (5–10 years) damage to or temporary exclusion from large proportion of commercial or recreational enterprise where recovery is expected to occur within 1 year of the activity stopping.
2 Minor	Temporary or permanent exclusion to minor proportion of commercial or recreational enterprise.
1 Incidental	Very short-term exclusion to minor proportion of commercial or recreational enterprise; or community disturbance impact e.g. low-level noise, vibration, lighting.

4.7 Determining Acceptability

For an environmental hazard to be assessed as acceptable, VOGA considers the following items:

- Principles of Ecologically Sustainable Development (ESD) are not compromised
- External context – objects or claims may by external relevant persons considered
- Internal context – VOGA HSE policy/procedures are being met
- Other requirements, e.g., industry notices and guidance
- RR < High (RRII)
- EPO(s) manage impacts to acceptable level(s).

4.8 Demonstrating ALARP of Impact and Risk

4.8.1 Demonstration of ALARP

Demonstrating ALARP has been undertaken in accordance with VOGA's Risk Management Manual [VOG-2000-MN-0001] and NOPSEMA's ALARP Guidance Note N-04300-GN0166 [with the key principles of this Guidance Note (Health and Safety) also applying to Environmental Management]. Demonstrating that risks levels are ALARP is a two-step process. Firstly, residual risk levels must be tolerable, that is not within the "High" or "Extreme" risk area of the VOGA Risk Matrix as per Table 4-1. Secondly, once deemed tolerable further risk reduction measures must be identified and assessed for implementation as described below.

Following the identification of standard industry 'good practice' risk mitigation controls and recovery measures, VOGA reviews the residual risk and assesses whether there are any further measures required to reduce the residual risk to ALARP. For well construction activities and well intervention projects, risks are considered to have been reduced to ALARP if the risks are within the tolerable region of the VOGA Risk Matrix and have been subject to a detailed assessment process that has concluded that there are no additional reasonably practicable measures that can be implemented to further reduce the level of risk.

When deciding whether risks are managed to ALARP, the following items are considered:

- Duration and regularity of operations
- Risk
- Layers of protection

- Feasibility of additional controls or alternative arrangements
- Practicality of additional controls or alternative arrangements
- Cost of additional controls or alternative arrangements
- Effectiveness of additional controls or alternative arrangements
- Impact on risks from additional controls or alternative arrangements
- Lessons learnt from past campaigns and industry.

This decision is valid where:

- All environmental hazards have been identified and assessed
- Risk levels have been evaluated
- Residual risk levels are tolerable, compliant and ALARP.

EPSs have been defined to ensure that the risks are reduced to ALARP on an ongoing basis. The VOGA risk matrix defines an upper threshold above which no risk is tolerable. Below this threshold is the ALARP region, where risks should be further reduced until the cost of any additional action outweighs the incremental benefit gained.

4.8.2 Concept Evaluation ALARP Demonstration

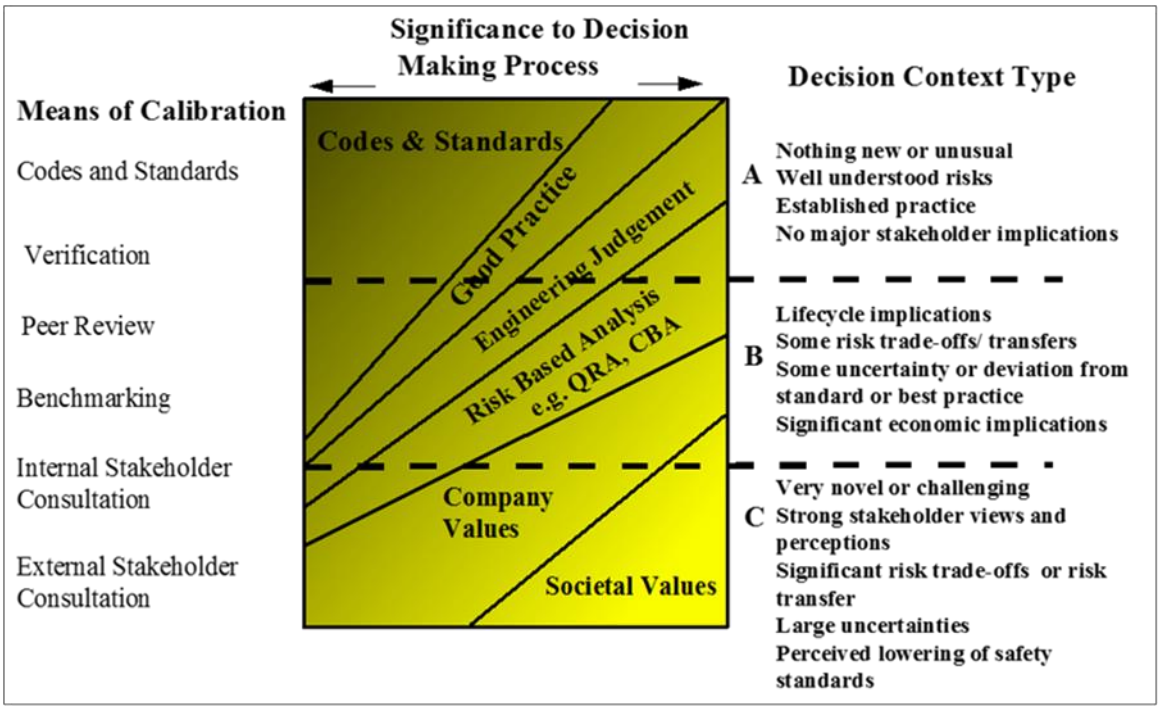
For evaluation of concepts, a specific ALARP Demonstration Worksheet is completed in accordance with the processes defined in VOGA's Risk Management Manual [VOG-2000-MN-0001]. For concept evaluations, demonstration of ALARP contains elements of the following process:

- Identification and consideration of a range of potential measures for further risk reduction
- Systematic analysis of each of the identified risk reduction measures and a view formed on the HSE benefit associated with each of them
- Evaluation of the reasonable practicability of the identified measures
- The implementation (or planned implementation) of the identified risk reduction measures
- Recording of the process and results.

The United Kingdom Offshore Operators Association (UKOOA) has produced guidelines for assisting with the ALARP decision-making process and for recording and demonstrating the robustness of the decision as depicted in Figure 4-. These are regarded as good practice internationally and have been adopted globally as the standard guidance for ALARP decision making.

The UKOOA guidelines describe a framework that is intended to help decision-makers identify the various decision factors and establish a basis for the decision based on these. The decision framework assesses the significance to the decision process of codes and standards, good practice, engineering judgement, risk analysis, cost benefit analysis, and company and societal values. They aim to encourage the development of transparent decision-making processes.

Figure 4-3: UKOOA Decision Support Framework



The first step in the decision-making process is to establish the decision context. This is done by assigning a decision context type (A-C), based on the categories and prompts detailed in Table 4-4.

Table 4-4: ALARP decision context type

Decision context	Description
A	Nothing new or unusual Well understood risks Established practice No major stakeholder implications
B	Lifecycle implications Some risk trade-offs/transfers Some uncertainty or deviation from standard or best practice Significant economic implications
C	Very novel or challenging Strong stakeholder views and perceptions Significant risk trade-offs or risk transfer Large uncertainties Perceived lowering of safety standards

The ALARP template provides questions around the decision context and prompts discussion to determine the appropriate context type.

Once the decision context has been established, Table 4-5 is then consulted to determine an appropriate method of decision making. For example, a design which involves nothing new or unusual, has well understood risks and no major uncertainties or shareholder implications, would be assigned a decision context in the middle of Type A as shown by the band in Table 4-4.

Reading across this band indicates the relative importance of each of the decision-making criteria; that is, the decision should be primarily based on the requirements of codes and standards, then engineering judgement and finally good practice. Quantitative Risk Assessment (QRA) should not be allowed to have a great influence on the decision. Consulting the codes and standards provides an appropriate means to calibrate the decision.

However, if the costs associated with the problem were considerable, or there were significant risk uncertainties, this would push the context towards Type B. In this case, some use of QRA and consideration of the company values would be appropriate.

Table 4-5 provides further explanation of each of the decision-making criteria.

Table 4-5: Decision criteria definitions

Decision criteria	Definition
Codes and standards	Decision basis is to follow the requirements of relevant codes and standards. Codes and standards embody the lessons learnt over past years, and for well understood hazards and situations often provide an appropriate solution.
Good practice	Decision basis is to follow what is generally accepted as current standard or good/best practice. Good practice embodies both the requirements of codes, etc. and other good engineering, analysis and management practices for common situations. Good practice may include solutions that have not yet found their way into codes and standards. What is good practice may differ from situation to situation. Care should be taken to benchmark against the relevant good practice or emerging practice.
Engineering judgement	Decision basis is to follow what sound engineering judgement indicates is the best solution. This would be expected to include a recognition of what is good/best emerging practice, and an understanding and application of sound engineering and scientific principles and methods. It could include: engineering analysis, consequence modelling, deterministic cases for hazard management as well as competent judgment and interpretation of these and other information.
Risk-based analysis (QRA, cost benefit analysis (CBA), etc.)	Decision basis is to make use of the results of probabilistic analyses such as QRA, reliability analysis and CBA to support the decision-making process. The assessment could be qualitative or quantitative. Uncertainties and the resolution of the analysis vs the needs of the decision will be key issues to address.
Company values	Decision basis should take account of the views, concerns and perception of the stakeholders directly affected by the decision/option and the values of the company in terms of its safety commitment, image, etc.
Societal values	Decision basis should take account of the views, concerns and perceptions of all the relevant stakeholders, including society at large.

The ALARP Demonstration Worksheet provides documentary evidence that the above process has been followed and requires a recommendation of the proposed solution that best meets the appropriate criteria.

4.9 Evaluating Acceptability of Residual Impacts or Risks

Regulation 21(5)(c) of the OPGGS(E)R requires demonstration that environmental impacts and risks are of an acceptable level.

VOGA only considers the level of residual impact or risk to be of an acceptable level when (in combination):

- The relevant Principles of ESD have not been compromised
- Both internal and external context requirements have been achieved
- All other requirements have been met
- The predicted level of residual risk is below the level considered as unacceptable and is demonstrably ALARP.

To demonstrate that potential environmental impacts and risk associated with the well construction activities are of an acceptable level, the following process has been adopted to establish an acceptable level of residual risk for each aspect of the activity (either qualitative or quantitative) considering:

- The principles of ESD – the activity must be carried out in a manner consistent with the relevant ESD principles, namely:
  - Decision making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations. This principle is inherently applied via the risk assessment methodology, inclusive of the demonstration of ALARP, detailed within this EP. As such, this principle is not evaluated separately within each hazard assessment.
  - If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. This principle applied via the ALARP process in which a precautionary approach may be adopted where residual risks may be high-level or where there is a high degree of uncertainty in the outcomes of the activity.
  - The principle of inter-generational equity — that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. This principle is inherently applied via the risk assessment methodology, inclusive of the demonstration of ALARP, detailed within this EP. As such, this principle is not evaluated separately within each hazard assessment.
  - The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making. This principle is applied by evaluating residual risks of well construction activities to particular values and sensitivities, including matters protected under Part 3 of the EPBC Act, giving consideration to relevant recovery plans and species conservation advices as detailed within Table 1-3.
- Internal context – the activity must be undertaken in a manner consistent with the objectives of the VOGA HSE policy and relevant procedural controls.

- External context – where a relevant organisations' or persons' activity, function or interest may be affected by the activities, any objections or claims that have been assessed as having merit and are relevant to the activities should be considered when establishing the acceptable level of residual risk of the activity. The predicted level of residual risk presented within this EP shall be taken as acceptable in the context of external stakeholder expectations when:
  - the level of residual risk is equal to or below existing stakeholder expectations in regard to their function, activity or interest, or
  - where no objection or claim is received from a relevant organisation or person.
- Other requirements – the residual risks associated with the activity are considered acceptable in the context of external requirements when they are within the bounds identified in relevant laws, policies, standards, conventions and do not compromise the objectives of relevant recovery plans and species conservation advices as detailed within Table 1-3.

4.10 Environmental Performance Outcomes, Environmental Performance Standards and Measurement

EPOs, EPSs, and their measurement criteria, are defined for each control to ensure overall environmental performance is maintained at ALARP and acceptable levels.

The EPOs detailed within this EP are consistent with the principles of ESD as detailed in Section 4.9, provide for Matters Protected under Part 3 of the EPBC Act, are relevant to the potential impacts and risks associated with the well construction activity and maintain potential impacts and risks to acceptable levels based upon the context described in Section 4.9.

The EPOs detailed within this EP can be measured in various ways depending on whether the acceptable level of impact or risk is quantitative or qualitative.

Quantitative levels of performance embedded within EPOs can be directly monitored and measured either prior to or after an impact has occurred (either planned or unplanned). Qualitative levels of performance can be assessed by validating whether the EPO remains achievable, relevant, or that the EPO has been maintained (or breached).

Each EPO is a measurable level of performance required for the management of environmental aspects of the activity to ensure that environmental impacts and risks of the activity will be of an acceptable level. Where multiple controls protect against the same hazard, they may share a common environmental performance outcome.

Once the environmental performance outcome has been confirmed, a more specific statement on the level of performance required of the control is established – this is the EPS. The EPS may be a quantitative or qualitative statement of the functional requirement of a specific control. Note that for administrative controls such as procedures, EPSs are typically less specific than those for physical equipment.

Once EPOs and EPSs are developed, it is important that the performance of the control can be tracked or monitored in some way to confirm it continues to meet the performance standards. To achieve this, a measurement criterion or means of assurance is specified. The measurement

criterion varies, depending on the nature of the control. VOGA would also accept internal or external audit records, maintenance and testing records, certificates, operations records, purchasing records, material specifications etc. as a means of assurance or measurement criteria.

Each hazard assessment in Section 5 contains the EPOs and associated standards and measurement criteria for each of the material controls identified. These are also presented in Section 7.

4.11 Criteria Hazard Report Template

The risk assessment section of this EP is structured such that each of the hazards has a dedicated sub-section. Each sub-section commences with a Hazard Report Table, which is a tabular summary of the hazard, its causes, impacts and risk ranking.

Each Hazard Report Table contains:

- The activity/cause of the hazard
- EP risk number, this is a unique identification number applied to each risk
- The extent of the hazard, e.g. area disturbed, or volume released
- A high-level summary of the impacts to the environment which the hazard may cause
- A summary of the impact and risk evaluation, including residual risk
- Relevant EPO(s).

Section 5 Hazard Assessment

Planned activities and unplanned events associated with the well construction activities pose a range of different environmental hazards. The risks of these hazards occurring have been assessed using the methodology outlined in Section 4. A matrix of the hazards listed against the activities outlined in Section 2 is provided in Table 5-1. Descriptions of these hazards and how they may occur, along with measures to prevent and mitigate potential environmental impacts, are included in this section.

Table 5-1: Summary of environmental hazards for well construction activities

EP risk No.	Hazard	Activity												Risk Ranking			Section
		Drilling Well from a New Slot	Drilling a Well from a - Recovered Slot	Conversion of Existing Wells/Sidetracks	Well Intervention	Drilling Fluids and Cuttings	Cementing Operations	Temporary Suspension	P&A	BOP installation	MODU Operations	Support Operations	Oil Spill Response	Impact/consequence	Likelihood	Residual Risk	
Planned																	
EP-WC-R01	Interaction with other marine users										x	x		1	B	RRIV	5.1
EP-WC-R02	Seabed disturbance	x	x	x	x							x		1	E	RRIII	5.2
EP-WC-R03	Noise emissions	x	x	x	x				x			x		1	B	RRIV	5.3
EP-WC-R04	Atmospheric and GHG emissions										x	x		1	E	RRIII	5.4
EP-WC-R05	Light emissions										x	x		1	C	RRIV	5.5
EP-WC-R06	Vessel discharges										x	x		1	E	RRIII	5.6
EP-WC-R07	Drilling discharges					x								1	E	RRIII	5.7
EP-WC-R08	Non-drilling discharges						x							2	B	RRIV	5.8

EP risk No.	Hazard	Activity												Risk Ranking			Section
		Drilling Well from a New Slot	Drilling a Well from a - Recovered Slot	Conversion of Existing Wells/Sidetracks	Well Intervention	Drilling Fluids and Cuttings	Cementing Operations	Temporary Suspension	P&A	BOP installation	MODU Operations	Support Operations	Oil Spill Response	Impact/consequence	Likelihood	Residual Risk	
Unplanned																	
EP-WC-R09	Accidental discharge of waste and solid objects										x	x		2	B	RRIV	5.9
EP-WC-R10	Introduction of IMS										x	x		3	A	RRIV	5.10
EP-WC-R11	Interaction with marine fauna										x	x		1	B	RRIV	5.11
EP-WC-R12	Ancillary hydrocarbons or chemical spills										x	x		1	B	RRIV	5.12
EP-WC-R13	Accidental release - MDO											x		3	B	RRII	5.13
EP-WC-R14	Accidental release – LOWC*													N/A	N/A	N/A	5.14
EP-WC-R15	Environmental impact of oil spill response												x	2	B	RRIV	5.15

** The risk of an accidental release of hydrocarbons due to a LOWC is considered not credible.*

5.1 Planned: Physical Presence – Interaction with Other Marine Users

5.1.1 Hazard Report

Table 5-1: Hazard Report – Interaction with other marine users

HAZARD	Interaction with other marine users		
EP risk number	EP-WC-R01		
Activity/cause	• MODU operations • Support operations.		
Extent	Up to three support vessels, and one MODU will be in the Operational Area at any one time. The Operational Area incorporates the existing Wandoo facility PSZ, which excludes unauthorised vessels.		
Potential impact description	Change to other marine users functions, interests, and activities.		
IMPACT AND RISK EVALUATION SUMMARY			
Receptor	**Impact/Consequence**	**Likelihood**	**Residual Risk**
Commercial fishing and recreational fishing	Incidental (1)	Unlikely (B)	Low (RRIV)
Shipping	Incidental (1)	Unlikely (B)	Low (RRIV)
Relevant EPO(s)	EPO-WC-01 Undertake the drilling activities in a manner that does not interfere with other marine users to a greater extent than is necessary for the exercise of right conferred by the titles granted.		

5.1.2 Description of Hazard

The MODU and vessels will be present within the Operational Area during well construction activities. A maximum of 3 wells will be drilled within a single campaign and a campaign will take up to 150 days each to complete. Concurrent vessel activities have the potential to occur in the Operational Area, particularity during MODU positioning when three vessels will be required (one per leg). All activities will occur within the PSZ, excluding unauthorised vessels.

5.1.3 Impact and Risk Evaluation

Potential impacts to other marine users and associated values from well construction activities include:

- Potential short term changes to their functions, interests, and activities.

The following receptors within the Operational Area may be impacted by the physical presence:

- Commercial fisheries and recreational fishing
- Shipping.

5.1.3.1 Impact Assessment

Other Marine Users

Commercial Fishing and Recreational Fishing

Changes to the Functions, Interests and Activities

There is potential for minor/temporary disturbance of fishing activity during transit to and from the Operational Area. However, impacts associated with the well construction activities are minimal as they will occur within the existing Wandoo facility PSZ. Commercial and recreational fishing is not permitted in the restricted zone.

The MODU Contractor will issue a Notice to Mariners to AMSA prior to moving to the Operational Area. Access to the AMSA's website and their Maritime Safety Information updates allows members of the Western Australian Fishing Industry Council (WAFIC) and other commercial vessels to be made aware of the presence of the MODU within the Operational Area. Consultation has been conducted with WAFIC through the years of operation at Wandoo and will be ongoing for future campaigns (Section 9).

As described in Section 3.5.1, two WA-managed fisheries with catch-effort were recorded within 10 NM reporting CAES blocks that overlap the Operational Area, the Pilbara Fish Trawl and WA Tour Operator (Figure 3-23 and Figure 3-24). The Operational Area intersects the Pilbara Fish Trawl fishery, which is managed through designated areas (or zones) restricting the catch method allowed within that area. The Operational Area overlaps the Trap Fishing only area, and Area 1 (trawl and trap fishing allowed). The assessment of 10-year fishing effort indicated a maximum number of four vessels were active within the entire fishery. If trawl vessels encounter activity vessels, they may be required to deviate slightly from trawl lines. The likelihood of this would be reduced through on-water communications and consultation, and limited to only the small portion of the fishery management area that overlaps the Operational Area, which is located within the PSZ. Well construction activities will not require an additional exclusion zone, therefore no displacement from areas accessed is expected. Short-term and temporary impacts may be expected to the fishery.

Less than three fishing tour operator licence holders recorded effort in the 10 nm CAES blocks overlapping the Operational Area. The Dampier Archipelago (approximately 39 km southeast of the Operational Area) and the Glomar Shoals (approximately 40 km northeast of the Operational Area) are the closest features where tour-operators are likely to access. As noted in Section 3.5.1, DPIRD's FishCube fishing effort data between 2013–2023 notes that there were active fishing Tour Operators within the Operational Area, which correlates with the Wandoo platform being listed as a recreational fishing site by DPIRD (2023b) (Section 3.5.4.1) and correspondence from RecfishWest (Sensitive Information Report). The area is used for deepwater fishing by fishing charters and large private fishing boats. However, no unauthorised vessels are permitted within the 500 m PSZ, therefore no displacement from fishing areas is expected. Short-term and temporary impacts may be expected to recreational fishing.

Fisheries with recorded catch within the Operational Area at the 60 nm reporting blocks include the:

- Mackerel Managed Fishery

- Marine Aquarium Managed Fishery
- Nickol Bay Prawn Managed Fishery
- Onslow Prawn Managed Fishery
- Pilbara Crab Managed Fishery
- Pilbara Line Fishery
- Pilbara Trap Managed Fishery
- Specimen Shell Managed Fishery

The Pilbara Trap and Mackerel managed fisheries may be present in the Operational Area. The Pilbara Line and Mackerel managed fisheries operate via line-surface trolling for pelagic species. The Pilbara crab managed fishery operates using hourglass traps, primarily within inshore waters around Nickol Bay (Newman et al., 2023b). The Pilbara Trap Managed Fishery uses baited trap gears in depths of ~30–200 m (DCCEEW, 2023c). Interactions with these fisheries from vessel operations are likely to be limited to very-short term impacts to a minor portion of any fishery management area.

The Nickol Bay and Onslow Prawn managed fisheries are managed through spatial closures (designated fishing areas). The Nickol Bay management area does not overlap the Operational Area, therefore planned activities are not likely to interact with the fishery. The Onslow Prawn Managed Fishery is limited to Area 3, which overlaps the Operational Area. Fishing effort is typically targeted in the nearshore and coastal waters, west of the Dampier archipelago (Newman et al., 2023b). Given the distance from suitable and previous targeted areas, it is not considered likely the physical presence of activity vessels could have any interactions with the Onslow Prawn Managed Fishery.

The Marine Aquarium Fish, and Specimen Shell fisheries operate in coastal, nearshore waters via hand-catch or dive methods. Given the distance from shorelines and water depths in the Operational Area, impacts from physical presence of vessels are not considered likely.

No Commonwealth managed fisheries were recorded to have previous catch effort in the Operational Area, therefore are unlikely to have any interaction with planned activities.

Shipping

Changes to the Functions, Interests and Activities

Commercial shipping vessels move through the offshore waters on route to or from the marine terminals at Barrow and Varanus Islands. Ships using NWS waters include iron ore carriers, oil tankers and other vessels proceeding to or from the ports of Dampier, Port Walcott and Port Hedland. However, these are predominantly heading north from these ports. Large cargo vessels carrying freight bound or departing from Fremantle transit along the WA coastline heading north and south in deeper waters. The Operational Area is approximately 25 km from the northbound shipping fairway from Dampier. As detailed in Section 3.5.2, established shipping fairways are approximately 3 km south of the Operational Area. As a 500 m restricted zone exists around the facility where shipping traffic is not permitted, as well as a cautionary zone (2.5 nm around the Wandoo facilities), the MODU and AHTS vessels within the Operational Area

are unlikely to interact with shipping traffic. Given the activities will be occurring within the PSZ and cautionary zone, impacts to commercial shipping activities are considered to be low.

5.1.4 Risk Ranking

The Operational Area is located within the PSZ, prohibiting unauthorised vessels from entering. Previous fishing effort has remained relatively low (<5 active vessels per year), for fisheries with the potential to interact with well construction activities. Impacts to commercial fisheries and shipping from the physical presence of project vessels will be unlikely. Therefore:

- The consequence ranking of '1' (Incidental) was assigned to potential interactions with other marine users, and likelihood of 'B' (Unlikely) was considered appropriate, resulting in a risk ranking of 'Low' (RRIV).

5.1.5 ALARP Demonstration

Table 5-2: Demonstration of ALARP – Physical presence – Interaction with other marine users

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
Elimination			
None identified	-	-	-
Substitution			
None identified	-	-	-
Prevention			
Functional communication equipment on board MODU and vessels to communicate with commercial and recreational shipping vessels in the vicinity of the activities.	EPO-WC-01	Communication equipment on board MODU and vessels, shall be functional and maintained in accordance with the contractor's Preventative Maintenance System (PMS).	VOGA inspection or audit confirms application of contractor's PMS. Contractor's servicing and maintenance records are up to date.
Notification of Intent to move MODU to or from Wandoo Field is provided in advance to AMSA.	EPO-WC-01	Notify relevant agency of activities, vessel movements, and requested safety exclusion zone, to enable them to generate radio-navigation warnings and/or Notice to Mariners prior to commencing offshore activities.	Record of lodgement of notification to relevant agency.
	EPO-WC-01	AMSA shall be advised of planned rig moves at least four weeks prior to scheduled move date.	Copy of Notice to Mariners, noting location of MODU.

Notification of activities direct to relevant persons.	EPO-WC-01	Relevant persons to be identified and notified as appropriate prior to activity, in accordance with Section 9.4.11.	Record of relevant person assessment and correspondence.
Vessels to adhere to the navigation safety requirements including the *Navigation Act 2012* and any subsequent Marine Orders.	EPO-WC-01	Vessels compliant with *Navigation Act 2012* and Marine Order 21 (Safety of navigation and emergency procedures) and Marine Order 30 (Prevention of collisions).	Marine assurance inspection records demonstrate compliance with standard maritime safety procedures.
Reduction			
None identified	-	-	-
Mitigation			
None identified	-	-	-
Other			
None identified	-	-	-
Considered Control Measures	**Assessment of option**		**Decision**
None identified	-		-
ALARP Summary: The impacts of physical presence to other marine users are ALARP, based on the impact assessment outcomes using VOGA Risk Matrix (as per Table 4-1), the ALARP template to determine the appropriate decision context type (Table 4-4) and VOGA's criteria for demonstrating ALARP (Section 4.8). No reasonably practicable additional controls were identified that would further reduce the impacts without disproportionate sacrifice.			

5.1.6 Acceptability Demonstration

Table 5-3: Acceptability demonstration – Physical presence – Interaction with other marine users

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
Principles of ESD not compromised	Relevant Principles of ESD not compromised given proposed controls (Table 5-2).
External context – objections or claims considered	N/A – No external objections or claims received.
Internal context – VOGA HSE policy/procedures met	Yes – Risk managed in accordance with VOGA HSE policy.
Other requirements met	Yes – Notice to Mariners issued via AMSA in a timely manner. Yes – *Navigation Act 2012.*
RR < High (RRII)	Yes – Low (RRIV).
EPO(s) manage impacts to acceptable level(s)	Yes – The following relevant EPOs will be maintained: • EPO-WC-01. See Section 7 for further details.
Acceptability Summary	

The potential impacts of the physical presence of the MODU and vessel operations interacting with other marine users have been managed to a level that is broadly acceptable based on the demonstration of ALARP (Table 5-2), alignment with industry best practice, and VOGA's process for evaluating acceptability (Section 4.7).

5.2 Planned: Seabed Disturbance

5.2.1 Hazard Report

Table 5-4: Hazard Report – Seabed disturbance

HAZARD	Seabed disturbance		
EP risk number	EP-WC-R02		
Activity/cause	• MODU operations • Drilling activities • ROV operations.		
Extent	Seabed disturbance of up to 872 m^2 per drilling location.		
Potential impact description	Localised, reversible and short-term impacts to benthic habitats and assemblages, not affecting ecosystem functioning. Incidental impacts to submerged cultural heritage sites.		
IMPACT AND RISK EVALUATION SUMMARY			
Receptor	**Impact/Consequence**	**Likelihood**	**Residual Risk**
Benthic habitats and assemblages	Incidental (1)	Almost Certain (E)	Medium (RRIII)
Submerged cultural heritage	Incidental (1)	Rare (A)	Low (RRIV)
Relevant EPO(s)	EPO-WC-02 No serious or irreversible changes to the seabed which may adversely impact on biodiversity, ecological integrity, social amenity or human health.		

5.2.2 Description of Hazard

The physical presence of drilling equipment and well construction related activities may cause seabed disturbance, due to the potential smothering of benthic habitats and sea floor scour along the seabed. The key activities/causes are as follows:

- Installation of temporary moorings (subsea infrastructure) associated with placement of the MODU alongside the Wandoo platforms. The footings (known as 'spud-cans') on the bottom of the MODU legs cover an area of about 145 m^2 (based on approximately 2 m penetration of the seabed and giving a total footprint of 435 m^2 per location), at both a temporary holding location about 80 m from the final location, and at the final position of the MODU spud-cans
- Drilling activities (wellbore diameter)
- Anchoring of vessels—AHTS vessels do not anchor within the PSZ/Operational Area but may do so outside the restricted zone if on standby

- ROV operations—Use of an ROV during drilling activities as described in Section 2.11.4 may result in temporary seabed disturbance and suspension of sediments as a result of working close to, or occasionally on the seabed.
    - Additionally, the ROV may be wet-parked on the seabed which will cause localised and temporary impacts to benthic habitats and water quality from increased turbidity. The footprint of a typical ROV is likely to be no bigger than 1.7 m^2
- Support vessels—The AHTS vessels will only anchor within a designated anchoring zone. The anchoring zone is outside the PSZ/Operational Area, clear of seabed infrastructure and in an environmentally non-sensitive area.

The total area of seabed disturbance for the above activities will be approximately 872 m^2 per drilling location.

5.2.3 Impact and Risk Evaluation

Potential impacts to the seabed and its associated features from the well construction activities include:

- Change to benthic habitat and assemblages
- Change to submerged cultural heritage.

The following receptors within the Operational Area may be impacted by seabed disturbance:

- Benthic habitats
- Benthic invertebrates
- Submerged cultural heritage.

Given that there are no discernible impacts on commercially important demersal species at either an individual or population level due to the nature and scale of the potential seabed disturbance, social and economic impacts on commercial fisheries have not been evaluated.

5.2.3.1 Impact Assessment

Benthic Habitats and Assemblages

Change to Benthic Habitat and Assemblages

The benthic habitat of the Operational Area has been identified as consistent with the sediments found throughout the NWS Province, consisting of soft, sandy, unconsolidated sediments (Section 3.4.1). No coral, seagrasses, or macroalgae habitats or significant seabed or benthic features were recorded within the Operational Area (Section 3.4).

Marine life such as deep water benthic communities epifauna and infauna (living on and in the sediment dominated habitat), may be impacted from the placement of placement of temporary supporting infrastructure (MODU footing and ROV) on the seabed. Potential impacts include burial or smothering of benthic biota from localised sediment deposition, particularly to sessile epifauna such as sea pens and infauna (polychaetes), and sediment coating resulting from increased turbidity potentially smothering or causing or damage to the physiological functioning of certain biota (sea pens, polychaetes) reliant on external respiratory and feeding structures.

Secondary impacts may include alterations to epifauna and infauna community changes (Newell et al., 1998).

Benthic invertebrates present within the Operational Area are expected to be typical of the NWS region, of highly diverse species, such as burrowing polychaete worms and crustaceans, in low abundance (Section 3.4.3.2). The diversity and abundance of benthic invertebrates has been identified to decrease with increasing distances from the coast within the NWS region (SKM, 1996). No species or ecological communities listed as threatened under the EPBC Act, critical habitats, sensitive or protected benthic habitat or species, have been identified in the Operational Area.

The MODU has three legs fabricated in a lattice structure terminating with a footing (known as a spud-can) at the base. Each spud can cover an area of about 145 m^2 (based on approximately 2 m penetration of the seabed), totalling a total seabed disturbance of 870 m^2 for each well (well location plus temporary holding location). Additional impacts from well construction activities will be much smaller in comparison, including the footprint of any anchors that may be used by support vessels and the diameter of each wellbore.

The jacking-up of the MODU will have a localised impact on the benthic habitat. The disturbance may affect the benthic habitats involved and cause a reduction in benthic productivity. The substrate in the Operational Area consists of soft sandy unconsolidated sediments, with no significant seabed or benthic features/values recorded within the Operational Area (Section 3.4.3.2).

The effect of the MODU spud-cans is expected to be minimal given the natural movement of the sand to fill any voids, including the area impacted by the MODU spud-cans. Benthic organisms are expected to re-colonise quickly after the MODU is moved off location. An experimental study showed that the full recovery of soft sediment assemblages from physical disturbance could take between 64 and 208 days following physical disturbances of different intensities (Dernie et al., 2003). Where seabed sediments are soft and there are no sensitive communities or other underwater obstructions, it has been suggested that damage caused by anchoring is likely to be minimal and any disturbance is generally temporary (UK Marine SAC 2001 cited in NERA, 2018).

As discussed in Section 5.2.2, the greatest seabed disturbance footprint will be limited to the MODU footprint, and ROV with a maximum spatial extent of 872 m^2 per drilling location expected to be disturbed during activities.

Given the localised nature of the disturbance and the lack of significant benthic habitat and assemblages in the region, potential impacts to benthic habitats and assemblages from project activities are not anticipated to impact marine ecosystem functioning.

Submerged Cultural Heritage

Change to Submerged Cultural Heritage

Seabed disturbance from MODU operations, drilling activities, and ROV operations has very low potential to cause a change to submerged cultural heritage sites, given the small areas of seabed disturbance involved. As described in Section 1.1.1 and Section 3.7.6, Australia's underwater cultural heritage, such as shipwrecks, sunken aircrafts, First Nations underwater cultural

heritage, and other underwater heritage sites are protected under the UCH Act. No cultural heritage artefacts, such as shipwrecks or registered Aboriginal Cultural Heritage sites, have been identified within the Operational Area (Section 1.1.1 and Section 3.7.6). Any impact to submerged cultural heritage is expected to be incidental.

5.2.4 Risk Ranking

The seabed of the Operational Area is characterised by soft, unconsolidated sediments with limited sensitive features, benthic assemblages, no known underwater cultural heritage sites. No species or ecological communities listed as threatened under the EPBC Act, critical habitats, sensitive or protected benthic habitat or species, have been identified in the Operational Area Impacts to these receptors from seabed disturbance will be temporary and considered to be localised and minimal. Therefore:

- The consequence ranking of '1' (Incidental) was assigned to benthic habitats and assemblages, and a likelihood of 'E' (Almost Certain) was considered appropriate, resulting in a risk ranking of 'Medium' (RRII).
- The consequence ranking of '1' (Incidental) was assigned to submerged cultural heritage, and a likelihood of 'A' (Rare) was considered appropriate, resulting in a risk ranking of 'Low' (RRIV).

5.2.5 ALARP Demonstration

Table 5-5: Demonstration of ALARP – Seabed disturbance

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
Elimination			
None identified	-	-	-
Substitution			
None identified	-	-	-
Prevention			
No anchoring of vessels will occur within the Operational Area.	EPO-WC-02	The vessels only anchor within a designated anchoring zone outside of the Operational Area. The anchoring zone is outside the PSZ, clear of seabed infrastructure and in an environmentally non-sensitive area.	Incident reports of incorrect anchoring.
Reduction			
A Rig Move Plan will be prepared in general accordance with Drilling Contractor's Marine Operations Manual.	EPO-WC-02	MODU footings will be placed in a controlled fashion according to Rig Move Plan.	Rig Move Plan. Records of MODU operations.

Mitigation			
None identified	-	-	-
Other			
Unexpected finds of potential underwater cultural heritage sites/features are to be reported.	EPO-WC-02	In the event an underwater cultural heritage site or feature is identified, the Minister will be notified within 21 days through the Australasian Underwater Cultural Heritage Database tool.	Record of notification.
Considered Control Measures	**Assessment of option**		**Decision**
Positioning technology used to place MODU within the design footprint to reduce seabed disturbance.	The MODU will be pinned directly at the soft pin and final pin locations. The spud cans will be clear of the seafloor for the transit between the soft pin and final location.		Adopted (refer to CM 2.4).
Use of alternate MODU type, i.e. DP or semisubmersible drilling platform.	Using a jack-up MODU for each campaign minimises the impacts associated with anchoring, which can disturb large areas of benthic habitat because of the inability to use the same anchor location for each campaign. Use of a dynamically positioned or semisubmersible drilling platform is not practicable, as they cannot execute the required operations over the Wandoo platforms. The use of platform-based rigs to conduct the planned activities has been reviewed. However, the Wandoo facilities are too small to permit the installation of a suitable unit.		Not adopted.
UCH finds procedure.	No concerns were raised about the potential for UCH (in the Operational Area) during relevant person consultation. The probability of an impact to UCH occurring has been assessed as rare. At water depths greater than 50 m, finding UCH becomes less likely. The likelihood of finding UCH suggests preparing a detailed procedure is disproportionate to the limited potential benefit. In addition, CM-2.3 has been included to allow for reporting in the unlikely event of unexpected UCH finds.		Not adopted.
ALARP Summary: The impacts to seabed disturbance from well construction activities are ALARP, based on the impact assessment outcomes using VOGA Risk Matrix (as per Table 4-1), the ALARP template to determine the appropriate decision context type (Table 4-4) and VOGA's criteria for demonstrating ALARP (Section 4.8). Through the ALARP process, additional controls have been identified that would further reduce the impacts without disproportionate sacrifice.			

5.2.6 Acceptability Demonstration

Table 5-6: Acceptability demonstration – Seabed Disturbance

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
Principles of ESD not compromised	Relevant Principles of ESD not compromised given proposed controls (Table 5-2).
External context – objections or claims considered	N/A – No external objections or claims received.
Internal context – VOGA HSE policy/procedures met	Yes – Risk managed in accordance with VOGA HSE policy.
Other requirements met	Yes – Risk to underwater cultural heritage managed in accordance with the UCH Guidelines.
RR < High (RRII)	Yes – Medium (RRIII).
EPO(s) manage impacts to acceptable level(s)	Yes – The following relevant EPOs will be maintained: • EPO-WC-02 See Section 7 for further details.
Acceptability Summary The impacts of seabed disturbance have been managed to a level that is broadly acceptable based on the demonstration of ALARP (Table 5-5), alignment with industry best practice, and VOGA's process for evaluating acceptability (Section 4.7).	

5.3 Planned: Noise Emissions

5.3.1 Hazard Report

Table 5-7: Hazard Report – Noise emissions

HAZARD	Noise emissions		
EP risk number	EP-WC-R03		
Activity/cause	• Vessel operations • Drilling activities • P&A • Helicopter support.		
Extent	The maximum predicted range for exceeding marine fauna impact thresholds was 20.7 km from the Operational Area for the marine mammal behavioural response threshold (Wecker et al., 2022).		
Potential impact description	Masking or interfering with biologically important sounds. Change in fauna behaviour leading to disturbance or displacement of fauna. *Note: The risk rankings below relate to change in marine fauna behaviour (leading to disturbance, or displacement and including masking). Temporary or permanent injury to marine fauna is not credible as evaluated in Section 5.3.3.*		
IMPACT AND RISK EVALUATION SUMMARY			
Receptor	**Impact/Consequence**	**Likelihood**	**Residual Risk**
Fish, sharks and rays	Incidental (1)	Unlikely (B)	Low (RRIV)
Marine reptiles	Incidental (1)	Unlikely (B)	Low (RRIV)

Marine mammals	Incidental (1)	Unlikely (B)	Low (RRIV)
Relevant EPO(s)	EPO-WC-03 Impacts to marine fauna from noise emissions will be limited to temporary behavioural change localised to the noise source, with no species population-level impacts.		

5.3.2 Description of Hazard

During well construction activities, noise emissions will be generated from:

- Vessel operations
- Drilling activities
- P&A
- Helicopter support.

Vessel Operations

Vessels used to undertake the activity include the jack-up MODU, and up to 3 support vessels.

Continuous underwater noise generated from vessel operations is expected from support vessel operations. Up to 3 support vessels may operate within the Operational Area using dynamic positioning (thrusters) and propulsion systems (propellers) which will cause cavitation and generate continuous underwater noise (DOSITS, 2021). The maximum duration that support vessels are expected to be present within the Operational Area is 150 days (for a single campaign with up to a maximum of 3 wells). Sound source levels of around 187.6 dB re 1 μPa^2m^2, as measured by JASCO from the Fugro Etive (Stroot et al., 2022), are expected from support vessels undertaking dynamic positioning operations for this activity.

Once positioned, machinery on the MODU will generate low levels of underwater noise. Measured underwater sound from a comparable jack-up rig, the Spartan 151 jack-up MODU in Alaska's Cook Inlet, recorded received levels at approximately 127 dB re 1µPa to a maximum range of 1.2–1.4 km in the frequency range 8.9–44.7 Hz (Marine Acoustic, 2011). This is below the sound levels generated by vessel activities, therefore vessel sound is considered the worst-case sound source.

During drilling activities, underwater noise is expected from the MODU's drill stem (see below).

Drilling Activities

Once the jack-up legs are stationed on the seafloor, drilling activities will commence. The rotation of the drill stem when drilling through substrate material will produce low-intensity continuous underwater noise (Todd et al., 2020). The MODU is expected to be on location 30 to 50 days per well. Sound source levels of around 175.4 dB re 1 μPa^2m^2, as measured by JASCO from the Ocean Onyx whilst anchoring and drilling (Stroot et al., 2022), are expected from drilling activities for this activity. The Ocean Onyx, during anchored drilling, exhibits a sound source level comparable to a drilling jack-up MODU, primarily because both MODUs avoid continuous underwater noise associated with dynamic positioning or propulsion during drilling activities.

P&A

Wellhead cutting during P&A is expected to take up to 12 hours per wellhead. Pangerc et al. (2016) reported underwater sound measurements during diamond wire cutting of a 32-inch conductor (10 m above the seabed in ~80 m water depth) and found that, at lower frequencies, the noise was generally indistinguishable from the vessel's background noise. Therefore, wellhead cutting is not anticipated to produce sound levels distinguishable from drilling or vessel operations and is included within the overall assessment of sound emissions for well construction activities.

Helicopter Support

Helicopters are used for crew transfers to and from the MODU. It is expected there will be approximately 6 to 7 helicopter flights to the MODU each week during well construction activities. Their presence and associated noise are highly transient. During approach and landing on the helideck, sound transmission into the water column is greatest near the sea surface and decreases rapidly with depth. Helicopter noise typically occurs at frequencies below 500 Hz (Richardson et al., 1995). For example, Richardson et al. (1995) found that a Bell 214 helicopter was audible in air for about four minutes before passing overhead, but underwater detection lasted only 38 seconds at 3 m depth and 11 seconds at 18 m depth. Consequently, underwater exposure is limited to depths of 3–18 m for short periods (11–38 seconds) during each landing and take-off. This brief, intermittent noise is negligible compared to drilling activities and vessel operations and is included within the overall assessment of sound emissions for well construction activities.

5.3.3 Noise Modelling

To determine the spatial extent for impact and risk evaluation, a review of comparative analogue underwater sound propagation studies was undertaken:

- Stroot, D. H., Koessler, M. W. and McPherson, C.R. 2022. Acoustic Modelling for Assessing Marine Fauna Sound Exposures. Woodside NWS MODU Drilling Operations. Jasco Applied Sciences (Australia) Pty Ltd.
- Wecker, H., Koessler, M. W., Connel, S. J. and McPherson, C.R. 2022. Acoustic Modelling for Assessing Marine Fauna Sound Exposures. Woodside Pluto Drilling Campaign. Jasco Applied Sciences (Australia) Pty Ltd.
- Warren, V. E., M.W. Koessler, A. M. Muellenmeister, D. H. Stroot and C.R. McPherson. 2023. Gorgon Gas Development: Backfill Fields: Acoustic and Animal Movement Modelling for Assessing Marine Fauna Sound Exposures. Jasco Applied Sciences for Chevron Australia Pty Ltd.

The above listed analogue studies were conducted by Jasco using 3 sound propagation models (MON-BELLHOP, FWRAM and VSTACK). Results of these studies define the spatial extent for potential impact to fish including eggs and larvae, marine turtles and marine mammals.

These studies are considered appropriate and defensible analogues for predicting sound propagation for MODU drilling and associated support vessel operations for the activity based on the comparable environmental modelling parameters used. The MODU and support vessels used for the activity are yet to be contracted, as a result, the specifications are not known

however general specifications suitable for the activity are detailed in Section 2.11. Based on these specifications, the sound source levels for the MODU and vessels are expected to be analogous to those used in the studies listed below:

- Woodside drilling operations at Julimar South 1 (Stroot et al., 2022)
  - Water depth: ~160 m
  - MODU drilling operations (moored): 175.4 dB re 1 $\mu Pa^2 \cdot m^2 \cdot s$
  - Support vessel (under DP): 187.6 dB re 1 $\mu Pa^2 \cdot m^2 \cdot s$
  - Support vessel (slow transit): 177.8 dB re 1 $\mu Pa^2 \cdot m^2 \cdot s$
- Woodside drilling operations at XNA02 (Wecker et al., 2022)
  - Water depth: ~180 m
  - MODU drilling operations (under DP): 187.7 dB re 1 $\mu Pa^2 \cdot m^2 \cdot s$
  - Support vessel (under DP): 187.6 dB re 1 $\mu Pa^2 \cdot m^2 \cdot s$
  - Support vessel (slow transit): 177.8 dB re 1 $\mu Pa^2 \cdot m^2 \cdot s$
- Chevron drilling operations at Area 5 (Warren et al., 2023)
  - Water depth: ~140 m
  - MODU drilling operations (under DP): 188 dB re 1 $\mu Pa^2 \cdot m^2 \cdot s$
  - Support vessel (under DP): 181.2 dB re 1 $\mu Pa^2 \cdot m^2 \cdot s$

Underwater sound propagation is primarily governed by bathymetry, the underwater sound-speed profile, and the geoacoustic properties of the seabed. Each analogue study was undertaken within the Northern Carnarvon Basin in shallow coastal waters (defined as <200 m; DOSITS 2025), directly aligning with the project's water depth of approximately 50 m. This ensures that the bathymetric context of the analogue studies aligns closely with conditions of the Operational Area and EMBA.

In all analogue studies, the underwater sound-speed profiles were derived using temperature and salinity data from the US Generalized Digital Environmental Model (GDEM v3.0; Teague et al. 1990; Carnes 2009), for areas within the Carnarvon Basin. These profiles reliably capture the stratification patterns characteristic of continental shelf waters in this region. Similarly, geoacoustic properties in the analogue models reflect sediment compositions typical of shelf environments—conditions that are consistent with those present within the Operational Area/EMBA and therefore appropriate for predicting propagation loss.

Collectively, the analogue studies provide a comparative and scientifically valid basis for predicting broadband sound levels for MODU drilling and associated support vessel operations in the Carnarvon Basin. Importantly, the studies by Wecker et al. (2022) and Warren et al. (2023) represent highly conservative analogues because they include dynamic-positioning (DP) thruster noise—an elevated source level not relevant to the jack-up MODU proposed for this activity. As a result, the predicted sound fields from these analogues are expected to overestimate rather than underestimate actual activity-related underwater noise, providing further confidence in their suitability for use in impact assessment.

The modelling scenarios used in this assessment from the analogue studies are listed as follows:

- Stroot et al. (2022) – Scenario 5: Anchored MODU drilling (24 hr) + support vessel, under DP (8 hr) + support vessel on standby (24 hr)
- Wecker et al. (2022) – Scenario 10: MODU under DP[2], drilling (24 hr) + support vessel, under DP (8 hr) + support vessel on standby (24 hr)
- Warren et al. (2023) – Scenario 30: MODU under DP + support vessel under DP 8 hr.

The scenarios above represent resupply operations which are considered the loudest out of all possible MODU and support vessel activities including drilling operations, MODU mobilisation (i.e. for a jack-up MODU not using DP) and positioning. By selecting resupply scenarios, the assessment adopts a conservative worst-case envelope for underwater noise emissions given sound generated during drilling operations, MODU mobilisation and positioning are inherently lower than peak source levels generated during combined drilling operations and resupply vessel activities using DP station-keeping.

5.3.4 Impact and Risk Evaluation

Different species groups perceive and respond to sound differently, and so a variety of exposure criteria for the different types of impacts and species groups are considered. The following continuous noise effect thresholds were used in the impact and risk assessment:

- Frequency-weighted accumulated Sound Exposure Levels (SEL_{24h}) from Southall et al. (2019) for the onset of Permanent Threshold Shift (PTS) and Temporary Threshold Shift (TTS) in marine mammals
- Un-weighted Sound Pressure Level (SPL) for behavioural threshold for marine mammals based on NOAA (2024)
- Sound exposure guidelines for fish, fish eggs, and larvae (Popper et al., 2014)
- Frequency-weighted accumulated sound exposure levels (SEL_{24h}) from Finneran et al. (2017) for the onset of PTS and TTS in marine turtles.

Recent Commonwealth guidance has defined “injury to blue whales” as both PTS and TTS hearing impairment, as well as any other form of physical harm arising from anthropogenic sources of underwater sound (DAWE, 2021).

The NOAA (2024) behavioural threshold for marine mammals of a SPL at 120 dB re 1µPa is current best available science. This is based on Southall et al. (2007) and Southall et al. (2021) literature reviews and studies in relation to marine mammal behavioural response to continuous sound emissions.

New, more conservative thresholds for auditory injury (which includes PTS)[3] and TTS to marine mammals have recently been published within the *Update to: Technical Guidance for Assessing*

[2] Scenario 10’s MODU under DP is considered a conservative representation of a potential third support vessel for the well construction activities.

[3] The updated technical guidance (NMFS, 2024) details the inclusion of the term “auditory injury (AUD INJ)” to replace “PTS”. AUD INJ is defined as ‘damage to the inner ear that can result in destruction of tissue, such as the loss of cochlear neuron synapses or auditory neuropathy. Auditory injury may or may not result in a permanent threshold shift (PTS)’ (NMFS, 2024). Given the new, more conservative threshold for AUD INJ has not been incorporated into the impact assessment within this EP, the use

the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0): Underwater and In-Air Criteria for Onset of Auditory Injury and Temporary Threshold Shifts (NMFS, 2024). The updated thresholds now consider both the weighting function shape and the weighted threshold value. As the changes to these auditory weightings are more conservative than those previously proposed by Southall et al. (2019), VOGA anticipates that the updated auditory weighting functions, exposure function parameters, and received level thresholds for auditory injury and TTS may result in larger predicted spatial areas of auditory injury and TTS to marine mammal hearing groups.

Given the very short distances reached by the previous injury thresholds (PTS and TTS) (<3.33 km), any potential increase to the extent using the new thresholds are not expected to surpass the extents predicted for the behavioural threshold for marine mammals (9 to 21 km), which has substantially lower received levels. Furthermore, due to the nature and scale of the activity, the noise exposure extents are expected to only intersect with one BIA for marine mammals; a humpback whale Migration BIA, which has no associated recovery plan or conservation advice (Figure 3-15). Considering there are no regionally significant feeding, breeding or aggregation areas for marine mammals in the Operational Area, impacts are anticipated to be low and likely to be limited to transient individuals only. As such, even in the event that the new NMFS (2024) thresholds were to be modelled the impact evaluation for marine mammals is likely to remain unchanged. The adopted measures in Section 5.3.6 are developed based on the maximum ranges to the behavioural threshold (21 km), therefore, they will continue to protect marine mammals from auditory injury (which includes PTS) and TTS to marine mammals, in doing so meeting EPO-WC-03 and the acceptable level of impact. As such, the use of the updated NMFS (2024) thresholds is very unlikely to indicate unacceptable impacts to noise-sensitive receptors in or near the Operational Area, including migrating humpback whales.

Accomando et al. (2025) has suggested updates to the underwater sound exposure thresholds for marine turtles within the 2024 *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase 4*). These thresholds were not used within the analogue modelling studies, and subsequently have not been incorporated into impact assessment. VOGA anticipates that the updated auditory weighting functions, exposure function parameters, and received level thresholds for PTS and TTS may result in larger predicted spatial areas exposure than the thresholds previously suggested by Finneran et al. (2017). The received sound level thresholds for the behavioural thresholds have remained unchanged.

To account for the scientific uncertainty from the absence of predictions using the Accomando et al. (2025) thresholds, VOGA have chosen to use the PTS and TTS thresholds for low-frequency cetaceans as a proxy for the potential PTS and TTS for marine turtles within the impact assessment within Section 5.3.4.1. This is considered a highly conservative and precautionary approach, given the PTS and TTS thresholds for low frequency cetaceans are lower than those for marine turtles and the weighting function applied is based on low-frequency cetaceans which have a more sensitive and broader hearing frequency range than marine turtles.

Current available literature on sound exposure impacts to marine invertebrates from continuous noise is limited and inconclusive and is not discussed further.

of AUD INJ instead of PTS has been deemed as inappropriate for the level of assessment within this EP. As such, the term "PTS" has been used throughout.

There are no thresholds for underwater sound impacts to either seabirds or shorebirds. Therefore, the impacts to birds has not been assessed further.

A summary of the noise effect criteria used in the impact assessment for fish, marine reptiles and marine mammals and the relevant literature is provided in the analogue studies (Stroot et al., 2022; Wecker et al., 2022; Warren et al., 2023) and below in Table 5-8 to Table 5-11.

Table 5-8: Continuous noise criteria threshold for fish

Receptor	Behaviour	Mortality and potential mortal injury	Impairment		
			Recoverable injury	TTS	Masking
Fish: No swim bladder (particle motion detection)	(N) Moderate (I) Moderate (F) Low	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate
Fish: Swim bladder not involved in hearing (particle motion detection)	(N) Moderate (I) Moderate (F) Low	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate
Fish: Swim bladder involved in hearing (primarily pressure detection)	(N) High (I) Moderate (F) Low	(N) Low (I) Low (F) Low	170 dB SPL for 48h	158 dB SPL for 12h	(N) High (I) High (F) High
Fish eggs and fish larvae	(N) Moderate (I) Moderate (F) Low	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low

Source: Popper et al. (2014)
Note: Relative risk (high, moderate, low) is given for animals at three distances from the source defined in relative terms as near (N), intermediate (I), and far (F).

Table 5-9: Continuous noise criteria threshold for marine turtles

Receptor	Masking	Behaviour	Finneran et al. (2017)		Accomando et al. (2025)	
			PTS	TTS	PTS	TTS
			Weighted SEL_{24h} (LE,24h; dB re 1µPa^2s)		Weighted SEL_{24h} (LE,24h; dB re 1µPa^2s)	
Marine turtle	(N) High (I) High (F) Moderate	(N) High (I) Moderate (F) Low	220	200	198	178

Source: Popper et al. (2014); Finneran et al. (2017); Accomando et al. (2025)
Note: Relative risk (high, moderate, low) is given for animals at three distances from the source defined in relative terms as near (N) – tens of meters, intermediate (I) - hundreds of meters, and far (F) – thousands of meters.

Table 5-10: Continuous noise criteria threshold for marine mammals

Receptor	Hearing group	Behavioural	NMFS (2018)		NMFS (2024)	
			PTS	TTS	AUD INJ	TTS
		SPL (L_p; dB re 1µPa)	Weighted SEL_{24h} (L_E,24h; dB re 1µPa^{2}s)		Weighted SEL_{24h} (L_E,24h; dB re 1µPa^{2}s)	
Marine mammals	Low-frequency (LF) cetaceans	120	199	179	197	177
	High-frequency (HF) cetaceans		198	178	201	181
	Very High-frequency (VHF) cetaceans		173	153	181	161

Source: NMFS (2018; 2024); Southall et al. (2019)
Note: Lp denotes sound pressure level period and has a reference value of 1 µPa.
LE denotes cumulative sound exposure over a 24h period and has a reference value of 1 µPa^{2}s.

Table 5-11: Distances to PTS, TTS and behaviour effects from continuous noise from drilling operations on the North West Shelf (Stroot et al., 2022; Wecker et al., 2022; Warren et al., 2023)

Hearing Group	Noise Effect Criteria	Maximum Rmax Distance (km)			Reference
		Scenario 5	Scenario 10	Scenario 30	
Fishes: (swim bladder): recoverable injury	>170 dB SPL for 48 h	Not reached	Not reached	Not reached	Popper et al. (2014)
Fishes: (swim bladder): TTS	>158 dB SPL for 12 h	Not reached	Not reached	0.07	Popper et al. (2014)
Marine turtles: PTS	220 dB SEL_{24h}	Not reached	0.13	0.02	Finneran et al. (2017)
Marine turtles: TTS	200 dB SEL_{24h}	0.07	2.66	0.12	Finneran et al. (2017)
Marine mammals: behavioural	120 dB SPL	8.85	20.7	10.4	NMFS (2024)
Low-frequency cetaceans: PTS (humpback and pygmy blue whales)	197 dB SEL_{24h}	0.07	0.13	0.11	NMFS (2018)
Low-frequency cetaceans: TTS (humpback and pygmy blue whales)	177 dB SEL_{24h}	0.92	2.66	1.66	NMFS (2018)
High-frequency cetaceans: PTS	201 dB SEL_{24h}	0.02	0.09	0.05	NMFS (2018)

Hearing Group	Noise Effect Criteria	Maximum Rmax Distance (km)			Reference
		Scenario 5	Scenario 10	Scenario 30	
(dolphins, beaked whales, sperm whales)					
High-frequency cetaceans: TTS (dolphins, beaked whales, sperm whales)	181 dB SEL_{24h}	0.13	0.13	0.16	NMFS (2018)
Very High-frequency cetaceans: PTS (pygmy and dwarf sperm whales)	181 dB SEL_{24h}	0.19	0.15	0.21	NMFS (2018)
Very High-frequency cetaceans: TTS (pygmy and dwarf sperm whales)	161 dB SEL_{24h}	2.76	2.63	3.33	NMFS (2018)

5.3.4.1 Impact Assessment

Potential impacts caused by continuous underwater noise include:

- Change in fauna behaviour, including:
  - masking - interfering with other biologically important sounds, including vocal communication, echolocation, signals, and sounds produced by predators or prey.
- Injury/mortality to marine fauna, such as:
  - recoverable injury
  - mortality or potential mortal injuries
  - TTS
  - PTS.

Potential receptors that may be impacted are:

- Fish, sharks and rays (including eggs and larvae)
- Marine reptiles
- Marine mammals.

Continuous underwater noise generated by the activity will impact ambient sound levels in the NWS continental shelf.

Significant commercial shipping activity occurs across the NWS, the majority of which is associated with the WA oil and gas and mining industries. The closest AMSA shipping fairway is

~3 km south of the Operational Area (Figure 3-36). Shipping fairways provide a significant and continuous contribution to the ambient sound levels in the Operational Area.

Oil and gas activities, and strong weather conditions (cyclonic events) also contribute to the ambient sound levels in the Operational Area. The temporary generation of underwater sound from the activity will introduce and replicate existing oil and gas activities' contributions to ambient sound levels.

Fish, Sharks, and Rays

Several species of fish, sharks, and rays may be present within the Operational Area and surrounds. Many species of fish, sharks, and rays are expected to be transient individuals due to the absence of critical habitats found within the Operational Area (Section 3.4.3.4). However, the Wandoo A and Wandoo B facilities located within the Operational Area provide artificial hard substrate which can form the basis of relatively high biodiversity communities and have been shown to support more diverse fish assemblages in comparison to the surrounding seabed (McLean et al., 2017; Bond, 2018).

The Operational Area overlaps a foraging BIA for the whale shark (Figure 3-12). This species is known to aggregate at Ningaloo between March and July each year to feed. This species is found in coastal and oceanic environments making them potentially vulnerable to noise emissions.

Change in Behaviour

Fish, sharks, and rays have been identified to be susceptible to behavioural change, such as avoidance, in response to continuous noise emissions generated by vessel operations (Chapius et al., 2019; Popper et al., 2014). Currently, quantitative threshold criteria for behavioural responses of fishes from continuous sound do not exist (Popper et al., 2014). Fishes are highly likely to exhibit behavioural disturbances within tens of metres from continuous sound sources (Popper et al., 2014). Behavioural disturbances to fishes from underwater sound are therefore localised and limited to within the Operational Area. There are no habitats or features within the Operational Area that would restrict fish, sharks, and rays from moving away from vessel operations and drilling activities.

Fish, sharks, and rays in the Operational Area are likely to exhibit avoidance responses from continuous sounds generated and radiated by the activity (Carroll et al., 2017). Fish, sharks, and rays that do not avoid underwater sound radiated by the activity are likely to exhibit changes to schooling patterns and distribution from continuous sound (McPherson et al., 2016). Behavioural changes for some fish species are temporary and short lived (i.e. nuisance factor) and displacement of pelagic or migratory fish populations is unlikely (McCauley, 1998).

A foraging BIA for the whale shark was the only BIA for fish, shark, and ray species overlapped by the Operational Area. The Operational Area does not overlap the high density prey foraging BIA for whale sharks. The closest aggregation area for whale sharks is Ningaloo located ~300 km from the Operational Area. The Whale Shark Recovery Plan 2005-2010, which has not been superseded, does not list noise disturbance as a threat to whale sharks (DCCEEW, 2005). Whale sharks are found year-round in the wider NWS, not just during their peak aggregation in April and May at Ningaloo's foraging BIA. Temporary and localised behavioural changes to whale sharks may occur within the Operational Area, these changes are not expected to result in ecologically significant impacts at a population level.

Behavioural disturbance to fish, sharks, and rays, is expected to be limited to temporary and localised changes within the vicinity of support vessels and drilling locations within the Operational Area and will not impact population or ecosystem function.

Injury/Mortality

Popper et al. (2014) found no direct evidence of fish mortality or potential mortal injury from ship sound emissions. Based on this observation, it is inferred that continuous noise from drilling activities will also not result in fish mortality or potential mortal injury. For fish lacking swim bladders or with swim bladders not used for hearing (e.g. sharks), the risks of lethal or recoverable injuries are low, with temporary threshold shifts (TTS) in hearing posing a moderate risk within tens of metres of the vessel. For fish using swim bladders for hearing, mortality risks remain low, though, quantitative thresholds for potential recoverable injury and TTS were proposed for fish using swim bladders for hearing, i.e. 170 dB SPL (48h) and 158 dB SPL (12h), respectively (Table 5-8) (Popper et al., 2014). The impact of noise emission to fish is based on the classification of fish into 2 categories based on the presence or absence of a swim bladder; which is known to aid in hearing by transmitting vibrations to the inner ear (Popper et al., 2014). There is limited research that has been conducted on the response of sharks to noise emissions. In comparison to bony fish, sharks lack a swim bladder, and therefore are unlikely to respond to acoustical pressure. Due to an overall lack of observational data on impacts to fish from continuous sources, Popper et al. (2014) proposed qualitative indicators of relative risk of effects indicating that 170 dB SPL (48h) has the potential to result in a recoverable injury and 158 dB SPL (12h) has the potential to result in TTS impacts to fish that have a swim bladder involved in hearing (Table 5-8).

Table 5-11 shows that these threshold criteria were not reached for noise modelling conducted by Stroot et al. (2022) and Wecker et al. (2022). However, noise modelling by Warren et al. (2023) for Scenario 30 predicted:

- 12h TTS criteria was reached within 0.07 km
- 48h recoverable injury criteria was not reached.

No natural seabed habitats likely to support site-attached fish have been identified within the Operational Area, however the Wandoo A and Wandoo B facilities located within the Operational Area provide artificial hard substrate which can form the basis of relatively high biodiversity communities and have been shown to support more diverse fish assemblages in comparison to the surrounding seabed (McLean et al., 2017; Bond, 2018). Noting that any new wells will be located in close proximity to the existing facility, it is plausible that fish species would be present within 70 m of continuous sound sources for a period of 12 hours, and therefore onset of TTS is a possible. Given the short duration (i.e. 30 to 50 days per well) and the localised extent of possible TTS onset (e.g. a maximum distance of 70 m of a continuous sound source for 12 hours for the onset of TTS to occur), the consequence of injury/mortality to fish, sharks and rays from continuous noise emissions associated with the well construction activities has been evaluated to potentially result in localised short-term impacts but not affect local ecosystem or population functioning.

Marine Reptiles

Several species of marine turtles may be present within the Operational Area and surrounds; however, the internesting BIA buffer for the flatback turtle was the only BIA identified to overlap the Operational Area (Section 3.4.3.6).

Change in Behaviour

There is a paucity of data regarding how marine turtles respond to underwater noise. Studies have indicated that marine turtles use noise for navigation, to avoid predators and to find prey (Dow Piniack, 2012) and electro-physical studies have indicated that marine turtle detect a limited frequency range of sounds between 200–700 Hz (Bartol and Musick, 2003).

Specific data on behavioural response thresholds, such as avoidance or masking, of marine turtles to continuous sound emissions do not exist (Popper et al., 2014). Using semi-quantitative analysis, Popper et al. (2014) suggests there is low risk of masking and behavioural change to marine turtles from continuous sound within thousands of metres from the sound source. This suggests avoidance behaviours may occur within the Operational Area.

The Recovery Plan for Marine Turtles in Australia 2017-2027 lists noise disturbance from acute and chronic sources as a threat (Commonwealth of Australia, 2017). Continuous noise, which is identified as 'chronic noise' within the plan, is considered a threat to marine turtles as it may lead to avoidance of important habitats.

The Operational Area overlaps the internesting buffer for the flatback turtle which extends 60 km seawards from the nesting locations at the Dampier Archipelago, including Delambre Island and Hauy Island (Table 3-6). Using the potential of low risk of masking and behavioural change to marine turtles within 1 km (Popper et al. 2014), this range is expected to only overlap a comparatively small portion, approximately 0.5%, of the flatback turtle internesting buffer (Figure 3 16).

The closest nesting locations to the Operational Area are the significant rookeries located on Barrow Island (DSEWPC, 2012a), Montebello Islands, Thevenard Island, Varanus Island, Lowendal Islands, King Sound and Dampier Archipelago (Pendoley, 2005; Limpus, 2007; Pendoley Environmental, 2011), which are located approximately 39 km away. Given the Operational Area is approximately 39 km from the nearest turtle nesting beach, it is expected that only transient individuals, opportunistically foraging, or the few individuals transiting to nesting beaches are expected to be within the Operational Area.

Temporary and localised avoidance behaviours to individual marine turtles within the Operational Area are not expected to result in population or ecosystem level affects. Furthermore, the Recovery Plan for Marine Turtles in Australia states that potential behavioural changes to individual marine turtles are not expected to impact turtle populations (DEE, 2017a). As such, any impact will be short-term, with impacts temporary and localised.

Injury/Mortality

To account for the new thresholds for PTS and TTS (Accomando et al., 2025), and scientific uncertainty with regards to using previous injury thresholds (Finneran et al., 2017), the assessment has conservatively adopted the strategy to use the noise threshold criteria for LF cetaceans as discussed in Section 5.3.3. As such, the greatest modelled distance from noise modelling by Wecker et al. (2022) predicted:

- 24h TTS criteria was reached within 2.66 km
- 24h PTS criteria was reached within 0.13 km.

Given the Operational Area is approximately 39 km from the nearest turtle nesting beach, it is expected that only transient individuals, opportunistically foraging, or the few individuals transiting to nesting beaches are expected to be within the Operational Area.

The onset of TTS and PTS requires chronic exposure (over 24 hours). Transient individual marine turtles are not expected to remain within 2.66 km and 130 m of a continuous sound source for 24 hours for the onset of TTS and PTS to occur. Given the short duration (i.e. 30 to 50 days per well) and the localised extent of potential injury / mortality (e.g. a maximum distance of 2.66 km and 130 m of a continuous sound source for 24 hours for the onset of TTS and PTS to occur), the consequence of, injury/mortality to marine reptiles from continuous noise emissions associated with the well construction activities has been evaluated to potentially result in localised short-term impacts to individuals of conservation value, however, not affect local ecosystem or population functioning.

Marine Mammals

Several species of marine mammals may be present within the Operational Area and surrounds (Section 3.4.3.5). No breeding, foraging or calving areas for EPBC Act listed marine mammals were identified within the Operational Area.

A Migration BIA for the humpback whale was the only BIA identified to overlap the Operational Area (Section 3.4.3.5).

Change in Behaviour

Marine mammals are sensitive to noise in the marine environment. Their use of sound for communication, prey capture, predator avoidance, navigation and their physiological features (i.e. large gas-filled organs) make them vulnerable to both disturbance and physiological damage from underwater noise of sufficient magnitude.

Continuous underwater noise may interfere with the ability of marine animals to detect natural sounds. This effect is termed ‘auditory masking’ and has the potential to interfere with animals’ communication and socialisation, the detection of predators and prey, and navigation and orientation. For masking to occur, the noise must be loud enough and have a similar frequency to the communication signal, and both must occur at the same time. Therefore, the probability of masking increases with decreasing distance to the noise source due to the higher levels overlap of the vocalisations frequencies. Clark et al. (2009) classified the potential for masking and communication impacts as high near the vessel (within tens of metres), moderate within hundreds, and low within thousands of metres. Therefore, impacts of masking will be highly localised.

Behavioural responses to noise emissions by marine mammals, such as cetaceans are generally highly variable, and dependant on the context and individual. A wide range of behavioural responses to anthropogenic noise emissions have been observed, including avoidance, altered swimming direction, increased swimming speed, ‘startle’ reactions, and alteration to surfacing, breathing and diving patterns (Erbe et al., 2019). Vessel noise has also been shown to reduce foraging efficiency for specific species, such as sperm whales (Erbe et al., 2019).

Table 5-11 shows the marine mammal behavioural threshold (NMFS, 2024) was reached for noise modelling conducted by Stroot et al. (2022), Wecker et al. (2022) and Warren et al. (2023). Wecker et al. (2022) predicted the greatest modelled distance to the marine mammal behavioural threshold of 20.7 km from the continuous sound sources, based on a scenario of sound sources including three vessels under DP and drilling operations. This scenario, where a third support vessel will be used during MODU positioning or to provide additional logistical support, will be short term and not representative of the majority of days during a drilling campaign. Two support vessels supporting the MODU drilling is the expected typical scenario, as represented by Stroot et al. (2022) which predicted the marine mammal behavioural threshold to be reached within 8.85 km of the sound sources.

As a conservative approach, behavioural impacts to continuous noise emissions may occur within ~21 km of the well construction activities. This continuous noise exposure is expected to overlap only a comparatively small portion of the Migration BIA for the humpback whale (Figure 3-15) and there is no recovery plan or conservation advice associated with this BIA. Considering there are no regionally significant feeding, breeding or aggregation areas for marine mammals in the Operational Area, change in behaviour impacts are likely to be limited to transient individuals only.

Given the short duration (i.e. 30 to 50 days per well), the localised extent of potential behavioural changes (e.g. a maximum distance of <21 km), the lack of habitat critical to the survival of the species, the consequence has been evaluated to potentially result in localised short-term impacts to individuals of conservation value, however, not affect local ecosystem or population functioning.

Injury/Mortality

Literature provides quantitative TTS and PTS SEL24h thresholds for assessing auditory impairment in marine mammals. TTS and PTS SEL24h thresholds is a cumulative metric that requires a receptor to be consistently exposed at this noise effect criteria for a 24-hour period for injury to occur.

Table 5-11 shows TTS and PTS SEL24h threshold criteria for marine mammals were reached for noise modelling conducted by Stroot et al. (2022), Wecker et al. (2022) and Warren et al. (2023). The greatest modelled distances to marine mammal TTS and PTS thresholds were based on noise modelling by Wecker et al. (2022) and Warren et al. (2023) which predicted:

- TTS:
  - LF cetaceans - within 2.66 km (Wecker et al., 2022)
  - HF cetaceans - within 0.16 km (Warren et al., 2023)
  - VHF cetaceans - within 3.33 km (Warren et al., 2023).
- PTS:
  - LF cetaceans - within 0.13 km (Wecker et al., 2022)
  - HF cetaceans - within 0.09 km (Wecker et al., 2022)
  - VHF cetaceans - within 0.21 km (Warren et al., 2023).

To account for the new thresholds for auditory injury and TTS (NMFS, 2024) (Section 5.3.3), and scientific uncertainty with regards to using previous injury thresholds (Koessler and McPherson,

2020), the range to behavioural change threshold will also conservatively consider the potential for auditory injury and TTS, i.e. behavioural change, auditory injury and TTS to occur within <21 km of the sound source.

The potential of injury (TTS and PTS) to marine mammals during well construction activities requires an individual to be consistently exposed to vessel/MODU/drilling operations for a 24-hour period for injury to occur. As a very conservative approach, marine mammals are required to remain within 21 km of a vessel/MODU for at least a 24-hour period for injury to occur.

The area within a 21 km buffer of the Operational Area overlaps a comparatively small portion of the Migration BIA for the humpback whale (Figure 3-15), and there is no recovery plan or conservation advice associated with this BIA. Considering there are no regionally significant feeding, breeding or aggregation areas for marine mammals in the Operational Area, potential injury to marine mammals are limited to transient individuals only.

The area within the 21 km buffer of the Operational Area does not contain habitats that encourages high-site fidelity for marine mammals given the area does not overlap reproduction, known foraging area, foraging annual high use area BIAs for marine mammals. Marine mammals in this area are not expected to remain for extended periods and are expected to transit through.

Given the short duration of continuous underwater noise emissions (30 to 50 days per well), the limited spatial area (within a 21 km buffer of the Operational Area) where injury may occur, and that marine mammals within this area are expected to transit through and not remain in the area for extended periods, potential injury to marine mammals from continuous underwater noise is not credible and not considered further.

5.3.5 Risk Ranking

Noise emissions are expected to be limited to highly localised and short-term change in behaviour to marine fauna, such as temporary displacement from the immediate vicinity of the noise source. Due to the transient nature of most marine fauna found with the Operational Area, the absence of significant feeding, breeding or aggregation areas for marine fauna, and the short duration of continuous noise emissions, impacts are expected to be localised and short-term impact to few transient individuals of conservation value that may pass through the area. These impacts are not expected to affect local ecosystem or population functioning. Therefore:

- The consequence ranking of ‘1’ (Incidental) was assigned to fish, sharks and rays, marine reptiles and marine mammals, and a likelihood of ‘B’ (Unlikely) was considered appropriate, resulting in a risk ranking of ‘Low’ (RRIV).

5.3.6 ALARP Demonstration

Table 5-12: Demonstration of ALARP – Noise emissions

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
Elimination			
None identified	-	-	-

Substitution			
None identified	-	-	-
Prevention			
None identified	-	-	-
Reduction			
Engines on board the MODU and vessels to be maintained in accordance with manufacturer's specifications.	EPO-WC-03	All MODU and vessel engines and power generation equipment shall be serviced in accordance with the relevant contractor's PMS. Contractor's servicing and maintenance records shall be validated by VOGA to ensure they are up to date.	VOGA inspection or audit confirms application of contractor's PMS. Contractor's servicing and maintenance records are up to date.
Vessels contracted by VOGA operating in the Operational Area must adhere to Part 8 of EPBC Regulation 2000.	EPO-WC-03	Compliance with EPBC Regulations 2000 – Part 8 Division 8.1 (Regulation 8.05 and 8.06) which requires that: • A vessel will not travel greater than 6 knots within 300 m of a whale or turtle (caution zone) and not approach closer than 100 m from a whale. • A vessel will not approach closer than 50 m of a dolphin or turtle or 100 m of a whale (with the exception of animals bow-riding). • A vessel will not approach closer than 300 m to a calf (whale or dolphin) (the caution zone). • If a calf appears in the caution zone the vessel must be immediately stopped and must: ○ Turn off the vessel's engines, or disengage the gears, or withdraw the vessel from the caution zone at a constant speed of less than 6 knots.	Records demonstrate no breaches of EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans and application of these regulations to marine turtles.
Mitigation			
None identified	-	-	-
Other			
None identified	-	-	-

Considered Control Measures	Assessment of option	Decision
Implementation of shut-down procedures during well construction activities if marine mammals are spotted within close distances of vessels or the MODU.	Any localised, short-term change in behaviour to marine mammals caused by vessel operations and drilling activities would not affect feeding, breeding or aggregation activities. Individuals could easily move away from the noise source. These controls would not reduce environmental impact effectively and would be burdensome to implement, extending the activity timeframes. Cost is considered disproportionate to the environmental benefit.	Not adopted.
Implementation of shut-down procedures for humpback whales if well construction activities are undertaken during migration season.	Any localised, short-term change in behaviour to humpback whales caused by the well construction activities would not affect feeding, breeding or aggregation activities. Individuals could easily move away from the noise source. These controls would not reduce environmental impact effectively and would be burdensome to implement, extending the activity timeframes. Cost is considered disproportionate to the environmental benefit.	Not adopted.
Implementation of pre-start visual observations for whales.	Any localised, short-term change in behaviour to whales caused by the well construction activities would not affect feeding, breeding or aggregation activities. Individuals could easily move away from the noise source. This control would reduce the likelihood of individuals being within proximity of the acoustic source. However, as the potential impact to whales is already limited, the benefits of this control are not significant. Cost is considered disproportionate to the environmental benefit.	Not adopted.
Adopt newly updated NMFS (2024) marine mammal thresholds.	Adopting the newly updated NMFS (2024) marine mammal thresholds would include re-running the underwater noise modelling, and using the new modelling results to update the impact assessment where required. VOGA anticipates that distances to impact threshold will increase using the newly published thresholds, however, a conservative estimate has already been applied to the impact assessment by using the noise criteria thresholds for behavioural impacts (Section 5.3.4.1). There are no regionally significant feeding, breeding or aggregation areas for marine mammals in the Operational Area. Overlap with existing migration BIA may change, however, the overlap would still be a small fraction of the area. As such,	Not adopted.

	the consequence is not expected to change as a result of adopting the new thresholds. Considerable time and cost would be required to re-run the modelling, which is disproportionate to the potential gains given that a highly conservative approach has already been adopted in the impact assessment and no change to consequence is expected as a result of revised modelling results.	
Adopt Accomando et al. (2025) marine turtle thresholds.	Adopting the Accomando et al. (2025) marine turtle thresholds would include re-running the underwater noise modelling and using the new modelling results to update the impact assessment where required. VOGA anticipates that distances to impact threshold will increase using the newly published thresholds, however, a conservative estimate has already been applied to the impact assessment by using the criteria thresholds for LF cetaceans (Section 5.3.4.1). Although the Operational Area overlaps with a small portion (0.5%) of the internesting buffer for flatback turtles, by taking a conservative approach to the impact assessment VOGA does not expect that revised modelling would result in a change in consequence. The Operational Area does not overlap with any other habitats critical to the survival of marine turtle species. As such, the consequence is not expected to change as a result of adopting the new thresholds. Considerable time and cost would be required to re-run the modelling, which is disproportionate to the potential gains given that a highly conservative approach has already been adopted in the impact assessment and no change to consequence is expected as a result of revised modelling results.	Not adopted.
Use of alternate MODU type, i.e. DP or semisubmersible drilling platform.	Using a jack-up MODU for each campaign eliminates noise emissions associated with the use of dynamically positioned thrusters. The use of a dynamically positioned or semisubmersible drilling platform is not practicable, as they cannot execute the required operations over the Wandoo platforms. The use of platform-based rigs to conduct the planned activities has been reviewed. However, the Wandoo facilities are too small to permit the installation of a suitable unit.	Not adopted.
ALARP Summary: The impacts of noise emissions from well construction activities are ALARP, based on the impact assessment outcomes using VOGA Risk Matrix (as per Table 4-1), the ALARP template to determine the appropriate decision context type (Table 4-4) and VOGA's criteria for demonstrating ALARP		

(Section 4.8). No reasonably practicable additional controls were identified that would further reduce the impacts without disproportionate sacrifice.

5.3.7 Acceptability Demonstration

Table 5-13: Acceptability demonstration – Noise emissions

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
Principles of ESD not compromised	Relevant Principles of ESD not compromised given proposed controls (Table 5-12).
External context – objections or claims considered	N/A – no external objections or claims received.
Internal context – VOGA HSE policy/procedures met	Yes – Risk managed in accordance with VOGA HSE policy.
Other requirements met	Yes – including: • Vessels comply with Part 8 of EPBC Regulations 2000 • Approved Conservation Advice for *Balaenoptera borealis* (Sei Whale) (TSSC, 2015c) • Approved Conservation Advice for *Balaenoptera physalus* (Fin Whale) (TSSC, 2015d) • Conservation Management Plan for the Blue Whale, 2015-2025 (DoE, 2015) • Conservation Advice for *Orcaella heinsohni* (Australian snubfin dolphin) (DCCEEW, 2025b) • Conservation Advice for *Sousa sahulensis* (Australian humpback dolphin) (DCCEEW, 2025c) • Recovery Plan for Marine Turtles in Australia, 2017-2027 (Commonwealth of Australia, 2017) • Approved Conservation Advice for *Dermochelys coriacea* (Leatherback Turtle) (DEWHA, 2008c).
RR < High (RRII)	Yes – Low (RRIV).
EPO(s) manage impacts to acceptable level(s)	Yes – The following relevant EPOs will be maintained: • EPO-WC-03 See Section 7 for further details.
Acceptability Summary The impacts of noise emissions have been managed to a level that is broadly acceptable based on the demonstration of ALARP (Table 5-5), alignment with industry best practice, and VOGA's process for evaluating acceptability (Section 4.7)	

5.4 Planned: Atmospheric and Greenhouse Gas Emissions

5.4.1 Hazard Report

Table 5-14: Hazard Report – Atmospheric and GHG emissions

HAZARD	Atmospheric and GHG emissions
EP risk number	EP-WC-R04

Activity/cause	• MODU operations (fuel use) • Vessel operations (fuel use) • Helicopter operations (fuel use) • Fugitive emissions • Refrigerants • Materials (embodied carbon) • Waste (end treatment).		
Extent	Well construction is performed in campaigns that are likely to take up to 150 days to complete. The frequency of campaigns will vary. Typical campaigns include up to 3 wells. Drilling one well takes between 30 and 50 days. Vessel and MODU operations within Operational Area. Atmospheric and all scopes of GHG emissions generated from the activities considered (Scopes 1, 2 and 3).		
Potential impact description	A localised reduction in air quality. Minor contribution to global greenhouse gases.		
IMPACT AND RISK EVALUATION SUMMARY			
Receptor	**Impact/Consequence**	**Likelihood**	**Residual Risk**
Ambient Air Quality	Incidental (1)	Almost Certain (E)	Medium (RRIII)
Relevant EPO(s)	EPO-WC-04 Air emissions requirements from vessels within the Operational Area are consistent with Marine Order 97 requirements.		

5.4.2 Description of Hazard

Atmospheric emissions are gases released into the air from human and natural activities that can lead to reduction in local air quality. These emissions include non-greenhouse gases, such as nitrogen oxides (NO_x) and sulphur oxides (SO_x), and greenhouse gases (GHGs), such as carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). The GHGs reported under the National Greenhouse and Energy Reporting (NGER) Scheme include CO_2, CH_4. N_2O, sulphur hexafluoride (SF_6), and specified kinds of hydrofluorocarbons and perfluorocarbons (CER, 2024), and are measured in the units of carbon dioxide equivalent (CO_2-e).

The activities can generate atmospheric and GHG emissions from the following sources:

- Fuel usage by MODU and vessel operations
- Fuel usage by helicopter operations
- Fugitive emissions – minor volumes of gases or vapours from the holding tanks and pressure-containing equipment
- Refrigerants used in the centralised air-conditioning system on the MODU and vessels.

Well testing (flaring) is not part of well construction activities and is not addressed here.

5.4.3 Impact and Risk Evaluation

5.4.3.1 GHG Emissions Assessment

A GHG emissions assessment was conducted to estimate the GHG emissions generated from all planned activities that will occur within the Operational Area (Appendix G). The GHG emissions assessment covers all emission scopes—Scopes 1, 2 and 3, defined as:

- Scope 1: The GHG emissions released as a direct result of VOGA's well construction activities. These are emissions from sources owned or controlled by the company. In this case, scope 1 emissions will be zero as well testing (flaring) is not part of well construction activities and no deliberate releases from system upsets, accidents and process vents is expected. Fuel use by the MODU and vessels is not included in scope 1 emissions.
- Scope 2: The indirect GHG emissions from the generation of electricity, steam, heating, and cooling purchased, not owned or controlled by the company. Scope 2 will be zero as there is no electricity/energy involved.
- Scope 3: The indirect GHG emissions from VOGA well construction activities, not including scope 2, not owned or controlled by the company, e.g., fuel use by MODU and vessels, purchased goods and services (support operations, materials).

The GHG emission sources and scope included in the assessment and relevant to the activities are summarised in Table 5-15. The maximum duration of 450 days over the 5-year period is used in the GHG assessment to include all the relevant well construction activities. Emissions from fugitives and employee commuting (road travel and fixed wing aircraft) are assumed to be immaterial. There is no recovery of hydrocarbons associated with the well construction activities, and as such no processing, transport, or third party end-use of hydrocarbons would occur as a result of the petroleum activity within scope of the EP and GHG emissions assessment.

Table 5-15: Emission Sources and Scopes Included in the GHG Emissions Assessment

Emission scope	Well construction activities
Scope 1	Immaterial fugitive emissions; no other sources
Scope 2	Not applicable
Scope 3	Support operations, including MODU, vessels[1] and helicopters Materials[2] Waste generated[3]

[1] Include vessels and MODU activities within the Operational Area only, as per the EP scope.
[2] Include embodied carbon for the major items only – cement, casing, and water-based mud (WBM).
[3] Include landfilling of the wellhead retrieved assuming immaterial emissions from waste discharge.

GHG emissions are estimated according to the methodologies in NGER Determination 2008 and GHG Protocol Corporate Value Chain (Scope 3) Standard. Assumptions and methodology used can be referred to in Appendix G.

As summarised in Table 5-16, the total GHG emissions resulting from the activities are expected to be approximately 89.4 kt CO_2-e, consisting of entirely scope 3 emissions.

The support operations (vessels and helicopter) are expected to generate approximately 86.1 kt CO_2-e, ~96.4% of the total GHG emissions. The vessel and helicopter emissions have included a contingency factor of 20% to account for the potential delays from the schedule and weather.

The total emissions from the activities (89.4 kt CO_2-e) are expected to contribute to approximately 0.02% of the Australian carbon budget for 2026.

Table 5-16: Summary of the GHG Emissions Assessment Results

Emission source	Total scope 3 emissions	Percentage
	kt CO_2-e	%
Well construction activities	**3.23**	**3.61**
Materials[1]	3.20	3.58
Waste[2]	0.03	0.03
Support operations	**86.14**	**96.39**
Vessels[3,5]	85.57	95.75
Helicopter[4,5]	0.57	0.64
Total GHG Emissions (t CO_2-e)	**89.37**	**100.00**

[1] Major materials required for the well construction activities for 3 wells in total: 195 m^3 cement, 1,050 t casing and tubing, and 5,400 m^3 WBM in total.
[2] Weight of wellhead retrieved for landfill: 24 tonnes in total.
[3] Only MODU and vessel operations within Operational Area considered; Jack-up MODU used for the well construction activities with 3 AHTS vessels.
[4] Helicopter flights 7 times a week (max) during well construction activities, departing from Karratha Airport.
[5] A contingency factor of 20% applied for vessel and helicopter operations to account for potential delays.

5.4.3.2 Potential Impacts

Potential impacts caused by atmospheric and GHG emissions include:

- Localised and temporary decrease in air quality
- Minor contribution to GHGs and global climate change.

The following receptors within the Operational Area may be impacted by atmospheric and GHG emissions:

- Ambient air quality.

Given rapid dispersion of any air emissions is expected, impacts to fauna such as birds have not been evaluated.

5.4.3.3 Impact Assessment

Air Quality

Air emissions are released from vessel engines and onboard machinery. These emissions may result in a decline in local air quality within the immediate vicinity of the source.

The volume of emissions is low. Atmospheric emissions will be similar to other vessels operating in the region for both oil and gas activities and other activities.

The extent of the area of impact is predicted to be localised to the emission point as offshore winds will rapidly disperse atmospheric emission to background levels while the activities are undertaken. As the activities are in a remote location, any temporary change to air quality will not impact coastal towns.

While accidental release of ODS has the potential to contribute to ozone layer depletion, routine maintenance of refrigeration systems and controls make accidental releases rare.

Given the low volume of emissions and the offshore location of the Operational Area, biodiversity, ecological integrity and social amenity will not be impacted and any impact to air quality is negligible.

Contribution to Atmospheric GHGs

GHG emissions from the activities are expected to contribute to no more than 0.02% of the Australian carbon budget during the activity period and are not expected to have determinable impact.

It is important to acknowledge that GHG emissions can add load to the atmosphere, which then contributes to climate change. However, climate change impacts stem from long-term global GHG emissions, minus global GHG sinks, that have accumulated in the atmosphere since the industrial revolution began and thus cannot be attributed to a specific set of activities.

5.4.4 Risk Ranking

The ambient air quality of the Operational Area is expected to be high, but emissions will rapidly disperse to background levels close to the emission source and impacts to fauna are not predicted. Therefore:

- The consequence ranking of '1' (Incidental) was assigned to air quality and contribution to GHGs, and a likelihood of 'E' (Almost Certain) was considered appropriate, resulting in a risk ranking of 'Medium' (RRIII).

5.4.5 ALARP Demonstration

Table 5-17: Demonstration of ALARP – Atmospheric and GHG emissions

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
Elimination			
None identified	-	-	-
Substitution			
The sulphur content of fuel complies with Regulation 14 of MARPOL 73/78 Annex IV and AMSA Marine Order 97.	EPO-WC-04	Fuel purchased in Australia shall meet Australian standards.	Records of low sulphur fuel usage.

Prevention			
None identified	-	-	-
Reduction			
MODU and vessels comply with Regulation 14 of MARPOL 73/78 Annex VI and AMSA Marine Order Part 97.	EPO-WC-04	Marine diesel engines meet NO_x emission requirements and limits as set out by MARPOL 73/78, Annex VI, Regulation 13, and have an International Air Pollution Prevention (IAPP) certificate. Onboard incinerators (if present) will meet IMO standards and are identified in the vessels' IAPP certificate. Equipment and systems that contain ODS comply with MARPOL 73/78, Annex VI, Regulation 12, are identified in the vessels' IAPP certificate and an ODS record book is maintained (where applicable). Vessels >400 GT have a Ship Energy Efficiency Management Plan (SEEMP).	Vessel IAPP certificate. ODS Record Book. Records of SEEMP.
Contractor PMS in place to maintain power generation systems and ancillary diesel engines.	EPO-WC-04	All MODU and vessel engines and power generation equipment shall be serviced in accordance with the relevant Contractor's PMS. Contractor's servicing and maintenance records shall be validated by VOGA to ensure they are up to date.	VOGA inspection or audit confirms application of contractor's PMS. Contractor's servicing and maintenance records are up to date.
Contractor PMS in place to maintain refrigeration systems within the use of ODS.	EPO-WC-04	Refrigeration systems shall be maintained in accordance with contractor's PMS to ensure refrigerant emissions are minimised. Contractor's servicing and maintenance records	VOGA inspection or audit confirms application of contractor's PMS. Contractor's servicing and maintenance

		shall be validated by VOGA to ensure they are up to date.	records are up to date.
Mitigation			
None identified	-	-	-
Other			
None identified	-	-	-
Considered Control Measures	**Assessment of option**		**Decision**
Low emissions vessels.	There is a limited availability of low emissions vessels (e.g. LNG, or battery powered), limited bunkering infrastructure (e.g. methanol), or the fuel technology readiness is not adequate (e.g. ammonia or hydrogen), such that it is not practicable to use these technologies.		Not adopted.
ALARP Summary: The impacts of atmospheric and GHG emissions are ALARP, based on the impact assessment outcomes using VOGA Risk Matrix (as per Table 4-1), the ALARP template to determine the appropriate decision context type (Table 4-4) and VOGA's criteria for demonstrating ALARP (Section 4.8). Through the ALARP process, additional controls have been identified that would further reduce the impacts without disproportionate sacrifice.			

5.4.6 Acceptability Demonstration

Table 5-18: Acceptability demonstration – Atmospheric and GHG emissions

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
Principles of ESD not compromised	Relevant Principles of ESD not compromised given proposed controls (Table 5-2).
External context – objections or claims considered	N/A – No external objections or claims received.
Internal context – VOGA HSE policy/procedures met	Yes – Impact managed in accordance with VOGA HSE policy and PMS.
Other requirements met	Yes – MARPOL 73/78, OPGGS(E)R, *Navigation Act 2012* (Cth), Marine Order 97, NGER Act. • Approved Conservation Advice for *Balaenoptera borealis* (Sei Whale) (TSSC, 2015c) • Conservation Management Plan for the Blue Whale, 2015-2025 (DoE, 2015) • National Recovery Plan for the Southern Right Whale (*Eubalaena australis*) (DCCEEW, 2024) • Approved Conservation Advice for *Balaenoptera physalus* (Fin Whale) (TSSC, 2015d) • Conservation Advice for *Orcaella heinsohni* (Australian snubfin dolphin) (DCCEEW, 2025d) • Conservation Advice for *Sousa sahulensis* (Australian humpback dolphin) (DCCEEW, 2025h)

RR < High (RRII)	Yes – Medium (RRIII).
EPO(s) manage impacts to acceptable level(s)	Yes – The following relevant EPOs will be maintained: • EPO-WC-04 See Section 7 for further details.
Acceptability Summary The impacts of air and GHG emissions have been managed to a level that is broadly acceptable based on the demonstration of ALARP (Table 5-17), alignment with industry best practice, and VOGA's process for evaluating acceptability (Section 4.7).	

5.5 Planned: Light Emissions

5.5.1 Hazard Report

Table 5-19: Hazard Report – Light emissions

HAZARD	Light emissions		
EP risk number	EP-WC-R05		
Activity/cause	• MODU operations • Vessel operations		
Extent	A conservative light emission buffer of 20 km from the Operational Area has been assessed.		
Potential impact description	Disruption to marine fauna, such as disorientation, attraction or repulsion of marine fauna and birds and potential altered foraging and breeding behaviours.		
IMPACT AND RISK EVALUATION SUMMARY			
Receptor	**Impact/Consequence**	**Likelihood**	**Residual Risk**
Plankton	Incidental (1)	Possible (C)	Low (RRIV)
Fish, sharks and rays	Incidental (1)	Possible (C)	Low (RRIV)
Marine reptiles	Incidental (1)	Possible (C)	Low (RRIV)
Seabirds and shorebirds	Incidental (1)	Possible (C)	Low (RRIV)
Relevant EPO(s)	EPO-WC-05 Impacts to marine fauna from light emissions will be limited to temporary behavioural change localised to the light source, with no species population-level impacts.		

5.5.2 Description of Hazard

The MODU and support vessels will be present within the Operational Area for each well construction campaign. The duration of each campaign is expected to be up to 150 days and there are anticipated to be up to 3 campaigns over the 5 year period of EP validity. Artificial lighting is required for the safe operation of support vessels and the MODU. MODU and vessel deck lighting is kept on 24 hours a day for maritime safety purposes, in accordance with requirements of the *Navigation Act 2012* (Marine Order Part 30 (Prevention of Collisions)).

The distance that the light emissions will be visible from the source depends on the lighting type and the environmental conditions. Monitoring undertaken by Woodside (2014a) indicated that

light density from navigational lighting attenuated to below 1.0 lux and 0.03 lux at distances of ~300 m and ~1.4 km, respectively from the source. These light densities are comparable to natural light densities experienced during deep twilight and during a quarter moon. Therefore, it is expected that the temporary change (~40 days) to ambient light levels will affect a radius of ~1.4 km from MODU and vessel operations.

As described in Section 2.11.2, the number of support vessels within the Operational Area will vary during the duration of well construction activities. Concurrent light emissions have the potential to occur from multiple vessels in the Operational Area, particularity during MODU positioning. This scenario would include the MODU and 3 AHTS vessels and will result in slightly elevated ambient light levels. However, typically 2 support vessels will be present for the duration of each campaign.

5.5.3 Impact and Risk Evaluation

Potential impacts caused by light emissions include:

- Disruption to marine fauna.

The following receptors within the Operational Area may be impacted by light emissions:

- Plankton
- Fish, sharks and rays
- Marine reptiles
- Seabirds and shorebirds.

5.5.3.1 Impact Assessment

Artificial lighting has the potential to disrupt marine fauna by altering the use of visual cues for orientation, navigation or other purposes. This results in behavioural responses which can alter migration, foraging and breeding activity. It can also create competitive advantages for some species and reduce reproductive success and/or survival in others.

As per the recommendations of the National Light Pollution Guidelines for Wildlife (DCCEEW, 2023c) a precautionary 20 km buffer from the light source has been used to assess species sensitive to light. This is referred to as the ‘light EMBA’. This distance is considered conservative and is based on observed effects of sky glow on marine turtle hatchlings demonstrated to occur at 15-18 km and seabird fledglings grounding in response to artificial light 15 km away (DCCEEW, 2023c).

Plankton

The National Light Pollution Guidelines for Wildlife does not identify plankton as sensitive species to light pollution (DCCEEW, 2023c). However, studies have shown zooplankton to demonstrate avoidance, descending away from the surface light pollution caused by research vessels at depths of up to 200 m, and dispersing up to 200 m horizontally from the light source (Berge et al., 2020). Zooplankton naturally ascend at night to forage on phytoplankton that are found near the water’s surface. Conversely, studies by Meekan et al. (2001) found that some

zooplankton species were attracted to light sources, suggesting species specific response to light pollution.

The increase of zooplankton in an area has been shown to result in a subsequent increase in predators (Shaw et al., 2002). Therefore, light emissions produced from the vessel activities has the potential to lead to a localised change in zooplankton density which may lead to indirect impacts to predators and the food chain. Due to the short-term duration of the activities (i.e. up to 150 days in the Operational Area per campaign), any impact is anticipated to be highly localised and temporary.

Fish, Sharks and Rays

The National Light Pollution Guidelines for Wildlife does not identify fish, sharks or rays as sensitive species to light pollution (DCCEEW, 2023c). Studies have found that fish species can be attracted to light sources, similar to zooplankton (Meekan et al., 2001). The attraction of organisms to the light results in an increased food source for marine predators that aggregate around the edges of the visible light.

Seven threatened fish species have been identified by the PMST report for the 20 km light assessment area: dwarf sawfish, green sawfish, freshwater sawfish, scalloped hammerhead, grey nurse shark, white shark and whale shark. A foraging BIA for the whale shark also overlaps with this assessment area. However, relevant Conservation Advice and Recovery Plans for these species do not identify light emissions as a threat (Table 1-3).

The localised increase in fish activity, including opportunistic predation, to the immediate vicinity of the vessels is not considered to represent a significant impact to the local and regional food web. Therefore, impacts are expected to be negligible.

Marine Reptiles

The Recovery Plan for Marine Turtles in Australia (CoA, 2017) and National Light pollution Guidelines for Wildlife (DCCEEW, 2023c) identifies light pollution as a threat to marine turtles. Artificial lighting along or adjacent to turtle nesting beaches has the potential to alter or disrupt nocturnal behaviours of nesting adult females and emerging hatchlings as they make the passage from the beach to the sea (DCCEEW, 2023c).

Female turtles nest on sandy tropical and sub-tropical beaches predominantly at night where they rely on visual cues to select nesting beaches and orient on land (DCCEEW, 2023c). Artificial light has been shown to impact these nesting behaviours of adult females (Witherington and Martin, 2003), such as influencing site selection, with females typically selecting beaches not exposed to artificial light (Price et al., 2018).

Studies have shown that hatchlings are particularly vulnerable to artificial light emissions. Most turtle hatchlings emerge at night and rely on a combination of topographic and brightness cues to rapidly orient themselves and find the ocean in order to avoid predation (Mrosovsky, 1968). Disorientation of hatchlings as they emerge has the potential to direct hatchlings away from the ocean (Limpus, 2009), leading to mortality from predation, exhaustion, dehydration, or interaction with human activities (Erb and Wyneken, 2019). Hatchlings have been observed to respond to artificial light emission up to 18 km away from the source whilst emerging on the beach (Kamrowski et al., 2014). Artificial lights can also disrupt hatchlings within nearshore

waters by attracting hatchlings back to the shoreline (Truscott et al., 2017). Alternatively, hatchlings have also been reported to be found swimming around lights on vessels out at sea (Limpus et al., 2003). In the event that the light emissions attract fish, sharks, and rays, it may result in a higher level of predation.

As described in Section 3.4.3.6 several marine turtle species may be present within the Operational Area. The 20 km light emission buffer overlaps with BIAs and habitat critical to the survival of the following species:

- Flatback turtle
- Green turtle
- Hawksbill turtle
- Loggerhead turtle.

The 'light EMBA' overlaps habitat critical to the survival of the flatback, green and hawksbill turtles. The flatback turtle has a 60 km buffer established seawards from known nesting sites such as those in the Dampier Archipelago (~39 km from the Operational Area). This buffer is identified as internesting habitat which is critical to the species during nesting activities which occur between October and March each year (CoA, 2017). Both the green and hawksbill turtles also have defined habitat critical to the survival associated with nesting sites in the Dampier Archipelago, however the buffer for these species only extends 20 km from nesting sites (CoA, 2017). The nesting season for the green turtle occurs between November and March, while hawksbill turtle nesting occurs between October and February each year (CoA, 2017). As activities associated with the well construction campaigns are proposed to be undertaken at any time of year (Section 2.3), there is potential that artificial light from MODU and vessel operations will be emitted during marine turtle nesting seasons.

The Operational Area is located ~39 km from the nearest shoreline, which exceeds the recommended 18 km buffer where hatchlings have been observed to respond to artificial light emission (DCCEEW, 2023c). Further, it is expected that the 20 km light buffer would not overlap the shallow coastal waters where biologically important activities occur, such as mating or reproduction, or directly overlap beaches where nesting occurs. Therefore, lighting from the MODU and support vessels is not predicted to impact turtle hatchling or breeding behaviours at nesting locations and the impact of lighting on hatchling dispersal female turtle beach selection will be negligible.

There are no foraging BIAs for marine turtles overlapped by the Operational Area or light EMBA. The closest foraging BIA is located within the shallow waters surrounding the some of the islands of the Dampier Archipelago ~45 km from the Operational Area. Therefore, it is expected that any individuals within or adjacent to the Operational Area are transient and may forage opportunistically.

Turtles transiting in the surroundings of the Operational Area may be disturbed by the lights from MODU and vessel operations, however, given the large distances typically covered by marine turtles, impacts will be limited. Therefore, artificial light from the well construction activities may impact individual marine turtles, but it is not anticipated to result in impacts at a population-level or disrupt ecosystem functioning. Any impacts are expected to be highly localised and short-term (i.e. duration of each campaign).

Seabirds and Shorebirds

Several conservation plans and national guidelines have identified light pollution as a threat to birds, including the Wildlife Conservation Plan for Seabirds (CoA, 2020), Wildlife Conservation Plan for Migratory Shorebirds (DoE, 2015b) and the National Light Pollution Guidelines for Wildlife (DCCEEW, 2023c). Previous studies have shown artificial light to cause disruption to seabird and shorebird behaviours, such as disorientation resulting in collision, entrapment, stranding, grounding, and interference with navigation (DCCEEW, 2023c). There are a range of conflicting reports on the attractiveness of different light wavelengths to seabirds. In general, very bright light, regardless of colour, has been shown to attract seabirds (Raine et al., 2007), indicating that the light intensity may be a more important cue than colour for seabirds (DCCEEW, 2023c). Bright white lights on vessels have been shown attract seabirds at night, particularly on nights with little moonlight or low visibility (Merkel and Johansen, 2011).

The impact that artificial light has depends on the species and has been known to be exacerbated by the phase of the moon (Deppe et al., 2017), wind direction and strength (Syposz et al., 2018), precipitation, cloud cover, and the proximity of nesting sites or migrating sites to artificial light sources (Rodríguez et al., 2015).

Several studies have examined both the benefits and drawbacks of light pollution for migratory shorebirds (DCCEEW, 2023c). Artificial lighting can assist some species, particularly those that forage at night, by increasing access to food (Rogers et al., 2006; Dwyer et al., 2013). Conversely, bright lights can disrupt birds in flight by attracting airborne migrants (Longcore et al., 2013) and influencing stopover site selection in long-distance migrants, which may reduce migration success and overall fitness (McLaren et al., 2018). Additionally, Ronconi et al. (2013) reported that interactions between offshore oil and gas platforms and birds in the North Sea likely involve migratory shorebirds, estimating that hundreds of thousands of birds die annually in these encounters, with artificial light being a probable contributing factor (DCCEEW, 2023c).

Seabird species which are active at night, such as procellariforms (i.e. petrels, shearwaters, and albatross species) have been shown to be more vulnerable to impacts from artificial light (DCCEEW, 2023c). The fledgling phase for procellariforms is considered a critical phase in the life cycle of the species (Rodriquez et al., 2017). The fledging season may vary between species; however, it is known to occur over a short period of time with the first flight typically occurring within the first 2 hours after sunset (Chevillion et al., 2022). Artificial light has been shown to disrupt fledglings sea-finding cues during their emergence from the nesting sites. Studies note this disorientation has the potential to lead to seabird fledgling grounding in response to a light source at least 15 km away (Rodriguez et al., 2014).

A recent study demonstrated that artificial light disrupts adult nest attendance, subsequently affecting the weight gain and potential survival of the chicks (Cianchetti-Benedetti et al., 2018). Adult seabirds are less vulnerable to artificial light than fledglings. Adult procellariforms are the most vulnerable when returning to and leaving the nesting colony (CoA, 2020).

As described in Section 3.4.3.3 several seabird and shorebirds species may be present within the Operational Area. There are no habitats critical to the survival of threatened albatross and petrel species within the 20 km light EMBA, this includes known foraging and nesting sites. However, the light EMBA does overlap with breeding BIAs for the roseate tern and wedgetail shearwater.

The roseate tern is diurnal, meaning they are active at day and rest at night (DCCEEW, 2025). Therefore, any impacts from artificial light emissions from the activity are anticipated to be negligible and have not been assessed further.

The wedge-tailed shearwater is EPBC Act listed marine and migratory species that does not have a recovery plan or conservation advice but is covered by the Wildlife Conservation Plan for Seabirds (CoA, 2020). As a procellariform the wedge-tailed shearwater may be active at night. Diving seabirds, particularly petrels, are sensitive to artificial light emissions, and can be disoriented during flying and foraging (Marangoni et al., 2022). It is anticipated that artificial light at night may increase prey concentration in the localised area increasing the opportunity for seabird foraging activities. Although no foraging BIA for the species is identified within the light EMBA, the wedge-tailed shearwater would be expected to forage within the Operational Area and 20 km light EMBA during the breeding season (August to April) when it can be found along the coast between Exmouth and Port Headland. Therefore, the presence of artificial light from MODU and vessel operations may increase foraging opportunities.

As discussed above, a critical phase of life for shearwaters is at fledgling when dependence on parents and life on land shifts to independence at sea. Fledglings are vulnerable to becoming disorientated during their first flight when exposed to artificial light, with some fledglings leaving the nest but become attracted towards artificial lighting. This disorientation can lead to injury or fatality from fallouts over the ocean, groundings or collisions with infrastructure (Rodríguez et al., 2017; Marangoni et al., 2022). Studies have shown that some fledglings will not make their first flight due to light emissions if the nesting habitat does not become dark (DCCEEW, 2023c).

The wedge-tailed shearwater reproduction BIA is based on buffer areas surrounding the offshore islands (e.g. within Dampier Archipelago) that are used for nesting by this species (Section 3.4.3.3). Given the Dampier Archipelago coastline is ~39 km from the Operational Area, lighting from the MODU and support vessels is unlikely to impact fledgling wedge-tailed shearwaters, as grounding is predicted in response to a light source 15 km away (Rodriguez et al., 2014). Therefore, artificial light emissions from the activity only have the potential to temporarily attract individuals to nocturnally forage within the area which will not result in negative impacts to seabird populations, biologically important activities, or ecosystem function.

5.5.4 Risk Ranking

Light emissions may result in behavioural changes to fauna, particularly marine turtles and seabirds.

The 20 km light EMBA intersects with foraging BIA for the whale shark, internesting buffer BIA for the flatback, hawksbill and loggerhead turtles, and breeding BIAs for the roseate tern and wedge-tailed shearwater. Habitat critical to the survival of the green, flatback and hawksbill turtles also overlaps with the light EMBA.

Relevant Conservation Advice and Recovery Plans for threatened fish species do not identify light emissions as a threat. The Operational Area is also ~39 km from the closest shoreline, which is beyond the 15-18 km observed impact area for marine turtles and seabird fledglings. Furthermore, it is expected that the conservation 20 km light buffer recommended by the National Light Pollution Guidelines (DCCEEW, 2023c) would not overlap the shallow coastal

waters where biologically important activities occur, such as mating or reproduction, or directly overlap beaches where nesting occurs. Therefore:

- The consequence ranking of '1' (Incidental) was assigned to marine fauna and a likelihood of 'C' (Possible) was considered appropriate, given MODU and vessel deck lighting has to be kept on 24 hours a day for maritime navigational and safety purposes, resulting in a risk ranking of 'Low' (RRIV).

5.5.5 ALARP Demonstration

Table 5-20: Demonstration of ALARP – Light emissions

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
Elimination			
None identified.	-	-	-
Substitution			
None identified.	-	-	-
Prevention			
None identified.	-	-	-
Reduction			
Lighting will be limited to the minimum required for navigational and safety requirements, with the exception of emergency events.	EPO-WC-05	Reduce unnecessary MODU and vessel lighting to only those required for safe work and navigational use, in accordance with the National Light Pollution Guidelines for Wildlife (DCCEEW, 2023c).	VOGA inspection or audit confirms no unnecessary light other than usage for safe work and navigation.
Mitigation			
None identified.	-	-	-
Other			
None identified.	-	-	-
Considered control measures	**Assessment of option**		**Decision**
Exclude night-time operations.	The potential impact to marine turtles and birds is considered incidental, so excluding night-time operations will not reduce impact significantly. Cost to double the duration of the activity and increase impacts, or potential impacts, in other areas (i.e. waste, air emissions, etc.) considered disproportionate given no significant environmental benefit.		Not adopted.
Conduct the well construction activities outside seabird breeding or	The potential impact to birds is considered incidental, so avoiding periods of important behaviours will not reduce impact significantly. Cost associated with moving or		Not adopted.

migration seasons to avoid light impacts to fauna.	delaying the activity schedule (schedule dependent on vessel availability) is considered disproportionate given no significant environmental benefit.	
Implement an Offshore Seabird Management Plan.	Nesting colonies for the wedge-tailed shearwater are around 39 km from known breeding islands in the Dampier Archipelago. Considering impacts to wedge-tailed shearwater fledglings from grounding is predicted in response to a light source 15 km away (Rodriguez et al., 2014), it is considered that operational lighting from the activity will not impact fledglings. As population level impacts are not predicted to seabird species the control is considered disproportionate to the limited potential benefit.	Not adopted.
Reducing lighting levels.	Lighting levels described and assessed are required by law to provide a safe working environment for vessel personnel, as well as to ensure navigational safety in the area. These cannot be reduced further.	Not adopted.
Consider Marine Turtle Light Mitigation Toolbox from the National Light Pollution Guidelines for Wildlife (DCCEEW, 2023c).	Implementing light management options to further reduce the impact of artificial lighting to marine turtles is not considered relevant given the operational area is >20 km from the nearest breeding/nesting habitat as outlined in the Guidelines. Therefore, additional light management actions would not reduce the impact significantly also noting a minimum level of lighting is required for navigational and safety requirements.	Not adopted.
Consider Best Practice Lighting Design from the National Light Pollution Guidelines for Wildlife (DCCEEW, 2023c).	Substitute external lighting with light sources that minimise the effects of artificial light on wildlife (e.g. reduced or filtered-out blue, violet and ultraviolet wavelengths). The potential impact to marine turtles and birds is considered incidental, therefore replacing external lighting with light sources considered appropriate for wildlife will not significantly reduce the impact. Cost considered disproportionate given no significant environmental benefit.	Not adopted.
Reduce light spill from internal vessel light sources by using blinds on windows.	Blinds on vessel windows will have a negligible effect on the overall light emissions footprint. The primary source of light emissions from the survey vessel will be deck lighting. The survey vessel will have a large, illuminated deck to ensure a safe working environment for crew members.	Not adopted.

	Light emissions from windows and portholes contribute insignificant light spill compared to the floodlights illuminating the deck. Using window blinds on vessels where the primary source of light emissions is from internal vessel lights, such as cruise ships, may result in an environmental benefit. However, the application of window blinds on survey vessels will result in a negligible reduction in light emissions, given the primary source of light is deck lighting.	

ALARP summary:

The impacts from light emissions are ALARP, based on the impact assessment outcomes using VOGA Risk Matrix (as per Table 4-1), the ALARP template to determine the appropriate decision context type (Table 4-4) and VOGA's criteria for demonstrating ALARP (Section 4.8). No reasonably practicable additional controls were identified that would further reduce the impacts without disproportionate sacrifice.

5.5.6 Acceptability Demonstration

Table 5-21: Acceptability demonstration – Light emissions

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
Principles of ESD not compromised	Relevant principles of ESD not compromised given proposed controls (Table 5-20).
External context – objections or claims considered	N/A – no external objections or claims received.
Internal context – VOGA HSE policy/procedures met	Yes – Risk managed in accordance with VOGA HSE policy.
Other requirements met	Yes, including: • MARPOL 73/78 Annex VI • AMSA Marine Order 97 • *Navigation Act 2012* • National Light Pollution guidelines for Wildlife (DCCEEW, 2023c) • National Recovery Plan for albatrosses and petrels (2022) (DCCEEW, 2022b) • Wildlife Conservation Plan for Seabirds (CoA, 2020) • Wildlife Conservation Plan for Migratory Shorebirds (DoE, 2015b) • Recovery Plan for the White Shark (*Carcharodon carcharias*) (DSEWPC, 2013) • Recovery Plan for the Grey Nurse Shark (*Carcharias Taurus*) west coast population (DoE, 2014) • Recovery Plan for Marine Turtles in Australia, 2017-2027 (Commonwealth of Australia, 2017) • Approved Conservation Advice for *Dermochelys coriacea* (Leatherback Turtle) (DEWHA, 2008c) Recovery Plans/Conservation Advice for other species that may occur in the 20 km light EMBA do not identify light emissions as a

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
	key threat or have explicit relevant objectives or management actions related to light emissions.
RR < High (RRII)	Yes – Low (RRIV).
EPO(s) manage impacts to acceptable level(s)	Yes – The following relevant EPOs will be maintained: • EPO-WC-05. See Section 7 for further details.
Acceptability summary: The impacts of light emissions have been managed to a level that is broadly acceptable based on the demonstration of ALARP (Table 5-20), alignment with industry best practice, and VOGA's process for evaluating acceptability (Section 4.7).	

5.6 Planned: Vessel Discharges

5.6.1 Hazard Report

Table 5-22: Hazard Report – Vessel discharges

HAZARD	Vessel discharges		
EP risk number	EP-WC-R06		
Activity/cause	• MODU operations • Vessel operations.		
Extent	Within 100 m of the discharge.		
Potential impact description	A change in water quality, including localised eutrophication of the water column, and localised adverse effect to marine biota, such as a change in marine fauna behaviour and potential injury/mortality to marine fauna.		
IMPACT AND RISK EVALUATION SUMMARY			
Receptor	**Impact/Consequence**	**Likelihood**	**Residual Risk**
Water quality	Incidental (1)	Almost Certain (E)	Medium (RRIII)
Marine fauna	Incidental (1)	Unlikely (B)	Low (RRIV)
Relevant EPO(s)	EPO-WC-06 No serious or irreversible change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.		

5.6.2 Description of Hazard

The MODU and support vessels required to undertake the well construction activities will release routine discharges into the marine environment. These discharges will only occur within the Operational Area with volumes dependent on the duration of the activity and the number of POB.

The maximum duration that the MODU and support vessels are expected to be present within the Operational Area is 30-50 days per well, with up to 3 wells per campaign, giving a maximum campaign duration of 150 days. Expected POB is up to 150 persons for the MODU and up to a maximum of 156 persons total across all the support vessels. Noting a maximum of three support vessels (two AHTS vessels and a potential additional support vessel) may be used for the

duration of the campaign with a typical crew of 15 persons, up to a maximum of 52 persons, on each vessel (Section 2.11.2).

A description of each discharge stream is provided in Table 5-23.

Table 5-23: Vessel discharges descriptions

Routine discharge	Description	Estimated volume
Sewage, grey water and putrescible waste	Sewage Sewage will go through an extended aeration system prior to release. Once treated sewage will be discharged into the marine environment. Putrescible waste Food scraps will be macerated then discharged into the marine environment. Scraps that cannot be macerated, or are not readily degradable, such as bones, onion peels and orange rinds are bagged and disposed of onshore with the general rubbish. Grey water Grey water is comprised of potable water, soaps and detergents and is discharged from the vessel to the marine environment.	A maximum of 67.5 m^3 of sewage and greywater for the MODU and 23.4 m^3 per each vessel per day of domestic discharges (based on 450 L/day/person). A maximum of up to 300 kg/day of putrescible waste will be discharged from the MODU and up to 104 kg/day from each vessel (based on 2 kg/day/person).
Brine	Desalination brine is a discharge resulting from reverse osmosis desalination equipment that produces potable water from seawater for use on the vessels. The salinity of the discharged desalination brine is slightly higher (approximately 10%) than seawater and may contain small quantities of scale inhibitor.	The volume of the discharge is dependent on the requirement for fresh (or potable) water and would vary between vessels and the POB.
Bilge + deck drainage	Small quantities of grease and oil may accumulate on vessel deck surfaces creating potential slip hazards which are required to be washed down with water and detergent. The wash-down process flushes the accumulations into the vessel contained drain systems. The discharge of contaminated bilge water from vessels is inclusive of deck drainage and may contain water, oil, dispersants, detergents, solvents, chemicals, particles and other liquids, solids or chemicals. Bilge water discharges are regulated and required to be treated through an oil-in-water separator prior to being discharged to the marine environment at or below 15 ppm.	< 1 m^3 per campaign.
Cooling water	Cooling water is seawater that is utilised as a heat exchange medium for the power generation system on vessels. To prevent marine growth in the seawater circulation system, seawater is treated by a Marine Growth Prevention System, which involves producing chlorine electrically and continuous dosing at 2 mg/L. Cooling water is discharged to the marine environment from the cooling system at an elevated temperature of 0.5°C to 3.0°C.	Cooling water is discharged to the marine environment at a rate of 80 m^3/h to 100 m^3/h.

5.6.3 Impact and Risk Evaluation

Potential impacts from routine vessel discharges include:

- Change in water quality
- Change in marine fauna behaviour
- Injury/mortality to plankton.

The following receptors within the Operational Area may be impacted by routine discharges:

- Water quality
- Marine fauna
- Plankton.

5.6.3.1 Impact Assessment

Water Quality

Change in Water Quality

Daily MODU and support vessel operations will result in localised changes to the water quality within the vicinity of discharge point. Routine vessel discharges may result in increased temperature, chemicals, nutrients or salinity within the water column. All discharges will occur within the Operational Area.

Temperature

Following a discharge into the marine environment cooling water is subject to turbulent mixing resulting in a transfer of heat to the receiving environment, thereby increasing the ambient temperature of the surrounding water. The temperature of the discharge may be 0.5 to 3°C higher than the ambient sea temperature. These water temperatures are within the range of temperatures recorded on the NWS. Naturally occurring organisms in the area are expected to be tolerant of such increases. Potential impacts are also limited by the dilution of the discharge and by convection losses.

Modelling produced for Woodside found that the temperature of discharged water was <1°C above ambient within 100 m (horizontally) of the discharge point, and 10 m vertically (Woodside, 2014). The localised nature of the discharge and the dynamic open ocean conditions within the Operational Area ensures the change in water temperature will be short-term and ambient conditions will be readily re-established with increasing distance from the discharge point. Therefore, the impact of a change in water temperature on water quality is expected to be incidental.

Chemicals

Bilge water contains various chemical contaminants such as oil, lubricants and cleaning chemicals, as well as scale inhibitors and biocides used in bilge and deck drainage treatment. To minimise the risk of oil entering the deck drainage system, work areas will be bunded or equipped with drip trays. Prior to any discharge, oily water will be treated through an oily water separator to remove as much hydrocarbon content as possible. Additionally, detergents used

during wash-down activities will be biodegradable. While these chemicals will likely result in a localised reduction in water quality upon discharge, there may also be potential toxicity impacts to marine fauna (discussed below).

Modelling by Shell (2009) indicates that upon discharge, hydrocarbon and other chemical concentrations are rapidly diluted within less than 100 m of the discharge point, over a relatively short period of time. Hinwood et al. (1994) further predicted dilution factors in excess of 10,000 within 100 m of the discharge point, and Black et al. (1994) states that potential environmental impacts from deck drainage are considered to be slight given the rates of dilution that are likely offshore.

On discharge to the marine environment, chemical contaminants, including oil, will be localised to the discharge point and subject to rapid dilution due to the open ocean environment in the Operational Area (i.e. water depth, strong ocean currents and metocean conditions). Given the activity is also short-term (30-50 days per well), the impact of chemicals on water quality is expected to be incidental.

Nutrients

The primary concerns related to the discharge of sewage, greywater and putrescible waste (wastewater discharges) are nutrient enrichment of the receiving environment and increased biological oxygen demand.

Intermittently elevated nutrient levels from sewage, putrescible waste, and grey water discharges, is expected to either dilute in the receiving waters, settle out of the water column, chemically break down or be consumed by microorganisms (bacteria) (NERA 2017). In a study of sewage discharge in deep ocean waters, Friligos (1985) reported no appreciable differences in the inorganic nutrient levels between the outfall area and background concentrations, suggesting rapid uptake of nutrients and/or rapid dispersion in the surrounding waters. Further, in an open ocean environment setting such as the Operational Area, the effect of the effluent biological oxygen demand on seawater oxygen concentrations is expected to be negligible (Black et al., 1994).

On discharge to the marine environment, wastewater will be localised to the discharge point and subject to rapid dilution due to the open ocean environment in the Operational Area (i.e. water depth, strong ocean currents and metocean conditions). Given the activity is also short-term (30-50 days per well), the impact of wastewater on water quality is expected to be incidental.

Salinity

Desalination brine is of greater density than seawater and will sink and disperse in the currents upon discharge. Therefore, the greatest increase of salinity in the receiving environment will be experienced within the immediate vicinity of the discharge point.

Near-field dilution is anticipated to occur rapidly, resulting in a return to ambient salinity levels within 10 m of the discharge (Raventos et al., 2006). This assumption is supported by additional studies which also found that elevated salinity declines rapidly close to the discharge, even where simple diffusers are utilised (Fernandez-Torquemada et al., 2005).

Therefore, any increase in salinity within the marine environment will be localised, and of a short duration, with high dispersion and dilution rates due to the open ocean environment in the Operational Area (i.e. water depth, strong ocean currents and metocean conditions) resulting in an incidental impact to water quality.

Marine Fauna

Change in Behaviour

As discussed above, vessel discharges are localised with rapid dilution expected within the open ocean environment. Marine fauna within the Operational Area are likely to be transient. If contact does occur with any marine fauna, it will be for a short duration due to the small volumes released to the marine environment and the rapid dispersion of the plume such that any exposure to marine fauna is likely not of sufficient duration to cause a toxic effect.

The discharge of sewage and food waste may attract fishes and seabirds, which in turn may attract predatory species. However, this behavioural impact will be localised and temporary as the discharges will be quickly consumed by scavenging fauna, broken down by microbial activity, and/or dispersed by waves and ocean currents. Therefore, any behavioural impacts are expected to be short-term and incidental.

Injury/Mortality

Plankton are typically considered more vulnerable to the impacts of routine vessel discharges compared to mobile species due to their inability to move away from the discharge plume.

Planktonic species may experience toxicity effects from the chemical discharges associated with deck drainage and bilge water. They may also drift with the cooling water discharge as it disperses and decreases in temperature and may be sensitive to the thermal changes.

However, as discussed above, routine vessel discharges are anticipated to rapidly disperse and dilute into the surrounding water, and any impact is expected to occur within the immediate vicinity of the release.

Plankton are known to accumulate rapidly and are generally not found to be sensitive to the impacts of contaminants within the water column (Hook et al., 2016). Changes to water quality that may impact plankton will be localised to the discharge point with discharges subject to rapid dilution due to the open ocean environment in the Operational Area (i.e. water depth, strong ocean currents and metocean conditions). Therefore, vessel discharges are not predicted to have ecologically significant effects on planktonic species.

5.6.4 Risk Ranking

Routine vessel discharges are expected to result in highly localised and short-term changes to water quality. Due to the offshore oceanographic nature of the environment, the minimal volume, and low toxicity of the discharges, impacts to plankton present within the immediate vicinity of the discharge release are expected to be localised and short-term and not affect population functioning. Therefore:

- The consequence ranking of '1' (Incidental) was assigned to water quality, and a likelihood of 'E' (Almost Certain) was considered appropriate, resulting in a risk ranking of 'Medium' (RRIII).
- The consequence ranking of '1' (Incidental) was assigned to marine fauna, and a likelihood of 'C' (Possible) was considered appropriate, resulting in a risk ranking of 'Low' (RRIV).

5.6.5 ALARP Demonstration

Table 5-24: Demonstration of ALARP – Vessel discharges

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
Elimination			
None identified.	-	-	-
Substitution			
Chemical assessment and selection process.	EPO-WC-06	Chemicals that will be discharged to the marine environment are selected in accordance with VOGA's Chemical Assessment Process (Section 8.3.7).	Completed chemical assessments.
Prevention			
Engines on board the MODU and vessels to be maintained in accordance with manufacturer's specifications.	EPO-WC-06	All MODU and vessel engines and power generation equipment shall be serviced in accordance with the relevant contractor's PMS. Contractor's servicing and maintenance records shall be validated by VOGA to ensure they are up to date.	VOGA inspection or audit confirms application of contractor's PMS. Contractor's servicing and maintenance records are up to date.
Bunding and drip trays are present to minimise the risk of oil from machinery entering the deck drainage system.	EPO-WC-06	MODU and vessel work areas where machinery is present are bunded or the machines have drip trays to minimise the risk of oil from machinery entering the deck drainage system.	VOGA inspection or audit confirms correct presence of drip trays.
Reduction			
MODU and support vessels are required to comply with MARPOL 73/78 Annex I, Annex IV, Annex V, and AMSA Marine Orders 91, 95 and 96.	EPO-WC-06	Vessel contractor procedures include the requirements to comply with MARPOL 73/78 (Annex IV; Regulation 8) as required by class: • Equipped with either a sewage treatment plant or sewage comminuting and disinfecting system	Vessel international Sewage Pollution Prevention Certificate.

		or a sewage holding tank. • Wastes shall be macerated to <25 mm prior to discharge. • Untreated sewage will be stored on-board in suitable holding tanks and disposed of onshore at reception facility or to carrier licenced to receive the waste or discharged at a distance of more than 12 nm from the nearest land. Vessel contractor procedures include the requirements to comply with MARPOL 73/78 (Annex I; Regulation 15) as required by class: • Deck drainage and bilge water will be treated in an oil water separator and discharged.	
		Oil contaminated water shall be treated via a MARPOL (or equivalent) approved oily water separator and only discharge if oil content less than 15 ppm for vessels >400 tonne.	Oil Record Book
Mitigation			
None identified.	-	-	-
Other			
None identified	-	-	-
Considered control measures	**Assessment of option**		**Decision**
Onshore disposal food scraps, sewage and grey water.	All food scraps, sewage and grey waste transported to shore for land-based disposal. This would result in an increase in transportation requirements (and increased atmospheric emissions, safety risk and cost). Onshore disposal would have environmental impacts that may be greater than those created by offshore disposal, e.g. added energy needed (and associated emissions) for sewage and greywater treatment. It also provides an increased exposure to biological health hazards and considered grossly		Not adopted.

	disproportionate to any environmental benefit gained.	
Onshore treatment and disposal of deck drainage and bilge.	Collecting and transporting the water onshore for treatment and disposal was considered but rejected due to the additional potential risks associated with transportation to shore (e.g. lifting and transport and fuel-related emissions). This trade-off was considered undesirable given the limited potential impact of deck drainage to the marine environment and considered grossly disproportionate to any environmental benefit gained.	Not adopted.
Do not wash-down decks of the MODU and AHTS vessels during the well construction campaigns.	Unconsidered unsafe to workers as this would make the deck surfaces slippery and significantly increase the risk of injury to personnel.	Not adopted.
Do not use detergent when washing down decks.	Considered not feasible as it would make the wash-down process ineffective or worse, spread the oil and grease further across decks, increasing the safety hazards.	Not adopted.
Enhanced treatment of wastewater prior to discharge.	Considered grossly disproportionate due to the high cost of retrofitting additional treatment packages to the existing drains water treatment systems; and the minor environmental impact of the discharge.	Not adopted.
Additional bunding around each machinery space of the MODU and AHTS vessels.	Despite feasibility to add additional bunding around each machinery space on the MODU and vessels, it would be extremely costly to reengineer existing machinery spaces and could impact on safety in terms of ergonomics and increased tripping hazards and the retention of combustible fluids.	Not adopted.
Alternative supply of potable water.	Means of transportation which would introduce/increase other environmental impact, increased safety risk and cost. This trade-off was considered undesirable and grossly disproportionate given the limited potential impact of desalination brine to the marine environment.	Not adopted.

ALARP summary:

The impacts and potential risks from vessel discharges are ALARP, based on the impact assessment outcomes using VOGA Risk Matrix (as per Table 4-1), the ALARP template to determine the appropriate decision context type (Table 4-4) and VOGA's criteria for demonstrating ALARP (Section 4.8). No reasonably practicable additional controls were identified that would further reduce the impacts without disproportionate sacrifice.

5.6.6 Acceptability Demonstration

Table 5-25: Acceptability demonstration – Vessel discharges

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
Principles of ESD not compromised	Relevant principles of ESD not compromised given proposed controls (Table 5-24).
External context – objections or claims considered	N/A – no external objections or claims received.
Internal context – VOGA HSE policy/procedures met	Yes – Risk managed in accordance with VOGA HSE policy.
Other requirements met	Yes – Marine Orders 91, 95 and 96. • Approved Conservation Advice for *Balaenoptera borealis* (Sei Whale) (TSSC, 2015c) • Conservation Advice for *Sousa sahulensis* (Australian humpback dolphin) (DCCEEW, 2025h) • Conservation Advice for *Orcaella heinsohni* (Australian snubfin dolphin) (DCCEEW, 2025d) • Approved Conservation Advice for *Balaenoptera physalus* (Fin Whale) (TSSC, 2015d) • National Recovery Plan for the Southern Right Whale (*Eubalaena australis*) (DCCEEW, 2024) • Conservation Management Plan for the Blue Whale, 2015-2025 (DoE, 2015).
RR < High (RRII)	Yes – Medium (RRIII).
EPO(s) manage impacts to acceptable level(s)	Yes – The following relevant EPOs will be maintained: • EPO-WC-06 See Section 7 for further details.
Acceptability summary: The impacts and potential risks of vessel discharges have been managed to a level that is broadly acceptable based on the demonstration of ALARP (Table 5-24), alignment with industry best practice, and VOGA's process for evaluating acceptability (Section 4.7).	

5.7 Planned: Drilling Material Discharges – Drill Cuttings and Drilling Fluids

5.7.1 Hazard Report

Table 5-26: Hazard Report – Drilling material discharges – Drill cuttings and drilling fluids

HAZARD	Drilling material discharges – Drill cuttings and drilling fluids		
EP risk number	EP-WC-R07		
Activity/cause	• Drilling activities.		
Extent	Discharges will be released at the seabed and from the MODU just below the sea surface, and impact will be localised with 100 mg/L of total suspended solids within 100 m from the source of discharge.		
Potential impact description	A change in water quality, and localised adverse effect to benthic assemblages and plankton.		
IMPACT AND RISK EVALUATION SUMMARY			
Receptor	**Impact/Consequence**	**Likelihood**	**Residual Risk**
Water quality	Incidental (1)	Almost Certain (E)	Medium (RRIII)
Benthic assemblages	Incidental (1)	Almost Certain (E)	Medium (RRIII)
Plankton	Incidental (1)	Almost Certain (E)	Medium (RRIII)
Relevant EPO(s)	EPO-WC-06 No serious or irreversible change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.		

5.7.2 Description of Hazard

Drilling activities during well construction activities in the Operational Area will result in the discharge of a small quantity of discharges at the seabed and just below the sea surface, including:

- Drill cuttings
- Drilling and completion fluids.

Drilling activities are described in Section 2.5. A summary of indicative discharges associated with the proposed well construction activities are provided in Table 2-7.

Milling of casing generates steel shavings which are captured and disposed of onshore. There are no planned discharges associated with milling. However, control measures to ensure that no unplanned discharge occurs have been considered in Section 5.7.5.

5.7.2.1 Drilling Cuttings

Drilling operations during well construction activities in the Operational Area may utilise both the open and closed drilling systems. Drill cuttings will be discharged to the seafloor as a part of the drilling fluids from the wellbore whilst drilling the conductor and surface hole sections of a new appraisal well with the open (riserless) system. These discharges will result in a localised area of sediment deposition, between 77 m^3 of cuttings, known as a cuttings pile around and in proximity to the well which will be influenced by seabed currents.

A closed system will be utilised for all other hole sections. In this case the cuttings will be returned to the MODU in the drill fluid where it will be separated and discharged overboard, just below the sea surface. The volume of drill cuttings discharged will vary depending on many parameters, including hole diameter and section depth, however it is expected to be in the order of between 135 m^3 to 380 m^3 per well, discharged incrementally at the surface.

The drill cuttings produced during well construction operations in the Operational Area will largely consist of inert sediments, ranging from very fine to very coarse (<1 mm to 1.5 cm) particle/sediment sizes. Cuttings disposed from the MODU will form a temporary turbid plume and can cause localised burial/smothering of benthos.

The percentage volume of hydrocarbon on drill cuttings during drilling in the reservoir will be negligible because of the small amount recovered during the drilling process.

5.7.2.2 Drilling Fluids

As mentioned above, drill cuttings are returned in the drill fluid to the MODU during closed system drilling. To minimise drilling fluid discharge, a solids control system is utilised to remove the drill cuttings, so that the drilling fluids can be reused. As the drilling fluids are continuously reused, they eventually lose their effectiveness and are required to be replaced. The used drilling fluids are comprised mostly of seawater, naturally decomposing polymers, and drill cuttings, resulting in a low environmental effect which is suitable for disposal overboard. The volume discharged will vary, depending on certain parameters, such as hole diameter and section depth. Up to approximately 1,250 m^3 per well will be discharged during drilling, with approximately a further 100 to 450 m^3 upon completion.

In addition to the above, seawater and bentonite sweeps are used during drilling of the conductor and surface hole sections. This fluid is used to lubricate and cool the cutting tools, to remove cuttings from the hole, and to help prevent blowouts. These fluids are not able to be recycled with up to 14,000 m^3 used per well, discharged at the seabed. The sweep fluid is formulated from fresh water, bentonite clay and a small addition of sodium.

5.7.2.3 Completion Fluids

Well completion fluids are used during well construction; however, they are normally composed largely of salty brine (NaCl or KCl). Small quantities (up to 250 m^3) of brine treated with minor concentrations of biocide are discharged to the sea surface.

After drilling is completed, the well is displaced to solids-free completion fluid before sand restricted screens are run. The fluid is created using polymers that break down naturally. Approximately up to 620 m^3 of solids-free drilling fluid is discharged to the surface per well. This includes any excess completion fluids remaining in the MODU tank system discharged to sea as per standard operating procedures. This volume will be minimised through careful mud management

5.7.2.4 Contingent Activities

A well re-spud may be required if technical issues are encountered during drilling which will involve moving the cantilever to a new position to commence re-spud drilling. A sidetrack is an alternative to a well re-spud which involves drilling a secondary wellbore away from the primary

bore. A well re-spud or sidetrack would result in an increase in the volume of cuttings and cement generated as per Table 2-7.

5.7.3 Impact and Risk Evaluation

Potential risks and impacts caused by the discharge of drilling materials, such as drill cuttings and drilling fluids, may result in:

- Change in water quality.
- Impacts to benthic habitats and assemblages
- Injury/mortality to marine fauna

The following receptors within the Operational Area may be impacted by the discharge of drilling material:

- Marine fauna
- Benthic habitats.

5.7.3.1 Impact Assessment

Water Quality

Change in Water Quality

Drill cuttings and drilling fluid discharges are expected to increase turbidity and change water quality in the vicinity of the wellbore or at the sea surface from the MODU. Discharges of drill cuttings will be generally intermittent and of short duration during the drilling of each well.

WBM will be discharged at the seabed which will cause localised elevated turbidity in the water column above the seabed surrounding the wellbore. As described in Section 2.5.6, no synthetic based mud will be used during the activity. The main component of WBM is sea water, with polymers that break down naturally, being added to provide rheological properties and calcium carbonate being added for density to control losses into the reservoir. The change in water quality will be temporary, limited to operational discharges during drilling and subject to rapid dispersion and dilution by prevailing seabed currents.

When drill cuttings and retained WBM are discharged from the MODU at the sea surface, larger particles will quickly settle on the seabed while finer solids form a plume that is transported by prevailing currents and rapidly diluted (Neff, 2005; 2010). Studies show plumes dilute by more than 100-fold within 10 m of the discharge point and by at least 10,000-fold within 100 m (Neff, 2005). Using this dilution factor, cuttings and adhered fluids are expected to reach about 100 mg/L of total suspended solids within 100 m of the MODU, dispersing to this level in ~16 minutes at a conservative current speed of 0.1 m/s.

Dispersion of the cuttings and cement plume is influenced by particle size distribution of the discharge, discharge rates and events, and metocean conditions such as ocean current speed. Due to rapid dispersion and the short period of intermittent discharge, the discharge plume is expected to be highly localised and not predicted to impact productivity of the water column.

Marine Fauna

Injury/Mortality

Injury or mortality to sensitive marine fauna, such as planktonic species, may occur due a change in water quality following discharges of drill cuttings, cement slurry, and fluids. Impacts to these organisms can be due to both physical and chemical changes of water quality.

Previous studies have found that levels of suspended sediments greater than 500 mg/L may impact larvae of most fish species and levels of 100 mg/L will affect the larvae of some fish and invertebrate species if exposed for periods greater than 96 hours (Jenkins and McKinnon, 2006). Changes in water turbidity may also impact species which are visual feeders, affecting predatory and prey dynamics within the receiving waters (Gophen, 2015). Furthermore, a decrease in the availability of light has the potential to reduce the productivity of certain species which require light, such as phytoplankton (Dokulil, 1994).

However, as discussed above, the widely accepted dilution estimates (Hinwood et al., 1994; Neff, 2005) suggest that suspended sediment concentrations will be well below the levels required to impact fish or invertebrate larvae within and beyond the vicinity of the discharge site. Given this rapid dispersion, minimal impact to plankton and larvae is expected from the discharge of drilling cuttings.

As described in Section 2.5.6.3, VOGA will specify in the drilling fluid tender that only chemicals highly ranked under the OCNS rating system (i.e. 'Gold' or 'Silver' [CHARM] and 'E' or 'D' [non-CHARM], or equivalent) may be used in the drilling fluid design. The drilling fluid that will be in the activity all have inherently low levels of toxicity and bioaccumulation potential (Neff, 2010). The key additives used in WBM are xanthum gum (viscosifier), bentonite (viscosifier), and barite (weighting agent). These additives have a low toxicity and pose little to no risk to the environment. As such, toxic impacts to benthic or ecological receptors, such as plankton, fish, marine mammals and turtles, are not anticipated.

Due to the open nature of the marine environment, metocean conditions in the EMBA, and dispersive nature of the drilling discharges within a marine environment, it is expected that any impact to marine species, such as plankton and larvae, will be limited to within tens of metres from the discharge point and return to previous conditions within a relatively short period of time. As such, the impacts to plankton from drilling discharges will be localised and short-term and are not expected to impact the species at a population level or impact the planktonic food web.

Benthic Habitats and Assemblages

Change to Benthic Habitats and Assemblages

The deposition of drill cuttings and fluids on the seabed will result in a localised change to benthic assemblages from direct burial of benthic biota and change in benthic substrates.

The benthic habitat of the Operational Area has been identified as consistent with the sediments found throughout the NWS Province, consisting of soft, sandy, unconsolidated sediments (Section 3.4.1). No coral, seagrasses, or macroalgae habitats or significant seabed or benthic features have been recorded within the Operational Area (Section 3.4).

The deposition of drill cuttings and drilling fluids on the seabed may result in a localised change to benthic habitats and assemblages from the direct burial of benthic species and change in benthic composition. Prevailing seabed currents, water depth, and discharge composition will influence the extent and distribution of the localised are of deposition, known as a cuttings pile. In general, the extent of cuttings typically spread within tens of metres and up to a maximum of a few hundred metres around the well site. For assessment, a conservative 500 m radius has been applied.

Previous seabed surveys have identified that benthic communities within the Operational Area are generally sparse with low densities of organisms (3.4.1.1). Epifauna found in the unconsolidated sediment consisted predominantly of mobile burrowing species, such as crustaceans, molluscs, echinoderms and larger sessile organisms such as sponges, corals, sea whips and sea squirt (DEC, 2007). Sediments in deeper water were typically finer (muddier) and dominated by benthic scavengers and deposit feeders, such as polychaete worms, crustaceans, molluscs and echinoderms (DEWHA, 2012).

Any benthic organisms present beneath the cuttings piles will be smothered, with ecological impacts expected to occur when sediment deposition exceeds 6.5 mm (IOGP, 2016). Extensive studies have demonstrated that these impacts are typically highly localised and transient (Hinwood et al., 1994)), as recolonisation is also expected relatively quickly from settling larvae and from migration of mobile species from surrounding areas. Several monitoring studies reviewed by Sanzone et al. (2016) observed a substantial recovery in benthic communities within one to a few years after drilling discharges.

The displacement of mobile benthic fauna, such as demersal fish, may temporarily occur, with displacement impacts to highly mobile species, such as crabs, shrimps, and pelagic fish, less likely (IOGP, 2016). However, previous studies have shown impacts from cuttings and base fluids as minimal and highly localised, with benthic community changes generally slight and short-term (Balcom et al., 2012).

Anoxic conditions may occur in the surface sediments as a result of organic enrichment leading to a loss of infauna species that have a low tolerance to low oxygen concentrations. These impacts are highly localised with short-term recovery that may include changes in community composition with the replacement of infauna species that are hypoxia-tolerant (IOGP, 2016). Recovery of affected benthic infauna, epifauna and demersal communities is expected to occur, given the short duration of sediment deposition and the widely represented benthic and demersal community composition.

Metals found in the drilling fluid additives, such as barite, are used as a tracer of dispersion and are typically detected beyond the zone of ecological impact. However, as discussed above, these additives have low bioavailability to benthic biota. No significant impacts are anticipated from the dry cement transfer process or any from the cement slurries pumped during each campaign because of the minor quantities involved, the low or non-toxic nature of the material and the localised area of impact.

Impacts associated with drilling discharges will be largely limited to an area surrounding each well. The localised nature and scale of the impacts, combined with the low sensitivity of the benthic habitats and assemblages within the Operational Area, the recoverable nature of the benthic assemblages, and the low toxicity of the drilling discharges indicate that any impact will be localised, short-term and not affect the long-term viability of the ecosystem.

5.7.4 Risk Ranking

Drilling material discharges are expected to result in highly localised and short-term changes to water quality. Due to the offshore oceanographic nature of the environment, the minimal volume, and low toxicity of the discharges, impacts to benthic assemblages and sensitive marine fauna, such as plankton, present within the immediate vicinity of the discharge release are expected to be localised and short-term and not affect population functioning. Therefore:

- The consequence ranking of '1' (Incidental) was assigned to water quality, and a likelihood of 'E' (Almost Certain) was considered appropriate, resulting in a risk ranking of 'Medium' (RRIII).
- The consequence ranking of '1' (Incidental) was assigned to benthic assemblages and marine fauna, and a likelihood of 'E' (Almost Certain) was considered appropriate, resulting in a risk ranking of 'Medium' (RRIII).

5.7.5 ALARP Demonstration

Table 5-27: Demonstration of ALARP – Drilling material discharges – Drill cuttings and drilling fluids

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
Elimination			
None identified.	-	-	-
Substitution			
Chemical assessment and selection process.	EPO-WC-06	Chemicals that will be discharged to the marine environment are selected in accordance with VOGA's Chemical Assessment Process (Section 8.3.7).	Completed chemical assessments.
Prevention			
None identified.	-	-	-
Reduction			
Solids Control System used to remove cuttings from drilling fluids in order to keep fluids in specification for reuse.	EPO-WC-06	Solids Control System is used.	Contractor's daily report demonstrates use of Solids Control System.
		Maintenance of Solids Control System in accordance with the MODU PMS.	Documentation of planned and completed maintenance and testing of Solids Control System in accordance with the MODU PMS.
Mitigation			
None identified.	-	-	-
Other			
None identified.	-	-	-

Considered control measures	Assessment of option	Decision
Water-based drilling and completion fluids are used for well construction activities.	No synthetic-based mud will be used during the activity.	Adopted (refer to CM-6.5).
Collect drill cuttings and transport to shore.	Onshore disposal of drill cuttings would increase fuel use and emissions associated with transport and treatment and increase safety and environmental risks associated with handling. Low volumes of cuttings are assumed and drilling fluids have low toxicity. In addition, this approach is prohibitive from an operating cost and logistics perspective, with modifications required to the MODU to make collection of cuttings possible.	Not adopted.
Volume of fluid mixed to complete the task plus contingency volume (held in reserve) will be minimised.	This minimises waste and also minimises the impact on the environment. This control has a low implementation cost and relies on existing equipment and procedures. Cost and effort considered proportionate to the environmental benefit.	Adopted (refer to CM-6.6).
The volume of liquid (excluding seawater) discharged to the environment is recorded.	Recording discharges decreases the likelihood of volumes exceeding assessed thresholds, allows early detection of anomalies and supports continuous improvement which minimises the impact on the environment. Cost and effort considered proportionate to the environmental benefit.	Adopted (refer to CM-6.7).
Ditch magnets used to collect metal swarf generated during the drilling process after surface casing run and BOP's installed.	Metal swarf discharged to the marine environment may pose risks to benthic fauna and cause seabed disturbance. Thus, the collection of swarf using ditch magnets minimises the impact on the environment. This control is effective and has a low implementation cost. Cost and effort considered proportionate to the environmental benefit.	Adopted (refer to CM-6.8).
Swarf recovery unit to be used for any casing section milling operations.	The swarf recovery unit prevents discharge of swarf to the marine environment, which minimises the impact on the environment. Cost and effort considered proportionate to the environmental benefit.	Adopted (refer to CM-6.9).
ALARP summary: The impacts and potential risks from drilling discharges are ALARP, based on the impact assessment outcomes using VOGA Risk Matrix (as per Table 4-1), the ALARP template to determine the appropriate decision context type (Table 4-4) and VOGA's criteria for demonstrating ALARP (Section 4.8). No reasonably practicable additional controls were identified that would further reduce the impacts without disproportionate sacrifice.		

5.7.6 Acceptability Demonstration

Table 5-28: Acceptability Demonstration – Drilling Material Discharges – Drill cuttings and drilling fluids

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
Principles of ESD not compromised	Relevant principles of ESD not compromised given proposed controls (Table 5-24).
External context – objections or claims considered	N/A – no external objections or claims received.
Internal context – VOGA HSE policy/procedures met	Yes – Risk managed in accordance with VOGA HSE policy.
Other requirements met	Yes, including: • VOGA chemical assessment process aligns with OSPAR list and OCNS guidance. • Approved Conservation Advice for *Rhincodon typus* (whale shark) (TSSC, 2015b) • Sawfish and River Sharks Multispecies Recovery Plan: (*Pristis, Pristis zijsron, Pristis clavata, Glyphis* and *Glyphis garricki*) (DoE, 2015c) • Approved Conservation Advice for *Pristis zijsron* (green sawfish) (DEWHA, 2008b) • Approved Conservation Advice for *Pristis clavata* (dwarf sawfish) (DEWHA, 2009) • Approved Conservation Advice for *Pristis pristis* (Largetooth/ freshwater sawfish) (DCCEEW, 2025e) • Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) (DoE, 2014) • Recovery Plan for the White Shark (*Carcharodon carcharias*) (DSEWPC, 2013 • Recovery Plan for Marine Turtles in Australia, 2017-2027 (Commonwealth of Australia, 2017) • Conservation Advice for *Orcaella heinsohni* (Australian snubfin dolphin) (DCCEEW, 2025) • Conservation Management Plan for the Blue Whale, 2015-2025 (DoE, 2015) • Approved Conservation Advice for *Balaenoptera borealis* (Sei Whale) (TSSC, 2015c) • Approved Conservation Advice for *Balaenoptera physalus* (Fin Whale) (TSSC, 2015d). Recovery Plans/Conservation Advice for other species that may occur in the Operational Area do not identify habitat degradation/ modification as a key threat or have explicit relevant objectives or management actions related to habitat degradation/modification.
RR < High (RRII)	Yes – Medium (RRIII).
EPO(s) manage impacts to acceptable level(s)	Yes – The following relevant EPOs will be maintained: • EPO-WC-06 See Section 7 for further details.

ACCEPTABLE LEVEL OF RISK DEMONSTRATED
Acceptability summary: The impacts of drilling discharges have been managed to a level that is broadly acceptable based on the demonstration of ALARP (Table 5-24), alignment with industry best practice, and VOGA's process for evaluating acceptability (Section 4.7).

5.8 Planned: Non-drilling Material Discharges – Cement, Cementing Fluids, and Unused Bulk Products

5.8.1 Hazard Report

Table 5-29: Hazard Report – Non-drilling material discharges – Cement, cementing fluids, and unused bulk products

HAZARD	Non-drilling material discharges – Cement, cementing fluids, and unused bulk products		
EP risk number	EP-WC-R08		
Activity/cause	• Cementing operations • Contingency activities • Well abandonment • Bulk material disposal.		
Extent	Materials will be released at the seabed or the sea surface, and impact will be localised at the source of discharge.		
Potential impact description	Change in water quality. Localised adverse effect to benthic communities.		
IMPACT AND RISK EVALUATION SUMMARY			
Receptor	**Impact/Consequence**	**Likelihood**	**Residual Risk**
Water quality	Minor (2)	Unlikely (B)	Low (RRIV)
Benthic habitats and assemblages	Minor (2)	Unlikely (B)	Low (RRIV)
Marine fauna (indirect)	Incidental (1)	Unlikely (B)	Low (RRIV)
Relevant EPO(s)	EPO-WC-06 No serious or irreversible change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.		

5.8.2 Description of Hazard

Up to nine wells will be constructed over three separate campaigns, i.e. three wells per campaign. The well construction activities will include cementing operations which will result in the discharge of:

- Cement slurry
- Spacer fluids
- Residual cement.

Cementing operations are described in Section 2.5.7. Cement is used to support well integrity and support the casing. Cementing activities also include setting plugs for either well suspension

or P&A. When cementing the surface and production casings, any excess cement will be discharged to the seabed. Residual cement and wash water used to flush equipment will also be released, as well as the cement spacer used in the process. Additional discharges may also occur if contingency activities are required during a campaign (Section 2.9).

The discharge locations and approximate volumes of discharges resulting from cementing operations and contingency activities are listed in Table 2-7. This includes up to 5 m^3 of cement slurry per well to be released at the seabed. Up to 8 m^3 of left over cement slurry and up to 20 m^3 of cement spacer per well will be released at the sea surface from flushing the lines. Contingency discharges of cement may be if required if a cementing job does not meet technical and safety standards and needs to be circulated out of the well (up to approximately 18 m^3).On completion of drilling activities, there may be barite, bentonite and cement remaining (Section 2.5.6.6). Disposal of these bulks will be determined based on options in order of preference (Figure 2-2). The option to discharge these materials overboard is the least preferred option and will only be considered if all other options are not determined to be viable. Offshore disposal of bulks will only occur following an ALARP workshop to determine that the impact of bulk discharge is acceptable. If dry bulks are discharged to the marine environment, they will be diluted into a slurry before discharge. In the worst-case scenario of bulk discharge to sea, an anticipated volume of 45 m^3 each for cement, bentonite, barite and calcium carbonate could be discharged per campaign.

5.8.3 Impact and Risk Evaluation

Potential impacts from non-drilling material discharges include:

- Change in water quality
- Injury/mortality to benthic habitats and assemblages.

The following receptors within the Operational Area may be impacted by non-drilling material discharges:

- Water quality
- Benthic habitats and assemblages.

Indirect impacts to the environment from water quality changes include:

- Impacts to marine fauna arising from chemical toxicity.

5.8.3.1 Impact Assessment

Cement and cementing fluids will be either discharged at the seabed during the well construction activities or at the sea surfaces as part of the wash water from flushing the equipment.

Discharges will result in a localised changes in water quality and localised burial of benthic habitat that may cause injury/mortality to benthic communities. Impacts are expected to be localised around the discharge point with discharges at sea surface also expected to disperse and dilute rapidly, with concentrations significantly dropping with distance from the discharge point. Impacts outside of the operational area is considered unlikely to occur.

Water Quality

Change in Water Quality

Planned discharges of cement and cementing fluids will reduce the water quality and increase turbidity in the vicinity of the discharge point. Overboard disposal of bulk materials (e.g. barite, bentonite and cement) is not the primary management method being considered, however the release of these products at the sea surface will also contribute to a change in water quality and increase turbidity in the water column.

Cement is considered an inert substance and classed by OSPAR as posing little or no risk to the environment (PLONOR), so no toxicity impacts are expected. Barite and bentonite, like cement, are also considered to be PLONOR and are given the OCNS 'E' grouping. Given their inert nature, these materials are not anticipated to cause increased toxicity in the marine environment.

Discharges at sea surface or at the well location will result in a reduction in water quality from an increase in turbidity. Large particles and flocculated solids create a plume that settles rapidly on the seabed. In contrast, fine, light weight particles and soluble components form a separate plume in the water column, which drifts with prevailing currents and disperses quickly in the surrounding waters (Neff 2005).

Modelling was conducted by BP on 200 T of cement discharged per well directly to the seabed at a rate of 1.3 m^3/hour (BP, 2013). The modelling determined that after 2 hours of the discharge plume concentrations were between 5 and 50 mg/L, with the horizontal and vertical extents of the plume approximately 150 m and 10 m, respectively (BP 2013). Five hours after ceasing the discharge, modelling indicated that the plume had dispersed to concentrations below 5 mg/L (BP, 2013).

Given the total volume of cement materials to be released will occur in different locations within the operational area and at different times depending on the campaign schedule, and taking into account the dynamic metocean conditions of an offshore environment, the cement particles are expected to rapidly disperse and settle out of the water column.

Barite and bentonite are known to contain trace impurities of metals. A study of barite in seawater has noted that 1% of mercury and 15% of cadmium dissolved from the barite after one week (Crecelius et al., 2007). Given the low concentration of these components, discharge of these materials is not anticipated to have an adverse impact on water quality via metal dissolution.

Given the rapid dispersion expected in the open ocean and the low volume of discharges, the impact to water quality is expected to be highly localised and temporary. Water quality is expected to recover within hours of the cessation of activities.

Benthic Habitats and Assemblages

Injury/Mortality to Benthic Habitats and Assemblages

Benthic habitat may be buried as a result of cement discharges to the seabed that may result in injury and/or mortality to benthic assemblages. During cementing operations, cement slurry (up to 5 m^3 per well) will be released at the seabed.

These discharges are considered inert and will not release chemicals that would impact sediment quality and benthic habitat. The cement may set causing an accumulation of solids on the seafloor; however, it will remain inert and pose little or no toxicity risk to the marine environment.

Cement burial of benthic habitat will impact benthic assemblages in the immediate vicinity of the well (discharge location). A study of ~83 m^3 of cement discharged at the seabed showed that changes to the benthic environment was limited to a radius of ~10 m from the release site (BP, 2013). The volume of cement discharges expected for these well construction activities is much smaller. Therefore, the impact is anticipated to be localised to a small area around the release location. There are also no known sensitive seabed features (e.g. KEFs, corals, seagrass or macroalgae) in the Operational Area with regional benthic habitat surveys primarily consisting of soft sediments, likely to be sparsely populated by benthic infauna (Section 3.4.1).

No significant impacts are anticipated from the cement, spacer fluids or cement slurry discharges. Minor quantities, low toxicity of the material and the localised area of impact mean benthic assemblages are expected to recolonise quickly.

Marine Fauna

Indirect Impacts to Marine Fauna from Chemical Toxicity

As discussed in the sections above, impacts to water quality is expected to be localised and temporary. Marine fauna present within the Operational Area at the time of the well construction activities are likely to be transient with no foraging BIAs identified (Table 3-7). If contact does occur with any marine fauna, it will be for a short duration due to the rapid dispersion of the discharge plume and the transient movement of fauna, such that exposure time may not be of sufficient duration to cause a toxic effect.

Cement is an inert substance and considered PLONOR. No toxicity impacts are expected from cement. Barite and bentonite are also considered PLONOR and are in the ‘E’ category under the OCNS. However, barite and bentonite are known to contain trace impurities of metals. A study of barite in seawater has noted that 1% of mercury and 15% of cadmium dissolved from the barite after one week (Crecelius et al., 2007). These metals present in barite have limited environmental mobility and low bioavailability (Neff, 2008; Schaaning et at., 2002). Barite is considered inert from a toxicological perspective.

Should the offshore disposal of bulk materials be actioned, the concentration of metal impurities in the bulks will be reduced by preparation of a slurry before release. The slurry will be further diluted as it is rapidly mixed in the open ocean, reducing the concentration of mercury and other metals to well below toxic levels.

Impacts to the seabed are not anticipated to significantly affect mobile marine fauna, such as marine mammals, marine reptiles, fish, sharks and rays, noting the sparse benthic and epi-benthic communities expected in the Operational Area (Section 3.4.1).

Given the dynamic nature of the offshore marine environment within the vicinity of the Operational Area, the low concentration of these components and low solubility of barite and constituent metals, discharges of cement, spacer fluids or cement slurry are not predicted to have ecologically significant effects.

5.8.4 Risk Ranking

Non-drilling material discharges are expected to result in highly localised and short-term changes to water quality. Due to the dynamic nature of the offshore environment, minimal volumes for discharge, and low toxicity of the discharges, impacts are expected to be localised and short-term and not affect population functioning. Therefore:

- The consequence ranking of '2' (Minor) was assigned to water quality and benthic habitat and assemblages, and a likelihood of 'B' (Unlikely) was considered appropriate, resulting in a risk ranking of 'Low' (RRIV).
- The consequence ranking of '1' (Incidental) was assigned to marine fauna, and a likelihood of 'B' (Unlikely) was considered appropriate, resulting in a risk ranking of 'Low' (RRIV).

5.8.5 ALARP Demonstration

Table 5-30: ALARP Demonstration – Non-drilling material discharges – cement, cementing fluids and unused bulk products

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
Elimination			
None identified.	-	-	-
Substitution			
Chemical assessment and selection process.	EPO-WC-06	Chemicals that will be discharged to the marine environment are selected in accordance with VOGA's Chemical Assessment Process (Section 8.3.7).	Completed chemical assessments.
Prevention			
None identified.	-	-	-
Reduction			
Correct disposal of bulk product at end of campaign.	EPO-WC-06	Unused bulk product managed as per the Bulk material disposal options framework outlined in this EP at end of campaign.	Records confirm that the Bulk material disposal options framework was followed for the management of unused bulk product.
Mitigation			
None identified.	-	-	-
Other			
Quality control for barite.	EPO-WC-06	Contaminant limit concentrations in barite: • Mercury (Hg) – 1 mg/kg dry weight in stock barite	Records confirm barite used for the drilling meets the below standard: • Mercury (Hg) – 1 mg/kg dry weight in stock barite

		• Cadmium (Cd) – 3 mg/kg dry weight in stock barite.	• Cadmium (Cd) – 3 mg/kg dry weight in stock barite.
Monitoring use of barite and cement.	EPO-WC-06	Use of barite and cement will be monitored to reduce excess of bulk products remaining at end of campaign.	Barite and cement volumes and daily usage are monitored and recorded (daily barge report) to ensure sufficient stock available to meet forecast usage and contingency requirements so as to minimise excessive stock level.
Industry collaboration on management of unused bulk products.	EPO-WC-06	VOGA will continue to be involved in industry collaboration efforts relating to the management of unused bulk products and implement improvements identified through industry-wide collaboration efforts if deemed ALARP following decision framework Remove reference to in Figure 2-2.	Records confirm VOGA is involved in industry collaboration efforts and any improvements are implemented, if determined to be ALARP.
Considered control measures	**Assessment of option**		**Decision**
Eliminate discharge of unused bulks.	Any impact to the marine environment from discharge of bulks is minimal due to: • The nature of the materials – materials are considered inert or PLONOR, and barite has low solubility in the marine environment. • The marine environment – bulks disperse effectively in the offshore environment. Due to the presence of mercury in barite, compliance with Article 9 of the Minamata Convention has been addressed by considering best available techniques and best environmental practice, and subsequently developing the following control measures: • Correct disposal of bulk product at end of campaign (CM-6.12) • Quality control of barite (CM-6.13) • Monitoring use of barite and cement (CM-6.14). CM-6.13 limits the concentration of mercury in barite and CM-6.14 reduces the volume of bulks remaining at the end of the campaign. Adopting these control measures reduces releases of		Not adopted.

	mercury to the environment, as required by the Minamata Convention. The decision framework in CM-6.12 ensures all possible options are considered before bulks are released. Transport of dry bulks back to shore currently has an inherent increase in time, cost, and health and safety risk. Health and safety risks are increased due to transfer methodology for bulk products (pressured air used to "blow" bulks) into trucks which are not rated for the pressures with the potential for over-pressuring the receiving tank resulting in an explosion and fatalities. The environmental benefits of this control measure are limited, and currently, the associated health and safety risks are not justified.	
ALARP summary: The impacts from non-drilling material discharges (cement, cementing fluids and unused bulk products) are ALARP, based on the impact assessment outcomes using VOGA Risk Matrix (as per Table 4-1), the ALARP template to determine the appropriate decision context type (Table 4-4) and VOGA's criteria for demonstrating ALARP (Section 4.8). No reasonably practicable additional controls were identified that would further reduce the impacts without disproportionate sacrifice.		

5.8.6 Acceptability Demonstration

Table 5-31: Acceptability Demonstration – Non-drilling material discharges – cement, cementing fluids and unused bulk products

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
Principles of ESD not compromised	Relevant principles of ESD not compromised given proposed controls (Table 5-30).
External context – objections or claims considered	N/A – no external objections or claims received.
Internal context – VOGA HSE policy/procedures met	Yes – Risk managed in accordance with VOGA HSE policy.
Other requirements met	Yes, including: • VOGA chemical assessment process aligns with OSPAR list and OCNS guidance. • Mercury concentrations in barite will be limited in line with industry practice, to ensure compliance with article 9 of the Minamata Convention. • Approved Conservation Advice for *Rhincodon typus* (whale shark) (TSSC, 2015b) • Sawfish and River Sharks Multispecies Recovery Plan: (*Pristis, Pristis zijsron, Pristis clavata, Glyphis* and *Glyphis garricki*) (DoE, 2015c) • Approved Conservation Advice for *Pristis zijsron* (green sawfish) (DEWHA, 2008b) • Approved Conservation Advice for *Pristis clavata* (dwarf sawfish) (DEWHA, 2009)

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
	• Approved Conservation Advice for *Pristis pristis* (Largetooth / freshwater sawfish) (DCCEEW, 2025e) • Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) (DoE, 2014) • Recovery Plan for the White Shark (*Carcharodon carcharias*) (DSEWPC, 2013 • Recovery Plan for Marine Turtles in Australia, 2017-2027 (Commonwealth of Australia, 2017) • Conservation Advice for *Orcaella heinsohni* (Australian snubfin dolphin) (DCCEEW, 2025) • Conservation Management Plan for the Blue Whale, 2015-2025 (DoE, 2015) Approved Conservation Advice for *Balaenoptera borealis* (Sei Whale) (TSSC, 2015c) • Approved Conservation Advice for *Balaenoptera physalus* (Fin Whale) (TSSC, 2015d) • Approved Conservation Advice for *Pristis zijsron* (green sawfish) (DEWHA, 2008b) • Sawfish and River Sharks Multispecies Recovery Plan: (*Pristis, Pristis zijsron, Pristis clavata, Glyphis and Glyphis garricki*) (DoE, 2015c) • Approved Conservation Advice for *Pristis clavata* (dwarf sawfish) (DEWHA, 2009) Recovery Plans/Conservation Advice for other species that may occur in the Operational Area do not identify habitat degradation/ modification as a key threat or have explicit relevant objectives or management actions related to habitat degradation/modification.
RR < High (RRII)	Yes – Low (RRIV).
EPO(s) manage impacts to acceptable level(s)	Yes – The following relevant EPOs will be maintained: • EPO-WC-06 See Section 7 for further details.
Acceptability summary: The impacts of non-drilling material discharges (cement, cementing fluids and unused bulk products) have been managed to a level that is broadly acceptable based on the demonstration of ALARP (Table 5-30), alignment with industry best practice, and VOGA's process for evaluating acceptability (Section 4.7).	

5.9 Unplanned: Accidental Discharge of Waste and Solid Objects

5.9.1 Hazard Report

Table 5-32: Hazard Report – Accidental discharge of waste and solid objects

HAZARD	Accidental discharge of waste and solid objects
EP risk number	EP-WC-R09
Activity/cause	• MODU operations • Support operations.

Extent	Operational Area.		
Potential impact description	Localised, reversible and short-term impacts to benthic habitats and assemblages not affecting ecosystem functioning. Injury/mortality to marine fauna. Incidental impacts to submerged cultural heritage sites.		
IMPACT AND RISK EVALUATION SUMMARY			
Receptor	**Impact/Consequence**	**Likelihood**	**Residual Risk**
Benthic habitats	Minor (2)	Unlikely (B)	Low (RRIV)
Marine fauna	Incidental (1)	Rare (A)	Low (RRIII)
Submerged cultural heritage	Incidental (1)	Rare (A)	Low (RRIV)
Relevant EPO(s)	EPO-WC-07 No unplanned overboard loss of waste or solid objects to the marine environment.		

5.9.2 Description of Hazard

During vessel operations an accidental loss of waste or solid objects may result from:

- Dropped equipment (anchor) from support vessels
- Dropped equipment during MODU operations and support vessels
- Waste accidentally released to the marine environment.

While there will be no planned transfer of equipment or large items between vessels during the activity, dropped objects may occur during rough seas where they are not able to be retrieved.

The handling and storage of waste on-board the MODU and support vessels has the potential for an accidental loss of waste or solid materials overboard. The transfer of waste material will only occur in port for appropriate disposal, however accidental releases may occur from rough seas or high winds.

5.9.3 Impact and Risk Evaluation

Potential risks caused by the accidental loss of waste or solid objects include:

- Impacts to benthic habitats and assemblages
- Injury/mortality to marine fauna
- Impacts to submerged cultural heritage.

The following receptors within the Operational Area may be impacted by accidental loss of waste or solid materials:

- Benthic habitats
- Marine fauna
- Cultural heritage.

5.9.3.1 Impact Assessment

Benthic Habitats

Change to Benthic Habitats

Unplanned disturbance to benthic habitats and assemblages may occur due to dropped objects overboard or during MODU operations and support vessels. These receptors may be smothered or disturbed due to sediment suspension and re-settlement. Benthic habitats within the Operational Area are likely to consist of fine silt and sandy substrates with sparse benthic communities (Section 3.4.1). There is no seagrass, coral or macroalgal communities in the Operational Area.

Should the occurrence of dropped objects occur, the impact would be localised with limited disturbance to benthic habitats.

Marine Fauna

Injury/Mortality

Accidental discharge of waste release into Commonwealth waters can cause injury or death to marine fauna through ingestion or entanglement. Waste or marine debris encompasses all plastics and other types of debris that can harm vertebrate marine wildlife. This includes plastic garbage (e.g. bags, bottles or ropes) and solid non-biodegradable materials lost or disposed of at sea. These impacts will be limited in exposure and quantity, affecting individual animals rather than population levels.

Threatened and/or migratory species potentially affected by the loss of waste overboard are discussed in Section 3.4.3. Recovery plans and species conservation advice for these species including albatrosses and giant petrels, seabirds, marine turtles and whale shark (Table 1-3) identify marine debris as a threat for the species. The Operational Area does not overlap any feeding or foraging areas for seabirds or marine turtles.

The Operational Area overlaps the Foraging BIA for the whale shark (Figure 3-12). The high-density aggregation area for the species is approximately 270 km southwest of the Operational Area at the Ningaloo Marine Park and they are known to migrate further offshore along the 200 m depth contour. The Operational Area does not feature any upwelling or regions of high productivity. Therefore, whale shark presence in the area is likely to consist of individuals rather than any feeding aggregations.

Any accidental released of waste to the marine environment will be limited and managed with waste management procedures and compliance with Marine Orders. Should any waste be lost to the sea during the activities, impacts are expected to be short term not affecting species at a population level.

Submerged Cultural Heritage

Change to Submerged Cultural Heritage

Dropped objects may disrupt submerged cultural heritage, although there no known cultural heritage artefacts, shipwrecks or registered Aboriginal Cultural Heritage sites within the

Operational Area (Section 1.1.1 and 3.7.5). Therefore, any impact to submerged cultural heritage is expected to be incidental.

5.9.4 Risk Ranking

An accidental loss of waste or solid objects is expected to result in highly localised and temporary change to benthic habitats within the immediate vicinity of the release. Any impacts to marine fauna are expected to be short-term and not affect species at a population level. There are no known underwater cultural heritage sites in the Operational Area. Therefore:

- The consequence ranking of '2' (Minor) was assigned to benthic habitat, and a likelihood of 'B' (Unlikely) was considered appropriate, resulting in a risk ranking of 'Low' (RRIV).
- The consequence ranking of '1' (Incidental) was assigned to marine fauna and submerged cultural heritage, and a likelihood of 'A' (Rare) was considered appropriate, resulting in a risk ranking of 'Low' (RRIV).

5.9.5 ALARP Demonstration

Table 5-33: Demonstration of ALARP – Accidental overboard loss of waste and solid objects

Control measure	Environmental Performance outcome	Performance Standard	Measurement criteria
Elimination			
None identified	-	-	-
Substitution			
None identified	-	-	-
Prevention			
Non-hazardous and hazardous wastes are managed in accordance with contractor's Waste Management Plan.	EPO-WC-07	Hazardous and non-hazardous wastes shall be segregated into recyclable and non-recyclable in accordance with the contractor's Waste Management Plan.	VOGA inspection or audit confirms hazardous and non-hazardous wastes are segregated into recyclable and non-recyclable wastes. Compliance records from VOGA's waste management audit.
		Waste shall be stored in clearly marked containers, and hazardous wastes bunded, in accordance with the relevant Safety Data Sheet (SDS) and the contractor's Waste Management Plan.	VOGA inspection or audit confirms compliance.
		Wastes for onshore disposal shall be transported in suitable containers as outlined in the contractor's Waste Management Plan.	VOGA inspection or audit confirms waste is transported onshore in relevant containers.

		All non-hazardous (except putrescible waste and waste-water) and hazardous waste shall be transported to shore and disposed of in appropriately licensed facilities in accordance with the contractor's Waste Management Plan.	Waste disposal receipts confirm appropriate disposal of wastes (type and volume).
Environmental induction.	EPO-WC-07	Crew inductions, and job safety analyses where relevant, will include a component on preventing dropped objects to increase awareness of requirements.	Induction records.
Reduction			
MODU and vessel procedures are compliant with MARPOL Convention Annex V, Prevention of Pollution by Garbage from Ships and Marine Order 95.	EPO-WC-07	All vessels/MODU licensed to carry more than 15 persons or over 400 gross tonnage shall have and implement a Waste Management Plan and maintain a Garbage Record Book in accordance with MARPOL Convention Annex V, Prevention of Pollution by Garbage from Ships and Marine Order 95.	VOGA inspection or audit of MODU and vessels to ensure compliance with Waste Management Plan. Garbage Record Book details the wastes (type and volume) disposed.
MODU work procedures for lifts, bulk transfers and cargo loading.	EPO-WC-07	MODU work procedures require: • The security of loads to be checked prior to commencing lifts • Loads to be covered if there is a risk of losing loose materials • Lifting operations to be conducted using systems to manage the specific risks of that lift, including consideration of weather and sea state.	Completed handling and transfer procedure checklist, Permit to Work and/or risk assessments verify that the procedure is implemented prior to each transfer.
Mitigation			
Recovery of dropped objects where practical to do so.	EPO-WC-07	Any hazardous solid waste dropped to the marine environment will be recovered where safe and practicable to do so. Where safe and practicable for this activity, consider: • Risk to personnel to retrieve object	Incident reports detail the recovery attempt consideration and status of any hazardous waste lost to the marine environment.

		• Whether the location of the object is in recoverable water depths • The object's proximity to subsea infrastructure • Ability to recover the object (i.e. nature of object, lifting equipment or ROV availability, and suitable weather).	
Other			
None identified.	-	-	-
Considered Control Measures	**Assessment of option**		**Decision**
None identified.	-		-
ALARP Summary: Application of the described control measures ensures that the risk of waste discharge and dropped objects are ALARP, based on the impact assessment outcomes using VOGA Risk Matrix (as per Table 4-1), the ALARP template to determine the appropriate decision context type (Table 4-4) and VOGA's criteria for demonstrating ALARP (Section 4.8). No reasonably practicable additional controls were identified that would further reduce the impacts without disproportionate sacrifice.			

5.9.6 Acceptability Demonstration

Table 5-34: Acceptability demonstration – Accidental overboard loss of waste and solid objects

Acceptable level of impact/risk demonstrated	
Principles of ESD not compromised	Relevant Principles of ESD not compromised given proposed controls (see Table 5-33).
External context – objections or claims considered	N/A – no external objections or claims received.
Internal context – VOGA HSE policy/procedures met	Yes – Risk managed in accordance with VOGA HSE policy.
Other requirements met	Yes – including: • AMSA Marine Order 95 • Threat Abatement Plan for the Impacts of Marine Debris on Vertebrate Wildlife of Australia's Coasts and Ocean (DEE, 2018) • National Recovery Plan for albatrosses and petrels (2022) (DCCEEW, 2022b) • Approved Conservation Advice for *Rhincodon typus* (whale shark) (TSSC, 2015b) • Approved Conservation Advice for *Pristis zijsron* (green sawfish) (DEWHA, 2008b) • Sawfish and River Sharks Multispecies Recovery Plan: (*Pristis, Pristis zijsron, Pristis clavata, Glyphis and Glyphis garricki*) (DoE, 2015c)

	• Approved Conservation Advice for *Pristis clavata* (dwarf sawfish) (DEWHA, 2009) • Conservation Advice for *Orcaella heinsohni* (Australian snubfin dolphin) (DCCEEW, 2025b) • Conservation Advice for *Sousa sahulensis* (Australian humpback dolphin) (DCCEEW, 2025c) • Recovery Plan for Marine Turtles in Australia, 2017-2027 (Commonwealth of Australia, 2017) • Approved Conservation Advice for *Dermochelys coriacea* (Leatherback Turtle) (DEWHA, 2008c).
RR < High (RRII)	Yes – Low (RRIV).
EPO(s) manage impacts to acceptable level(s)	Yes – The following relevant EPOs will be maintained: • EPO-WC-07. See Section 7 for further details.
Acceptability Summary: The impacts of accidental loss of waste and solid objects have been managed to a level that is broadly acceptable based on the demonstration of ALARP (Table 5-33), alignment with industry best practice, and VOGA's process for evaluating acceptability (Section 4.7).	

5.10 Unplanned: Introduction of Invasive Marine Species

5.10.1 Hazard Report

Table 5-35: Hazard Report – Introduction of invasive marine species

HAZARD	Introduction of invasive marine species (IMS)		
EP risk number	EP-WC-R10		
Activity/cause	• Vessel operations • MODU operations.		
Extent	Operational Area.		
Potential impact description	Changes to habitat structure. Displacement of native marine species or a reduction in abundance from predation, competition or interspecies breeding. Interaction with industry.		
IMPACT AND RISK EVALUATION SUMMARY			
Receptor	**Impact/Consequence**	**Likelihood**	**Residual Risk**
Benthic habitats	Moderate (3)	Rare (A)	RRIV (Low)
Industry	Moderate (3)	Rare (A)	RRIV (Low)
Relevant EPO(s)	EPO-WC-08 No introduction, establishment or spread of a known or potential invasive marine species.		

5.10.2 Description of Hazard

Invasive marine species (IMS) are marine plants or animals that are not native to Australia but have been introduced by anthropogenic activities, such as shipping (DAFF, 2021). IMS can include fish, sea stars, crabs, molluscs, worms, sponges, microscopic dinoflagellates, shellfish, algae, bacteria and viruses.

Vessels associated with the activity may be sourced from domestic or international waters. Support vessels will be transferring various materials to the MODU and towing the MODU to and from waters adjacent to the Operational Area. There will be a maximum of three support vessels, and one MODU will be in the Operational Area at any time, they will typically be contracted for the duration of each campaign (30-50 days per well).

The physical presence and movement of the MODU and support vessels create a potential pathway for IMS introduction into the Operational Area. Vessels sourced from international waters pose a higher risk of transferring IMS that could establish in the local environment. There is also a smaller, but credible, risk of IMS transfer from other Australian waters.

Biofouling on immersed surfaces (e.g. ship hulls), floating/immersible equipment and within internal seawater circulation systems, as well as ballast water, are potential pathways for IMS to translocate on offshore vessels (DAWR, 2018).

5.10.2.1 Ballast Water

Ballast water is held in the ballast tanks of vessels and ensures that safe operating conditions are maintained by providing stability. When vessels require ballast, water from the surrounding environment is pumped into the ballast tanks. This water has the potential to be contaminated with microorganisms, such as, bacteria, microbes, small invertebrates, eggs, cysts and larvae of various species. When the weight of the vessel needs to be lightened ballast water is released into the receiving marine environment resulting in the potential introduction of foreign organisms. It is estimated that up to 30% of all marine pest incursions in Australia have arrived via ballast water (DAWR, 2018).

The Commonwealth Department of Agriculture, Fisheries and Forestry (DAFF) is the lead agency for management of ballast water. Vessels are required to manage ballast water in accordance with IMO Ballast Water Management (BWM) Convention, IMO Guidelines, the mandatory Australian Ballast Water Management Requirements (DAWE, 2020) that is enforced under the *Biosecurity Act 2015*. The Australian Ballast Water Management Requirements set out the obligations on vessel operators with regards to the management of ballast water and ballast tank sediment when operating within Australian seas.

The requirements set out guidance for vessel operators on best practice policies and apply to all vessels operating internationally and domestically in Australia.

- All vessels must carry a valid ballast water management plan
- All vessels must carry a valid International ballast water management certificate
- All vessels must maintain a complete and accurate record of all ballast water movements.
- Vessels with a Ballast Water Management System (BWMS) must carry a Type Approval Certificate specific to the type of BWMS installed.

Vessels that are intending to discharge internationally sourced ballast water must submit a Ballast Water Report through MARS at least 12 hours prior to arrival.

Domestic vessels that have been released from biosecurity control are still required to manage the movement of Australian sourced ballast water.

All ballast water should be managed using one of the approved ballast water management options. All ballast water must be managed or receive a low-risk exemption from the department prior to discharge.

5.10.2.2 Biofouling

Biofouling occurs when an accumulation of organisms attach and grow on immersed surfaces (e.g. ship hulls) and/or within internal seawater circulation systems.

DAFF is the lead agency for management of biofouling on vessel hulls, external niche areas and immersible equipment in Australian waters. Under the National Biofouling Management Guidelines for the Petroleum Production and Exploration Industry, IMO Guidelines for the control and management of ships' biofouling to minimise the transfer of IMS (resolution MEPC.207(62)) and Australian Biofouling Management Requirements (DAFF, 2023) a risk assessment approach is applied to manage biofouling. IMO biofouling guidelines are considered 'best practice' for mitigation of transfer of IMS to ALARP.

All MODUs and vessels are required to complete the VOGA Biofouling Risk Assessment Process described in Section 8.3.8. The VOGA Biofouling Risk Assessment Process assigns a final risk category of low, moderate, uncertain or high to vessels based on a range of information including last port of call, age of antifouling coating etc. If a risk category of moderate, uncertain or high is scored, a range of management options are available including inspections, cleaning or treatment of internal seawater systems.

5.10.3 Impact and Risk Evaluation

Potential risks from the activity caused by the introduction of IMS include:

- Changes to habitat structure.
- Reduction in native marine species abundance through predation, competition or interspecies breeding.
- Interaction with industry.

The following receptors within the Operational Area may be impacted by the introduction of IMS:

- Benthic habitats and assemblages
- Offshore infrastructure.

5.10.3.1 Risk Assessment

IMS are organisms that have established within a marine environment outside of their natural area of distribution and impact on the local environment.

Not all marine species that are introduced to an area have the potential to establish themselves and become invasive. Species of concern are those that are not native to the region, are likely to survive and establish in the area, and are able to spread by anthropogenic or natural means. IMS concern varies from one region to another depending on the various environmental factors such as water temperature, salinity, nutrient levels and habitat type. These factors dictate their survival and invasive capabilities.

Studies have found that most IMS are temperate. Of the 60 species known to have become established in WA, only six are tropical species that occur north of Shark Bay (Wells et al., 2009). Most IMS are concentrated in port areas and relatively few have expanded their range beyond their presumed introductory points (Wells et al., 2009). Consequently, the IMS that have established themselves in WA marine waters have, only resulted in changes to the ecosystems of highly localised port areas, with few repercussions for the broader marine environment.

IMS are generally found in shallow coastal locations and generally utilise hard substrata on which to settle.

IMS pose a major threat to the Australian environment, economy and social amenity by disrupting ecological processes. Disruption can occur via two pathways:

- Directly – through predation or completing with native marine plants and animals.
- Indirectly – through habitat alteration (DAWR, 2018).

Once established, marine pests can rarely be eradicated, and their negative effects are often long lasting.

Benthic Habitats and Assemblages

It was found that highly disturbed environments (such as marinas) are more susceptible to colonisation than open-water environments (Paulay et al., 2002). Of the 60 invasive species that are known to have become established in WA, only 6 are tropical species that occur north of Shark Bay (Wells et al., 2009). Most IMS are concentrated in port areas and relatively few have expanded their range beyond these presumed introductory points (Wells et al., 2009). Further, modelling conducted by the Bureau of Rural Sciences (BRS) of ballast water found that the risk of IMS colonisation decreases with an increased distance from shore (BRS, 2007), with only 2% chance of colonisation at 24 nm (44.5 km) offshore or beyond.

Benthic habitats within the Operational Area as described in Section 3.4.1.1, are defined by assemblages associated with subtidal soft sediments. ROV studies at similar depths within the NWS found that although sediments showed various levels of bioturbation, benthic communities were generally sparse with low densities of organisms (e.g. crustaceans, molluscs, and polychaetes). Further, no key ecological features, often associated with hard substrate habitats are located within the Operational Area.

The Operational Area is located in a deep-water (50–60 m) open-ocean environment with a lack of hard substrate and is approximately 39 km from the nearest shoreline (i.e. islands of the Dampier Archipelago). Therefore, it is considered that the Operational Area does not provide a location conducive to marine pest establishment and survival and that there is little potential for invasive organisms to accumulate and multiply.

Industry

The greatest potential for the establishment of IMS resulting from project activities is associated with the potential for colonisation of subsea infrastructure which provide attachment points for sessile invertebrates or marine algae closer to the sea surface where light is more available.

Project activities will occur within the Operational Area which currently contains the Wandoo B platform, the Wandoo A unmanned monopod, and a verity of subsea systems that are associated with 16 production wells. Further, the TL1 and TL2 export pipelines from the North Rankin Complex to the Karratha Gas Plant and the Devil Creek Development Project pipeline connecting the offshore Reindeer gas field to the onshore Devil Creek gas processing plant are in proximity to the Operational Area. The closest these are located to the proposed Operational Area are 4.6 km east (TL1) and 10 km west (TL2).

Water depths within the Operational Area range from approximately 50 m to 60 m. At these depths, light penetration is significantly reduced, limiting photosynthetic activity. If IMS are introduced and establish on Wandoo infrastructure, their spread is expected to remain localised due to the facility's physical isolation and limited connectivity with surrounding habitats. In the event of IMS introduction and establishment due to the project activities, a control strategy will be developed and implemented, in consultation with IMS experts and DAFF.

5.10.4 Risk Ranking

The offshore open waters of the Operational Area are not conducive to the settlement and establishment of IMS (Geiling, 2014), due to the lack of light and suitable habitat to sustain growth and survival. Therefore:

- A consequence ranking of '3' (Moderate) was assigned to benthic habitats and communities, and offshore infrastructure. A likelihood of 'A' (Rare) was considered appropriate, resulting in a risk ranking of Low (RRIV).

5.10.5 ALARP Demonstration

Table 5-36: Demonstration of ALARP – Introduction of IMS

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
Elimination			
None identified	-	-	-
Substitution			
None identified	-	-	-
Prevention			
MODU and vessels comply with Australian Ballast Water Management Requirements (DAWE, 2020).	EPO-WC-08	Vessels will have an approved ballast water management plan and valid ballast water management certificate, unless an exemption applies or is	Ballast water management plan or record of exemption. Valid ballast management certificate or record of exemption.

		obtained, as specified in the Australian Ballast Water Management Requirements (DAWE, 2020).	
MODU and vessels comply with the Annex 1 of the International Convention on the Control of Harmful Anti-Fouling Systems on Ships.	EPO-WC-08	Anti-fouling systems on the MODU and support vessels are maintained in compliance with International Convention on the Control of Harmful Anti-Fouling Systems on Ships (IMO, 2001): • Prohibits the use of harmful organotins in antifouling paints used on ships and establishes a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems.	Records confirm MODU and vessel anti-fouling systems have not used harmful organotins.
MODU, vessel and immersible equipment complete the VOGA Biofouling Risk Assessment Process.	EPO-WC-08	MODU and support vessels will complete a VOGA Biofouling Risk Assessment [VOG-1000-NH-0026], identifying a low risk before mobilisation to the Operational Area. If a risk category of moderate, uncertain or high is scored, the process requires an independent IMS expert to be engaged, and further risk assessment and/or management measures undertaken.	Records of VOGA Biofouling Risk Assessments maintained for MODU, vessels and relevant immersible equipment entering the Operational Area demonstrating low risk status. Records of management measures implemented if required, through the IMS vessel risk assessment process.
Reduction			
None identified	-	-	-
Mitigation			
None identified	-	-	-
Other			

None identified	-	-	-
Considered Control Measures	**Assessment of option**		**Decision**
Prior to entering the Operational Area hull inspections will be undertaken on the MODU and AHTS vessels that will be used for each campaign.	Inspection would ensure that no IMS are present on each MODU and AHTS vessel used for the campaigns. This would require the MODUs and AHTS vessels to be moved to a suitable location for inspection, this additional step will not reduce the environmental risks associated with the operations. Significant cost (grossly disproportionate to the risk) would lead to scheduling delays.		Not adopted.
MODU and AHTS vessels to have a biofouling management plan and record book.	The presence of a biofouling management plan and record book is part of the Biofouling risk assessment process and so will inform the risk level assigned and any actions. A biofouling management plan is best practice however not currently a legal requirement and as such not all vessels have this in place. This could lead to delays if ad hoc vessels are required and given the measure is part of the risk assessment process, not considered essential.		Not adopted.
Mandatory dry docking of vessels prior to entering the field to clean vessel and equipment and remove biofouling.	Practice would ensure that no IMS are present on vessel or associated equipment. Significant cost (grossly disproportionate to the risk) would lead to scheduling delays.		Not adopted.
Restrict vessel operations to using vessels and equipment that have only operated in local, State or Commonwealth waters to reduce potential for IMS introduction.	Would reduce potential for IMS to be transported into area since vessels would not have originated elsewhere. Vessels and equipment suitable for the activity that have only operated in local, State or Commonwealth waters may not be available; therefore, work could not be completed.		Not adopted.
ALARP Summary: The impacts of Introduction of IMS are ALARP, based on the impact assessment outcomes using VOGA Risk Matric (Table 4-1), the ALARP template to determine the appropriate decision context type (Table 4-4) and VOGA's criteria for demonstrating ALARP (Section 4.8). Through the ALARP process, additional controls have been identified that would further reduce the impacts without disproportionate sacrifice.			

5.10.6 Acceptability Demonstration

Table 5-37: Acceptability demonstration – Introduction of IMS

ACCEPTABLE LEVEL OF RISK DEMONSTRATED

Principles of ESD not compromised	Relevant Principles of ESD not compromised given proposed controls (Table 5-36).
External context – objections or claims considered	N/A – No external objections or claims received.
Internal context – VOGA HSE policy/procedures met	Yes – Risk managed in accordance with VOGA HSE policy.
Other requirements met	Yes – including: • Australian Ballast Water Management Requirements (DAWE, 2020) and the Australian Biofouling Management Requirements (DAFF, 2023) give effect to the *Biosecurity Act 2015* and associated regulations; International Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Convention) and relevant guidelines or procedures adopted by the Marine Environment Protection Committee of the IMO • National Biofouling Management Guidance for the Petroleum Production and Exploration Industry (MPSC, 2018) • Approved Conservation Advice for *Pristis zijsron* (green sawfish) (DEWHA, 2008b) • Approved Conservation Advice for *Pristis clavata* (dwarf sawfish) (DEWHA, 2009) • Sawfish and River Sharks Multispecies Recovery Plan: (*Pristis, Pristis zijsron, Pristis clavata, Glyphis and Glyphis garricki*) (DoE, 2015c).
RR < High (RRII)	Yes – Low (RRIV).
EPO(s) manage impacts to acceptable level(s)	Yes – The following relevant EPOs will be maintained: • EPO-WC-08. See Section 7 for further details.
Acceptability Summary The potential impacts of introduction of IMS have been managed to a level that is broadly acceptable based on the demonstration of ALARP table (Table 5-36), alignment with industry best practice, and VOGA's process for evaluating acceptability (Section 4.7).	

5.11 Unplanned: Physical Presence – Interaction with Marine Fauna

5.11.1 Hazard Report

Table 5-38: Hazard Report – Physical presence – Interaction with marine fauna

HAZARD	Physical presence – Interaction with marine fauna
EP risk number	EP-WC-R11
Activity/cause	• MODU operations • Vessel operations • Helicopter operations.
Extent	Operational Area.
Potential impact description	Injury/mortality to marine fauna.

IMPACT AND RISK EVALUATION SUMMARY			
Receptor	**Impact/Consequence**	**Likelihood**	**Residual Risk**
Fish, sharks and rays	Incidental (1)	Unlikely (B)	Low (RRIV)
Marine mammals	Incidental (1)	Unlikely (B)	Low (RRIV)
Marine reptiles	Incidental (1)	Unlikely (B)	Low (RRIV)
Seabirds and shorebirds	Incidental (1)	Unlikely (B)	Low (RRIV)
Relevant EPO(s)	EPO-WC-09 No serious or irreversible harm to a Threatened or Migratory listed species.		

5.11.2 Description of Hazard

5.11.2.1 Vessel Collision

A MODU and up to 3 AHTS vessels are required to support the well construction activities (Section 2.11.2). Movement of the MODU and support vessels within the Operational Area introduces a risk of vessel strike or collision with marine fauna. A collision between the vessel (hull and propellers) and marine fauna may result in injury or mortality. While the MODU is stationary, it is not anticipated to present as a collision risk as the hull and MODU legs will be readily detected and avoided by marine fauna transiting the area.

Factors that contribute to the frequency and severity of impacts from vessel interaction with marine fauna vary and depend on the vessel type, operation (e.g. specific activity and speed), physical environment (e.g. water depth), the type of animal potentially present and their behaviours.

A maximum of 3 wells will be drilled per campaign. Each well is estimated to take 30-50 days to complete. Therefore, the maximum duration that vessels are expected to be present in the Operational Area is 150 days per campaign, with up to 3 campaigns to be completed within the validity period of the EP.

Whilst in the Operational Area, vessels would typically be stationary or operating at low speeds when supporting the well construction activities. Support vessels will also transit between Dampier Port and the Operational Area transporting supplies.

5.11.2.2 Bird Strike

Transient seabirds and migratory shorebirds may opportunistically rest on the MODU as they pass through the Operational Area during the activity, increasing the risk of bird strike with helicopters.

The potential for interaction is greatest as helicopters approach the MODU causing birds to take flight. This can lead to pilot distraction and introduces the potential for bird strike. Factors that contribute to the frequency and severity of impacts from bird interactions vary and depend on bird species seasonal conditions, and weather events (e.g., winter storms). The approach speed of the helicopter, landing sequence and the level of bird activity on the MODU also influence risk. Approximately 6-7 helicopter flights are expected per week to support MODU operations (Section 2.11.3).

5.11.3 Impact and Risk Evaluation

Potential risks caused by the physical presence of vessels include:

- Injury/mortality to marine fauna.

The following receptors within the Operational Area may be impacted by the physical presence of vessels:

- Fish, sharks and rays
- Marine reptiles
- Marine mammals
- Seabirds and migratory shorebirds.

5.11.3.1 Risk Assessment

Slow-moving marine fauna present in surface waters, such as marine turtles, whale sharks, dugongs, and cetaceans, are most at risk to vessel strike due to their proximity to the vessel (hull, propeller or equipment) and their limited ability to avoid vessels (i.e. diving). Vessel collision can cause serious injury and/or mortality to individuals.

The National Strategy for Reducing Vessel Strike of Marine Megafauna identifies cetaceans and marine turtles to be the most vulnerable to vessel strikes (CoA, 2017a). Other marine fauna species, including seabirds, marine mammals (dolphins and seals) and fish species (including sharks and rays), are likely to avoid any moving vessels and are considered at low risk of potential vessel strike.

Birds roosting on the MODU are most at risk of interaction with helicopter operations due to their proximity to landing areas and potential to take flight during approach. The risk of bird collision during helicopter operations is an ongoing concern for the safety of flights to and from the MODU.

Fish, Sharks and Rays

Large, slow moving fish species that are known to spend time close to the surface, such as Whale Sharks, have been identified to be more vulnerable to vessel strike or collision. Smaller fish may also be at risk of injury or mortality from vessels if they are caught in vessel thrusters during station keeping operations (i.e. DP). However, this is unlikely given the large distribution and low density of small fish species, combined with the avoidance behaviour that is commonly displayed by pelagic fish from noise emitted during station keeping operations (Section 5.3).

Vessel strike is recognised as a key threat to recovery by the Approved Conservation Advice for Whale Sharks (TSSC, 2015b). A foraging BIA (northward from Ningaloo along the 200 m isobath) for whale sharks overlaps the Operational Area (Figure 3-12). Therefore, whale sharks will likely be present within the Operational Area as they are known to aggregate around Ningaloo between March and July each year to feed (TSSC, 2015b). Whale sharks reportedly spend 40% of their time in the upper 15 m of the water column and approximately 25% of their time within 2 m of the sea surface increasing their vulnerability to vessel strike (Wilson et al. 2006, Gleiss et al. 2013). Collision has been identified to be plausible with both smaller vessels as well as larger commercial vessels that have drafts greater than 20 m below the surface.

Vessels contracted by VOGA for the well construction activities will be required to maintain safe distances from any whale sharks sighted while in the Operational Area, as defined by the Biodiversity Conservation Regulations 2018 (WA) to minimise exposure (Table 5-39).

Given vessel activity is limited to within the Operational Area, the duration of activities is considered to be short-term (up to 150 days per campaign) and vessels will be operating at slow speeds, collisions with individual whale sharks is considered highly unlikely.

Marine Mammals

Cetaceans are naturally inquisitive and are often attracted to transiting vessels, with dolphins commonly known to 'bow ride' with vessels. The reaction of whales to an approaching vessel varies, with behaviours of humpback whales and other cetaceans observed to include longer dive times and movements away from the vessels path with increased speed (Baker and Herman, 1989; Meike et al., 2004). Data compiled from vessel strike records occurring from 1997 to 2015 in Australian waters from the International Whaling Commission (IWC) global database indicated that marine mammals, particularly the humpback whale, have the highest frequency of collision occurrences (Peel et al., 2016).

Cetaceans typically spend more time at the surface when resting, foraging, nursing or mating (CoA, 2017a). Individuals engaged in these biologically important activities are often distracted, making them less likely to detect an approaching vessel and therefore more susceptible to collisions (Laist et al., 2001). When vessels are stationary or moving slowly, the risk of collision with cetaceans is minimal. According to Laist et al. (2001), larger vessels travelling at speeds greater than 10 knots can inflict severe or fatal injuries on cetaceans, with the most serious injuries occurring at speeds exceeding 14 knots.

Whilst several species of marine mammals may transit through the Operational Area during the well construction activities, there are no known key aggregation areas for resting, breeding or foraging that intersect with the Operational Area. However, a migration BIA for the humpback whale overlaps with the Operational Area with key migration seasons identified along the WA coast between May and late November (Section 3.4.4). The Listing Advice for the Humpback Whale (TSSC, 2022) details that the species is no longer listed as vulnerable and identifies vessel strike as a current risk that does not threaten or prevent population growth. Well construction activities may occur during the humpback whale migration, however the potential for interaction is considered unlikely with the Operational Area representing 0.002% of the BIA and the slow speeds of the vessels within the Operational Area.

Migration Patterns of Marine Mammals

The Murujuga Aboriginal Corporation raised concerns that "the deviation of marine mammal migration paths, for example may have no significant environmental impact, but any change to the sighting of whales at a particular point in the landscape would impact the seasonal calendar that marks the transition between seasons." As mentioned, a migration BIA for the humpback whale overlaps with the Operational Area, with key migration seasons identified along the WA coast between May and late November (Section 3.4.4). Large numbers of humpback whales are anecdotally sighted migrating past the existing Wandoo Production Facilities annually. It is considered highly unlikely that the short-term presence of the MODU and additional vessels will affect migration patterns or species deviations, if drilling is undertaken during migration periods.

Marine Reptiles

Marine turtles transiting through the Operational Area are at risk from vessel strike during the time when they periodically return to the surface to breath and rest. Marine turtles spend as little as 3-6% of their time at the surface with routine dive times lasting anywhere from 15 minutes to an hour depending on environmental conditions (NOAA, 2021). The Recovery Plan for Marine Turtles in Australia (CoA, 2017) identifies vessel strike as a threat to marine turtles, particularly in shallow coastal foraging habitats and internesting areas, with a high concentration of recreational and commercial vessels.

Several marine turtle species have been identified to be present within the Operational Area, only one species has an identified BIA (Figure 3-18). An internesting buffer BIA for the flatback turtle overlaps with the Operational Area and is defined by a 60 km buffer established seawards from known nesting sites such as those in the Dampier Archipelago (~39 km from the Operational Area). This buffer is identified as internesting habitat which is critical to the species during nesting activities which occur between October and March each year (CoA, 2017).

A modelling study of internesting flatback turtles in the NWS was undertaken to identify suitable habitat within the region. The study found that turtles preferred water depths of 0–16 m within 5–10 km of the coastline, with all 47 tracked female turtles remaining in depths <44 m, with an average depth of <10 m (Whittock et al., 2016). The study further concluded that waters >25 m deep and >27 km from the coast were unsuitable (Whittock et al., 2016). The Operational Area is ~39 km from the nearest shoreline with water depths of ~55 m. Therefore, it is expected that any presence of marine turtles would be limited to transient individuals and that responses to vessel presence would result in avoidance behaviour.

Birds

The Wildlife Conservation Plan for Seabirds recognises that seabirds are known to aggregate around oil and gas platforms in above average numbers due to night lighting, flaring, food concentrations and other visual cues (Wiese et al. 2001). Although seabirds may be attracted to the MODU due to increased feeding opportunities, these behavioural changes are unlikely to alter population dynamics or significantly change the habitat use of birds due to the short duration of the activity (up to 150 days per campaign) and the regular relocation of the MODU for well construction activities (up to 3 wells per campaign).

There are 17 EPBC-listed bird species that may occur within the Operational Area, of which only one has a breeding BIA overlapping the Operational Area (Wedge-tailed Shearwater, Figure 3-11). The probability of a strike is related to the abundances of different bird species on or near the infrastructure. Wandoo B generally experiences minimal bird roosting due to continuous manning, whereas occasional bird activity has been observed on the unmanned Wandoo A.

The Operational Area does not overlap with any foraging BIAs for bird species or contain roosting or nesting habitat, which reduces the likelihood of large numbers of birds or individuals at vulnerable life stages being present. This significantly lowers the potential for bird strike events. Any birds occurring within the Operational Area are expected to be foraging opportunistically, rafting, or transiting through the area.

While helicopter movements present a potential risk for bird strike, the Wildlife Conservation Plan for Seabirds and the Wildlife Conservation Plan for Migratory Shorebirds does not identify

aircraft collisions as a specific threat to any species (CoA, 2020; DoE, 2015b). Routine helicopter operations will occur during daylight hours and outside major roosting and foraging areas, minimising potential for interaction.

5.11.4 Risk Ranking

Vessel movements and helicopter operations will occur within the Operational Area, creating a potential risk of interaction with marine fauna resulting in injury or mortality. However, the number of receptors present in the Operational Area is expected to be limited to a small number of transient individuals. BIAs for the whale shark (foraging) and humpback whale (migration) were identified within the Operational Area; however, the Operational Area overlaps a small portion of the BIAs for these species.

The MODU and AHTS vessels will transit very slowly (up to 3 knots) within the Operational Area during the well construction activities, posing a low risk of collision with marine fauna. Therefore:

- The consequence ranking of '1' (Incidental) was assigned to marine fauna, with a likelihood of 'B' (Unlikely), resulting in a risk ranking of 'Low' (RRIV).

5.11.5 ALARP Demonstration

Table 5-39: Demonstration of ALARP – Physical presence – Interaction with marine fauna

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
Elimination			
None identified.			
Substitution			
None identified.			
Prevention			
Vessels contracted by VOGA operating in the Operational Area must adhere to Part 8 of EPBC Regulation 2000.	EPO-WC-09	Compliance with EPBC Regulations 2000 – Part 8 Division 8.1 (Regulation 8.05 and 8.06) which requires that: • A vessel will not travel greater than 6 knots within 300 m of a whale or turtle (caution zone) and not approach closer than 100 m from a whale. • A vessel will not approach closer than 50 m of a dolphin or turtle or 100 m of a whale (with the exception of animals bow-riding). • A vessel will not approach closer than 300 m to a	Records demonstrate no breaches of EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans and application of these regulations to marine turtles.

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
		calf (whale or dolphin) (the caution zone) • If a calf appears in the caution zone the vessel must be immediately stopped and must: o turn off the vessel's engines, or disengage the gears, or withdraw the vessel from the caution zone at a constant speed of less than 6 knots.	
Vessel movements within the PSZ are restricted to less than 3 knots.	EPO-WC-09	Compliance with the Wandoo Marine Operations Manual [WNB-1000-YV-0001] which requires that a vessel will maintain a speed of less than 3 knots within the PSZ.	Records demonstrate no breaches of the speed restrictions within PSZ.
Vessels contracted by VOGA operating in the Operational Area must adhere to separation distances defined by the Biodiversity Conservation Regulations 2018 (WA).	EPO-WC-09	Compliance with Biodiversity Conservation Regulations 2018 (WA) which requires that: • A vessel will maintain a separation distance of 30 m from a whale shark.	Records demonstrate no breaches of the separation distances defined for whale sharks within the Biodiversity Conservation Regulations 2018 (WA).
Reduction			
None identified.	-	-	-
Mitigation			
None identified.	-	-	-
Other			
None identified.	-	-	-
Considered Control Measures	**Assessment of option**		**Decision**
Schedule well construction operation campaigns outside of whale migration season.	Practice would reduce the potential disturbance to marine mammals and aligns with biodiversity protection principles. However, migration timing is variable and uncertain, the measure is grossly disproportionate to the risk. It would cause significant cost and scheduling delays when other effective mitigation measures exist.		Not adopted.

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
Aeriel surveillance during well construction campaigns.	Practice would demonstrate proactive monitoring for marine fauna and support biodiversity protection during well construction. However, this measure is unsuitable because aerial detection offshore is unreliable, adds disproportionate cost and safety risks, and more effective vessel-based controls already exist.		Not adopted.
Environmental induction.	Reduces the risk of collision with megafauna by training key personnel (e.g. bridge crew) to understand and adhere to: • Part 8 of the EPBC Regulations • Separation distance defined for the whale shark within the Biodiversity Conservation Regulations 2018 (WA). Cost considered proportionate to the environmental benefit.		Adopted (refer to CM-9.5).
Use of dedicated MMOs on project vessels.	The potential impact to marine fauna is considered incidental, so implementing dedicated MMOs will not reduce the risk significantly. Cost considered disproportionate given no significant environmental benefit.		Not adopted.
ALARP Summary: Application of the described control measures ensures that the risk of interaction with marine fauna are ALARP, based on the impact assessment outcomes using VOGA Risk Matrix (as per Table 4-1), the ALARP template to determine the appropriate decision context type (Table 4-4) and VOGA's criteria for demonstrating ALARP (Section 4.8). Through the ALARP process, additional controls have been identified that would further reduce the impacts without disproportionate sacrifice.			

5.11.6 Acceptability Demonstration

Table 5-40: Acceptability demonstration – Physical presence – Interaction with marine fauna

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
Principles of ESD not compromised	Relevant Principles of ESD not compromised given proposed controls (Table 5-39).
External context – objections or claims considered	N/A – no external objections or claims received.
Internal context – VOGA HSE policy/procedures met	Yes – Risk managed in accordance with VOGA HSE policy.
Other requirements met	Yes – including: • Compliance with Part 8 of the EPBC Regulation 2000. • Compliance with separation distances defined for whale sharks within the Biodiversity Conservation Regulations 2018 (WA). • Approved Conservation Advice for *Rhincodon typus* (whale shark) (TSSC, 2015b)

	• Conservation Advice *Phaethon lepturus fulvus* white-tailed tropicbird (Christmas Island) (DoE, 2014). • Approved Conservation Advice for *Balaenoptera borealis* (Sei Whale) (TSSC, 2015c) • Approved Conservation Advice for *Balaenoptera physalus* (Fin Whale) (TSSC, 2015d) • Conservation Management Plan for the Blue Whale, 2015-2025 (DoE, 2015a) • Conservation Advice for *Orcaella heinsohni* (Australian snubfin dolphin) (DCCEEW, 2025d) • Conservation Advice for *Sousa sahulensis* (Australian humpback dolphin) (DCCEEW, 2025e) • Approved Conservation Advice for *Megaptera novaeangliae* (Humpback Whale) (TSSC, 2015e) • National Recovery Plan for the Southern Right Whale (DCCEEW, 2024l) • Recovery Plan for Marine Turtles in Australia, 2017-2027 (CoA, 2017) • Approved Conservation Advice for *Dermochelys coriacea* (Leatherback Turtle) (DEWHA, 2008a) • Wildlife Conservation Plan for Migratory Shorebirds – 2015 (DoE, 2015b) • Wildlife Conservation Plan for Seabirds (CoA, 2020).
RR < High (RRII)	Yes – Low (RRIV).
EPO(s) manage impacts to acceptable level(s)	Yes – The following relevant EPOs will be maintained: • EPO-WC-09. See Section 7 for further details.
Acceptability Summary The potential risks of unplanned interaction with marine fauna have been managed to a level that is broadly acceptable based on the demonstration of ALARP table (Table 5-39), in alignment with industry best practice, and VOGA's process for valuating acceptability (Section 4.7).	

5.12 Unplanned: Ancillary Hydrocarbons or Chemical Spills

5.12.1 Hazard Report

Table 5-41: Hazard Report - Ancillary hydrocarbons or chemical spills

HAZARD	Ancillary hydrocarbons or chemical spills
EP risk number	EP-WC-R12
Activity/cause	• MODU operations • Vessel operations.
Extent	Operational Area.
Potential impact description	Temporary decline in marine water quality. Localised toxic effects to marine fauna.

IMPACT AND RISK EVALUATION SUMMARY			
Receptor	**Impact/Consequence**	**Likelihood**	**Residual Risk**
Water quality	Incidental (1)	Unlikely (B)	Low (RRIV)
Marine fauna	Incidental (1)	Unlikely (B)	Low (RRIV)
Relevant EPO(s)	EPO-WC-10 No unplanned discharge of hydrocarbons or chemicals to the marine environment.		

5.12.2 Description of Hazard

VOGA has assessed that the accidental release of ancillary hydrocarbons and chemicals could occur as a result of the following scenarios:

- damage during handling or storage of chemicals and hydrocarbons
- decks spills from mechanical failure or inboard leaks
- bulk storage transfer failure.

The MODU and vessels will carry various fluids, such as maintenance chemicals and lubricating oils, which are stored in purpose-designed containers. Materials handling and storage damage to containers could result in a spill to the marine environment. Any spills are likely to be small in nature with the largest credible event being 205 L, which is the entire volume of the largest storage drum.

Minor spills may also occur from onboard leaks which could be generated from any of the wide range of equipment on the MODU and vessels. The leaks may come from a failure of a mechanical component, fitting or hose. Waste lube oil from mud pumps, compressors, equipment crankcases and drip pans drain into the dirty-oil holding tank. Leaks from inboard fittings and connections would be contained within bunded areas, which drain to a sump through the closed drain system. Any spill to deck will be cleaned up using absorbents. Therefore, spills into the marine environment are considered highly unlikely.

Bulk chemicals products will be transferred to/from the MODU and AHTS vessels via cranes, lifting cradles or dedicated containers. A lifting equipment incident or loss of station by the AHTS vessels may result in a release of bulk chemical products. Bulk products are transferred using double containerised packaging and stored in bunded areas. A lifting equipment incident is highly unlikely due to crane and lifting equipment certification and maintenance requirements and MODU lifting procedures. The largest credible spill event that could occur during bulk transfer is 1 m^3, which is the entire volume of an IBC.

5.12.3 Impact and Risk Evaluation

The accidental release of an accidental spill of ancillary hydrocarbons or chemicals may result in:

- A change in water quality.

The potential risks from a change in water quality caused by an accidental release of ancillary hydrocarbons or chemicals include:

- Injury/mortality to marine fauna.

The following receptors within the Operational Area may be impacted by an accidental spill of ancillary hydrocarbons or chemicals:

- Water quality
- Marine fauna.

5.12.3.1 Impact Assessment

Water Quality

Change in Water Quality

The accidental release of ancillary hydrocarbons or chemicals and hydrocarbons into the marine environment has the potential to cause a localised reduction of the water quality in the receiving marine environment. A visible oil sheen on the water surface may also occur in the event of minor hydrocarbon spills. However, the hydrocarbons that have the potential to release, such as hydraulic fluids, are medium oils of light to moderate viscosity that spread rapidly on the water surface. Therefore, hydraulic fluid would be expected to evaporate rapidly after being released due to natural weathering processes, with minimal residual components remaining given the volatile nature of the fluids. The chemical products would be subjected to rapid dispersion and dilution by the open ocean conditions. Any change in the water quality following a minor spill is anticipated to be highly localised, within the immediate vicinity of the release and result in short-term impacts which rapidly recovers.

Project chemicals will be selected in accordance with VOGA's Chemical Assessment and Selection Process, as described in Section 8.3.7. The drilling fluids to be used will be water-based hydrocarbons, classified under the OCNS as Class D or E, which are typically non-persistent. These hydrocarbons have been used widely in marine environments worldwide with no observed environmental effect.

See Section 5.13 for the impact assessment of a larger accidental hydrocarbon release of MDO.

Marine Fauna

Injury/Mortality to Marine Fauna

As a result of a change in water quality from an unplanned spill of ancillary hydrocarbons or chemicals, further impacts to receptors may occur, which include potential injury or mortality from toxicity exposure to sensitive marine fauna, such as surfacing plankton. Given that surface discharges are rapidly dispersed, and any subsea discharges (i.e., from ROVs) would be of small volumes, potential impacts would be highly localised and temporary. Therefore, the potential for toxicity to marine fauna will be rare as the temporary exposure will preclude toxic effects.

See Section 5.13 for the impact assessment of a larger accidental hydrocarbon release of MDO.

5.12.4 Risk Ranking

A minor spill of ancillary hydrocarbons or chemicals is expected to result in highly localised and temporary change to water quality within the immediate vicinity of the release. Due to the offshore oceanographic nature of the environment, the minimal volume, and low toxicity of the

spill, impacts to water quality and to marine fauna are expected to be localised and short-term. Therefore,

- The consequence ranking of '1' (Incidental) was assigned to water quality, and a likelihood of B' (Unlikely) was considered appropriate, resulting in a risk ranking of 'Low' (RRIV).
- The consequence ranking of '1' (Incidental) was assigned to marine fauna and a likelihood of 'B' (Unlikely) was considered appropriate, resulting in a risk ranking of 'Low' (RRIV).

5.12.5 ALARP Demonstration

Table 5-42: Demonstration of ALARP - Ancillary release of hydrocarbons or chemicals

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
Elimination			
No helicopter refuelling on the MODU or vessels in the Operational Area.	EPO-WC-10	No helicopter refuelling on the MODU or vessels in the Operational Area.	Records confirm no helicopter refuelling occurred.
Substitution			
None identified.	-	-	-
Prevention			
Intermediate Bulk Containers (IBCs) are transferred to/from vessel using a lifting cradle or are containerised.	EPO-WC-10	IBCs shall be transferred to/from vessels using a lifting cradle or will be containerised.	VOGA inspection or audit confirms compliance with contractor Lifting Procedure.
Cranes and lifting equipment are certified.	EPO-WC-10	Cranes and lifting equipment shall be certified.	IBCs, cranes and lifting equipment certification records.
Contractor's PMS includes lifting equipment and cranes.	EPO-WC-10	Lifting equipment and cranes shall be maintained in accordance with contractors' PMS.	VOGA inspection or audit confirms application of contractor's PMS. Contractor's servicing and maintenance records are up to date.
Chemical storage on MODU compliant with MODU contractor's storage requirements to prevent release to the marine environment.	EPO-WC-10	All hazardous chemicals shall be stored in bunded areas or below deck.	VOGA inspection or audit confirms chemicals are stored in bunded areas or below deck.
Crane driver meets contractor's competency requirements.	EPO-WC-10	Crane operators shall be certified for offshore tower crane operations.	Review of contractor's CMS.
Contractor's PMS includes hydraulic hose	EPO-WC-10	All hydraulic hoses, vessel lifting equipment and cranes shall be serviced in	VOGA inspection or audit confirms application of contractor's PMS.

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
maintenance and replacement schedule.		accordance with the relevant Contractor's PMS and replacement schedule. Contractor's servicing and maintenance records shall be validated by VOGA to ensure they are up to date.	Contractor's servicing and maintenance records are up to date.
Reduction			
None identified.	-	-	-
Mitigation			
MODU and vessels will implement a Shipboard Oil Pollution Emergency Plan (SOPEP)/SMPEP (equivalent to class) in the event of a spill.	EPO-WC-10	SOPEP/SMPEP (equivalent to class) procedures shall be available during well construction activities.	VOGA inspection or audit confirms SOPEP/SMPEP (equivalent to class) procedures are available on the MODU and vessels during well construction activities.
MODU and vessels have equipment to manage small spills on their facilities.	EPO-WC-10	Equipment meeting the requirements of the SOPEP/ SMPEP (equivalent to class) shall be available on the MODU and vessels during well construction activities.	VOGA inspection or audit confirms that the required spill kits are available during well construction activities.
Other			
None identified.	-	-	-
Considered control measures	**Assessment of option**		**Decision**
MODU to return to port each time it is required to transfer bulk products.	An alternative is for the MODU to return to port each time it is required to transfer bulk products. However, suspending well operations and moving the MODU into a port capable of handling a MODU for restocking purposes is not cost effective. The move process, along with the activities required to suspend and recommence operations, would introduce substantially more HSE risk than conducting the relatively simple, controlled AHTS vessels to MODU cargo and fuel transfers.		Not adopted.
Vessel firefighting system (portable or in built), to be consistent with IMO SOLAS Chapter 11-2, Part C, Regulation 10 amendments related to the use and storage of firefighting foams containing	Consistency with IMO SOLAS Chapter 11-2, Part C, Regulation 10 amendments, as outlined in MSC.532(107) may reduce the presence of PFOS-containing firefighting foams on vessels and the MODU. While not yet incorporated into ratified in relevant Australian domestic Legislation (Marine Order 15), implementing contemporary IMO requirements for the use		Adopted (refer to CM-10.10).

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
perfluoroctane sulfonic acid (PFOS), as outlined in MSC.532(107), including: • For vessels constructed on or after 1 January 2026, no use or storage of extinguishing media containing PFOS. • For vessels constructed before 1 January 2026, no use or storage of extinguishing media containing PFOS, beyond the date of first survey on or after 1 January 2026.	and storage of fire extinguishing media is consistent with international best practice. Benefit outweighs cost/sacrifice.		
ALARP summary: The impacts and potential risks from an accidental release of ancillary chemicals and hydrocarbons are ALARP, based on the impact assessment outcomes using VOGA Risk Matrix (as per Table 4-1), the ALARP template to determine the appropriate decision context type (Table 4-4) and VOGA's criteria for demonstrating ALARP (Section 4.8). Additional controls have been considered and adopted where benefits were considered to outweigh the cost/sacrifice.			

5.12.6 Acceptability Demonstration

Table 5-43: Acceptability demonstration – Ancillary hydrocarbons or chemical spills

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
Principles of ESD not compromised	Relevant principles of ESD not compromised given proposed controls (Table 5-42).
External context – objections or claims considered	N/A – no external objections or claims received.
Internal context – VOGA HSE policy/procedures met	Yes – Risk managed in accordance with VOGA HSE policy. Potential spills to be managed in accordance with the Wandoo Field Oil Spill Contingency Plan (OSCP) [WAN-2000-RD-0001].
Other requirements met	Yes – Notice to Mariners issued via AMSA in a timely manner. • Potential spills to be managed in accordance with SOPEP/SMPEP (equivalent to class) • National recovery plan for the red goshawk *Erythrotriorchis radiatus* (DCCEEW, 2012) • National Recovery Plan for the Australian Fairy Tern (*Sternula nereis nereis*) (DAWE, 2020a) • Approved Conservation Advice for *Sternula nereis nereis* (Fairy Tern) (TSSC, 2011)

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
	• Approved Conservation Advice for *Calidris canutus* (Red Knot) (DCCEEW, 2024b) • Approved Conservation Advice for *Calidris frruginea* (Curlew sandpiper) (DCCEEW, 2023a) • Approved Conservation Advice for *Papasula abbotti* (Abbott's booby) (TSSC, 2020a) • Conservation Advice for *Calidris acuminata* (sharp-tailed sandpiper) (DCCEEW, 2024o) • Conservation Advice for *Charadrius leschenaultii* (greater sand plover) (DCCEEW, 2023e) • Conservation Advice for *Limnodromus semipalmatus* (Asian dowitcher) (DCCEEW, 2024m) • Conservation Advice for *Numenius madagascariensis* (far eastern curlew) (DCCEEW, 2023g) • Conservation Advice *Phaethon lepturus fulvus* white-tailed tropicbird (Christmas Island) (DoE, 2014) • Conservation Advice for *Tringa nebularia* (common greenshank) (DCCEEW, 2024p) • Wildlife Conservation Plan for Migratory Shorebirds – 2015 (DoE, 2015b) • Approved Conservation Advice for *Pristis zijsron* (green sawfish) (DEWHA, 2008b) • Approved Conservation Advice for *Pristis clavata* (dwarf sawfish) (DEWHA, 2009) • Sawfish and River Sharks Multispecies Recovery Plan: (*Pristis, Pristis zijsron, Pristis clavata, Glyphis and Glyphis garricki*) (DoE, 2015c).
RR < High (RRII)	Yes – Medium (RRIII).
EPO(s) manage impacts to acceptable level(s)	Yes – The following relevant EPOs will be maintained: • EPO-WC-10 See Section 7 for further details.
Acceptability summary: The impacts and potential risks of an accidental release of ancillary hydrocarbons or chemicals have been managed to a level that is broadly acceptable based on the demonstration of ALARP (Table 5-42), alignment with industry best practice, and VOGA's process for evaluating acceptability (Section 4.7).	

5.13 Unplanned: Accidental Release – Marine Diesel Oil

5.13.1 Hazard Report

Table 5-44: Hazard Report – Accidental release - MDO

HAZARD	Accidental release of MDO
EP risk number	EP-WC-R13
Activity/cause	• Vessel operations.

Extent	Extent of the Hydrocarbon Area and EMBA.		
Potential impact description	Temporary decline in marine water quality. Injury or death of exposed marine fauna. Potential impacts where the spill reaches sensitive marine areas such as coral reefs or sandy/rocky shorelines.		
IMPACT AND RISK EVALUATION SUMMARY			
Receptor	**Impact/Consequence**	**Likelihood**	**Residual Risk**
Water quality	Moderate (3)	Unlikely (B)	Medium (RRIII)
Benthic habitats	Minor (2)	Unlikely (B)	Low (RRIV)
Coastal communities	Moderate (3)	Unlikely (B)	Medium (RRIII)
Marine fauna	Minor (2)	Unlikely (B)	Low (RRIV)
Protected and significant areas	Minor (2)	Unlikely (B)	Low (RRIV)
Other marine users	Minor (2)	Unlikely (B)	Low (RRIV)
First Nations	Moderate (3)	Unlikely (B)	Medium (RRIII)
Relevant EPO(s)	EPO-WC-10 No unplanned discharge of hydrocarbons or chemicals to the marine environment. EPO-WC-11 In the event of a loss of hydrocarbons, implement NOPSEMA-accepted spill response documents.		

5.13.2 Description of Hazard

VOGA has assessed that an accidental release of MDO could occur from the following scenarios:

- Collision of the MODU or AHTS vessels with another vessel or platform, or
- Hose or coupling failure during fuel transfer from AHTS vessel to MODU or platform.

Vessel collisions typically occur as a result of:

- Mechanical failure/loss of DP system
- Navigational error, or
- Foundering due to weather.

VOGA conducted a HAZID workshop to identify the worst-case credible spill scenarios that could occur during the activity. The maximum credible volume for the vessel collision scenario was identified by determining the volume of the largest fuel tank (AMSA, 2015). The maximum volume of the single largest fuel tank (based upon 100% capacity) aboard the support vessels is 300 m^3 (Section 2.11.2). This approach aligns with AMSA's guideline for indicative maximum credible spill volumes for other, non-oil tanker, vessel collision (AMSA 2015). VOGA has assessed the MDO scenario as the worst-case credible scenario for the activity and have used the scenario for the impact and risk evaluation below.

An unplanned release of MDO from the failure of a hose or coupling during fuel transfer from AHTS vessels to MODU or platform may result in a release of hydrocarbons into the marine

environment. Inspection criteria for transfer hoses ensure that the likelihood of hose failure is extremely unlikely. The use of dry break couplings on hoses used for critical fluid transfers, ensure that, in the unlikely event of failure, the volume of fluid lost to the environment is small. The maximum spill of ~10 m^3 has been identified, based on a maximum flow rate of 110 m^3/hr from the hose and assuming a conservative 5-minute shut-down period following equipment failure notification.

5.13.2.1 Spill Modelling

Stochastic spill modelling was undertaken to determine the trajectory of the worst-case credible accidental release of MDO (RPS, 2024). The spill modelling was carried out using a purpose-developed oil spill trajectory and fates model, SIMAP (Spill Impact Mapping Analysis Program). This model is designed to simulate the transport and weathering processes that affect the outcomes of hydrocarbon spills to the sea, accounting for the specific oil type, spill scenario, and prevailing wind and current circulation patterns (RPS, 2024).

Table 5-45 summarises the spill model inputs and parameters.

Table 5-45: Summary of the spill model settings used by RPS (2024)

Model settings	Scenario	
Scenario type	Accidental release of MDO	
Location	Kullingal (Closest to Wandoo A) within WA-14-L	
	Latitude*	Longitude*
	20° 10’ 16.32" S	116° 24’ 11.88" E
No. of spill simulations	100 per season	
Period	Summer (October to February) Winter (April to July) Transitional (March, August and September)	
Spill volume	300 m^3	
Oil type	MDO	
Release depth	0 m (surface)	
Release duration	6 hours	
Simulation length	30 days	

*Datum: WGS 1984

Hydrocarbon Characteristics

Although all vessels in the Wandoo Field use Marine Gas Oil (MGO), modelling on MDO has been used for impact assessment. MGO is lighter and less persistent in the environment, so modelling using MDO makes impact assessment more conservative.

MDO is categorised as a group II oil (light-persistent) according to the AMSA (2023) classifications. The classification is based on the specific gravity of hydrocarbons in combination with relevant Boiling Point (BP) ranges. It is important to note that some of the heavier components contained in the MDO (i.e. low volatile and persistent portions) will have a strong tendency to physically entrain into the upper water column in the presence of moderate winds (i.e. >12 knots) and breaking waves but can re-float to the surface if these energies abate. The

low viscosity (14 cP) indicates that this oil will spread quickly when released and will form a thin to low thickness film on the sea surface, increasing the rate of evaporation.

Generally, about 4% of the MDO mass should evaporate within the first 12 hours (BP < 180°C); a further 32% should evaporate within the first 24 hours (180°C < BP < 265°C); and an additional 54% should evaporate over several days (265°C < BP < 380°C). Approximately 10% (by mass) of MDO will not evaporate, though will decay slowly over time (RPS, 2024).

Table 5-46 summarises the physical characteristics for MDO.

Table 5-46: Hydrocarbon characteristics for MDO (RPS, 2024)

Hydrocarbon characteristics		MDO	
Hydrocarbon type		Marine Diesel Oil (MDO)	
API		27.4	
Density (kg/m^3)		890.0 (at 15°C)	
Dynamic viscosity (cP)		14.0 (at 25°C)	
Pour point (°C)		-9.0	
Hydrocarbon property category		Group II	
Hydrocarbon property classification		Light persistent	
Hydrocarbon component		Boiling point (°C)	% of total
Volatiles	Non- persistent	<180	4.0
Semi-volatiles		180–265	32.0
Low volatiles		265–380	54.0
Residual	Persistent	>380	10.0

Weathering and Fate

A series of weathering tests were conducted (RPS, 2024) to illustrate the potential behaviour following a 50 m^3 instantaneous surface release of MDO when exposed to:

- 5 knot (2.6 m/s) constant wind speed, 27°C water temperature and currents
- Variable wind speeds (1–12 m/s or 2–23 knots), 27°C water temperature and currents.

The first case is indicative of the potential weathering rates under calm conditions that would not generate entrainment, while the second case would be more representative of the moderate winds experienced over the region.

The mass balance forecast for the constant wind case (Figure 5-2) shows that 36.1% of the MDO is predicted to evaporate within 24 hours. The remaining MDO on the water surface will weather at a slower rate and be subject to more gradual decay through biological and photochemical processes (RPS, 2024).

For the variable wind speed case (Figure 5-3), after 24 hours, 80.5% of the mass of MDO will have entrained, with an additional 15.0% expected to have evaporated. Hence, only a <1% of floating oil remains on the water surface. The low volatile and residual compounds are anticipated to entrain beneath the surface under conditions generating wind waves (winds approximately >6 m/s). While the MDO is entrained, it is forecast to decay at a higher rate of 3%

per day or 21% after 7 days, attributed to biological and photochemical degradation. This contrasts with a rate of 0.14% per day and a total of ~1% after 7 days for the constant-wind case. Given the proportion of entrained MDO and its tendency to remain mixed in the water column, the remaining hydrocarbons are expected to undergo decay over several weeks (RPS, 2024).

Figure 5-2: Mass balance plot for an instantaneous 50 m^3 surface release of MDO subjected to a constant 5 knot (2.6 m/s) wind, currents and 27°C water temperature (RPS, 2024)

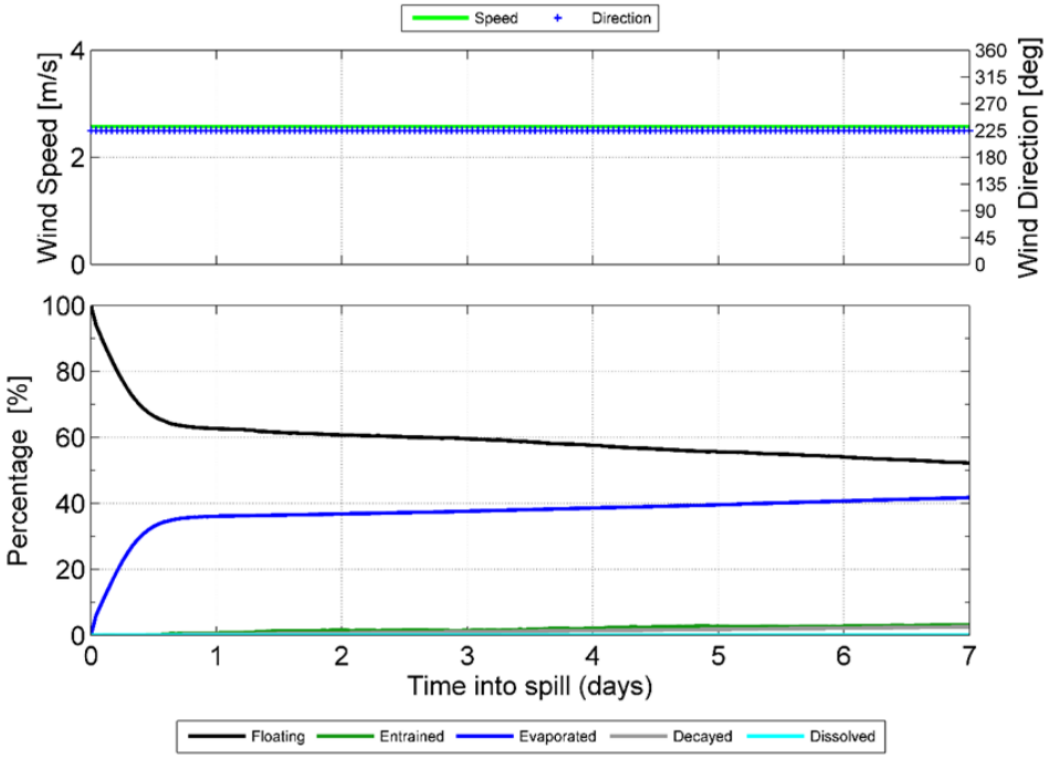
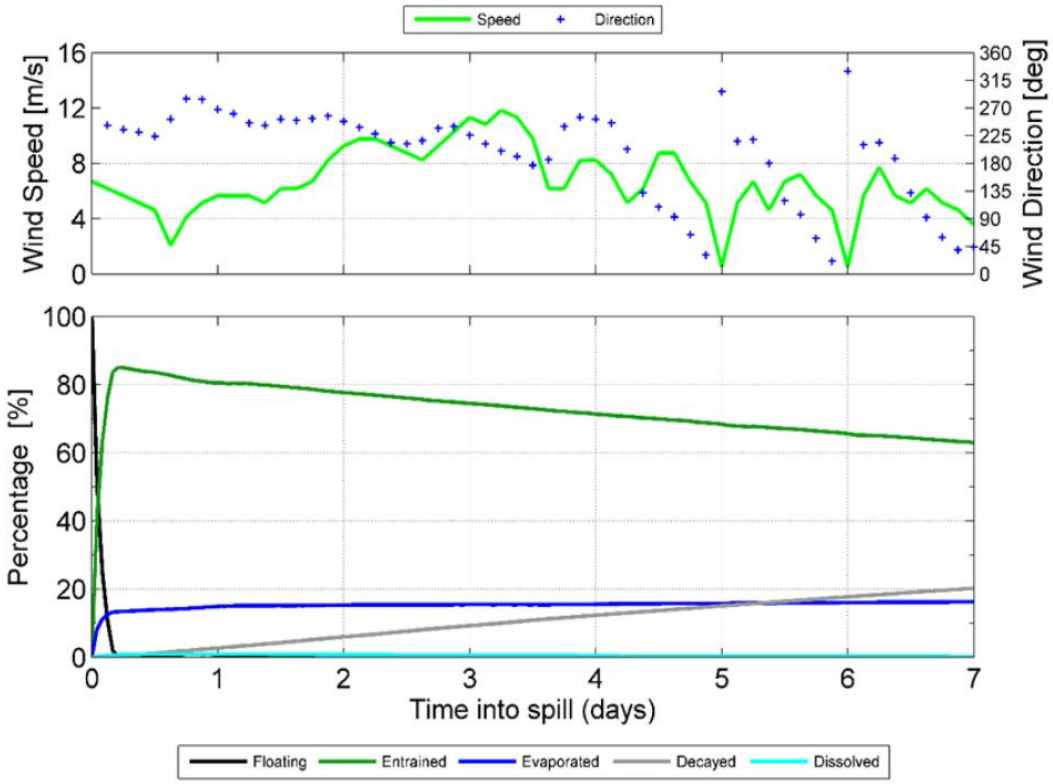


Figure 5-3: Mass balance plot for an instantaneous 50 m^3 surface release of MDO subjected to variable wind speeds of 2–23 knots (1–12 m/s), currents and 27°C water temperature (RPS, 2024)



Exposure Thresholds

The SIMAP model tracks oil concentrations to very low levels, therefore it is important to define meaningful threshold concentrations for the recording of contact by oil components and determining the probability of exposure at a location (calculated from the number of replicate simulations in which this contact occurred). The thresholds for surface, shoreline, and in-water oil (dissolved and entrained) used in this EP are consistent with those outlined by NOPSEMA's most recent recommendations (NOPSEMA, 2025) for spill modelling input selection and consequence evaluation. They are summarised in Table 5-47.

Table 5-47: Hydrocarbon threshold levels (NOPSEMA, 2019)

Exposure level	Threshold	Description
Surface oil		
Low	1 g/m^2	Approximates range of socio-economic effects and establishes planning area for scientific monitoring.
Moderate	10 g/m^2	Approximates lower limit for harmful exposures to birds and marine mammals.
High	50 g/m^2	Approximates surface oil slick and informs response planning.
Shoreline oil accumulation		
Low	10 g/m^2	Predicts potential for some socio-economic impact.
Moderate	100 g/m^2	Loading predicts area likely to require cleanup effort.
High	1,000 g/m^2	Loading predicts area likely to require intensive cleanup effort.

Exposure level	Threshold	Description
Dissolved in-water oil		
Low	10 ppb	Establishes planning area for scientific monitoring based on potential for exceedance of water quality triggers.
Moderate	50 ppb	Approximates potential toxic effects, particularly sublethal effects to sensitive species.
High	400 ppb	Approximates toxic effects including lethal effects to sensitive species.
Entrained in-water oil		
Low	10 ppb	Establishes planning area for scientific monitoring based on potential for exceedance of water quality triggers.
High	100 ppb	As appropriate given oil characteristics for informing risk evaluation.

NOPSEMA (2025) recognises these values as conservative exposure criteria for defining the EMBA, and as suitable for determining ecological, social, economic and cultural features potentially exposed to hydrocarbons in an offshore spill scenario.

The thresholds adopted in this EP align with the stochastic modelling undertaken by RPS (2024). Therefore, the EMBA represents the maximum credible spatial extent of potential hydrocarbon exposure and function as an intentional “outer-bound” value, applying the utmost rigour to ensure that no potentially affected receptor is excluded from appropriate assessment.

The risk evaluation (Section 5.13.3) is based on the exposure thresholds relevant to each receptor as defined in each evaluation subsection. Whilst recent updates to recommended exposure values have been published (NOPSEMA, 2025), the risk evaluations resulting from hydrocarbon exposure within the EP are still deemed valid due to the conservative nature of the original thresholds (NOPSEMA, 2019) and the relevance of the toxic effects of the updated exposure pathways.

Floating and shoreline exposure thresholds continue to align with earlier recommendations (NOPSEMA, 2019) and represent the level where response techniques are most effective.

It is noted that NOPSEMA (2025) provides refined dissolved and entrained thresholds using Polycyclic Aromatic Hydrocarbons (PAH) for dissolved and Total Hydrocarbons (THC) for entrained exposures. PAH represents the toxic, soluble fraction of hydrocarbons with French-McCay (2025) stating that ecotoxicological risk in the water column is overwhelmingly governed by dissolved phase hydrocarbons which are bioavailable to aquatic organisms. While THC measures the total concentration of suspended oil droplets in the water column, the soluble toxic fraction of oil droplets represents a low proportion of the THC. In addition, THC is largely not bioavailable and is rapidly depleted during weathering (Negri et al., 2025).

Whilst “high” exposure values (high in this context relates to oil concentration and does not necessarily correlate to the degree of consequences/impacts on the environment [NOPSEMA 2025a]) for dissolved pathways have been revised to 300 ppb (NOPSEMA, 2025), this EP has used the original conservative value of 400 ppb (NOPSEMA, 2019). RPS (2024) found there was no exposure predicted to any receptor at concentrations above 400 ppb. Dissolved moderate exposure levels have remained unchanged.

Negri et al. (2025) states that the entrained exposure thresholds derived by French-McCay (2025) and NOPSEMA (2025) could be considered conservative when applied in oil spill risk assessments as:

- Exposures in offshore and open coastal waters are short (typically hours) but the thresholds were derived from longer exposure tests (typically ~48 h). Since uptake of the toxic hydrocarbon fraction is time dependent, the proposed thresholds overestimate risk.
- Entrained oil droplets become depleted of their soluble fraction by weathering, no longer being a source of dissolved hydrocarbons. There is currently little evidence of harm from entrained droplets, especially highly weathered droplets, and they could be considered not acutely toxic.

French-McCay (2025) also states that entrained oil concentrations must be significantly higher than dissolved phase thresholds (on the order of 1,000–3,000 ppb THC), to approach levels associated with biological effects, reinforcing that values used in the earlier NOPSEMA (2019) guidance are an extremely conservative screening figure rather than a toxicological threshold. Negri et al. (2025) notes that legacy NOPSEMA entrained oil thresholds (10 ppb) are at least 100-fold more conservative than effect-based THC thresholds and therefore remain valid.

Therefore, as dissolved phase hydrocarbons are known to drive ecotoxicological effects and low entrained oil thresholds remain highly conservative, the impact assessment undertaken in this EP (with respect to a loss of MDO event) remains appropriately precautionary. In addition, the assessment meets the requirements of Regulation 21(5) and Regulation 21(6) of the OPGGS(E)R.

Modelling Results

Table 5-48 provides a summary of the results from the stochastic modelling report (RPS, 2024; Appendix B) for an accidental release of MDO.

Table 5-48: Summary of the hydrocarbon modelling results for an accidental release of MDO (RPS, 2024)

Exposure values	Summary of worst-case predicted exposure
Surface exposure	
Low (1 g/m^2)	The maximum distance for floating surface hydrocarbon exposure at or above this threshold from the source was predicted to be 31 km. No exposure was predicted to any receptor(s) at this threshold.
Moderate (10 g/m^2)	The maximum distance for floating surface hydrocarbon exposure at or above this threshold from the source was predicted to be 18 km. No exposure was predicted to any receptor(s) at this threshold.
High (50 g/m^2)	The maximum distance for floating surface hydrocarbon exposure at or above this threshold from the source was predicted to be 6 km. No exposure was predicted to any receptor(s) at this threshold.
Shoreline exposure	
Low (10 g/m^2)	The highest probability of hydrocarbon accumulation on any shoreline at or above this threshold was 24%. The minimum time to shore at or above the low threshold was 91 hours (Barrow Island, Lowendal Islands, and Montebello Islands).

Exposure values	Summary of worst-case predicted exposure
	The maximum total volume of hydrocarbon ashore for a single spill trajectory was 23.2 m^3. The maximum length of hydrocarbon ashore above the low threshold was 14 km (across Barrow Island and Montebello Islands).
Moderate (100 g/m^2)	The highest probability of hydrocarbon accumulation on any shoreline at or above the moderate threshold was 6%. The minimum time to shore at or above the moderate threshold was 110 hours (Montebello Islands). The maximum total volume of hydrocarbon ashore for a single spill trajectory was 20.3 m^3. The maximum length of hydrocarbon ashore above the moderate threshold was 6 km (Montebello Islands).
High (500 g/m^2)	No exposure at this threshold was predicted.
In-water exposure – dissolved	
Low (10 ppb)	The maximum distance for dissolved hydrocarbons at or above this threshold from the source was predicted to be 169 km. The minimum time to dissolved hydrocarbon exposure at any given receptor(s) was 27 hours (Montebello AMP). The probability of intersect with the Montebello AMP is 7%.
Moderate (50 ppb)	The maximum distance for dissolved hydrocarbons at or above this threshold from the source was predicted to be 58 km. The minimum time to dissolved hydrocarbon exposure at any given receptor(s) was 51 hours (Montebello AMP). The probability of intersect with the Montebello AMP is 1%.
High (400 ppb)	No exposure at this threshold was predicted.
In-water exposure – entrained	
Low (10 ppb)	The maximum distance for entrained hydrocarbons at or above this threshold from the source was predicted to be 494 km. The minimum time to dissolved hydrocarbon exposure at any given receptor(s) was 22 hours (Montebello AMP). The probability of intersect with the Montebello AMP is 54%.
High (100 ppb)	The maximum distance for entrained hydrocarbons at or above this threshold from the source was predicted to be 237 km. The minimum time to dissolved hydrocarbon exposure at any given receptor(s) was 23 hours (Montebello AMP). The probability of intersect with the Montebello AMP is 24%.

5.13.3 Impact and Risk Evaluation

The accidental release of MDO may result in:

- Change in water quality.

The potential risks from a change in water quality caused by the accidental release of MDO include:

- Disruption to marine fauna
- Injury/mortality to marine fauna
- Change in ecosystem dynamics and conservation values
- Changes to the functions, interests, or activities of other marine users
- Change in submerged cultural heritage.

The following receptors within the Operational Area may be impacted:

- Plankton.
- Benthic habitats.
- Coastal communities.
- Marine fauna, such as:
  - plankton
  - benthic invertebrates
  - seabirds and shorebirds
  - fish, sharks and rays
  - marine mammals
  - marine reptiles
  - Protected and significant areas.
- Social and economic environment, such as:
  - recreational fishing, fisheries and aquaculture
  - other marine users.
- First Nations values.

5.13.3.1 Risk Assessment

Water Quality

The accidental release of MDO into the marine environment as a result of vessel collision will result in a localised reduction in the water quality within the receiving marine environment. A visible oil sheen on the water surface may also occur in the event of a hydrocarbon spill.

As discussed in Section 3.3.2 the water quality within the Hydrocarbon Area and EMBA is expected to be representative of the typically pristine water found offshore WA. Water quality surveys undertaken in 2003 identified no detectable hydrocarbons; with BTEX, PAH and Total Petroleum Hydrocarbon (TPH) below the laboratory LOR (Wenziker et al., 2006). Surveys undertaken in 2025 (Worley, 2025) identified slightly higher concentrations of total recoverable hydrocarbons compared to previous surveys. Except for the two of the closet sites to the Wandoo B platform, all of the receiving water samples were below the LOR. These concentrations were shown to rapidly dilute in receiving waters with increasing distance from the facility (Worley, 2025).

The hydrocarbon modelling predicted that the maximum distance for floating surface hydrocarbon exposure at any threshold would extend out to 31 km, and 169 km and 494 km for dissolved and entrained hydrocarbons, respectively (RPS, 2024). Therefore, changes to water quality will occur outside of the Operational Area in the unlikely event of a vessel collision.

Due to the highly dispersive environment typical of the offshore area, and the rapid weathering expected for the light non-persistent hydrocarbon, with approximately 15–36.1% evaporated within 24 hours depending on the conditions (Section 5.13.2.1), any change to water quality is expected to be short term and will recover to pre-spill state as the hydrocarbon weathers. The consequence ranking of '3' (Moderate) was assigned to a change in water quality due to the extent of the spill outside the Operational Area.

Benthic Habitats

Benthic habitats have been assessed based on the hydrocarbon exposure at the thresholds that have the potential to cause ecological impacts (Section 3.1.1). Therefore, the extent of the hydrocarbon exposure has been defined by using moderate hydrocarbon exposure thresholds for surface, shoreline and in-water (dissolved) and the high hydrocarbon exposure for in-water (entrained) hydrocarbons. This is defined as the Hydrocarbon Area.

Table 5-49 evaluates the potential impact that hydrocarbon spills for this activity may have on benthic habitat receptors found within the Hydrocarbon Area.

Table 5-49: Risk assessment for an accidental release of MDO – benthic habitats

Benthic habitats
Exposure evaluation:
The seafloor in the Hydrocarbon Area is comprised of fine silt/sand substrates with low densities of benthic communities. Coral, seagrass, or macroalgae communities are found in nearshore areas of islands within the Hydrocarbon Area (i.e. Montebello Islands) (Section 3.4.1). The seafloor of the deeper waters of the NWS is primarily a soft sediment habitat that can support scavengers, benthic filter feeders and epifauna communities (Brewer et al., 2007). Any areas of exposed hard substrate are likely to be colonised by deep water filter-feeding organisms, such as hydroids and sponges. Biologically significant coral reef formations are found within the Hydrocarbon Area, such as hard corals found at the Montebello Islands. Seagrasses are found through shallower areas of the Hydrocarbon Area. Montebello Island contain sparse seagrass habitat (McMahon et al., 2017), however, the closest known key areas of seagrass habitat to the Operational Area are the Exmouth Gulf and Ningaloo Reef area, outside of the Hydrocarbon Area. Macroalgae is widespread within shallower hard substrate areas within the Hydrocarbon Area. Due to the widespread nature of macroalgal habitat within the Hydrocarbon Area, there are no identified areas of significant environmental value. The maximum distance for dissolved hydrocarbons at moderate exposure (50 ppb) from the source was predicted to be 58 km and 237 km for entrained hydrocarbons at the high threshold (100 ppb). Release of MDO will be at the surface, with the majority of hydrocarbon and weathered products remaining at or near the surface.
Predicted impact:
In-water
Corals Exposure of entrained hydrocarbons to shallow subtidal corals has the potential to result in lethal or sublethal toxic effects, resulting in acute impacts or death at moderate to high exposure thresholds (Shigenaka, 2011). Physical effects from entrained hydrocarbons have the potential to coat contacted coral reefs. The phenomena of smothering of exposed coral surfaces or polyps by hydrocarbon spills has only been reported where very large oil spill quantities, or very sticky oil slicks, have been encountered. Contact with corals may lead to reduced growth rates, tissue decomposition, impaired fertilisation and larval settlement, and poor resistance and mortality of sections of reef (NOAA, 2010). In-water exposure (dissolved or entrained) at relevant exposure thresholds is typically only predicted to occur within the upper 0–10 m of the water column, therefore, corals found in water depths below 10 m are not anticipated to be impacted by in-water hydrocarbon exposure. Seagrass In-water exposure (dissolved or entrained) is only predicted to occur within the upper 0–10 m of the water column; therefore, benthic habitat, such as seagrass, within intertidal or shallow nearshore waters has the potential to be exposed.

Benthic habitats

Intertidal and subtidal seagrass ecosystems can be damaged in a number of ways. Direct mortality from smothering can occur, however, sub-lethal impacts from smothering are more likely to occur than lethal impacts because much of seagrasses' biomass is underground in their rhizomes and less likely to be exposed to hydrocarbons (Zieman et al., 1984). However, exposure also can take place via uptake of hydrocarbons through plant membranes and seeds may be affected by contact with oil contained within sediments (NRDA, 2012). Petroleum fractions absorbed into the seagrass tissues, can also lower the organism's tolerance to other stressors and reduce growth rates (Zieman et al., 1984) (Runcie et al., 2010).

Studies of offshore benthic seaweeds in the northwest Gulf of Mexico prior to and after the Macondo well blowout at Sackett and Ewing banks (in water depths of 55–75 m) found a dramatic die-off of seaweeds after the spill (60 species pre-spill compared with 10 species post-spill) (Felder et al., 2014). However, these banks are exposed to influences from Mississippi River discharges that vary year to year, so definitive links to the oil spill were not possible. Petroleum residues were observed on Ewing Bank and it is possible that this may have caused localised mortalities.

Entrained hydrocarbon within the water column can affect light qualities and the ability of macrophytes, including seagrasses and macroalgae, to photosynthesise.

Macroalgae

In-water exposure (entrained and dissolved) is only predicted to occur within the upper 0-10 m of the water column; therefore, benthic habitats, such as macroalgae, within intertidal or shallow nearshore waters has the potential to be exposed.

Intertidal macroalgal beds are more prone to hydrocarbon spills than subtidal beds because, although the mucous coating of the macroalgae prevents oil adherence, oil that is trapped in the upper canopy may be more persistent, which impacts site-attached species. Additionally, when oil sticks to dry fronds on the shore, they can become heavy and break as a result of wave action (IPIECA, 2002).

The physical effects of smothering, fouling and asphyxiation has been documented from oil contamination in marine plants (Blumer, 1971; Cintron et al., 1981). In macroalgae, oil can act as a physical barrier for the diffusion of CO_2 across cell walls (O'Brien and Dixon, 1976). The effect of hydrocarbons, however, is largely dependent on the degree of direct exposure and how much of the hydrocarbon adheres to algae, which will vary depending on the oils physical state and relative 'stickiness'. The morphological features of macroalgae, such as the presence of a mucilage layer or the presence of fine 'hairs' will influence the amount of hydrocarbon that will adhere to the algae.

A review of field studies conducted after spill events by Connell et al. (1981) indicated a high degree of variability in the level of impact, but in all instances, the algae appeared to be able to recover rapidly even from very heavy oiling. The rapid recovery of algae was attributed to the fact that for most algae, new growth is produced near the base of the plant while the distal parts (which would be exposed to the oil contamination) are continually lost. Other studies have indicated that kelp beds oiled by crude oil had a 90% recovery within 3–4 years of impact, however, full recovery to pre-spill diversity may not occur for long periods after the spill (French-McCay, 2004).

The toxicity of hydrocarbons to macroalgae varies for the different macroalgal life stages, with water-soluble hydrocarbons more toxic (Van Overbeek and Blondeau, 1954; Kauss et al., 1973; cited in O'Brien and Dixon, 1976). Toxic effect concentrations for hydrocarbons and algae have varied greatly among species and studies, ranging 0.002–10,000 ppm (Lewis and Pryor, 2013). The sensitivity of gametes, larva and zygote stages, however, have all proven more responsive to oil exposure than adult growth stages (Thursby and Steele, 2004; Lewis and Pryor, 2013).

Benthic habitats
Entrained hydrocarbon within the water column can also affect light qualities and the ability of macrophytes, including seagrasses and macroalgae, to photosynthesise.
Predicted impact summary:
Given the restricted range of exposure for benthic communities; restricted to shallow nearshore and intertidal waters only, outside of the main exposure area predicted within 0–10 m of the sea surface, the rapid weathering of the hydrocarbon expected following a spill release (Section 5.13.2.1), and the predicted low concentrations of hydrocarbons expected to reach these waters, any impacts to benthic habitats and associated communities is anticipated to be localised and short-term, with rapid recovery expected.

Coastal Communities

Coastal communities have been assessed based on the hydrocarbon exposure based on the thresholds that have the potential to cause ecological impacts (Section 3.1.1). Therefore, the extent of the hydrocarbon exposure has been defined by using moderate hydrocarbon exposure thresholds for surface, shoreline and in-water (dissolved) and the high hydrocarbon exposure for in-water (entrained) hydrocarbons. This is defined as the Hydrocarbon Area.

Table 5-50 evaluates the potential impact that hydrocarbon spills for this activity may have on coastal receptors found within the Hydrocarbon Area.

Table 5-50: Risk assessment for an accidental release of MDO - coastal communities

Mangroves		
Exposure evaluation:		
A few isolated regionally significant mangrove communities are found along the coastline of the Montebello islands within the Hydrocarbon Area (Section 3.4.2.1). The spill modelling identified that the highest probability of hydrocarbon accumulation on any shoreline at or above the moderate threshold (100 g/m^2) was 6% at Montebello Islands. The minimum time to shore was 4.5 days (110 hours) and the maximum total volume of hydrocarbon ashore for a single spill trajectory was 20.3 m^3 (Section 5.13.2.1). Montebello Island also recorded the maximum length of hydrocarbon ashore above the moderate threshold (6 km). No contact at threshold was predicted for Barrow Island where mangroves communities are also present (Figure 3-5).		
Predicted impact:		
Surface	**In-water**	**Shoreline**
Mangroves are considered to have a high sensitivity to hydrocarbon exposure. Mangroves can be killed by heavy or viscous oil, or emulsification, that covers the trees' breathing pores thereby asphyxiating the subsurface roots, which depend on the pores for oxygen. The severity of exposure for mangroves depends on the amount and type of oil entering the intertidal zone (Duke, 2016). While heavy oils (high specific gravity) are particularly proficient at coating and smothering small plants and aerial root systems, lighter oils with low specific gravity, such as MDO and condensates, are more toxic to mangroves (Hensel et al., 2014; Connolly et al., 2020). The potential for toxicity effects from hydrocarbons may be reduced by weathering processes that should serve to lower the content of soluble aromatic components before contact occurs.	The change in toxicity levels within the marine environment can penetrate the root surfaces, via the respiratory capabilities of the roots, poisoning the plant. Mangroves can also take up in-water hydrocarbons from contact with leaves, roots or sediments, and it is suspected that this uptake causes defoliation through leaf damage and tree death (Wardrop et al., 1987). Acute impacts to mangroves can be observed within weeks of exposure, whereas chronic impacts may day months to years to detect.	Oil can enter mangrove forests when the tide is high and be deposited on the aerial roots and sediment surface as the tide recedes. This process commonly leads to a patchy distribution of the oil and its effects because different places within the forests are at different tidal heights (IPIECA 1993; NOAA, 2014). The physical smothering of aerial roots by standard hydrocarbons can block the trees' breathing pores used for oxygen intake and result in the asphyxiation of sub-surface roots (International Petroleum Industry Environmental Conservation Association (IPIECA, 1993).
Predicted impact summary:		
Isolated coastal mangroves communities that may be exposed to hydrocarbons within the Hydrocarbon Area are located at Montebello Island.		

Given the non-persistent nature of MDO, as a light non-persistent hydrocarbon, the distance to the nearest mangrove communities from the release location (~92 km southwest of the Operational Area), and the anticipated weathering that the hydrocarbon will undergo prior to impact with the minimum time to shoreline accumulation predicted after 4.5 days, any impact to mangroves are anticipated to be highly localised, with hydrocarbons highly weathered prior to exposure. Despite impacts predicted to be limited, given their sensitivity to hydrocarbons, the potential consequence to mangroves is assessed conservatively based on the potential for localised, medium-term impacts, to species or habitats of recognized conservation value or to local ecosystem function.
Saltmarsh
Exposure evaluation:
Saltmarsh habitat is common within tidal flats or wetland habitats within the wider EMBA area (Section 3.4.2.2), with very few isolated saltmarsh habitats present just outside of the Hydrocarbon Area, along the coastline of Barrow Island (Figure 3-5). The probability of shoreline contact for Barrow Island was only predicted at the low threshold (up to a maximum of 15% probability), with no contact predicted for moderate thresholds.
Predicted impact:
Shoreline
Saltmarsh is considered to have a high sensitivity to hydrocarbon exposure. Hydrocarbon (in liquid form) will readily adhere to the marshes, coating the stems from tidal height to sediment surface. However, heavy oil coating is unlikely due to the highly volatile nature of the condensate hydrocarbon. Oil can enter saltmarsh systems during the tidal cycles if the estuary/inlet is open to the ocean. Saltmarsh vegetation offers a large surface area for oil absorption and tends to trap oil. Similar to mangroves, this can lead to a patchy distribution of the oil and its effects, because different places within the inlets are at different tidal heights. Evidence from case histories and experiments shows that the damage resulting from oiling, and recovery times of oiled marsh vegetation, are highly variable. In areas of light to moderate oiling where oil is mainly on perennial vegetation with little penetration of sediment, the shoots of the plants may be killed but recovery can be relatively rapid, occurring the following growing season or earlier. However, when oil penetrates the soil and the initial mortality of the vegetation is extensive, recovery to reference conditions may take 3–4 years (Hester and Mendelssohn, 2000).
Predicted impact summary:
Given that the modelling did not predict shoreline accumulation to occur at Barrow Island at the moderate hydrocarbon threshold, impacts to saltmarshes following the accidental release of MDO are expected to be negligible and have not been assessed further.
Rocky and sandy beaches
Exposure evaluation:
Intertidal beaches and mudflats, sandy beaches, rocky beaches and rocky shorelines and reef platforms occur in island shores within the wider EMBA region (Section 3.4.2). Rocky substrate shorelines are the dominant shoreline found within the Hydrocarbon Area at Montebello Islands (Figure 3-6). The highest probability of hydrocarbon accumulation on any shoreline within the Hydrocarbon Area was predicted to occur at the Montebello Islands (6%) within 110 hours. The maximum length of hydrocarbon ashore above the moderate threshold was 6 km at the Montebello Islands.

As discussed within Section 3.4.2, sandy beaches are a dominant coastal shoreline on the Montebello Islands, with patchy of rocky beaches and rocky limestone outcrops.

Predicted impact:

Shoreline

Sandy Shoreline

Hydrocarbons can become concentrated as it strands ashore. However, most of the oil is concentrated along the high tide mark while the lower/upper parts are often untouched (IPIECA, 1995). Sandy beaches provide habitat for a diverse assemblage (although not always abundant) of infauna (including nematodes, copepods and polychaetes); and macroinvertebrates (e.g. crustaceans).

A sandy beach may also allow oil to percolate through the sand, thus increasing its ability to hold more oil ashore over tidal cycles and various wave actions than an equivalent area of water; hence oil can increase in thickness onshore over time. The viscosity of the oil will influence how likely it will percolate into the sand. For example, lower viscosity oils, such as condensates and marine diesels, are more like to permeate into sand areas compared to heavier, highly viscous oils.

The influence of tidal action and wave washing are expected to lead to increase levels of weathering of any hydrocarbons in the intertidal area and reduce the level of smothering or toxicity effects to exposed fauna along shorelines.

Rocky Shoreline

Hydrocarbons can become concentrated as it strands ashore. However, most of the oil is concentrated along the high tide mark while the lower/upper parts are often untouched (IPIECA, 1995).

The sensitivity of a rocky shoreline to oiling is dependent on a number of factors including its topography and composition, position, exposure to oceanic waves and currents etc. Exposed rocky shorelines have been shown to be less sensitive than sheltered rocky shorelines.

Rocky shorelines provide habitats for invertebrates (e.g. sea anemones, sponges, sea-squirts, molluscs), and can also be utilised by pinniped (haul-out sites) and bird species; noting that foraging and breeding/nesting typically occurs above high tide line.

The impact of oil on any organism depends on the toxicity, viscosity and amount of oil, on the sensitivity of the organism and the length of time it is in contact with the oil. Even where the immediate damage to rocky shores from oil spills has been considerable, it is unusual for this to result in long-term damage and the communities have often recovered within 2 or 3 years (IPIECA, 1995).

Predicted impact summary:

Given the low probability of the worst-case shoreline exposure (6%) (Section 5.13.2.1), the weathering expected for the light non-persistent hydrocarbon, and the tidal action and constant wave washing on this type of shoreline which would contribute to further weathering of any hydrocarbons in the intertidal shoreline area, any impacts to shorelines from exposure to MDO are anticipated to be localised and short term.

Marine Fauna

Marine fauna has been assessed based on the hydrocarbon exposure based on the thresholds that have the potential to cause ecological impacts (Section 3.1.1). Therefore, the extent of the hydrocarbon exposure has been defined by using moderate hydrocarbon exposure thresholds for surface, shoreline and in-water (dissolved) and the high hydrocarbon exposure for in-water (entrained) hydrocarbons. This is defined as the Hydrocarbon Area.

Table 5-51 evaluates the potential impact that hydrocarbon spills for this activity may have on marine fauna receptors found within the Hydrocarbon Area.

Table 5-51: Risk assessment for an accidental release of MDO – marine fauna

Plankton	
Exposure evaluation:	
Plankton has been identified as a receptor that may be present within the Hydrocarbon Area. Plankton are drifting organisms which includes eggs and larvae of fish and other animals. As discussed in Section 3.4.3.1, plankton are found in nearshore and open waters beneath the surface and form the basis for the marine food web, including whales and whale sharks which migrate through the Hydrocarbon Area. These organisms migrate vertically through the water column to feed in surface waters at night and, when doing so, may be exposed to surface hydrocarbons and, to a greater extent, hydrocarbons dissolved or entrained in the water column (NRDA, 2012). Plankton species are known to be sensitive to the toxic effects of oil at low concentrations and large numbers of planktonic organisms may be affected in the event of a spill event (ITOPF, 2014b). Plankton risk exposure through ingestion, inhalation and dermal contact.	
Predicted impact:	
Surface	**In-water**
Phytoplankton (photosynthetic organisms) can accumulate rapidly, due to their small size and high surface area to volume ratio, therefore populations are typically not sensitive to the impacts of oil (Hook et al., 2016). However, if phytoplankton are exposed to hydrocarbons at the sea surface, their ability to photosynthesise via smothering may be directly affected and would have implications for the next trophic level in the food chain (e.g. small fish) (Hook et al., 2016). In addition, the presence of surface hydrocarbons may result in a reduction of light penetrating the water column, which may again affect the rate of photosynthesis which may inhibit growth, particularly in instances where there is prolonged presence of surface hydrocarbons over an extensive area (Volkman et al., 1994).	Plankton species are sensitive to toxic effects of oil at low concentrations and large numbers of planktonic organisms may be affected (ITOPF, 2014a). Some zooplankton also have high lipid content, which facilitates hydrocarbon uptake and bioaccumulation (Hook et al., 2016). Water column organisms that come into contact with oil risk exposure through ingestion, inhalation and dermal contact (NRDA, 2012), can cause immediate mortality or declines in egg production, hatching rates and a decline in swimming speeds (Hook et al., 2016). However, any direct effects on plankton communities from spilled hydrocarbons is expected to be localised and temporary, as reproduction by survivors or migration from unaffected areas is likely to rapidly replenish any losses (Volkman et al., 1994). Furthermore, the proximity of nutrient-rich seasonal upwelling events which occur within the vicinity will further assist recovery rates. Once background water quality conditions have re-established, the plankton community may take weeks to months to recover due to short generation times (ITOPF, 2014a), allowing for seasonal influences on the assemblage characteristics.
Predicted impact summary:	
Plankton populations are numerous and widespread and expected to rapidly recover following an accidental release of MDO. Due to the highly dispersive environment of the offshore environment, and the rapid weathering expected for the MDO, 15–36.1% within 24 hours, depending on weather conditions (Section 5.13.2.1), any impacts to plankton from exposure to MDO are anticipated to be localised and short term, with rapid recovery expected.	

Benthic invertebrates
Exposure evaluation:
Benthic invertebrates may present within the Hydrocarbon Area (Section 3.4.3.2) and may be exposed to hydrocarbons following an accidental release of MDO. The benthic invertebrates within the Hydrocarbon Area are anticipated to be comparable to similar sites within the NWS region, of low abundance but highly diverse species, comprised largely of polychaete worms, crustaceans, echinoderms, and molluscs. (Rainer, 1991; SKM, 1996).
Predicted impact:
In-water
Entrained and dissolved hydrocarbons can have negative impacts on marine invertebrates and associated larval forms. Impacts to some adult species (e.g. crustaceans) is reduced as a result of the presence of an exoskeleton, while others with no exoskeleton and larval forms may be more prone to impacts. Exposure to microscopic oil droplets may also impact aquatic biota either mechanically (especially filter feeders) or act as a conduit for exposure to semi-soluble hydrocarbons (that might be taken up by the gills or digestive tract) (French-McCay, 2009). Toxicity is primarily attributed to water soluble PAHs, specifically the substituted naphthalene (C2 and C3) as the higher C-ring compounds become insoluble and are not bioavailable. Localised impacts to larval stages may occur which could impact population recruitment. If invertebrates are contaminated by hydrocarbons, tissue taint can remain for several months, although taint may eventually be lost. For example, it has been demonstrated that it took 2-5 months for lobsters to lose their taint when exposed to a light hydrocarbon (NOAA, 2002). Other possible impacts from the presence of dispersed and non-dispersed oil include effects of oxygen depletion in bottom waters due to bacterial metabolism of oil (and/or dispersants), and light deprivation under surface oil (NRDA, 2012). Water quality in benthic habitats exposed to entrained hydrocarbons would be expected to return to background conditions within weeks to months of contact. Several studies have indicated that rapid recovery rates may occur even in cases of heavy oiling (National Academies Press, 2003).
Predicted impact summary:
Due to the characteristics of the light, non-persistent hydrocarbons, surface release and associated water depths, coating of benthic assemblages and prolonged exposure to hydrocarbons is considered highly unlikely following a release of MDO. Furthermore, the highly dispersive environment of the offshore environment, and the rapid weathering expected for the MDO, with approximately 15-36.1% within 24 hours (Section 5.13.2.1), any impacts to benthic invertebrates from exposure to MDO are anticipated to be localised and short-term, with rapidly recovery expected.
Seabirds and shorebirds
Exposure evaluation:
Several threatened, migratory and/or listed marine species in the region have the potential to be rafting, resting, diving and feeding within the area predicted to be contacted by surface hydrocarbons; diving or foraging within in-water hydrocarbons; and foraging or nesting within shoreline exposure (Section 3.4.3.3). Four breeding BIAs for seabirds intersect the Hydrocarbon Area, including: • Fairy tern (EPBC Act listing as vulnerable (for the subspecies)) (Figure 3-7) • Lesser crested tern (EPBC Act: not listed) (Figure 3-8)

- Roseate tern (EPBC Act listing as migratory) (Figure 3-10)
- Wedge-tailed shearwater (EPBC Act listing as migratory) (Figure 3-11).

An additional breeding BIA for the lesser frigatebird (EPBC Act listing as migratory) is identified to only overlap the wider EMBA (Figure 3-9).

Breeding for the following species occurs:

- Fairy tern: on offshore islands in the Gascoyne and Pilbara with breeding occurring late July to September.
- Lesser crested tern: around offshore islands in Gascoyne, Pilbara and Kimberley in March to June.
- Roseate tern: around offshore islands in Gascoyne, Pilbara and Kimberly during mid-March to July.
- Wedge-tailed shearwater: in inshore islands around Montebello Islands between mid-August to April (Pilbara).

Please refer to Section 3.4.3.3 for further details.

The modelling predicted that the maximum distance for floating surface hydrocarbon exposure at the moderate threshold (10 g/m^2) from the source was predicted to be 18 km. The minimum time to shore at or above the low threshold as 110 hours (Montebello Island), with the minimum time to dissolved hydrocarbon exposure and entrained hydrocarbon exposure at any given receptor(s) was 51 hours and 23 hours, respectively, both at Montebello AMP.

Predicted impact:

Surface	In-water	Shoreline
Seabirds rafting, resting, diving or feeding within surface hydrocarbons may be exposed to surface hydrocarbons. Species most at risk include those that readily rest on the sea surface (such as shearwaters) and surface plunging species, such as terns. Direct contact with hydrocarbons is likely to foul plumage, which may result in hypothermia due to a reduction in the ability of the bird to thermo-regulate and impaired waterproofing (ITOPF, 2014a). Increased heat loss as a result of a loss of water-proofing results in an increased metabolism of food reserves in the body, which is not countered by a corresponding increase in food intake and may lead to emaciation (DSEWPC, 2011). A bird suffering from cold, exhaustion and a loss of buoyancy (resulting from fouling of plumage) may dehydrate, drown or starve (ITOPF, 2014a; DSEWPC, 2011; AMSA, 2013). Physical smothering may also result in impaired navigation and flight performance (Hook et al., 2016).	Seabirds could be impacted by in-water hydrocarbon exposure directly (i.e. whilst diving through the water column foraging) or indirectly (i.e. by consuming hydrocarbon-tainted fish, resulting in sub-lethal or toxic impacts). As seabirds are top order predators, any impact on other marine life (e.g. pelagic fish) from hydrocarbon exposure may disrupt and limit food supply both for the maintenance of adults and the provisioning of young.	Shorebird species foraging for invertebrates in intertidal feeding habitats, such as exposed sand and mud flats at lower tides, will be at potential risk of both direct impacts through contamination of individual birds (ingestion or soiling of feathers) and indirect impacts through the contamination of foraging areas that may result in a reduction in available prey items (Clarke, 2010). Any direct impact of oil on terrestrial habitats has the potential to contaminate seabirds present at the breeding sites (Clarke, 2010). Bird eggs may also be damaged if an oiled adult sits on the nest. Fresh crude was shown to be more toxic than weathered crude, which had a medial lethal dose of 21.3 mg/egg (Clarke, 2010). Studies of contamination of duck eggs by small quantities of crude oil, mimicking the effect of oil transfer by parent birds, have been shown to result in mortality of developing embryos (French-McCay, 2009).

Toxic effects on birds, including internal tissue irritation in their lungs and stomachs, may also result where the oil is ingested as the bird attempts to preen its feathers (ITOPF, 2014a). The preening process may also spread oil over otherwise clean areas of the body (ITOPF, 2014a). Whether this toxicity ultimately results in mortality will depend on the amount consumed and other factors relating to the health and sensitivity of the bird. In a review of 45 marine hydrocarbon spills, there was no correlation between the numbers of bird deaths and the volume of the spill (Burger, 1993).	Impacts are not anticipated at a population level due to the localised and temporary exposure of moderate levels of surface hydrocarbons.	Shoreline accumulation will be concentrated along the high tide mark while the lower/upper parts are often untouched (IPIECA, 1995). As breeding activities of shorebirds and seabirds generally occurs above the high tide mark, exposure to hydrocarbons is considered unlikely to occur. However, oiled bird species may track oil into their nests, which may then have subsequent impacts on any eggs present.
Predicted impact summary:		
Acute or chronic toxicity impacts to seabirds is possible, however, the presence of birds within areas exposed to moderate threshold levels is expected to be limited, due to the transitory nature of foraging individuals, and given the absence of offshore aggregation areas in the area. Breeding BIAs for several bird species intersect the hydrocarbon area at several offshore Pilbara islands within the Hydrocarbon Area, such as the Montebello Islands which is a known nesting site for wedge-tailed shearwaters. However, shoreline accumulation is unlikely to impact breeding areas given that shoreline accumulation will be concentrated along the high tide mark, and breeding activities tend to occur above the high tide mark. Furthermore, exposure of any rafting or foraging seabirds to MDO is also expected to be limited due to the predicted rapid weathering and entrainment of MDO (Section 5.13.2.1), limiting the area of surface exposure, for seabirds to come into contact with. There is the potential for indirect impacts to seabirds in offshore waters as a result of hydrocarbon exposure, such as reduced prey abundance. Consequently, the potential impacts and risks to seabirds from a release of MDO following vessel collision event are expected to result in localised, short-term impacts to species of recognised conservation value, however not affecting population or ecosystem functioning.		
Fish, sharks and rays		
Exposure evaluation:		
Various fish and shark species were identified by the EPBC Protected Matters Search for the wider EMBA area (Section 3.4.3.4). A foraging BIA for the whale shark was identified within the Hydrocarbon Area (Section 3.4.4; Figure 3-12). Any pelagic fish and shark species that occupy the water column, specifically within the upper 0–10 m of the water column the surface layers of the water column (where in-water hydrocarbon exposure is predicted), are more susceptible to entrained and dissolved hydrocarbons. Since fish, sharks, and rays do not generally break the sea surface, the impacts of surface hydrocarbons to fish and shark species are unlikely to occur. Near the sea surface, fish are able to detect and avoid contact with surface slicks meaning fish mortalities rarely occur in the event of a hydrocarbon spill in open waters (Volkman et al., 1994). There may be demersal species may be susceptible to oiled sediments, particularly species that are site restricted. The maximum distance for dissolved hydrocarbons at moderate exposure (50 ppb) from the source was predicted to be 58 km. The maximum distance for entrained hydrocarbons at this exposure from the source was predicted to be 237 km.		

Predicted impact:
In-water
A Foraging BIA for the whale shark intersects the Hydrocarbon Area (Figure 3-12). Whale sharks are suction filter feeders and are known to congregate in Ningaloo during March to July to feed on the seasonal concentrations of krill and other zooplankton which occur during coral spawning events. The whale shark is generally encountered close to or at the surface spending 40% of their time in the upper 15 m of the water column and 50% of time at depths equal to or less than 30 m. Hydrocarbon spills may pose a threat to whale sharks (DoE, 2024). Fish, sharks, and rays can be exposed to in-water hydrocarbon droplets through a variety of pathways, including: • Direct dermal contact (e.g. whilst swimming through oil or waters with elevated dissolved hydrocarbon concentrations and other constituents, with diffusion across their gills (Hook et al., 2016)) • Ingestion (e.g. directly or via food base, fish that have recently ingested contaminated prey may themselves be a source of contamination for their predators) • Inhalation (e.g. elevated dissolved contaminant concentrations in water passing over the gills). Exposure to hydrocarbons entrained or dissolved in the water column can be toxic to fish. Studies have shown a range of impacts including changes in abundance, decreased size, inhibited swimming ability, changes to oxygen consumption and respiration, changes to reproduction, immune system responses, DNA damage, visible skin and organ lesions and increased parasitism. However, many fish species can metabolise toxic hydrocarbons, which reduces the risk of bioaccumulation of contaminants in the food web (and human exposure to contaminants through the consumption of seafood) (NRDA, 2012). Sub-lethal impacts in adult fish include altered heart and respiratory rates, gill hyperplasia, enlarged liver, reduced growth, fin erosion, impaired endocrine systems, behavioural modifications and alterations in feeding, migration, reproduction, swimming, schooling, and burrowing behaviour (Kennish, 1998). Fish exposed to aromatics in the water have been shown to have a reduced aerobic capacity, which may be a result of the process to eliminate ingested oil from the fish (Cohen et al., 2005). However, generally these species are highly mobile species, and their patterns of movements makes it unlikely for them to remain within the area long enough to be exposed to hydrocarbons to experience sub-lethal impacts (ITOPF, 2014a). The exception would be in areas such as reefs and other seabed features where species are less likely to move away into open waters (i.e. site-attached species). Pelagic species fish are able to detect and avoid contact with surface slicks meaning fish mortalities rarely occur in the event of a hydrocarbon spill in open waters (Volkman et al., 1994). As a result, wide-ranging pelagic fish of the open ocean generally are not highly susceptible to impacts from surface hydrocarbons. Adult fish kills reported after oil spills, occur mainly to shallow water, near-shore benthic species (Volkman et al., 1994). Fish are most vulnerable to hydrocarbons during their embryonic, larval and juvenile life stages. Embryos and larvae may sustain mechanical damage to feeding and breathing apparatus from contact with oil droplets, and genetic damage, physical deformities and altered developmental timing from hydrocarbons in water (Fodrie and Heck, 2011). There may also be chronic effects to fish exposed to hydrocarbons in early life stages, such as disruption of predator avoidance behaviour (Hjermann et al., 2007). Eggs and larvae exposed to weathered concentrations of hydrocarbons in water for a prolonged period of time have been shown to be immunosuppressed (Hjermann et al., 2007). Hydrocarbons in the water column can physically affect fish with high site fidelity. When exposed for an extended duration (weeks to months) coating of gills may lead to lethal and sub-lethal effects from reduced oxygen exchange and coating of body surfaces may lead to increased incidence of irritation and infection. Fish may also ingest hydrocarbon droplets or contaminated food, leading to reduced growth (Volkman et al., 1994).

Recovery of fish assemblages depends on the intensity and duration of an unplanned discharge, the composition of the discharge and whether dispersants are used, as each of these factors influences the level of exposure to potential toxicants. Recovery would also depend on the life cycle attributes of fishes. Species that are abundant, short-lived and highly fecund may recover rapidly. Whereas, less abundant, long-lived species may take longer to recover. The range of movement of fishes will also influence recovery. The nature of the receiving environment would influence the level of impact on fishes.

Predicted impact summary:

As identified in Section 3.4.3.4, a number of fish and shark species, including the whale shark may occur in the Hydrocarbon Area.

Tuna Australia provided the following feedback in regard to the significance of the SBT spawning area and potential for interactions with the EMBA. However, given there is no fishing effort for SBT recorded in the Operational Area, Hydrocarbon Area or EMBA (Table 3-8), and the SBT spawning area is located 628 km northwest of the Hydrocarbon Area, with SBT known to migrate southwards down the Western Australian coastline to cooler temperate waters, an accidental release of MDO is not expected to impact population functioning.

Given the wide distribution of fish species in the region, the widespread foraging area typical of whale sharks (Figure 3-12), and the nature of potential impacts, impacts to an entire population or population's overall viability is not anticipated. Fish and shark populations are widespread throughout the Hydrocarbon Area, therefore, an accidental release of MDO is not expected to affect population functioning.

As such, due to the highly dispersive environment of the offshore environment, and the rapid weathering expected for the MDO, 15–36.1% within 24 hours depending on the conditions (Section 5.13.2.1), any impacts to fish and shark populations from exposure to MDO are anticipated to be localised and short term, and not expected to affect species populations or general ecosystem functioning.

Marine mammals

Exposure evaluation:

Several marine mammal species were identified by the EPBC Protected Matters Search for the Hydrocarbon Area (Section 3.4.3.5), including:

- Sei whale (EPBC Act listing as vulnerable)
- Blue whale (EPBC Act Listing as endangered)
- Fin whale (EPBC Act listing as vulnerable)
- Southern right whale (EPBC Act listing as endangered).

A Migration BIA for the humpback whale intersects the Hydrocarbon Area (Figure 3-15). The humpback whale migration corridor extends along the WA coast out to ~50–100 km from the coast. Migration occurs between May and late November.

The maximum distance for dissolved hydrocarbons at moderate exposure (50 ppb) and entrained hydrocarbons at the high exposure (100 ppb) was predicted to be 58 km and 237 km (Section 5.13.2.1).

Predicted impact:	
Surface	**In-water**
Marine mammals may come into contact with surface hydrocarbons when surfacing. However, direct surface oil contact with hydrocarbons is considered to have little deleterious effect on marine mammals, and any effect is likely to be minor and temporary. This may be due to the skin's effectiveness as a barrier to toxicity (Geraci and St Aubin, 1988). Cetaceans have mostly smooth skins with limited areas of pelage (hair covered skin) or rough surfaces such as barnacled skin. Oil tends to adhere to rough surfaces, hair or calluses of animals, so contact with hydrocarbons by cetaceans is expected to cause only minor hydrocarbon adherence. The inhalation of oil droplets, vapours and fumes is a distinct possibility if cetaceans' surface in slicks to breathe. Exposure to hydrocarbons in this way could damage mucous membranes, damage airways, or even cause death. Given the mobility of whales, only a small proportion of a population is anticipated to surface in the affected areas, resulting in short-term and localised consequences, with no long-term population viability effects. The susceptibility to ingested hydrocarbon has also been shown to vary with feeding habits. Baleen whales (such as blue, southern right and humpback whales) are not particularly susceptible to ingestion of oil in the water column but are susceptible to oil at the sea surface as they feed by skimming the surface. Oil may stick to the baleen while they 'filter feed' near slicks. Sticky, tar-like residues are particularly likely to foul the baleen plates. Habitat modification is identified as threats for the blue whale, southern right whale, and dugong. Activities within this EP will not be inconsistent with the conservation and management priorities outlined in these Conservation Management Plans.	Cetaceans exposed to entrained hydrocarbons can result in physical coating as well as ingestion (Geraci and St Aubin, 1988). Such impacts are associated with 'fresh' hydrocarbon, the risk of impact declines rapidly as the hydrocarbon weathers. The susceptibility to ingested hydrocarbon has also been shown to vary with feeding habits. Specifically, toothed whales and dolphins may be susceptible to ingestion of dissolved and entrained oil as they gulp feed at depth. There are reports of declines in the health of individual pods of killer whales (a toothed whale species), though not the population as a whole, in Prince William Sound after the Exxon Valdez vessel spill (heavy oil) (Hook et al., 2016). Geraci (1988) found little evidence of cetacean mortality from hydrocarbon spills; however, some behaviour disturbance (including avoidance of the area) may occur. Pelagic species have been said to avoid hydrocarbon, mainly because of its noxious odours, but this has not been proven. In the event avoidance was to occur, the potential for physiological impacts from contact with hydrocarbons would be reduced, however, active avoidance of an area may disrupt behaviours such as migration, or displace individuals from important habitat, such as foraging, resting or breeding. Although, the strong attraction to specific areas for breeding or feeding (e.g. the breeding, calving and nursing grounds within the North-West Cape region for the dugong) may override any tendency for marine mammals to avoid the noxious presence of hydrocarbons. Dolphin populations from Barataria Bay, Louisiana, USA, which were exposed to prolonged and continuous oiling from the Macondo oil spill in 2010, had higher incidences of lung and kidney disease than those in the other urbanised environments (Hook et al., 2016). The spill may have also contributed to unusually high perinatal mortality in bottlenose dolphins (Hook et al., 2016).
Predicted impact summary:	
As highly mobile species, in general it is very unlikely that cetaceans will be constantly exposed to concentrations of hydrocarbons in the water column for continuous durations (e.g. >96 hours) that would lead to chronic toxicity effects (NRC, 2001). The Hydrocarbon Area overlaps only a small proportion of the Migration BIA corridor which extends along the WA coastline (Figure 3-15).	

The modelling predicted that the hydrocarbons would weather rapidly if released to the environment (Section 5.13.2.1). Relatively fresh hydrocarbons (closer to the release location) are considered to have the greatest potential for impact. Therefore, the potential for environmental impacts would be limited to a relatively short period following the release and would need to coincide with a migration or aggregation event to result in exposure to a large number of individuals. Regardless, such exposure is not anticipated to result in long-term population viability effects.

A proportion of the migrating population of whales could be affected for a single migration event, which could result in temporary and localised consequences. Given the wide distribution of marine mammal species in the region and the nature of the potential impacts, impact to an entire population or the population's overall viability is not anticipated. Any impacts to marine mammals from exposure to MDO are anticipated to be localised and short term.

Marine reptiles

Exposure evaluation:

Marine reptiles may be exposed to hydrocarbon when transiting through the in-water hydrocarbons, surfacing to breathe within the surface slick, or nesting on oiled shorelines.

BIAs and habitat critical for the survival of marine turtles for four species of marine turtles intersect the Hydrocarbon Area (Section 3.4.4 and Section 3.4.3.6)., including:

- Flatback turtle (EPBC Act listed as vulnerable) Inter-nesting buffer, Mating and Foraging BIAs (Figure 3-18).
- Green turtle (EPBC Act listed as vulnerable) Inter-nesting buffer, Nesting, Mating and Foraging BIAs (Figure 3-19).
- Hawksbill turtle (EPBC Act listed as vulnerable) Inter-nesting buffer, Nesting, Mating and Foraging BIAs (Figure 3-20).
- Loggerhead turtles (EPBC Act listed as endangered) Inter-nesting buffer BIAs (Figure 3-21).

Turtle nesting and inter-nesting areas and rookeries for sea turtles in the Hydrocarbon Area including the Montebello islands.

The Recovery Plan for Marine Turtles in Australia: 2017–2027 (CoA, 2017) highlights acute chemical discharge as one of several threats to marine turtles.

EPBC Act listed sea snakes that are known to occur within the Hydrocarbon Area include:

- Short-nosed sea snake (EPBC Act listed as critically endangered)
- Leaf-scaled sea snake (EPBC Act listed as critically endangered)

There may be sea snakes present in the area predicted to be exposed to surface hydrocarbon within the Hydrocarbon Area; however, their presence is expected to be of a transitory nature only, and most species are not pelagic and therefore unlikely to be in high numbers within the Hydrocarbon Area.

Probability of shoreline contact for Montebello Islands reaching the moderate threshold is low and only expected during the transitional season (1%) and winter (6%). The maximum distance from the release location to floating oil exposure in moderate thresholds will be 18 km south during winter (Section 5.13.2.1).

Predicted impact:		
Surface	**In-water**	**Shoreline**
Marine Turtles Marine turtles make large, rapid inhalations before they dive which may result in inhalation of toxic vapours from hydrocarbons in surface waters (Milton and Lutz, 2003). This can lead to respiratory irritation, inflammation, emphysema or pneumonia (NOAA, 2010). Ingested oil may cause harm to the internal organs of turtles. Visibly oiled turtles showed higher indicators of PAH in tissues, stomach content, colon content and faeces compared to non-visibly oiled turtles (Ylitalo et al., 2017). This exposure pathway may cause an increase in the production of white blood cells and may affect the functioning of their salt gland (Lutcavage et al., 1995). Oiling has the potential to cause mortality depending on the size of the individual and the extent of oiling (DWH Natural Resource Damage Assessment Trustees, 2016). Sea Snakes Foraging behaviours which occur near the water surface may increase the vulnerability of individuals to hydrocarbon exposure (Yaghmour et al., 2022).	Some individual marine reptiles may come into contact with in-water hydrocarbon exposure while swimming or feeding. Marine Turtles Entrained hydrocarbons can adhere to body surfaces (Gagnon and Rawson, 2010) and can enter cavities such as the eyes, nostrils, or mouth. This can cause an elevated susceptibility to infections (NOAA, 2010). Records of oiled wildlife during spills rarely include marine turtles, even from areas where they are known to be relatively abundant (Short, 2011). An exception to this was the large number of marine turtles collected (613 dead and 536 live) during the Macondo spill in the Gulf of Mexico, although many of these animals did not show any sign of oil exposure (NOAA, 2021). Of the dead turtles found, 3.4% were visibly oiled and 85% of the live turtles found were oiled (NOAA, 2021). Of the captured animals, 88% were later released, suggesting that oiling does not inevitably lead to mortality. Sea Snakes Sea snakes have the potential to be directly and indirectly impacted by hydrocarbons. In general, there is limited literature on the impacts of oil spills to sea snakes. A recent study by Yaghmour et al. (2022) is the only study to record lethal impacts to sea snakes following a crude oil spill in the Gulf of Oman. The study identified varying levels of smothering, including over their eyes,	Marine turtles may experience oiling impacts on nesting beaches when they come ashore to lay their eggs. There is potential for contamination of turtle eggs to result in toxic impacts, such as developmental defects in hatchlings, to developing embryos. Studies on freshwater snapping turtles showed uptake of PAHs from contaminated nest sediments, but no impacts on hatching success or juvenile health following exposure of eggs to dispersed weathered light crude (Rowe et al., 2009). However, other studies found evidence that exposure of freshwater turtle embryos to PAHs results in deformities (Bell et al., 2006; Van Meter et al., 2006). Turtle hatchlings may be more vulnerable to smothering as they emerge from the nests and make their way over the intertidal area to the open water (AMSA, 2015). Hatchlings that contact oil residues while crossing a beach can exhibit a range of effects including impaired movement and bodily functions (Shigenaka, 2011). Hatchlings sticky with oily residues may also have more difficulty crawling and swimming, rendering them more vulnerable to predation. Marine pollution is listed as a threat to marine turtle in the Recovery Plan for Marine Turtles in Australia, 2017–2027, particularly in relation to shoreline oiling of nesting beaches.

	snout, mouth, and oesophagus. Due to the hydrocarbon characteristics of the MDO, as a light, non-persistent hydrocarbon, the impact would differ to spills of heavy crude as studied in Yaghmour et al. (2022). Light oils, which are less likely to cause severe external oiling, may expose marine fauna to volatile PAHs during at the surface during inhalations. However, the number of sea snakes that may be exposed is expected to be low due to the offshore location, the lack of BIAs, the extent of exposure above the threshold, and the anticipated rapid weathering of the light-non persistent hydrocarbon. Therefore, potential impact would be limited to individuals, with population impacts not anticipated.	

Predicted impact summary:

The number of marine turtles that may be exposed to hydrocarbons during a spill event is expected to be low due to the localised and temporary presence of surface hydrocarbons due to the rapid weathering anticipated (Section 5.13.2.1).

Shoreline accumulation at nesting beaches within the Hydrocarbon Area was predicted as a very low probability (Section 5.13.2.1). The activity will be conducted in a manner which is not inconsistent with the relevant management actions. Therefore, the potential impact would likely be limited to individual transiting marine turtles, with population impacts not anticipated.

Due to the low number of sea snakes anticipated within the Hydrocarbon Area, impacts to sea snakes at both an individual or population level is not anticipated.

Due to the highly dispersive environment of the offshore environment, and the rapid weathering expected for the MDO, with approximately 15–36.1% evaporated within 24 hours depending on the conditions (Section 5.13.2.1).

Therefore, any impacts to marine reptiles from exposure to MDO are anticipated to be localised and short term, with no impacts to population or ecosystem functioning.

Protected and Significant Areas

Protected and significant areas which have only ecological values have been assessed based on the hydrocarbon exposure based on the thresholds that have the potential to cause ecological impacts (Section 3.1.1). Therefore, the extent of the hydrocarbon exposure has been defined by using moderate hydrocarbon exposure thresholds for surface, shoreline and in-water (dissolved) and the high hydrocarbon exposure for in-water (entrained) hydrocarbons. This is defined as the Hydrocarbon Area.

Protected and significant areas which also include socio-economic value have been assessed based on the most conservative hydrocarbon exposure thresholds, such as those that have the potential to cause socio-economic effects (Section 3.1.1). Therefore, the extent of the hydrocarbon exposure has been defined by using low hydrocarbon exposure thresholds for surface, shoreline and in-water (dissolved and entrained) hydrocarbons. This is defined as the EMBA.

Table 5-52 evaluates the potential impact that hydrocarbon spills for this activity may have on protected and significant areas receptors found within either the Hydrocarbon Area or EMBA.

Table 5-52: Risk assessment for an accidental release of MDO - protected and significant areas

Marine parks
Exposure evaluation:
There are 4 Australian Marine Parks (AMPs) intersecting the EMBA (Section 3.6.5): • Dampier AMP • Gascoyne AMP • Montebello AMP • Ningaloo AMP. There are 3 State Marine Protected Areas (MPAs) intersects the EMBA (Section 3.6.6): • Montebello Islands and Barrow Islands (jointly managed) • Ningaloo and Muiron Islands Management area (jointly managed) • Pilbara Islands Nature Reserve (Great Sandy Island). The major conservation values for the above AMPs and State MPAs have been identified in Section 3.6.5 and Section 3.6.6, respectively. In general the AMPs and State MPAs include examples of unique ecosystems with characteristics that support diverse benthic or intertidal habitats, and often a range of species listed under the EPBC Act, often including BIAs, such as breeding and foraging habitat for seabirds, inter-nesting, foraging, mating, and nesting habitat for marine turtles, breeding, calving, foraging and nursing habitat for dugongs, foraging habitats, and migratory pathway for certain marine species, such as humpback whales, pygmy blue whales, whale sharks. Mangrove thickens are found on some of the Montebello Islands and Barrow Islands which provide essential habitat for coastal species and shorebirds (Section 3.4.2.1). Sea Country which overlaps these AMPs and MPAs is valued for Indigenous cultural identity, health and wellbeing. A few AMPs contains known shipwrecks listed under the *Underwater Cultural Heritage Act 2018*. Tourism, commercial fishing, mining, port activities, and recreation are important activities in some of the AMPs and MPAs (DNP, 2018). These sites and associated receptors may be impacted by exposure to surface, in-water, and shoreline hydrocarbons. No AMPs or State MPAs were exposed to floating hydrocarbon, at, or above, the low threshold for any season (RPS, 2024). The minimum time to dissolved hydrocarbon exposure at the low 10 ppb threshold at any given receptor(s) was 27 hours at the Montebello AMP, which also recorded the highest probability of intersect with at 7%. The highest probability of entrained hydrocarbons at the low 10 ppb threshold was predicted at Montebello AMP at 54% with contact predicted in 22 hours (RPS, 2024). The in-water probability results for the other AMPs to be intersected by these threshold levels included: • 54% entrained and 7% for dissolved at Montebello AMP.

- 13% entrained and no contact for dissolved at Gascoyne AMP.
- 1% entrained and no contact for dissolved at Dampier AMP.

The in-water probability results for the other MPs to be intersected by these threshold levels included:

- 37% entrained and 1% for dissolved at Montebello Islands and Barrow Islands MP.
- 13% entrained and no contact for dissolved at Ningaloo and Murion Islands MP.
- 7% entrained and no contact for dissolved at Pilbara Islands Nature Reserve MP.

The spill modelling identified that the highest probability of hydrocarbon accumulation on a specific shoreline at or above the low threshold (10 g/m^2) was 24% at the Barrow Island and Montebello Islands shoreline cell, which is a considered a part of the Pilbara Islands Nature Reserve MP. The shoreline cells for Barrow Island, Lowendal Islands and Montebello Islands recorded the minimum time to shore at 3.8 days (91 hours) and the maximum total volume of hydrocarbon ashore for a single spill trajectory was 23.2 m^3. Barrow Island and Montebello Islands recorded the maximum length of hydrocarbon ashore above the low threshold (14 km) (Section 5.13.2.1). The shoreline results for the other AMPs and MPs intersected by this threshold level included:

- 15% at the shoreline component of the Montebello Islands and Barrow Islands State MPA
- 4% at the shoreline component of the Ningaloo and Muiron Islands MPA.

Predicted impact:

In-water	**Shoreline**
The values identified within these Protected Areas (AMPs and MPAs) have the potential to be exposed to entrained hydrocarbons at, or above, the relevant threshold in the event of a spill incident. Marine fauna, such as seabirds, fish and whales, found within the water column are values of the AMPs and State MPAs that may be impacted when exposed to entrained or dissolved hydrocarbons. Exposure of in-water hydrocarbons will be greatest within the upper 10 m of the water column and areas close to the spill source, as such, values on the seafloor (i.e., benthic habitats, shipwrecks and cultural artefacts) are unlikely to be impacted. In-water exposure at relevant thresholds may impact culturally important significant values, such as Sea Country, and result in adverse impacts to activities such as fishing. Impact to these receptors from direct or indirect exposure to in-water hydrocarbons may cause a subsequent negative impact to the value of Protected Areas.	Hydrocarbons can become concentrated as it strands ashore. However, most of the oil is concentrated along the high tide mark while the lower/upper parts are often untouched (IPIECA, 1995). Coastal habitats, such as mangroves, and communities which utilise these habitats, such as shorelines and marine turtles, are important and sensitive values of the MPAs. These values can be directly impacted, or have important activities disrupted, if exposed to shoreline hydrocarbons at the relevant thresholds. Visual surface hydrocarbons, or exclusion zones, have the potential to impact and/or displace certain values, such as tourism, recreational activities, and heritage values. Impact to these receptors from direct or indirect exposure to shoreline hydrocarbons may cause a subsequent negative impact to the value of the State MPAs. The spill scenario is expected to be localised and short term, with the MDO rapidly weathering within the first few days. Therefore, recovery of the Protected Areas is expected relatively rapidly.

The spill scenario is expected to be localised and short term, with the MDO rapidly weathering within the first few days. Therefore, recovery of the Protected Areas is expected relatively rapidly.
The predicted impact to the individual values of the Protected Areas have been assessed separately. Refer to:
• Benthic habitats
• Marine fauna:
  ○ Plankton
  ○ Benthic invertebrates
  ○ Seabirds and shorebirds
  ○ Fish, sharks and rays
  ○ Marine reptiles
  ○ Marine mammals.
• Social and economic environment:
  ○ Tourism and recreational fishing
  ○ Other marine users (underwater heritage)
• First Nations.
	The predicted impact to the individual values of the Protected Areas have been assessed separately. Refer to:
	• Coastal communities
	• Marine fauna:
	  ○ Seabirds and shorebirds
	  ○ Marine reptiles
	• Social and economic environment:
	  ○ Tourism and recreational activities.

Predicted impact summary:	
Given the highly dispersive environment of the offshore environment, the weathering expected for the light non-persistent hydrocarbon (Section 5.13.2.1), and the tidal action and constant wave washing on this type of shoreline which would contribute to further weathering of any hydrocarbons in the intertidal shoreline area, the potential consequences to AMPs and State Marine Parks from exposure to hydrocarbons following a vessel collision has the potential for localised and short-term impacts on habitats and species of recognised conservation value or to local ecosystem functioning.	
World Heritage Properties / National Heritage Places	
Exposure evaluation:	
There are 2 World Heritage Properties which intersect the EMBA (Section 3.6.1): • Murujuga Cultural Landscape • Ningaloo Coast. There are 2 National Heritage Places which intersect the EMBA (Section 3.6.3): • Dampier Archipelago (including Burrup Peninsula)	

- Ningaloo Coast.

The Murujuga Cultural Landscape World Heritage Property is a landscape of ancient rocks encompassing the Burrup Peninsula, Dampier Archipelago Islands and nearby marine areas. The site is renowned for its dense concentration of petroglyphs, which provide a record of traditional use by First Nations people over thousands of years. The property holds cultural and spiritual significance to Traditional Custodians (Section 3.6.1). This site was only recently inscribed to the World Heritage List in 2025, as such there is no spatially defined data for the site.

The Ningaloo Coast has been listed as both a National Heritage place and a World Heritage Property (Sections 3.6.1 and 3.6.3). The major conservation values for the Ningaloo Coast include unique marine ecosystems of high productivity and diversity, such as the Ningaloo Reef, one of the longest fringing reefs in the world, coral spawning events, seasonal nutrient upwelling, mangroves, estuaries, and diverse marine fauna, such as: whales, whale sharks, marine turtles, fish, molluscs, crustaceans. The area is also a site of unique terrestrial features, such as groundwater streams, cave networks, and endemic terrestrial species.

The major conservation value of the Dampier Archipelago National Heritage Property is related to the cultural significance of the area; being home to the Ngarda-Ngarlie people for tens of thousands of years. The Burrup Peninsula is an area of rich and diverse rock art, with up to a million potential sites. Other culturally significant values, such as the marine area, middens, fish traps, rock shelters, ceremonial sites, and artefacts are prevalent throughout the area.

The worst-case results identified for the World Heritage Properties / National Heritage Places to be intersected by in-water (entrained) at the low threshold (RPS, 2024), include:

- 14% probability of entrained hydrocarbons at the Ningaloo Coast World Heritage Properties within 204 hours (8.5 days).
- 13% probability of entrained hydrocarbons at the Ningaloo Coast National Heritage Place within 226 hours (9.4 days).
- 1% probability of entrained hydrocarbons at the Dampier Archipelago (at the WAOMPRMA shoreline segment: WA11.East (317) - West Intercourse Island - Dolphin Island N point (G)) within 162 hours (6.75 days).
- 1% probability of entrained hydrocarbons at the Murujuga Cultural Landscape (at the WAOMPRMA shoreline segment: WA11.East (317) - West Intercourse Island - Dolphin Island N point (G)) within 162 hours (6.75 days).

No World Heritage Properties or National Heritage Places were exposed to floating hydrocarbons, in-water (dissolved), or shoreline hydrocarbons, at, or above, the low threshold for any season (Table 5-48; RPS, 2024; Table 3-10); therefore, no impacts to the surface, shoreline or terrestrial values are predicted to occur.

Importantly, no impact to any of the culturally significant terrestrial sites are expected, such as the ancient rocks encompassing the Burrup Peninsula, Dampier Archipelago Islands and nearby marine areas and the associated petroglyphs, middens, or artefacts.

The predicted impact to the individual values of the World Heritage Properties / National Heritage Places have been assessed separately. Refer to:

- Benthic habitats
- Marine fauna:
  - Plankton
  - Benthic invertebrates
  - Seabirds and shorebirds

- Fish, sharks and rays
- Marine reptiles
- Marine mammals.

- Social and economic environment:
  - Tourism and recreational fishing
- First Nations.

Predicted impact:

In-water

Values identified within these World Heritage Properties and National Heritage Places have the potential to be exposed to only entrained hydrocarbons at, or above, the relevant threshold in the event of a spill incident.

Coral reefs, such as the Ningaloo fringing reef found along the Ningaloo Coast and the reefs found off the Dampier Archipelago, and their associated values may be impacted by entrained hydrocarbons. These reefs support both tropical and temperate marine fauna, including a high diversity of coral, fish, mollusc, crustacean, algae, sponge, and echinoderm species and features annual gatherings of whale sharks and sea turtles in high numbers. Many species that occur in the region are rare or threatened. The Ningaloo reef specifically features a high diversity of habitats including lagoons, reef, open ocean, estuaries, mangroves, and the continental shelf. As such, marine fauna, that are values of these World Heritage Properties/National Heritage Places may be impacted when exposed to entrained hydrocarbons. Impact to these receptors from direct or indirect exposure to in-water hydrocarbons may cause a subsequent negative impact to the value of the Heritage Places/ Properties.

In-water exposure at relevant thresholds may also cause adverse impact to intangible culturally important significant values associated with the Murujuga and Damier Archipelago Heritage Sites, such as Sea Country (see Section 3.6.1).

Exposure of in-water hydrocarbons will be greatest within the upper 10 m of the water column and areas close to the spill source, as such, values on the seafloor (i.e., benthic habitats and any cultural artefacts) are not expected to be impacted by hydrocarbons.

Given the hydrocarbon characteristics of the MDO, as a light, non-persistent hydrocarbon, that rapidly weathers (21% expected decay after 7 days), a large proportion of the hydrocarbon is expected to have weathered prior to contact (RPS, 2024), with the spill scenario expected to be short-term and localised.

Predicted impact summary:

The spill modelling predicted no shoreline accumulation to occur at any threshold for any World Heritage Property or National Heritage Place. As such, no impact to the terrestrial culturally significant values of Murujuga Cultural Landscape or Dampier Archipelago are expected (i.e. rock art, middens or artefacts), or any other terrestrial values, such as the diverse habitats found along the Ningaloo Coast (i.e., sandy and rocky beaches).

Given the highly dispersive environment of the offshore environment, the low probability of contact (14% at the Ningaloo Coast and 1% at both the Dampier Archipelago and the Murujuga Cultural Landscape), the minimum times to contact (8.5 days at the Ningaloo Coast and 6.75 days at both the Dampier Archipelago

and the Murujuga Cultural Landscape), and the weathering expected for the light non-persistent hydrocarbon (Section 5.13.2.1), the potential consequences to World Heritage Properties and National Heritage Places will be limited to the short-term exposure of entrained hydrocarbons within the water column.

As such, following a vessel collision there is the potential for localised and short-term impacts on habitats and species of recognised conservation value or to local ecosystem functioning.

Key Ecological Features

Exposure evaluation:

The Hydrocarbon Area intersects 2 KEFs as described in Section 3.6.9 and shown in Figure 3-44. These include:

- Ancient coastline at 125 m depth contour
- Continental Slope Demersal Fish Communities
- Glomar Shoals.

The conservation values for these KEFs have been described in Section 3.6.7 and include unique seafloor environments that are considered to be of regional importance for a region's biodiversity or ecosystem function and integrity.

The Ancient coastline at 125 m depth contour KEF is a submerged coastline that provides an area of hard substrate which likely to include sponges, corals, crinoids, molluscs, echinoderms and other benthic invertebrates. The escarpment may also facilitate increased availability of nutrients which attracts larger marine life such as whale sharks, large pelagic fish, and Humpback whales (DCCEEW, 2024e).

The Glomar shoals are defined as a KEF for their high productivity and aggregations of marine life. The shoals are known to be an important area for a number of commercial and recreational fish species and consist of a high percentage of marine-derived sediments with high carbonate content and gravels of weathered coralline algae and shells (DCCEEW, 2024j).

Predicted impact:

In-water

No KEFs were predicted to be exposed to floating surface hydrocarbons at any threshold for any season (RPS, 2024).

The values identified within these KEFs have the potential to be exposed to entrained hydrocarbons at, or above, the moderate threshold.

However, the exposure of entrained hydrocarbons will be greatest within the upper 10 m of the water column and areas close to the spill source. Therefore, the spill is unlikely to intersect with majority of the seafloor values of the KEFs which are concentrated within the water column >10 m deep or along the seafloor at varying water depths.

Hydrocarbon exposure to the key receptors of the KEFs (e.g. seabirds, pinnipeds and cetaceans) may cause a subsequent negative impact to the value of the KEFs, however, is expected to be limited to a small number of individuals, with no impacts to regional populations.

Refer to:

- Benthic habitats

- Marine fauna:
  - Plankton
  - Fish, sharks, and rays
  - Seabirds and shorebirds
  - Marine reptiles
  - Marine mammals.

Predicted impact summary:

Given the highly dispersive environment of the offshore environment, the weathering expected for the light non-persistent hydrocarbon (Section 5.13.2.1), and the tidal action and constant wave washing on this type of shoreline which would contribute to further weathering of any hydrocarbons in the intertidal shoreline area, the potential consequences to KEFs from exposure to hydrocarbons following a vessel collision has the potential for localised and short-term impacts on habitats and species of recognised conservation value or to local ecosystem functioning.

Social and Economic Environment

Social and economic receptors have been assessed based on the hydrocarbon exposure based on the thresholds that have the potential to cause socio-economic effects (Section 3.1.1). Therefore, the extent of the hydrocarbon exposure has been defined by using low hydrocarbon exposure thresholds for surface, shoreline and in-water (dissolved and entrained) hydrocarbons. This is defined as the EMBA.

Table 5-53 evaluates the potential impact that hydrocarbon spills for this activity may have on social and economic receptors found within the EMBA.

Table 5-53: Risk assessment for an accidental release of MDO – social and economic environment

Commercial fisheries
Exposure evaluation:
Several State-managed fisheries were identified to have management areas that intersect the EMBA. The maximum distance for dissolved and entrained hydrocarbons at a low threshold (100 ppb) from the source was predicted to be 169 km and 494 km, respectively (RPS, 2024). The fisheries that have the potential to interact with the EMBA include 5 Commonwealth Fisheries: • North West Slope Trawl Fishery • Southern Bluefin Tuna Fishery • Western Deepwater Trawl • Western Skipjack Tuna Fishery • Western Tuna and Billfish Fishery. However, none of these fisheries have recorded active fishing within the EMBA based on historical datasets. Fourteen WA State Fisheries intersect the EMBA (Section 3.5.1; Figure 3-23 to Figure 3-35). However, of these fisheries, only 11 fisheries have recorded active fishing in the EMBA between 2018 and 2023 and have potential to interact with the EMBA, including: • Exmouth Gulf Prawn Managed Fishery • Mackerel Managed Fishery • Marine Aquarium Fish Managed Fishery • Nickol Bay Prawn Fishery • Onslow Prawn Limited Entry Fishery • Pilbara Crab Managed Fishery • Pilbara Fish Trawl Interim Managed Fishery • Pilbara Line Fishery (Condition) • Pilbara Trap Managed Fishery • Specimen Shell Managed Fishery • Tour Operator • West Coast Deep Sea Crustacean Managed Fishery Refer to Section 3.5.1 for a further description on fisheries that intersect the EMBA.

Predicted impact:	
Surface	**In-water**
Physical displacement of commercial fishers may occur due to the establishment of exclusion zones during the spill response. Visible surface hydrocarbons (i.e. a rainbow sheen) may have the potential to cause impact public perception of the industry, potentially causing a negative economic impact. Refer to: • Fish, sharks, and rays.	As discussed in the relevant sections above (i.e. fish and invertebrates) exposure to in-water hydrocarbons has the potential to impacts species. Due to the sensitivity, a small number of juvenile fish, larvae, and planktonic organisms, may be impacted. This could result in some component or all of a year class being impacted, given that most species have seasonal, pulsed recruitment. This has been identified to pose a significant risk for short-lived species and less for long-lived species (Young et al., 2011). However, despite the potential for localised impacts to population recruitment for commercially targeted species, impacts to an entire population or the population's overall viability is not anticipated. In-water hydrocarbon exposure may result in a reduction to individual commercially targeted marine species (i.e. fish and invertebrate species), subsequently having the potential to result in impacts to commercial fishing productivity. Contamination of target species can cause economic impacts to the industry. Refer to: • Fish, sharks, and rays • Invertebrates.
Predicted impact summary:	
Acute impacts to commercially fished species are expected to be limited to a small number of juvenile fish, larvae, and/or planktonic organisms. Depending on the timing of the spill, in the event it overlaps with the timing of a species reproduction event (i.e. a spawning event), there is potential for localised impacts to population recruitment for a commercially targeted species for a year class. However, due to the wide distribution of fish species typical in the region, the typical timing of recruitment events, and the nature of potential impacts from a spill of MDO, impacts to an entire population, or population's overall viability is not anticipated. Due to the highly dispersive environment of the offshore environment, and the rapid weathering expected for the MDO, as a light, non-persistent hydrocarbon, 15–36.1% evaporated within 24 hours depending on the conditions (Section 5.13.2.1), and high anticipated entrainment rates, any exclusion zones are not expected to be long-term and not cause significant impacts to the economic viability of the fishery. Impacts are expected to be limited to localised and short-term exclusion from the area affected.	

Tourism and recreational fishing		
Exposure evaluation:		
The Ningaloo region is a major tourism area that is overlapped by the EMBA. The Ningaloo region includes Ningaloo AMP, Ningaloo World Heritage Area, Ningaloo and Muiron Islands State MP, and Coral Bay and Exmouth communities. These areas are popular for a diverse range of marine-based tourism and recreational activities, such as: whale watching, recreational boating and fishing, charter fishing, snorkelling/diving, and surfing. As noted in Section 3.5.1, DPIRD's FishCube fishing effort data between 2013 – 2023 notes that there were active fishing Tour Operators in the Operational Area, which correlates with the Wandoo platform being listed as a recreational fishing site by DPIRD (2023b) (Section 3.5.4.1) and correspondence with RecfishWest (Sensitive Information Report). The area is used for deepwater fishing by fishing charters and large private fishing boats. With the exception of offshore fishing charters and some offshore recreational fishers, most marine-based tourism occurs in shallower waters. Please see Section 3.5.4.1 for further details.		
Predicted impact:		
Surface	**In-Water**	**Shoreline**
Visible surface hydrocarbons (i.e. a rainbow sheen) have the potential to reduce the visual amenity of the area for tourism and discourage recreational activities. Recreation is also linked to the presence of marine fauna and direct impacts to marine fauna such as whales, birds, and pinnipeds can result in indirect impacts to recreational values. It is important to note that the impact from a public perception perspective may be even more conservative. This may deter tourists and locals from undertaking recreational activities. If this occurs, the attraction is temporarily closed, economic losses to the business are likely to eventuate. The extent of these losses would be dependent on how long the attraction remains closed. Refer also to: • Fish, sharks and rays • Seabirds and shorebirds • Marine mammals • Benthic invertebrates.	The main source of recreational activities, such as marine-based tourism occur within nearshore waters (Section 3.5.4), with the exception of offshore fishing charters and recreational fishers who visit the Wandoo platform (Section 3.5.4.1). Any impact to receptors that are associated with marine-based tourism (e.g. whales, and whale sharks) may cause a subsequent negative impact to recreation and tourism businesses in the locally affected area. Recreational fishing over the area and Wandoo platform is popular. Precautionary exclusion from impacted areas following a hydrocarbon spill may be implemented until water quality monitoring verifies the absence of residual hydrocarbons. This could result in a temporary disruption to some recreational and tourism activities within and area for the duration of the response (if applicable).	Visible hydrocarbons stranded on shorelines have the potential to reduce the visual amenity of the area for tourism and discourage recreational activities. In general, recreational and tourism activities are restricted to shallower coastal waters and shorelines. Precautionary exclusion from shorelines may be implemented by local governments until water quality monitoring verifies the absence of residual hydrocarbons. This could cause disruption to some recreational and tourism activities within that area. Furthermore, visible hydrocarbons along shorelines may impact the aesthetic value for tourism and discourage recreational activities that may be operating within the area.

Predicted impact summary:	
Given the nature of the hydrocarbon, being a light and non-persistent, the low probability of shoreline impacts, and high anticipated evaporation and entrainment rates (Section 5.13.2.1), any impacts to recreation and tourism are expected to be localised and short term.	
Other marine users	
Exposure evaluation:	
Surface hydrocarbons may interact with other marine users, such as • Commercial shipping • Other oil and gas industry • Defence activities • Underwater heritage. The closest AMSA shipping fairway is ~3 km south of the Operational Area, which indicates high shipping use within the area and the potential to interact with the EMBA (Section 3.5.2). Several other offshore oil and gas industries and pipelines are located within the EMBA (Section 3.5.5). The EMBA encompasses defence activities including an Exmouth naval communication station and several offshore training areas including the North West Exercise Area (NWXA) and Learmonth Air Weapons Range in the EMBA. These areas are used for Defence Force training exercises, including live firing. Six UXO sites have been identified to overlap the EMBA (Section 3.5.3). There are 41 known historical shipwrecks located within the EMBA (see Table 3-13).	
Predicted impact:	
Surface	**In-water**
Physical displacement of other marine users may occur due to the establishment of exclusion zones during the spill response. However, due to the comparatively small area of exposure, and the fact that exclusion zones are not expected to be long-term, significant impacts are not anticipated.	In the event of a hydrocarbon spill, other marine users may be impacted by exclusion zones surrounding a spill. These users include: • Commercial shipping • Other oil and gas industry • Defence activities. Exclusion zones could reduce access for other marine users for the duration of the response undertaken for spill clean-up (if applicable) meaning vessels may have to take detours leading to potential delays and increased costs.

	Underwater Heritage In general, in-water exposure is limited to the upper 0–10 m of the water column, and not within the deeper areas of the water column where underwater heritage is located. Therefore, impacts are not expected.
Predicted impact summary:	
Given the nature of the hydrocarbon, being a light and non-persistent, the low probability of shoreline impacts, and high anticipated evaporation and entrainment rates (Section 5.13.2.1), any impacts to other marine users are expected to be localised and short term.	

First Nations

First Nations values and sensitivities have been assessed based on the hydrocarbon exposure based on the most conservative thresholds that have the potential to cause socio-economic effects (Section 3.1.1). Therefore, the extent of the hydrocarbon exposure has been defined by using low hydrocarbon exposure thresholds for surface, shoreline and in-water (dissolved and entrained) hydrocarbons. This is defined as the EMBA.

Table 5-54 evaluates the potential impact that hydrocarbon spills for this activity may have on First Nations values and sensitivities found within the EMBA.

Table 5-54: Risk Assessment for an accidental release of MDO – First Nations heritage

<table>
<tr><th colspan="3">First Nations heritage</th></tr>
<tr><td colspan="3">Exposure evaluation:</td></tr>
<tr><td colspan="3">The EMBA overlaps 3 Native Title Determinations (Section 3.7; Figure 3-45):
• Ngarluma/Yindjibarndi (Yindjibarndi Aboriginal Corporation RNTBC)
• Yaburara & Mardudhunera People (Wirrawandi Aboriginal Corporation)
• Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People (Nganhurra Thanardi Garrbu Aboriginal Corporation, Yinggarda Aboriginal Corporation).
There are 51 registered sites present within the EMBA.
First Nations people are intrinsically linked to Sea Country which encompasses lands, waterways, seas, cultural practices and values to which they are connected (AIATSIS 2025). Country is a cultural landscape which includes both tangible values (i.e. cultural heritage sites) and intangible values (i.e. creation stories and cultural practices). First Nations cultural concepts are directly connected with Country. Country describes all aspects of place, environment, spirituality, law and identity. Values of Country differ between First Nations groups, and not all First Nations groups and communities in Australia hold the same belief systems or spirituality.
Sea Country is Country that extends into the ocean. Smyth and Isherwood (2016) describe Sea Country as all estuaries, beaches, bays, and marine areas collectively, within a traditional estate. Sea Country contains evidence of the ancient mystical events by which all geographic features, animals, plants and people were created. Sea Country contains sacred sites and tracks (or ‘Songlines’) along which mythological beings travelled during the creation period (or ‘Dreamtime’) (Smyth and Isherwood, 2016). The sea, like the land, is integral to the identity of First Nations groups. Connection to Sea Country is accompanied by a complexity of cultural rights and responsibilities. Coastal areas traditionally were amongst the most densely populated areas due to the abundance of resources available. Formal recognition of Sea Country rights is significantly slower compared to land rights. This could be for a range of reasons including conflicting perspectives and opinions on traditional custodianship of land and how far it extends (Smyth and Isherwood, 2016).
An unplanned hydrocarbon spill will impact the waters within Sea Country for a period while the spill disperses and weathers and has the potential to disrupt cultural values of Sea Country. The likelihood of a hydrocarbon spill occurring is assessed as highly unlikely and the actual area that may be affected from any single spill event would be considerably smaller than represented by the EMBA.
The sea component of these areas may be contacted from surface, in-water, and shoreline hydrocarbon exposure. Hydrocarbon exposure may have the potential to impact the aesthetic and cultural values of Sea Country by the presence of physical hydrocarbons or the presence of oil spill responders.</td></tr>
<tr><td colspan="3">Predicted impact:</td></tr>
<tr><td>Surface</td><td>In-water</td><td>Shoreline</td></tr>
<tr><td>Visible surface hydrocarbons have the potential to reduce the visual amenity of known culturally significant values identified within the marine environment, subsequently potentially impacting the value of the site to First Nations people.</td><td>First Nations people connection to Sea Country could potentially be impacted by exposure to hydrocarbons. See Section 3.7.6 for further details of the values.
In-water exposure at relevant thresholds may impact culturally important significant coastal habitats such as mangroves, and</td><td>Visible hydrocarbons along a shoreline have the potential to reduce the visual amenity of known heritage sites along the coastline, subsequently potentially</td></tr>
</table>

Refer also to: • Seabirds and shorebirds • Marine reptiles • Marine mammals.	species to First Nations peoples, such as cetaceans, marine reptiles, and fish which may impact the cultural value of the species and cultural obligation to care for Country. The Ngarluma Aboriginal Corporation, Wanparta Aboriginal Corporation and Buurabalayji Thalanyji Aboriginal Corporation identified marine species of cultural value during consultation (Table 3-18). Their groups' Native Title Areas sit outside the EMBA, however Sea Country species may be impacted. VOGA recognises that First Nations groups features, values and interests are rarely limited to their Native Title boundaries, particularly totemic and migratory species. The 10 ppb low entrained exposure threshold (used to define the extent of the EMBA) represents the very lowest concentration and corresponds generally with the lowest trigger levels for chronic exposure for entrained hydrocarbons in water quality guidelines, no ecological impacts are anticipated at this threshold. It is considered highly unlikely that there will be long-term impacts to First Nations activities from contact at the low entrained threshold. Furthermore, the spill scenario is expected to be localised and short term, with the MDO rapidly weathering within the first few days. As evaluated above, impacts and risks to First Nations values are not expected to result in widespread long-term impacts to Sea Country, ecosystem functions and integrity, or culturally significant species populations. Refer also to: • Benthic habitats and communities • Marine invertebrates • Mangroves • Cetaceans • Marine reptiles • Seabirds and shorebirds	impacting the value of the site to First Nations people. The Kariyarra Aboriginal Corporation, Ngarluma Aboriginal Corporation, Wanparta Aboriginal Corporation, Murujuga Aboriginal Corporation and Buurabalayji Thalanyji Aboriginal Corporation identified islands and coastlines of cultural value during consultation (Table 3-18) that maybe potentially impacted by a hydrocarbon spill. Some parts of the Murujuga landscape and seascape within the EMBA have strict gender restrictions and cultural safety restrictions that would need to be considered in the event of managing any unexpected environmental incident. This is also likely for a number of other First Nations groups and will be considered in the response to a spill. Refer also to: • Coastal habitats • State Marine Parks.

	• State Marine Parks • Commonwealth Marine Parks.	

Predicted impact summary:

First Nations people's connection to Sea Country could potentially be impacted by exposure to hydrocarbons. However, due to the characteristics of the spill scenario, and the open water conditions of the Operational Area, the MDO is anticipated to rapidly disperse through the mixing of surface waters and near surface waters, driven by tidal current and wave action.

Aboriginal Corporations identified a number of values, features and interests of cultural value during consultation (Table 3-19). These areas sit outside the Operational Area, however some of these are located within the EMBA and may be exposed to hydrocarbons in the event of a spill. Consequently, the potential impacts and risks to cultural heritage receptors from an accidental of MDO are expected to result in localised medium-term impacts to socio-economic activities.

5.13.4 Risk Ranking

Vessel movements will occur within the Operational Area, introducing the potential for vessel collisions resulting in an accidental release of MDO. However, given the hydrocarbon characteristics of MDO as a light non-persistent hydrocarbon, the anticipated rapid weathering of the MDO, and minimal shoreline accumulation, any impact is anticipated to be predominantly highly localised, with short-medium term impacts to individuals, not affecting species populations or general ecosystem functioning. Therefore:

- The consequence ranking of '3' (Moderate) was assigned to a change in water quality, coastal communities, and First Nations values, and a likelihood of 'B' (Unlikely) was considered appropriate, resulting in a risk ranking of 'Low' (RRIV).
- The consequence ranking of '2' (Minor) was assigned to benthic habitats, marine fauna, protected and significant area, and social and economic environment, and a likelihood of 'B' (Unlikely) was considered appropriate, resulting in a risk ranking of 'Low' (RRIV).

5.13.5 ALARP Demonstration

Table 5-55: Demonstration of ALARP - Accidental release of MDO

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
Elimination			
None identified.	-	-	-
Substitution			
None identified.	-	-	-
Prevention			
Notification of intent to move MODU to or from Wandoo Field is provided in advance to AMSA.	EPO-WC-10	AMSA shall be advised of planned rig moves at least four weeks prior to scheduled move date.	Copy of Notice to Mariners, noting location of MODU.
Navigational lights on all vessels and MODU.	EPO-WC-10	Vessels and MODU navigation lighting shall comply with SOLAS and the *Navigation Act 2012*.	VOGA inspection or audit confirms lighting complies with SOLAS and the *Navigation Act 2012*.
Vessel contract specifies DP-capability.	EPO-WC-10	Vessels shall be DP capable.	Specification noted in contract.
Vessels obtain permission to enter PSZ.	EPO-WC-10	Vessels are required to establish radio communications with the platform and request permission to enter the PSZ.	Noted in radio log and/or Wandoo Marine Operations Checklist [WNB-1000-NV-0001].
Vessels perform DP trials as required by their PMS.	EPO-WC-10	Vessels are required to conduct DP trials prior to entry into the PSZ.	DP trials noted in ships log and/or Wandoo Marine Operations Checklist [WNB-1000-NV-0001].

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
SIMOPS Plan.	EPO-WC-10	SIMOPS Plan shall define controls to be implemented when multiple vessels are in the PSZ.	SIMOPS Plan implemented.
Vessels have certified masters/qualified crew.	EPO-WC-10	Vessel masters and crew meet contractor CMS requirements.	Review of contractors CMS.
Vessels have systems and personnel to assist with tracking and identifying vessels in the general area.	EPO-WC-10	Vessels are fitted with radar, Automatic Identification System (AIS) and a VHF radio, and crew maintain bridge watch.	VOGA inspection or audit confirms presence of working radar equipment.
Dry break coupling on refuelling hose to minimise spill due to vessel loss of position.	EPO-WC-10	Breakaway coupling is required to be installed on refuelling hoses.	VOGA inspection or audit confirms presence of breakaway couplings.
Bunkering undertaken in accordance with contractor bunkering procedure.	EPO-WC-10	Vessels compliant with contractor bunkering procedure, including: • Check hoses prior to bunkering. • Monitoring of gauges, hoses, fittings and sea surface during bunkering. • Bunkering only in daylight hours.	Records confirm bunkering operations undertaken in accordance with contractor bunkering procedure.
Reduction			
None identified.	-	-	-
Mitigation			
MODU and vessels will implement a SOPEP/ SMPEP (equivalent to class) in the event of a spill.	EPO-WC-10 EPO-WC-11	SOPEP/SMPEP (equivalent to class) procedures shall be available during well construction activities.	VOGA inspection or audit confirms SOPEP/SMPEP (equivalent to class) procedures are available on the MODU and vessels during well construction activities.
The NOPSEMA-accepted Wandoo Field OSCP [WAN-2000-RD-0001] will be implemented.	EPO-WC-11	Oil spill response strategies shall be implemented in accordance with the Wandoo Field OSCP [WAN-2000-RD-0001].	IAP records.
The NOPSEMA-accepted Operational and Scientific Monitoring Bridging Implementation Plan	EPO-WC-11	Oil spill operational and scientific monitoring shall be implemented in accordance with the Operational and	IAP records.

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
[VOG-1100-RG-0002] will be implemented.		Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002].	
Other			
None identified.	-	-	-
Considered control measures	**Assessment of option**		**Decision**
Refuelling restricted to daylight hours.	Vessel refuelling is not anticipated to be required outside of daylight hours. However, refuelling during this time may be required to be undertaken as a contingency.		Not adopted.
Export operations, including tanker approach, not permitted during MODU positioning.	To reduce SIMOPS of vessels within the field, routine vessel operations will be limited during MODU positioning.		Adopted (refer to CM-11.3).
ALARP summary: The impacts and potential risks from an accidental release of MDO are ALARP, based on the impact assessment outcomes using VOGA Risk Matrix (as per Table 4-1), the ALARP template to determine the appropriate decision context type (Table 4-4) and VOGA's criteria for demonstrating ALARP (Section 4.8). No reasonably practicable additional controls were identified that would further reduce the impacts without disproportionate sacrifice.			

5.13.6 Acceptability Demonstration

Table 5-56: Acceptability demonstration - Accidental release of MDO

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
Principles of ESD not compromised	Relevant principles of ESD not compromised given proposed controls (Table 5-55).
External context – objections or claims considered	N/A – no external objections or claims received.
Internal context – VOGA HSE policy/procedures met	Yes – Risk managed in accordance with VOGA HSE policy. Potential spills to be managed in accordance with the Wandoo Field OSCP [WAN-2000-RD-0001].
Other requirements met	Yes – including: • Notice to Mariners issued via AMSA in a timely manner. • Potential spills to be managed in accordance with SOPEP/SMPEP (equivalent to class) • National Recovery Plan for albatrosses and petrels (2022) (DCCEEW, 2022b) • National recovery plan for the red goshawk *Erythrotriorchis radiatus* (DCCEEW, 2012) • National Recovery Plan for the Australian Fairy Tern (*Sternula nereis nereis*) (DAWE, 2020a)

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
	• Approved Conservation Advice for *Sternula nereis nereis* (Fairy Tern) (TSSC, 2011) • Approved Conservation Advice for *Calidris canutus* (Red Knot) (DCCEEW, 2024b) • Approved Conservation Advice for *Calidris frruginea* (Curlew sandpiper) (DCCEEW, 2023a) • Approved Conservation Advice for *Papasula abbotti* (Abbott's booby) (TSSC, 2020a) • Conservation Advice for *Calidris acuminata* (sharp-tailed sandpiper) (DCCEEW, 2024o) • Conservation Advice for *Charadrius leschenaultii* (greater sand plover) (DCCEEW, 2023e) • Conservation Advice for *Limnodromus semipalmatus* (Asian dowitcher) (DCCEEW, 2024m) • Conservation Advice for *Numenius madagascariensis* (far eastern curlew) (DCCEEW, 2023g) • Conservation Advice *Phaethon lepturus fulvus* white-tailed tropicbird (Christmas Island) (DoE, 2014) • Conservation Advice for *Tringa nebularia* (common greenshank) (DCCEEW, 2024p) • Wildlife Conservation Plan for Migratory Shorebirds – 2015 (DoE, 2015b) • Approved Conservation Advice for *Pristis zijsron* (green sawfish) (DEWHA, 2008b) • Approved Conservation Advice for *Pristis clavata* (dwarf sawfish) (DEWHA, 2009) • Sawfish and River Sharks Multispecies Recovery Plan: (*Pristis, Pristis zijsron, Pristis clavata, Glyphis and Glyphis garricki*) (DoE, 2015c) • Recovery Plan for Marine Turtles in Australia, 2017-2027 (Commonwealth of Australia, 2017) • Approved Conservation Advice for short-nosed sea snake (*Aipysurus apraefrontalis*) (DSEWPC, 2011b) • Approved Conservation Advice for *Aipysurus foliosquama* (Leaf-scaled Sea Snake) (DSEWPC, 2011c).
RR < High (RRII)	Yes – Medium (RRIII).
EPO(s) manage impacts to acceptable level(s)	Yes – The following relevant EPOs will be maintained: • EPO-WC-10 • EPO-WC-11 See Section 7 for further details.
Acceptability summary: The impacts and potential risks of an accidental release of MDO have been managed to a level that is broadly acceptable based on the demonstration of ALARP (Table 5-55), alignment with industry best practice, and VOGA's process for evaluating acceptability (Section 4.7).	

5.14 Unplanned: Accidental Release – Loss of Well Containment

5.14.1 Hazard Report

Table 5-57: Hazard Report – Accidental release – LOWC

HAZARD	Accidental release – LOWC		
EP risk number	EP-WC-R14		
Activity/cause	• Drilling operations.		
Extent	N/A		
Potential impact description	N/A		
IMPACT AND RISK EVALUATION SUMMARY			
Receptor	Impact/Consequence	Likelihood	Residual Risk
N/A	-	-	-
Relevant EPO(s)	EPO-WC-10 No unplanned discharge of hydrocarbons or chemicals to the marine environment. EPO-WC-11 In the event of a loss of hydrocarbons, implement NOPSEMA-accepted spill response documents.		

5.14.2 Description of Hazard

VOGA conducted a HAZID workshop and undertook reservoir simulation modelling to identify the worst-case credible spill scenarios that could occur during the activity. For a Loss of Well Control (LOWC) to a occur multiple physical and administrative barriers would have to fail concurrently or sequentially, such as:

- Primary well control - which is achieved when the hydrostatic pressure exerted by fluids above a hydrocarbon source is greater than the pore pressure at the source.
- Secondary well control - which is provided by the systems of mechanical devices which form, or are able to form, a pressure-containing envelope around the well to ensure that the well fluids remain under control. Secondary well control components include well casing, tubing, wellhead, BOPs and Xmas Trees and their associated control systems.

Loss of primary well control may occur due to:

- Intersection of a fracture, fault or old well bore
- Overpressure of the annuli.

Loss of secondary well control may occur due to:

- BOP failure
- Loss of a suspended load from vessel (operating near subsea wells) damages the wellhead and/or flowlines
- Failure of integrity of the defined well barrier envelope.

5.14.2.1 Simulation Modelling

VOGA undertook Nodal Analysis and reservoir simulation using Rock Flow Dynamics's tNavigator software to investigate the possible uncontrolled flow rates for two of the wells proposed to be drilled (B19 and B20) (2027 Drilling Blowout Modelling [WNB-7500-RG-0017]). The method used to determine the uncontrolled well oil flowrate from all Wandoo wells modelled complies with Calculation of Worst-Case Discharge [SPE-174705-TR]. As described in Worst-Case Discharge, the dynamic reservoir simulation model is used to determine the liquid flow from the reservoir to the wellbore. Nodal analysis provides a set of correlations to determine the liquid flow through the wellbore (including pressure changes due to friction, acceleration and gravity) to surface conditions. All data used is the current best technical estimate for the Wandoo Field.

Analysis of the simulation data demonstrates that 0 m^3 of oil and water is released into the marine environment following a loss of well integrity at B19 and B20 (Figure 5-4 and Figure 5-5). This is due to the low reservoir pressure, which is sub-hydrostatic and requires artificial lift (gas or Electric Submersible Pumps in particular wells) for production, the high-water content of the reservoir (95-99%), and the extremely low geomechanical strength of the formation.

Figure 5-4: Simulation rate plot for B19

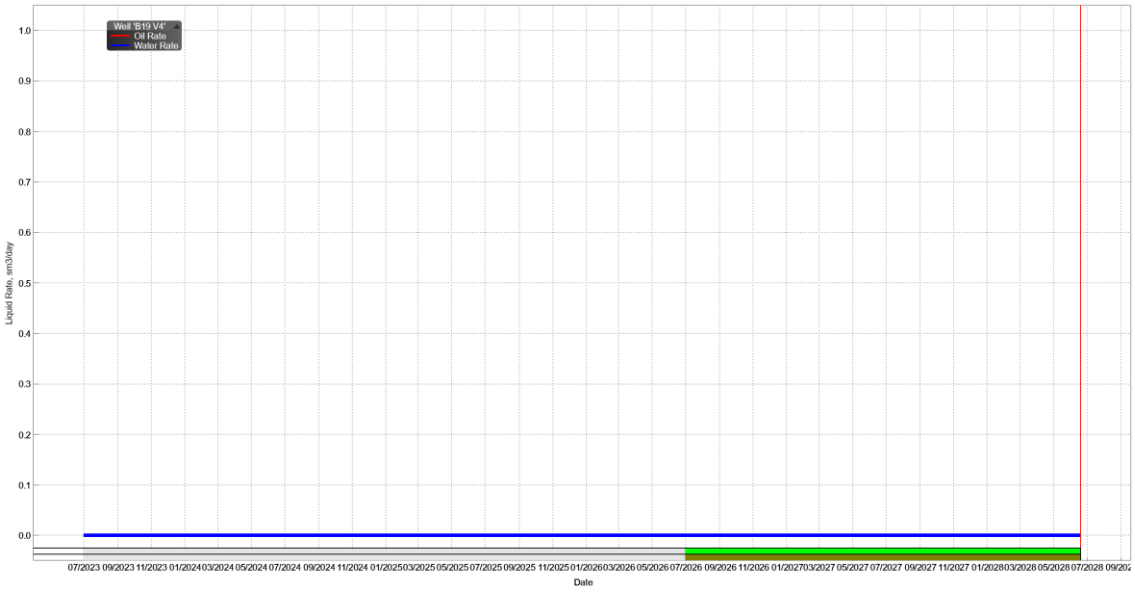
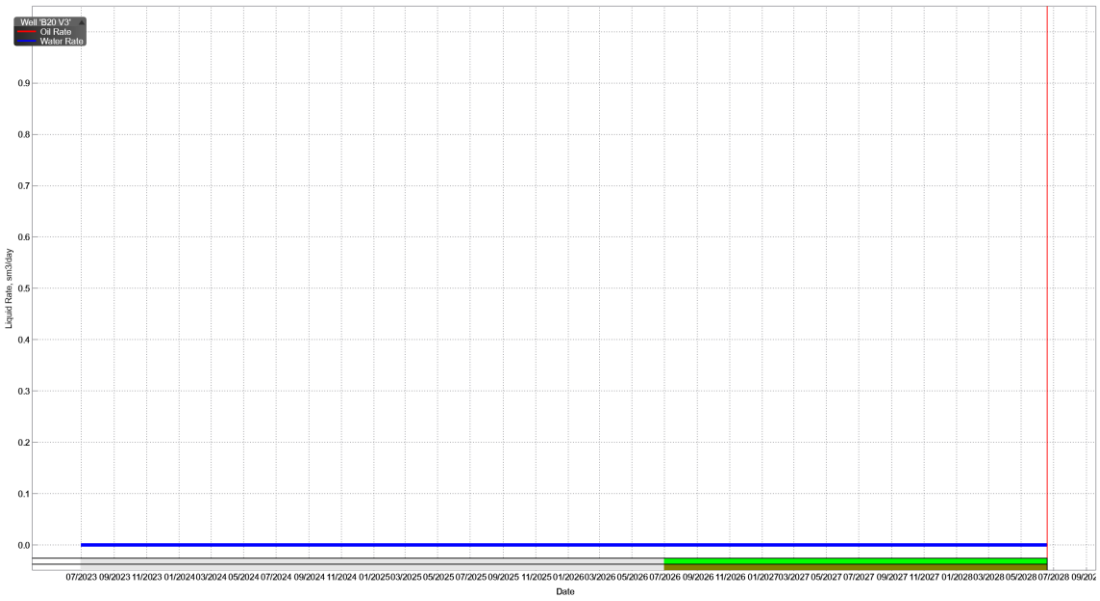


Figure 5-5: Simulation rate plot for B20



For any additional wells that are drilled under this Well Construction EP, similar Worst-Case Discharge modelling will be undertaken based on the following guidance:

- Society of Petroleum Engineers Technical Report Calculation of Worst-Case Discharge (WCD) (SPE-174705-TR, 2016)
- NOPSEMA Information Paper Source control planning and procedures (N-04750-IP1979, 2024)
- NOPSEMA Guidance Note Oil Pollution Risk Management (N-04750-GN1488, 2021).

In the unlikely event a well is found to freely flow to the surface, VOGA will raise an MoC and revise the EP accordingly (as per Section 8.5).

5.14.3 Impact and Risk Evaluation

As per Section 5.14.2.1, the worst-case discharge modelling predicted no reservoir hydrocarbons or water to be released into the marine environment. As such, impacts or potential risks to receptors are not credible and have not been assessed further.

Refer to Section 5.13 for the impact assessment of the worst-case spill scenario.

5.14.4 Risk Ranking

In the low probability event that multiple levels of physical and administrative barriers fail concurrently or sequentially whilst development well drilling activities are occurring, the wells would not naturally flow. Therefore, no hydrocarbons would be released to the marine environment. The risk of an accidental release of hydrocarbons due to a LOWC is considered not credible.

5.14.5 ALARP Demonstration

Table 5-58: Demonstration of ALARP – Accidental release – LOWC

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
Elimination			
None identified.	-	-	-
Substitution			
None identified.	-	-	-
Prevention			
Wells are designed in compliance with the VOGA Well Construction Standards Manual (WCSM) [VOG-5000-MN-003].	EPO-WC-10	Well design shall comply with standards described in VOGA's WCSM.	Statement in Basis of Well Design document.
VOGA standards require that casing and completion and wellhead components are manufactured to relevant API or ISO specifications.	EPO-WC-10	VOGA shall validate that well casing, completion and wellhead components are manufactured to relevant API specifications.	Purchase orders and contracts specify manufacturing standards.
VOGA selects contractors based on evaluation of their ability to provide fit-for-purpose services in support of the activity.	EPO-WC-10	The well construction contractor used on a campaign shall be assessed through VOGA's contractor evaluation process or equivalent.	Records of contractor selection/evaluation process.
VOGA standards require that all activities on a well after initial installation of a BOP require a minimum of two temporary barriers be in place unless exempted through a formal Management of Change (MoC) process.	EPO-WC-10	Drilling Program shall specify the barriers to be in place during well operations.	Drilling Program signed off by VOGA Well Construction Manager.
VOGA conduct Peer Review and Drill Well on Paper workshops to review well designs and operational plans.	EPO-WC-10	VOGA shall conduct Peer Review and Drill Well on Paper workshops to review well designs and operational plans.	Peer Review and Drill Well on Paper attendance records.
VOGA prepares a detailed program for each well activity to outline the intended work scope and the well	EPO-WC-10	Drilling Program shall outline the intended work scope and well barriers to be in place during the campaign.	Drilling Program signed off by VOGA Well Construction Manager.

barriers to be in place during the campaign.			
VOGA Drilling Supervisors, Completions Supervisors and Drilling Superintendents are required to hold current Well Control certification.	EPO-WC-10	VOGA Drilling Supervisors, Completions Supervisors and Drilling Superintendents shall hold current well control certification as required.	Drilling Superintendent confirms currency prior to operations commencing Certification records kept on file.
VOGA require the MODU Contractor to ensure that drilling personnel with a position of driller and above to hold well control certification.	EPO-WC-10	Relevant MODU personnel shall hold current well control certification as required.	Certification kept on file by MODU Contractor. Drilling Superintendent confirms currency prior to operations commencing.
VOGA require a Barrier Verification Document to be completed prior to progressing beyond programmed check points in a Drilling Program.	EPO-WC-10	VOGA Barrier Verification Document shall be completed and signed off by senior VOGA and Drilling Contractor representatives prior to progressing beyond the programmed check points in a Drilling Program.	Signed Barrier Verification Document.
VOGA require that BOPs are tested at regular intervals in accordance with API standard 53.	EPO-WC-10	VOGA shall validate that BOPs are tested at regular intervals in accordance with API standard 53 in accordance with VOGA requirements.	Tests noted in Daily Drilling Report.
Formation Integrity Tests (FITs) or Leak Off Tests (LOTs) are conducted after drilling out casing shoes or milling windows in existing casing if required under the WCSM.	EPO-WC-10	LOTs or FITs shall be conducted after drilling out casing shoes or milling windows in existing casing when programmed.	LOT or FIT report.
VOGA requires kick tolerances to be calculated for all pressure containing casing strings.	EPO-WC-10	Kick tolerance shall be calculated for all pressure containing casing strings in accordance with requirements of WCMS and Drilling Program.	Kick tolerance noted in Daily Drilling Report if kick tolerance calculations are required during drilling activities.
VOGA requires the Drilling Contractor and the mud logging service provider to independently monitor mud flows for variances.	EPO-WC-10	VOGA shall validate that the Drilling Contractor and the mud logging service provider monitor mud flows.	Daily mudlogging reports.
VOGA requires the Drilling Contractor to conduct drills	EPO-WC-10	VOGA shall validate that kick and choke drills conducted.	Drills noted in Daily Drilling Report.

demonstrating preparedness to act if unexpected mud flows occur.			
Collision risk assessed for planned well path against existing wells. Where collision is outside well construction standards, an MoC will be implemented with mitigation and controls specified.	EPO-WC-10	VOGA MoCs hall be used to manage drilling operations where the well separation factor is <1.0.	Approved MoC form.
VOGA prepare directional drilling plans for each new well designed to minimise the risk of a well bore collision.	EPO-WC-10	Well Construction Program shall include directional drilling plans for new wells and trajectories are checked for wellbore collision risk.	Well Construction Program signed off by VOGA Well Construction Manager.
VOGA utilise a geological model of the reservoir to predict Formation Evaluation While Drilling (FEWD) tool responses.	EPO-WC-10	Drilling plans shall incorporate offset well log responses for potential collision points to enable collision avoidance using FEWD tool responses if required to mitigate collision risk.	Campaign specific Drilling Collision Mitigation Plan prepared by Geologist and Senior Drilling Engineer.
VOGA prepare a Geosteering Plan to optimise well placement decisions.	EPO-WC-10	Geosteering Plan shall be incorporated into the Campaign specific Drilling Collision Mitigation Plan.	Approved Geological Evaluation Program.
VOGA shut in production wells when drilling occurs close to existing wells.	EPO-WC-10	Well Construction Program shall specify wells to be shut in prior to drilling in close proximity.	Wells which were shut in are noted in Daily Drilling Report.
Anti-collision procedures used when wells are in close proximity to an existing well bore.	EPO-WC-10	Drilling plans shall specify use of anti-collision procedures when drilling in close proximity of other wells.	Well Construction Program signed off by VOGA Well Construction Manager.
Reduction			
Non identified.	-	-	-
Mitigation			
Isolation of wells as part of the facility Emergency Shutdown (ESD).	EPO-WC-11	Platform status complies with requirements of the MODU Safety Case Revision prior to a MODU obtaining permission to approach platform during rig move.	Field Superintendent will issue a signed pre-move checklist confirming that pre-move checks have been completed.

		Function testing of ESD system from rig remote stations prior to commencing well construction activities.	Successful test noted in Daily Drilling Report.
Other			
For any additional wells that are drilled under this EP, worst-case discharge modelling will be undertaken.	EPO-WC-10	For any additional wells that are drilled under this EP, worst-case discharge modelling will be undertaken. If the assessment indicates potential for worst-case discharge parameters within this EP to be exceeded than those described in this EP, the MoC process will be undertaken in accordance with Section 8.5.	Reservoir modelling records. MoC records.
Considered control measures	**Assessment of option**		**Decision**
Higher density drilling and completions fluids could be used to provide greater overbalance on reservoir pressure during operations.	The fluids currently used already provide significant overbalance. Additionally, increasing the level of overbalance would increase the risk of losses to the formation during operations. Taking that natural flow of the well is not considered credible, this control exceeds the requirement and is not considered practical.		Not adopted.
Higher rated BOP and wellhead components could be used to provide additional redundancy against failure.	The maximum surface pressure that could be experienced during a LOWC at Wandoo is approximately 30% of the currently used, lowest rated, wellhead or BOP component. The industry norm is to specify equipment that is rated to no less than 80% of the maximum anticipated surface pressure. VOGA already significantly exceeds this norm. Furthermore, natural flow of the well is not considered credible; therefore, this control exceeds the requirement and is not considered practical.		Not adopted.
The number of barriers available during operations could be increased.	VOGA standards require two barriers to be in place at all times during operations. Increasing the number of barriers would add significantly to the operational cost. There are sufficient layers of protection in place for the current risk level considering natural flow of the well is not considered credible. As such, this control exceeds the requirement and is not considered practical.		Not adopted.
ALARP summary:			

The impacts and potential risks from an accidental release following a LOWC are ALARP, based on the impact assessment outcomes using VOGA Risk Matrix (as per Table 4-1), the ALARP template to determine the appropriate decision context type (Table 4-4) and VOGA's criteria for demonstrating ALARP (Section 4.8). No reasonably practicable additional controls were identified that would further reduce the impacts without disproportionate sacrifice.

5.14.6 Acceptability Demonstration

Table 5-59: Acceptability demonstration - Accidental release - LOWC

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
Principles of ESD not compromised	Relevant principles of ESD not compromised given proposed controls (Table 5-58).
External context – objections or claims considered	N/A – no external objections or claims received.
Internal context – VOGA HSE policy/procedures met	Yes – Risk managed in accordance with VOGA HSE policy. Potential spills to be managed in accordance with the Wandoo Field OSCP [WAN-2000-RD-0001] and Source Control Contingency Plan.
Other requirements met	Yes – including: • Notice to Mariners issued via AMSA in a timely manner. • Potential spills to be managed in accordance with SOPEP/SMPEP (equivalent to class). • National recovery plan for the red goshawk *Erythrotriorchis radiatus* (DCCEEW, 2012) • National Recovery Plan for the Australian Fairy Tern (*Sternula nereis nereis*) (DAWE, 2020a) • Approved Conservation Advice for *Sternula nereis nereis* (Fairy Tern) (TSSC, 2011) • Approved Conservation Advice for *Calidris canutus* (Red Knot) (DCCEEW, 2024b) • Approved Conservation Advice for *Calidris frruginea* (Curlew sandpiper) (DCCEEW, 2023a) • Approved Conservation Advice for *Papasula abbotti* (Abbott's booby) (TSSC, 2020a) • Conservation Advice for *Calidris acuminata* (sharp-tailed sandpiper) (DCCEEW, 2024o) • Conservation Advice for *Charadrius leschenaultii* (greater sand plover) (DCCEEW, 2023e) • Conservation Advice for *Limnodromus semipalmatus* (Asian dowitcher) (DCCEEW, 2024m) • Conservation Advice for *Numenius madagascariensis* (far eastern curlew) (DCCEEW, 2023g) • Conservation Advice *Phaethon lepturus fulvus* white-tailed tropicbird (Christmas Island) (DoE, 2014) • Conservation Advice for *Tringa nebularia* (common greenshank) (DCCEEW, 2024p) • Wildlife Conservation Plan for Migratory Shorebirds – 2015 (DoE, 2015b)

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
	• Approved Conservation Advice for *Pristis zijsron* (green sawfish) (DEWHA, 2008b) • Approved Conservation Advice for *Pristis clavata* (dwarf sawfish) (DEWHA, 2009) • Sawfish and River Sharks Multispecies Recovery Plan: (*Pristis, Pristis zijsron, Pristis clavata, Glyphis and Glyphis garricki*) (DoE, 2015c)
RR < High (RRII)	Yes – Medium (RRIII).
EPO(s) manage impacts to acceptable level(s)	Yes – The following relevant EPOs will be maintained: • EPO-WC-10 • EPO-WC-11 See Section 7 for further details.
Acceptability summary: The impacts and potential risks of an accidental loss of well containment have been managed to a level that is broadly acceptable based on the demonstration of ALARP (Table 5-58), alignment with industry best practice, and VOGA's process for evaluating acceptability (Section 4.7).	

5.15 Unplanned: Environmental Impact of Oil Spill Response

5.15.1 Hazard Report

Table 5-60: Hazard Report – Environmental Impacts of Oil Spill Response

HAZARD	Environmental impact of oil spill response		
EP risk number	EP-WC-R15		
Activity/cause	• Oil spill response activities.		
Extent	Extent of the Hydrocarbon Area and EMBA.		
Potential impact description	Disturbance to benthic habitat, adjacent vegetation and other environmentally sensitive areas. Scouring of sediments. Waste generation, disposal and management.		
IMPACT AND RISK EVALUATION SUMMARY			
Receptor	**Impact/Consequence**	**Likelihood**	**Residual Risk**
Marine fauna	Minor (2)	Unlikely (B)	Low (RRIV)
Relevant EPO(s)	EPO-WC-11 In the event of a loss of hydrocarbons, implement NOPSEMA-accepted spill response documents.		

5.15.2 Description of Hazard

In the event of an accidental release of MDO, response strategies will be implemented where possible to reduce environmental impacts to ALARP. The selection of strategies will be undertaken through the Net Environmental Benefit Analysis (NEBA) process, outlined in Appendix B of the Wandoo Field OSCP [WAN-2000-RD-0001].

The acceptability of the potential environmental impacts and risks associated with the following oil spill response strategies have been evaluated in accordance with VOGA's management systems and sub-regulations 13(5) and 13(6) of the OPGGS(E)R.

While spill response activities are intended to reduce the potential environmental consequences of a hydrocarbon spill, response activities could potentially exacerbate or cause further environmental harm. Decisions regarding spill response activities need to consider both the potential environmental impacts associated with taking no action and the potential environmental impacts associated with a response activity or combination of spill response activities. Poorly planned and coordinated response activities can result in a lack of, or inadequate information and poor decisions being made during incident response.

The assessment of each response strategy was based on a NEBA approach which considered the advantages and disadvantages of the different spill response options to determine if there would be a net environmental benefit resulting from the implementation of a particular response. This strategic NEBA considers the hydrocarbon type, threshold levels and sensitivity of the area potentially affected by the spill, and the potential outcomes (positive and negative) of the proposed response strategy. This assessment is summarised in the Wandoo Field OSCP [WAN-2000-RD-0001] (Appendix E).

The following spill response activities have been identified that may be considered for an accidental release of hydrocarbons, under the direction of the appropriate Control Agency:

- Source control
- Monitor, evaluation and surveillance (MES)
- Oiled wildlife response
- Operational and scientific monitoring.

See the Wandoo Field OSCP [WAN-2000-RD-0001] (Appendix E) for justifications for the selected oil spill response strategies.

5.15.3 Impact and Risk Evaluation

The potential additional impacts that may be caused by certain spill response activities include:

- Disruption to marine fauna
- Injury/mortality to marine fauna.

The following receptors within the Hydrocarbon Area may be impacted by oil spill response activities:

- Marine fauna, such as:
  - seabirds and shorebirds
  - marine reptiles
  - marine mammals.

5.15.3.1 Source Control

Source control activities are effective in minimising the quantity of hydrocarbons lost to the environment and reducing the area of potential exposure.

Potential source control activities for a vessel collision include:

- Contain diesel onboard
- Isolating tanks
- Tank lightening (transfer to another tank)
- Vessel separation.

Potential LOWC source control activities include:

- Emergency shutdown
- Isolation of equipment
- Surface well intervention
- Drilling a relief well (however as the Wandoo Field reservoir is sub-hydrostatic, no hydrocarbons will freely flow to the seabed surface).

Impact Assessment

The source control activities for a vessel collision will not create any additional impacts on the environment that have not already been assessed within Section 5.1 to 5.14 of this EP.

Source control activities such as emergency shut down, isolation of equipment and surface well intervention will reduce the volume of oil released to the marine environment. Consequently, these response strategies will not create additional impacts on the marine environment over and above the spill itself.

Drilling a relief well may be required if there is a total LOWC incident. The response process to be followed in the event of a LOWC incident will be outlined in the Wandoo Field Source Control Emergency Response Plan (SCERP). As per VOGA's standard response to a LOWC, the mobilisation process for a jack-up MODU would be commenced and progressed until proven that it is not required based on event outcomes.

The drilling of a relief well will not create any additional impacts on the environment that have not already been assessed for drilling activities within Section 5.1 to 5.14 of this EP. As such, the impact assessments that have been conducted for the impacts and risks associated with vessels and MODU, and drilling activities are considered conservative and sufficient for any source controls. As such, this has not been assessed further.

5.15.3.2 Monitor, Evaluate and Surveillance

Several methods can be used to monitor and evaluate, including:

- Aerial surveillance
- Remote (satellite) sensing
- Satellite tracking buoy deployment

- Drone imagery
- Vessel based observations
- Oil Spill Trajectory Modelling (OSTM).

Impact Assessment

The MES methods will predominantly not create any additional impacts on the environment that have not already been assessed within Section 5.13 of this EP. The surveillance of the spill size and tracking of its movement using an aircraft will, however, have an additional impact that has not been previously assessed.

Marine Fauna

Change in Behaviour

Noise emissions generated from an aircraft will be affected by both in-air and underwater propagation processes, in addition to factors such as wind and waves. The level of noise received underwater depends on source altitude and lateral distance, receiver depth, water depth and other variables. Under calm sea conditions, airborne noise is totally reflected and does not enter the water; however, rough seas may provide suitable angles for airborne sound to penetrate the water surface (Richardson et al., 1985).

Simmonds et al. (2004) measured a helicopter flyover at 305 m at 108 dB re 1 µPa, with a frequency of 45–70,000 Hz, and Richardson et al. (1995) identified that aircraft operations typically produce noise emissions below 500 Hz, which diminishes with increasing altitude and water depth. Studies on a helicopter which was audible in the air for 4 minutes, was detectable underwater for only 38 seconds at 3 m depth, and 11 seconds at 18 m depth.

Due to the expected noise source levels being lower than those assessed within Section 5.3, the risk evaluation that was conducted for the noise emissions produced from vessel operations, is considered appropriate and conservative for aircraft operations.

Injury/Mortality

The movement and operation of any aircrafts undertaking spill response activities has the potential to cause injury or death to fauna in the unlikely event of a collision. This is particularly a concern for seabird that may be present within the area. However, due to the offshore location of the activity and the lack of habitats critical to the survival of seabirds, it is considered unlikely that a collision between an aircraft and seabird will occur. Therefore, the risk evaluation that was conducted for the physical presence of the vessel operations resulting in an interaction with marine fauna, as assessed in Section 5.11, is considered appropriate and conservative for aircraft operations.

5.15.3.3 Oiled Wildlife Response

Oiled wildlife response has the potential to cause impacts to marine fauna. Activities associated with oiled wildlife response that can cause impacts to marine fauna include:

- Hazing
- Pre-emptive capture

- Search and capture
- Field stabilisation
- Cleaning and rehabilitation
- Termination.

Impact Assessment

Marine Fauna

Change in Behaviour

Oiled wildlife response activities have the potential to disrupt marine fauna. Activities such as hazing involves the use of visual, auditory or sensory deterrents to keep healthy marine fauna away from the hydrocarbon spill. This can lead to disturbance of marine fauna, such as the separation of groups or adults/juveniles, collisions with marine fauna, inadvertent movement of animals into the oiled area, or scattering of oiled animals.

Pre-emptive capture involves the capture and relocation of marine fauna before they become oiled. Potential impacts include relocation to inappropriate areas that will not support the animal's requirements (e.g. habitat, food sources).

Despite there being the potential of impacts to marina fauna from oiled wildlife response, these impacts are likely to be less than the potential impacts and risks posed to marine fauna from the hydrocarbon spill itself, as discussed in Section 5.13. Therefore, risk evaluation that was conducted for the accidental release of MDO is considered conservative for oiled wildlife response activities.

Injury/Mortality

Marine fauna have the potential to be injured during search and capture. In the event their physical condition is already poor due to the indirect or direct exposure to hydrocarbons, inexperienced handling can rapidly exacerbate their condition. The goal of search and capture is to collect as many live oiled animals as quickly as possible and in the best possible condition to maximise survival. Prompt initialisation of an oiled wildlife response that quickly and effectively collects wildlife and provides a means for humane euthanasia, or rehabilitation and release, will minimise suffering. Field stabilisation is required prior to further treatment of oiled animals, to ensure they can cope with the cleaning and rehabilitation process that will follow. Effective field stabilisation requires deployment of adequate handlers to appropriate locations in a timely manner.

Despite there being the potential of impacts to marina fauna from oiled wildlife response, these impacts are likely to be less than the potential impacts and risks posed to marine fauna from the hydrocarbon spill itself, as discussed in Section 5.13.3. In the unlikely event of a vessel spill, there is a chance that some marine fauna will experience lethal impacts from MDO. The risk evaluation that was conducted for the accidental release of MDO is considered conservative for oiled wildlife response activities.

5.15.3.4 Scientific and Operational Monitoring

Scientific monitoring is used to quantify the impact of associated response strategies, such as the use of chemical dispersants and shoreline clean-up. Various scientific monitoring sampling plans may be implemented, depending on the nature and scale of the spill, and the associated implemented response strategies.

An example of scientific monitoring strategies that may be activated include:

- Water quality impact assessment (SM1)
- Sediment quality impact assessment (SM2)
- Intertidal and coastal habitat assessment (SM3)
- Seabirds and shorebirds (SM4)
- Marine megafauna (SM5):
  - reptiles
  - whale sharks, dugongs and cetaceans
- Benthic Habitat Assessment (SM6)
- Marine fish and elasmobranch assemblages assessment (SMP7)
- Fisheries impact assessment (SM8)
- Heritage features assessment (SM9)
- Social impact assessment (SM10).

See the Operational and Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002] for the mobilisation and activation criteria(s) for the selected monitoring plans (contained within Appendix C of the Wandoo Field OSCP [WAN-2000-RD-0001]).

Impact Assessment

In general, majority of the scientific monitoring strategies (i.e. study scopes) will not create any additional impacts on the environment that have not already been assessed within Section 5.13 of this EP, such as associated with vessel operations, and seabed disturbances.

The presence of scientific monitoring SMEs and equipment deployed to the shorelines, use of shallow vessels, aircraft operations, and any additional impacts to oiled marine fauna, may have an additional impact that has not been previously assessed. These have already been assessed as a part of the other oil spill response activities above in Sections 5.15.3.1 to 5.15.3.4.

5.15.4 Risk Ranking

In the event of an accidental release of MDO, response strategies may be implemented that have the potential to impact receptors. However, given the scale of the activities as discussed in Section 5.13.2, the potential impacts and risks are likely to be less than those assessed for planned activities (vessel operations) and for the spill itself in Section 5. Therefore:

- The consequence ranking of ‘2’ (Minor) was assigned to marine fauna and a likelihood of ‘B’ (Unlikely) was considered appropriate, resulting in a risk ranking of ‘Low’ (RRIV).

5.15.5 ALARP Demonstration

Table 5-61: Demonstration of ALARP - Oil spill response

Control measure	Environmental Performance outcome	Performance standard	Measurement criteria
Elimination			
None identified	-	-	-
Substitution			
None identified	-	-	-
Prevention			
None identified	-	-	-
Reduction			
Ensure the most effective response strategies are being applied and environmental impact of the spill and response strategies are measured.	EPO-WC-11	• Monitoring shall be activated from time of spill detection to inform implementation of response strategies. • Preliminary Oil Spill Trajectory Modelling (OSTM) to be requested within 3 hours of a spill being reported. • Satellite tracking buoys to be deployed within 30 minutes of a spill being reported. • Environmental data to support decision making (IAP) and spill impact assessment shall be available prior to impact.	IAP records.
Mitigation			
Decision making processes support mitigation of environmental impact of spills and assessment of effectiveness of response strategies.	EPO-WC-11	The Wandoo Field OSCP [WAN-2000-RD-0001] shall provide a process for completing an IAP which shall include: • An environmental impact assessment of the proposed response activities • Selection of the most appropriate response activities (strategies) • Identification of appropriate operational and scientific monitoring activities • Operational and scientific monitoring outputs shall inform the effectiveness of response strategies.	Accepted Wandoo Field OSCP [WAN-2000-RD-0001].
Minimise potential impacts on fauna	EPO-WC-11	Induction and training shall cover any special handling requirements	Induction material.

caused by oiled wildlife response activities.		to minimise further detrimental impacts to flora and fauna.	
	EPO-WC-11	Wildlife strategy including hazing, if required, shall be developed in consultation with the Department of Transport (DoT).	Consultation records with DoT.
Oil spill response personnel understand and competently perform their response roles.	EPO-WC-11	Oil spill response personnel are competent in their required emergency response roles.	Exercises conducted in accordance with VOGA Emergency Response Schedule [VOG-1100-YH-0001]. HSEMS audits of Element 8 are conducted in accordance with the HSEMS Element 12 – Performance Assurance Manual [VOG-1100-YG-1201.02].
Other			
The Source Control Emergency Response Plan (SCERP) will be implemented in the event of a LOWC.	EPO-ED-11	SCERP prepared prior to well construction activities. If the assessment indicates potential for worst case discharge parameters within this EP to be exceeded, the MoC process will be undertaken in accordance with Section 8.5.	SCERP. Review records. Reservoir modelling records. MoC records.
		Source control response strategies shall be implemented in accordance with the SCERP.	IAP records.
		Suitable rigs for relief well operations are identified at the time of preparing the SCERP. VOGA will track MODU activity within the region and update the register on monthly basis during drilling activities for any well capable of sustaining flow to surface.	Relief well rig availability register records.
The NOPSEMA-accepted Wandoo Field OSCP [WAN-2000-RD-0001] will be implemented.	EPO-ED-11	Oil spill response strategies shall be implemented in accordance with the Wandoo Field OSCP [WAN-2000-RD-0001].	IAP records.
The NOPSEMA-accepted Operational and Scientific Monitoring Bridging Implementation	EPO-ED-11	Operational and scientific monitoring shall be implemented in accordance with the Operational and Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002].	IAP records.

Plan [VOG-1100-RG-0002] will be implemented.			
Maintenance of OSM Services Provider contract.	EPO-ED-11	Maintain contracts with third-party provider/s to provide access to suitably qualified and competent personnel and equipment to assist in the implementation of monitoring.	Contract with Monitoring Service Provider/s.
OSM Services Provider capability verified through regular capability reporting.	EPO-ED-11	Obtain monthly capability reports from Monitoring Service Provider to demonstrate suitable resources are available throughout the activity.	Monthly capability reports from Monitoring Service Provider.
OSM Services Provider testing and exercising.	EPO-ED-11	Annual testing of OSM Monitoring Service Provider standby arrangements and activation process.	Exercise records.
Adequacy of existing baseline data sources across the OSM Planning Area reviewed periodically.	EPO-ED-11	Periodical review of existing baseline data.	Adequacy of existing baseline data reviewed periodically for locations within the Operational and Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002] identified as requiring a baseline review
Activate operational and scientific monitoring plans.	EPO-ED-11	OMPs and SMPs will be activated in accordance with the initiation criteria provided in Table 9-1 and 9-2 of the Joint Industry OSM Framework (APPEA, 2021).	Incident Action Plan and Incident Log confirm OMPs and SMPs are activated in accordance with the initiation criteria provided in Table 9-1 and 9-2 of the Joint Industry OSM Framework (APPEA, 2021).
Activation of operational and scientific monitoring plans according to OMPs and SMPs initiation criteria.	EPO-ED-11	Initiation criteria of OMPs and SMPs will be reviewed during the preparation of the initial IAPs and subsequent IAPs; and if any criteria are met, relevant OMPs and SMPs will be activated.	IAP records.
Mobilisation and implementation of OMPs and SMPs.	EPO-ED-11	Mobilisation and implementation of OMPs and SMPs will be undertaken in accordance with the indicative timeframes and sequencing described in Part B of the	Incident log and monitoring records.

		Operational and Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002].	
OSM implementation of the Minimum Standards.	EPO-ED-11	Implementation of operational and scientific monitoring will comply with the Minimum Standards listed in Appendix A of the Joint Industry OSM Framework (APPEA, 2021).	Incident log and monitoring records.
Stand-down, termination and post-spill activities.	EPO-ED-11	Once post-spill SMP monitoring reports are drafted they will be peer reviewed by an expert panel.	Monitoring records.
		OMPs and SMPs will be terminated in accordance with the termination criteria provided in Tables 9-1 and 9-2 of the Joint Industry OSM Framework (APPEA, 2021).	IAP and Incident Log confirm OMPs and SMPs are terminated in accordance with the termination criteria provided in Tables 9-1 and 9-2 of the Joint Industry OSM Framework (APPEA, 2021).
Current oil spill response arrangements are accessible to all personnel in the event of an oil spill.	EPO-WC-11	Oil spill response documentation is up to date, maintained and readily available within VOGA Information Systems.	HSE MS audits of Element 8 are conducted in accordance with the HSEMS Element 12 – Performance Assurance Manual [VOG-1100-YG-1201.02].
Notification of relevant persons.	EPO-WC-11	Relevant persons to be identified and notified, as appropriate to the spill response, in accordance with Section 9.4.11.	Record of relevant person assessment and correspondence.
Considered control measures	**Assessment of option**		**Decision**
Standby MODU shared across AEP MOU Titleholders.	A standby MODU shared across all titleholders who are signatories to the AEP MOU is likely to provide a minor environmental benefit as it may reduce the sourcing, contracting and mobilisation time. This option is not considered feasible for a number of Titleholders due to the remote distances in Australia as well as a substantial range of well depths, types, complexities, geologies and geophysical properties across a range of Titleholders. As the environmental benefit is only considered minor and the reduction in timing would only be for the mobilisation period, the costs are considered disproportionate to the minor benefit gained. The costs and complexity of having a MODU and		Not adopted.

	maintaining a shared arrangement for the duration of the exploration drilling are disproportionate to the environmental benefit gained. A standby MODU also introduces additional environmental and safety risks. The wells are currently not predicted to flow due to low reservoir pressure, so the potential benefits of this option are limited.	
Maintaining relief well drilling supplies.	There is not predicted to be any reduction in relief well timing or spill duration from VOGA maintaining stocks of drilling supplies (mud, casing, cement, etc.). It would be feasible to source some relief well drilling supplies such as casing but the actual composition of the cement and mud required will need to be specific to the well. This option is also not deemed necessary as the lead time for sourcing and mobilising these supplies is included in the 35 days for sourcing and mobilising a rig. The cost of VOGA purchasing relevant drilling supplies is expected to be approximately $600K with additional costs for storage. These costs are considered disproportionate as this option would not provide an environmental benefit.	Not adopted.
Additional dedicated aircraft and observers.	An increase in surveillance would increase the identification of marine fauna presence. Additional charter costs would be incurred by VOGA to increase aerial surveillance. There may be a need for additional resources if determined through the IMT based on the amount of available information and potential data gaps. These can be arranged without need for further upfront costs or planning. Additionally, aerial surveillance is not the only dedicated surveillance tactic. Opportunity for surveillance will also occur from satellite surveillance, vessel surveillance, responder movements and opportunistic aerial surveillance through the shared use of aircraft deployed for other purposes e.g. aerial dispersant spraying, containment and recovery and shoreline strategies). The dedicated aerial surveillance unit is sufficient to validate and inform the IAP process to ensure overall response is commensurate with nature and scale of incident. Further, an additional dedicated aircraft introduces additional environmental and safety risks. Therefore, there is minimal value in increasing dedicated overpasses and therefore the arrangements described in the Wandoo Field OSCP [WAN-2000-RD-0001] are considered ALARP.	Not adopted.
Additional dedicated vessels and observers.	In the event that additional dedicated vessels are required due to data gaps, resources are available. The	Not adopted.

	cost of the additional vessels will be added to the cost of the response. There is no benefit in having additional dedicated surveillance vessels given surveillance can be performed from any vessel and these duties will be shared amongst spill response vessels. Increasing vessel surveillance would increase the safety risk. Aerial surveillance and UAVs are more efficient and effective at determining extent of oil movement, vessel surveillance is a secondary tactic. Further, an additional dedicated vessel introduces additional environmental and safety risks. Therefore, there is no value in increasing dedicated vessel numbers and therefore the arrangements described in the Wandoo Field OSCP [WAN-2000-RD-0001] are considered ALARP.	
Additional tracking buoys.	No environmental benefit for additional dedicated resources. Additional tracking buoys are available through AMSA and AMOSC within days. There is no additional upfront cost for accessing these secondary buoys. Tracking buoys are one tactic in the operational monitoring strategy. Four tracking buoys are located on Wandoo B for immediate use. The number of buoys immediately available is sufficient to cover tracking of oil given the other response activities (as per the Wandoo Field OSCP [WAN-2000-RD-0001]), that will be undertaken.	Not adopted.
Ongoing real time collection of data prior to any spill event.	This would provide greater awareness of the environment. However, an ongoing surveillance program would be at considerable cost to the drilling activity. Ongoing collection of real time environmental data would provide immediate inputs into decision making. However, this would require the use of aerial resources, satellite resources, ground surveys and marine surveys, which introduces additional environmental and safety risks. The existing contracts in place for aerial surveillance, satellite imagery and trajectory modelling can be activated in a timeframe that provides short, medium, and long-term access to data.	Not adopted.
Application of mechanical dispersant activities.	Given the extent, duration and expected weathering and fate of the spill, mechanical dispersion may introduce an increased safety risk to response personnel (i.e. volatiles). Not identified as a net benefit to the environment and alternatives strategies (refer to Wandoo Field OSCP [WAN-2000-RD-0001]) are likely to provide a better result. Given natural dispersion and evaporation, deliberate mechanical dispersion activities	Not adopted.

	would only minimally accelerate hydrocarbon dispersion.	
Application of chemical dispersant activities.	The characteristics of the hydrocarbon indicate it will not be susceptible to chemical dispersant. Given the extent, duration and expected weathering and fate of the spill, chemical dispersant is likely to cause more harm to the environment when compared to alternative spill response strategies (as per the Wandoo Field OSCP [WAN-2000-RD-0001]).	Not adopted.
ALARP summary: The impacts and potential risks from oil spill response are ALARP, based on the impact assessment outcomes using VOGA Risk Matrix (as per Table 4-1), the ALARP template to determine the appropriate decision context type (Table 4-4) and VOGA's criteria for demonstrating ALARP (Section 4.8). No reasonably practicable additional controls were identified that would further reduce the impacts without disproportionate sacrifice.		

5.15.6 Acceptability Demonstration

Table 5-62: Acceptability demonstration – Environmental impact of oil spill response

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
Principles of ESD not compromised	Relevant principles of ESD not compromised given proposed controls (Table 5-61).
External context – objections or claims considered	N/A – no external objections or claims received.
Internal context – VOGA HSE policy/procedures met	Yes – Risk managed in accordance with VOGA HSE policy. Potential spills to be managed in accordance with the Wandoo Field OSCP [WAN-2000-RD-0001].
Other requirements met	Yes – Notice to Mariners issued via AMSA in a timely manner. • Potential spills to be managed in accordance with SOPEP/SMPEP (equivalent to class) • National Recovery Plan for albatrosses and petrels (2022) (DCCEEW, 2022b) • National recovery plan for the red goshawk *Erythrotriorchis radiatus* (DCCEEW, 2012) • National Recovery Plan for the Australian Fairy Tern (*Sternula nereis nereis*) (DAWE, 2020a) • Approved Conservation Advice for *Sternula nereis nereis* (Fairy Tern) (TSSC, 2011) • Approved Conservation Advice for *Calidris canutus* (Red Knot) (DCCEEW, 2024b) • Approved Conservation Advice for *Calidris frruginea* (Curlew sandpiper) (DCCEEW, 2023a) • Approved Conservation Advice for *Papasula abbotti* (Abbott's booby) (TSSC, 2020a) • Conservation Advice for *Calidris acuminata* (sharp-tailed sandpiper) (DCCEEW, 2024o) • Conservation Advice for *Charadrius leschenaultii* (greater sand plover) (DCCEEW, 2023e)

ACCEPTABLE LEVEL OF RISK DEMONSTRATED	
	• Conservation Advice for *Limnodromus semipalmatus* (Asian dowitcher) (DCCEEW, 2024m) • Conservation Advice for *Numenius madagascariensis* (far eastern curlew) (DCCEEW, 2023g) • Conservation Advice *Phaethon lepturus fulvus* white-tailed tropicbird (Christmas Island) (DoE, 2014) • Conservation Advice for *Tringa nebularia* (common greenshank) (DCCEEW, 2024p) • Wildlife Conservation Plan for Migratory Shorebirds – 2015 (DoE, 2015b) • Approved Conservation Advice for *Pristis zijsron* (green sawfish) (DEWHA, 2008b) • Approved Conservation Advice for *Pristis clavata* (dwarf sawfish) (DEWHA, 2009) • Sawfish and River Sharks Multispecies Recovery Plan: (*Pristis, Pristis zijsron, Pristis clavata, Glyphis and Glyphis garricki*) (DoE, 2015c) • Recovery Plan for Marine Turtles in Australia, 2017-2027 (Commonwealth of Australia, 2017) • Approved Conservation Advice for short-nosed sea snake (*Aipysurus apraefrontalis*) (DSEWPC, 2011b) • Approved Conservation Advice for *Aipysurus foliosquama* (Leaf-scaled Sea Snake) (DSEWPC, 2011c).
RR < High (RRII)	Yes – Low (RRIV).
EPO(s) manage impacts to acceptable level(s)	Yes – The following relevant EPOs will be maintained: • EPO-WC-11 See Section 7 for further details.
Acceptability summary: The impacts and potential risks of an oil spill response have been managed to a level that is broadly acceptable based on the demonstration of ALARP (Table 5-61), alignment with industry best practice, and VOGA's process for evaluating acceptability (Section 4.7).	

Section 6 Cumulative Impact Assessment

In alignment with NOPSEMA's Environment Plan Decision Making Guideline criterion 10A(d) (NOPSEMA, 2024a), VOGA has assessed the cumulative impacts associated with the well construction activities. In the context of offshore petroleum activities, cumulative environmental impacts are defined by NOPSEMA as successive, additive, or synergistic impacts of collectively significant activities or projects with material impacts on the environment that have the potential to accumulate over temporal and spatial scales (NOPSEMA, 2024a).

The effects of past projects and activities, and currently operating activities, are captured when describing the existing condition of and any pressure or threats affecting the environment (see (Section 3). This baseline condition and understanding of the capacity of the receiving environment and receptors to accommodate changes, considering existing pressures and threats, informs the environmental hazard assessment conducted in Section 5 of this EP.

The focus of this Cumulative Impact Assessment (CIA) is to build on these assessments by considering the potential impacts from the planned components of the proposed activity on key matters in conjunction with the potential impacts from other reasonably foreseeable future projects and activities. Given that unplanned events are not intended to occur as a result of the well construction activities, risks from unplanned aspects have not been considered in the CIA.

6.1 Methodology

There is no specific guidance on CIA provided by NOPSEMA or the Australian Government for the OPGGSA or EPBC Act assessment regimes. Therefore, other relevant guidance has been used to inform the CIA methodology for this EP, including:

- UK Nationally Significant Infrastructure Projects Advice Note Seventeen: Cumulative effect assessment relevant to nationally significant infrastructure projects (Planning Inspectorate, 2019)
- NSW Department of Planning and Environment Cumulative Impact Assessment Guidelines for State Significant Projects (Department of Planning, Infrastructure and the Environment (DPIE), 2022).

Both the UK and DPIE guidelines are intended to apply to large-scale national and state significant projects, respectively, with greater potential for cumulative impacts into the long-term. Consequently, the assessment approach applied here has been adapted to the nature and scale of the activities covered in this EP.

6.2 Scoping the Cumulative Impact Assessment

A scoping assessment was undertaken to determine if impacts from the project activities could result in cumulative impacts to receptors.

The scoping process considered the following factors:

- **Other reasonably foreseeable future projects** to be considered in the CIA based on currently operating projects, approved projects, and projects under assessment (including those under public comment); and if these projects and their associated activities are reasonably foreseeable within the spatial and temporal extent of the assessment.

This defines the boundaries of the assessment by including projects and activities that have a realistic likelihood of occurring and potential contribution to cumulative impacts.

- **Key environmental matters** are features of the environment (ecological, socio-economic, and cultural values and sensitivities) that are valued because of their rarity or importance, including the critical role they play in supporting systems which are essential for the environment, people and / or the economy (DPIE, 2022). For example, commercial fisheries and threatened species undertaking biologically important behaviours.
- **Spatial extent** is the study area for the CIA, depending on the key environmental matters' range and distribution within the bioregion; and environment that may be affected by the planned activities. DPIE (2022) recommends that while the area chosen for each key matter must be broad enough to capture all relevant cumulative impacts, it should not be unnecessarily large or include areas where the cumulative impacts are likely to be negligible relative to the baseline condition of the relevant matter.
- **Temporal extent** is the period of the CIA, depending on the duration of the planned activities or characteristics of the key environmental matters.
- **Material cumulative impacts** resulting from the and other relevant future projects that have the potential to be above the defined acceptable levels. For example, threats of wide-scale, serious or irreversible damage due to cumulative impacts.
- **Cumulative impact assessment approach** based on standard assessment of material cumulative impacts, identify which cumulative impacts require further comprehensive assessment through either issue-specific CIA or combined CIA.

To identify the above factors, the scoping assessment was undertaken in two parts.

- **Part 1**: Identify reasonably foreseeable future projects and activities (Section 6.2.1).
- **Part 2**: Identify relevant key environmental matters (Section 6.2.2).

The DPIE Guidelines (2022) state that the CIA is to focus on the key matters that could be materially affected by the cumulative impacts of the project and other relevant future projects, not on every conceivable cumulative impact on every matter.

The scoping assessment identifies potential cause-effect pathways which could result in material cumulative impacts.

6.2.1 Part 1: Identify Reasonably Foreseeable Future Projects and Activities

To identify relevant future projects and activities, spatial and temporal extents for cumulative impacts have been based on the maximum spatial and temporal influence of the Project activities.

The spatial extent of impacts and risks from the project varies depending on the source of aspect. The largest potential impact area for any planned aspect from the well construction activities are a change in fauna behaviour caused by continuous underwater noise from vessel operations and drilling activities, for which a conservative spatial extent of ~21 km from the Operational Area was adopted (Section 5.3). The next largest potential impact area is associated with disruption to marine fauna which may be caused by light emissions caused by MODU and vessel emissions during well construction activities, for which a conservative spatial extent of 20 km from the Operational Area was adopted (Section 5.5).

Therefore, as a conservative approach, a spatial extent of 25 km has been used for the purposes of identifying existing and future projects and activities which may have effects that overlap with those the project, resulting in potential cumulative impacts.

The temporal extent selected for the CIA considers the planned commencement of well construction activities in 2026-2027, which can take up to 150 days for up to 3 wells, over a maximum of 3 campaigns (Section 2.3). The temporal end date selected for the CIA has been conservatively set as 2031, which allows for the five-year validity of this EP (once approved).

The scoping steps of Part 1 are as follows:

- Step 1: Review NOPSEMA Environment Plan and Department of Mines, Petroleum and Exploration (DMPE) GeoVIEW websites to identify projects and activities that overlap the spatial (25 km from the Operational Area) and temporal (2026-2031) extents.
- Step 2: Confirm potential overlap with other North-west Shelf petroleum titleholders.

Relevant future projects and activities identified to date, within the lifetime of the project (2026-2031) and located 25 km from the Project Operational Area, are detailed in Table 6-1. Projects and activities that are not relevant have been excluded from the assessment scope to maintain practicality and relevance in decision-making processes.

There are several petroleum pipelines within 25 km of the Project activities Operational Area. These are detailed in Table 6-1.

There are no subsea cables which overlap with the Project Operational Area or the 25 km spatial extent, therefore they have not been considered further.

Existing activities and relevant future activities that are included within the scope of the following CIA are those that can be publicly identified at the time of preparing and submitting this EP. Assumptions around specific timings for projects or activities have been made as there is some level of uncertainty in schedule and timing of approvals to support activities. Consequently, a conservative approach has been adopted whereby credible worst-case scenarios (e.g. concurrent activities with overlapping predicted impacts) are assessed.

Table 6-1: Part 1 - Relevant future projects or activities in the North-west Shelf region

Titleholder/ Operator/ Proponent	Activity	Status	Timing	Potential for temporal overlap	Potential for spatial overlap	Project relevant?
Petroleum Activities						
Jadestone Energy	Stag Field Operations: Stag field production and export facility operations. The Central Production Facility (CPF) has been in production since 1998 (Jadestone Energy, 2025). Includes routine production and well intervention, crude oil loading activities, routine inspection, maintenance and repair of the CPF, subsea export pipeline, wells and associated subsea infrastructure (including use of ROV and diving activities).	Accepted	EP covers the operation of offshore facilities for the five-year duration of the EP (accepted March 2025).	Yes – potential temporal overlap of Stag field operations with the well construction activities. Inspection, maintenance and repair work may include SSS activities, likely to be applied for several days at a time every few years.	Yes – potential spatial overlapping of Stag field operations light emissions and noise emissions with the well construction activities. The Stag platform is location ~13 km southwest of the Operational Area.	**Yes**. Potential temporal and spatial overlaps identified.
Santos	Commonwealth Exploration Vessel-Based Activities: Activities to support future petroleum exploration, development and operational programs (Santos, 2021). Includes geophysical, hydrographic, geotechnical,	Accepted	EP has a proposed activity schedule of 2021 – 2026 with activity taking place any time for the five-year duration of the EP (accepted March 2021).	No – the project was approved March 2021 and notified NOPSEMA of a stop date 17 October 2021.	Yes – potential spatial overlapping of the Commonwealth exploration activities as the proposed permit Areas (A, B and C) EMBA's overlap with well construction activities.	**No**. Spatial overlap but no temporal overlap identified.

Titleholder/ Operator/ Proponent	Activity	Status	Timing	Potential for temporal overlap	Potential for spatial overlap	Project relevant?
	ROV, metrology, metocean and environmental surveys.					
Santos	Reindeer Wellhead Platform and Offshore Gas Supply Pipeline Operations: Includes all activities that are associated with the operation of the WHP and gas supply pipeline. Ongoing operations and maintenance activities may involve additional personnel and the use of ROVs, divers and work vessels, which may require anchoring at or near the work location. Subsea, pipeline and seafloor imaging surveys may be undertaken around the production wells and gas supply pipeline using methods such as MBES and SSS (Santos, 2020).	Accepted	EP covers the operation of offshore facilities for the five-year duration of the EP (accepted July 2020).	No – the project was approved July 2020 to allow for activities within 5 years. Therefore, temporal overlap of the Reindeer operations with the well construction activities is not expected to occur. Santos has submitted a separate operations and Cessation of Production (CoP) Environment Plan (accepted) with facilities expected to go into CoP in 2025 (described below).	Yes – potential spatial overlapping of Reindeer field light emissions extent (gas supply pipeline) with the well construction activities underwater noise and light emissions extent. The Reindeer platform is 7 km northwest of the Operational Area.	**No**. Spatial overlap but no temporal overlap identified.

Titleholder/ Operator/ Proponent	Activity	Status	Timing	Potential for temporal overlap	Potential for spatial overlap	Project relevant?
Santos	Reindeer Wellhead Platform and Gas Supply Pipeline – Operations and CoP: During the operations phase or CoP phase, IMMR campaigns may be undertaken which include activities such as, surface inspections, subsea inspections and well intervention activities (Santos Ltd, 2025).	Accepted	The Reindeer facilities are expected to go into CoP phase in mid-2025. During CoP phase, IMMR campaigns may be undertaken. Individual general IMMR campaigns are expected to take around 14 days. Campaigns associated with CoP activities are expected to take around 30 days (Santos Ltd, 2025).	Yes – potential temporal overlap of Reindeer CoP activities with the well construction activities.	Yes – potential spatial overlapping of Reindeer field light emissions and noise emissions extent with the Project activities noise and light emissions extent.	**Yes**. Potential temporal and spatial overlaps identified.
Woodside Energy	Scarborough Offshore Facility and Trunkline (Operations): Includes hook-up of the Scarborough Floating Production Unit (FPU) (moorings and subsea system) and commissioning activities, routine production for up to 13 subsea wells (up to eight wells, export of dry gas through the gas export trunkline (ETL), Inspection, Monitoring, Maintenance and	Accepted	EP has a proposed earliest commencement 2H 2025 for FPU hook-up and commissioning (Woodside, 2025a). IMMR including contingent flowline and trunkline pigging may occur any time post infrastructure installation and	Yes – potential temporal overlap of Scarborough ETL IMMR activities with the well construction activities.	Yes – potential spatial overlapping, with the Scarborough export pipeline located ~11 km from the Operational Area.	**Yes**. Potential temporal and spatial overlaps identified.

Titleholder/ Operator/ Proponent	Activity	Status	Timing	Potential for temporal overlap	Potential for spatial overlap	Project relevant?
	Repair (IMMR) for the FPU and ETL, and gravimetry survey (Woodside Energy, 2025a).		throughout the five-year duration of the EP (accepted February 2025).			
Woodside Energy	North Rankin Complex Facility Operations: Includes routine production of dry gas and condensate, routine and non-routine operations of the facility and associated subsea infrastructure, routine and non-routine IMMR of the platform, export pipelines and associated subsea infrastructure, platform well intervention, workovers and clean-up activities (Woodside, 2024).	Under assessment	The NRC EP was submitted August 2024 and is currently under assessment with NOPSEMA. North Rankin facility operates 24 hours a day, 365 days a year. Maintenance activities are undertaken as required to support day-to-day operations (Woodside, 2024).	Yes – potential temporal overlap of the North Rankin pipelines IMMR activities.	Yes – potential spatial overlapping as the North Rankin Complex Operation Area which is located within 59 km of the Operational Area, and the export pipelines to the Karratha Gas Plant are located <1 km.	**Yes**. Potential temporal and spatial overlaps identified.

Titleholder/ Operator/ Proponent	Activity	Status	Timing	Potential for temporal overlap	Potential for spatial overlap	Project relevant?
Woodside Energy	Pluto Facility Operations: Includes routine production and associated activities, routine IMMR of the platform and associated subsea infrastructure, well clean up and commissioning, new well drilling in the Xena field, subsea infrastructure installation, and pre-commissioning and commissioning activities (Woodside Energy, 2025b).	Accepted	The Pluto EP was accepted May 2025 and plans to commence maintenance campaigns (including IMMR which typically last for 14 days, with ten campaigns planned per year) by December 2025 (Woodside, 2025b).	Yes – potential temporal overlap of the Pluto export pipeline IMMR activities.	Yes – potential spatial overlapping, as the Pluto LNG gas export pipeline to Burrup Operational Area is located ~11 km from the Operational Area.	**Yes**. Potential temporal and spatial overlaps identified.
Commercial Fisheries – Commonwealth managed						
Southern Bluefin Tuna Fishery	Pelagic longline and purse seine fishing gear are used in this fishery.	Not active.	12-month fishing season, commencing 1st December each year.	No – the fishery is not currently active, with no fishing recorded since 2018.	Yes – the fishery management area overlaps the Operational Area. Refer to Table 3-8 for further information on commercial fisheries in WA State waters.	**No**. Spatial overlap but no temporal overlap identified.
Western Skipjack Tuna Fishery	Purse seine and pole & line are used in this fishery.	Not active	Not active since 2009.	No – the fishery is not currently active, and no fishing has occurred since 2009.	Yes – the fishery management area overlaps the Operational Area.	**No**. Spatial overlap but no temporal overlap identified.

Titleholder/ Operator/ Proponent	Activity	Status	Timing	Potential for temporal overlap	Potential for spatial overlap	Project relevant?
					Refer to Table 3-8 for further information on commercial fisheries in Commonwealth waters.	
Western Tuna and Billfish Fishery	Pelagic longline and low levels of minor-line fishing are used in this fishery.	Not active	12-month fishing season, commencing 1st February each year.	No – the fishery is not currently active, with no fishing recorded since 2018.	Yes – the fishery management area overlaps the Operational Area. Refer to Table 3-8 for further information on commercial fisheries in WA State waters.	**No**. Spatial overlap but no temporal overlap identified.
Commercial Fisheries – WA State managed						
Abalone Managed Fishery	Hand collection method is used in this fishery.	Not active	12-month fishing season, from February – January.	No – the fishery is not currently active, with no fishing recorded since 2018.	Yes – the fishery management area overlaps the Operational Area. Refer to Table 3-8 for further information on commercial fisheries in WA State waters.	**No**. Spatial overlap but no temporal overlap identified.
Exmouth Gulf Prawn Managed Fishery	Low opening, otter prawn trawl systems used.	Active	9-month fishing season from April – December typically.	Yes - potential temporal overlap of fishing vessel activities with timings of the well	No – the fishery management area does not overlap the Operational Area.	**No**. Potential temporal overlap, but no

Titleholder/ Operator/ Proponent	Activity	Status	Timing	Potential for temporal overlap	Potential for spatial overlap	Project relevant?
				construction activities	Refer to Table 3-8 for further information on commercial fisheries in WA State waters.	spatial overlap identified.
Mackerel Managed Fishery	Surface and midwater troll fishing are used in this fishery.	Active	12-month fishing season.	Yes – potential temporal overlap of fishing vessel activities with timings of the well construction activities	Yes – the fishery management area overlaps the Operational Area. Refer to Table 3-8 for further information on commercial fisheries in WA State waters.	**Yes**. Potential temporal and spatial overlaps identified.
Marine Aquarium Fish Managed Fishery	Hand collection and fishing line methods are used in this fishery.	Active	12-month fishing season.	Yes – potential temporal overlap of fishing vessel activities with timings of the well construction activities	Yes – the fishery management area overlaps the Operational Area. Refer to Table 3-8 for further information on commercial fisheries in WA State waters.	**Yes**. Potential temporal and spatial overlaps identified.
Nickol Bay Prawn Fishery	Low opening, otter prawn trawl systems are used in this fishery.	Active	12-month fishing season.	Yes – potential temporal overlap of fishing vessel activities with timings of the well construction activities	No – the fishery management area does not overlap the Operational Area. Refer to Table 3-8 for further information	**No**. Potential temporal overlap, but no spatial overlap identified.

Titleholder/ Operator/ Proponent	Activity	Status	Timing	Potential for temporal overlap	Potential for spatial overlap	Project relevant?
					on commercial fisheries in WA State waters.	
Onslow Prawn Limited Entry Fishery	Low opening, otter prawn trawl systems are used in this fishery.	Active	12-month fishing season.	Yes – potential temporal overlap of fishing vessel activities with timings of the well construction activities	Yes – the fishery management area overlaps the Operational Area. Refer to Table 3-8 for further information on commercial fisheries in WA State waters.	**Yes**. Potential temporal and spatial overlaps identified.
Pilbara Crab Managed Fishery	Hourglass traps are used in this fishery.	Active	12-month fishing season.	Yes – potential temporal overlap of fishing vessel activities with timings of the well construction activities	Yes – the fishery management area overlaps the Operational Area. Refer to Table 3-8 for further information on commercial fisheries in WA State waters.	**Yes**. Potential temporal and spatial overlaps identified.
Pilbara Fish Trawl Interim Managed Fishery	Trawl, trap and line methods are used in this fishery.	Active	12-month fishing season.	Yes – potential temporal overlap of fishing vessel activities with timings of the well construction activities	Yes – the fishery management area overlaps the Operational Area. Refer to Table 3-8 for further information	**Yes**. Potential temporal and spatial overlaps identified.

Titleholder/ Operator/ Proponent	Activity	Status	Timing	Potential for temporal overlap	Potential for spatial overlap	Project relevant?
					on commercial fisheries in Commonwealth waters.	
Pilbara Line Fishery (Condition)	Trawl, trap and line methods are used in this fishery.	Active	12-month fishing season.	Yes – potential temporal overlap of fishing vessel activities with timings of the well construction activities	Yes – There is no defined management area for this fishery; however, activity noted within the Operational Area. Refer to Table 3-8 for further information on commercial fisheries in WA State waters.	**Yes**. Potential temporal and spatial overlaps identified.
Pilbara Trap Managed Fishery	Trawl, trap and line methods are used in this fishery.	Active	12-month fishing season.	Yes – potential temporal overlap of fishing vessel activities with timings of the well construction activities	Yes – the fishery management area overlaps the Operational Area. Refer to Table 3-8 for further information on commercial fisheries in WA State waters.	**Yes**. Potential temporal and spatial overlaps identified.
South-west Coast Salmon Fishery	Seine nets are used in this fishery.	Not active	3-month fishing season, February – April.	No – the fishery is not currently active, with no fishing recorded since 2018.	Yes – the fishery management area overlaps the Operational Area.	**No**. Spatial overlap but no temporal overlap identified.

Titleholder/ Operator/ Proponent	Activity	Status	Timing	Potential for temporal overlap	Potential for spatial overlap	Project relevant?
					Refer to Table 3-8 for further information on commercial fisheries in WA State waters.	
Specimen Shell Managed Fishery	Hand collection is the main method used in this fishery. In some instances, remotely operated underwater vehicles are used (Newman et al., 2023a).	Active	12-month fishing season.	Yes – potential temporal overlap of fishing vessel activities with timings of the well construction activities	Yes – the fishery management area overlaps the Operational Area. Refer to Table 3-8 for further information on commercial fisheries in WA State waters.	**Yes**. Potential temporal and spatial overlaps identified.
Tour Operator	Range of methods including hook and line, surface and midwater troll methods.	Active	12-month fishing season.	Yes – potential temporal overlap of fishing vessel activities with timings of the well construction activities	Yes – no defined management area. However, the fishery is permitted to fish anywhere in WA-state waters.	**Yes**. Potential temporal and spatial overlaps identified.
West Coast Deep Sea Crustacean Managed Fishery	Baited pots operated in a long-line formation are used in this fishery.	Active	12-month fishing season.	Yes – potential temporal overlap of fishing vessel activities with timings of the well construction activities	Yes – the fishery management area overlaps the Operational Area. Refer to Table 3-8 for further information on commercial fisheries in WA State waters.	**Yes** - potential temporal and spatial overlaps identified.

Titleholder/ Operator/ Proponent	Activity	Status	Timing	Potential for temporal overlap	Potential for spatial overlap	Project relevant?
Western Australian Sea Cucumber Fishery	Hand collection is the main method used in this fishery.	Active	12-month fishing season.	Yes – potential temporal overlap of fishing vessel activities with timings of the well construction activities	Yes – the fishery management area overlaps the Operational Area. Refer to Table 3-8 for further information on commercial fisheries in WA State waters.	**Yes**. Potential temporal and spatial overlaps identified.
Commercial Shipping						
Shipping fairways	AMSA shows the closest shipping fairway is ~3 km south of the Operational Area (Section 3.5.2).	Ongoing	All year round.	Yes – potential temporal overlap of shipping activities with timings of the well construction activities.	Yes – potential overlapping with underwater sound and light emissions.	**Yes**. Potential temporal and spatial overlaps identified.

6.2.2 Part 2: Identify Relevant Key Environmental Matters

The scoping steps of Part 2 are detailed as follows:

- Step 1: Review Section 5 to identify the planned project aspects of the Project, relevant key environmental matters, and reiterate the acceptable levels of impact for each key environmental matter.
- Step 2: Based on the Project spatial extent, identify potential pathways for cumulative impacts from the Project and other reasonably foreseeable future projects and activities for each key environmental matter (i.e. multiple planned aspects that have spatial overlap with areas of significance for key environmental matters such as BIAs, critical habitat, active fishing cells, petroleum titles).
- Step 3: Based on the indicative project life (2026 to 2031), identify potential pathways for cumulative impacts from the Project and other reasonably foreseeable future projects and activities for each key environmental matter (i.e. multiple planned aspects that have temporal overlap with the presence of key environmental matters present in the Project area).
- Step 4: From the identified spatial and temporal pathways for cumulative impacts, confirm if there is potential for material cumulative cause-effect pathways and the resulting cumulative impacts.
- Step 5: Identify the level of certainty of the scoping assessment data used to define the above factors.
- Step 6: Review the potential of material cumulative impacts and level of certainty for each key environmental matter:
  - If there is potential for material cumulative impacts, the key environmental matter is required to have a detailed CIA.
  - If the certainty of the scoping assessment data does not meet the following points below, the key environmental matter is required to have a detailed cumulative impact assessment:
    - Impacts are well understood
    - Impacts are relatively easy to predict using standard methods
    - Impacts are capable of being mitigated to comply with relevant standards and to meet the acceptable level.

The results of Part 2 scoping assessment are detailed in Table 6-2.

As described in Section 3.6, there is no overlap between the Operational Area and any protected and significant areas (world heritage properties, national heritage places, underwater cultural heritage, state marine protected areas, AMPs, wetlands of international importance, KEFs and TECs) in the North-west Shelf region.

As the scoping assessment presented in Table 6-2 did not identify potential cause-effect pathways which could result in material cumulative impacts, a detailed CIA is not required.

Table 6-2: Part 2 - Identification of relevant key environmental matters and detailed CIA scoping

Environmental Component	Key Environmental Matter	Planned Project Aspects									Acceptable Level	Cumulative Impact Scoping: Based on Planned Aspects from the Project and Reasonably Foreseeable Future Projects and Activities				
		Physical presence – interaction with other marine users	Seabed disturbance	Noise emissions – continuous	Noise emissions – impulsive	Atmospheric and GHG emissions	Light emissions	Vessel discharges	Drilling material discharges	Non-drilling material discharges		Potential for cumulative impact – Spatial extent	Potential for cumulative impact – Temporal extent	Material cumulative cause-effect pathway	Level of Certainty of Scoping Assessment	Does the material cumulative impact require detailed assessment?
Physical Environment	Water quality		✓					✓	✓	✓	• Temporary, localised and dispersive. • No serious or irreversible change in water quality.	No - spatial interference is incidental.	No – temporal interference is incidental.	The well construction activity and other reasonably foreseeable projects and activities have the potential to cause temporary and localised change to water quality. Based on the spatial and temporal overlap of the well construction activity with other reasonably foreseeable projects and activities and the localised scale of potential impacts, no material cumulative cause-effect pathways identified.	Impacts are well understood.	**No.** No material cumulative impacts anticipated.
	Air quality					✓					• Temporary, localised and dispersive. • No impact to biodiversity, ecological integrity and social amenity. • No determinable impact to Australia's carbon budget. • Air emissions requirements from vessels within the Operational Area are consistent with Marine Order 97 requirements.	No – minor contribution to GHGs and global climate change.	No - not outside of the framework of the national and domestic emissions reduction targets.	The well construction activity and other reasonably foreseeable project and activities will require fuels and energy that will result in GHG being released into the atmosphere. The cumulative emissions are anticipated to be relatively small in the context of Australian carbon budget and are not expected to have determinable impact. No material cumulative cause-effect pathways identified.	Impacts are capable of being reduced to comply with relevant standards and to meet the acceptable level. GHG emissions assessment conducted.	**No.** No material cumulative impacts anticipated.
Ecological Environment	Benthic habitats		✓						✓	✓	• Temporary and localised. • No serious or irreversible changes to the seabed which may adversely impact on biodiversity or ecological integrity.	No - no critical habitats, sensitive or protected benthic habitat overlap.	Yes – continual presence of benthic habitats.	The well construction activity and other reasonably foreseeable project and activities have the potential result in incidental and localised seabed disturbance. The localised nature of disturbance and the lack of significant benthic habitat and assemblages in the region from the EP activities are not anticipated to impact marine ecosystem functioning. Additional impacts from the well construction activity and other reasonably foreseeable projects and activities are not expected to result in material cumulative impacts. No material cumulative cause-effect pathways identified.	Impacts are well understood.	**No.** No material cumulative impacts anticipated.

Environmental Component	Key Environmental Matter	Planned Project Aspects									Acceptable Level	Cumulative Impact Scoping: Based on Planned Aspects from the Project and Reasonably Foreseeable Future Projects and Activities				
		Physical presence – interaction with other marine users	Seabed disturbance	Noise emissions – continuous	Noise emissions – impulsive	Atmospheric and GHG emissions	Light emissions	Vessel discharges	Drilling material discharges	Non-drilling material discharges		Potential for cumulative impact – Spatial extent	Potential for cumulative impact – Temporal extent	Material cumulative cause-effect pathway	Level of Certainty of Scoping Assessment	Does the material cumulative impact require detailed assessment?
Ecological Environment	Plankton						✓	✓	✓		• Short-term, temporary, and localised. • No serious or irreversible change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	No – no sensitive habitat overlap.	Yes – continual presence of plankton.	The well construction activity and other reasonably foreseeable project and activities have the potential to cause temporary and localised behavioural change to plankton. However, these are not predicted to have ecologically significant effects on planktonic species. Impacts from other reasonably foreseeable projects are predicted to be similar with no material cumulative impacts. No material cumulative cause-effect pathways identified.	Impacts are well understood.	**No.** No material cumulative impacts anticipated.
	Benthic invertebrates		✓		✓			✓		✓	• Temporary and localised. • No serious or irreversible change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	No – no critical habitats, sensitive or protected benthic habitat or species overlap.	Yes – continual presence of benthic invertebrates	The well construction activity and other reasonably foreseeable project and activities have the potential to cause temporary behavioural change and injury/mortality to benthic invertebrates. The localised nature of disturbance and the lack of significant benthic habitat and assemblages in the region from the well construction activities are not anticipated to impact marine ecosystem functioning. Impacts from other reasonably foreseeable projects are predicted to be similar with no material cumulative impacts. No material cumulative cause-effect pathways identified.	Impacts are well understood.	**No.** No material cumulative impacts anticipated.
	Seabirds and shorebirds						✓	✓			• Temporary and localised. • No serious or irreversible harm to a threatened or migratory listed species.	Yes – BIA overlap.	Yes – impact during seasonal presence.	The well construction activity and other reasonably foreseeable project and activities have the potential to cause temporary behavioural change to seabirds and shorebirds. Impacts from other reasonably foreseeable projects are predicted to be similar with no material cumulative impacts. The activity light emissions buffer (20 km from Operational Area) overlaps <2% of the breeding BIA for wedge-tailed shearwater in the North-west	Impacts are capable of being mitigated to comply with relevant standards and to meet the acceptable level.	**No.** No material cumulative impacts anticipated.

Environmental Component	Key Environmental Matter	Planned Project Aspects									Acceptable Level	Cumulative Impact Scoping: Based on Planned Aspects from the Project and Reasonably Foreseeable Future Projects and Activities				
		Physical presence – interaction with other marine users	Seabed disturbance	Noise emissions – continuous	Noise emissions – impulsive	Atmospheric and GHG emissions	Light emissions	Vessel discharges	Drilling material discharges	Non-drilling material discharges		Potential for cumulative impact – Spatial extent	Potential for cumulative impact – Temporal extent	Material cumulative cause-effect pathway	Level of Certainty of Scoping Assessment	Does the material cumulative impact require detailed assessment?
														Marine Region (Figure 3-11). The BIA is based on a buffer area surrounding offshore islands that are used by the species for nesting. Individuals return to the nesting colonies in late June, foraging locally once eggs have hatched. Fledging occurs in the first two weeks of April. Due to the temporary and localised nature of light emissions from the well construction activities and other reasonably foreseeable projects and activities, and the small area of overlap, no material cumulative cause-effect pathways identified.		
Ecological Environment	Fish, Sharks and Rays			✓	✓		✓	✓			• Temporary and localised. • Impacts to marine fauna from noise emissions will be limited to temporary behavioural change localised to the noise source, with no species population-level impacts. • No serious or irreversible change in water quality which may adversely impact on biodiversity or ecological integrity.	Yes – BIA overlap.	Yes – Impact during seasonal presence.	The well construction activity and other reasonably foreseeable project and activities have the potential to cause behavioural change to marine reptiles undertaking biologically important behaviours. The well construction activity light and noise emissions buffers (20 km from Operational Area) overlaps with <1% of the foraging BIA for whale shark in the North-west Marine Region (Figure 3-12). It is known that the whale sharks are more common migrating along the 200 m depth contour, which is further offshore to the Wandoo facility (TSSC, 2015b). Whale sharks aggregate at Ningaloo which is approximately 296 km south-west of the Operational Area between March and July each year to feed (Section 3.4.1.2). Due to the temporary and localised nature of light and noise emissions from the well construction activities and other reasonably foreseeable projects and activities, and the small area of overlap, no material cumulative cause-effect pathways identified.	Impacts are capable of being reduced to comply with relevant standards and to meet the acceptable level.	**No.** No material cumulative impacts anticipated.

Environmental Component	Key Environmental Matter	Planned Project Aspects									Acceptable Level	Cumulative Impact Scoping: Based on Planned Aspects from the Project and Reasonably Foreseeable Future Projects and Activities				
		Physical presence – interaction with other marine users	Seabed disturbance	Noise emissions – continuous	Noise emissions – impulsive	Atmospheric and GHG emissions	Light emissions	Vessel discharges	Drilling material discharges	Non-drilling material discharges		Potential for cumulative impact – Spatial extent	Potential for cumulative impact – Temporal extent	Material cumulative cause-effect pathway	Level of Certainty of Scoping Assessment	Does the material cumulative impact require detailed assessment?
Ecological Environment	Marine mammals			✓	✓						• Short-term, temporary and localised. • Unlikely to result in population level effects. • No serious or irreversible change in water quality which may adversely impact on biodiversity or ecological integrity.	Yes – BIA overlap	Yes – Impact during seasonal presence.	The well construction activity and other reasonably foreseeable project and activities have the potential to cause temporary behavioural change to marine mammals from noise emissions. The Operational Area overlaps with a Migration BIA for the humpback whale (Figure 3-15). The species migrates north through the EMBA from their Antarctic feeding grounds around May each year, reaching the waters of the NWMR in early-June (DoE, 2024b). However, the exact timing of the migration period can vary from year to year. Although, temporary and localised behavioural changes to whale sharks may occur within the Operational Area, these changes are not expected to result in ecologically significant impacts at a population level. No material cumulative cause-effect pathways identified.	Impacts are capable of being reduced to comply with relevant standards and to meet the acceptable level.	**No.** No material cumulative impacts anticipated.
	Marine reptiles			✓	✓		✓				• Temporary and localised • No serious or irreversible change in water quality which may adversely impact on biodiversity or ecological integrity.	Yes – BIA and critical habitat overlap	Yes – Impact during seasonal presence.	The well construction activity and other reasonably foreseeable project and activities have the potential to cause behavioural change to marine reptiles undertaking biologically important behaviours. The well construction activity light emissions buffer (20 km from Operational Area) overlaps with only <2% of the internesting BIA for flatback turtle and <3% of the habitat critical for flatback turtle in the North-west Marine Region (Figure 3-18). The Pilbara stock nests throughout the North West Shelf and is characterised by summer nesting (October to March) (CoA, 2017). Due to the temporary and localised nature of light emissions from the well construction activities and other reasonably foreseeable projects and activities, no material cumulative cause-effect pathways identified.	Impacts are capable of being reduced to comply with relevant standards and to meet the acceptable level.	**No.** No material cumulative impacts anticipated.

Environmental Component	Key Environmental Matter	Planned Project Aspects									Acceptable Level	Cumulative Impact Scoping: Based on Planned Aspects from the Project and Reasonably Foreseeable Future Projects and Activities				
		Physical presence – interaction with other marine users	Seabed disturbance	Noise emissions – continuous	Noise emissions – impulsive	Atmospheric and GHG emissions	Light emissions	Vessel discharges	Drilling material discharges	Non-drilling material discharges		Potential for cumulative impact – Spatial extent	Potential for cumulative impact – Temporal extent	Material cumulative cause-effect pathway	Level of Certainty of Scoping Assessment	Does the material cumulative impact require detailed assessment?
Social and Economic Environment	Commercial fisheries	✓									• Short-term and temporary. • Undertake the activities in a manner that does not interfere with other marine users to a greater extent than is necessary for the exercise of the rights conferred by the titles granted.	Yes – fishing area overlapping Operational Area.	Yes – impact during seasonal presence	The well construction activity and other reasonably foreseeable oil and gas project and activities have the potential to cause short-term and temporary impacts to fishing operations. Temporary and localised change in fishing operations will not cause material change or result in material cumulative impacts to commercial fisheries. Consultation did not identify any concerns from fishing charter operators within the Operational Area. Interactions with fisheries from vessel presence will be of short-term nature to a minor portion of any fishery management area. No material cumulative cause-effect pathways identified.	Impacts are well understood.	**No.** No material cumulative impacts anticipated.
	Shipping	✓									• Short term and localised safety exclusion zone. • Undertake the activities in a manner that does not interfere with other marine users to a greater extent than is necessary for the exercise of the rights conferred by the titles granted.	No - spatial interference is incidental.	No – temporal interference is incidental	The well construction activity and other reasonably foreseeable project and activities have the potential to cause short-term and localised change in shipping movements. Short-term and localised change in shipping routes to avoid the well construction activity area and other reasonably foreseeable project and activities will not result in material cumulative impacts to the shipping industry. No material cumulative cause-effect pathways identified.	Impacts are well understood.	**No.** No material cumulative impacts anticipated.
Protected and Significant Areas	Submerged cultural heritage		✓								• No serious or irreversible changes to the seabed which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	No – no spatial overlap with submerged cultural heritage sites.	No – no potential temporal overlap.	The well construction activity and other reasonably foreseeable projects and activities will not overlap submerged cultural heritage sites. No material cumulative cause-effect pathways identified.	Impacts are well understood	**No.** No material cumulative impacts anticipated.

Section 7 Environmental Performance Outcomes

Section 21 of the OPGGS(E)R requires an EP to include Environmental Performance Outcomes (EPOs), control measures, Environmental Performance Standards (EPSs) and measurement criteria (Section 4). To ensure environmental performance is maintained to ALARP and acceptable levels, EPOs, control measures, EPSs and measurement criteria have been defined for the activity. EPOs are listed in Table 7-1 and control measures, EPSs and measurement criteria are listed in Table 7-2.

Table 7-1: Environmental Performance Outcomes

Reference	Environmental Performance Outcome
EPO-WC-01	Undertake the drilling activities in a manner that does not interfere with other marine users to a greater extent than is necessary for the exercise of right conferred by the titles granted.
EPO-WC-02	No serious or irreversible changes to the seabed which may adversely impact on biodiversity, ecological integrity, social amenity or human health.
EPO-WC-03	Impacts to marine fauna from noise emissions will be limited to temporary behavioural change localised to the noise source, with no species population-level impacts.
EPO-WC-04	Air emissions requirements from vessels within the Operational Area are consistent with Marine Order 97 requirements.
EPO-WC-05	Impacts to marine fauna from light emissions will be limited to temporary behavioural change localised to the light source, with no species population-level impacts.
EPO-WC-06	No serious or irreversible change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.
EPO-WC-07	No unplanned overboard loss of waste or solid objects to the marine environment.
EPO-WC-08	No introduction, establishment or spread of a known or potential invasive marine species.
EPO-WC-09	No serious or irreversible harm to a Threatened or Migratory listed species.
EPO-WC-10	No unplanned discharge of hydrocarbons or chemicals to the marine environment.
EPO-WC-11	In the event of loss of hydrocarbons, implement NOPSEMA-accepted spill response documents.

Table 7-2: Control Measures, Environmental Performance Standards and Measurement Criteria

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-1.1 Functional communication equipment on board MODU and vessels to communicate with commercial and recreational shipping vessels in the vicinity of the activities.	EPS-1.1.1 Communication equipment on board MODU and vessels, shall be functional and maintained in accordance with the contractor's Preventative Maintenance System (PMS).	MC-1.1.1 VOGA inspection or audit confirms application of contractor's PMS. Contractor's servicing and maintenance records are up to date.	EPO-WC-01
CM-1.2 Notification of intent to move MODU to or from Wandoo Field is provided in advance to AMSA.	EPS-1.2.1 Notify relevant agency of activities, vessel movements, and requested safety exclusion zone, to enable them to generate radio-navigation warnings and/or Notice to Mariners prior to commencing offshore activities.	MC-1.2.1 Record of lodgement of notification to relevant agency.	EPO-WC-01
	EPS-1.2.2 AMSA shall be advised of planned rig moves at least four weeks prior to scheduled move date.	MC-1.2.2 Copy of Notice to Mariners, noting location of MODU.	EPO-WC-01 EPO-WC-10
CM-1.3 Notification of activities direct to relevant persons.	EPS-1.3.1 Relevant persons to be identified and notified as appropriate prior to activity, in accordance with Section 9.4.11.	MC-1.3.1 Record of relevant person assessment and correspondence.	EPO-WC-01
CM-1.4 Vessels to adhere to the navigation safety requirements including the *Navigation Act 2012* and any subsequent Marine Orders.	EPS-1.4.1 Vessels compliant with *Navigation Act 2012* and Marine Order 21 (Safety of navigation and emergency procedures) and Marine Order 30 (Prevention of collisions).	MC-1.4.1 Marine assurance inspection records demonstrate compliance with standard maritime safety procedures.	EPO-WC-01

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-2.1 No anchoring of vessels will occur within the Operational Area.	EPS-2.1.1 The vessels only anchor within a designated anchoring zone outside of the Operational Area. The anchoring zone is outside the PSZ, clear of seabed infrastructure and in an environmentally non-sensitive area.	MC-2.1.1 Incident reports of incorrect anchoring.	EPO-WC-02
CM-2.2 A Rig Move Plan will be prepared in general accordance with Drilling Contractor's Marine Operations Manual.	EPS-2.2.1 MODU footings will be placed in a controlled fashion according to Rig Move Plan.	MC-2.2.1 Rig Move Plan. Records of MODU operations.	EPO-WC-02
CM-2.3 Unexpected finds of potential underwater cultural heritage sites/features are to be reported.	EPS-2.3.1 In the event an underwater cultural heritage site or feature is identified, the Minister will be notified within 21 days through the Australasian Underwater Cultural Heritage Database tool.	MC-2.3.1 Record of notification.	EPO-WC-02
CM-2.4 Positioning technology used to place MODU within the design footprint to reduce seabed disturbance.	EPS-2.4.1 The MODU will be pinned directly at the soft pin and final pin locations. The spud cans will be clear of the seafloor for the transit between the soft pin and final location.	MC-2.4.1 Records of MODU operations.	EPO-WC-02
CM-3.1 Engines on board the MODU and vessels to be maintained in accordance with manufacturer's specifications.	EPS-3.1.1 All MODU and vessel engines and power generation equipment shall be serviced in accordance with the relevant contractor's PMS. Contractor's servicing and maintenance records shall be validated by VOGA to ensure they are up to date.	MC-3.1.1 VOGA inspection or audit confirms application of contractor's PMS. Contractor's servicing and maintenance records are up to date.	EPO-WC-03 EPO-WC-06

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-3.2 Vessels contracted by VOGA operating in the Operational Area must adhere to Part 8 of EPBC Regulation 2000.	EPS-3.2.1 Compliance with EPBC Regulations 2000 – Part 8 Division 8.1 (Regulation 8.05 and 8.06) which requires that: • A vessel will not travel greater than 6 knots within 300 m of a whale or turtle (caution zone) and not approach closer than 100 m from a whale. • A vessel will not approach closer than 50 m of a dolphin or turtle or 100 m of a whale (with the exception of animals bow-riding). • A vessel will not approach closer than 300 m to a calf (whale or dolphin) (the caution zone). • If a calf appears in the caution zone the vessel must be immediately stopped and must: ○ Turn off the vessel's engines, or disengage the gears, or withdraw the vessel from the caution zone at a constant speed of less than 6 knots.	MC-3.2.1 Records demonstrate no breaches of EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans and application of these regulations to marine turtles.	EPO-WC-03 EPO-WC-09
CM-4.1 The sulphur content of fuel complies with Regulation 14 of MARPOL 73/78 Annex IV and AMSA Marine Order 97.	EPS-4.1.1 Fuel purchased in Australia shall meet Australian standards	MC-4.1.1 Records of low sulphur fuel usage.	EPO-WC-04

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-4.2 MODU and vessels comply with Regulation 14 of MARPOL 73/78 Annex VI and AMSA Marine Order Part 97.	EPS-4.2.1 Marine diesel engines meet NO_x emission requirements and limits as set out by MARPOL 73/78, Annex VI, Regulation 13, and have an International Air Pollution Prevention (IAPP) certificate. Onboard incinerators (if present) will meet IMO standards and are identified in the vessels' IAPP certificate. Equipment and systems that contain ODS comply with MARPOL 73/78, Annex VI, Regulation 12, are identified in the vessels' IAPP certificate and an ODS record book is maintained (where applicable). Vessels >400 GT have a Ship Energy Efficiency Management Plan (SEEMP).	MC-4.2.1 Vessel IAPP certificate. ODS Record Book. Records of SEEMP.	EPO-WC-04
CM-4.3 Contractor PMS in place to maintain power generation systems and ancillary diesel engines.	EPS-4.3.1 All MODU and vessel engines and power generation equipment shall be serviced in accordance with the relevant Contractor's PMS. Contractor's servicing and maintenance records shall be validated by VOGA to ensure they are up to date.	MC-4.3.1 VOGA inspection or audit confirms application of contractor's PMS. Contractor's servicing and maintenance records are up to date.	EPO-WC-04
CM-4.4 Contractor PMS in place to maintain refrigeration systems within the use of ODS.	EPS-4.4.1 Refrigeration systems shall be maintained in accordance with contractor's PMS to ensure refrigerant emissions are minimised. Contractor's servicing and maintenance records shall be validated by VOGA to ensure they are up to date.	MC-4.4.1 VOGA inspection or audit confirms application of contractor's PMS. Contractor's servicing and maintenance records are up to date.	EPO-WC-04

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-5.1 Lighting will be limited to the minimum required for navigational and safety requirements, with the exception of emergency events.	EPS-5.1.1 Reduce unnecessary MODU and vessel lighting to only those required for safe work and navigational use, in accordance with the National Light Pollution Guidelines for Wildlife (DCCEEW, 2023c).	MC-5.1.1 VOGA inspection or audit confirms no unnecessary light other than usage for safe work and navigation.	EPO-WC-05
CM-6.1 Chemical assessment and selection process.	EPS-6.1.1 Chemicals that will be discharged to the marine environment are selected in accordance with VOGA's Chemical Assessment Process (Section 8.3.7).	MC-6.1.1 Completed chemical assessments.	EPO-WC-06
CM-6.2 Bunding and drip trays are present to minimise the risk of oil from machinery entering the deck drainage system.	EPS-6.2.1 MODU and vessel work areas where machinery is present are bunded or the machines have drip trays to minimise the risk of oil from machinery entering the deck drainage system.	MC-6.2.1 VOGA inspection or audit confirms correct presence of drip trays.	EPO-WC-06

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-6.3 MODU and support vessels are required to comply with MARPOL 73/78 Annex I, Annex IV, Annex V, and AMSA Marine Orders 91, 95 and 96.	EPS-6.3.1 Vessel contractor procedures include the requirements to comply with MARPOL 73/78 (Annex IV; Regulation 8) as required by class: • Equipped with either a sewage treatment plant or sewage comminuting and disinfecting system or a sewage holding tank. • Wastes shall be macerated to <25 mm prior to discharge. • Untreated sewage will be stored on-board in suitable holding tanks and disposed of onshore at reception facility or to carrier licenced to receive the waste or discharged at a distance of more than 12 nm from the nearest land. • Vessel contractor procedures include the requirements to comply with MARPOL 73/78 (Annex I; Regulation 15) as required by class: ○ Deck drainage and bilge water will be treated in an oil water separator and discharged.	MC-6.3.1 Vessel international Sewage Pollution Prevention Certificate.	EPO-WC-06
	EPS-6.3.2 Oil contaminated water shall be treated via a MARPOL (or equivalent) approved oily water separator and only discharge if oil content less than 15 ppm for vessels >400 tonne.	MC-6.3.2 Oil Record Book	EPO-WC-06
CM-6.4 Solids Control System used to remove cuttings from drilling fluids	EPS-6.4.1 Solids Control System is used.	MC-6.4.1 Contractor's daily report demonstrates use of Solids Control System.	EPO-WC-06

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
in order to keep fluids in specification for reuse.	EPS-6.4.2 Maintenance of Solids Control System in accordance with the MODU PMS.	MC-6.4.2 Documentation of planned and completed maintenance and testing of Solids Control System in accordance with the MODU PMS.	EPO-WC-06
CM-6.5 Water-based drilling and completion fluids are used for well construction activities.	EPS-6.5.1 Only water-based drilling and completion fluids are used for well construction activities.	MC-6.5.1 Daily fluids report demonstrates use of water-based drilling and completion fluids.	EPO-WC-06
CM-6.6 Volume of fluid mixed to complete the task plus contingency volume (held in reserve) will be minimised.	EPS-6.6.1 Volume of fluid mixed to complete the task plus contingency volume (held in reserve) will be minimised.	MC-6.6.1 Daily fluids report records volume drilling and completion fluids, mixed, consumed, held in reserve and lost (surface discharges or downhole losses).	EPO-WC-06
CM-6.7 The volume of liquid (excluding seawater) discharged to the environment is recorded.	EPS-6.7.1 The volume of liquid (excluding seawater) discharged to the environment is recorded.	MC-6.7.1 Daily fluids report records volume drilling and completion fluids, mixed, consumed, held in reserve and lost (surface discharges or downhole losses).	EPO-WC-06
CM-6.8 Ditch magnets used to collect metal swarf.	EPS-6.8.1 Ditch magnets used to collect metal swarf generated during the drilling process after surface casing run and BOP's installed. Swarf will be collected and disposed onshore.	MC-6.8.1 Daily mudlogging report records volume of metal recovered on ditch magnets.	EPO-WC-06

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-6.9 Swarf recovery unit to be used for any casing section milling operations.	EPS-6.9.1 Swarf recovery unit to be installed and used for any casing section milling operations. Swarf will be collected and disposed onshore.	MC-6.9.1 Volume (weight) of recovered swarf recorded in daily drilling report.	EPO-WC-06
CM-6.10 Correct disposal of bulk product at end of campaign.	EPS-6.10.1 Unused bulk product managed as per the Bulk material disposal options framework outlined in this EP at end of campaign.	MC-6.10.1 Records confirm that the Bulk material disposal options framework was followed for the management of unused bulk product.	EPO-WC-06
CM-6.11 Quality control for barite.	EPS-6.11.1 Contaminant limit concentrations in barite: • Mercury (Hg) – 1 mg/kg dry weight in stock barite • Cadmium (Cd) – 3 mg/kg dry weight in stock barite.	MC-6.13.1 Records confirm barite used for the drilling meets the below standard: • Mercury (Hg) – 1 mg/kg dry weight in stock barite • Cadmium (Cd) – 3 mg/kg dry weight in stock barite.	EPO-WC-06
CM-6.12 Monitoring use of barite and cement.	EPS-6.12.1 Use of barite and cement will be monitored to reduce excess of bulk products remaining at end of campaign.	MC-6.12.1 Barite and cement volumes and daily usage are monitored and recorded (daily barge report), to ensure sufficient stock available to meet forecast usage and contingency requirements so as to minimise excessive stock level.	EPO-WC-06

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-6.13 Industry collaboration on management of unused bulk products.	EPS-6.13.1 VOGA will continue to be involved in industry collaboration efforts relating to the management of unused bulk products and implement improvements identified through industry-wide collaboration efforts if deemed ALARP following decision framework in Figure 2-2.	MC-6.13.1 Records confirm VOGA is involved in industry collaboration efforts and any improvements are implemented, if determined to be ALARP.	EPO-WC-06
CM-7.1 Non-hazardous and hazardous wastes are managed in accordance with contractor's Waste Management Plan.	EPS-7.1.1 Hazardous and non-hazardous wastes shall be segregated into recyclable and non-recyclable in accordance with the contractor's Waste Management Plan.	MC-7.1.1 VOGA inspection or audit confirms hazardous and non-hazardous wastes are segregated into recyclable and non-recyclable wastes. Compliance records from VOGA's waste management audit.	EPO-WC-07
	EPS-7.1.2 Waste shall be stored in clearly marked containers, and hazardous wastes bunded, in accordance with the relevant Safety Data Sheet (SDS) and the contractor's Waste Management Plan.	MC-7.1.2 VOGA inspection or audit confirms compliance.	EPO-WC-07
	EPS-7.1.3 Wastes for onshore disposal shall be transported in suitable containers as outlined in the contractor's Waste Management Plan.	MC-7.1.3 VOGA inspection or audit confirms waste is transported onshore in relevant containers.	EPO-WC-07
	EPS-7.1.4 All non-hazardous (except putrescible waste and waste-water) and hazardous waste shall be transported to shore and disposed of in appropriately licensed facilities in accordance with the contractor's Waste Management Plan.	MC-7.1.4 Waste disposal receipts confirm appropriate disposal of wastes (type and volume).	EPO-WC-07

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-7.2 Environmental induction.	EPS-7.2.1 Crew inductions, and job safety analyses where relevant, will include a component on preventing dropped objects to increase awareness of requirements.	MC-7.2.1 Induction records.	EPO-WC-07
CM-7.3 MODU and vessel procedures are compliant with MARPOL Convention Annex V, Prevention of Pollution by Garbage from Ships and Marine Order 95.	EPS-7.3.1 All vessels/MODU licensed to carry more than 15 persons or over 400 gross tonnage shall have and implement a Waste Management Plan and maintain a Garbage Record Book in accordance with MARPOL Convention Annex V, Prevention of Pollution by Garbage from Ships and Marine Order 95.	MC-7.3.1 VOGA inspection or audit of MODU and vessels to ensure compliance with Waste Management Plan. Garbage Record Book details the wastes (type and volume) disposed.	EPO-WC-07
CM-7.4 MODU work procedures for lifts, bulk transfers and cargo loading.	EPS-7.4.1 MODU work procedures require: • The security of loads to be checked prior to commencing lifts • Loads to be covered if there is a risk of losing loose materials • Lifting operations to be conducted using systems to manage the specific risks of that lift, including consideration of weather and sea state.	MC-7.4.1 Completed handling and transfer procedure checklist, Permit to Work and/or risk assessments verify that the procedure is implemented prior to each transfer.	EPO-WC-07

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-7.5 Recovery of dropped objects where practical to do so.	EPS-7.5.1 Any hazardous solid waste dropped to the marine environment will be recovered where safe and practicable to do so. Where safe and practicable for this activity, consider: • Risk to personnel to retrieve object • Whether the location of the object is in recoverable water depths • The object's proximity to subsea infrastructure • Ability to recover the object (i.e. nature of object, lifting equipment or ROV availability, and suitable weather).	MC-7.5.1 Incident reports detail the recovery attempt consideration and status of any hazardous waste lost to the marine environment.	EPO-WC-07
CM-8.1 MODU and vessels comply with Australian Ballast Water Management Requirements (DAWE, 2020).	EPS-8.1.1 Vessels will have an approved ballast water management plan and valid ballast water management certificate, unless an exemption applies or is obtained, as specified in the Australian Ballast Water Management Requirements (DAWE, 2020).	MC-8.1.1 Ballast water management plan or record of exemption. Valid ballast management certificate or record of exemption.	EP-WC-08
CM-8.2 MODU and vessels comply with the Annex 1 of the International Convention on the Control of Harmful Anti-Fouling Systems on Ships.	EPS-8.2.1 Anti-fouling systems on the MODU and support vessels are maintained in compliance with International Convention on the Control of Harmful Anti-Fouling Systems on Ships (IMO, 2001): • Prohibits the use of harmful organotins in antifouling paints used on ships and establishes a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems.	MC-8.2.1 Records confirm MODU and vessel anti-fouling systems have not used harmful organotins.	EP-WC-08

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-8.3 MODU, vessel and immersible equipment complete the VOGA Biofouling Risk Assessment Process.	EPS-8.3.1 MODU and support vessels will complete a VOGA Biofouling Risk Assessment [VOG-1000-NH-0026], identifying a low risk before mobilisation to the Operational Area. If a risk category of moderate, uncertain or high is scored, the process requires an independent IMS expert to be engaged, and further risk assessment and/or management measures undertaken.	MC-8.3.1 Records of VOGA Biofouling Risk Assessments maintained for MODU, vessels and relevant immersible equipment entering the Operational Area demonstrating low risk status. Records of management measures implemented if required, through the IMS vessel risk assessment process.	EP-WC-08
CM-9.1 Vessel movements within the PSZ are restricted to less than 3 knots.	EPS-9.1.1 Compliance with the Wandoo Marine Operations Manual [WNB-1000-YV-0001] which requires that a vessel will maintain a speed of less than 3 knots within the PSZ.	MC-9.1.1 Records demonstrate no breaches of the speed restrictions within PSZ.	EPO-WC-09
CM-9.2 Vessels contracted by VOGA operating in the Operational Area must adhere to separation distances defined by the Biodiversity Conservation Regulations 2018 (WA).	EPS-9.2.1 Compliance with Biodiversity Conservation Regulations 2018 (WA) which requires that: • A vessel will maintain a separation distance of 30 m from a whale shark.	MC-9.2.1 Records demonstrate no breaches of the separation distances defined for whale sharks within the Biodiversity Conservation Regulations 2018 (WA).	EPO-WC-09
CM-9.3 Environmental induction.	EPS-9.3.1 Crew inductions will include a component on interacting with marine fauna, including: • Part 8 of the EPBC Regulations • Separation distance for the whale shark within the Biodiversity Conservation Regulations.	MC-9.3.1 Induction records..	EPO-WC-09

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-10.1 No helicopter refuelling on the MODU or vessels in the Operational Area.	EPS-10.1.1 No helicopter refuelling on the MODU or vessels in the Operational Area.	MC-10.1.1 Records confirm no helicopter refuelling occurred.	EPO-WC-10
CM-10.2 Intermediate Bulk Containers (IBCs) are transferred to/from vessel using a lifting cradle or are containerised.	EPS-10.2.1 IBCs shall be transferred to/from vessels using a lifting cradle or will be containerised.	MC-10.2.1 VOGA inspection or audit confirms compliance with contractor Lifting Procedure.	EPO-WC-10
CM-10.3 Cranes and lifting equipment are certified.	EPS-10.3.1 Cranes and lifting equipment shall be certified.	MC-10.3.1 IBCs, cranes and lifting equipment certification records.	EPO-WC-10
CM-10.4 Contractor's PMS includes lifting equipment and cranes.	EPS-10.4.1 Lifting equipment and cranes shall be maintained in accordance with contractors' PMS.	MC-10.4.1 VOGA inspection or audit confirms application of contractor's PMS. Contractor's servicing and maintenance records are up to date.	EPO-WC-10
CM-10.5 Chemical storage on MODU compliant with MODU contractor's storage requirements to prevent release to the marine environment.	EPS-10.5.1 All hazardous chemicals shall be stored in bunded areas or below deck.	MC-10.5.1 VOGA inspection or audit confirms chemicals are stored in bunded areas or below deck.	EPO-WC-10
CM-10.6 Crane driver meets contractor's competency requirements.	EPS-10.6.1 Crane operators shall be certified for offshore tower crane operations.	MC-10.6.1 Review of contractor's CMS.	EPO-WC-10

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-10.7 Contractor's PMS includes hydraulic hose maintenance and replacement schedule.	EPS-10.7.1 All hydraulic hoses, vessel lifting equipment and cranes shall be serviced in accordance with the relevant Contractor's PMS and replacement schedule. Contractor's servicing and maintenance records shall be validated by VOGA to ensure they are up to date.	MC-10.7.1 VOGA inspection or audit confirms application of contractor's PMS. Contractor's servicing and maintenance records are up to date.	EPO-WC-10
CM-10.8 MODU and vessels will implement a Shipboard Oil Pollution Emergency Plan (SOPEP)/SMPEP (equivalent to class) in the event of a spill.	EPS-10.8.1 SOPEP/SMPEP (equivalent to class) procedures shall be available during well construction activities.	MC-10.8.1 VOGA inspection or audit confirms SOPEP/SMPEP (equivalent to class) procedures are available on the MODU and vessels during well construction activities.	EPO-WC-10 EPO-WC-11
CM-10.9 MODU and vessels have equipment to manage small spills on their facilities.	EPS-10.9.1 Equipment meeting the requirements of the SOPEP/SMPEP (equivalent to class) shall be available on the MODU and vessels during well construction activities.	MC-10.9.1 VOGA inspection or audit confirms that the required spill kits are available during well construction activities.	EPO-WC-10

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-10.10 Vessel firefighting system (portable or in-built), to be consistent with IMO SOLAS Chapter 11-2, Part C, Regulation 10 amendments related to the use and storage of firefighting foams containing perfluoroctane sulfonic acid (PFOS), as outlined in MSC.532(107): • For vessels constructed on or after 1 January 2026, no use or storage of extinguishing media containing PFOS). • For vessels constructed before 1 January 2026, no use or storage of extinguishing media containing PFOS, beyond the date of first survey on or after 1 January 2026.	EPS-10.10.1 Survey vessel firefighting system consistent with IMO SOLAS Chapter 11-2, Part C, Regulation 10 amendments related to the use and storage of firefighting foams containing PFOS, as outlined in MSC.532(107).	MC-10.10.1 Records demonstrate survey vessel firefighting systems are consistent with IMO SOLAS Chapter 11-2, Part C, Regulation 1 – amendments related to the use and storage of firefighting foams containing PFOS, as outlined in MSC.532(107).	EPO-WC-10
CM-10.11 Navigational lights on all vessels and MODU.	EPS-10.11.1 Vessels and MODU navigation lighting shall comply with SOLAS and the *Navigation Act 2012*.	MC-10.11.1 VOGA inspection or audit confirms lighting complies with SOLAS and the *Navigation Act 2012*.	EPO-WC-10
CM-10.12 Vessel contract specifies DP-capability.	EPS-10.12.1 Vessels shall be DP capable.	MC-10.12.1 Specification noted in contract.	EPO-WC-10

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-10.13 Vessels obtain permission to enter PSZ.	EPS-10.13.1 Vessels are required to establish radio communications with the platform and request permission to enter the PSZ.	MC-10.13.1 Noted in radio log and/or Wandoo Marine Operations Checklist [WNB-1000-NV-0001].	EPO-WC-10
CM-10.14 Vessels perform DP trials as required by their PMS.	EPS-10.14.1 Vessels are required to conduct DP trials prior to entry into the PSZ.	MC-10.14.1 DP trials noted in ships log and/or Wandoo Marine Operations Checklist [WNB-1000-NV-0001].	EPO-WC-10
CM-10.15 SIMOPS Plan.	EPS-10.15.1 SIMOPS Plan shall define controls to be implemented when multiple vessels are in the PSZ.	MC-10.15.1 SIMOPS Plan implemented.	EPO-WC-10
CM-10.16 Vessels have certified masters/qualified crew.	EPS-10.16.1 Vessel masters and crew meet contractor CMS requirements.	MC-10.16.1 Review of contractors CMS.	EPO-WC-10
CM-10.17 Vessels have systems and personnel to assist with tracking and identifying vessels in the general area.	EPS-10.17.1 Vessels are fitted with radar, Automatic Identification System (AIS) and a VHF radio, and crew maintain bridge watch.	MC-10.17.1 VOGA inspection or audit confirms presence of working radar equipment.	EPO-WC-10
CM-10.18 Dry break coupling on refuelling hose to minimise spill due to vessel loss of position.	EPS-10.18.1 Breakaway coupling is required to be installed on refuelling hoses.	MC-10.18.1 VOGA inspection or audit confirms presence of breakaway couplings.	EPO-WC-10

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-10.19 Bunkering undertaken in accordance with contractor bunkering procedure.	EPS-10.19.1 Vessels compliant with contractor bunkering procedure, including: • Check hoses prior to bunkering. • Monitoring of gauges, hoses, fittings and sea surface during bunkering. • Bunkering only in daylight hours.	MC-10.19.1 Records confirm bunkering operations undertaken in accordance with contractor bunkering procedure.	EPO-WC-10
CM-10.20 Wells are designed in compliance with the VOGA Well Construction Standards Manual (WCSM) [VOG-5000-MN-003].	EPS-10.20.1 Well design shall comply with standards described in VOGA's WCSM.	MC-10.20.1 Statement in Basis of Well Design document.	EPO-WC-10
CM-10.21 VOGA standards require that casing and completion and wellhead components are manufactured to relevant API or ISO specifications.	EPS-10.21.1 VOGA shall validate that well casing, completion and wellhead components are manufactured to relevant API specifications.	MC-10.21.1 Purchase orders and contracts specify manufacturing standards.	EPO-WC-10
CM-10.22 VOGA selects contractors based on evaluation of their ability to provide fit-for-purpose services in support of the activity.	EPS-10.22.1 The well construction contractor used on a campaign shall be assessed through VOGA's contractor evaluation process or equivalent.	MC-10.22.1 Records of contractor selection/evaluation process.	EPO-WC-10

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-10.23 VOGA standards require that all activities on a well after initial installation of a BOP require a minimum of two temporary barriers be in place unless exempted through a formal Management of Change (MoC) process.	EPS-10.23.1 Drilling Program shall specify the barriers to be in place during well operations.	MC-10.23.1 Drilling Program signed off by VOGA Well Construction Manager.	EPO-WC-10
CM-10.24 VOGA conduct Peer Review and Drill Well on Paper workshops to review well designs and operational plans.	EPS-10.24.1 VOGA shall conduct Peer Review and Drill Well on Paper workshops to review well designs and operational plans.	MC-10.24.1 Peer Review and Drill Well on Paper attendance records.	EPO-WC-10
CM-10.25 VOGA prepares a detailed program for each well activity to outline the intended work scope and the well barriers to be in place during the campaign.	EPS-10.25.1 Drilling Program shall outline the intended work scope and well barriers to be in place during the campaign.	MC-10.25.1 Drilling Program signed off by VOGA Well Construction Manager.	EPO-WC-10
CM-10.26 VOGA Drilling Supervisors, Completions Supervisors and Drilling Superintendents are required to hold current Well Control certification.	EPS-10.26.1 VOGA Drilling Supervisors, Completions Supervisors and Drilling Superintendents shall hold current well control certification as required.	MC-10.26.1 Drilling Superintendent confirms currency prior to operations commencing Certification records kept on file.	EPO-WC-10

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-10.27 VOGA require the MODU Contractor to ensure that drilling personnel with a position of driller and above to hold well control certification.	EPS-10.27.1 Relevant MODU personnel shall hold current well control certification as required.	MC-10.27.1 Certification kept on file by MODU Contractor. Drilling Superintendent confirms currency prior to operations commencing.	EPO-WC-10
CM-10.28 VOGA require a Barrier Verification Document to be completed prior to progressing beyond programmed check points in a Drilling Program.	EPS-10.28.1 VOGA Barrier Verification Document shall be completed and signed off by senior VOGA and Drilling Contractor representatives prior to progressing beyond the programmed check points in a Drilling Program.	MC-10.28.1 Signed Barrier Verification Document.	EPO-WC-10
CM-10.29 VOGA require that BOPs are tested at regular intervals in accordance with API standard 53.	EPS-10.29.1 VOGA shall validate that BOPs are tested at regular intervals in accordance with API standard 53 in accordance with VOGA requirements.	MC-10.29.1 Tests noted in Daily Drilling Report.	EPO-WC-10
CM-10.30 Formation Integrity Tests (FITs) or Leak Off Tests (LOTs) are conducted after drilling out casing shoes or milling windows in existing casing if required under the WCSM.	EPS-10.30.1 LOTs or FITs shall be conducted after drilling out casing shoes or milling windows in existing casing when programmed.	MC-10.30.1 LOT or FIT report.	EPO-WC-10
CM-10.31 VOGA requires kick tolerances to be calculated for all pressure containing casing strings.	EPS-10.31.1 Kick tolerance shall be calculated for all pressure containing casing strings in accordance with requirements of WCMS and Drilling Program.	MC-31.1 Kick tolerance noted in Daily Drilling Report if kick tolerance calculations are required during drilling activities.	EPO-WC-10

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-10.32 VOGA requires the Drilling Contractor and the mud logging service provider to independently monitor mud flows for variances.	EPS-10.32.1 VOGA shall validate that the Drilling Contractor and the mud logging service provider monitor mud flows.	MC-10.32.1 Daily mudlogging reports.	EPO-WC-10
CM-10.33 VOGA requires the Drilling Contractor to conduct drills demonstrating preparedness to act if unexpected mud flows occur.	EPS-10.33.1 VOGA shall validate that kick and choke drills conducted.	MC-10.33.1 Drills noted in Daily Drilling Report.	EPO-WC-10
CM-10.34 Collision risk assessed for planned well path against existing wells. Where collision is outside well construction standards, an MoC will be implemented with mitigation and controls specified.	EPS-10.34.1 VOGA MoCs hall be used to manage drilling operations where the well separation factor is <1.0.	MC-10.34.1 Approved MoC form.	EPO-WC-10
CM-10.35 VOGA prepare directional drilling plans for each new well designed to minimise the risk of a well bore collision.	EPS-10.35.1 Well Construction Program shall include directional drilling plans for new wells and trajectories are checked for wellbore collision risk.	MC-10.35.1 Well Construction Program signed off by VOGA Well Construction Manager.	EPO-WC-10
CM-10.36 VOGA utilise a geological model of the reservoir to predict Formation Evaluation While Drilling (FEWD) tool responses.	EPS-10.36.1 Drilling plans shall incorporate offset well log responses for potential collision points to enable collision avoidance using FEWD tool responses if required to mitigate collision risk.	MC-10.36.1 Campaign specific Drilling Collision Mitigation Plan prepared by Geologist and Senior Drilling Engineer.	EPO-WC-10

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-10.37 VOGA prepare a Geosteering Plan to optimise well placement decisions.	EPS-10.37.1 Geosteering Plan shall be incorporated into the Campaign specific Drilling Collision Mitigation Plan.	MC-10.37.1 Campaign specific Drilling Collision Mitigation Plan prepared by Geologist and Senior Drilling Engineer.	EPO-WC-10
CM-10.38 VOGA shut in production wells when drilling occurs close to existing wells.	EPS-10.38.1 Well Construction Program shall specify wells to be shut in prior to drilling in close proximity.	MC-10.38.1 Wells which were shut in are noted in Daily Drilling Report.	EPO-WC-10
CM-10.39 Anti-collision procedures used when wells are in close proximity to an existing well bore.	EPS-10.39.1 Drilling plans shall specify use of anti-collision procedures when drilling in close proximity of other wells.	MC-10.39.1 Well Construction Program signed off by VOGA Well Construction Manager.	EPO-WC-10
CM-10.40 For any additional wells that are drilled under this EP, worst-case discharge modelling will be undertaken.	EPS-10.40.1 For any additional wells that are drilled under this EP, worst-case discharge modelling will be undertaken. If the assessment indicates potential for worst-case discharge parameters within this EP to be exceeded than those described in this EP, the MoC process will be undertaken in accordance with Section 8.5.	MC-10.40.1 Reservoir modelling records. MoC records.	EPO-WC-10
CM-11.1 The NOPSEMA-accepted Wandoo Field OSCP [WAN-2000-RD-0001] will be implemented.	EPS-11.1.1 Oil spill response strategies shall be implemented in accordance with the Wandoo Field OSCP [WAN-2000-RD-0001].	MC-11.1.1 IAP records.	EPO-WC-11

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-11.2 The NOPSEMA-accepted Operational and Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002 will be implemented.	EPS-11.2.1 Oil spill operational and scientific monitoring shall be implemented in accordance with the Operational and Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002].	MC-11.2.1 IAP records.	EPO-WC-11
CM-11.3 Export operations, including tanker approach, not permitted during MODU positioning.	EPS-11.3.1 Export operations within the Operational Area, including tanker approach, not permitted during MODU positioning.	MC-11.3.1 Offtake records.	EPO-WC-11
CM-11.4 Isolation of wells as part of the facility Emergency Shutdown (ESD).	EPS-11.4.1 Platform status complies with requirements of the MODU Safety Case Revision prior to a MODU obtaining permission to approach platform during rig move.	MC-11.4.1 Field Superintendent will issue a signed pre-move checklist confirming that pre-move checks have been completed.	EPO-WC-11
	EPS-11.4.2 Function testing of ESD system from rig remote stations prior to commencing well construction activities.	MC-11.4.2 Successful test noted in Daily Drilling Report.	EPO-WC-11

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-11.5 Ensure the most effective response strategies are being applied and environmental impact of the spill and response strategies are measured.	EPS-11.5.1 • Monitoring shall be activated from time of spill detection to inform implementation of response strategies. • Preliminary Oil Spill Trajectory Modelling (OSTM) to be requested within 3 hours of a spill being reported. • Satellite tracking buoys to be deployed within 30 minutes of a spill being reported. • Environmental data to support decision making (IAP) and spill impact assessment shall be available prior to impact.	MC-11.5.1 IAP records.	EPO-WC-11
CM-11.6 Decision making processes support mitigation of environmental impact of spills and assessment of effectiveness of response strategies.	EPS-11.6.1 The Wandoo Field OSCP [WAN-2000-RD-0001] shall provide a process for completing an IAP which shall include: • An environmental impact assessment of the proposed response activities • Selection of the most appropriate response activities (strategies) • Identification of appropriate operational and scientific monitoring activities • Operational and scientific monitoring outputs shall inform the effectiveness of response strategies.	MC-11.6.1 Accepted Wandoo Field OSCP [WAN-2000-RD-0001].	EPO-WC-11

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-11.7 Minimise potential impacts on fauna caused by oiled wildlife response activities.	EPS-11.7.1 Induction and training shall cover any special handling requirements to minimise further detrimental impacts to flora and fauna. Wildlife strategy including hazing, if required, shall be developed in consultation with the Department of Transport.	MC-11.7.1 Induction material.	EPO-WC-11
	EPS-11.7.2 Wildlife strategy including hazing, if required, shall be developed in consultation with the Department of Transport (DoT).	MC-11.7.2 Consultation records with DoT.	EPO-WC-11
CM-11.8 Oil spill response personnel understand and competently perform their response roles.	EPS-11.8.1 Oil spill response personnel are competent in their required emergency response roles.	MC-11.8.1 Exercises conducted in accordance with VOGA Emergency Response Schedule [VOG-1100-YH-0001]. HSEMS audits of Element 8 are conducted in accordance with the HSEMS Element 12 – Performance Assurance Manual [VOG-1100-YG-1201.02].	EPO-WC-11
CM-11.9 The Source Control Emergency Response Plan (SCERP) will be implemented in the event of a LOWC.	EPS-11.9.1 SCERP prepared prior to well construction activities. If the assessment indicates potential for worst case discharge parameters within this EP to be exceeded, the MoC process will be undertaken in accordance with Section 8.5.	MC-11.9.1 SCERP. Reservoir modelling records. MoC records.	EPO-WC-11

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
	EPS-11.9.2 Source control response strategies shall be implemented in accordance with the SCERP.	MC-11.9.2 IAP records.	EPO-WC-11
	EPS-11.9.3 Suitable rigs for relief well operations are identified at the time of preparing the SCERP. VOGA will track MODU activity within the region and update the register on monthly basis during drilling activities for any well capable of sustaining flow to surface.	MC-11.9.3 Relief well rig availability register records.	EPO-WC-11
CM-11.10 Maintenance of OSM Services Provider contract.	EPS-11.10.1 Maintain contracts with third-party provider/s to provide access to suitably qualified and competent personnel and equipment to assist in the implementation of monitoring.	MC-11.10.1 Contract with Monitoring Service Provider/s.	EPO-WC-11
CM-11.11 OSM Services Provider capability verified through regular capability reporting.	EPS-11.11.1 Obtain monthly capability reports from Monitoring Service Provider to demonstrate suitable resources are available throughout the activity.	MC-11.11.1 Monthly capability reports from Monitoring Service Provider.	EPO-WC-11
CM-12.12 OSM Services Provider testing and exercising.	EPS-11.12.1 Annual testing of OSM Monitoring Service Provider standby arrangements and activation process.	MC-11.12.1 Exercise records.	EPO-WC-11
CM-11.13 Adequacy of existing baseline data sources across the OSM Planning Area reviewed periodically.	EPS-11.13.1 Periodical review of existing baseline data.	MC-11.13.1 Adequacy of existing baseline data reviewed periodically for locations within the Operational and Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002] identified as requiring a baseline review.	EPO-WC-11

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-11.14 Activate operational and scientific monitoring Plans.	EPS-11.14.1 OMPs and SMPs will be activated in accordance with the initiation criteria provided in Table 9-1 and 9-2 of the Joint Industry OSM Framework (APPEA, 2021).	MC-11.14.1 Incident Action Plan and Incident Log confirm OMPs and SMPs are activated in accordance with the initiation criteria provided in Table 9-1 and 9-2 of the Joint Industry OSM Framework (APPEA, 2021).	EPO-WC-11
CM-11.15 Activation of operational and scientific monitoring plans according to OMPs and SMPs initiation criteria.	EPS-11.15.1 Initiation criteria of OMPs and SMPs will be reviewed during the preparation of the initial IAPs and subsequent IAPs; and if any criteria are met, relevant OMPs and SMPs will be activated.	MC-11.15.1 IAP records.	EPO-WC-11
CM-11.16 Mobilisation and implementation of OMPs and SMPs.	EPS-11.16.1 Mobilisation and implementation of OMPs and SMPs will be undertaken in accordance with the indicative timeframes and sequencing described in Part B of the Operational and Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002].	MC-11.16.1 Incident log and monitoring records.	EPO-WC-11
CM-11.17 OSM implementation of the Minimum Standards.	EPS-11.17.1 Implementation of operational and scientific monitoring will comply with the Minimum Standards listed in Appendix A of the Joint Industry OSM Framework (APPEA, 2021).	MC-11.17.1 Incident log and monitoring records.	EPO-WC-11
CM-11.18 Stand-down, termination and post-spill activities.	EPS-11.18.1 Once post-spill SMP monitoring reports are drafted they will be peer reviewed by an expert panel.	EPS-11.18.1 Monitoring records.	EPO-WC-11

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
	EPS-11.18.2 OMPs and SMPs will be terminated in accordance with the termination criteria provided in Tables 9-1 and 9-2 of the Joint Industry OSM Framework (APPEA, 2021).	EPS-11.18.2 IAP and Incident Log confirm OMPs and SMPs are terminated in accordance with the termination criteria provided in Tables 9-1 and 9-2 of the Joint Industry OSM Framework (APPEA, 2021).	EPO-WC-11
CM-11.19 Current oil spill response arrangements are accessible to all personnel in the event of an oil spill.	EPS-11.19.1 Oil spill response documentation is up to date, maintained and readily available within VOGA Information Systems.	MC-11.19.1 HSE MS audits of Element 8 are conducted in accordance with the HSEMS Element 12 – Performance Assurance Manual [VOG-1100-YG-1201.02].	EPO-WC-11
CM-11.20 Notification of relevant persons.	EPS-11.20.1 Relevant persons to be identified and notified, as appropriate to the spill response, in accordance with Section 9.4.11.	MC-11.20.1 Record of relevant person assessment and correspondence.	EPO-WC-11
CM-12.1 Personnel training and competency.	PS-12.1.1 VOGA personnel involved in the activity have the appropriate competencies to perform the tasks required of their roles. This requires that competencies for specific roles are defined, that adequate training and supervision is provided.	CM-12.1.1 CVs and training records demonstrate personnel have required competencies and training for their role.	N/A
CM-12.2 Environment Plan induction.	PS-12.2.1 An Environment Plan induction will be delivered to all MODU and vessel personnel.	CM-12.2.1 Training records confirm relevant personnel have completed the induction.	N/A

Control Measure	Environmental Performance Standard	Measurement Criteria	EPO Reference (Table 7-1)
CM-12.3 Audits and inspections.	PS-12.3.1 Audits and inspections against the Commitment Register will be undertaken in accordance with the phase and frequency outlined in Table 8-13.	CM-12.3.1 End of Campaign Report.	N/A

Section 8 Implementation Strategy

8.1 Overview

The primary goals of VOGA's Well Construction EP implementation strategy are to direct, review and manage well construction activities so that environmental impacts and risks are continually being managed to ALARP and acceptable levels, and to ensure that environmental performance outcomes and standards are being met over the life of the project.

The VOGA HSE Management System (HSE MS) provides the procedures and practices that will be followed to ensure environmental risks of operations are reduced to ALARP.

The following approaches are used to ensure VOGA's HSE MS, practices and procedures are implemented:

- Activities will be undertaken in accordance with VOGA's HSE MS (Section 8.2.1)
- Activities will be undertaken in accordance with VOGA's HSE Policy (Section 8.2.3)
- Activities will be assessed in accordance with the VOGA Risk Management Manual [VOG-2000-MN-0001] (Section 4)
- Contractors are managed (Section 8.3.4)
- Roles and responsibilities are outlined (Section 8.3.5)
- All personnel working in the Operational Area will undertake the VOGA site-specific induction which contains information on the EP, environmental legislation and environmental sensitivities (Section 8.3.6)
- There is ongoing hazard identification and evaluation (Section 8.3.10)
- Environmental performance outcomes, standards and measurement criteria are implemented (Section 8.3)
- Chemicals used in offshore applications are appropriately managed (Section 8.3.7)
- An inspection and audit plan developed and implemented (Section 8.10)
- Non-conformance and changes are appropriately managed (Section 9.3.3)
- ERPs are in place (Section 8.8.1)
- Spill response will be regularly tested (Section 8.9)
- Environmental performance reporting is undertaken (Section 9)
- There is ongoing engagement with relevant Stakeholders (Section 10)
- Opportunities for continual improvement are identified (Section 8.6).

8.2 HSE Management System

8.2.1 Overview

The VOGA HSE MS provides the procedures and practices that will be followed to ensure that the environmental risks associated with its activities are reduced to ALARP.

The HSE MS has been developed to be consistent with the requirements of the following standards:

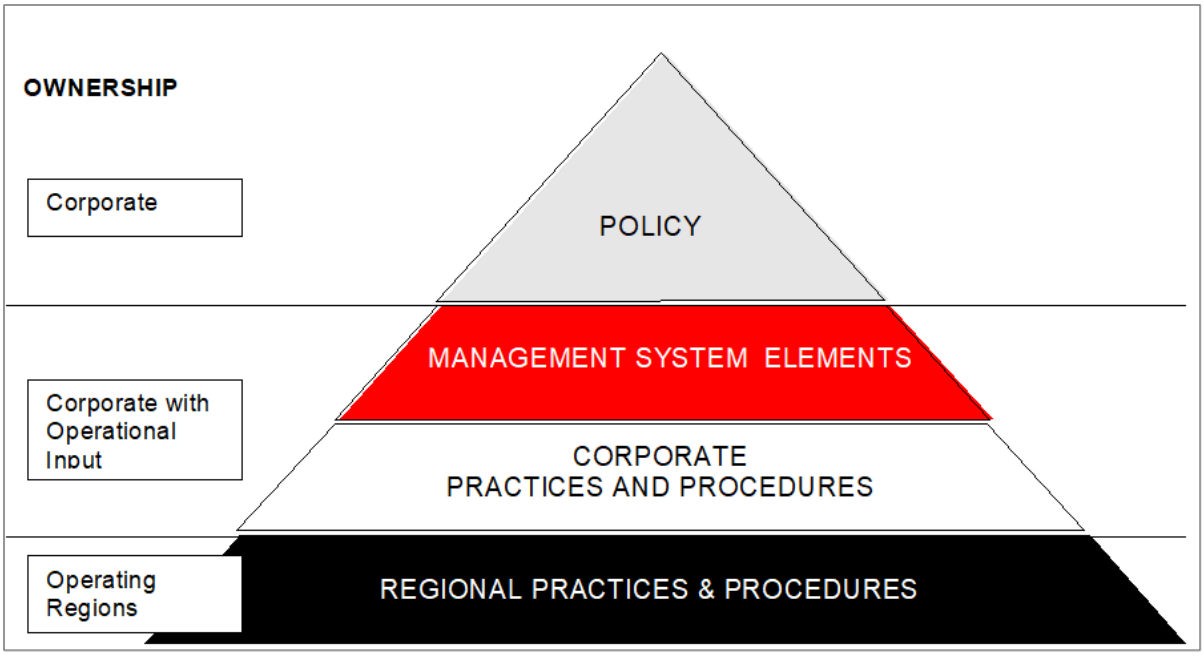
- ISO 14001: Environmental Management System;
- OHSAS 18002:2000 Occupational Health & Safety Management Systems (an international standard equivalent to AS/NZS 4801); and
- API 9100 Model Environmental, Health and Safety Management System.

HSE MS is also consistent with AS/NZS 4360:2004 Risk Management although it has not been developed specifically to meet that standard.

8.2.2 Structure

The following section describes the structure of the HSE MS, how it integrates top level management through to operational activities on the facilities, and how the elements of the HSE MS are linked in a logical manner to all activities. The overall HSE MS documentation hierarchy is illustrated in Figure 8-1.

Figure 8-1: HSE MS framework



8.2.3 HSE Policy

The VOGA HSE Policy applies to all VOGA activities. The written policy statement provides an overall commitment in terms of key principles for managing health, safety and the environment. The Policy sets the overall HSE intentions of the organisation and contains a commitment to continuous improvement. The Policy is the starting point for setting VOGA's HSE objectives and targets. A copy of VOGA's HSE Policy is provided in Appendix A.

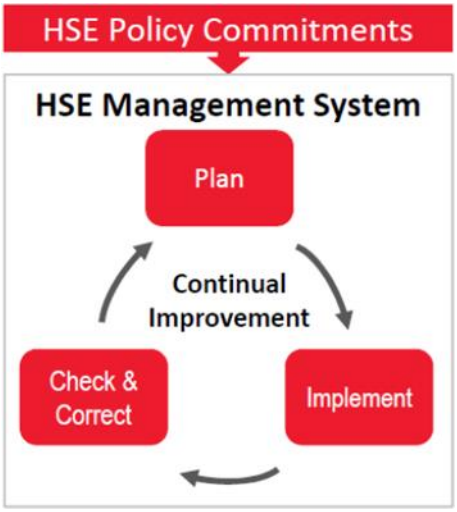
8.2.4 Contents

VOGA has developed an HSE MS that consists of three phases as follows:

- Phase 1: Plan
- Phase 2: Implement
- Phase 3: Check and correct.

As outlined in Figure 8-2, the three-phase structure provides a continual improvement feedback cycle consistent with management system concepts that underlie the various standards. Each phase has one or more component element, and each element has multiple expectations.

Figure 8-2: Outline of HSE MS Process – Plan-Implement-Check and Correct



The HSE MS is structured into 12 elements as outlined in Table 8-1; each element has been developed within the overall three-phase HSE MS process (Plan-Implement-Check and Correct). As such, each element connects to one or more of the other elements within the overall continual improvement cycle.

Table 8-1: Elements of HSE MS and objectives

Phase	HSE MS Elements	Objectives
Plan	Element 1: Management, Leadership and Policy	Management provides vision, resources and the environment for HSE MS success. All employees understand and are held accountable for the success of HSE MS. Performance excellence in HSE is recognised as a priority and prerequisite to successful business results.
	Element 2: Corporate and Social Responsibility and Communication with Stakeholders	VOGA is committed to protecting health, safety and the environment, and reducing and managing the HSE risks associated with its operations. In doing so, it is important that VOGA commit to an open dialogue with employees, the communities in which they operate, and other relevant stakeholders with respect to HSE issues associated with VOGA operations.
	Element 3: Risk Management	VOGA will ensure that risks are identified and managed to minimise the potential for incidents and liabilities.
	Element 4: MoC	Risks associated with change to personnel, organisations, procedures, practices, designs, facilities and regulatory requirements are identified, evaluated and managed.
Implement	Element 5: Training and Competency	Personnel are required to have the necessary skills and competencies to carry out their responsibilities in a safe and effective manner. Managers will ensure all employees have the appropriate skills and knowledge and will provide training where necessary.
	Element 6: Operations and Maintenance	HSE practices and procedures are necessary for the construction and operation of each asset. Practices and procedures are prescriptive “how to’s” of job tasks. The purpose of this element is to identify the requirements for practices and procedures necessary for each business/facility to ensure employees, contractors, the general public and the environment are protected from accidents/incidents.
	Element 7: Contractor Management and Procurement	It is important that controls are in place to ensure that activities undertaken by contractors, vendors and service providers are carried out in an efficient, safe and environmentally responsible manner.
	Element 8: Emergency Preparedness Management and Response	All operating areas have the necessary ERPs, skills and equipment to respond quickly to any emergency associated with our operations.
	Element 9: Incident Management	Reporting, investigating, analysing, follow-up and sharing information from incidents (and near misses) are used to minimise future occurrences.
	Element 10: Security Management	VOGA protects its people and assets from security risks and threats.

Phase	HSE MS Elements	Objectives
	Element 11: Documentation and Records	Operating regions ensure relevant documentation and records required to meet regulatory and VOGA business entity internal performance requirements, are maintained, organised and accessible.
Check and Correct	Element 12: Performance Assessment	Continual improvement is assured through regular assessments, audits and reports to management.

8.2.5 Review of the HSE ME

To ensure ongoing effectiveness and continual improvement of the HSE MS, VOGA and Vermilion Energy Inc. periodically review the elements of the HSE MS, including Element 12. This review process is intended to provide a mechanism for making changes to the HSE MS as necessary to achieve the organisational goals and meet the expectations of stakeholders. VOGA and Vermilion Energy Inc. Senior Management review VOGA HSE MS performance in order to achieve the following:

- Determine its continuing suitability, adequacy and effectiveness
- Address possible needs for changes to the HSE Policy, procedures, objectives, targets and other elements of the management system
- Identify opportunities for continual improvement.

VOGA and Vermilion Energy Inc. Senior Management review the effectiveness of the VOGA management system and provide formal feedback to assure continual improvement through:

- An annual review of VOGA HSE MS performance
- Monthly review of HSE Key Performance Indicators (KPIs)
- Incident reports (as required)
- Audit reports (as required).

Checklists detailing content, inputs and outputs of the annual review and monthly review of HSE KPIs are provided in Management System Manual: Performance Assurance Manual [VOG-1100-YG-1201.02].

8.3 Implementation of Controls

8.3.1 Well Construction Management System

All activities carried out during the planning and execution of well construction campaigns are carried out in accordance with VOGA's HSE MS. However, the HSE MS is focused on the design, operation and maintenance of production operation systems. As such it does not provide the appropriate focus for management of well construction operations. The Well Construction Management System (WCMS) was created to provide a structure that is consistent with the HSE MS but focused on guiding the safe and efficient management and execution of well construction activities. The WCMS is directly aligned to the HSE MS. It is headed by the VOGA HSE Policy and meets the objectives of each HSE MS Element. The objectives attached to each

element of the HSE MS are detailed in Table 8-2, along with a description of how the WCMS meets these objectives.

In addition to execution of activities in accordance with VOGA's WCMS, well construction operations must also be carried out in accordance with the MODU Contractor's management systems. To ensure compliance with both management systems, they are aligned through the facility Safety Case Revisions.

Table 8-2: Elements of HSE MS/WCMS and objective

HSE MS/WCMS elements	HSE MS/WCMS objectives	Well construction expectations
Element 1: Management, Leadership and Policy	Management provides vision, resources and the environment for HSE MS success. All employees understand and are held accountable for the success of HSE MS. Performance excellence in HSE is recognised as a priority and prerequisite to successful business results.	The Well Construction Manager and Drilling Superintendent demonstrate visible leadership and proactive commitment to HSE performance through personal example. Management are expected to visit the MODU at least once a month during a campaign, to interact with the workforce and observe operational practices. Refer to Section 8.3.5.
Element 2: Corporate and Social Responsibility and Communication with Stakeholders	VOGA is committed to protecting health, safety and the environment, and reducing and managing the HSE risks associated with its operations. In doing so, it is important that VOGA commit to an open dialogue with employees, the communities in which they operate, and other relevant stakeholders with respect to HSE issues associated with VOGA operations.	Operations will only be carried out when residual risk associated with known hazards is reduced to ALARP to protect health safety and the environment. VOGA has a process for managing external communications with relevant persons during the well construction process. There is also a process in place to respond to public concerns related to HSE issues (Section 9).
Element 3: Risk Management	VOGA will ensure that risks are identified and managed to minimise the potential for incidents and liabilities.	Well construction activities will be undertaken in accordance with VOGA Risk Management Manual [VOG-2000-MN-0001] (Section 4). Separate HAZID and HAZOP assessments are held for all well construction activities and a project specific Risk Register will be maintained. This is to ensure the environmental impacts and risk of the activity continues to be identified and reduced to ALARP. Further details are provided in Section 5. A project specific Commitments Register will also be developed for all well construction projects (Section 8.4.2).

HSE MS/WCMS elements	HSE MS/WCMS objectives	Well construction expectations
Element 4: Management of Change	Risks associated with change to personnel, organisations, procedures, practices, designs, facilities and regulatory requirements are identified, evaluated and managed.	The Well Construction Management of Change Process (MoC) meets the expectations of the HSE MS by ensuring that any changes to well construction operations are managed to ensure that the HSE risks arising remain at an acceptable level. This process will be followed throughout well construction activities. Further details on the MoC process are provided in Section 8.5.
Element 5: Training and Competency	Personnel are required to have the necessary skills and competencies to carry out their responsibilities in a safe and effective manner. Managers will ensure all employees have the appropriate skills and knowledge and will provide training where necessary.	The Well Construction Manager has responsibility for ensuring the competency of personnel for each position in the VOGA well construction team and for providing required training to close any identified competency gaps within the team. Further details on training and competency are provided in Section 8.3.6.3.
Element 6: Operation and Maintenance	HSE practices and procedures are in place for each business/facility to ensure employees, contractors, the general public and the environment are protected from accidents/incidents.	All well construction campaigns are planned and executed in accordance with the Well Construction Process Manual. Wells are designed and constructed in accordance with the Well Construction Standards Manual (Section 8.3.2).
Element 7: Contractor Management and Procurement	Controls are in place to ensure that activities undertaken by contractors, vendors and service providers are carried out in an efficient, safe and environmentally responsible manner.	Contractors and vendors will be selected in accordance with the VOGA Contractor and Vendor Selection and Management Manual [VOG-1000-MN-0001]. Each high-risk contractor is assessed to ensure they meet a minimum level of service capability inclusive of management systems to ensure acceptable QHSE performance and personnel competency. Further detail is provided in Section 8.3.4.
Element 8: Emergency Preparedness and Response	All operating areas have the necessary emergency response plans, skills and equipment to respond quickly to any emergency associated with our operations.	The following emergency response documents are revised during the Detailed Design Planning Phase of well construction: • Emergency Response Plan [VOG-2000-RD-0017] • Wandoo Field Oil Spill Contingency Plan [WAN-2000-RD-0001] • Source Control Contingency Plan. These documents include plans for managing credible unplanned incidents, emergency response and recovery. Further details are provided in Section 8.7.

HSE MS/WCMS elements	HSE MS/WCMS objectives	Well construction expectations
Element 9: Incident Management	Reporting, investigating, analysing, follow-up and sharing information from incidents (and near misses) are used to minimise future occurrences.	All incidents and near misses are systematically reported, investigated and corrective and preventative actions undertaken in accordance with the Event Management Manual [VOG-2000-MN-0003]. On VOGA contracted MODUs, all incidents and accidents are investigated in accordance with the Drilling Contractor Safety Management System which has been reviewed for alignment with VOGA expectations.
Element 10: Security Management	VOGA protects its people and assets from security risks and threats.	Potential risks to security during the well construction campaigns and any prevention or mitigation strategies are reviewed as part of the development of the project-specific Risk Registers.
Element 11: Information Management	Operating regions ensure relevant documentation and records required to meet regulatory and VOGA business entity internal performance requirements are maintained, organised and accessible.	Critical well construction documents will be issued and maintained under the VOGA Document Management System.
Element 12: Performance Assessment	Continual improvement is assured through regular assessments, audits and reports to management.	A program of internal and external inspections and audits will be established to ensure, regulatory, corporate and company commitments including performance standards and outcomes outlined in the EP are being met during the well construction campaigns. Further details of inspections and audits are provided in Section 8.9.

8.3.2 Well Control

VOGA designs its wells and plans and executes its well construction and intervention operations in a manner that complies with its WCMS.

One of the major environmental hazards associated with well construction activities is the potential for loss of well control. The WCMS specifies engineering standards and well design and operational practices to be implemented during the planning, design and execution phases of a well construction campaign to mitigate the risks associated with the activities are reduced to ALARP for the life of a well.

Key elements are:

- **Well integrity critical equipment (e.g. casing, tubing, Xmas Tree, safety valve, etc.) selection**: The equipment specification and operational processes ensure that the well

integrity critical equipment installed in a well or used during the well construction process provides a suitable pressure envelope for well integrity purposes

- **Well cementing design**: The well design and operational processes ensure that casing strings are adequately cemented into the well to provide a suitable annular pressure envelope for well integrity purposes
- **Drilling fluids**: The well design and operational processes ensures that fluids are specified and maintained such that primary well control is maintained at all times during well construction activities
- **Directional drilling**: The well design and operational processes ensure that well bore positioning is planned and executed in a manner that ensures collisions with other wells are avoided.

VOGA's WCMS provides a structured approach to the engineering, design, planning and preparation for well construction and intervention operations. This process enables the activities to be carried out in a manner that provides a safe working environment for its employees and contractors and ensures that potential environmental impacts are reduced.

A critical component of the well design, operational planning and execution processes is to ensure that the risks that could have a material impact on project success, health, safety and/or the environment are identified.

Risks are captured in the Project Risk Register, which is maintained as a living document throughout the planning process (Risk Management Process). Risk review and HAZID workshops, involving both VOGA and contractor personnel, are used throughout the planning process to assess the risks and controls associated with specific activities. This allows appropriate risk mitigation strategies to be put in place, where relevant, as the operations programs are prepared, thus ensuring that residual risk associated with the planned activities are reduced to ALARP.

The WCSM [VOG-5000-MN-003], a key reference document within the VOGA WCMS, specifies the required barrier standards to be applied during the well design and operational planning and execution processes.

Peer review and Drill Well on Paper workshops are held with both internal and external peers to review well designs and operations plans and risks (and to identify potential improvements prior to operations).

Performance monitoring is used throughout the planning and execution phases to provide assurance that the required controls are established:

- Critical controls are subject to performance verification and monitoring and deviation management processes to ensure continual management of risk to ALARP
- The campaign-specific Commitments Register identifies commitments made under the WCMS, campaign-specific Safety Case Revisions, EPs and other relevant campaign documents. Ongoing update and review of the Commitments Register provides VOGA management with assurance that campaign commitments are being met
- MODU equipment and MODU Contractor management systems are assessed during pre-hire inspections and management system audits

- Pre-start MODU inspection and audit processes ensure that well and pressure control and monitoring equipment is present on the rig and is maintained and functioning. VOGA audits contractors to ensure fit-for-purpose well and pressure control equipment is provided, and that the contractors' PMS includes their well and pressure control equipment
- Well and pressure control equipment testing requirements have been met and the relevant testing has been verified by a senior member of the MODU Contractor and VOGA offshore supervisory teams.

In addition, VOGA conducts internal reviews to demonstrate compliance with its WCMS.

Application of the well design and operational planning and execution processes ensure that project risks are identified and appropriately managed, reducing the residual risk associated with the planned activities to ALARP.

8.3.3 Operational Controls and Recovery Mechanisms

VOGA's WCMS provides a structured approach to the management of operations, ensuring that:

- Operations are carried out while ensuring that commitments made under the VOGA management system, the Facility Safety Cases and the Project Simultaneous Operations (SIMOPS) Plan are met
- Change is managed in accordance with the MoC Process.

Operating in accordance with the MODU's Safety Case and VOGA's operating standards ensures:

- The various controls associated with maintaining well integrity are in place. This includes ensuring that well control equipment and well barriers are tested and verified, and well control drills are regularly carried out to ensure personnel react instinctively at critical times.
- VOGA's barrier verification process is applied, which provides assurance to all stakeholders that well integrity is being managed in accordance with the WCSM [VOG-5000-MN-003]. This confirms that a minimum of two independent and verified barriers are in place at all times in order to prevent the uncontrolled release of well fluids to the environment.
- MoC procedures are applied to ensure that a rigorous process is followed to assess and manage any risk associated with changes to designs or plans and their potential impact on related critical control measures.

8.3.4 Contractor Management and Procurement

8.3.4.1 Contractor Selection

The manner in which VOGA executes its well construction activities means that many risks are embedded in activities and processes that are controlled and progressed by service or contractor organisations and contractor personnel. VOGA selects well construction contractors and service providers in accordance with the VOGA Contractor and Vendor Selection and Management Manual [VOG-1000-MN-0001]. Each high-risk contractor is assessed to ensure they meet a minimum level of service capability, inclusive of management systems to ensure acceptable QHSE performance and personnel competency. If shortcomings are identified during

the assessment process, they are reviewed with the contractor in question and, where necessary, management processes are applied to address critical areas of concern.

When carrying out activities on a VOGA-contracted MODU, all contractors are required to work in accordance with the MODU and Wandoo Facility Safety Case Revisions for which compliance with the HSE MS and this EP are fundamental requirements.

VOGA requires that:

- The specifications of equipment or materials that have potential QHSE impacts are reviewed to verify suitability for the intended use and to mitigate against the introduction of additional risks
- All requisitions for materials and equipment specify, where relevant, appropriate certification and inspection requirements
- Induction programs are in place to ensure that personnel are aware of the management systems in use during the operations and to communicate any major HSE risks and their management strategies.

VOGA commissions pre-mobilisation inspections of the MODU and vessels to ensure their compliance with applicable standards and contractor management systems and to confirm that they can operate in a safe and environmentally responsible manner. Further detail on inspections and audits undertaken is provided in Section 8.9.

8.3.4.2 Procurement

The WCSM [VOG-5000-MN-0003] stipulates the technical standards to be applied for the design, manufacture and testing of equipment used during well construction operations. All Purchase Orders specify the technical standards to be applied during the design, manufacture and testing process.

VOGA's wells are designed from a life-of-field perspective in accordance with sound engineering principles and to comply with relevant legislative requirements. VOGA utilises existing API or ISO standards as a basis for equipment and material specification rather than developing VOGA specific standards.

For well integrity critical equipment, VOGA only procure or rent equipment that meets relevant API or ISO standards. The relevant standards for the various equipment types used during VOGA's well construction and intervention activities are specified in the WCSM.

Independent third-party validation of the application of a manufacturer's quality assurance system is carried throughout the manufacturing process for any critical equipment purchased by VOGA for installation during a well construction operation.

VOGA uses internal resources, or contracts third party QA/QC specialists, to supervise the inspection and testing of well integrity critical equipment during its manufacture, or during its preparation for operations. This process provides assurance that the well integrity critical equipment used in VOGA's well construction process conforms to VOGA's specified standards. As such, the process ensures that the residual risk associated with the failure of well integrity critical equipment has been reduced to ALARP.

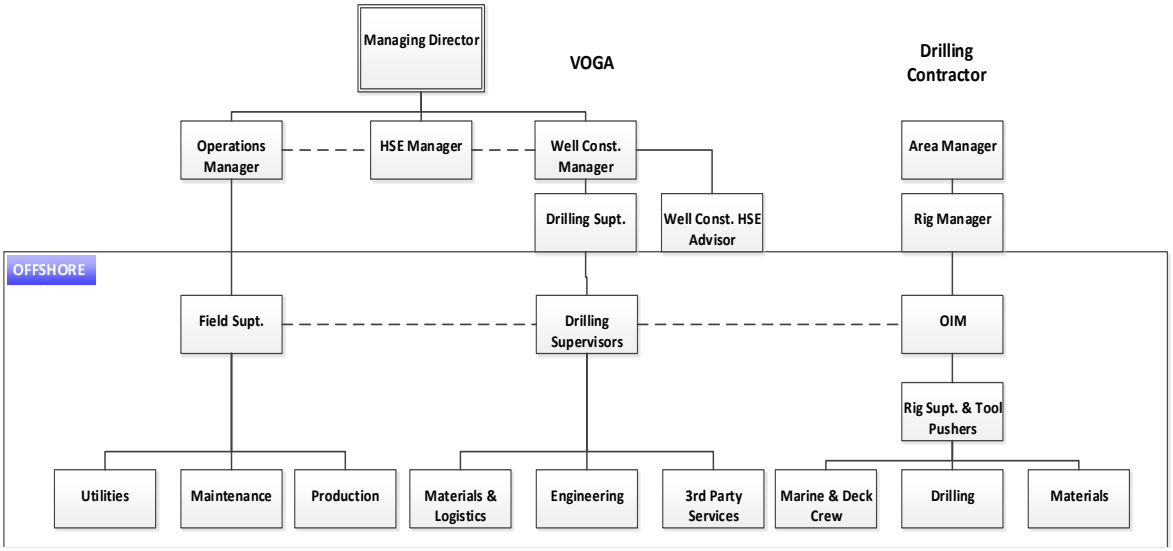
VOGA requires all new or refurbished critical equipment to be supplied with manufacturer/ supplier's Certificate of Conformance to demonstrate compliance with design, manufacturing and testing specifications.

8.3.5 Key Roles and Responsibilities

Key roles and responsibilities for VOGA and its contractors have been identified for future well construction activities to ensure all elements of the EP Implementation Strategy are effectively applied.

The organisational chart (Figure 8-3) indicates the relevant key personnel for a well construction project.

Figure 8-3: Combined organisation chart – VOGA and MODU



A description of the roles and responsibilities of the key positions within the organisational chart are outlined in Table 8-3.

Table 8-3: Environment Plan key roles and responsibilities

Role	Responsibility
VOGA Managing Director	• Review and approve EP and OSCP. • Ensures that appropriate resource and competence levels are available to deliver safe, efficient and effective operations within VOGA's organisation. • Ensures overall compliance with the VOGA HSE MS. • Ensures overall compliance with the EP and OSCP with advice from the HSES Advisor. • Responsible for facilitating an emergency response strategy in the event of an incident.
VOGA Well Construction Manager	• Ensures that VOGA's WCMS is applied and maintained. • Ensures EP has been accepted by NOPSEMA before activity commences. • Ensures compliance with EP.

Role	Responsibility
	• Reviews EP prior to each well construction campaign and confirms that appropriate environmental performance outcomes, standards and measurement criteria are in place for all identified environmental risks. • Ensures that all well construction personnel (including contractors) are aware of their responsibilities in regard to ensuring compliance with the Commitments Register and that processes are in place to meet them. • Oversees all aspects of contracting, procurement, logistics, QHSE, planning, design, execution and review for well construction and intervention activities. • Ensures appropriate resources and competence levels are available to deliver safe, efficient and effective well construction and intervention activities. • Ensures that effective emergency response systems are in place for well construction operations. • Ensures that VOGA's stated obligations are met during all well construction and intervention activities. • Ensures that the policies and procedures of the various well construction and intervention contractor companies are consistent with the VOGA Management Systems. • Ensures that project objectives are clearly communicated to all well construction personnel including contractors. • Ensures activities specified in the project specific Commitments Register are appropriately closed out. • Ensures that all significant changes that may increase risk to environment are managed via the Well Construction MOC Process. • Ensures NOPSEMA notified at least 10 days prior to the commencement and within 10 days after the completion of well construction activities.
VOGA Well Construction QHSE Advisor	• Coordinates the QHSE process associated with the planning, design, execution and review for well construction and intervention activities. • Assists in the development and ongoing maintenance of VOGA's WCMS components. • Assists with the development of this EP. • Ensures risk management and change control is implemented in the planning and execution of well construction and intervention activities. • Ensures monitoring is undertaken as outlined in the EP. • Prepares and ensures delivery of environmental content at inductions. • Prepares monthly report to NOPSEMA outlining non-conformances with performance standards for submission by the VOGA HSES Adviser. • Leads/participates in incident investigations and analyses. • Retains specialist services to assist in the audit and inspection process. • Tracks close-out of action items resulting from investigation, audit and review processes. • Liaises with the VOGA HSES Advisor for interfaces between the well construction and VOGA management system requirements. • Coordinates collation of monthly QHSE statistics and reporting during well construction campaigns. • Ensures EP compliance report is prepared and submitted to NOPSEMA.

Role	Responsibility
	• Ensures that any non-conformances are reviewed, and the implementation strategy of the EP revised as a result. • Participates in review of EP for applicability prior to campaigns. • Conducts HSE inductions. • Acts as the HSE support in well construction related emergency response events. • Participates in emergency response drills. • Facilitates QHSE interface with contractors and MODU sharing partners. • Maintains the project-specific Commitments Register. • Approval of chemicals proposed for use at the start of each well construction campaign.
VOGA Drilling Superintendent	• Ensures appropriate resources are available on the MODU to deliver safe, efficient and effective well construction and intervention activities. • Ensures that contractors have appropriate arrangements necessary for compliance against this EP. • Ensures compliance with the provisions of this EP and OSCP by both VOGA and contractor personnel. • Reviews the EP to assure all EP related risks are stated and communicated. • Ensures that all personnel are inducted to the requirements of this EP. • Ensures all audits, reviews, monitoring records identified in this plan are progressed and appropriately reported. • Ensures that all environment-related incidents are reported to the Well Construction Manager and the Wandoo Field Superintendent. • Assists with ensuring that all environment-related incidents are reported and appropriately analysed for causes. Ensures that all significant changes that may increase risk to environment are managed via the Well Construction MOC Process.
Logistics Coordinator	• Ensures all VOGA purchased/supplied materials and equipment for use in well construction and intervention operations meet the standards laid out in the WCMS prior to acceptance and dispatch. • Maintains records of independent review and inspection activities associated with the purchase/supply of materials and equipment. • Ensures appropriate logistical resources are available in the field and in the supply base to deliver safe, efficient and effective well construction and intervention activities. • Coordinates the efficient unloading of materials and unloading of waste in accordance with procedures outlined in the EP.
Wandoo Field Superintendent	• Ensures compliance with VOGA HSE MS, EP and OSCP. • Leads/participates in audits and inspections. • Ensures that environmental incidents are reported to statutory authorities and internal reporting and investigation requirements conducted and corrective actions are completed. • Ensures drills and exercises for emergency response are completed. • Ensures corrective actions arising from audits and emergency response drills are complete.

Role	Responsibility
	• Manages coordinating and controlling of all field operational activities (production, maintenance, procurement and logistics). • Acts as Permit to Work custodian, in accordance with the project-specific SIMOPS Plan, for well construction and intervention activities and ensures that the potential impact of a SIMOPS environment is considered during the preparations for all activities. • Provides leadership and stewardship for environment protection. • Meets all operational and HSE Key Performance Indicators (KPIs) as set by VOGA. • Executes duties as the emergency commander during emergency response.
VOGA Drilling Supervisor	• Supports the induction of the offshore supervisory team. • Implements the MODU-based elements of the campaign audit plan and environment commitment schedule. • Provides primary liaison and interface management between the MODU Offshore Installation Manager and the Wandoo Field Superintendent for implementing the campaign-specific SIMOPS Plan. • Manages the offshore aspects of well construction operations to meet QHSE and project objectives. • Ensures that the VOGA WCMS is actively implemented during operations. • Ensures that all HSE and operational commitments are met, and standards are adhered to. • Ensures that the deviations to well programs are managed in accordance with the Well Construction MOC process. • Works with the AHTS vessel masters to ensure a very high focus is placed on HSE for all vessel activities while they are operating for VOGA. • Monitors relevant critical risk controls and ensuring that these are in place and effective prior to the commencement of activities. This includes ensuring that the commitments made in the VOGA management systems, the Wandoo Field Safety Case update, the MODU Safety Case Revision and the campaign-specific SIMOPS Plan are honoured and that MODU-related actions in the Project Commitments Register are closed out as required. • Provides technical and logistical support to the Offshore Installation Manager during emergency response or incident management. • Leads the MODU-based QHSE audit and review activities and ensuring close-out of action items resulting from investigations, audits and review processes.
MODU (Rig) Offshore Installation Manager	• Ensures all operations carried out on-board the MODU are consistent with environmental legislative requirements and ensures compliance with the requirements laid out in this EP. • Notifies the VOGA Drilling Supervisor of any deviations from VOGA Well Construction EP performance standards for MODU-based risk controls measures. • Ensures monitoring is undertaken in accordance with EP requirements. • Ensures that personnel appointed to positions with responsibility for emergency response (including well control) are trained and competent to fulfil those responsibilities and are familiar with the MODU's emergency response equipment (including that associated with well control). • Ensures corrective actions identified during environmental audits are implemented.

Role	Responsibility
	• Implements the MODU's Well Control Plan as defined in the company's Well Control Procedures and the company emergency response plans. • Ensures that the MODU Contractor's HSE MS are implemented and effective. • Provides input to EP and OSCP if required. • Reports all incidents to the Wandoo Field Superintendent and the VOGA Drilling Supervisor.
MODU (Rig) Manager	• Ensures that the MODU Contractor's HSE MS is implemented and effective on the MODU. • Ensures that the MODU Contractor's HSE MS will meet the requirements of this EP. • Ensures that the environmental performance data is collected and reported in accordance with this EP. • Conducts audits and reviews in accordance with the MODU Contractor's HSE MS. • Provides leadership and stewardship with respect to performance against this EP. • Provides input to EP and OSCP as required.
Vessel master	• Ensures that all operations on board the vessel are carried out in accordance with environmental legislative requirements, commitments, conditions and procedures as provided in this EP. • Ensures monitoring is undertaken in accordance with EP requirements. • Report all incidents to the VOGA Drilling Supervisor. • Provides input to EP and OSCP as required.

8.3.6 Training and Competency

8.3.6.1 Overview

The Well Construction Manager has responsibility for ensuring the competency of personnel and for providing required training to close any identified competency gaps within the well construction team. The Well Construction Manager ensures that HSE awareness and commitment are an integral part of team selection and subsequent training, and that a process is in place to ensure employees, contractors and visitors are aware of relevant hazards, risks and controls.

The WCPM [VOG-5000-MN-0002] describes a process for selecting a competent and fully trained well construction team for each campaign. Responsibilities are assigned in the Well Construction Process Manual to ensure that single-point accountabilities exist for the execution of essential activities, thereby ensuring that vital work necessary for the maintenance of controls is not overlooked.

Expectations are that:

- HSE critical positions are identified
- Job descriptions, which clearly describe individual responsibility towards HSE, are agreed with key department personnel
- Personnel are competent in their assigned roles or tasks

- All personnel hold relevant qualifications, certification and experience for their job
- Induction programs are in place to ensure all personnel are aware of any major HSE hazards and the management systems in operation at their site
- VOGA staff are appraised for their performance, including HSE performance.

8.3.6.2 Induction

All personnel working in VOGA's well construction campaigns will receive an induction that provides the following information:

- VOGA's HSE Policy
- An overview of the VOGA HSE MS, WCMS and EP with particular emphasis on environmental performance outcomes, standards and measures
- Major project risks and their associated mitigation strategies
- Emergency response roles and responsibilities
- Regulatory and procedural requirements.

Inductions will be conducted at the following locations:

- **VOGA Perth Office** – to communicate and assign responsibility for office-based EP performance standards.
- **MODU** – to communicate expectations to all personnel on board and assign responsibilities for MODU-based EP performance standards and emergency response roles and responsibilities.
- **AHTS vessels** – to communicate expectations to crews and are aware of relevant EP performance standards. Including, but not limited to, Part 8 of the EPBC Regulations.
- **Ongoing awareness** – will be maintained through discussion at Pre-Tour Meetings, daily SIMOPS Coordination Meetings, weekly HSE meetings and weekly contractor communication meetings.

8.3.6.3 Competence of Personnel

VOGA assures the competence of personnel working on its operations through a combination of the verification of personal knowledge, qualifications and training, and through the provision of additional project specific training.

VOGA requires that their contractors demonstrate that they operate under a competency management system that ensures their personnel are competent for their assigned positions. More specifically, the Drilling Contractor's personnel must be compliant with the competency matrix defined within the MODU Safety Case.

VOGA's senior well construction personnel and the MODU Contractor's MODU-based senior drilling personnel must maintain current well control certification from the International Well Control Forum (IWCF) or International Association of Drilling Contractors (IADC) accreditation organisations, providing an internationally recognised level of well control competence assurance.

VOGA and the Drilling Contractor conduct inductions for personnel coming onto the MODU to communicate the project objectives along with risks and specific controls to ensure that the activities described in the Well Construction Program are achieved safely.

During operations, drills are conducted in accordance with the MODU Safety Case to ensure that personnel react promptly to changes in well parameters, suspend operations and, if necessary, shut-in the well without deferring to a higher authority.

The combination of competence assurance, induction and drills demonstrate that personnel working on VOGA's well construction operations are competent, providing a key element towards ensuring that safety, environmental and well integrity related risks are managed to ALARP.

8.3.7 Chemical Assessment Process

VOGA has a chemical assessment and selection process to manage the risks and impacts associated with discharge of chemicals to the marine environment to ALARP during well construction activities.

Chemicals proposed to be selected will be managed in accordance with the requirements set out by the Australian Government under the Industrial Chemicals Environmental Standard (IChEMS). The IChEMS is a key component of several National reforms to improve approaches to how industrial chemicals are used, produced, imported and managed. Industrial chemicals will be listed on the IChEMS Register in one of 7 schedules according to their environmental risk.

Chemicals proposed for selection in this activity will be assessed against those listed in the IChEMS register under one of the 7 schedules according to their environmental risk. The selection and management of any chemical will adhere to the specific risk management measures, storage, use and handling requirements outlined in the corresponding schedule.

8.3.7.1 Selection Criteria

VOGA uses the chemical ranking scheme developed through the Oslo and Paris Conventions (OSPAR) Commission decision 2000/2 and the OSPAR list of substances considered to Pose Little or No Risk (PLONOR) to the environment to determine the risk of discharge of chemicals to the environment in order to select the lowest toxicity chemicals practicable.

Under the OSPAR list, chemicals are ranked using the Chemical Hazard and Risk Management (CHARM) model. The CHARM model calculates the ratio of Predicted Effect Concentration against Predicted No Effect Concentration (PEC:PNEC). This is expressed as a Hazard Quotient (HQ), which is then used to rank the product. HQ is converted to a colour banding to denote its environmental hazard (Table 8-4) which is then published on the Definitive Ranked Lists of Approved Products by the OCNS.

Products not applicable to the CHARM model (i.e. inorganic substances, hydraulic fluids or chemicals used only in pipelines) are assigned an OCNS grouping, A-E. Group A includes products considered to have the greatest potential environmental hazard and Group E the least.

Any chemical that will be discharged to the marine environment during well construction activities shall meet at least one of the following criteria:

- The chemical is listed on the OSPAR List of Substances Used and Discharged Offshore which are considered to PLONOR, or
- The chemical has a HQ banding of Gold or Silver or an OCNS grouping of E or D in accordance with the OCNS Definitive Ranked List of Registered Substances.

Chemicals planned for use during well construction operations will be listed with their classifications in the campaign fluids program.

If the chemical is not OCNS listed the ecotoxicity data will be assessed in accordance with the OCNS system. The OCNS system requires bioaccumulation, biodegradation and aquatic toxicity data from relevant species such as algae, crustacea or fish to be assessed. Once appropriate ecotoxicity values are obtained they will be evaluated against the OCNS grouping data.

An ALARP justification is required for any chemicals not OCNS listed, if listed with a substitution warning, if there is no available ecotoxicity data, or if ecotoxicity is available but:

- LC50 <10 mg/l or EC50 <10 mg/l
- The bioaccumulation octanol-water partition coefficient (log Pow)>3, or
- The percentage biodegradation within 28 days is <20%.

The ALARP justification assesses the chemical requiring approval and available alternative options in accordance with the following factors (in order of priority):

- Health and safety criteria (Dangerous Goods Class and Safe Work Australia risk phases)
- Ecotoxicity criteria (aquatic toxicity, bioaccumulation and biodegradation data for relevant species)
- Cost.

The change of chemical will be risk assessed and documented in a MoC in accordance with the process outlined in Section 8.5.

Table 8-4: OCNS HQ and colour bands

Minimum HQ value	Maximum HQ value	Colour banding	
>0	<1	Gold	Lowest hazard
≥1	<30	Silver	
≥30	<100	White	
≥100	<300	Blue	
≥300	<1,000	Orange	
≥1,000	-	Purple	Highest hazard

8.3.8 Biofouling Risk Assessment Process

The biofouling risk assessment process is undertaken as part of the process for engaging a new Contractor for activities involving vessel, MODU and/or immersible equipment, or for the

mobilisation of a previously contracted vessel known to have an increased risk profile since last use (e.g. extended period in Port).

The process excludes ballast water management. Ballast water risk is managed under the *Biosecurity Act 2015*, Australian Ballast Water Management Requirements (DAWR, 2017), consistent with the International Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Management Convention) (IMO, 2004).

The following steps outline the VOGA Biofouling Risk Assessment Process:

Step 1: Conduct Review of Relevant Contractor Procedures and Documentation:

- Biofouling Management Plan consistent with IMO guidelines
- Biofouling Record Book
- Antifouling Coating Certificate
- Immersible equipment management procedures.

Step 2: Conduct Biosecurity Risk Assessment (vessel, MODU and/or immersible equipment):

- Gather relevant information (where available)
- Recent inspection(s) – date/location and any corrective actions taken
- Dry dock/cleaning information – date/location
- Operational History (e.g. operating out of areas with known IMS)
- Anti-fouling coatings (AFC) – valid, age, coverage, appropriate for vessel activity profile
- Maintenance and inspection records and biocide dosing information for Marine Growth Prevention Systems (MGPS)
- Vessel operating profile – including any details of vessel operating outside normal profile, extended inactive periods.
- Vessel previously located in high risk area (vessel sharing with other high or uncertain risk conveyance/platform, ports with established IMS)
- Immersible equipment activity profile and history
- Immersible equipment cleaning, drying, maintenance and storage practices
- Planned activity profile for vessel/MODU immersible equipment – how long alongside, proximity to Wandoo facilities
- The WA Department of Primary Industries and Regional Development ‘Vessel Check’ may be used to validate the low risk status of commercial vessels frequenting WA waters
- Assess risk using the VOGA Risk Management Manual [VOG-2000-MN-0001] based on biofouling risk indicators from WA Department of Primary Industries and Regional Development ‘Vessel Check’. Risk indicators will include the following:
    - History of the vessel/facility, including time spent in ports of call since last dry dock, cleaning regime or marine pest inspection results

- Time between a biofouling inspection and mobilisation to an offshore activity to inform exposure risk following the last inspection and justify the relevance of biofouling inspection findings
- Presence of an appropriate biofouling management plan and effective implementation of the plan
- Level of existing biofouling and the presence of species of concern (in particular the presence of marine pests) within biofouling communities on the vessel/ infrastructure/ facility associated with the activity (informed by biofouling record books, maintenance records, cleaning results or inspection programs)
- Operational profile relevant to biosecurity risk such as operating speed, time alongside a facility and the need for ballast exchanges while engaged in an offshore activity.

Step 3: Further Risk Mitigation Actions:

If a low risk is not identified, an IMS expert will be engaged to review risk assessment and recommend mitigation measures to implement for the vessel risk to be acceptable. Further information must be obtained, and action undertaken to reduce risks to an acceptable level (i.e. low risk or further risk mitigation actions implemented) prior to proceeding with engagement of vessel or equipment. Mitigation measures include:

- Engage independent IMS expert to conduct visual inspection
- Cleaning of biofouling on submerged surfaces to reduce the risk of marine pest transfer
- Additional marine growth prevention measures (e.g. dosing of internal seawater system with biocides, application or re-application of anti-foul coatings)
- Using alternative vessels or other mobile components or equipment that have a demonstrated low biosecurity risk profile.

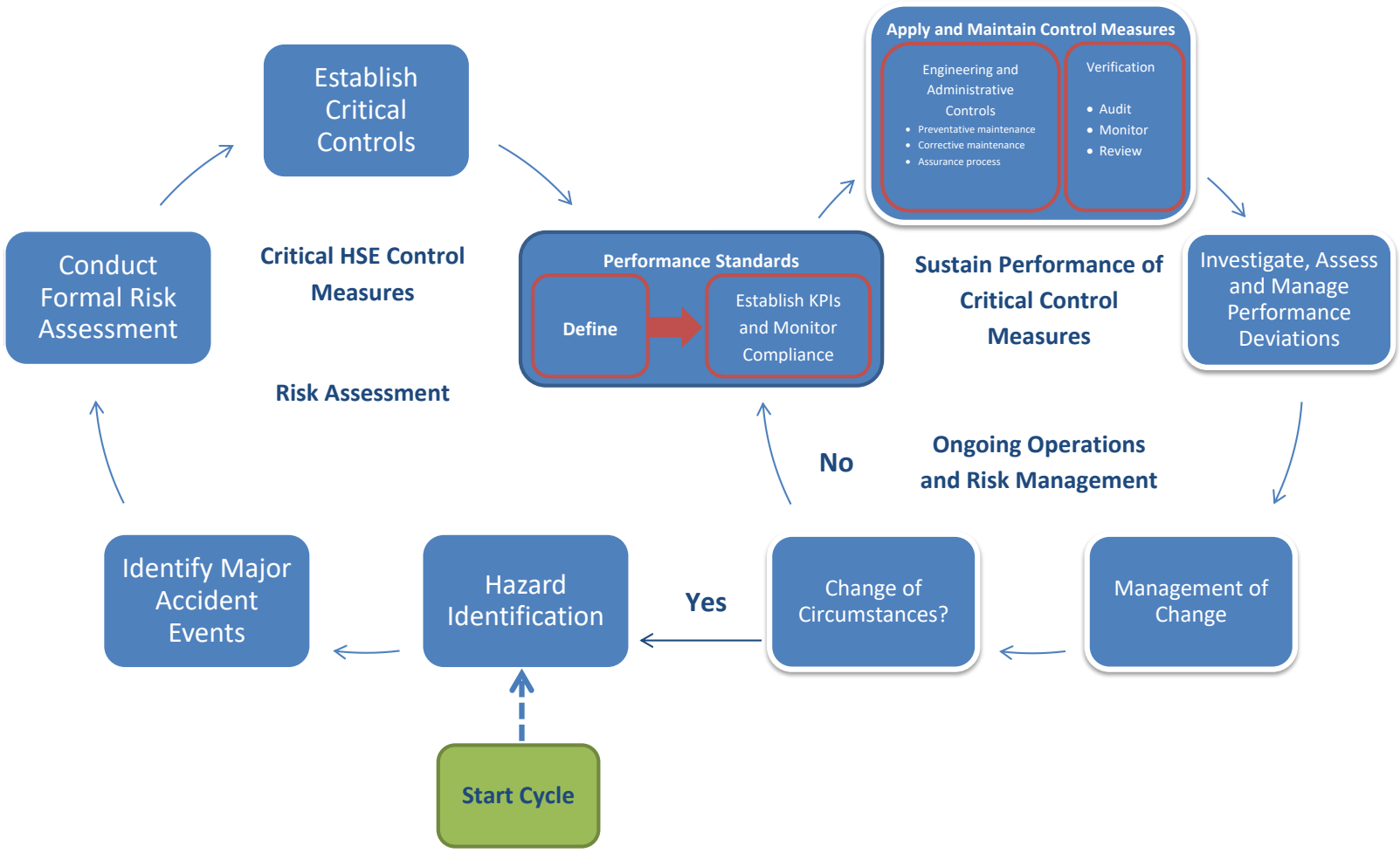
8.3.9 Managing Critical Controls

The process of defining and determining VOGA's environmental performance outcomes, standards and measurement criteria are defined in Section 6. The implementation framework is based on the right-hand side loop of the Performance Standards cycle in Figure 8-4, 'Sustain Performance of Critical Control Measures,' as part of the Ongoing Operations and Risk Management component of the performance improvement process (Figure 8-4). The framework includes four key areas:

- Apply and maintain control measures: Addressed through the implementation of VOGA's HSE MS and operations and maintenance routines.
- Verify and monitor compliance: Conducted using the Wandoo Well Construction EP Commitment Register. This is discussed in Section 8.4.2.
- Investigate, assess and manage performance deviations: When a control fails to meet its defined performance standard the Well Construction team utilises the MoC process to assess the change in risk and identify appropriate risk management strategies.
- Management of change: Changes to the facility for operational purposed, changes due to investigation into a performance deviation and changes to performance standards

themselves are all assessed through VOGA's MoC process which addresses the potential impact of the change to the environment.

Figure 8-4: Performance standards and continuous improvement (adapted from NOPSEMA's Control Measures and Performance Standards' Guidance Notes, 2011)



8.3.10 Ongoing Hazard Identification and Evaluation

Project risks, including environmental risks, are managed during the well construction process in accordance with the principles of AS/NZS ISO31000:2009, the requirements of the OPGGS(E)R and the VOGA Risk Management Manual [VOG-2000-MN-0001] and is in line with the requirements of the OPGGS(E)R. The Risk Management Process is described in the Well Construction Process Manual and in Section 4 of this EP.

Activity-related risks are reviewed during all phases of the project. The WCMS identifies 11 points of planning reference for identification, review of and management of risks. The Risk Management Process runs in parallel with the well construction core processes and interfaces with them at various key stages.

8.3.10.1 Planning Phase

Separate HAZID and HAZOP assessments are held for all planned wells, sequences of similar wells, or well intervention activities to identify hazards and establish mitigation measures and contingency plan requirements that are specific to the project or well.

Environmental hazards and their respective controls have been documented in Section 5 of this EP along with the associated performance standards and measurement criteria. This forms the pre-operational risk assessment process.

8.3.10.2 Operational Phase

During well construction operations, risk management is achieved through routine and programmed activities and utilises the following tools to maintain environmental awareness for personnel working in the Field:

- Daily pre-job meetings are held on the MODU prior to crews commencing work for the day. During this meeting operational and HSE issues and opportunities for improvement are discussed. Personnel are required to sign an attendance sheet
- JSAs are carried out for new and critical activities to ensure personnel involved are aware of the planned activities, their roles and the associated operational and HSE risks and mitigation strategies
- Toolbox meetings are held on a task based/as required basis to review a planned task and any controls required. This provides the crew members with clear directions and an opportunity to suggest improvements
- A safety observation system will be in place on the MODU to identify report and manage exposures as well as to compliment positive behaviour. The process provides a feedback loop from the workforce which is reviewed by VOGA and MODU management on a daily basis
- A lesson learned action tracking system is maintained during the project to provide input into after action reviews and assist in continuous improvement in VOGAs well construction operations.

During well construction operations, changes to planned operations may be required. VOGA applies a Well Construction MOC process to evaluate potential changes to an approved well program. The process assesses the impact of the change on:

- The operational and HSE risks profiles of the task and/or any dependent tasks
- Safety and well integrity critical controls
- Level of authorisation required for approval of the change
- To determine if the deviation should be progressed or declined.

8.3.10.3 Review Phase

VOGA reviews operational and HSE performance at the conclusion of each campaign to ensure key learning points are captured for future projects and to ensure incidents have been adequately closed out and audit actions have been addressed. Environmental performance is reviewed and any identified opportunities for improvement are incorporated into subsequent well construction planning and revisions to this EP.

8.4 Monitoring and Review

8.4.1 Overview

VOGA recognises that an effective 'monitoring and review' process is an essential part of an overall risk management process. Monitoring and review is applied to achieve environmental performance outcomes and commitments identified within the EP.

VOGA will monitor compliance with EP performance standards and commitments by applying a number of methods including:

- Management internal audits and inspections
- Third party audits and verification
- Daily operations meetings
- Performance review of construction activities.

The frequency of environmental monitoring is based on the risk level. VOGA personnel and management are responsible for ongoing monitoring of operational activities to ensure compliance with the EP.

8.4.2 Commitments Register

A Commitments Register is developed to verify compliance with the commitments in the WCMS and those outlined in this EP, including the well construction environmental performance standards. The Commitments Register provides assurance that the standards and measurement criteria specified in this EP are being meet.

The register also outlines the phase of the well construction campaign that the commitment applies to, and the personnel responsible for monitoring the compliance with each

commitment. A detailed description of the phases of the well construction campaign is provided in the Well Construction Process Manual [VOG-5000-MN-0002]. These phases include:

- Planning and design: This phase of the planning process occurs well in advance of execution, includes preliminary planning and detailed design
- Execution: Period when well construction operations are undertaken
- Campaign wrap up phase: Review of HSE performance including lessons learnt
- Emergency: During an emergency and its immediate aftermath.

The Well Construction Manager will ensure that all relevant well construction personnel (including contractors) are aware of their responsibilities with regard to ensuring compliance with this EP and ensuring that the processes are in place to meet them during well construction activities.

The VOGA QHSE Advisor is responsible for ensuring compliance with the Commitments Register.

Assurance of compliance with the Commitments Register will be undertaken by inspections and internal and external inspections and audits. The objective and frequency of planned assurance inspections and audits are provided in Section 8.9.

8.4.3 Environmental Monitoring

The undertaking of the well construction activities and accidental events associated with the activities pose a range of different environmental risks. Emissions and discharges to the environment are monitored to assess the environmental performance of the activity on an ongoing basis. Table 8-14 details the quantitative records that are maintained for all emissions and discharges during routine or emergencies within the Operational Area as per Regulation 22(6) of the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.*

8.4.4 Monitoring Impacts from Oil Pollution

The process and arrangements for monitoring the impacts from oil pollution is outlined in the Operational and Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002].

Monitoring may include:

- Operational monitoring (Type I) which provides information of direct relevance to spill response operations, and/or
- Scientific monitoring (Type II) which relates to non-response objectives and includes short term environmental damage assessments, longer-term damage assessments (including remediation), purely scientific studies and all post-spill monitoring activities.

8.4.5 Review of Environment Plan and Oil Spill Contingency Plan

8.4.5.1 Review of Environment Plan

A review of the implementation of the Well Construction EP will be undertaken after every well construction campaign. The review will include an assessment of:

- Compliance with the campaign Commitments Register
- The continued relevance of environmental performance outcomes and standards
- Effectiveness of the implementation strategy within the EP
- The adequacy of auditing and monitoring
- Any amendments to the EP that may need to be communicated to NOPSEMA.

8.4.5.2 Review of Oil Spill Contingency Plan

The Wandoo Field OSCP [WAN-2000-RD-0001] shall be reviewed:

- Three months prior to commencement of well construction activities
- Post a significant event
- When major changes (e.g. new service providers) have occurred, which may affect the Oil Spill Response coordination or capabilities
- After a change to spill profile where spill risk has been identified as potentially greater to that previously identified.
- Contractors on standby will provide readiness reports to the Well Construction Manager on a fortnightly basis outlining spill response capability.

The full review schedule is outlined in the Wandoo Field OSCP [WAN-2000-RD-0001].

8.5 Management of Change

8.5.1 Overview

The MoC, including deviations from critical controls, during well construction operations is managed through the Well Construction MoC Process, which is consistent with the VOGA Risk Management Manual [VOG-2000-MN-0001]. The WCMS MoC process evaluates a proposed deviation from approved plans by:

- Outlining the deviation and the impact it may have on environmental risk levels
- Assessing whether any alternative/contingency controls should be implemented to manage risk to ALARP
- Assessing the residual risks and determining the conditions under which the activity can continue.

The risk assessment must be approved by the VOGA Well Construction Manager (or delegate). For any risk with potential to impact the Wandoo A or Wandoo B facilities, the VOGA Production Operations Duty Manager must also approve the assessment.

VOGA manages temporary and permanent changes through an MoC process which utilises an approval form (MoC) and MoC Checklist. The MoC form provides a documented record of the change, including justification for the change, duration of change, engagement and communication, implementation, monitoring and review and authorisation and sign-off.

The MoC checklist is completed for every proposed change. The checklist includes high level screening of those changes which may impact on environmental aspects of regulatory compliance (Section 8.5.2).

Actions required to assess the impact of the change are identified through the MoC checklist and recorded on the MoC Form.

8.5.2 Regulatory Compliance

For those changes which have been assessed as having the potential for environmental regulatory compliance aspects the following questions are addressed:

- Could the change modify an existing Environment Performance Outcome or Standard within the EP?
- Does the change propose significant modification, new stage of activity or are the activities to be carried out different from the activities contemplated in the accepted EP?
- Could the change result in a significant change in the overall level of risk and impacts identified in EP?
- Does the proposal change the HSE MS or an implementation plan within an accepted EP?

Consistent with Regulations 38 and 39 of the OPGGS(E)R, VOGA will revise the Wandoo Well Construction EP and submit for regulatory acceptance if there is a proposed change which will result in at least one of the following:

- A new activity
- A significant modification or new stage of the activity
- A new or increased environmental impact or risk, or
- A change of titleholder.

In accordance with the NOPSEMA Guideline – When to submit a proposed revision of an EP (N04750-GL1705) (NOPSEMA, 2024b), VOGA considers the following aspects when determining whether a modification, meaning how the activity is being managed and/or conducted, is significant:

- Continual reduction of the impacts and risks of the activity to ALARP
- The effect the change has on the ability to demonstrate EPOs and EPSs are being met
- The criticality of the aspect being changed (i.e. a management system change is likely more critical because of its coverage of all impacts and risks as opposed to an individual item of equipment)
- The degree of deviation from how the activity was described in the EP

- The effect the change has on meeting legislative obligations, such as the requirement to remove property and equipment from the title area.

A new stage of an activity is considered to be any change to the timing or spatial limits detailed in the accepted EP.

For individual changes, VOGA considers a change to be a "significant change to impact or risk" if:

- There is a resultant step change in overall risk level of an environmental hazard – whether by reassessment with updated information or an actual increase in impact or risk, or
- A change in environmental impact profile from emissions introduces new relevant stakeholders or requires additional communication and agreements with existing relevant stakeholders.

For the changes assessed as "significant":

- If planned, the change will not be implemented without Regulatory acceptance, or
- If unplanned, e.g. initiated by incident, the change may be managed and implemented prior to resubmission. In this instance a report and notification to the Regulator will be made in accordance with Section 8.10. Depending on the situation a resubmission of the Wandoo Well Construction EP to the Regulator maybe required post the event. Cumulative impact of minor changes are reviewed as part of the annual reporting process. For these items, changes will have most likely been implemented prior to Regulatory submission.

8.6 Continuous Improvement

Continuous improvement is the process of enhancing the VOGA HSE MS to achieve improvements in overall environmental performance. The VOGA HSE Policy and the VOGA HSE MS provides criteria for ongoing assessment of environmental performance. This is achieved through the Performance Assessment Manual - Performance Assurance [VOG-1100-YG-1201.02] which outlines the monitoring and assessment tools and processes VOGA uses to monitor HSE performance and compliance.

Performance assessment is conducted to monitor effectiveness, provide assurance and identify improvement opportunities. Assessment of HSE performance generally encompasses:

- Monitoring, measurement, analysing and reporting HSE data
- Conducting HSE audits and inspections, according to performance standards, pre-established intervals and ad hoc safety critical situations
- Tracking and close-out of HSE actions
- Conducting management reviews.

Performance monitoring is primarily achieved by establishing and reporting on leading and lagging KPIs. Quarterly HSE performance reports are provided to the HSE Subcommittee of the Vermilion Energy Inc. Board in Canada.

HSE MS documents are updated as required to include changes of procedure, corrective actions and new guidelines. The HSES Advisor will look at methods of ensuring continual improvement over the duration of operations, focusing on incorporation of lessons learnt.

8.7 Emergency Management

The Wandoo Emergency Response Plan (ERP) [VOG-2000-RD-0017] provides details on the response arrangements and responsibilities VOGA has for the management of emergencies which may occur during well construction operations. Incidents are categorised in relation to the response required:

- **Level 1 incidents**: Generally able to be resolved through the application of local or initial resources only (e.g. first strike response)
- **Level 2 incidents**: More complex in size, duration, resource management and risk and may require deployment of jurisdictional resources beyond the initial response;
- **Level 3 incidents**: Characterised by a degree of complexity that requires the Incident Commander to delegate all incident management functions to focus on strategic leadership and response coordination and may be supported by national and international resources.

More detailed response plans have and will be developed to address particular events (e.g. the Wandoo Field OSCP [WAN-2000-RD-0001] and the Source Control Contingency Plan).

8.7.1 Emergency Training, Testing and Drills

Emergency response training will be undertaken including training workshops and exercises to ensure the team understands their roles and responsibilities.

Prior to the commencement of operations on each well construction campaign, an emergency response exercise will be undertaken to verify communications arrangements and evaluate personnel responses.

VOGA require MODU contractor personnel with job classifications of derrick-man and above and its Drilling Superintendent and Drilling Supervisors to maintain current well control training certification.

The VOGA WCMS has requirements for MODU well control training drills, including:

- Kick response drills both during drilling operations and tripping operations
- Choke drills conducted prior to drilling out casing shoes to familiarise personnel with equipment usage.

8.7.2 Wandoo Field Source Control Emergency Response Plan

The Wandoo Field Source Control Emergency Response Plan (SCERP) will be focused on source control for wells and include the RWP. The plan will provide campaign-specific details relating to reservoir conditions, blowout taskforce team structure, and logistics. The purpose of the document is to have as much planning as possible conducted upfront to minimise the response time of remedial measures.

There are several generic phases to bring an uncontrolled hydrocarbon release under control:

- Phase 1: Initial response, convene well construction ICT and gather information
- Phase 2: Determine most efficient well kill method
- Phase 3: Detailed planning of the well kill operation
- Phase 4: Execute well kill operation
- Phase 5: Clean-up operation
- Phase 6: Incident Investigation.

Source Control arrangements are further described in Section 5.13.

8.8 Oil Pollution Response

8.8.1 Overview

The implementation strategy must contain an Oil Pollution Emergency Plan (OPEP) and provide for updating the OPEP. The OPGGS(E)R outlines the requirements for the OPEP which must include adequate arrangements for responding to and monitoring oil pollution. As part of the implementation strategy, VOGA has developed the Wandoo Field OSCP [WAN-2000-RD-0001].

To assist responders in the event of a spill, the Wandoo Field OSCP [WAN-2000-RD-0001] contains two documents, a planning document (the OSCP) and a response document, referred to as the Oil Pollution Emergency Plan (OPEP) (Figure 8-5). In the event of a spill, responders will immediately refer to the OPEP.

The planning and preparedness document (document one) includes:

- Part 1 – an overview of the Wandoo Field OSCP
- Part 2 – the VOGA incident management process
- Part 3 – the management arrangements for the Wandoo Field OSCP.

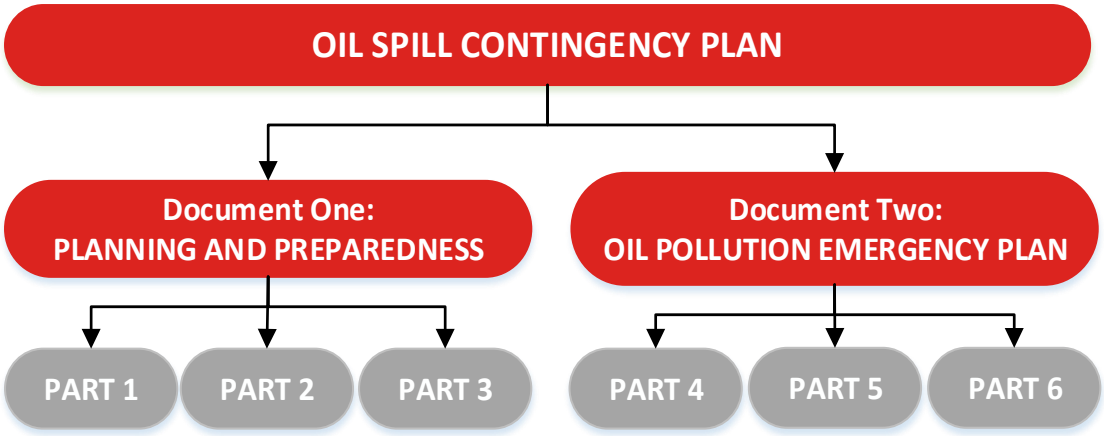
The OPEP (document two) includes:

- Part 4 – notification and activation requirements of the Oil Pollution Plans (OPPs)
- Part 5 – OPPs detailing response strategies and arrangements for credible spill scenarios
- Part 6 – spill response support plans.

The appendices of the Wandoo Field OSCP include:

- Appendix A – Safety Data Sheets
- Appendix B – Net Environmental Benefit Analysis (NEBA)
- Appendix C – Operational and Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002].

Figure 8-5: Structure of the Wandoo Field OSCP



A summary of how this EP, the OPEP and supporting documents address the various requirements of OPGGS(E)R relating to oil pollution response arrangements is shown in Table 8-5.

Table 8-5: Oil spill response OPGGS(E)R reference

OPGGS(E)R Reference	Regulation	Relevant section of Well Construction EP or Wandoo Field OSCP
22(2b)	Details of (oil pollution response) control measures that will be used to reduce the impacts and risks of the activity to ALARP and an acceptable level.	• Well Construction EP (Section 5.15.5) documents the ALARP assessment of response strategies. • Assurance and capability management process described in the EP (Section 8.8.7) ensures that environmental impacts and risks of spill response activities will be continuously identified and reduced to ALARP.
22(8)	The implementation strategy must contain an oil pollution emergency plan and provide for the updating of the plan.	• The Wandoo Field OSCP [WAN-2000-RD-0001.02]. • Well Construction EP (Section 8.4.5.2) describes plan review and update process.
22(9)	The oil pollution emergency plan must include adequate arrangements for responding to and monitoring oil pollution, including: (a) the control measures necessary for timely response to an emergency that results or may result in oil pollution; (b) the arrangements and capability that will be in place, for the duration of the activity, to ensure timely implementation of the control measures, including arrangements for ongoing maintenance of response capability; (c) the arrangements and capability that will be in place for monitoring the effectiveness of the control measures and ensuring that the environmental performance standards for the control measures are met; (d) the arrangements and capability in place for monitoring oil pollution to inform response activities.	a) Well Construction EP (Section 5.15.5) documents the control measures for oil spill response, with corresponding assurance activities to measure performance. b) Arrangements for ongoing maintenance of response capability are documented in Well Construction EP (Section 8.8.7.2). c) Arrangements and capability to implement control measures, including monitoring oil pollution to inform response activities, are described as follows: • Wandoo Field OSCP [WAN-2000-RD-0001.01] – Part 5 and 6 detail the resources needed, timeframes and guidance on implementation. • Logistics Management Plan [VOG-7000-RH-0008], described in EP (Section 8.8.6), details the specification for each resource requirement (e.g. skills vessels, equipment), identifies contracts and arrangements required to be in place, and details the process for sourcing, activation and mobilisation.

OPGGS(E)R Reference	Regulation	Relevant section of Well Construction EP or Wandoo Field OSCP
		• Oil Spill Response Capability Review [VOG-7000-RH-0009] contains up-to-date capability assessment of equipment and personnel.
22 (10)	The implementation strategy must provide for monitoring of impacts to the environment from oil pollution and response activities that: (a) is appropriate to the nature and scale of the risk of environmental impacts for the activity (b) is sufficient to inform any remediation activities.	• Wandoo Field OSCP [WAN-2000-RD-0001.01] – Part 6.
22 (11)	The implementation strategy must include information demonstrating that the response arrangements in the oil pollution emergency plan are consistent with the national system for oil pollution preparedness and response.	• Well Construction EP (Section 8.8.2). • Wandoo Field OSCP [WAN-2000-RD-0001] – Part 1 and 3.
22 (12)	The implementation strategy must include arrangements for testing the response arrangements in the oil pollution emergency plan that are appropriate to the response arrangements and to the nature and scale of the risk of oil pollution for the activity.	• Well Construction EP (Section 8.8.7.2). • Wandoo Field OSCP [WAN-2000-RD-0002] – Part 3.
22 (13)	The arrangements for testing the response arrangements must include: (a) a statement of the objectives of testing; and (b) a proposed schedule of tests; and (c) mechanisms to examine the effectiveness of response arrangements against the objectives of testing; and (d) mechanisms to address recommendations arising from tests.	• Well Construction EP (Section 8.8.7.2). • Wandoo Field OSCP [WAN-2000-RD-0001.01] – Part 3.
22 (14)	The proposed schedule of tests must provide for the following: (a) testing the response arrangements when they are introduced;	• Well Construction EP (Section 8.8.7.2). • Wandoo Field OSCP [WAN-2000-RD-0001.01] – Part 3.

OPGGS(E)R Reference	Regulation	Relevant section of Well Construction EP or Wandoo Field OSCP
	(b) testing the response arrangements when they are significantly amended; (c) testing the response arrangements not later than 12 months after the most recent test; (d) if a new location for the activity is added to the environment plan after the response arrangements have been tested, and before the next test is conducted—testing the response arrangements in relation to the new location as soon as practicable after it is added to the plan; (e) if a facility becomes operational after the response arrangements have been tested and before the next test is conducted—testing the response arrangements in relation to the facility when it becomes operational.	

8.8.2 Spill Management Arrangements

8.8.2.1 Jurisdictional Authority

authority for marine pollution in its area of jurisdiction. NOPSEMA is the jurisdictional authority for offshore oil and gas exploration and production activities in Commonwealth waters, while AMSA is the jurisdictional authority for vessel-based activities in Commonwealth waters.

The Department of Mines, Industry Regulation and Safety (DMIRS) is the jurisdictional authority for offshore oil and gas exploration and production activities in State waters, while the DoTMI is the jurisdictional authority for vessel-based activities in State waters and is also the HMA for Marine Oil Pollution. In the event of marine pollution in State waters, the HMA (DoTMI) is the designated jurisdictional authority, regardless of the source.

8.8.2.2 Control Agency

The National Plan describes the control agency as the agency or company assigned by legislation, administrative arrangements or within the relevant contingency plan, to control response activities to a maritime environmental emergency. The control agency will have responsibility for appointing the Incident Controller (VOGA uses the term 'Incident Commander').

VOGA is the Control Agency for oil spills wholly confined to Commonwealth waters from production facilities, meaning VOGA is responsible for assuming Incident Control and providing an Incident Controller (Commander). In the event that a spill has any potential to enter State waters; the WA DoT will be notified as soon as reasonably practicable. For spills arising from ships and vessels within Commonwealth waters, VOGA may undertake initial response actions and will hand over Incident Control to AMSA.

In accordance with State Hazard Plan – Maritime Environmental Emergencies (MEE), the Controlling Agency for a Level 1 MEE in State waters resulting from an offshore petroleum activity is VOGA. The Controlling Agency for a Level 2/3 MEE in State waters resulting from an offshore petroleum activity is DoTMI.

Cross jurisdictional response activities are those activities that arise as a result of an incident originating in Commonwealth waters and requiring DoTMI to exercise its HMA obligations in State waters. A partnership between VOGA and DoTMI is required to ensure response activities across the entire incident are carried out.

Where State waters are impacted by a Level 2/3 MEE resulting from an offshore petroleum activity in Commonwealth waters, DoTMI will only assume the role of Controlling Agency for that portion of the response activity that occurs within State waters.

Dispersant use in and around State waters must be approved by either DoTMI or the DMIRS.

Table 8-6: Control agency by location

Spill response/ impact location	Spill source	Control agency	Relevant OSCP
Commonwealth waters	VOGA facilities	VOGA	Wandoo Field OSCP
	Ships and vessels	VOGA/AMSA	Wandoo Field OSCP/National Plan
State waters	VOGA facilities	VOGA	Wandoo Field OSCP
		DoT	WA DoT OSCP
	Vessels not connected to the facility	DoT	WA DoT OSCP

8.8.3 Interface with Other Plans

8.8.3.1 VOGA Plans

To assist responders in the event of a spill, the Wandoo Field OSCP is split into two documents:

- The Wandoo Field Oil Spill Contingency Plan – Document 1: Planning and Preparedness [WAN-2000-RD-0001.01]
- The Wandoo Field Oil Spill Contingency Plan – Document 2: Oil Pollution Emergency Plan [WAN-2000-RD-0001.02] including the supporting Operational and Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002].

In the event of a spill, responders will immediately refer to the OPEP.

Document 1, Planning and Preparedness, is focused on outlining the basis of preparation of the OPEP and the processes for monitoring and maintaining response arrangements. The relevant sections of Document 1 are provided in this section of this EP.

The Wandoo Field OSCP interfaces with the following VOGA plans:

- Wandoo Facility Emergency Response Plan [VOG-2000-RD-0017]
- Source Control Contingency Plan – to be developed prior to drilling
- CGS Source Control Plan [VOG-3000-YH-0001]
- Wandoo Facility EP [WPA-7000-YH-0007]
- Wandoo Well Construction EP [WPA-7000-YH-0001]
- Oil Spill Response Capability Review [VOG-7000-RH-0009].

8.8.3.2 Government and Industry Plans

The OPEP interfaces with the following Australian Government, State Government and Industry plans:

Oil Spill Response Organisations (OSRO)

- Oil Spill Response Limited (OSRL)
- Australian Marine Oil Spill Plan (AMOS Plan).

Oil Spill Response Agency (OSRA)

- National Plan for Maritime Environmental Emergencies (National Plan)
- WA State Hazard Plan – Maritime Environmental Emergencies (MEE)
- WA DoTMI Incident Management Plan - Marine Oil Pollution (MOP).

Third Party Vessels

- Shipboard Oil Pollution Emergency Plans (SOPEPs).

8.8.4 Approach to Response Planning

VOGA's oil spill response planning process is based on impact and consequence scenario planning which involves establishing the context and risk; evaluating, demonstrating and defining response strategies and resources; implementation; and first response, as described in Table 8-7 and illustrated in Figure 8-6.

The process is divided into two phases: planning (described in Table 8-7) and spill response. The spill response is supported by the incident action planning process to ensure response is commensurate potential impact; OPPs 1 and 2 are initial IAPs based on existing impact assessments for the spill and response activities within the relevant EPs.

8.8.4.1 Planning Phase

As outlined in Table 8-7, preparing for spills involves the following steps to achieve the Wandoo Field OSCP [WAN-2000-RD-0001] outcomes:

- Step 1: Understanding the hazard profile - Outcome 1
- Step 2: Identifying parameters to assess applicable response strategies and scale of the event - Outcome 2
- Step 3: Identifying suitable response strategies - Outcome 2
- Step 4: Understanding the impacts associated with response strategies - Outcome 2 and 3
- Step 5: Ensuring capability and plan supports management of risks to ALARP - Outcome 4 and 5
- Step 6: Define the environmental performance standards within the respective EPs.

The outcome of this approach is that:

- Oil spill hazards associated with VOGA's activities are addressed and risks are managed to ALARP.
- Response strategies and resources are based on the nature and scale of the incident.
- Oil Spill Trajectory Modelling (OSTM) outputs for operations and well construction were compared to ascertain a worst-case scenario for response planning by considering:
  - minimum time to impact defined environmental sensitivities
  - probability of shoreline impact to defined environmental sensitivities
  - maximum quantity of oil impact to defined environmental sensitivities

  - maximum length of oil impact to defined shoreline environmental sensitivities.

- Response resources defined for the well construction loss of well control scenario are considered to be appropriate and conservative for covering both the operations loss of well control and a CGS spill.
- Response strategies are risk assessed and management controls outlined in both the Well Construction and Wandoo Field EPs are considered in the Wandoo Field OSCP [WAN-2000-RD-0001].

8.8.4.2 Response Phase

Initial response actions are described in the OPPs. These actions are based on the strategies, resources and capability identified in the planning process. Resources are activated and the outputs from monitoring, evaluation and surveillance (MES) activities are used to conduct a net environmental benefit analysis (NEBA), to confirm that the risks associated with response activities are consistent within the EPs and the Wandoo Field OSCP [WAN-2000-RD-0001]. If they are, then response effectiveness Key Performance Indicators (KPIs) are developed and response measures implemented. The incident action planning process provides for the opportunity to determine if response operations are effective and if termination criteria are met.

The incident action planning process used by the ICT allows for the effectiveness of each strategy to be reviewed, adjusted or halted if the objectives of the response are not being met or the environmental impacts were not addressed in the NEBA thus fulfilling Outcome 3 of the OSCP. If the impact of a response strategy is significantly higher than what is considered in the EPs, then this means either impact of the strategy is unacceptable or an EP revision is required for acceptance. An example of where a revision to an EP may be required is where new technology such as that for in-situ burning or bioremediation becomes available to VOGA.

To support this approach and provide a timely response, OPPs detail initial IAP (OPEP; Part 5) enabling response resources to be activated whilst event specific assessments are conducted. Resources are identified and capability to achieve timeframes has been reviewed to ensure first response actions are able to be implemented. Response planning details are provided in Table 8-7 and Figure 8-6.

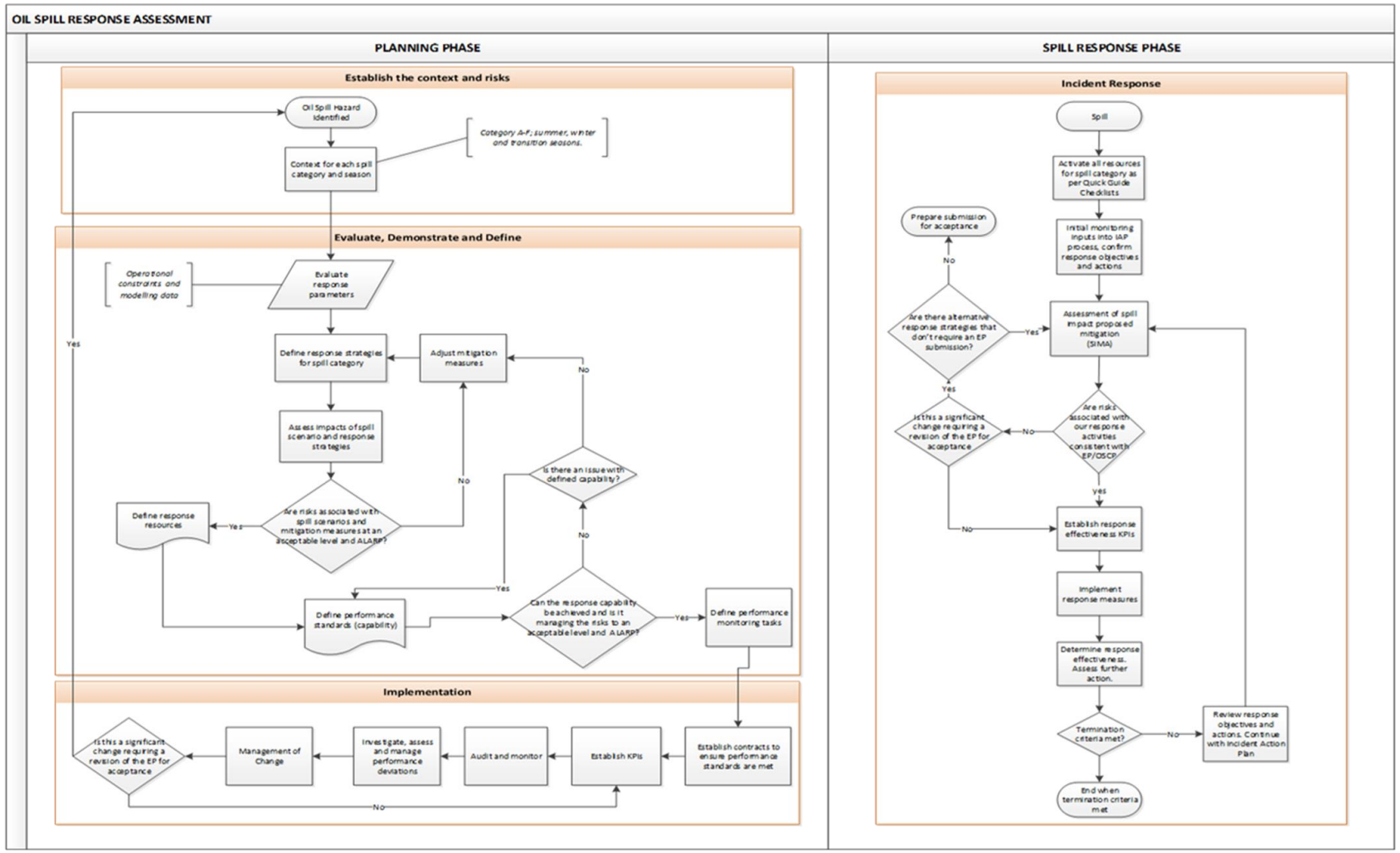
Table 8-7: Response planning

Response Planning Steps	Where step is addressed in EP and/or OSCP
Step 1: Oil spill hazard is identified and context for each spill category and season described. This requires understanding the potential events (scenarios) which requires knowledge of: • API type, composition of reservoir/fluids assay. • reservoir modelling of oil type or another geotechnical analysis. • release rate, quantity, duration. • location of activity and potential spill sources. • metocean data matching the location and timing of activity. • location of environmental receptors and method of impact from oil. • toxicity of oil. • timing of spill (season). • thresholds. • EMBA of the activity.	To support a hazard-based approach to planning, oil spill scenarios outlined in this EP were initially grouped into spill categories based on fluid type, duration, and volume. Details for each scenario are provided in the following sections in this EP: • diesel spill to sea (Section 5.13) • liquid hydrocarbon release from wells (Section 5.14).
Step 2: Evaluate response parameters, is also about consideration of the hazard, as response preparation requires understanding the potential consequence including: • probability of oiling defined environmental sensitivities. • minimum time to impact defined environmental sensitivities. • quantity of oil to impact defined environmental sensitivities. • length of shoreline impacted. • response operating area.	As a part of the hazard assessments in Section 5 of the EP, modelling was undertaken which was used to determine potential impacts and to identify the parameters for the response.

Response Planning Steps	Where step is addressed in EP and/or OSCP
Step 3: Define response strategies for spill categories, involves designing the most appropriate response plan, such that the impacts, in the event of a spill, are reduced to ALARP. VOGA uses an assessment process for oil spill planning and response and in doing so consider: • the oil spill hazard. • the context for each spill category and season. • operational constraints. • assess the impacts of the hazard and the response activities. • assess whether impacts from the hazard and the response activities are ALARP, by considering all alternatives and their relative benefits and costs. • where not determined to be ALARP, the response strategies are adjusted as part of an iterative process. • this iterative process considers capability and in doing so looks at the potential benefits and costs of doing more sooner.	Oil spill scenarios identified are grouped into categories based on the fluid type, duration and volume. There are six categories, further grouped into two response plans (OPP1 and OPP2). The response strategies planned are summarised in the Section 5.15 as well as being described in the respective OPPs. The response strategies are also assessed in Section 5.15 of this EP. This section describes the response strategy and assesses the risk of the hazard. It also identifies the critical stages of the response strategy and schedule for implementation which are evaluated further to determine if undertaking more of the techniques will provide additional benefit and/or if anything can be done sooner.
As a part of the planning the response, in **Step 4: Assess impacts of spill scenario**, VOGA also assesses the impacts of the spill response. This not only contributes to making choices about the response strategies, but also informs how the response should be undertaken to ensure that the risks and impacts of the response are managed to ALARP. This step involves: • environmental risk and impact assessment. • OSTM of surface, entrained and subsurface oil with and without response strategies. • identification of the controls (including environmental performance outcomes, standards and measurement criteria) to be implemented as a part of the spill.	The potential impacts of each spill response strategy have been assessed in Section 5.15 of this EP, and it is demonstrated that they are ALARP.

Response Planning Steps	Where step is addressed in EP and/or OSCP
To ensure that VOGA has a level of preparedness to implement the response strategy **Step 5: Define the response resources** is undertaken next. In this step, VOGA considers: • operational limitations (equipment functional capacity/coverage, safety of response personnel). • constraints of equipment effectiveness. • scale of the spill event. • skill-sets required for specific roles.	OPP's detail the resources needed, timeframes and guidance on oil spill response. Logistics Management Plan [VOG-7000-RH-0008]; details the specification for each resource requirement (e.g. skills vessels, equipment) and identifying what contracts and arrangements are required to be in place; details provided in Section Oil Spill Response Capability Review [VOG-7000-RH-0009] is undertaken annually based on the response activities outlines in the OPEP. For each statutory EP submission, the latest information from the Capability Review at time of the revision is provided in the OPEP. Assurance and capability management for OSR is detailed in Section of this EP.
Step 6: Define the performance standards. Some of the spill scenarios have been identified by VOGA to be CEE with "emergency preparedness, management and response" identified as a critical control, requiring a specific Critical Procedure Performance Standard. The Critical Procedure Performance Standard (Element 8 - Emergency preparedness, management and response) has the objective "to ensure that measures are in place to provide effective response in the event of an emergency situation at Wandoo facilities". To meet this objective, there are a number of key requirements of this overarching control, and performance criteria to set a level of performance, with corresponding assurance activities to measure performance identified. By working towards the objective, this Critical Procedure Performance Standard guides the manner in which VOGA plans for a response and ensures that the response is appropriate and will reduce the impacts to ALARP.	Section 5.15 in this EP includes specific control measures to achieve the overarching objectives.

Figure 8-6: Response planning diagram



8.8.5 Incident Management Process

8.8.5.1 Response Structure

VOGA has an emergency management response structure that is based around three levels of organisational control: tactical, operational and strategic. The premise behind these levels of control is that those parties within VOGA with the greatest expertise to manage that aspect of the emergency are empowered to do so, with operational or strategic levels stood up to provide support in terms of planning, resources and the management of extraneous issues that while important, are managed at the lower levels of control.

There are 3 teams within the emergency management response structure:

- Corporate Command Team (CCT)
- Incident Command Team (ICT)
- On-site ICT.

The goal of the three teams within the VOGA emergency management response structure is to implement reasonable and proportionate response strategies until such time as the response may be terminated.

The teams will do this through an incident action planning cycle. Prudent over-caution is used by VOGA in responding to oil spills, i.e. CCTs and ICTs will be notified with a view to being stood up for oil spills, then stood down after size and scale have been assessed and verified.

The chain of command for incident response is depicted within the VOGA emergency management response structure, as presented in Figure 8-7 and Table 8-8. Personnel appointed to these functions are selected from within VOGA or, for protracted incidents that run for weeks or months, using trained National Response Team members, AMOSC and the AMOSC Core Group, international OSR support organisations, and from within the international resources of VOGA. Where required the DoT Incident Controller has input into the team composition and structure.

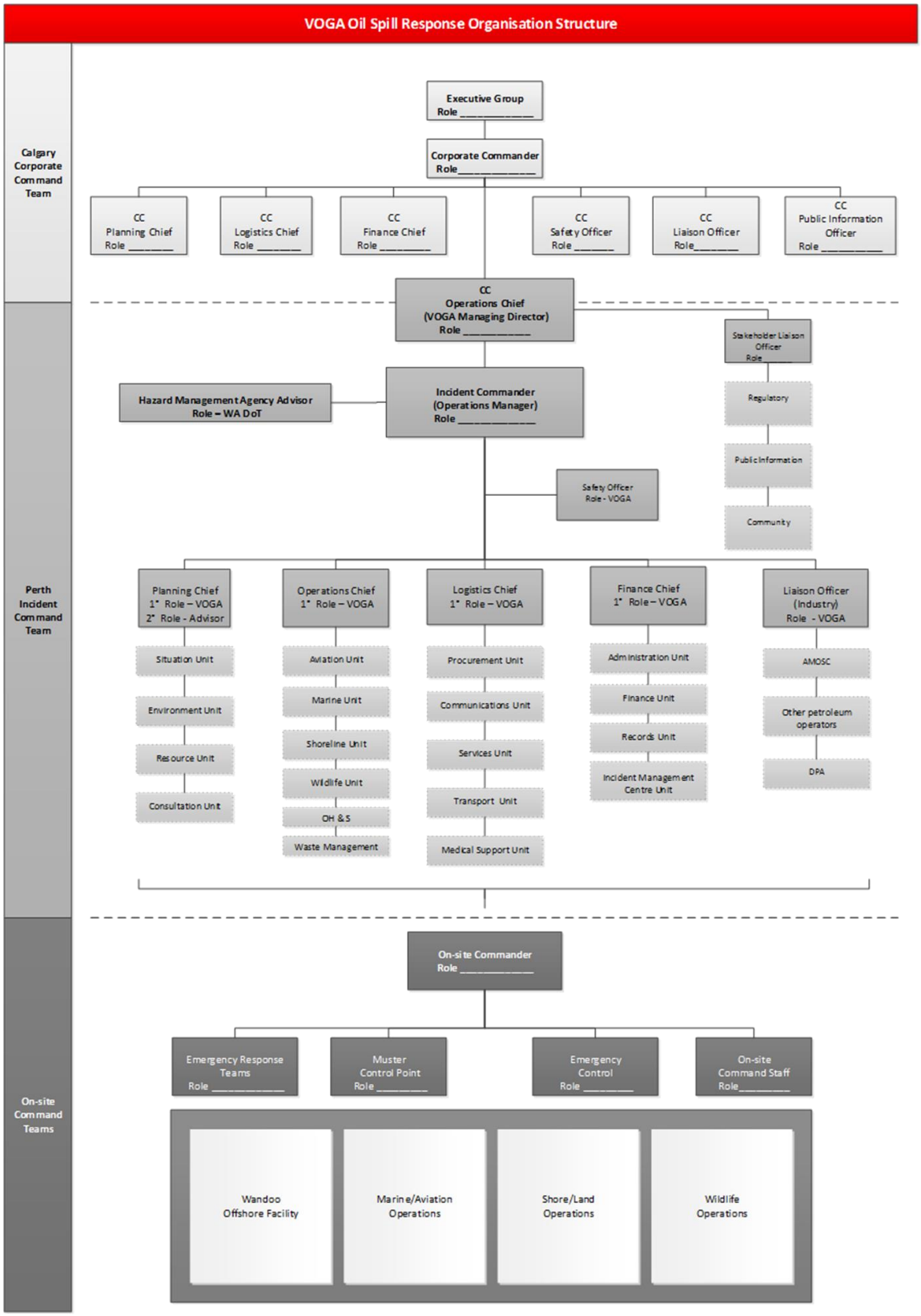
Table 8-8: Key ICT functions for Oil Spill Response

Role	Functional responsibilities
VOGA Incident Commander/ICT Leader	First point of contact for Person in Charge (PIC) offshore. Assists PIC to manage the response and calls out the ICT if required. Responsible for ensuring that an effective response is mounted by the On-site Command Team, and the onshore ICT. Approve IAP and where required engage State Maritime Environmental Emergency Coordinator/ DoT Incident controller for agreement/endorsement of plan for activities within, or potentially impact, WA waters.
DoTMI Incident Controller (Hazard Management Agency) and State Marine Pollution Coordinator	DoTMI Incident Controller (Hazard Management Agency) is the State appointed incident controller for oil spill response activities within, or potentially impact, WA waters. The State Marine Pollution Coordinator provides overall strategic management of the response and executive level support and guidance to the DoTMI Incident Controller.

Role	Functional responsibilities
Planning Chief • Situation • Resources • Environment	Supervises the VOGA ICT and leads the IAP process. Records and displays data for information, planning and programming, allocation and justification. Documents and maintain records of all Wandoo Offshore Installation and VOGA ICT actions. Manages critical information requirements.
	Interfaces with State Maritime Environmental Emergency Coordinator or State Environmental and Scientific Coordinator (ESC) for input into IAP for activities impacting state waters.
	The collection, processing and organisation of operational monitoring information, e.g. OSTM, weather, sea state.
	Tracking of the deployment of resources.
	Responsible for the collection and collation of environment data/advice, e.g. obtains environmental data from OSRA and scientific monitoring (DoT ESC and local sources) with support from an Environment Unit Lead role.
Logistics Chief • Procurement • Services • Transport • Communications • Medical	Develops logistics plan to support operations and provides overall resource support to emergency incident sites. Establishes and maintains lists of personnel, supplies and materials which might be required to support the emergency/disaster. Responsible for establishing any Simultaneous Operations (SIMOPS) Plan to manage the risk generated by multiple activities.
	Acquisition of personnel and equipment.
	Acquisition of services and facilities, including waste management resources.
	Provision of air, land and sea transport services.
	Communications Sub-Plan and for ensuring the provision of communications services/support.
	Provision of medical services where needed.
Operations Chief • Marine • Aviation • Shoreline • Wildlife • Occupational Health & Safety (OH&S) • Waste management	Assumes responsibility for executing approved Action Plans. Responsible for all tactical command and coordination of in-country incident response assets in the assistance and support of the On-site Commander. Ensures that operational objectives and assignments identified in Action Plans are carried out effectively. Monitors operations; ensures necessary operational support is provided when and where required; allocates resources.
	Coordination and direction of all activities undertaken by waterborne craft and equipment.
	Coordination and direction of all activities undertaken utilising aircraft, e.g. aerial dispersant spraying, aerial surveillance and transport.
	Planning and coordination of shoreline assessment and clean-up activities (in consultation with the DoT, planning, specifically the environmental specialists). Implementation of shoreline clean-up activities.
	Implementation of the WA Oiled Wildlife Plan, i.e. the collection, treatment and rehabilitation of oiled wildlife in consultation with DBCA via the DoT ESC.
	Development and implementation of the OH&S Plan.
	Coordination of the containment, storage, transport and disposal of recovered oil and oily waste. Also, instruction in on-site handling, storage and/or separation and treatment.

Role	Functional responsibilities
Finance Chief	Provides monetary, insurance, legal, risk and human resources, related administrative functions to support emergency operations and to preserve vital records documenting work performed and associated costs in the event of disaster or major emergency.
Safety Officer	Assesses unsafe situations and develops measures for assuring personnel safety. Confirms safety regulatory authorities and applicable departments have been notified. Ensures implementation of safety measures and monitoring and recording of personnel exposures to hazardous products. Supports accident investigations, recommends corrective action, and prepares accident report.
Corporate Command Team (CCT)	Focus of the CCT is on ensuring ICT are responding in accordance with corporate requirements, liability/insurance, business continuity, media/investor relations, and financial management/support of response.
Corporate Command Operations Chief	Provides the interface between the ICT and CCT. Provides updates to the CCT regarding IAPs and communicates any needs for support if required. Responsible for ensuring VOGA's corporate objectives are communicated to the ICT and are also reflected in the IAP.
Stakeholder Liaison Officer	Responsible for managing regulatory engagement and coordinating any regulatory approvals required to implement response strategies. Coordinates engagement of stakeholders who are impacted from the spill or response activities. Coordinates investigation of reportable events. Acts as the functional interface between these various parties. Implements VOGA Communications Plan, providing media information support and serving as the dissemination point for all VOGA media releases.
Liaison Officer (Industry)	Identifies the assisting and cooperating companies and agencies, including communications link and location; provides list to the CCT. Functions as "point of contact" for assisting and cooperating agency representatives. Responsible for ensuring that parties who have agreed to undertake specific functions under the OPEP are undertaking the functions consistent with the OSR strategies, performance standards and objectives of the Wandoo Field OSCP [WAN-2000-RD-0001].

Figure 8-7: Oil Spill Response structure



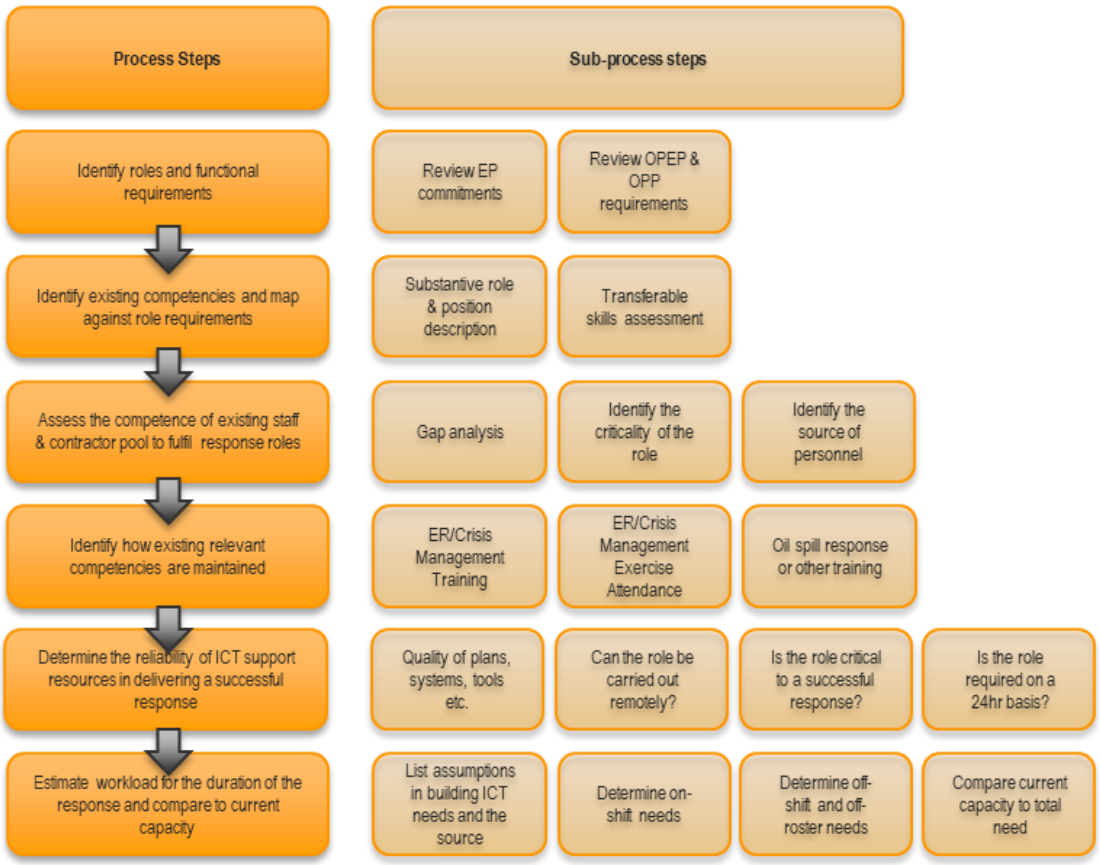
8.8.5.2 ICT Response Resources

Vermilion engaged a third-party expert to research and provide an appropriate method that could be used for VOGA to determine the level of ICT personnel required to undertake an effective response to VOGA's identified oil spill events. In Australia, the National Plan relies on fewer numbers of highly competent and broadly qualified individuals who can operate in a cooperative national system for its response operations. Based on this research, VOGA has decided that, to be consistent with the National system for oil spill response in Australia, a methodology based primarily on ensuring competent personnel are positioned in the critical roles is the most appropriate for its activities.

Whilst a secondary consideration, it is also important that we have a method of determining the quantity of personnel required for our largest incident and that we have the arrangements in place to meet this need, catering for rosters in longer responses, potential 24 hour ICT operations, personnel absences, and contingency capability.

The method in Figure 8-8 has been developed for VOGA to assess, and periodically review its ICT capability both in terms of competence and quantity. The method can also be used by the ICT in a response to validate plans and/or build new plans depending on the specific spill circumstances. It has been designed to determine an ICT capability for the largest demand of each response strategy collectively.

Figure 8-8: Process for determining the competence and quantity of ICT personnel



8.8.5.3 Source Control Technical Support Teams

In the event of a well control incident the VOGA Incident Command Team (ICT) are responsible for managing the response in accordance with the Source Control Contingency Plan and the ERP. The ICT will be based in the VOGA Perth office and supported on technical aspects by dedicated technical support teams.

The Incident Commander will authorize the assembly of the following dedicated technical teams to undertake the well kill and relief well planning and execution activities:

- Well Control Response Team
- Subsurface Team
- Relief Well Planning Team.

Each of these teams will be under the direction of the Well Construction Manager who will report to the Incident Commander to ensure a clear chain of command.

These teams will consist of VOGA personnel and/or potentially service contractors, dependent on the well control event category and if the event occurs during drilling or well intervention programs.

VOGA has a consultant based offshore drilling team available during well construction and intervention programs that could be utilized for drilling a relief well. There are several consulting firms in Perth who specialise in the supply of suitably qualified personnel at short notice if VOGA decide more engineering support is required in their office or for offshore supervision.

VOGA has the option, with its international offices, to call on additional internal engineering support. VOGA's Perth office has agreements in place with most major service companies for equipment and personnel and can draw on a range of specialised personnel to assist in blowout response.

Section 8.8.6.3 of this EP details the resource requirements and arrangements of the technical support teams.

The competency level required of the technical teams is managed through the well construction management process as described in Section 8.3.6.

8.8.5.4 Cross Jurisdictional Arrangements

In all cross jurisdiction MOP emergencies beyond Level 1, DoTMI will establish an IMT and VOGA will be required to provide an appropriate number of appropriately qualified personnel for the DoTMI IMT. This is an initial 10 personnel in accordance with the DoT Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements (Version 4, September 2018).

VOGA will conduct initial response actions in State waters as necessary in accordance with their OPEP and continue to manage those operations until incident control can be established by DoTMI. Upon establishment of incident control by DoTMI, VOGA will continue to provide planning and resources in accordance with the OPEP. This will include response assets and contracts specified in their OPEP, such as those pertaining to waste management, transport and

personnel as well as response arrangements with the Australian Marine Oil Spill Centre (AMOSC) and other third party responders.

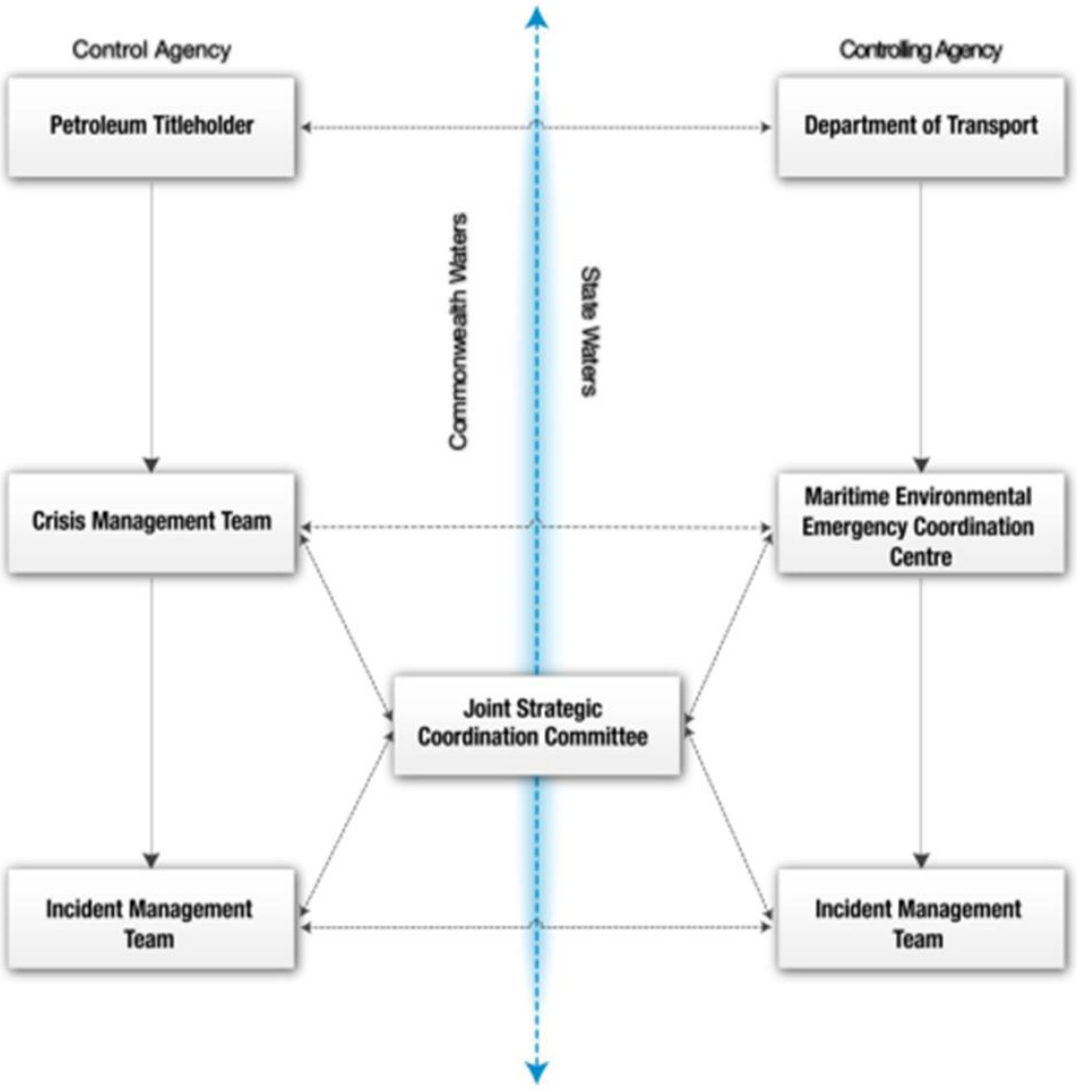
In fulfilling its obligations as Controlling Agency, DoTMI will require VOGA to work in partnership with DoTMI to ensure an adequate response is provided across the entire incident. DoTMI and VOGA will determine the most appropriate response in State waters by working together on the IAP, protection priorities and net environmental benefit assessment of response activities.

VOGA utilises an Initial NEBA Spreadsheet Tool that provides information on sensitivities at risk, and feasibility and impact of response strategies based on the spill category and season. This and The Initial Incident Action Plan prepared by VOGA can be provided to DoTMI at the time of initial notification of a spill potentially entering state waters.

To facilitate this overarching coordination between the two Controlling Agencies and their respective IMT's a Joint Strategic Coordination Committee (JSCC) will be established. The JSCC will be jointly chaired by the WA DoTMI State Maritime Environmental Emergency Coordinator and a VOGA nominated senior representative, and comprise of individuals deemed necessary by the chairs to ensure an effective coordinated response across both jurisdictions.

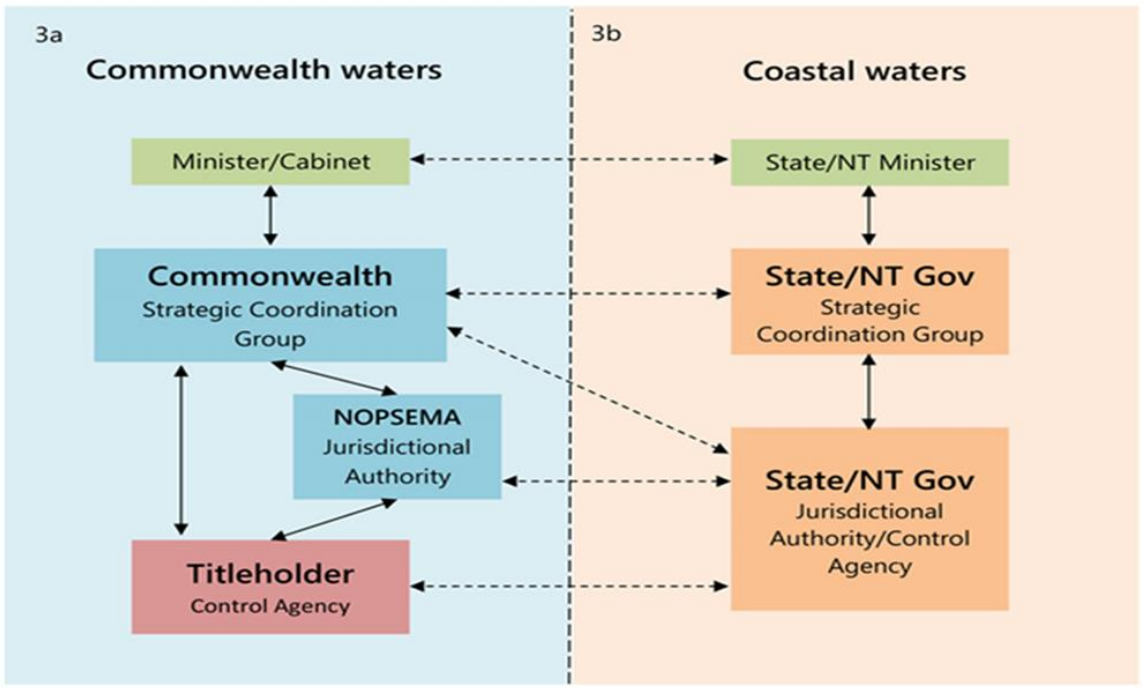
The control coordination arrangements for a Cross Jurisdiction MOP emergency are outlined in Figure 8-9. Figure 8-10 from the Offshore Petroleum Incident Coordination Framework (March 2019) provides the strategic response structure between the Commonwealth and a state or territory jurisdiction may operate in the event of a cross jurisdictional incident. The Commonwealth strategic coordination group will change depending on the severity of the incident.

Figure 8-9: Coordination arrangements for a cross jurisdictional MOP emergency



Note — DoT IMT contains an appropriate number of appropriately qualified persons from the Petroleum Titleholder in key areas commensurate with their level of introduced risk.

Figure 8-10: Offshore Petroleum Strategic Response Structure



8.8.6 Logistics Management Plan

8.8.6.1 Overview

The Logistics Management Plan [VOG-7000-RH-0008] contains outputs from the identification of resources required and the scope of works/services required to deliver those resources. It is maintained as live document based on the resources identified and the Contractor Scope of Works in the OSR Capability Review [VOG-7000-RH-0009]. The plan provides details of the logistics support available to support the implementation of the Oil Pollution Plans (OPP) outlined in the OPEP. Logistics requirements for smaller spills can be scaled down from this.

On activation of the ICT for OSR, incident specific logistic plans will be developed to support effective logistics management and deployment. Depending on the size of logistics activities, SIMOPS plans may be developed to manage the hazards associated with multiple logistics interfaces within a confined area. The Logistics Officer is responsible for managing the logistics and SIMOPS plans.

8.8.6.2 Roles and Responsibilities

Logistics Chief

The Logistics Chief is a member of the ICT and is responsible for providing facilities, services and material in support of the incident. The Logistics Chief participates in the development and implementation of the IAP, activates and supervises the branches and units within the logistics section.

The function of this section is to provide support for the control of the incident through the obtaining and maintaining of human and physical resources, facilities, services, and materials.

Responsibilities of the Logistics Chief include:

- Developing the logistics component of the IAP ensuring that Planning Chief is provided with a list of resources available
- Planning organisation of the logistics section
- Allocating tasks to section personnel
- Supporting control of the incident through the procurement and maintenance of human and physical resources, facilities, services and materials
- Facilitating effective liaison and cooperation with all relevant persons
- Providing progress reports on logistical support for the incident to the Incident Commander and the ICT
- Estimating future service and support requirements
- Facilitating the establishment and maintenance of staging areas (if required) in support of the Operations Section.

Logistics Units

Procurement Unit - The Procurement Unit acquires and distributes equipment and materials for infrastructure support. Ensures supplies are appropriately stored and maintained. Obtain extra resources (people, vehicles, equipment etc.) as required. Includes supporting the incident with the provision of food and drinks to personnel involved in the incident across the Incident Command Centre (ICC) and all on-ground sites across different meal times and duty shifts (considering specific dietary requirements).

Communications Unit - Provide input into the acquisition, installation and maintenance of communications equipment. Assist the Planning Section to produce the Communications Plan for the effective use of incident communications equipment and facilities; installation and testing of communications equipment; supervision of the Incident Communications Centre; distribution of communications equipment to incident personnel; and the maintenance of communications equipment.

Services Unit - The Services Unit obtains and manages the necessary facilities and accommodation to support operations and incident control and maintains them in working order. Responsible for the setup, maintenance and demobilisation of incident facilities, e.g. Base, ICC and staging areas, as Well as security services required to support incident operations. Provides sleeping and sanitation facilities for incident personnel and manages Base operations. Each facility is assigned a manager who reports to the facilities unit leader and is responsible for managing the operation of the facility.

Transport Unit - The Transport Unit is responsible for providing transport for personnel, equipment, supplies and food, together with fuelling, mechanical maintenance and security of all equipment and vehicles at the incident. Develop and implement a Traffic Management Plan for in and around the incident.

Other Functions that Support the Logistics Unit

Resource Unit (a Unit within the Planning Section that works closely with the Logistics Section) - This function gathers, maintains and presents information on incident resources and contributes to the plans for demobilisation. The Resource Unit Leader is responsible for maintaining the status of all assigned tactical resources and personnel at an incident. This is achieved by overseeing the check-in of all tactical resources and personnel, maintaining a status keeping system indicating current location and status of all these resources. Includes the tasks of resource management, resource tracking, changeover management and demobilisation (in accordance with demobilisation plan). VOGA plans to utilise planners to fulfil this role with offshore planners (if demobbed) to provide back-up support.

Responsibilities include:

- Establish and maintain a Resource Management System for the tracking of resources
- Display resources as allocated (working), available (within a short time frame), en route, resting, demobilised or unserviceable
- Work closely with Staging Area Manager to ensure communication flow
- Participate in mobilisation and demobilisation plans
- Process requests from Operations Division(s) for additional resources in liaison with Logistics Coordinator
- Provide records/information to Media Liaison Officer.

8.8.6.3 Resource Arrangements

Two categories of contractors and support organisations have been identified to support VOGA respond to oil spills:

- Oil spill response specific support organisations (including national, state and industry resources)
- Existing operational contractors that can be engaged for emergency response activities.

AMOSC and AMSA are the first support agencies to be called, followed by Oil Spill Response Limited (OSRL) and the WA DoT if required. The first contractors to be called are likely to be the providers of aircraft and vessels.

During the development of the Incident Action Plan (IAP) the Planning Chief will be working with the Logistics Chief with the to identify the available resources and deployment time. The IAP will outline the priority response strategies and their locations, based on the potential incident escalation, impact of response activities and available resources.

Contact details for oil spill response agencies, organisations and key contractors are available in the VOGA Emergency Contact List [VOG-2000-RD-0050] and further contractors and service provider details is maintained on an Oil Spill Contracts List spreadsheet managed by the VOGA Logistics team.

The OPEP [WAN-2000-RD-0001.02] (Section 5; Table 5-1 and Table 5-2) lists the spill response resource arrangements that VOGA has in place across the business that may be called on to assist in a VOGA-led spill response.

Oil spill response organisation and contractor capability is confirmed through the assurance and capability management process.

8.8.7 Assurance and Capability Management

VOGA manages oil pollution response capability and assurance requirements through:

- Training and competency of key response personnel and contractors
- Assessing and maintaining response capability
- Assurance tasks such as exercises and third-party inspections.

8.8.7.1 ICT Training and Competency

Onsite Emergency Response personnel are trained in emergency control and leadership to ensure they are suitability prepared for decision-making in an emergency situation.

Training requirements are identified for Onsite Command and Incident Command teams to ensure rotate testing of scenarios and equipment. Records are is kept to track training of personnel.

Relevant members of VOGA's ICT will have completed incident management training. Full details on ICT personnel training, resource and competency requirements are provided in the OPEP [WAN-2000-RD-0001.02] (Section 5; Table 5-1 and Table 5-2). Noting, this activation plan is based on OPP2 requirements (Wandoo Facility EP [WPA-7000-YH-0007] Wandoo Crude worst-case scenario). For activation of OPP1, the Planning Chief is responsible for reviewing and adjusting the activation plan as required.

8.8.7.2 Capability Management

Determine Requirements

Capability can be demonstrated by the creation and testing of mechanisms to access and activate resources during a spill response. These include the testing of contracts, agreements, MOUs, and directories to demonstrate VOGA's capability to implement the response strategies which is undertaken and documented at a minimum of annually under the Oil Spill Response Capability Review [VOG-7000-RH-0009]. For each EP revision submitted to NOPSEMA the most current information from the review in regard to the identification and assessment of additional resources is provided as part of the ALARP demonstration (Section 5.15.5).

Determining capability for oil spill response requires an understanding of the strategies to be implemented and the associated resources. Resources required to support the implementation of each response strategy are identified in the OPEP [WAN-2000-RD-0001.02] and demonstrated as suitable in Section 5.15.5 of this EP. VOGA manages ongoing capability required for what is it considers to be the highest demand spill scenarios, with the assumption that a capability which applies to worst-case spill scenarios should be sufficient in terms of resource preparedness for less significant spill scenarios.

Assessment of Capability

Capability assessment is a step in the response planning process described in Figure 8-6 and utilised as an ongoing self-assurance and continuous improvement process. Once a capability is defined, arrangements are then tested to ensure it can be achieved and that risks are being managed to ALARP. If testing suggests the capability cannot be achieved, then an assessment of the response strategy and specified capability is undertaken. The following questions are considered to determine capability requirements to support management of risk to ALARP:

- Are there additional tasks that can be undertaken for this strategy?
- When and where the resource would be required, based on the results of consequence modelling (e.g. time to impact, thresholds and probability)?
- How long would the resources be required for use?
- Where and what are the size of stockpiles available to VOGA?
- What are the mobilisation times for equipment from these stockpiles and contractor resources?
- What are the logistical requirements for safe deployment of materials and equipment?
- Is there any benefit of either increasing resource and/or reducing mobilisation times?
- What are the costs of either increasing resource and/or reducing mobilisation times?
- Is there any benefit in increasing the amount of resources?
- Is there a better way to undertake activities associated with this strategy?

If the capability cannot be achieved, then response strategies will be reviewed as part of the IAP process to identify alternative response strategies that reduce risks to ALARP.

In addition to the testing documented in Table 8-9 and the Oil Spill Response Capability Review [VOG-7000-RH-0009], exercises, inspections/audits and action management are undertaken as a key aspect of performance management:

- Exercises - the VOGA Emergency Response Schedule [VOG-1100-YH-0001] addresses the scope and requirements for conducting exercises for the onsite and incident command teams and provides details regarding the reporting of recommendations arising out of exercises including changes of procedure, corrective actions and new guidelines. Exercises are included as part of the testing schedule.
- Inspections and audits - VOGA's auditing schedule includes all elements of VOGA's HSE MS, including environment performance. The auditing schedule includes three types of auditing processes: Internal inspections of VOGA's response capabilities and commitments: External inspections of VOGA's response capabilities and commitments; and Inspections of third-party providers. The frequency of the inspection is dependent on VOGA's activity, requirements of mutual aid partners and size/capability of the organisation and is provided in Table 8-11. Note that this is in addition to the annual capability testing documented in the Oil Spill Response Capability Review [VOG-7000-RH-0009] and detailed in Table 8-10.
- Action management - Recommendations arising out of Wandoo Field OSCP [WAN-2000-RD-0001] reviews, capability reviews, inspections, audits are reviewed and where

recommendations are to address an increase spill response risk exposure identifies interim measures to manage the risk to ALARP whilst any agreed action is being completed.

Table 8-9: Testing schedule

Objectives that VOGA will test	Evidence and supporting documentation required	Well Construction activities	Wandoo Facility activities	Within three months after a significant change to spill profile	Joint industry, OSRA or OSRO exercises
		Within three months before activity starts	Annually		
Aim 1: Provide situational experience for core incident command team personnel and enabling them to be aware of their assigned roles and responsibilities during a response					
To provide an oil spill event to test the onsite or incident command team roles specifically listed in Table 8-1 of the Wandoo Field OSCP.	VOGA ICT exercise scenario description and attendance list.	x	x	-	-
	VOGA onsite command team scenario description and exercise report.	-	x	-	-
Aim 2: Assess the effectiveness, achievability and timeliness of incident action planning for the duration of expected response					
Test the incident response cycle as documented in the OSCP.	VOGA ICT exercise scenario description, IAP and decision/event log and post scenario lessons learned.	x	x	x	-
	VOGA onsite command team scenario description and exercise report.	-	x	-	-
Aim 3: Testing interfaces and deployment of equipment and resources					
To test the VOGA on-site equipment capability.	Maintenance records for simulated deployment of satellite tracking buoy.	-	x	-	-
To assess that the ICT are aware of notification protocols in place to contact other agencies, regulatory authorities and OSRAs and OSROs.	VOGA ICT exercise scenario description, IAPs, decision/event log and stakeholder/ notification contact list.	x	x	x	-
Test the mobilisation ability and logistic assumptions around equipment and	ICT member/s observers role or participates in mobilisation exercise with OSRA or OSRO with lessons learned documented.	-	-	-	x

Objectives that VOGA will test	Evidence and supporting documentation required	Well Construction activities	Wandoo Facility activities	Within three months after a significant change to spill profile	Joint industry, OSRA or OSRO exercises
		Within three months before activity starts	Annually		
personnel movement, timings and capability as per the OPEP.	Updates to Oil Spill Response Capability Review (refer Table 8-10 for objectives and scope).	x	x	x	-
To participate in equipment deployment exercises (AMOSC, AMSA, DoT, contractors, other industry operators) as observers or ICT members.	ICT member/s observers role or participates in joint industry exercise: Shore-based equipment field deployment exercise.	-	-	-	x

Table 8-10: Oil spill capability review scope

Test	Objectives	Parties involved
Source control (relief well)	To test arrangements (e.g. availability of adequate equipment and competent personnel) to undertake source control activities as per the resource requirements defined in Section 5.15.3.1 of this EP.	VOGA and third-party agencies and service providers.
Monitor and evaluate	To test arrangements (e.g. availability of adequate equipment and competent personnel) to undertake monitor and evaluate activities as per the resource requirements defined in the Wandoo Field OPEP [WAN-2000-RD-0001.02].	
Oiled wildlife	To test arrangements (e.g. availability of adequate equipment and competent personnel) to undertake oiled wildlife activities as per the resource requirements defined in the Wandoo Field OPEP [WAN-2000-RD-0001.02].	
Operational and Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002]	To test arrangements (e.g. availability of adequate equipment and competent personnel) to undertake OSM activities as per the resource requirements defined in the Operational and Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002] (Appendix C of Wandoo Field OSCP [WAN-2000-RD-0001]).	
Incident Command Team	Test availability of competent personnel to staff the VOGA ICT as per the resource requirements defined in the Wandoo Field OPEP [WAN-2000-RD-0001.02].	

Table 8-11: Inspection frequency and scope

Item	Third Party oil spill response providers		
	OWR Agency	Local/Regional Oil Spill Equipment Provider	Global dispersant
Frequency	3-yearly	2-yearly	3-yearly
Equipment: Maintenance management, logistics, training, readiness for activation/deployment.	Included	Included	Included
People: training and competency management, quantity and availability.	Included	Included	-
Activation Process: Notification processes, activation and mobilisation of people and equipment, exercises and testing.	Included	Included	Included
Documentation: Contracts, agreements, specialist services, authorisation lists, capturing of	Included	-	Included

Item	Third Party oil spill response providers		
	OWR Agency	Local/Regional Oil Spill Equipment Provider	Global dispersant
learning and input into training materials.			
Management and organisation: Organisational management of change process, lessons learnt, contracts and liability.	-	-	-

8.8.7.3 Continuous Improvement

The Wandoo Field OSCP [WAN-2000-RD-0001] requires review:

- Following a significant change to a spill risk profile
- Following significant changes to OSR capability or performance standards
- Post-significant event (i.e. incident, change to risk profile, change to activities, change to preparedness/capability both within VOGA and external service providers).

Reviews will consider any issues arising from events or exercises, any changes in legislation, and also incorporate findings and recommendations from industry incidents locally and globally (if and when information is made public).

Recommendations arising out of Wandoo Field OSCP [WAN-2000-RD-0001] reviews, capability reviews, inspections, audits are reviewed, assessed and considered for implementation if it is consistent with the ALARP principles outlined in the VOGA EPs. A schedule of reviews is provided in Table 8-12.

Table 8-12: Review schedule

Objective	Activity type	Well construction activities	
		Within 3 months before activity starts	During activity
To ensure that all contacts in the Wandoo Field OSCP are regularly checked and updated	Contacts list check	✓	-
To ensure that all service providers retain capability	Review OSR Capability Review [VOG-7000-RH-0009]	✓	-
	Contractor readiness reports	-	✓
To ensure that response strategies are consistent with oil spill mitigation requirements	Wandoo Field OSCP review	-	-

8.9 Inspection and Auditing

8.9.1 Audit Process

The VOGA audit procedure is outlined in the Performance Assessment Manual [VOG-1000-MN-0003]. The audit process comprises:

- Audit scheduling
- Preparation and planning
- The audit
- Reporting

Follow up and action item close-out.

8.9.2 Inspection Process

Inspection of equipment and processes are a means by which VOGA collect records pertaining to technical status of contractor equipment and compliance with certain environmental performance standards. The inspection process is similar to, but less formal than, the audit process.

8.9.3 Inspections and Audits

Internal and external inspections and audits will be undertaken to confirm that commitments specified within the Commitments Register are being met.

Internal inspections and audits are conducted by VOGA personnel. Internal inspections and audits range from regular small area specific inspections conducted by field supervisors through to high level management audits focused on a single major accident event or an environmental event assessed to have a 'Catastrophic' impact under the VOGA risk matrix or HSES topic. These inspections and audits assess compliance with the HSE MS, including the environmental performance outcomes and standards specified within this EP.

External inspections and audits are conducted by third party service providers with specific expertise to provide an independent evaluation of compliance with the HSE MS expectations and performance standards and outcomes.

8.9.4 Inspection and Audit Plan

VOGA develops a specific audit plan for each well construction campaign, optimised to meet that campaigns specific requirements. The audits and inspections outlined in Table 8-13 will be carried out during each well construction campaign.

Table 8-13: Audits and inspections proposed for each well construction campaign

Timing	Inspection audit objective	Frequency	Internal/external
Planning and design phase	Pre-campaign inspections on MODU and AHTS vessels to verify preparedness for work, including compliance with EP Commitment Register.	Per drilling campaign	Internal

Timing	Inspection audit objective	Frequency	Internal/external
	Pre-campaign EP compliance review to ensure compliance with commitments relating to this phase.	Per drilling campaign	Internal and/or external
Execution	EP compliance audit against Commitment Register during the campaign.	Per drilling campaign	Internal and/or external

8.9.5 Follow-up and Action Item Close Out

Following receipt of the Audit Report, the Well Construction Manager should undertake a review and develop an Action Plan. The Action Plan should finalise:

- Action items
- Action parties
- Timeframe for completing action items
- Approver.

The appropriate actions need to be taken by the designated action parties within the agreed timeframe. The process for closing out actions is detailed in the Management System Manual: Performance Assessment [VOG-1100-YG-1201]. Additionally, compliance auditing of the Commitments Register will allow for activity non-conformances to be identified, captured and tracked via the Management System Manual: Performance Assessment [VOG-1100-YG-1201].

8.10 Reporting

8.10.1 Records

All records generated during a well construction campaign will be maintained for at least five years, in accordance with the OPGGS(E)R. Table 8-14 outlines the record keeping requirements to comply with performance standards and routine reporting obligations.

Table 8-14: Summary of routine monitoring and record keeping

Measurement	Frequency	Monitoring Strategy	Record
Ballast water discharges	Intermittently – discharge events recorded as they occur	Discharges determined from ballast water record log	Ballast water records
Volumes of the following waste types are recorded: • general and putrescible waste • hazardous waste • timber/wood • recyclables • cardboard/paper • metal	Logged on MODU when transferred via vessel to shore then to licensed waste facility Vessel also records volumes on manifest	Invoicing process checks vessel manifest against waste disposal records of service provider, and evidence of disposal	Manifest documents Oil record book Garbage record book

Measurement	Frequency	Monitoring Strategy	Record
• plastic • batteries			
Oily water	Intermittently – discharge events recorded as they occur	Discharges determined from oil record log (or equivalent)	Oil record book
Garbage (food scraps)	Intermittently – discharge events recorded as they occur	Discharges determined from garbage record log (or equivalent)	Garbage record book
Sewage	Intermittently – discharge events recorded as they occur	Discharges determined from sewage record log (or equivalent)	Sewage record book
Volume of drilling discharges	Daily	Volumes used determined from change in inventory	Daily report
Cuttings discharge	Daily	Onboard cuttings management system	Daily mud report
Barite does not exceed concentrations of the following metals: • Mercury – maximum 1 mg/kg dry weight • Cadmium – maximum 3 mg/kg dry weight	As purchased	Contaminants determined from purchase records prior to use	Purchase records
Cement and drilling fluid used	Daily	Mud and Cementing Engineers monitor fluid and cement used/ discharged	Daily drilling report
Unplanned discharges of solid objects, hazardous liquids or hydrocarbons	In the event of an incident	Incident only	IAP records
GHG emissions	At end of campaign	Assumption of emissions based on fuel used	Fuel records detail fuel use on MODU, helicopters and vessels
Inductions	Per campaign	Details of crew environmental inductions	Induction record sheets
Audits and inspections	As identified in Table 8-13	Compliance with EP Commitments Register	Completed environmental

Measurement	Frequency	Monitoring Strategy	Record
			inspection/audit reports
Spill response	In the event of an incident	Spill volume. Dispersant volume	IAP records
Consultation	As required or requested by stakeholder	Ongoing consultation with stakeholders	Consultation records

8.10.1.1 Statutory Reporting

Regulation 22 of the OPGGS(E)R require operators to include arrangements in the EP for:

- Maintaining a quantitative record of emissions and discharges to the air, marine, seabed and sub-seabed environment to enable evaluation of performance against performance standards and measurement criteria.
- Recording, monitoring and reporting information about the activity (including information required to be recorded under the OPGGSA, the regulations and any other environmental legislation applying to the activity) sufficient to enable the Regulator to determine whether the environmental performance outcomes and standards in the EP are met.
- Reporting to the Regulator at intervals agreed with the Regulator, but not less than annually.

A report of these parameters will be submitted to NOPSEMA at the end of each well construction campaign by the VOGA HSES Advisor. If no activity has occurred in any given year, this will also be notified to NOPSEMA fulfilling the requirement for annual reporting.

VOGA has legal obligations under the OPGGS(E)R to submit routine reports to NOPSEMA as well as notify NOPSEMA of an incident within a specified period of time, depending on the impact or potential impact to the environment and whether the incident is deemed reportable or recordable under the regulations (Section 8.12).

In addition, VOGA must notify NOPSEMA of a change in the following in accordance with Regulation 23(3):

- The titleholder of WA-14-L
- The titleholder's nominated liaison person for the activity, or
- A change in contact details for either the titleholder or the nominated liaison person.

8.10.2 Routine Internal Reporting

A number of routine internal reports will be prepared during each well construction campaign, including:

- Daily Drilling Reports: prepared by the VOGA Drilling Supervisor and issued to key support personnel and stakeholders. Daily Drilling Reports outline performance information on well construction activities completed over the previous 24 hours, QHSE, logistics, equipment and fuel usage.
- The seven-day look-ahead (issued daily by the VOGA Drilling Supervisor) provides a forward projection of activities over the coming 7 days and identifies AHTS vessel and helicopter

movement and equipment and personnel requirements. Relevant internal reports will be collated and maintained by VOGA's HSES Advisor and will inform the preparation of external routine reports, as described below.

- An environmental discharges log is maintained by the VOGA Offshore Materials Coordinator. This log is a consolidation of data from several sources to enhance accessibility.

8.10.3 Routine External Reporting

VOGA reports information on environmental performance to regulators as outlined in Table 8-15.

Table 8-15: External routine reporting requirements

Report	Recipient	Frequency	Content
Activity Commencement/ Completion Notification (Regulation 29)	NOPSEMA	At least 10 days prior to an activity commencing and within 10 days after completion using form N-04750-FM140.	Notification that an activity is to commence at least 10 days prior or notify that an activity has been completed.
End of Campaign Report	NOPSEMA	Within three months of completion of activities.	In accordance with the OPGGS(E)R, confirmation of compliance with the supplementary Performance Standards.
Null Report	NOPSEMA	Regulation 22(7) requires that the interval between reports will not be more than one year. Therefore, if no drilling has occurred within a year of the previous report a Null Report will be issued.	A statement that no activities have occurred in relation to this EP within the past year.

8.11 Internal Incident Reporting

The Wandoo Event Management Manual [VOG-2000-MN-0003] outlines the reporting requirements:

- Incidents: All incidents that result in a loss must be reported using an approved Incident Investigation Report Form (e.g. injuries, damage to assets, spills and releases, corporate reputation and near misses).
- Investigation Report Form: For well construction operations, VOGA reviews the incident reporting process of the MODU Contractor. If the MODU Contractor's process is compliant with the VOGA system, then the MODU Contractor's reporting process is used in preference to VOGA's to minimise the volume of reporting. VOGA provides members to any team conducting formal investigations of major incidents.
- Non-Compliance Incidents: VOGA's Incident Report Form must be completed and submitted, whenever a non-compliance event is reported to a regulator.
- Regulatory Audits and Inspections: The results of all regulatory audits and inspections are to be reported by site supervisors.

- Hazard Alert/Near Miss Reports: It is expected that all near misses are reported, and all high-potential hazards are investigated and reported, using the Incident Report Form.
- Hazard Observations: To encourage the reporting of near misses, VOGA uses a simplified reporting form. It is expected that all high-potential hazard alerts and close calls will be investigated, and reported, using VOGA's Incident Report Form (or the MODU Contractor's if compliant with VOGA's system).
- Public Concerns and Complaints: Incidents involving the public in the communities near VOGA operations should be treated as serious and reported using the Incident Report Form.

All near misses, hazard identifications, incidents, regulatory compliance inspections, and associated action items, are entered into VOGA's event tracking system within 24 hours of the occurrence. All incident investigation reports must be complete within 5 working days of the initial review for high and extreme risk (potential and actual) events, up to 10 business days of the initial review for all others.

In accordance with the Wandoo Event Management Manual, all incidents should be immediately recorded within the Incident Management Database.

8.12 External Incident Reporting

8.12.1 Reportable Incidents

The OPGGS(E)R defines a reportable incident *"as an incident relating to the activity that has caused, or has the potential to cause, moderate to significant environmental damage."*

Reportable incidents are identified through the risk assessment process for a reported event and comprise any event with a potential consequence to an ecosystem or environmental asset of 3 (moderate) or greater, i.e. 4 (major) and 5 (catastrophic), regardless of the overall risk level assigned. The consequence ratings are based on VOGA Risk Management Manual [VOG-2000-MN-0001] corporate risk matrix using the ecosystem/environmental asset impact criteria.

For this EP, these include these include:

- Introduction of invasive marine species from AHTS vessel/MODU (EP-WC-R10)
- Accidental release of MDO (EP-WC-R13).

NOPSEMA, NOPTA and the Department of the responsible State Minister are to be notified of all reportable incidents in accordance with the following requirements of the OPGGS(E)R:

- Notify NOPSEMA orally of a reportable environmental incident as soon as practicable but not later than 2 hours after the first occurrence of the incident or after the time that the titleholder becomes aware of the incident
- Provide a written record of the notification to NOPSEMA, the Titles Administrator and the Department of the responsible State or Northern Territory Minister as soon as practicable after the oral notification
- Provide NOPSEMA a written report of a reportable incident as soon as practicable but not later than 3 days after the first occurrence of the incident

- Provide a copy of the written report to both the Titles Administrator and the Department of the responsible State Minister within 7 days of giving the written report to NOPSEMA.

The written report must contain the following information:

- All material facts and circumstances concerning the reportable incident that the titleholder knows or is able, by reasonable search or enquiry, to find out
- Any action taken to avoid or mitigate any adverse environment impacts of the reportable incident
- The corrective action that has been taken, or is proposed to be taken, to stop, control or remedy the reportable incident.

MODU incident investigation and closeout procedures will be used for all environmental incidences which occur on the MODU. The VOGA HSE MS, including incident investigation and closeout procedures, will be used for all environmental related incidents occurring away from the MODU.

8.12.2 Recordable Incidents

The OPGGS(E)R defines a recordable incident as *"a breach of an environmental performance outcome for the activity or an environmental performance standard relating to the activity, that is not a reportable incident"*. Recordable incidents are reported by the HSES Advisor to NOPSEMA on a monthly basis.

Written reports of all recordable incidents will be reported to NOPSEMA in compliance with Regulation 50 of the OPGGS(E)R and will:

- Relate to a calendar month
- Be given as soon as practical after the end of the calendar month, and not later than 15 days after the end of the calendar month
- Will contain all the information as required under Regulation 50 of the OPGGS(E)R.

Table 8-16: Incident reporting

Incident	Reporting requirement and KPI	Responsibility
Reportable Incident (Regulations 47, 48)	Verbal or written notification must be undertaken within 2 hours of the incident or as soon as practicable to NOPSEMA. NOPSEMA written report.	VOGA HSES Advisor
Recordable Incident (Regulation 50)	Monthly, by 15th of each month to NOPSEMA.	VOGA HSES Advisor
A pollution incident that occurs within a marine park or is likely to impact on a marine park	Report verbally to the DNP (24-hour) Marine Compliance Duty Officer as soon as practicable, and also provide a follow-up email. • Phone: 0419 293 465 Email: marine.compliance@environment.gov.au	VOGA HSES Advisor
Death or injury to individual(s) from an EPBC Act Listed Species	As per EPBC condition 26e (EPBC 2008/4469), report injury to or death of EPBC Act Listed Threatened or Migratory species within 1 business day of observation to DCCEEW.	VOGA HSES Advisor

Incident	Reporting requirement and KPI	Responsibility
as a result of the petroleum activity	• Phone: +61 2 6274 1111 • Email: EPBC.Permits@environment.gov.au	
Vessel collision with marine mammals	Reported as soon as practicable to • https://data.marinemammals.gov.au/report/shipstrike	VOGA HSES Advisor
Presence of any suspected IMP or disease	Within 24 hours to DPIRD: • Email: biosecurity@fish.wa.gov.au • Phone: FishWatch 24-hour hotline: 1800 815 507	VOGA HSES Advisor
Unplanned release that is expected to impact land or water within WA State jurisdiction	Reported as soon as practicable. • petroleum.environment@DEMIRS.wa.gov.au	VOGA HSES Advisor
Records of complaints from fishermen or other users	MODU and AHTS vessel radio logs document interactions with other sea users.	AHTS vessel masters and MODU OIM
Records of breaches of restricted zone by fishermen or other	MODU and AHTS vessel daily logs record breaches.	AHTS masters vessel and MODU OIM

8.12.3 Management of Non-conformances

Non-conformances include near-misses, incidents or other events or information which indicates a lack of conformance with specified objectives or compliance requirements (e.g. an audit action plan; Section 8.5).

VOGA utilises the Vermilion global incident recording and action tracking system, Enablon. This system is used for capturing and following up on near-misses and incidents including their associated corrective and preventive actions, ensuring that any lessons are learned in the interests of continual improvement.

In addition to Enablon, and on behalf of the VOGA Managing Director, the VOGA Administration Assistant maintains logs of outstanding actions arising from audits or other actions that do not require entry on Enablon, but which nevertheless require some form of follow-up action and confirmation of closure.

Section 9 Relevant Person Consultation

9.1 Overview

The relevant person consultation process enables VOGA to provide sufficient information and a reasonable period of time to allow each relevant person to make an informed assessment of the possible consequences of the proposed activity on their functions, interests, or activities.

Consultation also ensures the activity is undertaken in a manner consistent with the OPGGS(E)R to ensure the environmental impacts and risks are As Low as Reasonably Practicable (ALARP) and are acceptable.

Consultation with relevant persons began in October and November 2024 in accordance with Regulation 25 of the OPGGS(E)R. It builds on previous consultation undertaken with relevant persons to support the ongoing activities of VOGA's operations. VOGA's consultation record is at Appendix F.

9.2 Consultation Approach

VOGA's core values of excellence, trust, respect, and responsibility have underpinned the consultation process. In developing its approach to consultation and throughout the process, VOGA has also ensured it responds to:

- Regulation 25 of the OPGGS(E)R
- NOPSEMA guidance, specifically NOPSEMA's latest EP Consultation Guidelines (20 May 2024)
- Government and industry guidance, as described in Section 9.2.1
- Applicable case law (Santos v *Tipakalippa*), as described in Section 9.2.4.

VOGA's approach is also consistent with the principles of the Ecologically Sustainable Development (ESD) outlined in Section 3A of the EPBC Act [(a) – (e)].

9.2.1 OPGGS(E)R Consultation Requirements

VOGA has considered the OPGGS(E)R for its consultation program as appropriate.

Regulation 25 of the OPGGS(E)R describes a titleholder's obligations when preparing a new EP or revising an existing plan. The regulations require titleholders to engage with 'relevant persons' including Commonwealth, State, or Territory agencies or authorities; the Department of the responsible State Minister; people or organisations which have functions, interests or activities which may be affected by the titleholder's activities carried out under the EP; and any other people or organisations the titleholder considers relevant.

Regulation 25 requires each relevant person be given sufficient information and a reasonable period for consultation to make an informed assessment of the consequences of the

titleholder's activities on their functions, interests or activities. Additionally, the titleholder must inform each consulted relevant person that they can request certain information to remain private, and such requested information will not be published.

9.2.2 NOPSEMA Consultation Guideline

VOGA's consultation approach, process, and activities have been developed in accordance with relevant regulations, NOPSEMA guidelines, and guidance notes as well as other government and industry guidance as listed below:

- *Consultation in the course of preparing an environment plan* – GL2086 A900179 – 20/5/2024
- *Responding to Public Comment* – GN1847 A662607 – 10/1/2024
- *Consultation with Commonwealth agencies with responsibilities in the marine area* – GL1887 A705589 – 21/11/2024
- *Environment Plan decision making* – GL1721 A524696 – 10/1/2024
- *Environment Plan Content Requirement* – GN1344 A339814 10/1/2024
- *Petroleum activities and Australian Marine Parks* – GN1785 A620236 – 10/1/2024.

9.2.3 Government and Industry Guidance

Consultation approach, process, and activities have also been developed in accordance with other government and industry guidance, including:

- Australian Fisheries Management Authority – Petroleum industry consultation with the commercial fishing industry
- Australian Heritage Commission – Ask First – A guide to respecting Indigenous heritage places and values
- International Association for Public Participation – Principles for Engagement with Communities and stakeholders
- DCCEEW: Sea Countries of the North-West; Literature review on Indigenous connection to and uses of the North-West Marine Region
- DCCEEW: Draft Guidelines for working in the near and offshore environment to protect Underwater Cultural Heritage – 2023
- WA Department of Transport – Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements – July 2020
- WA Department of Transport – WA Incident Management Plan – Marine Oil Pollution, September 2023
- Western Australian Fishing Industry Council – Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector, July 2023
- Western Australian Fishing Industry Council – Consultation Approach for Unplanned Events
- International Standards Organisation – ISO14001:2015 Environmental Management Systems Environmental management systems – requirements with guidance for use

- International Finance Corporation Performance Standard 7 – 2012.

9.2.4 Applicable Case Law and Guidance

In shaping its approach and process to consultation, VOGA carefully considered judgments handed down in both the Federal Court and the Full Court of the Federal Court, with respect to environmental plans, which underscored the importance of conducting genuine consultations. These judgements reinforced that communication with relevant stakeholders must be open and effective, the process must be transparent, and further anchored in principles of collaboration, inclusiveness, and integrity.

The Full Court's decision in Santos v *Tipakalippa* (*Tipakalippa*) (Federal Court of Australia, 2022) has set a clear precedent for titleholders, establishing standards that have since been incorporated into NOPSEMA's current guidelines. *Tipakalippa* affirms that there is no 'one-size-fits-all' approach to consultation. Instead, consultation strategies must be tailored to reflect the specific interests of each relevant party and must go beyond superficial or tokenistic engagement. The judgement also placed particular emphasis on the need for meaningful consultation with First Nations groups, affirming that the right to be consulted is substantive and must be respected as such (Ashurst, 2023).

VOGA has been conscious of these requirements in establishing and implementing its consultation process.

9.3 Consultation Summary

VOGA undertook a comprehensive approach to identify relevant persons and implemented a robust consultation process in keeping with the NOPSEMA's guidance which focuses on the instructive reasons outlined in *Tipakalippa*.

The guideline deals with matters that should be considered when designing and implementing consultation processes and provides interpretations contained in Regulation 25 of the OPGGS(E)R. Further, it provides a summary of the Full Court of the Federal Court's interpretation of 'functions', 'activities' and 'interests' to assist titleholders identify relevant persons.

Throughout the preparation of this EP, VOGA has undertaken consultation in compliance with Regulation 25 of the OPGGS(E)R by:

- Consulting with each of the following relevant persons while preparing this EP:
  - each Commonwealth, State or Northern Territory agency or authority to which the activities to be carried out under the environment plan may be relevant
  - if the plan relates to activities in the offshore area of a State—the Department of the responsible State Minister
  - if the plan relates to activities in the Principal Northern Territory offshore area—the Department of the responsible Northern Territory Minister
  - a person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the EP

  - any other person or organisation that the titleholder considers relevant (Regulation 25(1) of the OPGGS(E)R).

- Giving each relevant person sufficient information to allow the relevant person to make an informed assessment of the possible consequences of the activity on their functions, interests or activities (Regulation 25(2) of the OPGGS(E)R).
- Allowing the relevant person a reasonable period for the consultation (Regulation 25(3) of the OPGGS(E)R.
- Telling each relevant person that the titleholder consults with, that the relevant person may request that particular information it provides in the consultation note be published and any information subject to such a request is not to be published (Regulation 25(4) of the OPGGS(E)R).

9.4 VOGA's Consultation Methodology and Process

9.4.1 Overview

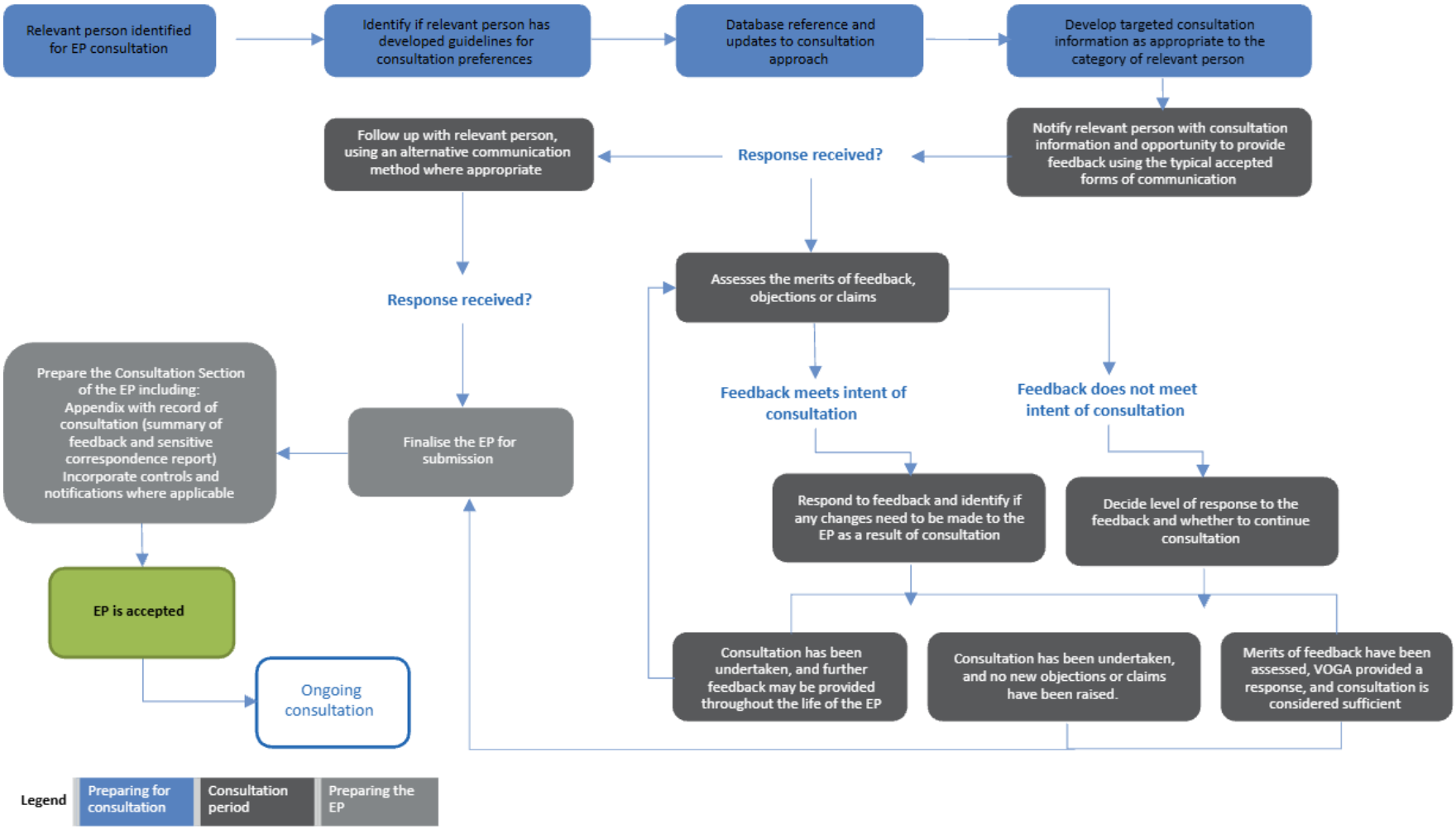
VOGA has undertaken extensive research to inform its methodology, process and approach, referencing various guidelines, standards, and relevant information on planned activities. VOGA applies guiding principles to its methodology for discharging its obligations under Regulation 25 of the OPGGS(E)R and has developed a consultation methodology for its process (Table 9-1 and Figure 9-1).

Table 9-1: Guiding Principles for Consultation

Guiding Principle	Key concept
Consultation processes must be designed in the context of the objects of the OPGGS(E)R (NOPSEMA, 2023).	Consistent with the principles of ecologically sustainable development set out in Section 3A of the EPBC Act. Intended to reduce the environmental impacts and risks from the activity to ALARP and at an acceptable level.
Collaborative and provides opportunities for relevant persons to engage and provide feedback on the EP, through formal and ongoing consultation processes.	Consistent with general principles for effective consultation and literature, and guidelines or guidance issued by relevant persons. Consultation should be undertaken in good faith between titleholders and relevant persons, with a free and open exchange of information to inform appropriate environmental impact assessment (Parliament of Australia, 2023).
A person required to be consulted under Section 25 needs to be more than a member of the public who is generally concerned with or interested in the activity (Parliament of Australia, 2023).	Consultation on offshore petroleum activities is a two-way process where information is shared between titleholders and relevant persons (NOPSEMA, 2023a).
Section 25 requires consultation with relevant persons; however, it does not require consent for an activity to be given by any relevant person (Parliament of Australia, 2023).	Titleholders are not required by law to obtain agreement or consent from relevant persons for their offshore petroleum activities to proceed; however, they are required to demonstrate in their environment plan how the concerns, objections or claims raised by relevant persons were considered and demonstrate that their

Guiding Principle	Key concept
	response to that information was appropriate (NOPSEMA, 2023a).
The nature of the person or organisation being consulted, and the function, interest or activity that may be affected, will inform the appropriate manner of consultation with each relevant person (Parliament of Australia, 2023).	What constitutes sufficient information, and a reasonable period of time depends on several factors including the nature of a relevant person's functions, interests and activities (NOPSEMA, 2023a).
What is a reasonable period for consultation will need to be considered on a case-by-case basis (Parliament of Australia, 2023).	The nature, scale, and complexity of an activity, as well as the extent of potential impacts and risks on a relevant person's functions, interests, or activities, may inform what makes a reasonable period for consultation (Parliament of Australia, 2023).
Section 25 places obligations on titleholders but does not place any obligations on relevant persons (Parliament of Australia, 2023).	If a relevant person does not respond to consultation, the titleholder is not required to wait indefinitely for a response (Parliament of Australia, 2023). Titleholders must make reasonable efforts to consult with relevant persons, but the regulations do not require them to get a response to their requests. As long as the titleholder can demonstrate that it has provided sufficient information and a reasonable period for consultation in accordance with subsections 25(2) and (3), the titleholder will have met the consultation requirements.
The consultation process must be practical and reasonable to implement.	There is no requirement in the law for titleholders to pay the costs incurred by relevant persons to be consulted, however they may choose to provide assistance to relevant persons to ensure consultation is carried out efficiently and is robust. This is a matter between the titleholder and relevant persons (NOPSEMA, 2023a). Relevant persons should be aware that while they are free to respond on any matter and raise any concern, this may not be able to be considered if it is outside the scope or purpose of the environment plan and approval process (NOPSEMA, 2023a).

Figure 9-1: VOGA's consultation methodology and process



9.4.2 Identifying Relevant Persons

VOGA acknowledges the importance of consultation and undertook a comprehensive assessment to determine who qualified as relevant persons for the purposes of this EP. VOGA recognises that consultation provides an opportunity for relevant persons to be heard and to provide feedback in keeping with best practice principles as outlined in the International Association for Public Participation – *Quality Assurance Standard for Community and Stakeholder Engagement* (IAP2 Australasia, 2023), recognising that for each relevant person consultation may differ.

Table 9-2 illustrates how VOGA identified relevant persons for this EP.

Table 9-2: VOGA's process to identify relevant persons and undertake consultation

Process	Activities and considerations
Identifying potentially relevant person categories	Relevant person category identification methodology: • Consider nature and scale of the activity • Describe the petroleum activity • Spatial extent of the EMBA • Environmental impacts • Spatial mapping datasets and analysis of physical receptors • Undertake actions to identify relevant persons categories • Review of relevant person database • Review of public databases • Research activities.

Identifying relevant persons for consultation	Undertake actions to identify relevant persons:
	• Review of relevant persons databases
	• Review of identified relevant persons in publicly available EPs submitted by other titleholders that may be relevant to this proposed activity
	• Desktop research of publicly available information, studies and key word search
	• Review of information previously provided during engagement and consultation activities
	• Review of fishing catch and effort data and fisheries in the EMBA/Operational Area
	• Review of EMBA overlap (and adjacent) with Native Title registered or determined claims, ILUAs, sacred sites, IPAs and management, to identify First Nations groups
	• Review National Native Title Tribunal website
	• Review public cultural heritage databases relevant to the EMBA
	• Review marine park management plans relevant to the EMBA
	• Review of EMBA overlap with:
	  ○ Local Government areas
	  ○ Petroleum, greenhouse gas and any other NOPTA issued titles

Process	Activities and considerations
	○ Area of recreational fishing and areas of interest to charter and tourism operators ○ Research institutes, infrastructure operators, historical heritage groups or organisations and local environment or conservation groups with potential activity or presence in the area. ○ Throughout the consultation process, relevant persons may provide advice or suggestions about other relevant persons. VOGA will assess those identified persons to determine if they are relevant for consultation on the EP.
Opportunities for relevant persons to identify themselves if they wish to be consulted through advertising and/or third parties	Undertake actions to identify relevant persons: • Targeted print media advertising campaign to raise awareness of the activity and promote relevant persons to identify themselves and come forward • Geo-targeted social media campaign to raise awareness of the activity, promote self-identification, and direct digital traffic to the consultation website • Distribution of flyers to be displayed at relevant community centres, promoting the activity, self-identification, and listing contact details for VOGA.
Consultation planning and consultation activities	Undertake actions to consult with relevant persons: • Print media advertisement campaigns to seek feedback from relevant persons and detail avenues for providing feedback • Development of consultation materials (information sheets, presentations etc.) • Draft consultation outreach materials (emails, letters) • Development of a consultation webpage on VOGA's website to host relevant information on the activity, provide contact details, and resources such as a frequently asked questions document • Geo-targeted social media campaign to raise awareness of the activity, promote self-identification, and direct digital traffic to further information hosted on the consultation website.
Consulting relevant persons	Undertake consultation outreach with relevant persons: • Consultation outreach with relevant persons to notify them and receive feedback • Follow ups with relevant persons • Two-way correspondence with relevant persons • Face-to-face meetings (in person and virtually), as required.

9.4.3 Public Awareness Campaign and Self-identification Opportunities

VOGA has undertaken several promotional activities for organisations and individuals to self-identify as potentially relevant persons if they believe their functions, interests, or activities may be affected by the activity. These included print media, community flyers, and social media advertisements with links to a webpage containing information about the proposed activities.

Further details of the public awareness campaign and self-identification opportunities including efforts to ensure self-identification opportunities for First Nations organisations and individuals

are described in Appendix F, Section 1.3. A schedule of advertising for both social media and print media is included in Appendix F, Section 1.3.2.

An information flyer was displayed at community centres within and adjacent to the EMBA, outlining the activity and promoting self-identification for consultation purposes. VOGA's consultation webpage provided fact sheets and other publicly available materials. Further details concerning the community flyer and webpage are included in Appendix F, Section 1.3.3.

These activities and information provided a more than reasonable opportunity to raise public awareness of consultation and for organisations and individuals to self-identify for the purpose of OPGGS(E)R Regulation 25 consultation.

VOGA's process provides a reasonable timeframe for the self-identification of relevant persons, for relevant persons to consider and access consultation information, and for relevant persons to provide feedback for VOGA to consider.

9.4.4 Identification and Consultation with First Nations People and Organisations

VOGA's consultation with First Nations groups was reinforced and in keeping with the *Ask First – A guide to respecting Indigenous Heritage places and values* (Australian Heritage Commission, 2002). VOGA recognises the necessity to maintain heritage values and place, that are a vital part of First Nations groups 'sense of place', cultural identity and well-being. Indigenous heritage is unique and part of Australia's national cultural heritage, requiring recognition and protection for future generations of all Australians.

The *Sea Countries of the North-West – literature review on Indigenous connection to and uses of the North-West Marine Region* (DCCEEW, 2007) was considered when consulting First Nations groups in Commonwealth waters. This literature outlines the strong connection and direct interest First Nations groups have in planning and managing the North West Marine Region.

DCCEEW is responsible for administering the *Underwater Cultural Heritage Act 2018*, which provides protection from disturbance or adverse impact to archaeological remains located in Australia's near and offshore environment. The department provides guidelines with direction for proponents who undertake activities in Australian waters (DCCEEW, 2023d).

When approaching identification and consultation with relevant First Nations groups, VOGA undertook a broad and tailored approach.

1. Initial Identification

- Developed a list of all Native Title registered claims and determinations along the coastline of WA.
- Reviewed the EMBA and overlap or adjacency to Native Title registered claims and determinations to establish a list of potentially affected First Nations groups.
- Identified First Nations groups as potentially relevant persons, comprising:
  - Native Title Representative Bodies (NTRB)
  - Registered Native Title Bodies Corporate (RNTBCs – the formal name given to a group once Native Title has been determined)

- Prescribed Bodies Corporate (PBCs – the legal entity formed by a group of Native Title Claimants during the determination process, but used interchangeably with RNTBC)
- Aboriginal Corporations – Aboriginal run or managed businesses, often operating on behalf of, or under a RNTBC
- Land and Sea Management Groups – primarily Ranger Groups, many of whom operate under a RNTBC.

2. Tiered Contact Methodology

Utilising extensive spill modelling, VOGA has conservatively assessed that planned impacts to First Nations relevant persons functions, interests, and activities (including cultural values or features) are unlikely to extend beyond 200 km from the Wandoo Operational Area for this EP. VOGA maintains open to feedback from First Nations relevant persons to inform its understanding of functions, interests or activities.

This was considered a reasonable basis for including a tiered methodology to focus consultation efforts on those relevant persons closest to the planned activities outlined in this EP and those who could provide inputs into cultural features closest to the planned activities.

However, regardless of which tier a group was categorised in, VOGA's overarching approach remained consistent in principle.

Table 9-3 below identifies the relevant First Nations people, groups and organisations categorised into Tier 1 and Tier 2. For the Tier 3 category, Table 9-4 below identifies the First Nations people and organisations determined to be not relevant but the members are at the periphery of the Planning Area or are Indigenous people or organisations that can self-identify.

Table 9-3: Approach to consultation with relevant First Nations people and organisations

Tier	Overview of identified First Nations people and organisations	Relevant persons	Consultation efforts
Tier 1	Closest to planned activities - located within 200 km of the operational area on the Australian mainland: • Determined Native Title Holders (including relevant Registered Native Title Body Corporate (RNTBC) or Prescribed Body Corporate (PBC)). • Aboriginal corporation providing environmental management functions.	**Representative Aboriginal Corporations** PBCs: • Ngarluma People – Ngarluma Aboriginal Corporation RNTBC • Kariyarra People – Kariyarra Aboriginal Corporation RNTBC • Ngarluma/Yindjibarndi– Yindjibarndi Aboriginal Corporation • Yaburara & Mardudhunera People - Wirrawandi Aboriginal Corporation RNTBC • Ngarla and Ngarla #2 (Determination Area A) – Wanparta Aboriginal Corporation RNTBC. Other: • Murujuga Aboriginal Corporation.	Precedence was placed on consultation with Tier 1 relevant persons through focused efforts, including attempts to contact them via multiple forms of communication—such as phone calls, text messages, and emails—where such details were available. Where long-standing relationships were not already in place or being actively maintained by the relevant group, efforts were made to initiate and foster enduring connections, consistent with principles of respectful engagement. These efforts were undertaken not only to disseminate information about the EP and the Wandoo Facility, but also to foster meaningful, two-way engagement with appropriate representatives—such as the Board or Chief Executive Officer—in accordance with Regulation 25 OPGGS(E)R and NOPSEMA's *Community Engagement and Consultation Guidance Note (GN1746)*. This engagement sought to gather input on cultural features, values, and potential impacts, and to determine whether additional consultation information or engagement were required to satisfy our consultation obligations, beyond the provision of information, online material and through advertising. As Tier 1 Relevant Persons, VOGA may adopt a broader approach to consultation with these stakeholders, during which information about the Wandoo Facility—as well as other Environmental Plans—may be discussed to provide appropriate context and support deeper understanding. This approach reflects VOGA's

Tier	Overview of identified First Nations people and organisations	Relevant persons	Consultation efforts
			commitment to transparent communication, mutual respect, and early identification of concerns that may influence the ongoing development or revision of the EP. This approach was also the preference of these stakeholders.
Tier 2	• Determined Native Title Holders (including relevant representative bodies) (excluding Tier 1 and Tier 3). • Aboriginal corporations providing environmental management functions, who are coastally adjacent to the planning area (excluding Tier 1 and Tier 3).	**Representative Aboriginal Corporations** PBCs: • Thalanyji People – Buurabalayji Thalanyji Aboriginal Corporation RNTBC • Gnulli, Gnulli #2 and Gnulli #3 – Yinggarda, Baiyungu and Thalanyji People – Nganhurra Thanardi Garrbu Aboriginal, Yinggarda Aboriginal Corporation.	Tier 2 relevant persons were identified as stakeholders whose functions, activities or interests may be affected by the proposed activities, but to a lesser extent than Tier 1 stakeholders. While VOGA's systematic approach prioritised initial contact with Tier 1 persons, engagement with Tier 2 stakeholders commenced at the same time. A concerted effort was made to contact Tier 2 stakeholders through multiple available communication methods, including phone calls, text messages, and emails. The aim was to gather input on cultural values, features, and any other matters relevant to the preparation of the EP. Where possible, VOGA sought to establish genuine two-way dialogue with appropriate representatives, such as Boards or Chief Executive Officers, and responded to any requests to enter into consultation agreements regarding the EP.

Table 9-4: Approach to consultation with First Nations people and organisations identified as not relevant

Tier	Overview of Identified First Nations People and Organisations	Identified and assessed as not relevant	Consultation efforts
Tier 3	• Determined Native Title Holders (including relevant representative bodies) whose members are at the periphery of the Planning Area (excluding Tier 1 and Tier 2) • Aboriginal Corporations – Aboriginal run or managed businesses, often operating on behalf of, or under a RNTBC • Land and Sea Management Groups – primarily Ranger Groups, many of whom operate under a RNTBC.	**Representative Aboriginal Corporations** PBCs: • Rubibi Community – Yawuru Native Title Holders Aboriginal Corporation RNTBC • Karajarri People – Karajarri Traditional Lands Association (Aboriginal Corporation) RNTBC • Nyangumarta People (Part A) – Nyangumarta Warraran Aboriginal Corporation RNTBC • Nyangumarta-Karajarri Overlap Proceeding (Yawinya) – Nyangumarta Karajarri Aboriginal Corporation RNTBC • Malgana Part A – Malgana Aboriginal Corporation RNTBC. • Nanda People Part B, Malgana 2 and Malgana 3 – Malgana Aboriginal Corporation RNTBC & Nanda Aboriginal Corporation RNTBC • Nanda People and Nanda #2 - Nanda Aboriginal Corporation RNTBC • Mayala People – Mayala Inninalang Aboriginal Corporation • Bardi and Jawi Bardi Jawi Niimindiman Aborigincal Corporation RNTBC	Tier 3 stakeholders were identified during the stakeholder mapping process but were assessed as not meeting the definition of Relevant Persons under Regulation 25 of the OPGGS(E)R. Groups that had previously engaged with Vermilion on prior EP consultation were contacted at Vermilion's discretion to advise of the proposed activities and that they were not identified as relevant for the consultation. Groups with no previous engagement on Vermilion EPs were not directly contacted. However, to ensure transparency and provide a reasonable opportunity for self-identification, a public awareness campaign was implemented. This included clear pathways for interested parties to contact VOGA should they wish to participate in the consultation process. No contact was received from these groups during the consultation period. However, in the event that a Tier 3 stakeholder makes contact or expresses an interest in the EP, VOGA will respond promptly using the communication method provided (e.g. phone call, text message, or email). Where appropriate, and if an email address is supplied, an EP Information Sheet will be made available to support informed engagement.

Tier	Overview of Identified First Nations People and Organisations	Identified and assessed as not relevant	Consultation efforts
		• Warrwa Mawadjala Gadjidgar & Warrwa Combined Part A – Madanann Nada Aboriginal Corporation RNTBC • Bindunbur Nimanburr Aboriginal Corporation, Nyul Nyul PBC Aboriginal Corporation & Gogolanyngor Aboriginal Corporation • Jabirr Jabirr/Ngumbarl – Gogolanyngor Aboriginal Corporation • Yamatji Nation – Bundi Yamatji Aboriginal Corporation. Native Title Representative Bodies: • Kimberly Land Council (KLC) – (NTRB) • Yamatji Marlpa Aboriginal Corporation (YMAC) – (NTRB).	

3. Cultural Awareness and Understanding Lore and Protocols

VOGA ensured that all staff involved in the consultation process had undertaken cultural awareness training to understand the significance of Indigenous heritage and protocols.

VOGA understands that First Nations people follow lore and customs with respect to land. Cultural protocol establishes who can and cannot 'speak for country' (South West Aboriginal Land and Sea Council, 2025).

Following research and consultation activities, it was understood that not all groups considered themselves responsible for cultural and spiritual care of land and sea to equal or similar degrees. For example:

- NTRBs, including Kimberley Land Council and Yamatji Marlpa Aboriginal Corporation, often provide administration services such as payroll, legal and human resource services to RNTBCs or PBCs who have chosen to use the NTRB as an umbrella organisation under which to function, in addition to their primary role of assisting with matters pertaining to Native Title claims and determinations
- VOGA engaged with NTRBs to receive advice on groups who could be relevant for consultation and to gather insights about preferred consultation approaches
- However, the NTRBs do not consider it appropriate to represent the views of the RNTBCs or other groups who use their services, although in some circumstances they operate as a conduit or formal contact point for RNTBCs.

4. Culturally Appropriate Engagement

When engaging with First Nations relevant persons, VOGA aimed to adopt a culturally appropriate and tailored approach.

- VOGA was aware that Traditional Lore time, typically from November to February, is when Indigenous communities engage in cultural activities and ceremonies. These periods are not fixed to specific dates but are instead aligned with natural cycles, seasons, and significant cultural events
- During Lore time, it is customary for First Nations groups to focus on cultural activities, ceremonies, and the passing down of traditions. As such, it may not be possible for meetings and other formal engagements to be scheduled during these times
- For this EP, VOGA provided an extended consultation period to First Nations relevant persons by starting the initial outreach in August 2025 with those groups it has ongoing engagement with on other EPs, advising of the upcoming consultation and seeking a consultation meeting if the group would like one.
    - Understanding that stakeholders may engage before or not until after the Lore time period. VOGA recognised that early engagement was important in some cases to allow time for meaningful consultation.
- VOGA was prepared to be flexible and while it followed up to arrange engagements, was aware that it may take time for stakeholders to be available for meetings.

- During the period of August 2025 to February 2026, VOGA made multiple attempts to engage with First Nations groups to progress consultation on this EP. Many attempts were made to contact First Nations groups once lore time was complete and before submission of the EP.
- In February 2026, VOGA sent written communication to First Nations groups advising of its intent to submit this EP and explained that consultation on this EP can continue as part of ongoing consultation. VOGA advised that any feedback would be assessed and if required the EP could be updated through the management of change process.
    - In some cases, VOGA has also provided First Nations groups a summary of the information included in the EP for review and advice.
- VOGA continues to engage with First Nations groups on this EP as part of ongoing consultation. In some cases, feedback may be after the submission of this EP as part of the ongoing consultation process. It will be reviewed and incorporated as outlined in Section 9.4.11.

At the initial outreach to First Nations groups, VOGA:

- Stated the importance of cultural heritage to the Native Title Holders and committed to ensuring that these values are respected and integrated into project planning
- Sought advice on preferred contact and engagement methods
- Recognised the potential need for formal agreements before consultation
- Wanted to make sure the engagement was tailored to the group's needs and offered a co-design approach, where the agenda for any meeting is mutually agreed and includes input from the group
- Outlined the purpose of the consultation was to give the group an opportunity to provide input to:
    - VOGA's understanding of the current environment and its cultural characteristics
    - how VOGA's activities might affect the existing environment, including cultural aspects
    - potential measures and controls to reduce the environmental impact of the proposed activities on the group's functions, interests, and activities.

Initial outreach emails can be found in Appendix F.

5. Decision Making Process

VOGA understands that chairpersons, workers and other representatives from the First Nations group or community often do not make immediate decisions. Information from an email/phone call, meeting or consultation may need to be taken to other members of the community to discuss and decide, which can take time. As part of ongoing consultation, VOGA will continue to engage with First Nations groups on this EP.

6. Capacity to Engage

VOGA may need to provide tailored and additional resources to First Nations groups to help them engage effectively in the consultation process. This could include funding for attendance

at meetings or for independent advisors. For this EP, VOGA has provided both tailored and additional resources to facilitate and fund consultation meetings with First Nations groups.

7. Tailored Communication Methods

VOGA develops tailored communication materials for consultation outreach including a summary information sheet which is shorter with plain English language, more diagrams and images and less technical information (Appendix F, reference 1.3).

VOGA aims to use communication methods that are preferred by First Nations groups. This includes making phone calls, text messages and prioritising face-to-face meetings where possible, or meeting by Microsoft Teams as appropriate. VOGA accommodates preference to be engaged on-Country (or other locations).

When face-to-face or virtual meetings are held with RNTBC's and Aboriginal Corporations, VOGA:

- Researches the group and publicly available consultation material (from consultation with other titleholders) to understand what areas might be of interest to the group.
- Brings printed out consultation material to meetings: enlarged maps with the group's Native Title determination or ILUA, consultation and summary information sheets, and copies of the presentation to the meeting to ensure information is readily accessible.
- Tailors its presentation material and verbal delivery of information to what VOGA considers to be the primary ways the group's functions, interests or activities could be affected. VOGA includes specific information that is more detailed on potential areas of interest. VOGA also tailors the acknowledgement of country and includes a local photo on the slide.
- Aims to conduct its consultation meetings with co-design feedback. During consultation, VOGA has received positive feedback from a NTRB about the level of information and imagery used in the presentation. Based on feedback received from the NTRB, VOGA sought to include more video content at its next meeting of the marine environment at and surrounding Wandoo from its marine monitoring surveys.

Information about the specific consultation activities with First Nations relevant persons can be found at Appendix F, Section 1.3.4.

9.4.5 Relevant Persons Consultation Process

Consultation allows for the free and open exchange of information between a titleholder and any relevant persons who may be impacted by a proposed activity:

- The process provides a genuine opportunity for relevant persons to be heard and provide feedback.
- The process includes mechanisms for titleholders to receive information from relevant persons that they might not have otherwise received.
- The process enables a titleholder to gain better understanding about the environment that may be affected and measures that may be necessary to mitigate the potential

environmental impacts and risks associated with either a petroleum or greenhouse gas activity [4].

- Consultation does not carry with it any obligation on the titleholder either to seek or reach agreement; nor requires consent on the activity subject to the consultation; however, the titleholder should be receptive to suggestions from a relevant person, where these may improve the overall environmental outcome [5] (NOPSEMA, 2023a).

The consultation process must be practical and reasonable to implement:

- Consulting with relevant persons and potential relevant persons is a real-world obligation that must be interpreted in a practical and pragmatic way that makes a process both reasonable and workable[6].
- Where communal interests are held, the process of consultation needs to reasonably reflect the characteristics of the communal interests affected and does not necessarily require communications with each and every person who is a member of the relevant community[7].
- The obligation to identify relevant persons for the purpose of consultation must be reasonably capable of discharged (i.e. relevant persons need to be ascertainable) within a reasonable time[8].

Consultation entails providing adequate information about a proposed activity to relevant individuals and allowing them a reasonable period to review and consider the information:

- Information provided to a relevant person should be sufficient to allow them to make an informed assessment of consequence of the proposed activity on their functions, interests or activities.
- The nature, scale, and complexity of a proposed activity, as well as the extent of potential impacts and risks on a relevant person's functions, interests, or activities, is considered when determining a reasonable period for consultation.

Participation in the consultation process by relevant individuals is voluntary:

- Relevant persons are not obligated to respond to a titleholder's request to participate in the consultation process.
- A titleholder is not required to wait indefinitely for a response where sufficient information and reasonable period of time has been afforded to the relevant person.

Figure 9-2 demonstrates VOGA's ongoing consultation process.

Table 9-6 provides a summary of the relevant persons or organisations by category identified by VOGA, the actions taken to identify and consult with them, the consultation process and

[4] *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Appeal Decision), paragraphs [49], [54], [57], [89] and [141].

[5] *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Appeal Decision), paragraphs [89], [109], [136], [138] and [141].

[6] *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Appeal Decision), paragraphs [48], [89], [104], [108], [109], [141] and [153].

[7] *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Appeal Decision), paragraphs [136], [141] and [153].

[8] As relevant to the categories of persons defined in Regulation 25(1) of the OPGGS(E)R.

information provided, and VOGA's determination of what constitutes a reasonable period and sufficient information. This process conducted consistent with Regulation 25(1)(a)(b)(c) of the OPGGS(E)R.

9.4.6 Provision of Sufficient Information

VOGA provided sufficient information to all relevant person categories for the purpose of consultation to allow them to make an informed assessment of the possible consequences of the activity on their functions, interests or activities.

Information provided by VOGA to relevant persons was provided through a number of channels:

- EP Consultation Information Sheet
- Emails
- Letters
- Telephone calls
- Published notices in applicable traditional print media
- Undertook geotargeted advertising on social media platforms, linking to consultation information on the VOGA website
- Distribution of community flyers in regional community centres.

As part of the consultation process emails were sent to relevant persons which included an activity summary, directions for how to provide input into the EP development through consultation, advice regarding the consultation closing date and a link to VOGA's website with additional resources on EP consultation. VOGA considers provision of information for this EP to relevant persons as sufficient.

Consultation Information Sheet

VOGA produced a consultation information sheet for this EP and distributed to relevant persons and organisations. It is also available on VOGA's website. The Consultation Information sheet is designed to ensure that relevant persons receive sufficient information. It includes:

- An overview of the proposed activities; including activity type and description, location, timing, planned schedule and duration, vessels, infrastructure and methods involved.
- Maps of the proposed activities; potential impacts, risks and management measures.
- The presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the EMBA based on a review of publicly available information.
- An outline of how identified risks and impacts will be managed or mitigated.
- Engagement and feedback channels, including contact details for submitting questions or feedback and timeframe for providing input.

Table 9-5: Relevant Persons identified by VOGA, consultation actions and reasonable period and sufficient information

Identified Relevant Persons	Actions taken to identify relevant persons	Consultation process and information provided	Reasonable period and sufficient Information
Regulation 25(1)(a) of the OPGGS(E)R: Departments or agencies of the Commonwealth to which the activities to be carried out under the EP may be relevant			
Commonwealth Government Departments and Agencies	• Undertook an audit of Commonwealth government websites and directories to ascertain roles and responsibilities.	• VOGA emailed the Commonwealth government agency/authority and included an activity summary, directions for how to provide input into the EP development through consultation, the consultation timing and a link to VOGA's website with additional resources on EP consultation. • Consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures.	• A reasonable period of 30 business days (four weeks), subject to the nature and scale of the proposed activity, was provided for feedback. • A consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures which we deem to be sufficient information for each stakeholder. • Additional targeted content via email, where applicable.
Regulation 25(1)(a) and (b) of the OPGGS(E)R: Departments or agencies of Western Australia to which the activities to be carried out under the EP may be relevant			
State Government Departments and Agencies	• Undertook an audit of state government websites and directories to ascertain roles and responsibilities.	• VOGA emailed the State government agency/authority and included an activity summary, directions for how to provide input into the EP development through consultation, the consultation timing and a link to VOGA's website with additional resources on EP consultation. • Consultation information sheet including an overview of the	• A reasonable period of 30 business days (four weeks), subject to the nature and scale of the proposed activity, was provided for feedback. • A consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures which we deem to be sufficient information for each stakeholder.

Identified Relevant Persons	Actions taken to identify relevant persons	Consultation process and information provided	Reasonable period and sufficient Information
		proposed activities; potential impacts, risks and management measures.	• Additional targeted content via email, where applicable.
Regulation 25(1)(d) of the OPGGS(E)R: Persons or organisations whose functions, interests or activities may be affected by the activities to be carried out under the EP			
Commonwealth commercial fishing – representative bodies; and Commonwealth commercial fisheries	• Assessed Commonwealth commercial fishing catch and effort data in the Operational Area. • Assessed fisheries entitled to fish in the EMBA and searched applicable websites.	• VOGA emailed to introduce its operations and upcoming activities. • Sought representative bodies' input on preferred method of consultation. • VOGA emailed and provided consultation information which included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and a link to VOGA's website with additional resources. • Consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures. • VOGA provided a commercial fisher information sheet, which included an overview of the proposed activities; key information for the commercial fishing sector about the activities; coordinates for operational areas; an activity summary; assessment of	• A reasonable period of 30 business days (four weeks), subject to the nature and scale of the proposed activity, was provided for feedback. • A consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures • A commercial fisher information sheet, which included an overview of the proposed activities; key information for the commercial fishing sector about the activities; coordinates for operational areas; an activity summary; assessment of commercial fishing, potential effects and impacts; and VOGA's impact assessment. which we deem to be sufficient information for each stakeholder. • Additional targeted content via email, where applicable.

Identified Relevant Persons	Actions taken to identify relevant persons	Consultation process and information provided	Reasonable period and sufficient Information
		commercial fishing, potential effects and impacts; and VOGA's impact assessment.	
State commercial fishing – representative bodies	• Assessed the Western Australian Government commercial fishing catch and effort data in the Operational Area and EMBA.	• VOGA emailed WAFIC and provided consultation information. • The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and a link to VOGA's website with additional resources. • Consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures • VOGA provided a commercial fisher information sheet, which included an overview of the proposed activities; key information for the commercial fishing sector about the activities; coordinates for operational areas; an activity summary; assessment of commercial fishing, potential effects and impacts; and VOGA's impact assessment.	• A reasonable period of 30 business days (four weeks), subject to the nature and scale of the proposed activity, was provided for feedback. • A consultation information Sheet including an overview of the proposed activities; potential impacts, risks and management measures • A commercial fisher information sheet, which included an overview of the proposed activities; key information for the commercial fishing sector about the activities; coordinates for operational areas; an activity summary; assessment of commercial fishing, potential effects and impacts; and VOGA's impact assessment. which we deem to be sufficient information for each stakeholder. • Additional targeted content via email, where applicable.
State commercial fisheries	• Assessed the Western Australian Government commercial fishing catch and	• VOGA emailed WAFIC and provided consultation information to distribute to licence holders.	• A reasonable period of 30 business days (four weeks), subject to the

Identified Relevant Persons	Actions taken to identify relevant persons	Consultation process and information provided	Reasonable period and sufficient Information
	effort data in the Operational Area and EMBA. • Assessed the fisheries entitled to fish in the operational area and EMBA and searched applicable websites. • Entered a fee for service arrangement with the West Australian Fishing Industry Council (WAFIC) to liaise directly with State commercial fisheries. Followed WAFIC's guidance[9] for its preferred approach to consultation with state commercial fisheries.	• The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and a link to VOGA's website with additional resources. • Consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures. • VOGA provided a commercial fisher information sheet, which included an overview of the proposed activities; key information for the commercial fishing sector about the activities; coordinates for operational areas; an activity summary; assessment of commercial fishing, potential effects and impacts; and VOGA's impact assessment. • WAFIC undertook consultation with licence holders on behalf of VOGA and advised of any feedback at the end of the consultation process.	nature and scale of the proposed activity, was provided for feedback. • A consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures • A commercial fisher information sheet, which included an overview of the proposed activities; key information for the commercial fishing sector about the activities; coordinates for operational areas; an activity summary; assessment of commercial fishing, potential effects and impacts; and VOGA's impact assessment. which we deem to be sufficient information for each stakeholder. • Additional targeted content via email, where applicable.

[9] https://www.wafic.org.au/wp-content/uploads/2023/07/Oil-and-Gas-Consultation-Framework.pdf

Identified Relevant Persons	Actions taken to identify relevant persons	Consultation process and information provided	Reasonable period and sufficient Information
Recreational fishers and marine users and peak representative bodies	• Assessed potential Operational Area and EMBA overlap with the interest of recreational fishers, marine users, tourism operators and peak representative bodies and searched applicable websites.	• VOGA emailed and sent postal letters providing consultation information. • Emails and letters included an activity summary, directions for how to provide input into the EP development through consultation, the consultation date and a link to VOGA's website with additional resources on EP consultation • Consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures.	• A reasonable period of 30 business days (four weeks), subject to the nature and scale of the proposed activity, was provided for feedback. • A consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures which we deem to be sufficient information for each stakeholder.
Energy industry titleholders and operators	• Assessed the potential presence in the EMBA and searched applicable websites.	• VOGA emailed and provided consultation information. • The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation date and a link to VOGA's website with additional resources on EP consultation. • Consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures.	• A reasonable period of 30 business days (four weeks), subject to the nature and scale of the proposed activity, was provided for feedback. • A consultation information Sheet including an overview of the proposed activities; potential impacts, risks and management measures which we deem to be sufficient information for each stakeholder.

Identified Relevant Persons	Actions taken to identify relevant persons	Consultation process and information provided	Reasonable period and sufficient Information
Peak industry titleholders and operators	• Assessed the potential presence in the EMBA and searched applicable websites.	• VOGA emailed and included an activity summary, directions for how to provide input into the EP development through consultation, the consultation date and a link to VOGA's website with additional resources on EP consultation. • Consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures.	• A reasonable period of 30 business days (four weeks), subject to the nature and scale of the proposed activity, was provided for feedback. • A consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures which we deem to be sufficient information for each stakeholder.
Infrastructure operators	• Assessed the potential presence in the Operational Area and EMBA and searched applicable websites.	• VOGA emailed and included an activity summary, directions for how to provide input into the EP development through consultation, the consultation date and a link to VOGA's website with additional resources on EP consultation. • Consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures.	• A reasonable period of 30 business days (four weeks), subject to the nature and scale of the proposed activity, was provided for feedback. • A consultation information Sheet including an overview of the proposed activities; potential impacts, risks and management measures which we deem to be sufficient information for each stakeholder.
Traditional Custodians and First Nations nominated representative corporations and Native Title Representative Bodies	• Developed a list of all Native Title registered claims and determinations along the coastline of WA. • Reviewed the EMBA and overlap or adjacency to Native Title registered claims and	• VOGA emailed and telephone called to introduce its operations and seek engagement in a co-design consultation process. • VOGA emailed and included an activity summary, directions for how to provide input into the EP	• A reasonable period of 30 business days (four weeks), subject to the nature and scale of the proposed activity, was provided for feedback. • A summary consultation information sheet and links to a detailed consultation information

Identified Relevant Persons	Actions taken to identify relevant persons	Consultation process and information provided	Reasonable period and sufficient Information
	determinations to establish a list of potentially affected First Nations groups. • Identified First Nations groups as potentially relevant persons, comprising: ○ Native Title Representative Bodies (NTRB) ○ Registered Native Title Bodies Corporate (RNTBCs – the formal name given to a group once Native Title has been determined) ○ Prescribed Bodies Corporate (PBCs – the legal entity formed by a group of Native Title Claimants during the determination process, but used interchangeably with RNTBC) ○ Aboriginal Corporations – Aboriginal run or managed businesses, often operating on behalf of, or under a RNTBC ○ Land and Sea Management Groups – primarily Ranger Groups, many of whom operate under a RNTBC.	development through consultation, the consultation date and a link to VOGA's website with additional resources on EP consultation. • Summary consultation information sheet and links to a detailed consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures. • Virtual or in person meetings with supporting presentation materials and handouts. • Continued emails and telephone calls to groups.	sheet including an overview of the proposed activities; potential impacts, risks and management measures. • Bespoke maps outlining the EMBA relevant to areas of interest, such as native title boundary. • Virtual or in person meetings with supporting presentation materials and handouts which we deem to be sufficient information for each stakeholder. • Additional targeted content and requests via email.

Identified Relevant Persons	Actions taken to identify relevant persons	Consultation process and information provided	Reasonable period and sufficient Information
Historical heritage groups or organisations	• Searched public cultural heritage databases relevant to the Operational Area and EMBA.	• VOGA emailed and included an activity summary, directions for how to provide input into the EP development through consultation, the consultation date and a link to VOGA's website with additional resources on EP consultation. • Consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures.	• A reasonable period of 30 business days (four weeks), subject to the nature and scale of the proposed activity, was provided for feedback. • A consultation information Sheet including an overview of the proposed activities; potential impacts, risks and management measures which we deem to be sufficient information for each stakeholder. • Additional targeted content via email, where applicable.
Local government and recognised local business and community reference/liaison groups or organisations	• Assessed the boundaries of local governments, local business and community reference/liaison groups organisations on EMBA and potential presence in the EMBA and searched applicable websites.	• VOGA emailed and included an activity summary, directions for how to provide input into the EP development through consultation, the consultation date and a link to VOGA's website with additional resources on EP consultation. • Consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures.	• A reasonable period of 30 business days (four weeks), subject to the nature and scale of the proposed activity, was provided for feedback. • A consultation information Sheet including an overview of the proposed activities; potential impacts, risks and management measures which we deem to be sufficient information for each stakeholder.
Research institutes	• Searched research institutes websites and publicly available information.	• VOGA emailed and included an activity summary, directions for how to provide input into the EP development through consultation, the consultation date and a link to	• A reasonable period of 30 business days (four weeks), subject to the nature and scale of the proposed activity, was provided for feedback. • A consultation information Sheet including an overview of the

Identified Relevant Persons	Actions taken to identify relevant persons	Consultation process and information provided	Reasonable period and sufficient Information
		VOGA's website with additional resources on EP consultation. • Consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures.	proposed activities; potential impacts, risks and management measures which we deem to be sufficient information for each stakeholder.
Local environment and conservation groups or organisations	• Searched environment and conservation groups websites and publicly available information • Reviewed publicly available EP documents from other titleholders on the NOPSEMA website.	• VOGA emailed and included an activity summary, directions for how to provide input into the EP development through consultation, the consultation date and a link to VOGA's website with additional resources on EP consultation. • Consultation information sheet including an overview of the proposed activities; potential impacts, risks and management measures.	• A reasonable period of 30 business days (four weeks), subject to the nature and scale of the proposed activity, was provided for feedback. • A consultation information Sheet including an overview of the proposed activities; potential impacts, risks and management measures which we deem to be sufficient information for each stakeholder.

Additional Targeted and Tailored Information for Relevant Persons

In addition to the consultation information sheet, VOGA develops and provides supplementary targeted content for individual stakeholders or stakeholder groups, based on their known or likely functions, interests, or activities. For this EP, additional information developed included:

- EP Summary Consultation Information Sheet
- EP Commercial Fisher Information Sheet
- Where requested, virtual or in person meetings with supporting presentation materials and handouts
- Additional targeted content to consultation emails
- Bespoke maps and figures.

9.4.7 Providing a Reasonable Period for Consultation

In accordance with prescribed regulations regarding a 'reasonable period', VOGA initiated consultation with certain categories of relevant persons in August 2025, providing additional time before commencing consultation on the EP for gathering input on preferred methods. VOGA commenced its broad consultation approach on 22 October 2025. To account for the December and January public holidays and ensure relevant persons had adequate time to provide feedback, the consultation period closed on the 13 February 2026. VOGA remains committed to ongoing engagement beyond this deadline to facilitate meaningful dialogue and address any further considerations or feedback on this EP.

The Consultation Period during the development of an EP is generally defined by VOGA as being 30 business days (four weeks), subject to the nature and scale of the proposed activity. Where dialogue with relevant persons is ongoing after this period, VOGA will continue to consult with these persons until VOGA believes that it has provided sufficient evidence/justification to close the consultation.

VOGA considers it has provided a reasonable period to relevant persons for consultation appropriate to the nature and scale of the proposed activity under this EP.

9.4.8 Approach to Consulting Relevant Persons

VOGA adopted a bespoke approach for all relevant person categories, and each group/person was individually considered to ensure they received sufficient material that was appropriate for the recipient and aligned with any guidance or specific requirements.

This included a planned and considered approach to engaging identified relevant persons and interested parties on VOGA's proposed activities. The company undertook a broad consultation process to raise public awareness, encourage feedback, and prompt respectful two-way consultation.

9.4.9 Consultation Opportunities/Channels

VOGA provided consultation opportunities through multiple mediums such as:

- Introductory telephone calls
- Response via email or mail
- Provision of a consultation phone number
- In-person or virtual meetings as appropriate and mutually agreed.

In the instances where no response was received following initial consultation outreach, attempts were made to follow up identified relevant persons via email, letter, telephone calls and text message as appropriate.

9.4.10 Unplanned Event

VOGA has established procedures should an unplanned event occur.

Within our Exploration and Survey OPEP, VOGA has procedures to ensure relevant persons are notified within 24 hours should a Level 2 oil spill occur. VOGA provides notifications to relevant persons as requested through its consultation process.

VOGA routinely reviews its EPs to ensure all existing environment information is up to date. A current list of commercial fisheries and aquaculture, government departments and First Nations groups that could potentially be impacted is included in this update.

VOGA has prepared and adopted an Oil Spill Monitoring Plan utilising the joint industry framework for operational and scientific monitoring. VOGA is also a member of the Oil Spill Response Limited joint industry arrangements for Oil Spill Management which provides capacity to implement the Oil Spill Monitoring Plan.

9.4.11 Ongoing Consultation

VOGA recognises there will be relevant persons unable to provide feedback within the timeframes set out in Regulation 25 of the OPGGS(E)R and the extended consultation period provided by VOGA for the preparation of this EP.

If consultation cannot take place before the EP submission, VOGA will notify the relevant person of the intent to submit the EP and advise that consultation can continue in ongoing consultation, where feedback can be received, assessed and responded to (as appropriate) throughout the life of an EP.

In this way, if a response is received, consultation can commence after the EP is submitted and feedback can be assessed and incorporated through the MoC process (Section 8.5). In accordance with Regulation 22(15), ongoing consultation is part of VOGA's implementation strategy. Should consultation feedback be received following acceptance of this EP in which a measure or control which VOGA considers requires implementation or updates to meet the intended outcome of consultation, VOGA will apply its MoC process (Section 8.5).

An overview and summary of VOGA's Ongoing Consultation engagements are included in Appendix F – Ongoing Engagement Plan Summary Report and summarised in Table 9-2 demonstrates VOGA's ongoing consultation process.

9.4.11.1 Ongoing Consultation with First Nation Groups

VOGA remains in ongoing consultation with First Nation groups. At the time of EP submission, there are no outstanding issues to resolve as a result of relevant person consultation.

VOGA will continue to seek the opportunity to continue to meet with First Nations groups already consulted, and Tier 1 First Nations groups it is yet to meet with (Appendix F). VOGA is developing an Ongoing Engagement Plan with First Nations Groups ("Ongoing Engagement Plan"), to demonstrate VOGA's commitment to ongoing engagement of First Nations. It is a living document, designed to evolve with ongoing consultation and feedback from First Nations for all its activities.

A summary of the ongoing engagement with relevant First Nations groups for this EP is included at Appendix F, Summary of Ongoing Engagement, reference 1.4.2.

The Ongoing Engagement Plan has been developed so that First Nations can, on an ongoing basis, provide VOGA with feedback relating to the possible consequences of an activity to be carried out under an EP on their functions, interests and activities as they relate to cultural values. This feedback will be evaluated in conjunction with First Nation groups and, where necessary, avoidance or mitigation strategies will be developed.

VOGA is committed to continue to receive feedback on cultural values for the life of an EP, the inclusion of new information and the development of avoidance or mitigation strategies in collaboration with First Nations. This information will be recorded and assessed and any potential impacts to the accepted EP evaluated via the MoC process (Section 8.5).

Figure 9-2: VOGA's ongoing consultation process

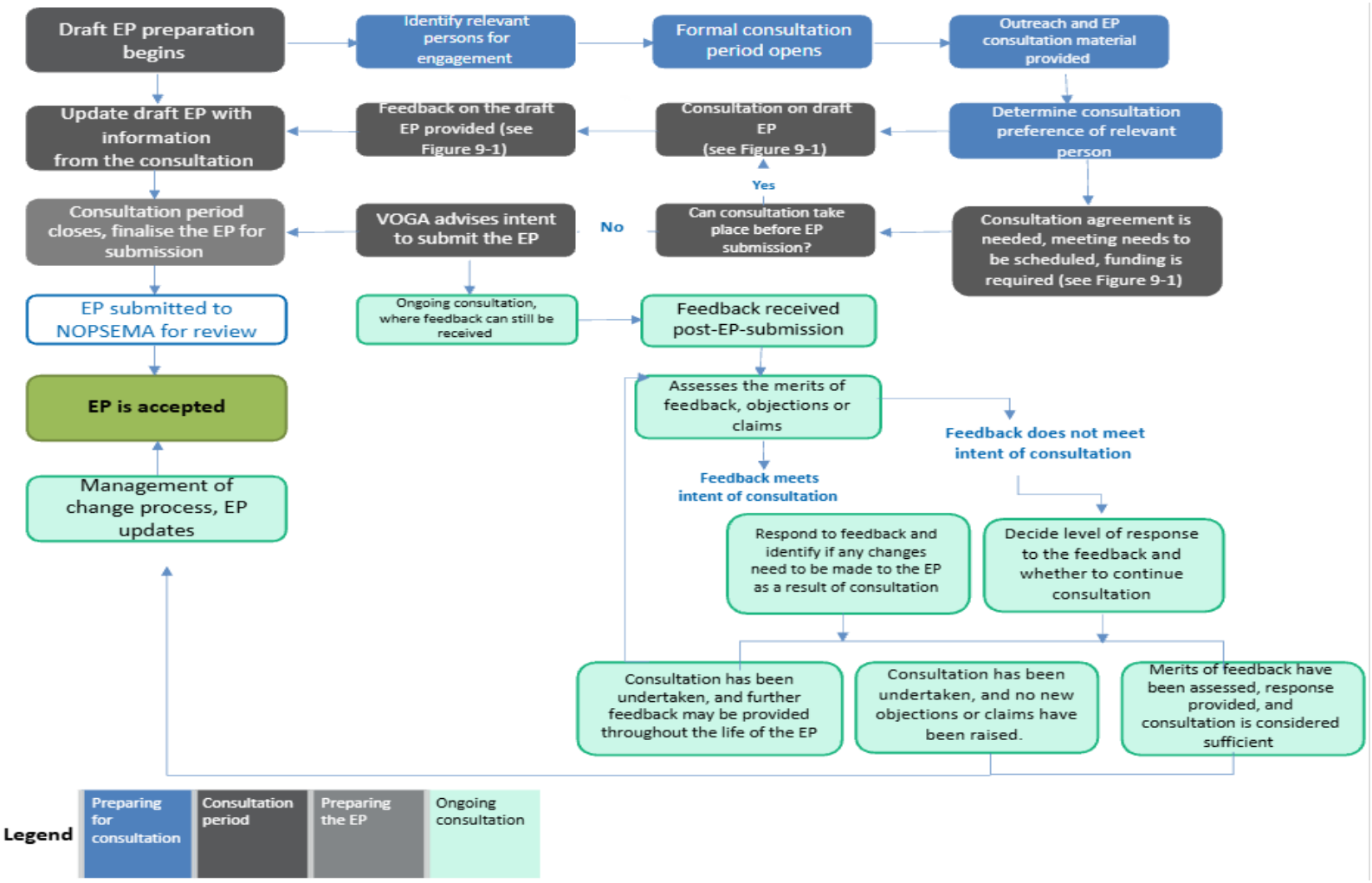


Table 9-6: Ongoing consultation engagements

Report	Recipient	Purpose	Frequency	Content
Emails/Meetings	Relevant First Nations Groups	Identification, assessment and consideration of cultural values relevant to the Operational Area and EMBA	Ongoing	Assessment of any relevant new information on cultural values will be assessed. VOGA will apply its MoC process, where appropriate (Section 8.5).
Notification (email)	AHO	As requested by AHO during consultation.	No less than 4 weeks prior to commencement.	Date of activity start. Addressed in Table 7-2 (CM-1.3).
Updates (email)			As required.	Changes to planned activities.
Notification (email)	AMSA – Marine Safety	As requested by AMSA during consultation.	No less than 4 weeks prior to commencement and at the end of activities.	Date of activity start. Addressed in Table 7-2 (CM-1.3).
			Contact AMSA's Rescue Centre (ARC) and Joint Rescue Coordination Centre (JRCC) at least 24–48 hours before operations commence.	
Notification (Australasian Underwater Cultural Heritage Database tool)	DCCEEW – Underwater Cultural Heritage	As requested by DCCEEW – Underwater Cultural Heritage during consultation.	Within 21 days of a discovery.	VOGA will notify the Minister of an Underwater Cultural Heritage discovery through the Australasian Underwater Cultural Heritage Database tool. Addressed in Table 7-2 (CM-2.3).
Notification (email)	Director of National Parks (DNP)	As requested by DNP.	Within 24 hours of an unplanned oil spill event.	DNP requested Marine Compliance Duty Officer be notified of any spill or pollution. Addressed in Table 7-2 (CM-11.20).
Updates (email)			As required.	DNP requested an update should the Operational Area change.

Report	Recipient	Purpose	Frequency	Content
Notification (email)	DBCA	As requested by DBCA.	As required.	VOGA to contact DBCA's Pilbara regional office in the event of a hydrocarbon release during the activity.
Notification (call and email)	DoT – Marine Pollution	As requested by DoT.	As soon as reasonably practical (within 2 hours).	In the risk of a spill impacting state waters to DoT Maritime Environmental Emergency Response (MEER) Duty Officer via the 24-hour reporting number (08) 9480 9924. The initial verbal notification must be followed up by an email containing a marine pollution report (POLREP), or similar, to marine.pollution@transport.wa.gov.au. As per Guidance Note from July 2020 titled Marine Oil Pollution: Response and Consultation Arrangements. Addressed in Table 7-2 (CM-11.20).
Notification (email)	Pilbara Ports Authority (PPA)	As requested by PPA.	As soon as practicable.	PPA to be notified if an unplanned event occurs, with the potential to impact Pilbara Port. Addressed in Table 7-2 (CM-11.20).
Notification (email)	WAFIC	As requested by WAFIC.	No less than 10 days prior to commencement of activities.	Date of activity start. Addressed in Table 7-2 (CM-1.3).
			As soon as practical.	WAFIC requested to be included in any vessel operation notification associated with this EP.
			Within 24 hours of an unplanned Level 2 oil spill event.	WAFIC to be notified in the event of a Level 2 oil spill. Addressed in Table 7-2 (CM-11.20).
Ongoing engagement	Recfishwest	As requested by Recfishwest.	Ongoing.	Project progress update, including date of activity start. Addressed in Table 7-2 (CM-1.3).

Report	Recipient	Purpose	Frequency	Content
Updates (email)	Shire of Ashburton	As requested by the Shire of Ashburton.	As required.	Project progress update, including date of activity start. Addressed in Table 7-2 (CM-1.3).
Notification (email)	Other relevant persons	Notification of significant change.	As appropriate.	Notification of significant change.
Emails/Meetings	Persons or organisations who provide feedback to VOGA post EP submission.	Identification, assessment and consideration of feedback, claims and/or objections.	As appropriate.	Assessment of claims and/or objections. VOGA will apply its MoC process, where appropriate (Section 8.5).
Notification (email/phone call)	Ngarluma Aboriginal Corporation	As requested by Ngarluma Aboriginal Corporation.	As soon as practicable.	Ngarluma Aboriginal Corporation to be notified in the event of an oil spill with potential to impact Country. Addressed in Table 7-2 (CM-11.20).
Notification (email/phone call)	Wanparta Aboriginal Corporation	As requested by Wanparta Aboriginal Corporation.	As soon as practicable.	Wanparta Aboriginal Corporation to be notified in the event of an oil spill with potential to impact Country. Addressed in Table 7-2 (CM-11.20).
Notification (email/phone call)	Murujuga Aboriginal Corporation	As requested by Murujuga Aboriginal Corporation.	As soon as practicable.	Murujuga Aboriginal Corporation to be immediately contacted for consultation on management of cultural values if an unplanned environmental incident may affect Murujuga World Heritage property. Addressed in Table 7-2 (CM-11.20).
Notification (email/phone call)	Buurabalayji Thalanyji Aboriginal Corporation	As requested by Buurabalayji Thalanyji Aboriginal Corporation.	As soon as practicable.	Buurabalayji Thalanyji Aboriginal Corporation to be notified in the event of an oil spill with potential to impact Country. Addressed in Table 7-2 (CM-11.20).

Report	Recipient	Purpose	Frequency	Content
Notification (email/phone call)	Wirrawandi Aboriginal Corporation	As requested by Wirrawandi Aboriginal Corporation.	As soon as practicable.	Wirrawandi Aboriginal Corporation to be notified in the event of an oil spill with potential to impact Country. Addressed in Table 7-2 (CM-11.20).

References

Accomando, A., Finneran, J., Henderson, E., Jenkins, K., Kotecki, S., Martin, C., Mulsow, J., Zapetis, M., and (eds) Carline, K. and Schreher, V. (2025). Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase 4) Revision 2025.1. April 2025.

ANZECC/ARMCANZ (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand.

Ashurst (2023). Full Court Tipakalippa decision – stakeholder consultation grows teeth. Written by Denholder, A., Gay, A., Lawrence, C. and Hall, J. Available at https://www.ashurst.com/en/insights/full-court-tipakalippa-decision-stakeholder-consultation-grows-teeth/

Aurecon (2016). Wandoo Environmental Monitoring Program Operational Baseline Survey 2015. Prepared for Vermillion Oil and Gas Australia.

Australian Heritage Commission (2002). Ask First – A guide to respecting Indigenous Heritage places and values. Available at Ask First: A guide to respecting Indigenous heritage places and values - First Nations Heritage Protection Alliance.

Australian Bureau of Statistics (ABS) (2024). Tourism Satellite Account, 2023–24. Retrieved from https://www.abs.gov.au/statistics/economy/national-accounts/tourism-satellite-account/latest-release

Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) 2026. First Peoples of Australia. Accessed February 2026: https://aiatsis.gov.au/explore/first-peoples-australia

Australian Institute of Marine Science (AIMS) (2021). Hawksbill and green turtle distribution and important areas. As part of the Northwest Shores to Shoals Research Program, supported by Santos. Available at https://northwestatlas.org/nwa/nws2s-megafauna#green_bia

Australian Maritime Safety Authority (AMSA) (2012). Marine Notice 15/2012, Shipping Fairways off the north-west coast of Australia. Australian Maritime Safety Authority, Canberra, Australia.

Australian Maritime Safety Authority (AMSA) (2013). Rescuing Oiled wildlife – What can you do! Available at https://www.amsa.gov.au/environment/maritime-environmental-emergencies/national-plan/General-Information/oiled-wildlife/rescuing-wildlife/index.asp.

Australian Institute of Marine Science (AIMS) (2025). AIMS Index of Marine Industry 2025. https://www.aims.gov.au/sites/default/files/2025-09/3.%20AIMS%20MARINE%20INDEX_WEB_2Sept2025_compressed.pdf

Australian Maritime Safety Authority (AMSA) (2015). Technical guidelines for preparing contingency plans for marine and coastal facilities. Available at

https://www.amsa.gov.au/sites/default/files/np-gui-012-technical-guidelines-contingency-plans-15082023_0.pdf

Australian Maritime Safety Authority (AMSA) (2023). 'Technical Guideline for the Preparation of Marine Pollution Contingency Plans for Marine and Coastal Facilities Australian Maritime Safety Authority. Available at https://www.amsa.gov.au/sites/default/files/np-gui-012-technical-guidelinescontingency-plans-15082023_0.pdf.

Australian Petroleum Production and Exploration Association (APPEA) (2008). Code of Environmental Practice – October 2008. RPS Ecos.

ANZG (2018). Australian and New Zealand guidelines for fresh and marine water quality. Australian and New Zealand Governments and Australian state and territory governments. Canberra, Australian Capital Territory. Available at https://www.waterquality.gov.au/anz-guidelines.

Astron (2014). Exmouth Islands Turtle Monitoring Program – January 2014 Field Survey. Rev A, 11 February 2014, unpublished report for Apache Energy Ltd, Perth.

Astron (2017). Quadrant Environmental Monitoring Program Varanus and Airlie Islands Turtle Monitoring Annual Report 2016/17, Prepared for Quadrant Energy Australia Ltd by Astron Environmental Services, Perth, Western Australia, June 2017. Report reference EA-60-RI-10173.

Baird, A.H., Blakeway, D.R., Hurley, T.J. and Stoddart, J.A. (2011). Seasonality of coral reproduction in the Dampier Archipelago, northern Western Australia. *Marine Biology* 158: 275-285.

Baker, C.S. and Herman, L.M. (1989). Behavioural responses of summering humpback whales to vessel traffic: experimental and opportunistic observations. Final Report to the National Park Service. US Department of the Interior, Anchorage, AK.

Baker, C., Potter, A., Tran, M. and Heap, A.D. (2008). Geomorphology and Sedimentology of the Northwest Marine Region of Australia. Geoscience Australia, Record 2008/07. Geoscience Australia, Canberra.

Balcom, B.J., Graham, B.D., Hart, A.D. and Bestall, G.P. (2012). Benthic Impacts Resulting from the Discharge of Drill Cuttings and Adhering Synthetic Based Drilling Fluid in Deepwater. In International Conference on Health, Safety and Environment in Oil and Gas Exploration and Production. OnePetro.

Bannister, J.L. (1979-2005). Annual Reports on aerial surveys of Southern Right Whales on the southern Australian coastline. Western Australian Museum, Perth.

Bannister, N., Holland, J. and Farrelly, T. (2014). Nest site fidelity of flatback turtles (Natator depressus) on Bare Sand Island, Northern Territory, Australia. *Northern Territory Naturalist* 27: 47–53.

Bartol, S. M., J. A. Musick, and M. L. Lenhardt. (1999). Auditory evoked potentials of the loggerhead sea turtle (*Caretta caretta*). Copeia, 1999(3), 836–840.

Bell, B., Spotila, J.R. and Congdon, J. (2006). High Incidence of Deformity in Aquatic Turtles in the John Heinz National Wildlife Refuge. *Environmental Pollution* 142(3): 457–465.

Benjamin, J., O'leary, M., McCarthy, J., Reynen, W., Wiseman, C., Leach, J., Bobeldyk, S., Buchler, J., Kermeen, P., Langley, M. and Black, A. (2023). Stone artefacts on the seabed at a submerged freshwater spring confirm a drowned cultural landscape in Murujuga, Western Australia. *Quaternary Science Reviews*, 313, p.108190.

Berge J., Geoffroy M., Daase M., Cottier F., Priou P., Cohen J.H., Johnsen G., McKee D., Kostakis I., Renaud P.E., Vogedes D., Anderson P., Last K.S. and Gauthier S. (2020). Artificial light during the polar night disrupts Arctic fish and zooplankton behaviour down to 200 m depth. *Communications Biology* 3(1): 102.

Black, K.P., Brand, G.W., Grynberg, H., Gwyther, D., Hammond, L.S., Mourtikas, S., Richardson, B.J., and Wardrop, J.A. (1994). Production Facilities. In: Environmental Implications of Offshore Oil and Gas Development in Australia - The Findings of an Independent Scientific Review.

Blumer, M. (1971). Scientific Aspects of the Oil Spill Problem. *Boston College Environmental Affairs Law Review* 1(1) 54-73.

Bond, T., Partridge, J.C., Taylor, M.D., Langlois, T.J., Malseed, B.E., Smith, L.D. and McLean, D. L. (2018). Fish associated with a subsea pipeline and adjacent seafloor of the North West Shelf of Western Australia. *Marine Environmental Research* 141, 53–65.

Bowman Bishaw Gorham (BBG) (1996). Environmental Baseline Survey Wandoo B. Report prepared for Ampolex Ltd (Ampolex Report Number 17486).

BP. (2013). Great Australian Bight Exploration Project: Dispersion modelling of drilling discharges (Final version, 6 March 2013).

Brewer, D., Lyne, V., Skewes, T. and Rothlisberg, P. (2007). Trophic systems of the North West Marine Region. Report to the Department of the Environment and Water Resources. CSIRO Marine and Atmospheric Research, Australia.

Brotas, V., Tarran, G. A., Veloso, V., Brewin, R. J. W., Woodward, E. M., Airs, R., Beltran, C., Ferreira, A., & Groom, S. B. (2022). Complementary approaches to assess phytoplankton groups and size classes on a long transect in the Atlantic Ocean. Frontiers in Marine Science, 8, Article 682621.

BRS (2007). Designated Exchange Areas Project – Providing Informed Decision on the Discharge of Ballast Water in Australia (Phase II) Ed. Knight, E., Barry, S., Summerson, R., Cameron S., Darbyshire R. report for the Bureau of Rural sciences.

Bureau of Meteorology (2024). Climate Data Online. Available at http://www.bom.gov.au/climate/averages/tables/cw_004083.shtml

Burger, A.E. and Fry, D.M. (1993). Effects of oil pollution on seabirds in the northeast Pacific, in K Vermeer, KT Briggs, KH Morgan and D Siegel-Causey (eds), The status, ecology, and conservation of marine birds of the North Pacific. Canadian Wildlife Service Special Publication, Ottawa.

Burnell, S.R. (1999). The population biology of southern right whales in southern Australian waters. Unpublished Ph.D. Thesis. Ph.D. Thesis. University of Sydney, Sydney, Australia.

Burnell, S. & T. McKenna (1996). An incidental flight network for the photo-identification of southern right whales off south-eastern Australia. Report to BHP Petroleum Pty Ltd. Unpublished.

Burnell, S.R. (2001). Aspects of the reproductive biology, movements and site fidelity of right whales off Australia. *Journal of Cetacean Research and Management* (Special Issue 2). Page(s) 89-102.

Carroll, A.G., Jorgensen, D.C., Siwabessy, P.J.W., Jones, L.E.A., Sexton, M.J., Tran, M., Nicholas, W.A., Radke, L.C., Carey, M.P., Howard, F.J.F., Stowar, M.J., Heyward, A.J., Potter, A and Shipboard Party, (2012). Seabed Environments and Shallow Geology of the Petrel Sub-basin, Northern Australia SOL5463 (GA0335) – Post Survey Report. Geoscience Australia, Canberra.

Carnes, M.R. 2009. Description and Evaluation of GDEM-V 3.0. Document Number NRL Memorandum Report 7330-09-9165. U.S. Naval Research Laboratory, Stennis Space Center, MS. 21 pp.

Chapius, L., Collin, S.P., Yopak, K.E., McCauley, R.D., Kempster, R.M., Ryan, L.A., Schmidt, C., Kerr, C.C., Gennari, E., Egeberg, C.A. and Hart, N.S. (2019). The effect of underwater sounds on shark behaviour. Accessed at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6502882/

Chatto, R. (2001). Technical report: the distribution and status of colonial breeding seabirds in the Northern Territory, Parks and Wildlife Commission of the Northern Territory, Darwin.

Chevron (2005). Environmental Impact Statement/Environmental Review and Management Programme for the proposed Gorgon Development. Chevron Australia Pty Ltd, Perth, Western Australia.

Chevron (2008). Gorgon Gas Development Revised and Expanded Proposal Public Environmental Review Operated by Chevron Australia in joint venture with Gorgon Project. EPBC Referral 2008/4178. Assessment No. 1727. Chevron Australia Pty Ltd, Perth, Western Australia, September 2008.

Chevron Australia (2022). Gorgon Gas Development and Jansz Feed Gas Pipeline Environmental Performance Report 2022. Available at https://australia.chevron.com/-/media/australia/our-businesses/documents/gorgon-gas-development-and-jansz-feed-gas-pipeline-environmental-performance-report-2022.pdf

Chiaradia, A., Dann, P., Jessop, R. and Collins, P. (2002). The diet of crested tern (*Sterna bergii*) chicks on Phillip Island, Victoria, Australia. *Emu* 102(4): 367-371.

Cianchetti-Benedetti, M., Becciu, P., Massa, B. and Dell'Omo, G. (2018). Conflicts between touristic recreational activities and breeding shearwaters: short-term effect of artificial light and sound on chick weight. *European Journal of Wildlife Research* 64: 19.

Cintron, G., Lugo, A.E., Marinez, R., Cintron, B.B., and Encarnacion, L. (1981). Impact of oil in the tropical marine environment. Technical Publication, Division of Marine Research, Department of Natural Resources, Puerto Rico.

Clark, C.W., Ellison, W.T., Southall, B.L., Hatch, L., Van Parijs, S.M., Frankel, A. and Ponirakis, D. (2009). Acoustic masking in marine ecosystems: Intuitions, analysis, and implication. *Marine Ecology Progress Series* 395: 201-222.

Clarke, R.H. (2010). The Status of Seabirds and Shorebirds at Ashmore Reef and Cartier and Browse Islands: Monitoring program for the Montara Well release - Pre-impact Assessment and First Post-impact Field Survey. Prepared on behalf of PTTEP Australasia and the Department of the Environment, Water, Heritage and the Arts, Australia.

Clean Energy Regulator (CER) (2024). Emissions and energy types. Clean Energy Regulator, Australian Government. Available at: https://cer.gov.au/schemes/national-greenhouse-and-energy-reporting-scheme/about-emissions-and-energy-data/emissions-and-energy-types

Commission for the Conservation of Southern Bluefin Tuna (CCSBT). (2025). Report on Biology, Stock Status and Management of Southern Bluefin Tuna. Attachment 7 of the Report of the Thirtieth Meeting of the Scientific Committee. 30 August 2025. Available at: https://www.ccsbt.org/sites/default/files/userfiles/file/docs_english/general/ESC30_Attachment07_ReportOnBiologyStatusManagement.pdf

Commonwealth of Australia. (2007). Environment Protection and Biodiversity Conservation Act 1999: Inclusion of a place in the National Heritage List (Dampier Archipelago, including Burrup Peninsula). Commonwealth of Australia Gazette, No. S127.

Commonwealth of Australia (CoA). (2017). Recovery Plan for Marine Turtles in Australia 2017 – 2027. Commonwealth of Australia 2017. Available at https://www.agriculture.gov.au/sites/default/files/documents/recovery-plan-marine-turtles-2017.pdf.

Commonwealth of Australia (CoA). (2017a). National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna 2017. Commonwealth of Australia 2017. Available at https://www.dcceew.gov.au/environment/marine/marine-species/cetaceans/national-strategy-reducing-vessel-strike-cetaceans-marine-megafauna.

Commonwealth of Australia (CoA). (2020). Wildlife Conservation Plan for Seabirds. Commonwealth of Australia 2020. Available at https://www.dcceew.gov.au/environment/biodiversity/publications/wildlife-conservation-plan-seabirds-2022

Commonwealth of Australia (CoA) (2023). Murujuga Cultural landscape Nominated World Heritage Property. Available at https://whc.unesco.org/document/222348

Connell, D.W., and Miller, G.J. (1981). Petroleum hydrocarbons in aquatic ecosystems – behaviour and effects of sublethal concentrations. CRC Report: Critical Reviews in Environmental Controls.

Connolly, R.M., Connolly, F.N. and Hayes, M.A., 2020. Oil spill from the Era: Mangroves taking eons to recover. *Marine Pollution Bulletin*, Volume 153, 2020, 110965, ISSN 0025-326X.

ConocoPhillips. (2018). Barossa Area Development Offshore Project Proposal. ConocoPhillips, Perth, Western Australia.

Conservation and Land Management (CALM) and Marine Parks and Reserves Authority (MPRA) (2005). Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005–2015. Management Plan No. 52. Department of Conservation and Land Management and Marine Parks and Reserves Authority.

Convention on Biological Diversity (CBD). (2025). Ecologically or Biologically Significant Marine Areas. Spawning area of Southern Bluefin Tuna. Marine EBSA (EBSA). CHM-EBSA-SCBD-204023-2. Accessed January 2026. Available at https://chm.cbd.int/en/database/record?documentID=204023

Crawford, R., Cooper, J. Dyer, B., Upfold, L. Venter, A.D., Whittington, P., Williams, A.J. and Wolfaardt, A. (2002). Longevity, inter-colony movements and breeding of Crested Terns in South Africa. Emu 102.

Crecelius, E., Trefry, J., McKinley, J., Lasorsa, B. and Trocine, R., (2007). Study of Barite Solubility and the Release of Trace Components to the Marine Environment. US Dept. of the Interior, OC5 Study MMS 2007-061. p. 176.

CSIRO (2015). Marine Benthic Substrate Database – CAMRIS – Marsed Version 1. CSIRO. ata Collection. Available at https://doi.org/0.4225/08/551485612CDEE

D'Antonio, B., Ferreira, L., Fisher, R., Thums, M., Pattiaratchi, C.B., Sequeira, A.M.M., Faubel, S., Norman, B., Meekan, M. (2025). Natural and artificial structures influence the movement and habitat connectivity of whale sharks (*Rhincodon typus*) across seascapes. *Diversity and Distributions*, 31(1), e13950.

Deepwater Horizon (DWH) Natural Resource Damage Assessment Trustees (2016). Deepwater Horizon Oil Spill: Final Programmatic Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement.

Del Hoyo J., Elliot A., Sargatal J. (eds). (1996). Handbook of the birds of the world, vol. 3: hoatzin to auks. Barcelona, Spain: Lynx Ediciones.

Deppe, L., Rowley, O., Rowe, L.K., Shi, N., McArthur, N., Gooday, O. and Goldstein, S.J., 2017. Investigation of fallout events in Hutton's shearwaters (Puffinus huttoni) associated with artificial lighting. Notornis. 64(4): p. 181–191.DISER. 2022. Department of Industry, Science, Energy and Resources. Offshore Petroleum Decommissioning Guideline. Available at https://www.nopta.gov.au/_documents/guidelines/decommissioning-guideline.pdf

Department of Agriculture and Water Resources (DAWR) (2018) Marine Pest Plan 2018–2023: the National Strategic Plan for Marine Pest Biosecurity. Available at https://www.marinepests.gov.au/sites/default/files/Documents/marine-pest-plan-2018-2023.docx

Department of Agriculture, Fisheries and Forestry (DAFF) (2021). Marine pests. Australian Government, DAFF, Canberra. Available at https://www.agriculture.gov.au/biosecurity-trade/pests-diseases-weeds/marine-pests

Department of Agriculture, Fisheries and Forestry (DAFF) (2023). Australian Biofouling Management Requirements – Version 2. Available at https://www.agriculture.gov.au/sites/default/files/documents/Australian-biofouling-management-requirements.pdf

Department of Agriculture, Water and the Environment (DAWE) (2020). Australian Ballast Water Management Requirements – Version 8. Available at https://www.agriculture.gov.au/sites/default/files/documents/australian-ballast-water-management-requirements.pdf.

Department of Agriculture, Water and the Environment (2020a). National Recovery Plan for the Australian Fairy Tern (*Sternula nereis nereis*). Department of Agriculture, Water and the Environment, Canberra.

Department of Agriculture, Water and the Environment (DAWE) (2021). Guidance on key term within the Blue Whale Conservation Management Plan. Available at https://www.dcceew.gov.au/sites/default/files/documents/guidance-key-terms-blue-whale-conservation-management-plan-2021.pdf

Department of Agricultural and Water Resources (DAWR) (2018). Marine Pest Plan 2018–2023: National Strategic Plan for Marine Pest Biosecurity. Available at https://www.marinepests.gov.au/sites/default/files/Documents/marine-pest-plan-2018-2023.pdf

Department of Biodiversity, Conservation and Attractions (DBCA) (2020). Pilbara inshore islands nature reserves and proposed additions draft management plan. Department of Biodiversity, Conservation and Attractions, Perth, Australia.

Department of Biodiversity, Conservation and Attractions (DBCA) (2022). *Nyinggulu (Ningaloo)* Coastal Reserves: Red Bluff to Winderabandi joint management plan 101. Parks and Wildlife Service, Department of Biodiversity, Conservation and Attractions, Perth, Western Australia.

Department of Biodiversity, Conservation and Attractions (DBCA) (2020b). Economic contribution of Ningaloo: one o' Australia's best kept secrets. Deloitte Access Economics. June 2020. 58 pp.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2005). Whale Shark (*Rhincodon typus*) Recovery Plan 2005-2010. Published under Department of the Environment and Heritage. Commonwealth of Australia, 2005.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2007). Sea Countries of the North-West – literature review on Indigenous connection to and uses of the North-West Marine Region. Published under Australian Government Department of the Environment and Water Resources.

Department of Environment and Resource Management (2012). National recovery plan for the red goshawk *Erythrotriorchis radiatus*. Report to the Department of Sustainability, Environment, Water, Population and Communities, Canberra. Queensland Department of Environment and Resource Management, Brisbane.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2022a). Annual Climate Change Statement 2022, Australian Government Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2022b). National recovery plan for albatrosses and petrels 2022. Australian Government Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2023a). Conservation Advice for *Calidris ferruginea* (curlew sandpiper). Canberra: Department of Climate Change, Energy, the Environment and Water. Available from http://www.environment.gov.au/biodiversity/threatened/species/pubs/856-conservation-advice-18122023.pdf

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2023b). National Light Pollution Guidelines for Wildlife, Department of Climate Change, Energy, the Environment and Water, Canberra, May. CC BY 4.0.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2023c). Assessment of the Western Australian Pilbara Trap Managed Fishery – December 2023. Commonwealth of Australia.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2023d). Guidelines for working in the near and offshore environment to protect Underwater Cultural Heritage, Department of Climate Change, Energy, the Environment and Water, Canberra, October CC BY 4.0.

Department of Climate Change, Energy, the Environment and Water (2023e). Conservation Advice for *Charadrius leschenaultii* (greater sand plover). Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (2023f). Conservation Advice for *Erythrotriorchis radiatus* (red goshawk). Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (2023g). Conservation Advice for *Numenius madagascariensis* (far eastern curlew). Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (2023h). Conservation Advice for *Phaethon rubricauda westralis* (Indian Ocean red-tailed tropicbird). Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2024a). Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters –

Guidelines on the application of the *Underwater Cultural Heritage Act 2018*. Department of Climate Change, Energy, the Environment and Water, Canberra.

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2024b). Conservation advice for *Calidris canutus* (red knot). Australian Government.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2024c). Environment Protection and Biodiversity Conservation Regulations 2000. Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2024e). Ancient coastline at 125 m depth contour. Key Ecological Feature. Species Profile and Threats Database. Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2024f). Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula. Key Ecological Feature. Species Profile and Threats Database. Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2024g). Commonwealth waters adjacent to Ningaloo Reef. Key Ecological Feature. Species Profile and Threats Database. Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2024h). Continental Slope Demersal Fish Communities. Key Ecological Feature. Species Profile and Threats Database. Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2024i). Exmouth Plateau. Key Ecological Feature. Species Profile and Threats Database. Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2024j). Glomar Shoals. Key Ecological Feature. Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2024k). Species Profiles and Threats Database. Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2024l). National Recovery Plan for the Southern Right Whale, Department of Climate Change, Energy, the Environment and Water, Canberra.

Department of Climate Change, Energy, the Environment and Water (2024o). Conservation Advice for *Calidris acuminata* (sharp-tailed sandpiper). Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (2024m). Conservation Advice for *Limnodromus semipalmatus* (Asian dowitcher). Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (2024n). Conservation Advice for *Limosa lapponica menzbieri* (Yakutian bar-tailed Godwit). Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (2024p). Conservation Advice for *Tringa nebularia* (common greenshank). Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2025a). National Greenhouse and Energy Reporting (Measurement) Determination 2008. Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2025b). Commonwealth Heritage List: Learmonth Air Weapons Range Facility. Australian Heritage Database. Available at https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=list_code%3DCHL%3Blegal_status%3D35%3Bkeyword_PD%3D0%3Bkeyword_SS%3D0%3Bkeyword_PH%3D0;place_id=105551

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2025c). Commonwealth Heritage List: Ningaloo Marine Area - Commonwealth Waters. Australian Heritage Database.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2025d). Conservation Advice for *Orcaella heinsohni* (Australian snubfin dolphin). Canberra: Department of Climate Change, Energy, the Environment and Water. Available from http://www.environment.gov.au/biodiversity/threatened/species/pubs/81322-conservation-advice-05032025.pdf

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2025e). Conservation Advice for *Sousa sahulensis* (Australian humpback dolphin). Canberra:Department of Climate Change, Energy, the Environment and Water. Available from http://www.environment.gov.au/biodiversity/threatened/species/pubs/87942-conservation-advice-05032025.pdf

Department of Climate Change, Energy, the Environment and Water (2025f). Conservation Advice for *Pezoporus occidentalis* (night parrot). Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (2025g). Conservation Advice for *Sternula albifrons* (little tern). Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Climate Change, Energy, the Environment and Water (2025h). Conservation Advice for *Sousa sahulensis* (Australian humpback dolphin) . Canberra: Department of Climate Change, Energy, the Environment and Water.

Department of Conservation and Land Management (CALM) (2005). Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005 – 2015 Management Plan No. 52. Department of Conservation and Land Management, Perth, Western Australia.

Department of Environment (DoE) (2004). Pilbara Air Quality Study – Summary Report. Department of Environment, Technical Series No. 120.

Department of the Environment (2014). Conservation Advice *Phaethon lepturus fulvus* white-tailed tropicbird (Christmas Island). Canberra: Department of the Environment.

Department of Environment (DoE) (2015a). Conservation Management Plan for the Blue Whale. A Recovery Plan under the Environment Protection and Biodiversity Conservation Act 1999.

Department of the Environment. Canberra. Department of Environment (DoE) (2015b). Wildlife Conservation Plan for Migratory Shorebirds. Commonwealth of Australia.

Department of Environment (DoE) (2015c). Sawfish and River Sharks Multispecies Recovery Plan. Commonwealth of Australia.

Department of the Environment (DoE) (2024). Whale Shark (*Rhincodon typus*) in Species Profile and Threats Database, Department of the Environment, Canberra. Available from https://www.environment.gov.au/sprat

Department of the Environment (2026). *Thunnus maccoyii* in Species Profile and Threats Database, Department of the Environment, Canberra. Accessed January 2026. Available from https://www.environment.gov.au/sprat

Department of Environment and Conservation (DEC) 2007. Management Plan for the Montebello/Barrow Islands Marine Conservation Reserves 2007-2017. Management Plan No. 55. Available from https://www.dbca.wa.gov.au/management/plans/montebellobarrow-islands-marine-conservation-reserves

Department of Environment, Water, Heritage and the Arts (DEWHA) (2008). Approved Conservation Advice for *Dermochelys coriacea* (Leatherback Turtle). Canberra: Department of the Environment, Water, Heritage and the Arts. Available from http://www.environment.gov.au/biodiversity/threatened/species/pubs/1768-conservation-advice.pdf.

Department of the Environment, Water, Heritage and the Arts (2008a). Approved Conservation Advice for *Malurus leucopterus edouardi* (White-winged Fairy-wren (Barrow Island)). Canberra: Department of the Environment, Water, Heritage and the Arts.

DEWHA (2008b). Approved conservation advice for Green Sawfish (*Pristis zijsron*). Australian Government. Accessed from https://www.dcceew.gov.au/sites/default/files/env/pages/8d4cd57e-4eff-4004-b727-880bf2c42c19/files/68442-conservation-advice.pdf

DEWHA. (2009). conservation advice for *Pristis clavata* (Dwarf Sawfish). Australian Government. Available from

https://www.environment.gov.au/biodiversity/threatened/species/pubs/68447-conservation-advice.pdf

Department of Transport and Major Infrastructure (WA) (DoT) (2023). Western Australian Marine (Transitional Provisions) Regulations 2023. Department of Transport and Major Infrastructure (WA).

Department of the Environment and Energy (DEE) (2016). Factsheet: Coastal wetlands – Mangroves and saltmarshes. Commonwealth of Australia.

Department of the Environment and Energy (DEE) (2018). Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans. Commonwealth of Australia, 2018.

Department of Environment, Water, Heritage and the Arts (DEWHA) (2012). The North-West Marine Bioregional Plan: Bioregional Profile. Department of the Environment, Water, Heritage and the Arts, Canberra.

Department of Planning and Environment (DPIE) (2022). Cumulative Impact Assessment Guidelines for State Significant Projects, NSW.

Department of Primary Industries and Regional Development (DPIRD) (2023a). Fishery Map Data. Department of Primary Industries and Regional Development, Perth, Western Australia.

Department of Primary Industries and Regional Development (DPIRD) (2023b). Recreational fishing location guide. Available from https://library.dpird.wa.gov.au/cgi/viewcontent.cgi?article=1058&context=fr_fop.

Department of Sustainability, Environment, Water, Population and Communities, Australian Government (DSEWPC) (2011a). Background Paper, Population Status and Threats to Albatrosses and Giant Petrels Listed as Threatened under the Environment Protection and Biodiversity Conservation Act 1999, Commonwealth of Australia, Department of Sustainability, Environment, Water, Population and Communities, AAD, Hobart.

Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) (2011b). Approved Conservation Advice for *Aipysurus apraefrontalis* (Short-nosed Sea Snake). Canberra, ACT: Department of Sustainability, Environment, Water, Population and Communities.

Department of Sustainability, Environment, Water, Population and Communities (2011c). Approved Conservation Advice for *Aipysurus foliosquama* (DSEWPC) (Leaf-scaled Sea Snake). Canberra, ACT: Department of Sustainability, Environment, Water, Population and Communities.

Department of Sustainability, Environment, Water, Population and Communities, Australian Government (DSEWPC) (2012a). Marine bioregional plan for the North-west Marine Region, Australian Government, Canberra, Australian Capital Territory. Available at https://www.dcceew.gov.au/sites/default/files/env/pages/1670366b-988b-4201-94a1-1f29175a4d65/files/north-west-marine-plan.pdf

Department of Sustainability, Environment, Water, Population and Communities, Australian Government (DSEWPC) (2012c). *Eretmochelys imbricata* – Hawksbill Turtle. Available at http://www.environment.gov.au/cgibin/sprat/public/publicspecies.pl?taxon_id=1766

Department of Sustainability, Environment, Water, Population and Communities, Australian Government (DSEWPC) (2012d). Marine bioregional plans. Department of Sustainability, Environment, Water, Population and Communities, Canberra, ACT. Available at http://www.environment.gov.au/marine/marine-bioregional-plans/about

Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) (2013). Recovery plan for the Australian Sea Lion (*Neophoca cinereal*). Department of Sustainability, Environment, Water, Population and Communities, Canberra, ACT.

Department of Sustainability, Environment, Water, Population and Communities (2013a). Approved Conservation Advice for *Rostratula australis* (Australian painted snipe). Canberra: Department of Sustainability, Environment, Water, Population and Communities.

Deppe, L., Rowley, O., Rowe, L.K., Shi, N., McArthur, N., Gooday, O. and Goldstien, S.J. (2017). Investigation of fallout events in Hutton's shearwaters (*Puffinus huttoni*) associated with artificial lighting. *Notornis* 64(4): 181–191.

Dernie, K. M., Kaiser, M. J., Richardson, E. A., & Warwick, R. M. (2003). Recovery of soft sediment communities and habitats following physical disturbance. *Journal of Experimental Marine Biology and Ecology* 285, 415-434.

Director of National Parks (DNP) (2018). North-west Marine Parks Network Management Plan 2018, Director of National Parks, Canberra.

Dokulil, M.T. (1994). Environmental control of phytoplankton productivity in turbulent turbid systems. *Hydrobiologia* 289: 65-72.

DOSITS (2025). How does sound travel in shallow water? Discovery of Sound in the Sea, University of Rhode Island. Available at https://dosits.org/science/advanced-topics/shallow-water-propagation/

Double, M.C. Andrews-Goff, V.K., Jenner, C.S., Jenner, M-N., Laverick, S.M., Branch, T.A. and Gales, N.J. (2014). Migratory Movements of Pygmy Blue Whales (*Balaenoptera musculus brevicauda*) between Australia and Indonesia as Revealed by Satellite Telemetry. PLOS one 9(4).

Dow Piniak, W.E., 2012. Acoustic Ecology of Sea Turtles: Implications for Conservation. PhD thesis, Marine Science and Conservation Duke University. pp 136. Accessed online on 07/06/2019 Available at https://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/6159/Piniak_duke_0066D_11691.pdf?sequence=1

Duke, N., Wood, A., Hunnam, K., Mackenzie, J., Haller, A., Christiansen, N., Zahmel, K. and Green, T. (2010). Shoreline Ecological Assessment Aerial and Ground Surveys 7-19 November 2009. As part of the Scientific Monitoring Study of the Montara Monitoring Plan. A report

commissioned by PTTEP Australasia (Ashmore Cartier) PL, Perth, Western Australia for the Department of the Environment, Water, Heritage and the Arts, Canberra, ACT.

Duke, N. (2016). Oil spill impacts on mangroves: Recommendations for operational planning and action based on a global review, *Marine Pollution Bulletin*. 109(2): 700–715. Available at https://doi.org/10.1016/j.marpolbul.2016.06.082

Dunlop, J. N. (2018). Fairy Tern (*Sternula nereis*) conservation in south-western Australia. Second Edition. Conservation Council (WA): Perth.

Dwyer, RG, S. Bearhop, HA. Campbell and DM Bryant. 2013. 'Shedding light on light: benefits of anthropogenic illumination to a nocturnally foraging shorebird', *Journal of Animal Ecology* 82: 478-485.

Environmental Protection Authority (EPA) (2001). Guidance for the assessment of environmental factors, guidance statement for protection of tropical arid zone mangroves along the Pilbara coastline, No. 1. Environmental Protection Authority, Perth.

Erbe, C., Marley, S.A., Schoeman, R.P., Smith, J.N., Trigg, L.E. and Embling, C.B. (2019). The Effects of Ship Noise on Marine Mammals—A Review. Available at https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2019.00606/full

Erb, V. and Wyneken, J. (2019). Nest-to-surf mortality of loggerhead sea turtle (Caretta caretta) hatchlings on Florida's east coast. *Frontiers in Marine Science* 6(271).

Federal Court of Australia (2022). *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193.* Available at https://www.judgments.fedcourt.gov.au/judgments/Judgments/fca/full/2022/2022fcafc0193.

Felder, D.L., Thoma, B.P., Schmidt, W.E., Sauvage, T., Self-Krayesky, S.L., Chistoserdov, A, Bracken-Grissom, H.D. and Fredericq, S. (2014). Seaweeds and Decapod Crustaceans on Gulf Deep Banks after the Macondo Oil Spill. *BioScience* 64: 808–819.

Fernandez-Torquemada, Y., Sanchez-Lizaso, J.L. and Gonzalez-Correa, J.M. (2005). Preliminary results of the monitoring of the brine discharge produced by the SWO desalination plant of Alicante (SE Spain) *Desalination* 182: 395-402.

Finneran, J.J., Henderson, E.E., Houser, D.S., Jenkins, K., Kotecki, S. and Mulsow, J. (2017). Criteria and Thresholds for U.S. Navy.

Fodrie, F.J. and Heck, K.L. (2011). Response of coastal fishes to the Gulf of Mexico oil disaster. PloS ONE 6: e21609.

Fossette, S., Ferreira, L.C., Whiting, S.D., Pendoley, J.K.K., Shimada, T., Speirs, M., Tucker, A.D., Wilson, P. and Thums, M. (2021). Movements and distribution of hawksbill turtles in the Eastern Indian Ocean. *Global Ecology and Conservation*, 29. e01713.

French-McCay, D.P. (2004). Oil Spill Impact Modelling: Development and Validation. *Environmental Toxicology and Chemistry* 23(10): 2441-2456.

French-McCay, D. (2009). State-of-the-Art and Research Needs for Oil Spill Impact Assessment Modelling. Proceedings of the 32nd AMOP Technical Seminar on Environmental Contamination and Response.

French-McCay, D. (2025). Considerations for development of entrained oil thresholds for oil spill risk assessment: Technical Note, April 2025.

Friligos, N. (1985). Turnover time of waters in a deep basin in the Aegean Sea. *Estuarine, Coastal and Shelf Science* 21: 879-894.

Fugro. (2020). Survey results report: Otway Pipeline/Umbilical Route Survey (Report No. VOB-SV-REP-4900-0002).

Gagnon, M.M. and Rawson, C.A. 2010. Montara Well Release: Report on necropsies from a Timor Sea green sea turtle. Perth, Western Australia, Curtin University, vol. 15.

Gagnon, M.M. and Rawson, C. (2011). Montara Well Release, Monitoring Study S4A – Assessment of Effects on Timor Sea Fish. Curtin University, Perth, Australia.

Geiling, N. (2014). Arctic Shipping: Good for Invasive Marine Species, Bad for the Rest of Nature. Smithsonian. Available at https://www.smithsonianmag.com/science-nature/global-warmings-unexpected-consequence-invasive-species-180951573/

Geraci, J.R. and St. Aubin, D.J. (1988). Synthesis of Effects of Oil on Marine Mammals, Report to US Department of the Interior, Minerals Management Service, Atlantic OCS Region, OCS Study Ventura, California.

Gleiss, A., Wright, S., Liebsch, N. and Wilson, R. (2013). Contrasting diel patterns in vertical movement and locomotor activity of Whale sharks at Ningaloo Reef. *Marine Biology* 160: 2981-2992.

Gophen, M. (2015). Ecological devastation in Lake Victoria: Part B: Plankton and fish communities. *Open Journal of Ecology* 5(07): 315.

Greenwell, C. (2021). Life history, ecology, and population dynamics of the Australian Fairy Tern and implications for their conservation. Research thesis, Murdoch University, Perth, Western Australia.

Groom, R.A., Lawler, I.R. and Marsh, H. (2004) The risk to dugongs of vessel strike in the Southern Bay Islands area of Moreton Bay. Report to Queensland Parks and Wildlife Service.

Harris, P., A Heap, V. Passlow, L. Sbaffi, M. Fellows, R. Porter-Smith, C. Buchanan, and J. Daniell (2005). Geomorphic Features of the Continental Margin of Australia. Record 2003/30. Canberra, Australian Capital Territory: Geoscience Australia. Available at https://www.dcceew.gov.au/sites/default/files/documents/nmb-geomorphic-report.pdf

Hensel, P.F., Proffitt, E.C., Delgado, M., Shigenaka, G., Yender, R., Hoff, R. and Michel, J., 2014. Oil spills in mangroves. Planning & response considerations. In: Hoff, R., Michel, J. (Eds.), US Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Office of Response and Restoration, Seattle, Washington.

Hester MW and Mendelssohn IA (2000) 'Long-term recovery of a Louisiana brackish marsh plant community from oil spill impact: Vegetation response and mitigating effects of marsh surface elevation', *Marine Environmental Research* 49: 233–254.

Hjermann, D.Ø., Melsom, A., Dingsør, G.E., Durant, J.M., Eikeset, A.M., Røed, L.P., Ottersen, G., Storvik, G. and Stenseth, N.C. (2007). Fish and oil in the Lofoten–Barents Sea system: synoptic review of the effect of oil spills on fish populations. *Marine Ecology Progress Series* 339: 283–299

Higgins, P.J. and S.J.J.F. Davies (eds). (1996). Handbook of Australian, New Zealand and Antarctic Birds. Volume 3: Snipe to Pigeons. Oxford University Press, Melbourne.

Hinwood, J.B., Potts, A.E., Dennis, L.R., Carey J.M., Houridis, H., Bell, R.J., Thomson, J.R., Boudreau, P. and Ayling, A.M. (1994). Environmental Implications of Shore Oil and Gas Development in Australia – Drilling Activities. The Findings of an independent Scientific Review on Behalf of the APPEA and Energy Research and Development Corporation.

Hook, S., Batley, G., Holoway, M., Irving P. and Ross, A. (2016). Oil Spill Monitoring Handbook. CSIRO Publishing.

Huisman, J. M. (2000). Marine plants of Australia. University of Western Australia Press in association with Australian Biological Resources Study.

Huisman, J. M. (2004). Marine benthic flora of the Dampier Archipelago, Western Australia. *Records of the Western Australian Museum,* Supplement 66: 61–68.

Huisman, J.M. and Borowitzka, M.A. (2003). Marine benthic flora of the Dampier Archipelago, Western Australia. In F.E. Wells, D.I. Walker and D.S. Jones (eds.) The Marine Flora and Fauna of Dampier, Western Australia. Western Australian Museum, Perth.

International Association for Public Participation Australasia Limited (IAP2 Australasia) (2023). Quality Assurance Standard for Community and Stakeholder Engagement. Available at https://iap2.org.au/resources/quality-assurance-standard/

International Finance Corporation (IFC) (2015). Environmental Health and Safety Guidelines for Offshore Oil and Gas Development. World Bank Group, IFC, Washington, D.C. Available at https://documents.worldbank.org/en/publication/documents-reports/documentdetail/378221479466912449/environmental-health-and-safety-guidelines-for-offshore-oil-and-gas-development.

International Maritime Organisation (IMO) (2001). with International Convention on the Control of Harmful Anti-Fouling Systems on Ships.

International Maritime Organisation (IMO) (2004). International Convention for the Control and Management of Ships' Ballast Water and Sediments.

International Association of Oil and Gas Producers (IOGP) (2016). Environmental fates and effects of ocean discharge of drill cuttings and associated drilling fluids from offshore oil and gas operations (Report No. 543). International Association of Oil and Gas Producers, London.

International Union for Conservation (IUCN) (2011). Ningaloo Coast, World Heritage Convention. UNESCO. Available at https://whc.unesco.org/en/list/1369/

International Tanker Owners Pollution Federation (ITOPF) (2014a). Effects of oil pollution on the marine environment (Technical Information Paper No. 13). International Tanker Owners Pollution Federation Limited, London.

International Tanker Owners Pollution Federation (ITOPF) (2014b). 'Technical Information Paper 2 - Fate of Marine Oil Spills', International Tankers Owners Pollution Federation td, UK.

IPIECA (1993). Biological Impacts of Oil Pollution: Mangroves. IPIECA. London.

IPIECA (1995). Biological Impacts of Oil Pollution: Rocky Shores. IPIECA. London.

IPIECA (2002). Guidelines on Biological Impacts of Oil Pollution. International Petroleum Industry Environmental Conservation Association. London.

Jadestone Energy. (2025). Stag Field Enviornment Plan Permit WA-15-L. Available from https://docs.nopsema.gov.au/A1180740

Jaquemet, S., Le Corre, M., Marsac, F., Potier, M. and Weimerskirch, H. (2005). Foraging habitats of the seabird community of Europa Island (Mozambique Channel). *Marine Biology* 147(3): 573–582.

Jenkins, G., & McKinnon, L. (2006). Port Phillip Bay Channel Deepening Project: Supplemental Environmental Effects Statement – Aquaculture and fisheries. Victorian Government.

Jenner, K. C. S., Jenner, M.-N., & McCabe, K. A. (2001). Geographical and temporal movements of humpback whales in Western Australian waters. *APPEA Journal* 38(1) 692–707.

Jenner KCS and Jenner MN (2005) Distribution and abundance of humpback whales and other mega-fauna in Exmouth Gulf, Western Australia, during 2004/2005. Final report prepared for Straits Salt (Fremantle WA).

Jimenez-Arranz, G., Glanfield, R., Banda, N. and Wyatt, R. (2017). Review on Existing Data on Underwater Sounds Produced by the Oil and Gas Industry. Submitted to E&P Sound & Marine Life.

Johnstone, R.E., Burbidge, Allan and Darnell, John. (2013). Birds of the Pilbara region, including seas and offshore islands, Western Australia: distribution, status and historical changes. *Records of the Western Australian Museum*, Supplement 78(2): 343-441.

Kamrowski, R.L., Limpus, C.J., Pendoley, K. and Hamann, M. (2014). Influence of industrial light pollution on the sea-finding behaviour of flatback turtle hatchlings. *Wildlife Research* 41: 421–434.

Kariyarra Aboriginal Corporation (KAC). 2024. Country and Region. Kariyarra Aboriginal Corporation PBC. Accessed January 2025. Available at: https://kariyarra.com.au/country-and-region/

Keesing, J.K. (Ed.) (2019). Benthic habitats and biodiversity of the Dampier and Montebello Australian Marine Parks. Report for the Director of National Parks. CSIRO, Australia.

Kemper, C.M., J. Mole, R.M. Warneke, J.K. Ling, D.J. Needham & J.E. Wapstra (1994). Southern Right Whales in south-eastern Australia during 1991-1993. BHP Petroleum Ltd, Melbourne.

Kennish, M.J. (1998). Pollution Impacts on Marine Biotic Communities. Boca Raton, Fla.: CRC Press.

Kinhill (1997). East Spar First Post-commissioning Survey Report. A report to Apache Energy by Kinhill Pty Ltd. October 1997. Report EA-00-RI-9981/B.

Kirkman, H. (1997). Seagrasses of Australia. Canberra: Environment Australia.

Koessler, M.W. and C.R. McPherson (2020). Dorado OPP Acoustic Modelling: Assessing Marine Fauna Sound Exposures. Document 02076, Version 1.1. Technical report by JASCO Applied Sciences for CDM Smith Australia.

Laist, D.W., Knowlton, A.R., Mead, J.G., Collet, A.S. and Podesta, M. (2001). Collisions between ships and whales. *Marine Mammal Science* 17(1): 35-75.

Lewis, M. and Pryor, R. (2013). Toxicities of oils, dispersants and dispersed oils to algae and aquatic plants: Review and database value to resource sustainability. *Env Poll* 180: 345–367.

Limpus, C.J., Miller, J.D., Parmenter, C.J. and Limpus, D.J. (2003). The green turtle, Chelonia mydas, population of Raine Island and the Northern Great Barrier Reef. Memoirs of the Queensland Museum 49: 349–440.

Limpus, C.J. (2007). A biological review of Australian marine turtle species. 5. Flatback turtle, Natator depressus (Garman). The State of Queensland. Environmental Protection Agency, Brisbane, Queensland.

Limpus, C.J. (2008a). A biological review of Australian marine turtle species. 2. Green turtle, *Chelonia mydas* (Linneaus). The State of Queensland. Environmental Protection Agency, Brisbane, Queensland.

Limpus, C.J. (2008b). A biological review of Australian marine turtle species. 1. Loggerhead turtle, *Caretta caretta* (Linneaus). The State of Queensland. Environmental Protection Agency, Brisbane, Queensland.

Limpus, C.J. (2009). A biological review of Australian marine turtle species.3. Hawksbill turtle, Eretmochelys imbricata (Linneaus). The State of Queensland. Environmental Protection Agency, Brisbane, Queensland.

Long, E.R., MacDonald, D.D., Smith, S.L. and Calder, F.D. (1995). Incidence of adverse biological effects within ranges of chemical concentrations in marine and estuarine sediments. *Environmental Management* 19: 81-97.

Longcore, T, C. Rich, P. Mineau, B. MacDonald, DG. Bert, LM. Sullivan, E. Mutrie, SA. Gauthreaux, ML. Avery, RL. Crawford, AM. Manville, ER. Travis and D. Drake. 2013. ‘Avian mortality at

communication towers in the United States and Canada: which species, how many, and where?' *Biological Conservation* 158: 410-419.

Lutcavage, M.E., Lutz, P.L., Bossart, G.D. and Hudson, D.M. (1995). Physiologic and clinicopathological effects of crude oil on loggerhead sea turtles. *Archives of Environmental Contamination and Toxicology* (28): 417–422.

Marangoni, L. F. B., Davies, T., Smyth, T., Rodríguez, A., Hamann, M., Duarte, C., Pendoley, K., Berge, J., Maggi, E., & Levy, O. (2022). Impacts of artificial light at night in marine ecosystems—A review. *Global Change Biology*, 28, 5346–5367.

Marchant, S., Higgins, P.J. (1990). Handbook of Australia, New Zealand and Antarctic birds, vol. 1, Ratites to ducks, Oxford University Press, Melbourne.

Marine Acoustics (2011). Underwater Acoustic Measurement of the Spartan 151 Jack-up Drilling Rig in the Cook Inlet Beluga Whale Critical Habitat. Marine Acoustics, Inc. Prepared for Furie Operating Alaska, LLC. Available from https://www.fisheries.noaa.gov/s3//dam-migration/acousticmeasurejackuprig1211-akr.pdf

Marine Pest Sectoral Committee (MPSC) (2018). National biofouling management guidelines for the petroleum production and exploration industry, Department of Agriculture and Water Resources, Canberra, December. CC BY 4.0.

McCauley, R.D. (1998). Radiated underwater noise measured from the drilling rig Ocean General, rig tenders Pacific Ariki and Pacific Frontier, fishing vessel Reef Venture and natural sources in the Timor Sea, Northern Australia. Report to Shell Australia.

McCauley, R. D., Gavrilov, A. N., Jolliffe, C. D., Ward, R., & Gill, P. C. (2018). Pygmy blue and Antarctic blue whale presence, distribution and population parameters in southern Australia based on passive acoustics. *Deep Sea Research Part II: Topical Studies in Oceanography* 157–158: 154–168.

McClatchie, S, Middleton, J., Pattiaratchi, C., Currie, D. and Kendrick, G. (2006). The South-west Marine Region: Ecosystems and Key Species Groups. Report to the Department of Environment and Water Resources, 143 pp.

McConnell A, Janke T, Cumpston Z & Cresswell I (2021). Australia state of the environment 2021: heritage, independent report to the Australian Government Minister for the Environment, Commonwealth of Australia, Canberra.

McLaren, JD, JJ. Butler, T. Schreckengost, JA. Smolinsky, M. Boone, E. van Loon, DK. Dawson and EL. Walters. 2018. 'Artificial light at night confounds broad-scale habitat use by migrating birds'. *Ecology Letters* 21(3): 356-364.

McLean, D.L., Partridge, J.C., Bond, T., Birt, M.J., Bornt, K.R. and Langlois, T.J. (2017). Using industry ROV videos to assess fish associations with subsea pipelines. *Continental Shelf Research* 141: 76–97.

McLeay, L. J., Sorokin, S. J., Rogers, P. J. and Ward, T. M. (2003). Benthic Protection Zone of the Great Australian Bight Marine Park: 1. Literature Review. South Australia Research and Development Institute.

McLeay, L., Page, B., Goldsworthy, S., Paton, D., Teixeira, C., Burch, P. and Ward, T. (2010). Foraging behaviour and habitat use of a short-ranging seabird, the crested tern. *Marine Ecology Progress Series* 411.

McMahon, K., Statton, J. and Lavery, P. (2017). Seagrasses of the north west of Western Australia: Biogeography and considerations for dredging-related research: Report of Theme 5-Project 5.1. 2 prepared for the Dredging Science Node.

Meekan, M.G., Wilson, S.G., Halford, A. and Retzel, A. (2001). A comparison of catches of fishes and invertebrates by two light trap designs, in tropical NW Australia. *Marine Biology* 139: 373–381.

Meike, S., Castro, C., Gonzalez, J. and Williams, R. (2004). Behavioural responses of humpback whales (Megaptera novaeangliae) to whale watching boats near Isla de la Plata, Machalilla National Park, Ecuador. *Journal of Cetacean Research and Management* 6(1): 63-68.

Merkel, F.R. and Johansen, K.L. (2011). Light-induced bird strikes on vessels in southwest Greenland. *Marine Pollution Bulletin* 62: 2330–2336.

Milton SL and Lutz P (2003) 'Physiological and Genetic response to Environmental Stress', The Biology of Sea Turtles Volume II, CRC Press, Boca Raton, pp163.

Morse, K. (1993). West Side Story: Towards a Prehistory of the Cape Range Peninsula, Western Australia. Available from https://api.research-repository.uwa.edu.au/ws/portalfiles/portal/40446776/Morse_Kate_1993_compressed.pdf

Mrosovsky, N., and Shettleworth, S.J., 1968. Wavelength preferences and brightness cues in the water finding behaviour of sea turtles. Behaviour 32:211–257.

Mustoe, S. and Edmunds, M. (2008). Coastal and marine natural values of the Kimberley, WWF-Australia.

Nagelkerken, I., Blaber, S.J.M., Bouillon, S., Green, P., Haywood, M., Kirton, L.G., Meynecke, J-O., Pawlik, J., Penrose, H.M., Sasekumar, A., and Somerfield, P.J. (2008). The habitat function of mangroves for terrestrial and marine fauna: A review. *Aquatic Botany* 89: 155-185.

National Academies Press (US) (2003). Oil in the Sea III: Inputs, Fates, and Effects. National Research Council (US) Committee on Oil in the Sea: Inputs, Fates, and Effects. Washington. Available at https://www.nap.edu/catalog/10388/oil-in-the-sea-iii-inputs-fates-and-effects

Neff, J., McKelvie, S. and Ayers Jr., R. (2000). Environmental impacts of synthetic based drilling fluids (OCS Study No. MMS 2000-064). United States Department of the Interior, New Orleans.

Neff, J.M. (2005). Composition, environmental fates, and biological effects of water based drilling muds and cuttings discharged to the marine environment: a synthesis and annotated biography. Prepared for the Petroleum Environment Research Forum (PERF) and the American Petroleum Institute. American Petroleum Institute, Washington, DC, 73 pp.

Neff, J.M. (2010). Fate and effects of water based drilling muds and cuttings in cold water environments. Houston (TX): Report to Shell Exploration and Production Company.

Negri, A., Brinkman, D. and Jones, R. (2025). Review of entrained oil thresholds: Report prepared for Santos Australian Institute of Marine Science (AIMS).

National Energy Resources Australia (NERA) (2017). Environment Plan Reference Case, Planned discharge of sewage, putrescible waste and grey water. National Energy Resources Australia (NERA), Kensington, WA. Accessed August 2023.

National Energy Resources Australia (NERA) (2018). Environment Plan Reference Case: Anchoring of Vessels and Floating Facilities. National Energy Resources Australia. Department of Industry, Innovation and Science.

National Marine Fisheries Service. (2024). Summary of Marine Mammal Protection Act acoustic thresholds. U.S. Department of Commerce, NOAA, Office of Protected Resources.

Newell, R.C., Seiderer, L.J. and Hitchcock, D.R. (1998). The impact of dredging works in coastal waters: a review of the sensitivity to disturbance and subsequent recovery of biological resources on the sea bed. *Oceanography and Marine Biology: An Annual Review* 36(1), 127-178.

Newman, S.J., Wise, B.S., Santoro, K.G. and Gaughan, D.J. (eds). (2023a). Status Reports of the Fisheries and Aquatic Resources of Western Australia 2021/22: The State of the Fisheries. Department of Primary Industries and Regional Development, Western Australia.

Newman, S.J., Santoro, K.G. and Gaughan, D.J. (eds). (2023b). Status Reports of the Fisheries and Aquatic Resources of Western Australia 2022/23: The State of the Fisheries. Department of Primary Industries and Regional Development, Western Australia.

Nicholson, L.W. (2002). Breeding strategies and community structure in an assemblage of tropical seabirds on the Lowendal Islands, Western Australia [PhD thesis]. Perth, Australia: Murdoch University. 327 p.

National Marine Fisheries Service (NMFS). 2024. Update to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0): Underwater and InAir Criteria for Onset of Auditory Injury and Temporary Threshold Shifts. U.S. Dept. of Commer., NOAA. NOAA Technical Memorandum NMFS-OPR-71, 182 p.

National Native Title Tribunal (NNTT) (2010). Native title: an overview. Commonwealth of Australia. Available at http://www.nntt.gov.au/Information%20Publications/Native%20Title%20an%20overview.pdf

National Native Title Tribunal (NNTT) (2024). Representative Aboriginal/Torres Strait Islander Body Areas. Available at https://www.nntt.gov.au/Maps/RATSIB_map.pdf

National Oceanic and Atmospheric Administration (NOAA) (2002). Environmental Sensitivity Index Guidelines: Version 3 March 2002, National Oceanic and Atmospheric Administration, Washington.

National Oceanic and Atmospheric Administration (NOAA) (2010). Oil and sea turtles: biology planning and response. US Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Office of Response and Restoration.

NOAA. 2014. Oil Spills in Mangroves – Planning and Response Considerations. US Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Office of Response and Restoration. https://response.restoration.noaa.gov/sites/default/files/Oil_Spill_Mangrove.pdf

NOAA. 2021. Oil and Sea Turtles: biology planning and response. US Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Office of Response and Restoration.

National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) (2019). Environment bulletin: Oil spill modelling. April 2019. Available at: https://www.nopsema.gov.au/sites/default/files/documents/2021-04/A652993.pdf.

National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) (2022). Guidance Note: ALARP. N -04300-GN0166 A138249. Available at https://www.nopsema.gov.au/sites/default/files/documents/N-04300-GN0166%20-%20ALARP%20%28A138249%29.pdf

National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) (2023). Guideline: Consultation in the course of preparing an environment plan. N-04750-GL1705 A515816. Available at https://www.nopsema.gov.au/sites/default/files/documents/Consultation%20in%20the%20course%20of%20preparing%20an%20Environment%20Plan.pdf

National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) (2023a). Consultation on Offshore Environment Plans – Information for the Community. Available at https://www.nopsema.gov.au/sites/default/files/documents/Consultation%20on%20offshore%20petroleum%20environment%20plans%20brochure.pdf

National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) (2024). Guidance Note: Environment plan content requirement. N-04750-GN1344 A339814. Available at https://www.nopsema.gov.au/sites/default/files/documents/Environment%20Plan%20Content%20Requirements%20Guidance%20Note.pdf

National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) (2024a). Environment Plan Decision Making Guideline. Document number: N-04750-GL1721 A524696.

National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) (2024b). Guideline: When to submit a proposed revision of an EP. N-04750-GL1705 A515816. Available at https://www.nopsema.gov.au/sites/default/files/documents/When%20to%20submit%20a%20proposed%20revision%20of%20an%20Environment%20Plan%20guideline%2028%20Feb%202024.pdf

National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) (2025). Information Paper: Application of oil spill modelling in Environment Plans. N-04750-IP2376 A1289237. Available at https://www.nopsema.gov.au/sites/default/files/documents/N-04750-IP2376%20-%20Application%20of%20oil%20spill%20modelling%20in%20Environment%20Plans%20%28A1289237%29.pdf

National Research Council (US)(NRC). Committee on Spills of Emulsified Fuels: Risks and Responses. Spills of Emulsified Fuels: Risks and Response. Washington (DC): National Academies Press (US); 2001. 3, Ecological Effects: Summary and Evaluation of Available Information. Available at https://www.ncbi.nlm.nih.gov/books/NBK223937

NRDA (2012). April 2012 Status Update for the Deepwater Horizon Oil Spill. A WWW publication accessed at: http://www.gulfspillrestoration.noaa.gov. Natural Resource Damage Assessment.

Nunn, P. D., & Reid, N. J. (2016). Aboriginal Memories of Inundation of the Australian Coast Dating from More than 7000 Years Ago. *Australian Geographer* 47(1): 11–47.

O'Brien, P.Y. and Dixon, P.S. (1976). The effects of oils and oil components on algae: A review. *British Phycological Journal* 11(2): 115-142.

Oliver, G.A. (1990). Interim Guidelines for Operations – Serrurier Island.

O'Leary, M. J., Paumard, V., & Ward, I. (2020). Exploring Sea Country through high-resolution 3D seismic imaging of Australia's NW shelf: Resolving early coastal landscapes and preservation of underwater cultural heritage. *Quaternary science reviews*, 239, 106353.

OSPAR. (2021). OSPAR List of Substances Used and Discharged Offshore which Are Considered to Pose Little or No Risk to the Environment (PLONOR) – Updated 2021. OSPAR Commission.

Orth, R.J., Harwell, M.C. and Inglis, G.J. (2006). Ecology of seagrass seeds and dispersal strategies. In A.W.D. Larkum, R.J. Orth and C.M. Duarte (eds.) Seagrasses: Biology, Ecology and Conservation. Springer, Dordrecht.

Parliament of Australia (2023). Replacement Explanatory Statement, Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulation 2023, 06 November 2023. Available at https://www.aph.gov.au/Parliamentary_Business/Tabled_Documents/4118

Pangerc T, Robinson S, Theobald P and Galley L. 2016. Underwater sound measurement data during diamond wire cutting: First description of radiated noise. *Proc. Mtgs. Acoust*. 27: 040012 (2016).

Paton, D.C. and Rogers, D.J. (2009). Ecology of breeding Fairy Terns Sternula nereis in the Coorong. Final report for the Wildlife Conservation Fund. Adelaide University, Adelaide.

Paulay, G.K., Lambert, G. and Meyer, C. (2002). Anthropogenic biotic interchange in a coral reef ecosystem: A case study from Guam. *Pacific Science* 56 (4): 403–422.

Pearce, A., S. Buchan, T. Chiffings, N. D'Adamo, C. Fandry, P. Fearns, D. Mills, R. Phillips and C. Simpson (2003). A review of the oceanography of the Dampier Archipelago, Western Australia. In: Wells, F.E., D.I. Walker and D.S Jones (Eds.). The marine flora and fauna of Dampier, Western Australia. Western Australian Museum, Perth, 13-50 pp.

Peel, D., Smith, J.N. and Childerhouse, S. (2016). Historical data on Australian whale vessel strikes. Presented to the IWC Scientific Committee. SC/66b/HIM/05.

Pendoley, K.L. (2005). Sea Turtles and the Environmental Management of Industrial Activities in North West Western Australia, PhD Thesis, Murdoch University, Australia. 310 pp.

Pendoley, Kellie (2007): Sea Turtles and the Environmental Management of Industrial Activities in North West W.A. - Satellite telemetry. .dataset. https://catalogue.aodn.org.au:443/geonetwork/srv/api/records/b8ecce00-495f-11dc-a73f-00188b4c0af8

Pendoley, K.L., Schofield, G., Whittock, P.A., Ierodiaconou, D. and Hays, G.C. (2014). Protected species use of a coastal marine migratory corridor connecting marine protected areas. *Marine Biology* 1-12.

Pendoley, K.L., Whittock, P.A., Vitenbergs, A., Bell, C. (2016). Twenty years of turtle tracks: marine turtle nesting activity at remote locations in the Pilbara, Western Australia. *Australian Journal of Zoology* 64: 217-226.

Pendoley, K. and Kamrowski, R.L. (2015). Sea-finding in marine turtle hatchlings: what is an appropriate exclusion zone to limit disruptive impacts of industrial light at night? *Journal for Nature Conservation* 30: 1–11.

Pendoley Environmental (2009). Marine Turtle Beach Survey: Forty Mile Beach Area, North East and South West Regnard Island. Report to Apache Energy Ltd.

Pendoley Environmental (2011). Varanus Island Marine Turtle Tagging Programme 2009 - 2010. Report to Apache Energy Ltd.

Pendoley Environmental. (2019). Varanus Island Turtle Monitoring Report: Annual Report 2018/19. Unpublished report for Santos Ltd.

Pirzl, R. (2008). Spatial ecology of E. australis: habitat selection at multiple scales. Ph.D. Thesis. School of Life and Environmental Sciences, Deakin University.

Planning Inspectorate (2019). Nationally Significant Infrastructure Projects – Advice Note Seventeen: Cumulative effects assessment relative to nationally significant infrastructure projects.

Popper, A.N., Hawkins, A.D., Fay, R.R., Mann, D., Bartol, S., Carlson, Th., Coombs, S., Ellison, W.T., Gentry, R., Halvorsen, M.B., Lokkeborg, S., Rogers, P., Southall, B.L., Zeddies, D.G. and Tavolga, W.N. (2014). Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI-Accredited Standards Committee S3/ SC1 and registered with ANSI. Acoustical Society of America and Springer.

Price, J.T., Drye, B., Domangue, R.J. and Paladino, F.V. (2018). Exploring the role of artificial light in loggerhead turtle (Caretta caretta) nest-site selection and hatchling disorientation. *Herpetological Conservation and Biology* 13(2): 415–422.

Prince, R.I.T. (1994). Status of the Western Australian Marine Turtle Populations: The Western Australian Marine Turtle Project 1986–1990. Report prepared for the Queensland Department of Environment and Heritage and Australian Nature Conservation Agency.

Raine, H., Borg, J.J., Raine, A., Bariner, S. and Cardona, M.B. (2007). Light pollution and its effect on yelkouan shearwaters in Malta: causes and solutions, BirdLife Malta, Malta: Life Project Yelkouan Shearwater, 1–54 pp.

Rainer, S.F. (1991). High species diversity in demersal polychaetes of the North West Shelf of Australia. *Ophelia Suppl*. 5: 497-505.

Rawson, C., Gagnon, M.M. and Williams, H. (2011). Montara Well Release Olfactory Analysis of Timor Sea Fish Fillets. Curtin University, Perth, Western Australia, November 2011.

Raventos, N., Macpherson, E., and Garcia-Rubies, A. (2006). Effect of brine discharge from a desalination plant on microbenthic communities in the NW Mediterranean. *Marine Environmental Research* 62: 1-14.

Richardson, W.J., Greene, C.R., Maime, C.I. and Thomson, D.H. (1995). Marine Mammals and Noise Academic Press, San Diego, California.

Rodríguez, A., García, D., Rodríguez, B., Cardona, E., Parpal, L. and Pons, P. (2015). Artificial lights and seabirds: is light pollution a threat for the threatened Balearic petrels? *Journal of Ornithology* 156: 893–902.

Rodríguez A, Holmes ND, Ryan PG, Wilson KJ, Faulquier L, Murillo Y, Raine AF, Penniman JF, Neves V, Rodríguez B, Negro JJ, Chiaradia A, Dann P, Anderson T, Metzger B, Shirai M, Deppe L, Wheeler J, Hodum P, Gouveia C, Carmo V, Carreira GP, Delgado-Alburqueque L, Guerra-Correa C, Couzi FX, Travers M, Corre ML. (2017). Seabird mortality induced by land-based artificial lights. *Conserv Biol.* 31(5):986-1001.

Rogers, DI, T. Piersma and CJ. Hassell. 2006. 'Roost availability may constrain shorebird distribution: exploring the energetic costs of roosting and disturbance around a tropical bay', *Biological Conservation*, vol. 133(2), pp. 225-235.

Ronconi, RA, KA. Allard and PD Taylor. 2015. 'Bird interactions with offshore oil and gas platforms: review of impacts and monitoring techniques', *Journal of Environmental Management*, vol. 147, pp. 34-45.

Rosser, N.L., and Gilmour, J.P. (2008). New insights into patterns of coral spawning on Western Australian reefs. *Coral Reefs* 27: 345-349.

Rowe, C.L., Mitchelmore, C.L. and Baker, J.E. (2009). Lack of Biological Effects of Water Accommodated Fractions of Chemically and Physically Dispersed Oil on Molecular, Physiological, and Behavioural Traits of Juvenile Snapping Turtles Following Embryonic Exposure. *Science of The Total Environment* 407(20): 5344–5355.

RPS (2012). OSCP Environmental Sensitivities Summary. Wandoo B Production Facility. Unpublished report prepared for Vermilion Oil & Gas Australia.

RPS (2024). Vermilion Kullingal Oil Spill Modelling. Unpublished report prepared for Vermilion Oil & Gas Australia.

Runcie, J., Macinnis-Ng, C., Ralph, P. (2010). The toxic effects of petrochemicals on seagrassess - literature review. Institute for Water and Environmental Resource Management, University of Technology Sydney, Sydney.

Santos Ltd (2020). Reindeer Wellhead Platform and Offshore Gas Supply Pipeline Operations Environment Plan WA-41-L and WA-18-PL. Available from https://docs.nopsema.gov.au/A738138.

Santos Ltd (2021). Commonwealth Exploration Vessel Based Activity Environment Plan. Available from https://docs.nopsema.gov.au/A769320

Santos Ltd (2025). Reindeer Wellhead Platform and Offshore Gas Supply Pipeline - Operations and Cessation of Production Environment Plan WA-41-L and WA-18-PL. Available from https://docs.nopsema.gov.au/A1203265

Sanzone, D., Neff, J., Lewis, D., Vinhateiro, N., and Blake, J. 2016. Environmental Fates and Effects of Ocean Discharge of Drill Cuttings and Associated Drilling Fluids From Offshore Oil and Gas Operations. International Association of Oil and Gas Producers, Report 543.

Saunders, D.A. and De Rebeira, P. (1985). The Birdlife of Rottnest Island. The Authors. Perth. A.H. & A.W. Reed Ltd, Sydney.

Schaaning et al. (2002). Bioavailability of metals in weight materials for drilling muds. Report SNO 4597-2002. Norwegian institute of Water Research (NIVA), Oslo, Norway 36 p.

Shaw R.F., Lindquist D.C., Benfield M.C., Farooqi T. and Plunket J.T. (2002). Offshore Petroleum Platforms: Functional Significance for Larval Fish Across Longitudinal and Latitudinal Gradients. Prepared by the Coastal Fisheries Institute, Louisiana State University. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study MMS 2002-077. 107 pp.

Shell (2009). Prelude Floating LNG Project Draft Environmental Impact Statement.

Shigenaka, G. (2011). Effects of Oil in the Environment. *Oil Spill Science and Technology* 985-1024.

Short, M. (2011). Pacific Adventurer Oil Spill: Big Birds, Sea Snakes and a Couple of Turtles. International Oil Spill Conference Proceedings: March 2011.

Simmonds M., Dolman S., and Weilgart L. (eds) (2004). Oceans of noise. A whale and Dolphin Society Science Report, Chipperham, UK. 169 pp.

Simpson, C.J., Cary, J.L. and Masini, R.J. (1993). Destruction of corals and other reef animals by coral spawn slicks on Ningaloo Reef, Western Australia. *Coral Reefs* 12: 185–191.

Sinclair Knight Merz (SKM). (1996). East Spar Gas Field Long Term Environmental Monitoring Program. Pre-production survey. Report prepared by Sinclair Knight Merz for WMC Resources, Perth.

Sinclair Knight Merz (SKM) (1998). Mobil Wandoo Sampling. Prepared by SKM for Mobil Exploration and Producing Australia Pty Ltd.

Smyth (2007). Sea Countries of the North-west: Literature review on Indigenous connection to and uses of the North-west Marine Region. Prepared by Dr. Dermot Smyth for the National Oceans Office Branch, Marine Division, Australian Government Department of Environment and Water Resources.nSmyth, D. and Isherwood, M. (2016). Protecting sea country: Indigenous people and marine protected areas in Australia. Big, Bold and Blue: Lessons from Australia's marine protected areas. 307-325 pp.

Southall, B.L., Finneran, J.J., Reichmuth, C., Nachtigall, P.E., Ketten, D.R., Bowles, A.E., Ellison, W.T., Nowacek, D.P. and Tyack, P.L. (2019). Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects. *Aquatic Mammals* 45(2): 125-232.

South West Aboriginal Land and Sea Council (2025). Noongar Lore. Available at https://www.noongarculture.org.au/noongar-lore/.

Stoddart, J.A., and Gilmour, J. (2005). Patterns of reproduction of in-shore corals of the Dampier Harbour, Western Australia, and comparisons with other reefs. In J.A. Stoddart and S.E. Stoddart (eds.) Corals of the Dampier Harbour: Their Survival and Reproduction During the Dredging Programs of 2004. MScience Pty Ltd, Perth.

Stroot, D. H., Koessler, M. W. and McPherson, C.R. 2022. Acoustic Modelling for Assessing Marine Fauna Sound Exposures. Woodside NWS MODU Drilling Operations. Jasco Applied Sciences (Australia) Pty Ltd.

Summerson, R. (2024). ABARES Fishery Status Reports Map Data: User guide. Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, March.

Surman C.A. and Wooller R.D. (2003). Comparative feeding ecology of five sympatric terns at a sub-tropical island in the eastern Indian Ocean. *J Zool* 259: 219–230.

Surman, C. A. and Nicholson, L. W. (2009). A survey of the breeding seabirds and migratory shorebirds of the Houtman Abrolhos, Western Australia. *Corella* 33(4): 89-98.

Surman, C. A. and Nicholson, L. W. (2015). Exmouth Sub-basin Marine Avifauna Monitoring Program: Final Report. Unpublished report prepared for Apache Energy Ltd. by Halfmoon Biosciences. 188 pp.

Surman, C.A., Nicholson, L.W. and Philipps, R.A. (2018). Distribution and patterns of migration of a tropical seabird community in the Eastern Indian Ocean. *Journal of Ornithology* 158: 867-877.

Sypośz, M., Goncalves, F., Carty, M., Hoppitt, W., & Manco, F. (2018). Factors influencing Manx shearwater grounding on the west coast of Scotland. *Ibis* 160: 846–854.

Tatz, C. (1999). Genocide in Australia. An AIATSIS Research Discussion Paper. Australian Institute of Aboriginal and Torres Strait Islander Studies. Available from https://aiatsis.gov.au/sites/default/files/research_pub/tatzc-dp08-genocide-in-australia_3.pdf

Teague, W.J., M.J. Carron, and P.J. Hogan. (1990). A comparison between the Generalized Digital Environmental Model and Levitus climatologies. Journal of Geophysical Research 95(C5): 7167- 7183.

Threatened Species Scientific Committee (TSSC) (2011). Approved Conservation Advice for *Sternula nereis nereis* (Fairy Tern). Department of the Environment, Canberra.

Threatened Species Scientific Committee (TSSC) (2014). Commonwealth Listing Advice on *Ardenna carneipes* (flesh-footed shearwater). Department of the Environment, Canberra.

Threatened Species Scientific Committee (TSSC) (2015). Conservation Advice *Anous tenuirostris melanops* (Australian lesser noddy). Department of the Environment, Canberra.

Threatened Species Scientific Committee (TSSC) (2015a). Approved Conservation Advice for *Ptodroma mollis* (soft-plumaged petrel). Department of the Environment, Canberra.

Threatened Species Scientific Committee (TSSC) (2015b). Approved Conservation Advice for *Rhincodon typus* (whale shark). Department of the Environment, Canberra.

Threatened Species Scientific Committee (TSSC) (2015c). Approved Conservation Advice for *Balaenoptera borealis* (Sei Whale). Department of the Environment, Canberra.

Threatened Species Scientific Committee (TSSC) (2015d). Approved Conservation Advice for *Balaenoptera physalus* (Fin Whale). Department of the Environment, Canberra.

Threatened Species Scientific Committee (TSSC) (2015e). Approved Conservation Advice for *Megaptera novaeangliae* (Humpback Whale). Department of the Environment, Canberra.

Threatened Species Scientific Committee (TSSC) (2020a). Approved Conservation Advice for Abbott's booby - *Papasula abbotti*. Department of the Environment, Canberra.

Threatened Species Scientific Committee (2020b). Conservation Advice *Falco hypoleucos* Grey Falcon. Canberra: Department of Agriculture, Water and the Environment.

Threatened Species Scientific Committee (TSSC) (2022). Approved Listing Advice for *Megaptera novaeangliae* (Humpback Whale). Department of the Environment, Canberra.

Thums, M., Rossendell, J., Fisher, R., Guinea, M. (2020). Nesting ecology of flatback sea turtles *Natator depressus* from Delambre Island, Western Australia. *Marine and Freshwater Research* 71: 443-451.

Thursby, G.B. and Steele, R. L. (2004). Toxicity of arsenite and arsenate to the marine macroalga *Champia parvula* (rhodophyta). Environmental Toxicology and Chemistry 3(3): 391-397.

Todd, V. L. G., Williamson, L. D., Jiang, J., Cox, S. E., Todd, I. B., & Ruffert, M. (2020). Proximate underwater soundscape of a North Sea offshore petroleum exploration jack-up drilling rig in the Dogger Bank. *Journal of the Acoustical Society of America* 148(6): 3971–3979.

Truscott, Z., Booth, D.T. and Limpus, C.J. (2017). The effect of on-shore light pollution on sea-turtle hatchlings commencing their off-shore swim. *Wildlife Research* 3(5): 127–134.

Tzioumis, V. and Keable, S. (2007). Description of key species groups in the East Marine Region. Sydney: Australian Museum, nature culture discover.

United Nations Educational, Scientific and Cultural Organisation (UNESCO) (2025). The Operational Guidelines for the Implementation of the World Heritage Convention. UNESCO World Heritage Centre, Paris.

United Nations Educational, Scientific and Cultural Organisation (UNESCO) (2025). Murujuga Cultural Landscape, World Heritage Listing. Available from https://whc.unesco.org/en/list/1709/

Urban, E.K., Fry, C.H. and Keith, S. (1986). The Birds of Africa, Volume II. Academic Press, London.

Van Meter, R.J., Spotila, J.R. and Avery, H.W. (2006). Polycyclic aromatic hydrocarbons affect survival and development of common snapping turtle (*Chelydra serpentina*) embryos and hatchlings. *Environmental Pollution* 142: 466-475.

Van Overbeek and Blondeau (1954). Mode of Action of Phytotoxic Oils. *Weeds* 3(1): 55 – 65.

VOGA (2021). Wandoo facility Environment Plan. Number: WPA-7000-YH-0007. Revision 16. Vermilion Oil & Gas Australia (VOGA). 21 April 2021. Available from https://docs.nopsema.gov.au/A779255

Volkman, J.K., Miller, G.J., Revill, A.T. and Connell, D.W. (1994). Environmental implications of offshore oil and gas development in Australia – oil spills. In: Swan, J.M., Neff, J.M. and Young, P.C. (eds). Environmental implications of offshore oil and gas development in Australia: The findings of an independent scientific review. Australian Petroleum Exploration Association, Sydney.

Waayers, D. (2010). A Holistic Approach to Planning for Wildlife Tourism: A Case Study of Marine Turtle Tourism and Conservation in the Ningaloo Region, Western Australia. PhD Thesis, Murdoch University, Perth.

Wirrawandi Aboriginal Corporation (WAC). 2023. Strategic Plan 2023-2027. https://www.wirrawandi.org.au/Profiles/wac/Assets/ClientData/Documents/IT88_-_WAC_-_Strategic_Plan_2023-2027__Landscape___PROOF__v3.pdf

Ward, T.J. and Rainer, S.F. (1988). Decapod crustaceans of the North West Shelf, a tropical continental shelf of north-western Australia. *Australian Journal of Marine and Freshwater Research* 39: 751-765.

Wardrop, JA. 1987. The effects of oils and dispersants on mangroves: a review and bibliography. Centre for Environmental Studies, the University of Adelaide. Adelaide.

Warren, V. E., M.W. Koessler, A. M. Muellenmeister, D. H. Stroot and C.R. McPherson. 2023. Gorgon Gas Development: Backfill Fields: Acoustic and Animal Movement Modelling for Assessing Marine Fauna Sound Exposures. Jasco Applied Sciences for Chevron Australia Pty Ltd.

Wecker, H., Koessler, M. W., Connel, S. J. and McPherson, C.R. 2022. Acoustic Modelling for Assessing Marine Fauna Sound Exposures. Woodside Pluto Drilling Campaign. Jasco Applied Sciences (Australia) Pty Ltd.

Wells, F. E., McDonald, J. I., & Huisman, J. M. (2009). Introduced marine species in Western Australia (Fisheries Occasional Publication No. 57). Department of Fisheries, Western Australia.

Wenziker, K., McAlpine, K., Apte, S. and Masini, R. (2006). Background quality for coastal marine waters of the North West Shelf, Western Australia (No. 18). NWSJEMS Technical Report.

Western Australian Fishing Industry Council (WAFIC) (2023). Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector. Available at https://www.wafic.org.au/wp-content/uploads/2023/07/Oil-and-Gas-Consultation-Framework.pdf.

Whittock, P.A., Pendoley, K.L. and Hamann, M. (2016). Using habitat suitability models in an industrial setting: the case for internesting flatback turtles. *Ecosphere* 7(11): e01551.

Wilson, S.G., Polovina, J.J., Stewart, B.S. and Meekan, M.G. (2006). Movements of Whale sharks (Rhincodon typus) tagged at Ningaloo Reef, Western Australia. *Marine Biology* 148: 1157-1166.

Witherington, B. and Martin, R.E. (2003). Understanding, assessing, and resolving light-pollution problems on sea turtle nesting beaches, Florida Fish and Wildlife Conservation Commission FMRI Technical Report TR-2, Jensen Beach, Florida.

Woodside (2002). WA-271-P Field Development: Environmental Impact Statement. Woodside Energy Ltd., Perth.

Woodside (2006). Pluto LNG Project Public Environmental Review. Woodside Energy Limited, Perth, Western Australia.

Woodside (2014). Browse FLNG Development, Draft Environmental Impact Statement. EPBC 2013/7079. Woodside Energy Ltd, Perth WA.

Woodside (2024). North Rankin Complex Facility Operations Environment Plan. Revision 11. August 2024. Woodside Energy Ltd, Perth WA.

Woodside (2025a). Scarborough Offshore Facility and trunkline (Operations) Environment Plan. Revision 3. January 2025. Woodside Energy Ltd, Perth WA.

Woodside (2025b). Pluto Facility Operations Environment Plan. Revision 15. April 2025. Woodside Energy Ltd, Perth WA.

Worley (2025). Vermilion Oil and Gas Australia Wandoo Environmental Survey – Water and Sediment Quality Report. Document no. Rev 0: 411012-00817-EN-REP-01. Prepared for Vermilion Oil and Gas Australia.

Working with Indigenous Australians (2020). First Nations People: Practice Tips. Available at https://www.workingwithindigenousaustralians.info/content/Practice_Implications_8_Practice_Tips.html.

Yaghmour, F., Els, J., Maio, E., Whittington-Jones, B., Samara, F., El Sayed, Y., Ploeg, R., Alzaabi, A., Philip, S., Budd, J. and Mupandawana, M. (2022). Oil spill causes mass mortality of sea snakes in the Gulf of Oman. *Scient of The Total Environment* 835: 154072.

Ylitalo, G.M., Collier, T.K., Anulacion, B.F., Juaire, K., Boyer, R.H., da Silva, D.A.M., Keene, J.L. and Stacy, B.A. (2017). Determining oil and dispersant exposure in sea turtles from the northern Gulf of Mexico resulting from the Deepwater Horizon oil spill. *Endangered Species Research* 33: 9-24.

Young, J.W., Skewes, T.D., Lyne, V.D., Hook, S.E., Revill, A.T., Condie, S.A., Newman, S.J., Wakefield, C.B., and Molony, B.W. (2011). A Review of the Fisheries Potentially Affected by the Montara Oil Spill off Northwest Australia and Potential Toxicological Effects. Montara Well Release Scientific Monitoring Programme Study S4B. Report to PTTEP Australasia and SEWPAC. CSIRO.

Zieman, J.C, Orth, R.J., Phillips, R.C., Thayer, G.W. and Thorhaug, W. (1984). The effects of oil spills on seagrass ecosystems. In Restoration of Habitats Impacted by Oil Spills. Edited by Carins, J. and Builema, A. Butterworth Publ. Mass.

Appendices

Appendix A VOGA Health, Safety and Environment (HSE) Policy

HEALTH, SAFETY AND ENVIRONMENT (HSE) POLICY

Vermilion is committed to conducting its activities in a manner that safeguards the health and safety of employees, contractors, and the public. Our HSE Vision is to consistently apply our Core Values of Excellence, Trust, Respect and Responsibility to foster a workplace where HSE is fully integrated into our organizational decision-making, reflecting our commitment to safe and reliable operations as a fundamental way of working – it is our way of life.

Vermilion will maintain health, safety and environmental practices and procedures that comply with or exceed regulatory requirements and industry standards.

Our commitments to achieving strong HSE performance include:

- Maintaining an HSE Management System (HSE MS) with clear objectives and expectations to identify hazards, manage risks, and reduce the likelihood and consequences of Serious Injury and Fatality (SIF) events, while promoting the health of employees and contractors
- Applying Human and Organizational Performance (HOP) principles to understand system and human interactions and enhance learning from all events and near-misses
- Demonstrating visible, active commitment from leaders at all levels to achieve HSE performance targets
- Providing a safe and healthy workplace for all employees and contractors, reinforced through control assurance for higher risk activities
- Fostering an ownership culture in which all employees and contractors take responsibility for HSE, feel empowered to speak up, and actively promote safe behaviors and environmental protection
- Continuously evaluating and improving our HSE MS, standards, operating practices, and procedures to strengthen safety, health, and operational reliability
- Making a positive contribution to environmental protection and seeking improvements in the efficient use of natural resources
- Ensuring open and timely communication with all stakeholders, and
- Ensuring the resources necessary to support this policy are provided

Hazard awareness, risk management, and environmental stewardship are integral to every job. Achieving these objectives requires the active participation and continuous support of everyone at Vermilion. The protection of health, safety and the environment must be a key part of the planning execution of every task. All individuals engaged in work for Vermilion are expected to perform their duties with consideration to these principles, and act in alignment with this policy to support safe and reliable operations.

HSE: Everyone. Everywhere. Everyday.

Dion Hatcher **President**	**Darcy Kerwin** **Vice President, International & HSE**	**Ryan Carty** **Managing Director,** **Australia Business Unit**

VERMILION ENERGY

Appendix B Oil Spill Modelling Report [GOC367176]

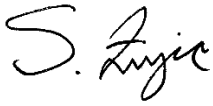
VERMILION KULLINGAL OIL SPILL MODELLING

Report

GOC367176
Final
20 December 2024

Document status					
Version	**Purpose of document**	**Authored by**	**Reviewed by**	**Approved by**	**Review date**
Rev A	Draft issued for internal review	Dr. Larissa Perez	Dr. Ryan Dunn Dr. Sasha Zigic	Dr. Sasha Zigic	16/09/2024
Rev 0	Draft issued for client review			Dr. Sasha Zigic	18/09/2024
Rev 1	Draft issued for client review	Dr. Larissa Perez Dr. Ryan Dunn	Dr. Larissa Perez Dr. Sasha Zigic	Dr. Sasha Zigic	09/10/2024
Rev 2	Draft issued for client review	Dr. Larissa Perez	Dr. Sasha Zigic	Dr. Sasha Zigic	5/11/2024
Final	Issued to client			Dr. Sasha Zigic	20/12/2025

Approval for issue

Dr. Sasha Zigic  20 December 2024

This report was prepared by RPS within the terms of RPS' engagement with its client and in direct response to a scope of services. This report is supplied for the sole and specific purpose for use by RPS' client. The report does not account for any changes relating the subject matter of the report, or any legislative or regulatory changes that have occurred since the report was produced and that may affect the report. RPS does not accept any responsibility or liability for loss whatsoever to any third party caused by, related to or arising out of any use or reliance on the report.

Prepared by:

RPS

Dr Sasha Zigic
General Manager

PO Box 1048,
Robina, QLD, 4230
Lakehouse Corporate Space, Suite 425
Level 2, 34-38 Glenferrie Drive
Robina, QLD, 4226

T +61 7 5553 6900
E Sasha.Zigic@rpsconsulting.com

Prepared for:

Vermilion Oil & Gas Australia

Meròme Johnson
Decommissioning Environmental Consultant

Level 5, 30 The Esplanade
Perth, WA, 6000

T +61 (08) 9215 0719
E merome.johnson@vermilionenergy.com

Contents

Terms and Abbreviations ..... **xv**

Executive Summary ..... **xvii**
Background xvii
Methodology xvii
Oil Properties xvii
Summary of Modelling Results xviii

1 INTRODUCTION **1**
1.1 Background 1
What is Oil Spill Modelling? 3
1.1.1 Stochastic Modelling (Multiple Spill Simulations) 3

2 SCOPE OF WORK **4**

3 REGIONAL CURRENTS **5**
3.1 Tidal Currents 6
3.1.1 Grid Setup 6
3.1.2 Tidal Conditions 8
3.2 Ocean Currents 8
3.3 Surface Currents 8

4 WIND DATA **11**

5 WATER TEMPERATURE AND SALINITY **14**

6 OIL SPILL MODEL SIMAP **16**

7 THRESHOLDS **18**
7.1 Floating Oil 18
7.2 Shoreline Oil Accumulation 19
7.3 In-water 20
7.3.1 Dissolved Hydrocarbons 21
7.3.2 Entrained Hydrocarbons 21
7.4 Dispersion Coefficients and Mixed Layer Depth 22

8 OIL PROPERTIES **23**
8.1 Weathering Characteristics 24
8.1.1 Wandoo crude 24
8.1.2 Marine Diesel Oil 25

9 RECEPTORS **27**

10 MODEL SETTINGS **48**

11 PRESENTATION AND INTERPRETATION OF MODEL RESULTS **50**
11.1 Stochastic Modelling 50
11.2 Deterministic Modelling 51

12 CALCULATION OF STOCHASTIC MODELLING EXPOSURE RISKS **53**

13 MODELLING RESULTS: LOSS OF WELL CONTROL **54**
13.1 Stochastic Analysis 54
13.1.1 Exposure Areas 54
13.1.2 Floating Oil Exposure 56
13.1.3 Shoreline accumulation 81
13.1.4 In-water exposure 103
13.2 Deterministic Analysis 157
13.2.1 Greatest Number of Receptors with Floating Oil Exposure Within 7 days 157

14 MODELLING RESULTS: VESSEL COLLISION 166
14.1 Stochastic Analysis 166
14.1.1 Exposure Areas 166
14.1.2 Floating Oil Exposure 168
14.1.3 Shoreline accumulation 190
14.1.4 In-water exposure 200

15 REFERENCES 248

Tables

Summary of key results 1
Table 1.1 Coordinates of the oil spill modelling release location. 1
Table 5.1 Monthly average sea surface (0-2 m depth layer) temperature and salinity in the vicinity of the release location. 14
Table 7.1 Summary of the thresholds applied in this study. 18
Table 7.2 The Bonn Agreement Oil Appearance Code. 19
Table 7.3 Floating oil exposure thresholds used in the oil spill modelling study (in alignment with NOPSEMA, 2019). 19
Table 7.4 Shoreline accumulation thresholds used in oil spill modelling study (in alignment with NOPSEMA, 2019). 20
Table 7.5 Dissolved and entrained hydrocarbon exposure thresholds assessed over a 1-hour time step used in the oil spill modelling study (in alignment NOPSEMA, 2019). 22
Table 10.1 Summary of the oil spill model settings used in this assessment. 48
Table 13.1 Maximum distances from the release location to floating oil exposure thresholds from a surface LOWC at Kullingal. Results were calculated from 100 spill simulations per season. 56
Table 13.2 Receptors predicted to be exposed by floating oil following a surface LOWC at Kullingal. Results were calculated from100 spill simulations per season. 57
Table 13.3 Summary of oil accumulation on any shoreline following a surface LOWC at Kullingal. Results were calculated from 100 spill simulations per season. 81
Table 13.4 Summary of shoreline oil accumulation on WAMOPRA shoreline cells following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 82
Table 13.5 Summary of shoreline oil accumulation on WAMOPRA shoreline cells following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 85
Table 13.6 Summary of shoreline oil accumulation on WAMOPRA shoreline cells following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 88
Table 13.7 Maximum distances from the release location to dissolved hydrocarbon exposure thresholds following a surface LOWC at Kullingal. Results were calculated from 100 spill simulations per season. 103
Table 13.8 Receptors predicted to be exposed by dissolved hydrocarbons following a surface LOWC at Kullingal. Results were calculated from100 spill simulations per season. 104
Table 13.9 Maximum distances from the release location to entrained hydrocarbon exposure thresholds following a surface LOWC at Kullingal. Results were calculated from 100 spill simulations per season. 128
Table 13.10 Receptors predicted to be exposed by entrained hydrocarbons following a surface LOWC at Kullingal. Results were calculated from100 spill simulations per season. 129
Table 14.1 Maximum distances from the release location to floating oil exposure thresholds from a vessel collision at Kullingal. Results were calculated from 100 spill simulations per season. 168

Table 14.2 Summary of oil accumulation on any shoreline following a vessel collision at Kullingal. Results were calculated from 100 spill simulations per season. 190
Table 14.3 Summary of shoreline oil accumulation on WAMOPRA shoreline cells following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 191
Table 14.4 Summary of shoreline oil accumulation on WAMOPRA shoreline cells following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 191
Table 14.5 Summary of shoreline oil accumulation on WAMOPRA shoreline cells following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 191
Table 14.6 Maximum distances from the release location to dissolved hydrocarbon exposure thresholds following a vessel collision at Kullingal. Results were calculated from 100 spill simulations per season. 200
Table 14.7 Receptors predicted to be exposed by dissolved hydrocarbons following a vessel collision at Kullingal. Results were calculated from100 spill simulations per season. 201
Table 14.8 Maximum distances from the release location to entrained hydrocarbon exposure thresholds following a vessel collision at Kullingal. Results were calculated from 100 spill simulations per season. 223
Table 14.9 Receptors predicted to be exposed by entrained hydrocarbons following a vessel collision at Kullingal. Results were calculated from100 spill simulations per season. 224

Figures

Figure 1.1 Map of the oil spill modelling release location. 2
Figure 1.2 Examples of four individual spill trajectories (four replicate simulations) predicted by SIMAP for a spill scenario (left pane). The frequency of contact for given locations is used to calculate the probability of impacts during a spill. Essentially, all model runs are overlain (shown as the stacked runs on the right) and the number of times that trajectories contact a given location at a concentration is used to calculate the probability. 3
Figure 3.1 Schematic of ocean currents along the northwestern Australian continental shelf. Image adapted from DEWHA (2008). 5
Figure 3.2 Zoomed in view of the model grid used to generate the tidal currents for the study region. Higher resolution areas are shown by the denser mesh. 7
Figure 3.3 Bathymetry defined throughout the tidal model domain. 7
Figure 3.4 Monthly surface current rose plots adjacent to the release location, derived from the 2010 to 2019 modelled dataset. 9
Figure 3.5 Total surface current rose plots adjacent to the release location, derived from the 2010 to 2019 modelled dataset. 10
Figure 4.1 Spatial resolution of the CFSR modelled wind data used as input into the oil spill model. Note, for ease viewing only every second wind vector is displayed on the map. 11
Figure 4.2 Monthly wind rose plots adjacent to the release location, derived from the 2010 to 2019 modelled dataset. 12
Figure 4.3 Total wind rose plot adjacent to the release location, derived from the 2010 to 2019 modelled dataset. 13
Figure 5.1 Monthly temperature and salinity profiles throughout the water column in the vicinity of the release location. 15
Figure 7.1 Photographs showing the difference between oil colour and thickness on the sea surface (source: adapted from Oil Spill Solutions, 2015). 19
Figure 8.1 Mass balance plot for an instantaneous 50 m^3 surface release of Wandoo crude subjected to a constant 5 knot (2.6 m/s) wind, currents and 27°C water temperature. 24
Figure 8.2 Mass balance plot for an instantaneous 50 m^3 surface release of Wandoo crude subjected to variable wind speeds (1 – 12 m/s or 2 to 24 knots), currents and 27°C water temperature. 25
Figure 8.3 Mass balance plot for an instantaneous 50 m^3 surface release of MDO subjected to a constant 5 knot (2.6 m/s) wind, currents and 27°C water temperature. 26
Figure 8.4 Mass balance plot for an instantaneous 50 m^3 surface release of MDO subjected to variable wind speeds of 2 to 23 knots (1 – 12 m/s), currents and 27°C water temperature. 26
Figure 9.1 Receptor map for Australian Marine Parks and Marine Parks. 29
Figure 9.2 Receptor map of Key Ecological Features (KEF). 30
Figure 9.3 Receptor map of Marine Management Areas (MMA) and Nature Reserves (NR). 31
Figure 9.4 Receptor map for Ramsar wetlands and State and Territory Waters (1 of 2). 32
Figure 9.5 Receptor map for Ramsar wetlands and State and Territory Waters (2 of 2). 33
Figure 9.6 Receptor map for Reefs, Shoals and Banks (1 of 4) 34
Figure 9.7 Receptor map for Reefs, Shoals and Banks (2 of 4) 35
Figure 9.8 Receptor map for Reefs, Shoals and Banks (3 of 4) 36
Figure 9.9 Receptor map for Reefs, Shoals and Banks (4 of 4) 37
Figure 9.10 Receptor map for the WAMOPRA shoreline cells (1 of 10). 38
Figure 9.11 Receptor map for the WAMOPRA shoreline cells (2 of 10). 39
Figure 9.12 Receptor map for the WAMOPRA shoreline cells (3 of 10). 40
Figure 9.13 Receptor map for the WAMOPRA shoreline cells (4 of 10). 41
Figure 9.14 Receptor map for the WAMOPRA shoreline cells (5 of 10). 42
Figure 9.15 Receptor map for the WAMOPRA shoreline cells (6 of 10). 43
Figure 9.16 Receptor map for the WAMOPRA shoreline cells (7 of 10). 44
Figure 9.17 Receptor map for the WAMOPRA shoreline cells (8 of 10). 45
Figure 9.18 Receptor map for the WAMOPRA shoreline cells (9 of 10). 46

Figure 9.19 Receptor map for the WAMOPRA shoreline cells (10 of 10). 47
Figure 13.1 Predicted exposure areas following a surface LOWC at Kullingal, presented as an annual assessment. The exposure areas were determined by integrating the results of all 300 spill simulations across low, moderate and high thresholds. 55
Figure 13.2 Predicted zones of floating oil exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 60
Figure 13.3 Predicted zones of floating oil exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 61
Figure 13.4 Predicted zones of floating oil exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 62
Figure 13.5 Minimum time before floating oil exposure at, or above, 1 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 63
Figure 13.6 Minimum time before floating oil exposure at, or above, 1 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 64
Figure 13.7 Minimum time before floating oil exposure at, or above, 1 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 65
Figure 13.8 Minimum time before floating oil exposure at, or above, 10 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 66
Figure 13.9 Minimum time before floating oil exposure at, or above, 10 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 67
Figure 13.10 Minimum time before floating oil exposure at, or above, 10 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 68
Figure 13.11 Minimum time before floating oil exposure at, or above, 50 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 69
Figure 13.12 Minimum time before floating oil exposure at, or above, 50 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 70
Figure 13.13 Minimum time before floating oil exposure at, or above, 50 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 71
Figure 13.14 Probability of floating oil exposure at, or above, 1 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 72
Figure 13.15 Probability of floating oil exposure at, or above, 1 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 73
Figure 13.16 Probability of floating oil exposure at, or above, 1 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 74
Figure 13.17 Probability of floating oil exposure at, or above, 10 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 75
Figure 13.18 Probability of floating oil exposure at, or above, 10 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 76

Figure 13.19 Probability of floating oil exposure at, or above, 10 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 77
Figure 13.20 Probability of floating oil exposure at, or above, 50 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 78
Figure 13.21 Probability of floating oil exposure at, or above, 50 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 79
Figure 13.22 Probability of floating oil exposure at, or above, 50 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 80
Figure 13.23 Maximum potential shoreline oil accumulation following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 91
Figure 13.24 Maximum potential shoreline oil accumulation following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 92
Figure 13.25 Maximum potential shoreline oil accumulation following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 93
Figure 13.26 Predicted probability of shoreline oil accumulation at, or above, 10 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 94
Figure 13.27 Predicted probability of shoreline oil accumulation at, or above, 10 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 95
Figure 13.28 Predicted probability of shoreline oil accumulation at, or above, 10 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 96
Figure 13.29 Predicted probability of shoreline oil accumulation at, or above, 100 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 97
Figure 13.30 Predicted probability of shoreline oil accumulation at, or above, 100 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 98
Figure 13.31 Predicted probability of shoreline oil accumulation at, or above, 100 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 99
Figure 13.32 Predicted probability of shoreline oil accumulation at, or above, 1,000 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 100
Figure 13.33 Predicted probability of shoreline oil accumulation at, or above, 1,000 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 101
Figure 13.34 Predicted probability of shoreline oil accumulation at, or above, 1,000 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 102
Figure 13.35 Predicted zones of dissolved hydrocarbon exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 107
Figure 13.36 Predicted zones of dissolved hydrocarbon exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 108

Figure 13.37 Predicted zones of dissolved hydrocarbon exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 109
Figure 13.38 Minimum time before dissolved hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 110
Figure 13.39 Minimum time before dissolved hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 111
Figure 13.40 Minimum time before dissolved hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 112
Figure 13.41 Minimum time before dissolved hydrocarbon exposure at, or above, 50 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 113
Figure 13.42 Minimum time before dissolved hydrocarbon exposure at, or above, 50 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 114
Figure 13.43 Minimum time before dissolved hydrocarbon exposure at, or above, 50 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 115
Figure 13.44 Probability of dissolved hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 116
Figure 13.45 Probability of dissolved hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 117
Figure 13.46 Probability of dissolved hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 118
Figure 13.47 Probability of dissolved hydrocarbon exposure at, or above, 50 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 119
Figure 13.48 Probability of dissolved hydrocarbon exposure at, or above, 50 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 120
Figure 13.49 Probability of dissolved hydrocarbon exposure at, or above, 50 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 121
Figure 13.50 North-south cross-section transect of dissolved hydrocarbon concentrations exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 122
Figure 13.51 North-south cross-section transect of dissolved hydrocarbon concentrations exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 123
Figure 13.52 North-south cross-section transect of dissolved hydrocarbon concentrations exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 124
Figure 13.53 East-west cross-section transect of dissolved hydrocarbon concentrations exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 125

Figure 13.54 East-west cross-section transect of dissolved hydrocarbon concentrations exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 126
Figure 13.55 East-west cross-section transect of dissolved hydrocarbon concentrations exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 127
Figure 13.56 Predicted zones of entrained hydrocarbon exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 136
Figure 13.57 Predicted zones of entrained hydrocarbon exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 137
Figure 13.58 Predicted zones of entrained hydrocarbon exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 138
Figure 13.59 Minimum time before entrained hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 139
Figure 13.60 Minimum time before entrained hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 140
Figure 13.61 Minimum time before entrained hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 141
Figure 13.62 Minimum time before entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 142
Figure 13.63 Minimum time before entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 143
Figure 13.64 Minimum time before entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 144
Figure 13.65 Probability of entrained hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 145
Figure 13.66 Probability of entrained hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 146
Figure 13.67 Probability of entrained hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 147
Figure 13.68 Probability of entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 148
Figure 13.69 Probability of entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 149
Figure 13.70 Probability of entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 150

Figure 13.71 North-south cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 151
Figure 13.72 North-south cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 152
Figure 13.73 North-south cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 153
Figure 13.74 East-west cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 154
Figure 13.75 East-west cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 155
Figure 13.76 East-west cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 156
Figure 13.77 Predicted low threshold exposure area following a surface LOWC at Kullingal for the deterministic simulation (transitional, run 31) which resulted in the greatest number of receptors with floating oil exposure at or above 1 g/m^2 within 7 days. 161
Figure 13.78 Predicted zones of floating oil exposure and maximum shoreline accumulation following a surface LOWC at Kullingal for the deterministic simulation (transitional, run 31) which resulted in the greatest number of receptors with floating oil exposure at or above 1 g/m^2 within 7 days....162
Figure 13.79 Predicted zones of dissolved oil exposure and maximum shoreline accumulation following a surface LOWC at Kullingal for the deterministic simulation (transitional, run 31) which resulted in the greatest number of receptors with floating oil exposure at or above 1 g/m^2 within 7 days....163
Figure 13.80 Predicted zones of entrained oil exposure and maximum shoreline accumulation following a surface LOWC at Kullingal for the deterministic simulation (transitional, run 31) which resulted in the greatest number of receptors with floating oil exposure at or above 1 g/m^2 within 7 days....164
Figure 13.81 Predicted weathering and fates graph following a surface LOWC at Kullingal for the deterministic simulation (transitional, run 31) which resulted in the greatest number of receptors with floating oil exposure at or above 1 g/m^2 within 7 days. 165
Figure 14.1 Predicted exposure areas following a vessel collision at Kullingal, presented as an annual assessment. The exposure areas were determined by integrating the results of all 300 spill simulations across low, moderate and high thresholds. 167
Figure 14.2 Predicted zones of floating oil exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 169
Figure 14.3 Predicted zones of floating oil exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 170
Figure 14.4 Predicted zones of floating oil exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 171
Figure 14.5 Minimum time before floating oil exposure at, or above, 1 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 172
Figure 14.6 Minimum time before floating oil exposure at, or above, 1 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 173

Figure 14.7 Minimum time before floating oil exposure at, or above, 1 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 174
Figure 14.8 Minimum time before floating oil exposure at, or above, 10 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 175
Figure 14.9 Minimum time before floating oil exposure at, or above, 10 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 176
Figure 14.10 Minimum time before floating oil exposure at, or above, 10 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 177
Figure 14.11 Minimum time before floating oil exposure at, or above, 50 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 178
Figure 14.12 Minimum time before floating oil exposure at, or above, 50 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 179
Figure 14.13 Minimum time before floating oil exposure at, or above, 50 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 180
Figure 14.14 Probability of floating oil exposure at, or above, 1 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 181
Figure 14.15 Probability of floating oil exposure at, or above, 1 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 182
Figure 14.16 Probability of floating oil exposure at, or above, 1 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 183
Figure 14.17 Probability of floating oil exposure at, or above, 10 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 184
Figure 14.18 Probability of floating oil exposure at, or above, 10 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 185
Figure 14.19 Probability of floating oil exposure at, or above, 10 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 186
Figure 14.20 Probability of floating oil exposure at, or above, 50 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 187
Figure 14.21 Probability of floating oil exposure at, or above, 50 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 188
Figure 14.22 Probability of floating oil exposure at, or above, 50 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 189
Figure 14.23 Maximum potential shoreline oil accumulation following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 192
Figure 14.24 Maximum potential shoreline oil accumulation following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 193

Figure 14.25 Maximum potential shoreline oil accumulation following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 194
Figure 14.26 Predicted probability of shoreline oil accumulation at, or above, 10 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 195
Figure 14.27 Predicted probability of shoreline oil accumulation at, or above, 10 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 196
Figure 14.28 Predicted probability of shoreline oil accumulation at, or above, 10 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 197
Figure 14.29 Predicted probability of shoreline oil accumulation at, or above, 100 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 198
Figure 14.30 Predicted probability of shoreline oil accumulation at, or above, 100 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 199
Figure 14.31 Predicted zones of dissolved hydrocarbon exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 202
Figure 14.32 Predicted zones of dissolved hydrocarbon exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 203
Figure 14.33 Predicted zones of dissolved hydrocarbon exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 204
Figure 14.34 Minimum time before dissolved hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 205
Figure 14.35 Minimum time before dissolved hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 206
Figure 14.36 Minimum time before dissolved hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 207
Figure 14.37 Minimum time before dissolved hydrocarbon exposure at, or above, 50 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 208
Figure 14.38 Minimum time before dissolved hydrocarbon exposure at, or above, 50 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 209
Figure 14.39 Minimum time before dissolved hydrocarbon exposure at, or above, 50 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 210
Figure 14.40 Probability of dissolved hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 211
Figure 14.41 Probability of dissolved hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 212
Figure 14.42 Probability of dissolved hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 213

Figure 14.43 Probability of dissolved hydrocarbon exposure at, or above, 50 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 214
Figure 14.44 Probability of dissolved hydrocarbon exposure at, or above, 50 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 215
Figure 14.45 Probability of dissolved hydrocarbon exposure at, or above, 50 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 216
Figure 14.46 North-south cross-section transect of dissolved hydrocarbon concentrations exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 217
Figure 14.47 North-south cross-section transect of dissolved hydrocarbon concentrations exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 218
Figure 14.48 North-south cross-section transect of dissolved hydrocarbon concentrations exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 219
Figure 14.49 East-west cross-section transect of dissolved hydrocarbon concentrations exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 220
Figure 14.50 East-west cross-section transect of dissolved hydrocarbon concentrations exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 221
Figure 14.51 East-west cross-section transect of dissolved hydrocarbon concentrations exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 222
Figure 14.52 Predicted zones of entrained hydrocarbon exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 227
Figure 14.53 Predicted zones of entrained hydrocarbon exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 228
Figure 14.54 Predicted zones of entrained hydrocarbon exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 229
Figure 14.55 Minimum time before entrained hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 230
Figure 14.56 Minimum time before entrained hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 231
Figure 14.57 Minimum time before entrained hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 232
Figure 14.58 Minimum time before entrained hydrocarbon exposure at, or above, 100 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 233
Figure 14.59 Minimum time before entrained hydrocarbon exposure at, or above, 100 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 234

Figure 14.60 Minimum time before entrained hydrocarbon exposure at, or above, 100 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 235
Figure 14.61 Probability of entrained hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 236
Figure 14.62 Probability of entrained hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 237
Figure 14.63 Probability of entrained hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 238
Figure 14.64 Probability of entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 239
Figure 14.65 Probability of entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 240
Figure 14.66 Probability of entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 241
Figure 14.67 North-south cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 242
Figure 14.68 North-south cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 243
Figure 14.69 North-south cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 244
Figure 14.70 East-west cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions. 245
Figure 14.71 East-west cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions. 246
Figure 14.72 East-west cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions. 247

TERMS AND ABBREVIATIONS

Term	Meaning
Actionable oil	Oil which is thick enough for the effective use of mitigation strategies.
AMSA	Australian Maritime Safety Authority
API	American Petroleum Institute gravity. A measure of how heavy or light a petroleum liquid is compared to water.
Bonn Agreement	An agreement for cooperation in dealing with pollution of the North Sea by oil and other harmful substances, established 1983 includes: Governments of the Kingdom of Belgium, the Kingdom of Denmark, the French Republic, the Federal Republic of Germany, the Republic of Ireland, the Kingdom of the Netherlands, the Kingdom of Norway, the Kingdom of Sweden, the United Kingdom of Great Britain and Northern Ireland and the European Union.
BP	Boiling point. The temperature at which the vapor pressure of the liquid is equal to the pressure exerted on it by the surrounding atmosphere
BTEX	Benzene, toluene, ethylbenzene, and xylenes
Decay	The process where oil components are changed either chemically or biologically (biodegradation) to another compound. It includes breakdown to simpler organic carbon compounds by bacteria and other organisms, photo-oxidation by solar energy, and other chemical reactions.
Deterministic (single) Oil spill modelling	Oil spill modelling involving a computer simulation of a single hypothetical oil spill event subject to a single sequence of wind, current and other sea conditions over time. Single oil spill modelling, also referred to as “deterministic modelling” provides a simulation of one possible outcome of a given spill scenario, subject to the metocean conditions that are imposed. Single oil spill modelling is commonly used to consider the fate and effects of ‘worst-case’ oil spill scenarios that are carefully selected in consideration of the nature and scale of the offshore petroleum activity and the local environment (NOPSEMA, 2018). Because the outcomes of a single oil spill simulation can only represent the outcome of that scenario under one sequence of metocean conditions, worst-case conditions are often identified from stochastic modelling. It is impossible to calculate the likelihood of any outcome from a single oil spill simulation. Single oil spill modelling is generally used for response planning, preparedness planning and for supporting oil spill response operations in the event of an actual spill
Dynamic viscosity	The dynamic viscosity of a fluid expresses its resistance to shearing flows, where adjacent layers move parallel to each other with different speeds.
Floating oil exposure	Contact by floating oil on the sea surface at concentrations equal to or exceeding defined threshold concentrations. The consequence will vary depending on the threshold and the receptors
HYCOM	Hybrid Coordinate Ocean Model. A data-assimilative, three-dimensional ocean model
HYDROMAP	Advanced ocean/coastal tidal model used to predict tidal water levels, current speed and current direction.
MAHs	Monoaromatic hydrocarbons
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
PAH	Polynuclear aromatic hydrocarbons
Pour Point	The pour point of a liquid is the temperature below which the liquid loses its flow characteristics
Shoreline accumulation	Arrival of oil at or near shorelines at on-water concentrations equal to or exceeding defined threshold concentrations. Shoreline accumulation is judged for floating oil arriving within a 2 km buffer zone from any shoreline as a conservative measure.
SIMAP	Spill Impact Model Application Package. SIMAP is designed to simulate the fate and effects of spilled hydrocarbons for surface or subsea releases.
Stochastic (multiple) oil spill modelling	Stochastic oil spill modelling is created by overlaying and statistically analysing the outcomes of many single oil-spill simulations of a defined spill scenario, where each simulation was subject to a different sequence of metocean conditions, selected objectively (typically by random selection) from a long sequence of historic conditions for the study area. Analysis of this larger set of simulations provides a more accurate indication of the areas of potential exposure and indicates which locations are more likely to be exposed (as well as other statistics). Stochastic oil spill

DRAFT

	modelling avoids biases that affect single oil spill modelling (due to the reliance on only one possible sequence of conditions). However, when interpreting stochastic modelling, which is based on a wide range of potential conditions that might happen to occur, it is essential to understand that calculations will encompass a much larger area than could be affected in any single spill event, where a more limited set of conditions will occur. Consequently, it is misleading to imply that the region derived from stochastic modelling indicate the outcomes expected from a single spill event (NOPSEMA, 2018) Stochastic modelling is generally used for risk assessment and preparedness planning by indicating locations that could be exposed and may require response or subsequent impact assessment.

DRAFT

EXECUTIVE SUMMARY

Background

Vermilion Oil and Gas Australia Pty Ltd (VOGA) operates the Wandoo field, located approximately 70 km northwest of Dampier, Western Australia, in waters approximately 50 m deep.

To support the preparation of the Environment Plan (EP) and Oil Pollution Emergency Plan (OPEP) for the Kullingal well exploration drilling activity, a detailed oil spill modelling study was commissioned. This study assessed the following two hypothetical scenarios:

- **Scenario 1:** A 167,800 bbl (26,678 m^3) surface release of Wandoo crude over 35 days following a loss of well control (LOWC) at Kullingal; and
- **Scenario 2:** A 300 m^3 surface release of marine diesel oil (MDO) over 6 hours following a vessel collision at Kullingal.

The potential exposure of surrounding waters and shorelines was assessed and presented for the distinct seasons, summer (October to February), winter (April to July) and transitional (March, August and September). The modelling does not take into consideration any of the spill prevention, mitigation and response capabilities that would be implemented in response to the spill.

Methodology

The modelling study was carried out in stages. Firstly, a 10-year wind and current dataset (2010–2019) that includes the combined influence of large-scale ocean and tidal currents was prepared. Secondly, the currents, local winds and detailed hydrocarbon characteristics were used as inputs in the three-dimensional oil spill model (SIMAP) to simulate the drift, spread, weathering and fate of the spilled oil.

Modelling was conducted using a stochastic (or probabilistic) approach, which involved running 100 spill simulations per season and each simulation had the same spill information (spill volume, duration and composition of hydrocarbons) but randomly selected start times to ensure a range of wind and current conditions were assessed. Once all 100 simulations per season were run, the results were combined to determine the potential exposure to the surrounding waters, shorelines and sensitive receptors based on the thresholds outlined in the NOPSEMA Oil Spill Modelling Bulletin (NOPSEMA, 2019).

Oil Properties

Wandoo Crude (API 19.4) was used for this oil spill modelling study. The unweathered mixture has a density of 937.7 g/cm^3 (at 16°C), a dynamic viscosity of 161 cP and a pour point of -24°C, which ensures that this crude will remain in a liquid state over the annual temperature range observed.

Wandoo Crude is composed of approximately 1.7% (by mass) of volatile hydrocarbons that will evaporate within the first 12 hours. A further 10.2% of the oil is characterised as the semi-volatile compounds that will likely evaporate within the first 24 hours when on the surface and the additional 33.1% represent the low volatiles which typically evaporate over several weeks. A relatively high proportion (55%) of hydrocarbon compounds is persistent, which are unlikely to evaporate and will decay over time. It is categorised as a Group IV (or persistent) oil according to both oil classifications for AMSA (2023).

The MDO has a density of 890.0 kg/m^3 at 15ºC (API of 27.5) and a low pour point of -9.0°C. The low viscosity (14.0 cP at 25ºC) indicates that this oil will spread quickly when released and will form a thin to low thickness film on the sea surface, increasing the rate of evaporation. Generally, about 4% of the MDO mass should evaporate within the first 12 hours (Boiling point (BP) < 180°C); a further 32.0% should evaporate within the first 24 hours (180°C < BP < 265°C); and an additional 54.0% should evaporate over several days (265°C < BP < 380°C). Approximately 10% (by mass) of MDO will not evaporate, though will decay slowly over time. It is categorised as a Group II oil (light-persistent) according to the AMSA (2023) classifications.

DRAFT

Summary of Modelling Results

A detailed summary of the results for all modelled scenarios is provided in the table below.

DRAFT

Summary of key results

Scenario description		Scenario 1 – Surface LOWC	Scenario 2 - Vessel collision
Spill volume		167,800 bbl (26,678 m^3)	300 m^3
Oil type		Wandoo crude	MDO
Release depth		0 m (surface)	0 m (surface)
Release duration		35 days	6 hours
Simulation length		56 days	30 days
Floating Oil Exposure	Maximum distances from the release location to floating oil exposure thresholds	Floating oil concentrations ≥ 1 g/m^2 could extend up to 998 km from the release location. The maximum distances reduced to 473 km and 25 km as the threshold increases to ≥ 10 g/m^2 and ≥ 50 g/m^2, respectively.	Floating oil concentrations ≥ 1 g/m^2 could extend up to 31 km from the release location. The maximum distances reduced to 18 km and 6 km as the threshold increases to ≥ 10 g/m^2 and ≥ 50 g/m^2, respectively.
	Highest probability of floating oil exposure to a receptor at, or above, 1 g/m^2	Mermaid Reef AMP, 97% during winter conditions	NC
	Quickest time before exposure to a receptor at, or above, 1 g/m^2	Montebello AMP, 37 hours during transitional conditions	NC
Shoreline Oil Accumulation	Probability of oil accumulation on **any** shoreline at, or above, 10 g/m^2	100% during winter conditions	24% during winter conditions
	Absolute minimum time for oil to accumulate on shoreline cells at ,or above, 10 g/m^2	WA11.West (318) - Barrow Island and Montebello Islands (A), 69 hours during winter conditions	WA11.West (318) - Barrow Island and Montebello Islands (A), 91 hours during winter conditions
	Maximum volume of oil ashore from a single spill simulation at, or above, 10 g/m^2	4,550.0 m^3 during summer conditions	23.2 m^3 during winter conditions
	Highest probability of oil accumulation for a specific shoreline cell at, or above, 10 g/m^2	WA11.West (318) - Barrow Island and Montebello Islands (A), 92% during winter conditions	WA11.West (318) - Barrow Island and Montebello Islands (A), 15% during winter conditions
	Maximum volume of oil ashore from a single spill simulation for a specific shoreline cell at, or above, 10 g/m^2	2,570 m^3, WA11.West (318) - Barrow Island and Montebello Islands (A), during transitional conditions	23.2 m^3, WA11.West (318) - Barrow Island and Montebello Islands (A), during winter conditions

Dissolved Hydrocarbons	Maximum distances from the release location to dissolved hydrocarbon exposure thresholds	Concentrations ≥ 10 ppb threshold may extend up to 790 km from the release location. As the threshold increases to 50 ppb, the maximum distance decreases to 425 km. No exposure was predicted above 400 ppb.	Concentrations ≥ 10 ppb threshold may extend up to 169 km from the release location. As the threshold increases to 50 ppb, the maximum distance decreases to 58 km. No exposure was predicted above 400 ppb.
	Highest probability of dissolved hydrocarbon exposure to a receptor at, or above, 10 ppb	Montebello AMP, 89% during winter conditions	Montebello AMP, 7% during winter conditions
	Quickest time before exposure to a receptor at, or above, 10 ppb	Montebello AMP, 26 hours during summer conditions	Montebello AMP, 27 hours during transitional conditions
Entrained Hydrocarbons	Maximum distances from the release location to entrained hydrocarbons exposure thresholds	Concentrations ≥ 10 ppb threshold may extend up to 1,302 km from the release location. As the threshold increases to ≥ 100 ppb, the maximum distance decreases to 1,037 km.	Concentrations ≥ 10 ppb threshold may extend up to 494 km from the release location. As the threshold increases to ≥ 100 ppb, the maximum distance decreases to 237 km.
	Highest probability of entrained hydrocarbon exposure to a receptor at, or above, 10 ppb	Montebello AMP, 99% during winter conditions	Montebello AMP, 54% during winter conditions
	Quickest time before exposure to a receptor at, or above, 10 ppb	Montebello AMP, 21 hours during summer and winter conditions	Montebello AMP, 22 hours during winter conditions

NC: No contact to receptor predicted for specified threshold.

1 INTRODUCTION

1.1 Background

Vermilion Oil and Gas Australia Pty Ltd (VOGA) operates the Wandoo field, located approximately 70 km northwest of Dampier, Western Australia, in waters approximately 50 m deep.

To support the preparation of the Environment Plan (EP) and Oil Pollution Emergency Plan (OPEP) for the Kullingal well exploration drilling activity, a detailed oil spill modelling study was commissioned. This study assessed the following two hypothetical scenarios:

- **Scenario 1:** A 167,800 bbl (26,678 m^3) surface release of Wandoo crude over 35 days following a loss of well control (LOWC) at Kullingal; and
- **Scenario 2:** A 300 m^3 surface release of marine diesel oil (MDO) over 6 hours following a vessel collision at Kullingal.

The coordinates for the Kullingal well, which was used as the release location for the two scenarios are presented in Table 1.1 and is illustrated in Figure 1.1.

The potential exposure of surrounding waters and shorelines was assessed and presented for the distinct seasons, summer (October to February), winter (April to July) and transitional (March, August and September).

The spill modelling was performed using an advanced three-dimensional trajectory and fates model; Spill Impact Model Application Package (SIMAP). The SIMAP model calculates the transport, spreading, entrainment and evaporation of spilled hydrocarbons over time, based on the prevailing wind and current conditions and the physical and chemical properties. The modelling does not take into consideration any of the spill prevention, mitigation and response capabilities that would be implemented in response to the spill.

The hydrocarbon spill model, the method and analysis applied herein use modelling algorithms which have been peer reviewed and published in international journals. Further, RPS warrants that this work meets and exceeds the American Society for Testing and Materials (ASTM) Standard F2067-22 "*Standard Practice for Development and Use of Oil Spill Models*".

Table 1.1 Coordinates of the oil spill modelling release location.

Release site	Latitude*	Longitude*	Water Depth (m)
Kullingal	20° 10' 16.32" S	116° 24' 11.88" E	50

*Datum: WGS 1984

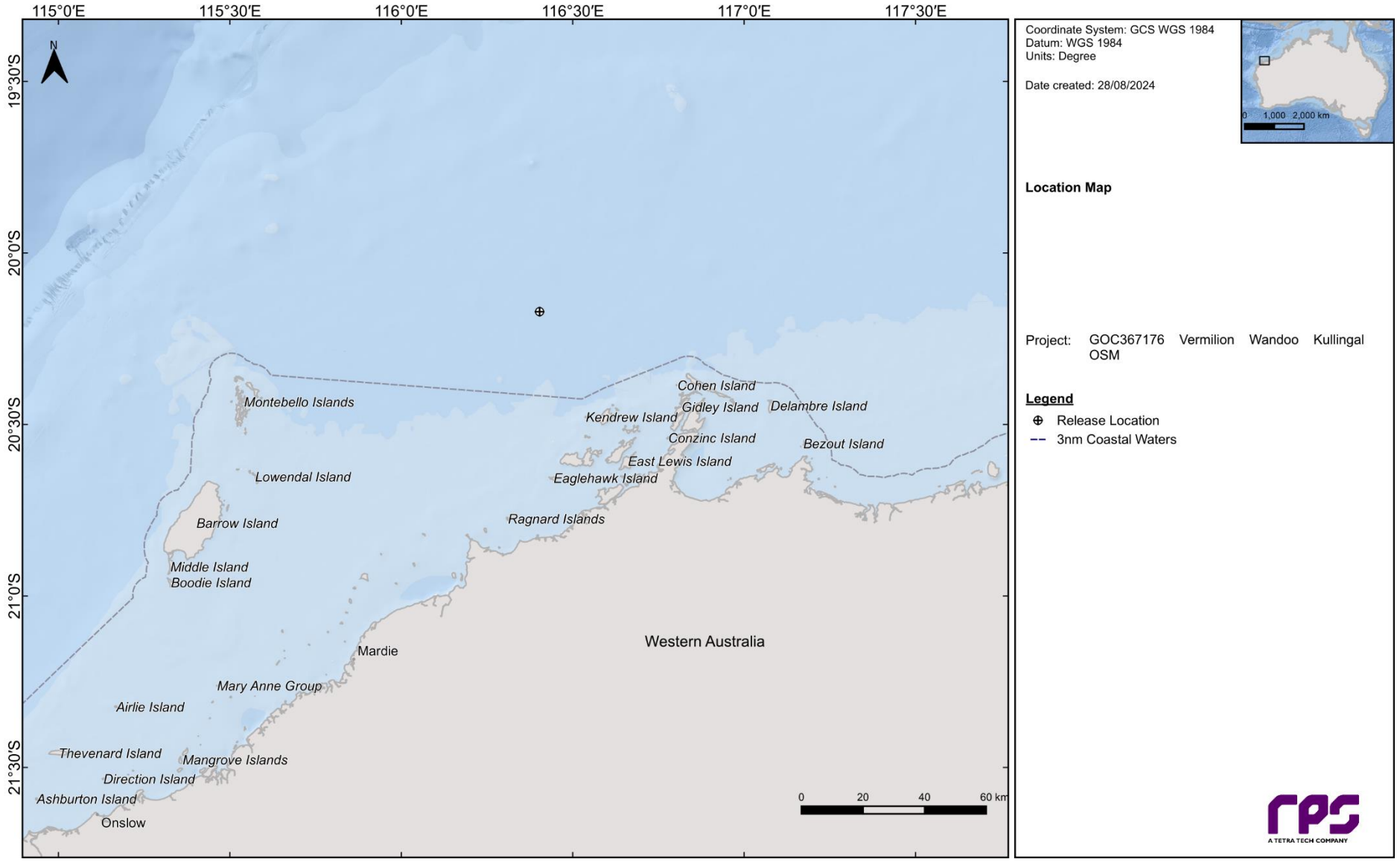


Figure 1.1 Map of the oil spill modelling release location.

What is Oil Spill Modelling?

Oil spill modelling is a valuable tool widely used for risk assessment, emergency response and contingency planning where it can be particularly helpful to proponents and decision makers. By modelling a series of the most likely oil spill scenarios, decisions concerning suitable response measures and strategic locations for deploying equipment and materials can be made, and the locations at most risk can be identified. The two types of oil spill modelling often used are stochastic and deterministic modelling.

1.1.1 Stochastic Modelling (Multiple Spill Simulations)

Stochastic oil spill modelling is created by overlaying a great number (often hundreds) of individual, computer-simulated hypothetical spills (NOPSEMA, 2018; Figure 1.2).

Stochastic modelling is a common means of assessing the potential risks from oil spills related to new projects and facilities. Stochastic modelling typically utilises hydrodynamic data for the location in combination with historic wind data. Typically, 100 simulations are run, which sufficiently samples the historic dataset that is most relevant to the season or timing of the project.

The outcomes are often presented as a probability of exposure and are primarily used for risk assessment purposes in view to understand the range of environments that may be affected or impacted by a spill. Elements of the stochastic modelling can also be used in oil spill preparedness and planning.

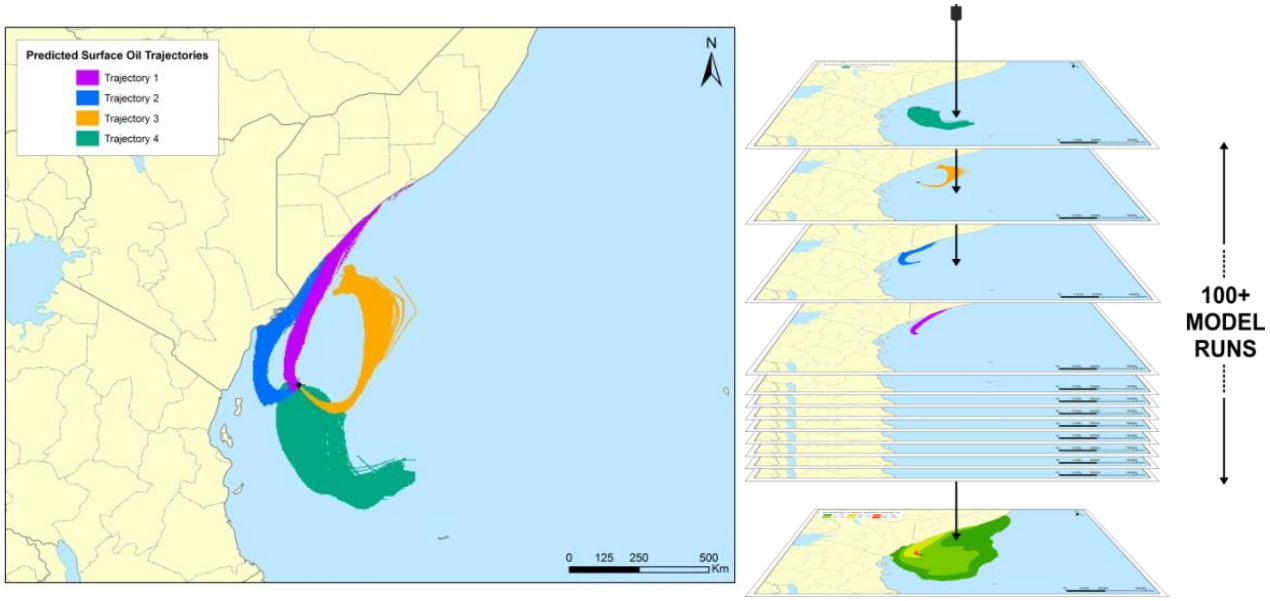


Figure 1.2 Examples of four individual spill trajectories (four replicate simulations) predicted by SIMAP for a spill scenario (left pane). The frequency of contact for given locations is used to calculate the probability of impacts during a spill. Essentially, all model runs are overlain (shown as the stacked runs on the right) and the number of times that trajectories contact a given location at a concentration is used to calculate the probability.

2 SCOPE OF WORK

The scope of work included the following components:

1. Generate 10 years (2010 to 2019 (inclusive)) of wind and current data. The three-dimensional current data includes the combined influence of ocean and tidal currents;
2. Include the wind data, current data and oil properties into the three-dimensional oil spill model; SIMAP, to model the movement, spreading, entrainment, weathering and potential shoreline accumulation over time;
3. Run 100 simulations per season (300 simulations in total) for each scenario, with each scenario specific simulation having the same spill information (location, volume, duration and crude properties) but randomly varying start times. This ensured that each spill simulation was exposed to unique wind and current conditions;
4. Combine the results from the 100 spill simulations per season for each scenario to determine the potential exposure to the surrounding waters, shorelines and sensitive receptors based on the thresholds outlined in the NOPSEMA Oil Spill Modelling Bulletin (NOPSEMA, 2019); and
5. To inform spill response and Operational and Scientific Monitoring (OSM) Bridging Implementation Plan (BIP) capability requirements, the following deterministic simulation for the LOWC scenario was identified and presented:
    a. Greatest number of receptors with floating oil exposure at or above 1 g/m^2 within the first 7 days.

3 REGIONAL CURRENTS

The area of interest for this study is typified by strong tidal flows over the shallower regions, particularly along the inshore region of the North West Shelf and among the island groups stretching from the Dampier Archipelago to the North West Cape. However, the offshore regions with water depths exceeding 100 m – 200 m experience significant large-scale drift currents. These drift currents can be relatively strong (1 knot – 2 knots) and complex, manifesting as a series of eddies, meandering currents, and connecting flows. These offshore drift currents also tend to persist longer (days to weeks) than tidal current flows (hours between reversals) and thus will have greater influence upon the net trajectory of slicks over time scales exceeding a few hours.

Wind shear on the water surface also generates local-scale currents that can persist for extended periods (hours to days) and result in long trajectories. Hence, the current-induced transport of oil can be variably affected by combinations of tidal, wind-induced, and density-induced drift currents. Depending on their local influence, it is critical to consider all these potential advective mechanisms to rigorously understand patterns of potential transport from a given spill location. A comprehensive description of the circulation patterns of the North West Shelf is provided in a review by Condie & Andrewartha (2008).

A schematic of the ocean currents along the North West Australian continental shelf is shown in Figure 3.1.

While the tidal currents are generally weaker in the deeper waters, their influence is greatest along the near shore, coastal passage regions and, in and around islands. Therefore, to accurately account for the movement of an oil spill, which can move between the nearshore and offshore region, ocean and tidal currents were combined as part of the study.

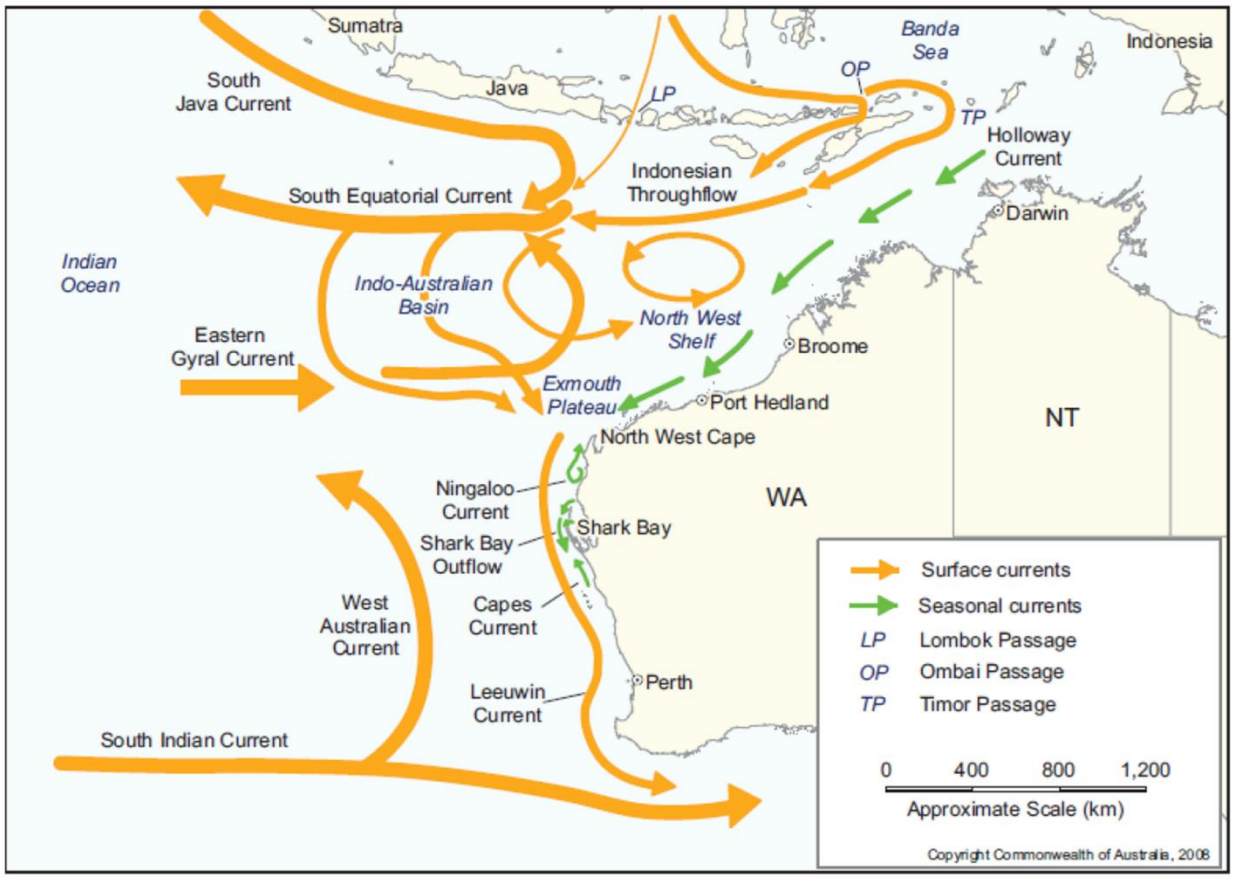


Figure 3.1 Schematic of ocean currents along the northwestern Australian continental shelf. Image adapted from DEWHA (2008).

3.1 Tidal Currents

The effects of tides were generated using RPS's advanced ocean/coastal model, HYDROMAP. The HYDROMAP model has been thoroughly tested and verified through field measurements throughout the world for over 35 years (Isaji and Spaulding, 1984; Isaji et al., 2001; Zigic et al., 2003; Makarynskyy et al., 2010), whilst being used for a wide variety of disciplines within marine environments (e.g. Zigic et al., 2003; Talouli et al., 2009; Zigic et al., 2009; King et al., 2010; Makarynskyy et al., 2010; 2015). In fact, HYDROMAP tidal current data have been used as input for the OILMAP hydrocarbon spill modelling system, which forms part of the Incident Management System (IMS) operated by Maritime New Zealand (MNZ), Australian Maritime Safety Authority (AMSA) and the United Kingdom Maritime and Coastguard Agency, as well as several major oil and gas companies.

HYDROMAP employs a sophisticated sub-gridding strategy, which supports up to six levels of spatial resolution, halving the grid cell size as each level of resolution is employed. The sub-gridding allows for higher resolution of currents within areas of greater bathymetric and coastline complexity, and/or of particular interest to a study.

The numerical solution methodology follows that of Davies (1977a and 1977b) with further developments for model efficiency by Owen (1980) and Gordon (1982). A more detailed presentation of the model can be found in Isaji and Spaulding (1984) and Isaji et al. (2001).

3.1.1 Grid Setup

The tidal model domain has been sub-gridded to a resolution of 500 m for shallow and coastal regions, starting from an offshore (or deep water) resolution of 8 km. The finer grids were allocated in a step-wise fashion to resolve flows more accurately along the coastline, around islands and over regions with more complex bathymetry. Figure 3.2 shows the tidal model grid resolutions.

A combination of datasets was used and merged to describe the shape of the seabed within the grid domain (Figure 3.3). These included spot depths and contours which were digitised from nautical charts released by the hydrographic offices as well as Geoscience Australia database, and depths extracted from the Shuttle Radar Topography Mission (SRTM30_PLUS) Plus dataset (see Becker et al., 2009).

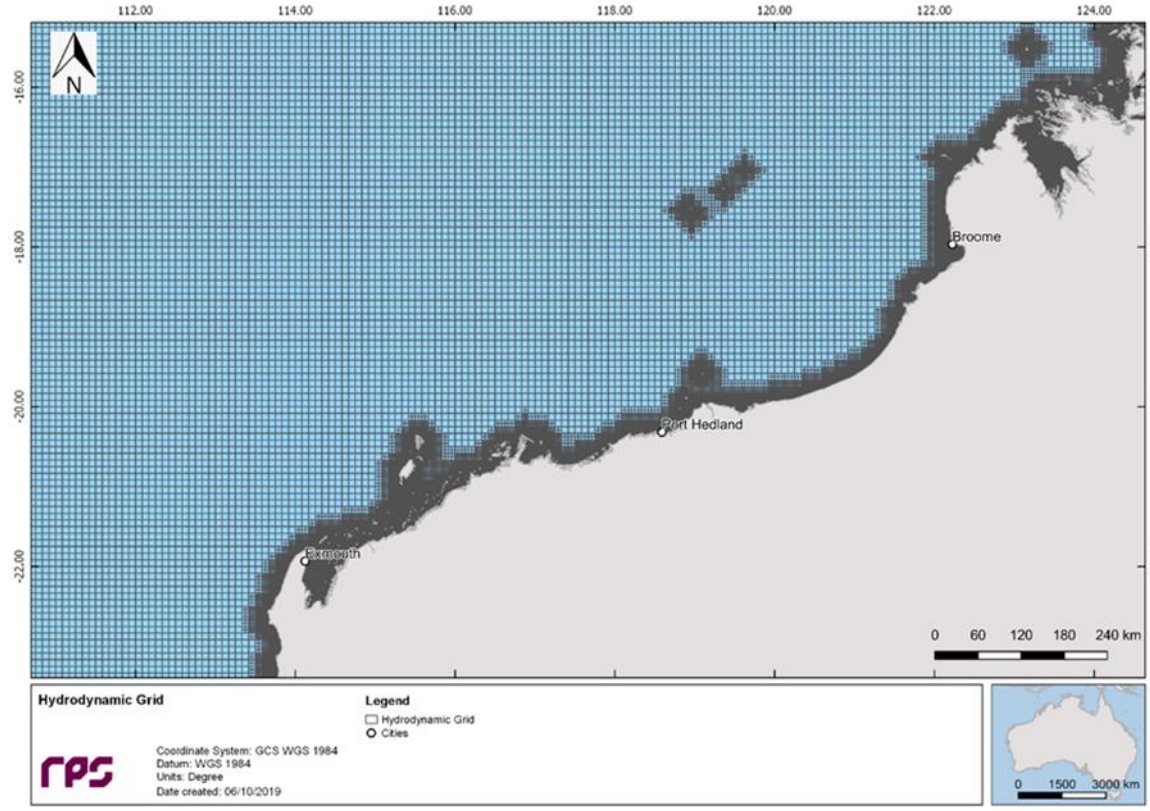


Figure 3.2 Zoomed in view of the model grid used to generate the tidal currents for the study region. Higher resolution areas are shown by the denser mesh.

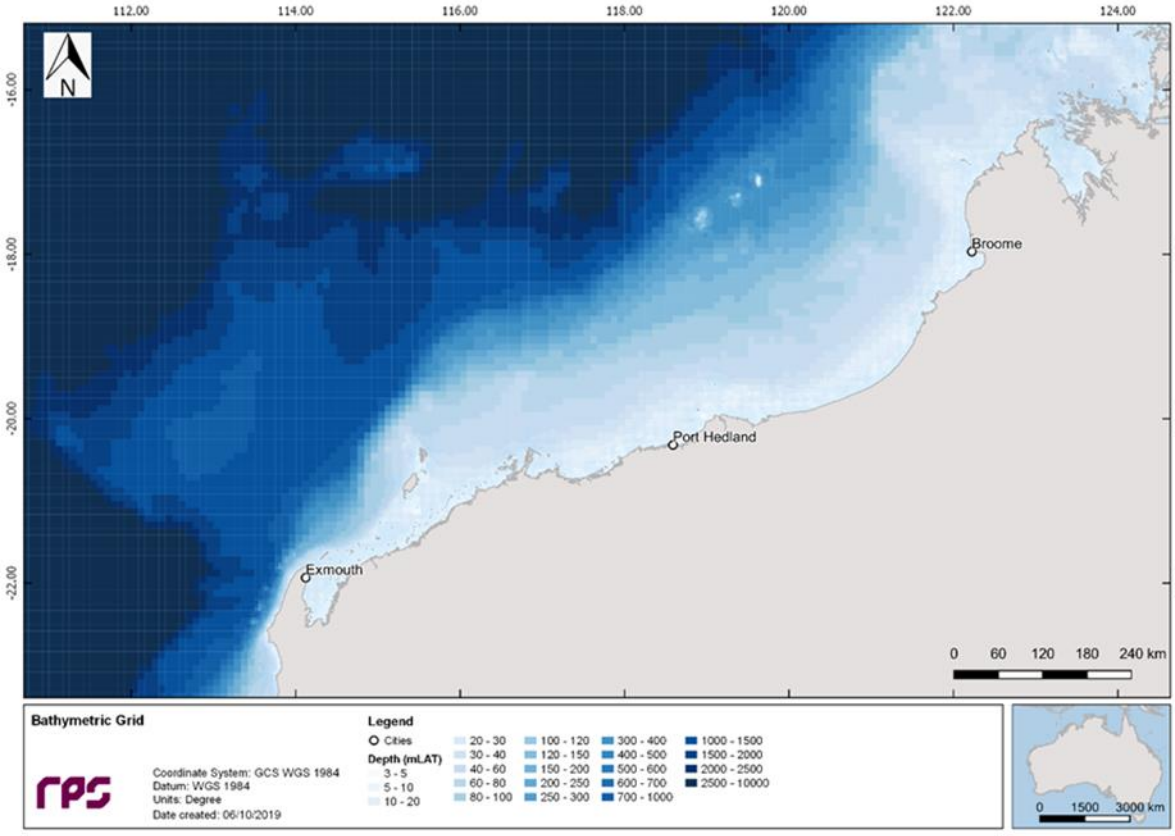


Figure 3.3 Bathymetry defined throughout the tidal model domain.

3.1.2 Tidal Conditions

The ocean boundary data for the regional model was obtained from satellite measured altimetry data (TOPEX/Poseidon 7.2) which provided estimates of the eight dominant tidal constituents at a horizontal scale of approximately 0.25 degrees. The eight major tidal constituents used were K_2, S_2, M_2, N_2, K_1, P_1, O_1 and Q_1. Using the tidal data, surface heights were firstly calculated along the open boundaries, at each time step in the model.

The TOPEX/Poseidon satellite data have a global resolution of 0.25 degrees and is produced and quality controlled by NASA (National Aeronautics and Space Administration). The satellites equipped with two highly accurate altimeters and capable of taking sea level measurements with an accuracy of ± 5 cm measured oceanic surface elevations (and the resultant tides) for over 13 years (1992–2005). In total, these satellites carried out 62,000 orbits of the planet.

The Topex-Poseidon tidal data have been extensively reported and utilised within the oceanographic community (e.g. Andersen, 1995; Ludicone et al., 1998; Matsumoto et al., 2000; Kostianoy et al., 2003; Yaremchuk and Tangdong, 2004; Qiu and Chen 2010; Amores et al., 2019; Sagnieres et al., 2020; Veng et al., 2021; Zeitlhöfler et al., 2023). As such the Topex/Poseidon tidal data is considered suitably accurate for this study.

3.2 Ocean Currents

Data describing the flow of ocean currents were obtained from HYCOM (Hybrid Coordinate Ocean Model, (Chassignet et al., 2007), which is operated by the HYCOM Consortium, sponsored by the National Ocean Partnership Program (NOPP), as part of the U.S. Global Ocean Data Assimilation Experiment (GODAE). HYCOM is a data-assimilative, three-dimensional ocean model that is run as a hindcast (for a past period), assimilating time-varying observations of sea surface height, sea surface temperature and in-situ temperature and salinity measurements (Chassignet et al., 2009). The HYCOM predictions for drift currents are produced at a horizontal spatial resolution of approximately 8.25 km (1/12th of a degree) over the region, at a frequency of every 3 hours. HYCOM uses isopycnal layers in the open, stratified ocean, but uses the layered continuity equation to make a dynamically smooth transition to a terrain following coordinate in shallow coastal regions, and to z-level coordinates in the mixed layer and/or unstratified seas.

For this study, the HYCOM hindcast currents were obtained for the years 2010 to 2019 (inclusive).

3.3 Surface Currents

Figure 3.4 and Figure 3.5 present the monthly and total current rose plots, respectively, for surface waters adjacent to the release location.

Note the convention for defining current direction throughout this report is the direction the current flows towards. Each branch of the current rose distribution represents the currents flowing to that direction, with north to the top of the diagram. The branches are divided into segments of different colour, which represent the current speed ranges for each direction. Speed intervals of 0.2 m/s are typically used in these current roses. The length of each coloured segment within a branch is proportional to the frequency of currents flowing within the corresponding speed and direction.

The average and maximum current speeds were 0.25 m/s and 2.07 m/s, respectively. Throughout the year, the dominant current directions were northwest and southeast, primarily driven by tidal currents rather than ocean currents, given the release location's proximity to shore and shallow waters.

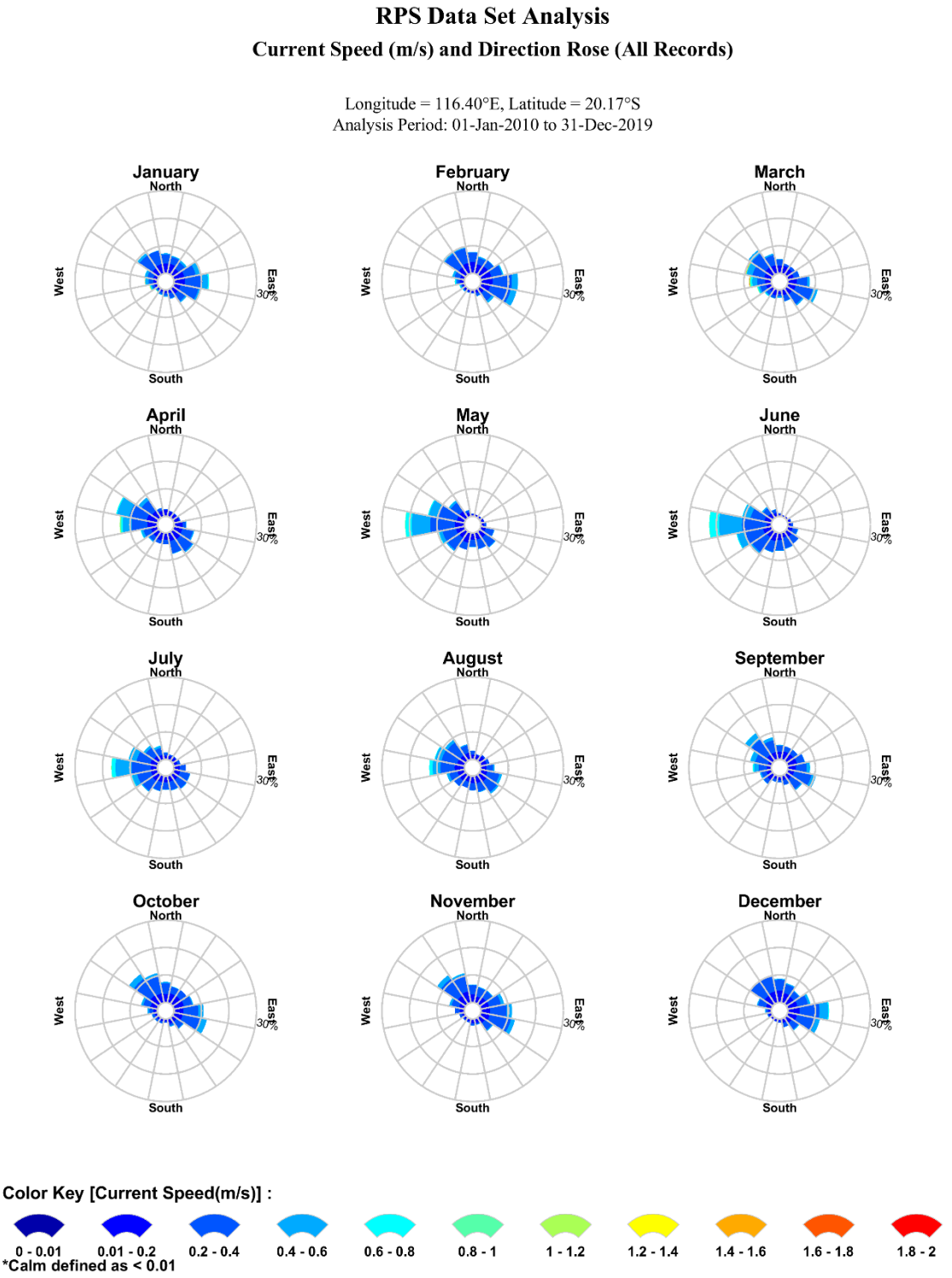


Figure 3.4 Monthly surface current rose plots adjacent to the release location, derived from the 2010 to 2019 modelled dataset.

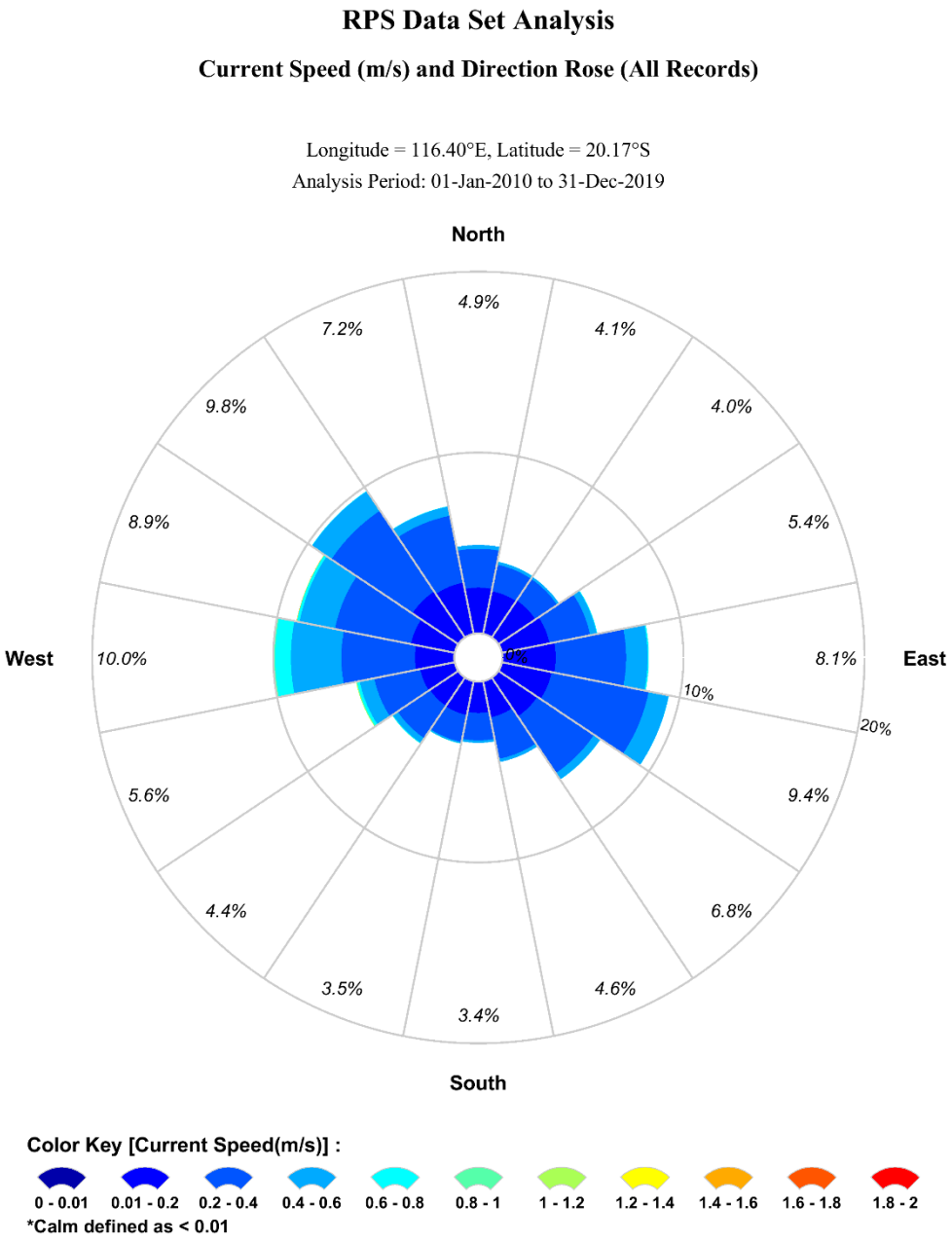


Figure 3.5 Total surface current rose plots adjacent to the release location, derived from the 2010 to 2019 modelled dataset.

4 WIND DATA

To account for the influence of the wind on the floating oil, wind data from 2010 to 2019 (inclusive) was sourced from the National Centre for Environmental Prediction (NCEP) Climate Forecast System Reanalysis (CFSR; see Saha et al., 2010). The CFSR wind model includes observations from many data sources; surface observations, upper-atmosphere air balloon observations, aircraft observations and satellite observations. The model is capable of accurately representing the interaction between the earth's oceans, land and atmosphere. The gridded wind data output is available at ¼ of a degree resolution (~33 km) and 1-hourly time intervals. Figure 4.1 shows the spatial resolution of the wind field used as input into the oil spill model.

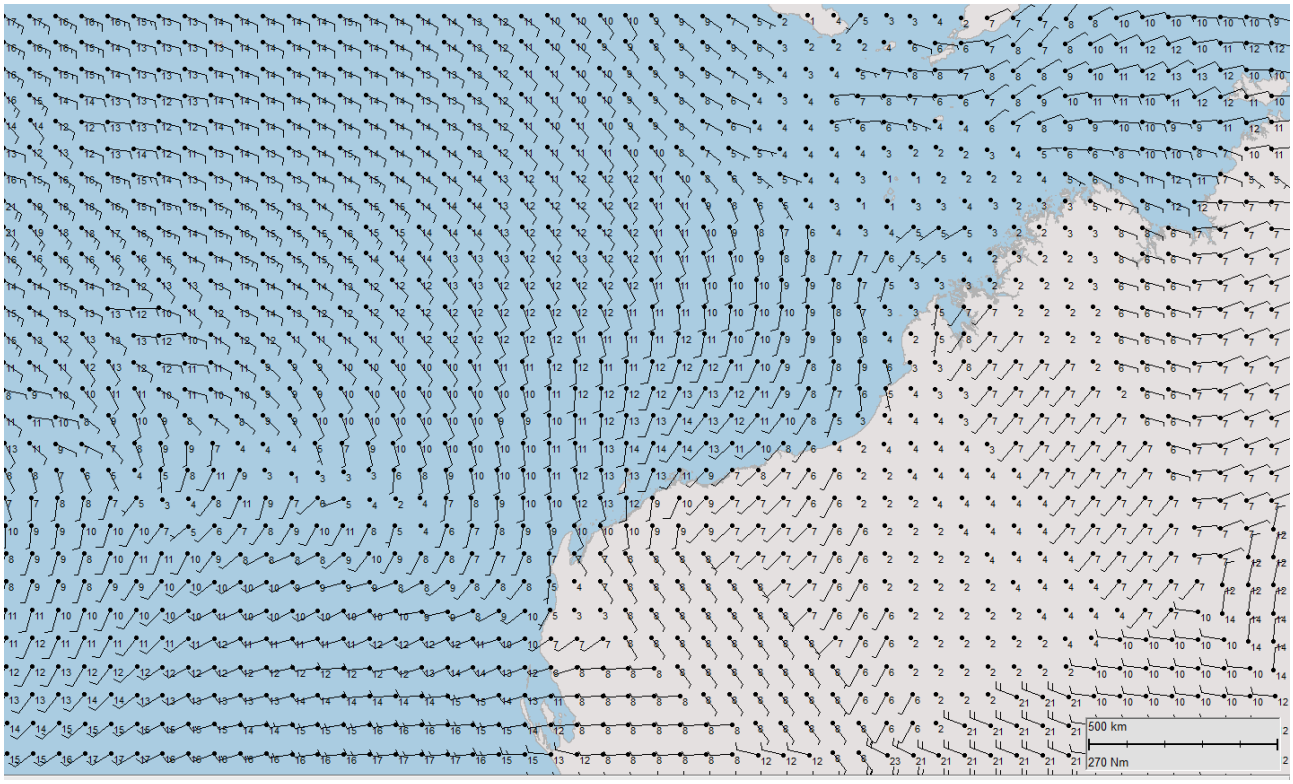


Figure 4.1 Spatial resolution of the CFSR modelled wind data used as input into the oil spill model. Note, for ease viewing only every second wind vector is displayed on the map.

Figure 4.2 and Figure 4.3 illustrate the monthly and total wind rose plots, respectively, adjacent to the release location.

Note that the atmospheric convention for defining wind direction, that is, the direction the wind blows from, is used to reference wind direction throughout this report. Each branch of the rose represents wind coming from that direction, with north to the top of the diagram. Sixteen directions are used. The branches are divided into segments of different colour, which represent wind speed ranges from that direction. Speed ranges of 5 knot intervals are typically used in these wind roses. The length of each segment within a branch is proportional to the frequency of winds blowing within the corresponding range of speeds from that direction.

The average and maximum wind speeds were 12.2 knots and 52.3 knots, respectively. Winds typically blow from the west-southwest during the summer months, while in winter, they predominantly come from the east.

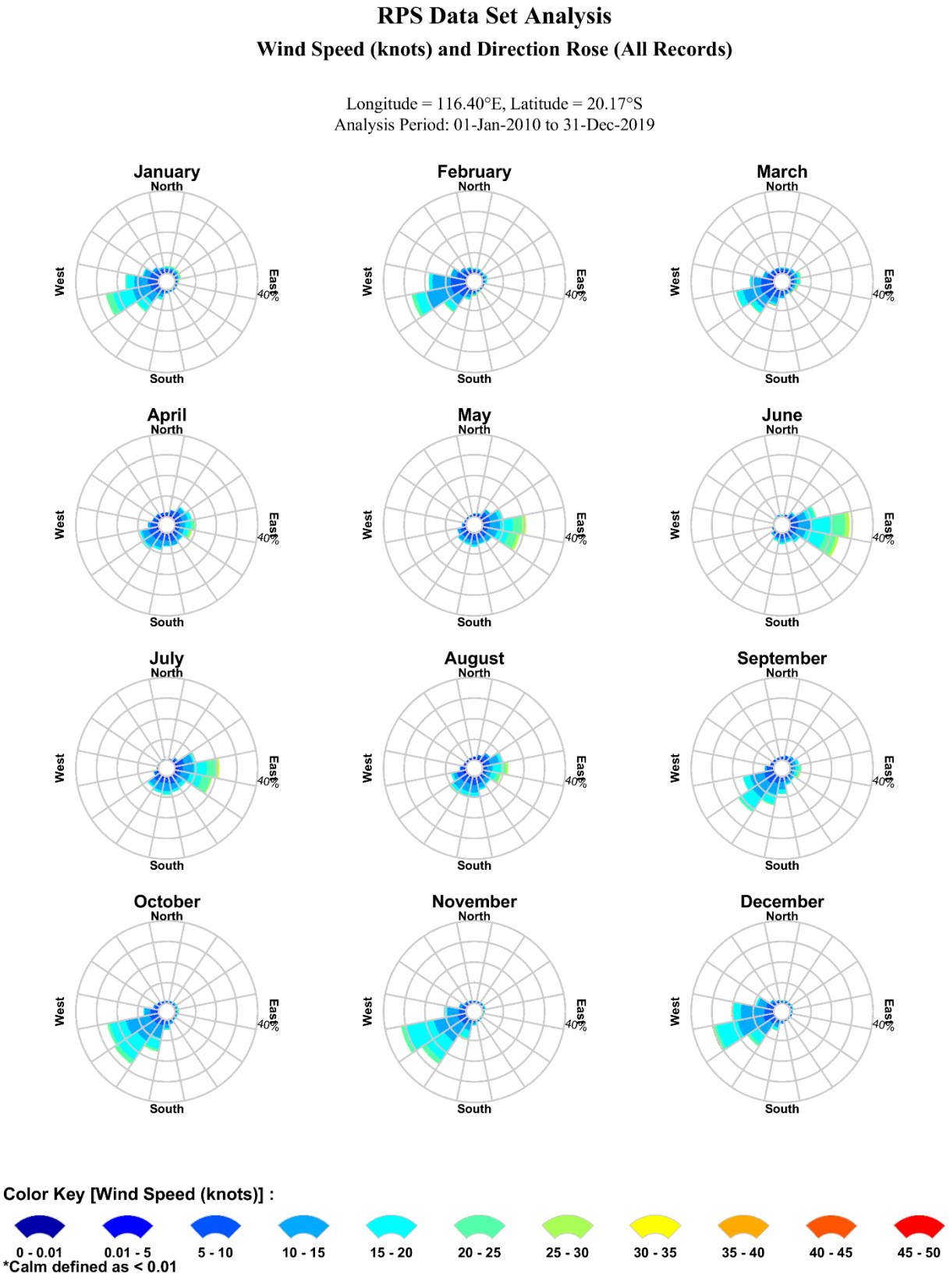


Figure 4.2 Monthly wind rose plots adjacent to the release location, derived from the 2010 to 2019 modelled dataset.

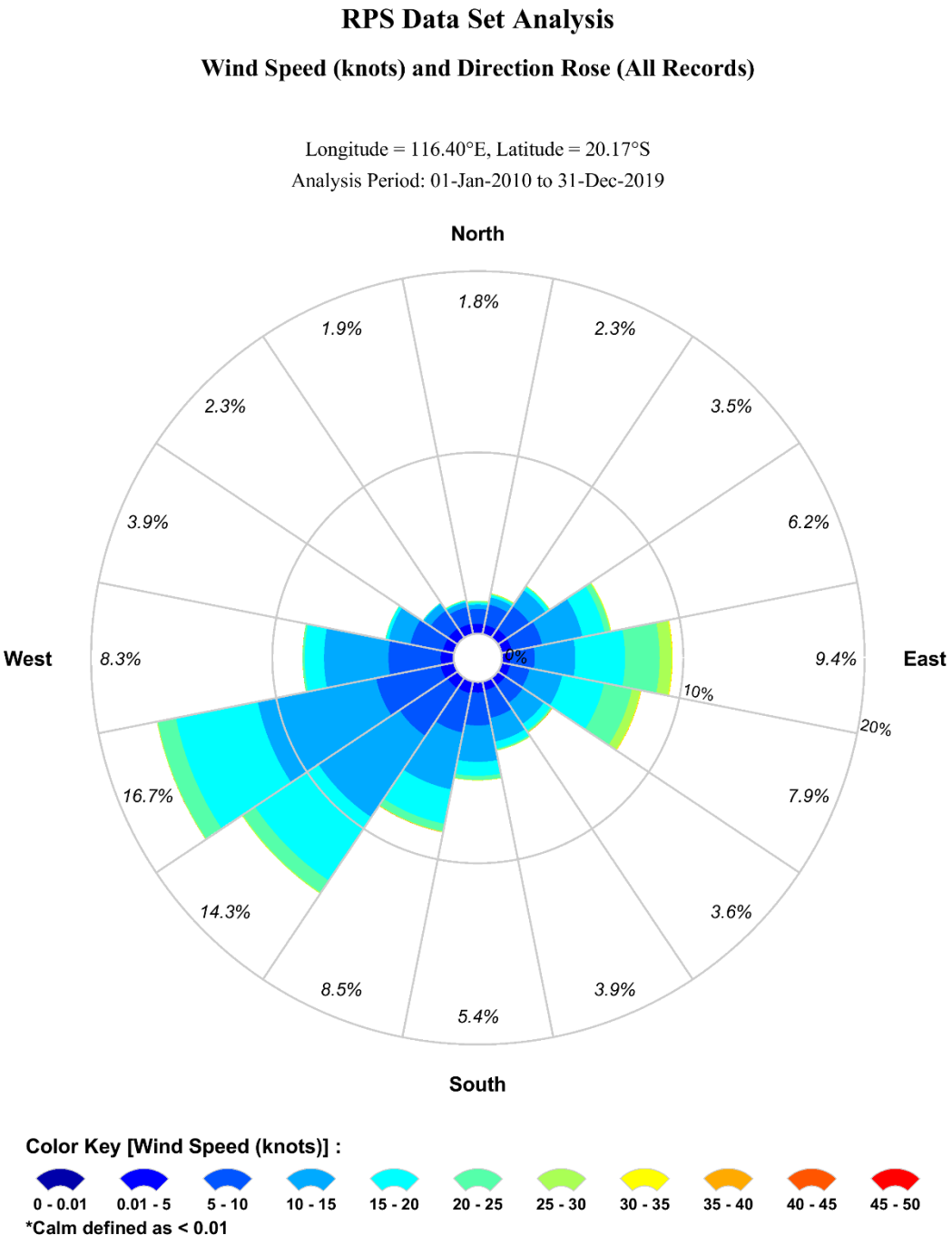


Figure 4.3 Total wind rose plot adjacent to the release location, derived from the 2010 to 2019 modelled dataset.

5 WATER TEMPERATURE AND SALINITY

The monthly depth-varying water temperature and salinity profiles for the closest point to the release location were obtained from the World Ocean Atlas 2018 database produced by the National Oceanographic Data Centre (National Oceanic and Atmospheric Administration) and its co-located World Data Center for Oceanography (Levitus et al., 2013). The data are used to inform the weathering, movement and evaporative loss of hydrocarbon spills in the surface and subsurface layers.

Table 5.1 shows that the monthly average sea surface (0-2 m depth layer) temperatures ranged from 24.0°C (September) to 29.6°C (March). Salinity remained consistent throughout the year ranging between 35.2 ppt and 35.4 ppt.

Figure 5.1 presents monthly temperature and salinity profiles throughout the water column in the vicinity of the release location.

Table 5.1 Monthly average sea surface (0-2 m depth layer) temperature and salinity in the vicinity of the release location.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Temperature (°C)	27.5	27.5	29.6	28.2	28.1	26.4	24.7	24.3	24.0	25.8	26.8	27.8
Salinity (psu)	35.3	35.3	35.2	35.2	35.4	35.4	35.2	35.2	35.2	35.2	35.3	35.2

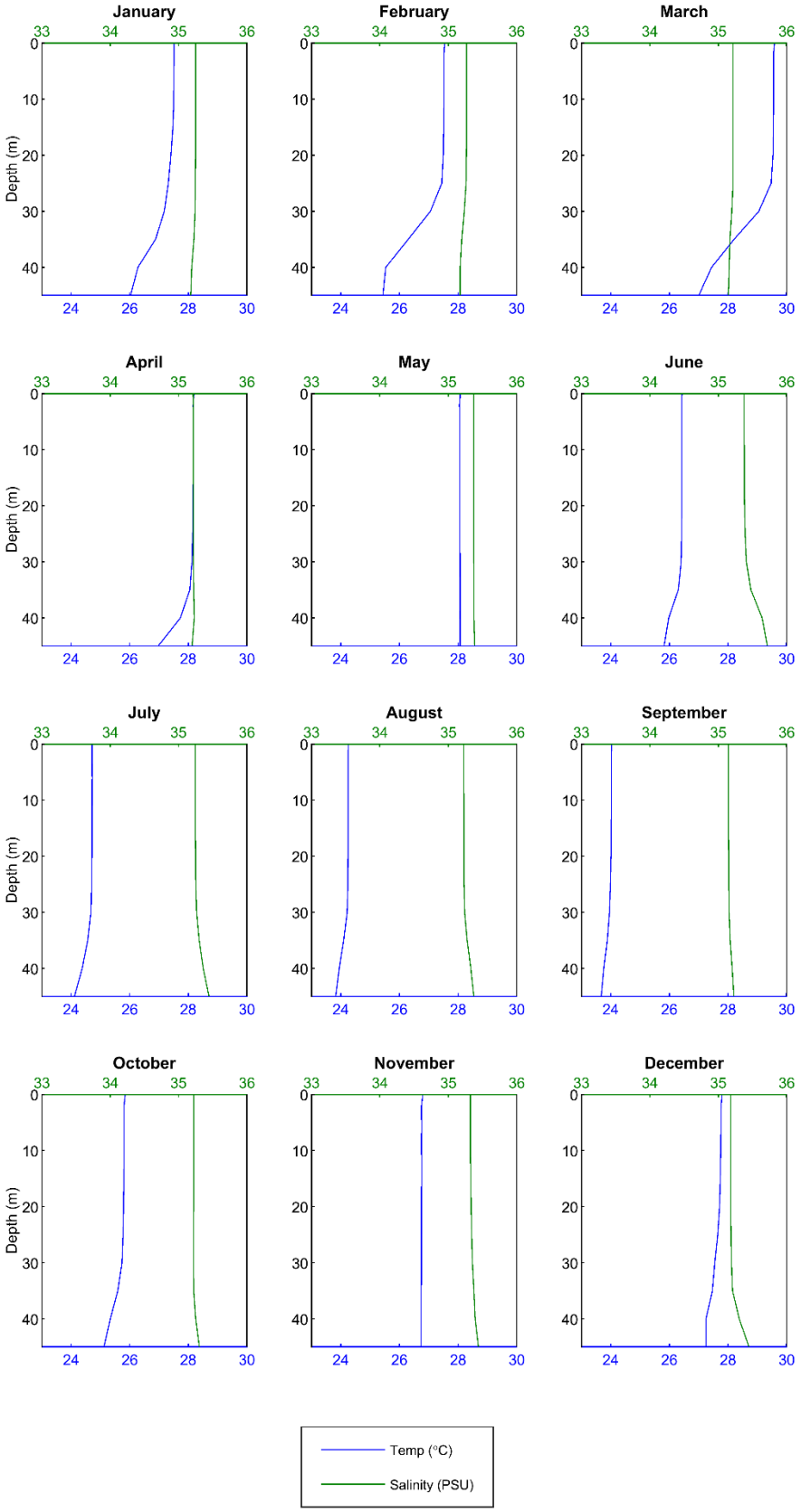


Figure 5.1 Monthly temperature and salinity profiles throughout the water column in the vicinity of the release location.

6 OIL SPILL MODEL SIMAP

The spill modelling was carried out using a purpose-developed oil spill trajectory and fates model, SIMAP (Spill Impact Model Application Package). This model is designed to simulate the transport and weathering processes that affect the outcomes of hydrocarbon spills to the sea, accounting for the specific oil type, spill scenario, and prevailing wind and current circulation patterns (French et al., 1999; French-McCay, 2003; 2004; French-McCay et al., 2004; 2021; 2022a; 2022b).

SIMAP is the evolution of the United States Environmental Protection Agency (US EPA) Natural Resource Damage Assessment model (French et al., 1999) and is designed to simulate the fate and effects of spilled oils and fuels for both the surface slick and the three-dimensional plume that is generated in the water column. SIMAP includes algorithms to account for both physical transport and weathering processes. The latter are important for accounting for the partitioning of the spilled mass over time between the water surface (surface slick), water column (entrained oil and dissolved compounds), atmosphere (evaporated compounds) and land (stranded oil). The model also accounts for the interaction between weathering and transport processes.

The physical algorithms calculate transport and spreading by physical forces, including surface tension, gravity as well as wind and current forces for both surface slicks and oil within the water column. The fates algorithms calculate all the weathering processes known to be important for oil spilled to marine waters. These include droplet and slick formation, entrainment by wave action, emulsification, dissolution of soluble components, sedimentation, evaporation, bacterial and photo-chemical decay and shoreline interactions. These algorithms account for the specific oil type being considered.

Entrainment is the physical process where globules of oil are transported from the sea surface into the water column by wind and wave-induced turbulence or be generated subsea by a pressurised discharge at depth. It has been observed that entrained oil is broken into droplets of varying sizes. Small droplets spread and diffuse into the water column, while larger ones rise rapidly back to the surface (Delvigne & Sweeney, 1988; Delvigne, 1991).

Dissolution is the process by which soluble hydrocarbons enter the water from a surface slick or from entrained droplets. The lower molecular weight hydrocarbons tend to be both more volatile and more soluble than those of higher molecular weight.

The formation of water-in-oil emulsions, or mousse, which is termed ‘emulsification’, depends on oil composition and sea state. Emulsified oil can contain as much as 80% water in the form of micrometre-sized droplets dispersed within a continuous phase of oil (Daling & Brandvik, 1991; Bobra, 1991; Daling et al., 1997; Fingas, 1995, Fingas & Fieldhouse, 2004).

Entrainment, dissolution and emulsification rates are correlated to wave energy, which is accounted for by estimating wave heights from the sustained wind speed, direction and fetch (i.e. distance downwind from land barriers) at different locations in the domain. Dissolution rates are dependent upon the proportion of soluble, short-chained hydrocarbon compounds, and the surface area at the oil/water interface of slicks. Dissolution rates are also strongly affected by the level of turbulence. For example, dissolution rates will be relatively high at the site of the release for a deep-sea discharge at high pressure.

Evaporation can result in the transfer of large proportions of spilled oil from the sea surface to the atmosphere, depending on the type of oil. Evaporation rates vary over space and time dependent on the prevailing sea temperatures, wind and current speeds, the surface area of the slick and entrained droplets that are exposed to the atmosphere as well as the state of weathering of the oil. Evaporation rates will decrease over time, depending on the calculated rate of loss of the more volatile compounds. By this process, the model can differentiate between the fates of different oil types.

Decay (degradation) of hydrocarbons may occur as the result of photolysis, which is a chemical process energised by ultraviolet light from the sun, and by biological breakdown, termed biodegradation. Many types of marine organisms ingest, metabolise and utilise oil as a carbon source, producing carbon dioxide and water as by-products.

The SIMAP weathering algorithms include terms to represent these dynamic processes. Technical descriptions of the algorithms used in SIMAP and validations against real spill events are provided in French et al., (1999) and French-McCay (2004).

Input specifications for oil types include density, viscosity, pour-point, distillation curve (volume of oil distilled off versus temperature) and the aromatic/aliphatic component ratios within given boiling point ranges. The model calculates a distribution of the oil by mass into the following components:

- Surface-bound or floating oil;
- Entrained oil (non-dissolved oil droplets that are physically entrained by wave action);
- Dissolved hydrocarbons (principally the aromatic and short-chained aliphatic compounds);
- Evaporated hydrocarbons;
- Sedimented hydrocarbons; and
- Decayed hydrocarbons.

7 THRESHOLDS

The SIMAP model will track oil concentrations to very low levels. Hence, it is useful to define meaningful threshold concentrations for the recording of contact by oil components and determining the probability of exposure at a location (calculated from the number of replicate simulations in which this contact occurred).

The judgement of meaningful levels is complicated and will depend upon the mode of action, sensitivity of the biota contacted, the duration of the contact and the toxicity of the compounds that are represented in the oil. The latter factor is further complicated by the change in the composition of an oil type over time due to weathering processes. Without specific testing of the oil types, at different states of weathering against a wide range of the potential local receptors, such considerations are beyond the scope of this investigation.

It is important to note that the thresholds herein are based on the thresholds outlined in the NOPSEMA Oil Spill Modelling Bulletin (NOPSEMA, 2019), which are summarised in Table 7.1. Their relationship to exposure for the sea surface, shoreline, and water column (entrained and dissolved hydrocarbons) are presented in Sections 7.1 to 7.3. Supporting justifications of the adopted thresholds applied during the study and additional context relating to the area of exposure are also provided.

Table 7.1 Summary of the thresholds applied in this study.

Floating Oil Concentration (g/m^2)	Shoreline Oil Accumulation (g/m^2)	Entrained Hydrocarbons Concentration (ppb)	Instantaneous Dissolved Hydrocarbons (ppb)
1	10	10	10
10	100	100	50
50	1,000		400

7.1 Floating Oil

Floating oil concentrations are relevant to describing the risks of oil coating emergent reefs, vegetation in the littoral zone and shoreline habitats, as well as the risk to wildlife found on the water surface, such as marine mammals, reptiles, and birds. Floating oil is also visible at relatively low concentrations (> ~0.05 g/m^2). Hence, the area affected by visible oil, which might trigger social or economic impacts, will be larger than the area where biological impacts might be expected.

The low threshold for floating oil exposure was set to 1 g/m^2, which equates approximately to an average thickness of 1 µm. It represents the practical limit of observing hydrocarbon sheens in the marine environment. This threshold is considered below levels which would cause environmental harm and is more indicative of the areas perceived to be affected due to its visibility on the sea-surface and potential to trigger temporary closures of areas (i.e., fishing grounds) as a precautionary measure.

Oil of this thickness is described as rainbow sheen in appearance, according to the Bonn Agreement Oil Appearance Code (Bonn Agreement, 2009; AMSA, 2014) (see Table 7.2). Figure 7.1 shows photographs highlighting the difference in appearance between a silvery sheen, rainbow sheen and metallic sheen.

Ecological impact has been estimated to occur at 10 g/m^2 (a film thickness of approximately 10 µm or 0.01 mm) (French et al.,1996; French-McCay 2009) as this level of fresh oiling has been observed to mortally impact some birds through adhesion of oil to their feathers, exposing them to secondary effects such as hypothermia. The appearance of oil at this average thickness has been described as a metallic sheen (Bonn Agreement, 2009). Concentrations above 10 g/m^2 are also considered the lower actionable threshold, where oil may be thick enough for containment and recovery as well as dispersant treatment (AMSA, 2023).

Oil concentrations on the sea surface of 25 g/m^2 (or greater) would be harmful for all birds that have landed in an oil film due to potential contamination of their feathers, with secondary effects such as loss of temperature regulation and ingestion of oil through preening (Scholten et al., 1996; Koops et al., 2004). The appearance of oil at this thickness is also described as metallic sheen (Bonn Agreement, 2009). For this study the high exposure threshold was set to 50 g/m^2 and above based on NOPSEMA (2019). This threshold can also be used to inform response planning. Table 7.3 is a summary of each threshold.

Table 7.2 The Bonn Agreement Oil Appearance Code.

Code	Description Appearance	Layer Thickness Interval (g/m^2 or µm)	Litres per km^2
1	Sheen (silvery/grey)	0.04 – 0.30	40 – 300
2	Rainbow	0.30 – 5.0	300 – 5,000
3	Metallic	5.0 – 50	5,000 – 50,000
4	Discontinuous True Oil Colour	50 – 200	50,000 – 200,000
5	Continuous True Oil Colour	≥ 200	≥ 200,000

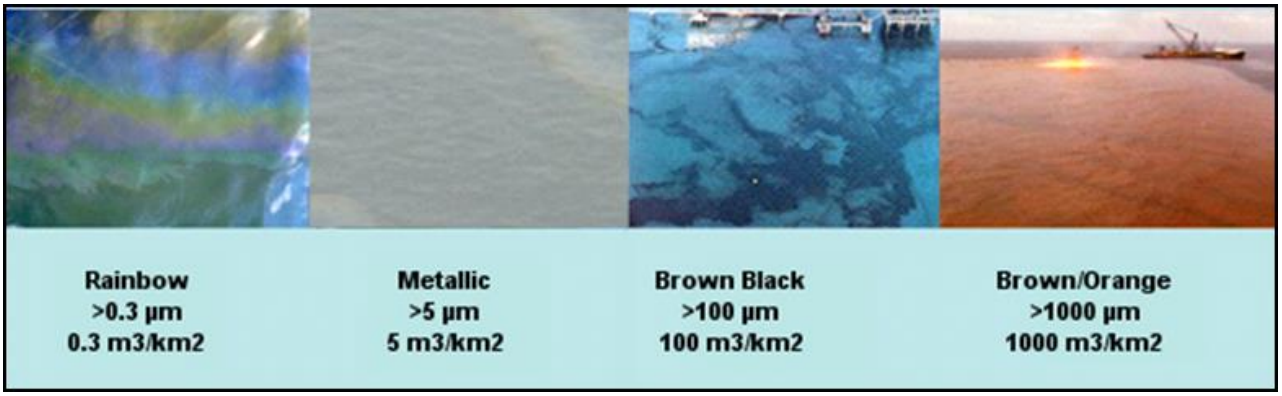


Figure 7.1 Photographs showing the difference between oil colour and thickness on the sea surface (source: adapted from Oil Spill Solutions, 2015).

Table 7.3 Floating oil exposure thresholds used in the oil spill modelling study (in alignment with NOPSEMA, 2019).

Threshold level	Floating oil (g/m^2)	Description
Low	1	Approximates range of socio-economic effects and establishes planning area for scientific monitoring
Moderate	10	Approximates lower limit for harmful exposures to birds and marine mammals
High	50*	Approximates surface oil slick and informs response planning

* 50 g/m^2 also used to define the threshold for actionable floating oil.

7.2 Shoreline Oil Accumulation

There are many different types of shorelines, ranging from cliffs, rocky beaches, sandy beaches, mud flats and mangroves, and each of these influences the volume of oil that can remain stranded ashore and its thickness before the shoreline saturation point occurs. For instance, a sandy beach may allow oil to percolate through the sand, thus increasing its ability to hold more oil ashore over tidal cycles and various wave actions than an equivalent area of water; hence oil can increase in thickness onshore over time. A sandy beach shoreline was assumed as the default shoreline type for the modelling in this study, as it allows for the highest carrying capacity of oil (of the available open/exposed shoreline types).

In, previous risk assessment studies, a threshold of 10 g/m^2 was used to assess the potential for shoreline accumulation (French-McCay et al.,2005a; 2005b). This is a conservative threshold used to define regions of socio-economic impact, such as triggering temporary closures of adjoining fisheries or the need for shore clean-up on beaches or man-made features/amenities (breakwaters, jetties, marinas, etc.). It would equate

to approximately 2 teaspoons of hydrocarbon per square meter of shoreline accumulation. The appearance is described as a stain/film. On that basis, the 10 g/m^2 has been selected to define the low threshold.

French et al. (1996) and French-McCay (2009) define a shoreline oil accumulation threshold of 100 g/m^2, or above, would potentially harm shorebirds and wildlife (fur-bearing aquatic mammals and marine reptiles on or along the shore) based on studies for sub-lethal and lethal impacts. This threshold has been used in previous environmental risk assessment studies (see French-McCay, 2003; French-McCay et al., 2004, French-McCay et al., 2011; 2012; NOAA, 2013). Additionally, this threshold is also recommended in AMSA's foreshore assessment guide as the acceptable minimum thickness that does not inhibit the potential for recovery and is best remediated by natural coastal processes alone (AMSA, 2023). This threshold equates to approximately ½ a cup of oil per square meter of shoreline accumulation and is described as a thin oil coat. The 100 g/m^2 has been selected to define the moderate threshold.

Observations by Lin & Mendelssohn (1996) demonstrated that loadings of more than 1,000 g/m^2 of hydrocarbon during the growing season would be required to impact marsh plants significantly. Similar thresholds have been found in studies assessing hydrocarbon impacts on mangroves (Grant et al., 1993; Suprayogi & Murray, 1999). This loading equates to approximately 1 litre of hydrocarbon per square meter of shoreline accumulation and the appearance is described as a hydrocarbon cover. A loading of 1,000 g/m^2 has been selected to define high threshold.

Table 7.4 is a summary of each threshold.

Table 7.4 Shoreline accumulation thresholds used in oil spill modelling study (in alignment with NOPSEMA, 2019).

Threshold level	Shoreline loading(g/m^2)	Description
Low	10	Predicts potential for some socio-economic impact
Moderate	100*	Loading predicts area likely to require clean-up effort
High	1,000	Loading predicts area likely to require intensive clean-up effort

* 100 g/m^2 also used to define the threshold for actionable shoreline oil.

7.3 In-water

Oil is a mixture of thousands of hydrocarbons of varying physical, chemical, and toxicological characteristics, and therefore, demonstrates varying fates and impacts on organisms. As such, for in-water exposure, the SIMAP model provides separate outputs for dissolved and entrained hydrocarbons from oil droplets. The consequences of exposure to dissolved and entrained components will differ because they have different modes and magnitudes of effect.

Entrained hydrocarbon concentrations were calculated based on oil droplets that are suspended in the water column, though not dissolved. The composition of this oil would vary with the state of weathering (oil age) and may contain soluble hydrocarbons when the oil is fresh. Calculations for dissolved hydrocarbons specifically calculates oil components which are dissolved in water, which are known to be the primary source of toxicity exerted by oil.

A complicating factor that should be considered when assessing the consequence of dissolved and entrained oil distributions is that there will be some areas where both physically entrained oil droplets and dissolved hydrocarbons co-exist. Higher concentrations of each will tend to occur close to the source where sea conditions can force mixing of relatively unweathered oil into the water column, resulting in more rapid dissolution of soluble compounds.

7.3.1 Dissolved Hydrocarbons

Laboratory studies have shown that dissolved hydrocarbons exert most of the toxic effects of oil on aquatic biota (Carls et al., 2008; Nordtug et al., 2011; Redman, 2015). The mode of action is a narcotic effect, which is positively related to the concentration of soluble hydrocarbons in the body tissues of organisms (French-McCay, 2002). Dissolved hydrocarbons are taken up by organisms directly from the water column by absorption through external surfaces and gills, as well as through the digestive tract. Thus, soluble hydrocarbons are termed “bioavailable”.

Hydrocarbon compounds vary in water-solubility and the toxicity exerted by individual compounds is inversely related to solubility, however bioavailability will be modified by the volatility of individual compounds (Nirmalakhandan & Speece, 1988; Blum & Speece, 1990; McCarty, 1986; McCarty et al., 1992a; 1992b; McCarty & Mackay, 1993; Verhaar et al., 1992; 1999; Swartz et al., 1995; French-McCay, 2002; McGrath & Di Toro, 2009). Of the soluble compounds, the greatest contributor to toxicity for water-column and benthic organisms are the lower-molecular-weight aromatic compounds, which are both volatile and soluble in water. Although they are not the most water-soluble hydrocarbons within most oil types, the polynuclear aromatic hydrocarbons (PAHs) containing 2 – 3 aromatic ring structures typically exert the largest narcotic effects because they are semi-soluble and not highly volatile, so they persist in the environment long enough for significant accumulation to occur (Anderson et al., 1974; 1987; Neff & Anderson, 1981; Malins & Hodgins, 1981; McAuliffe, 1987; NRC, 2003). The monoaromatic hydrocarbons (MAHs), including the BTEX compounds (benzene, toluene, ethylbenzene, and xylenes), and the soluble alkanes (straight chain hydrocarbons) also contribute to toxicity, but these compounds are highly volatile, so that their contribution will be low when oil is exposed to evaporation and higher when oil is discharged at depth where volatilisation does not occur (French-McCay, 2002).

French-McCay (2002) reviewed available toxicity data, where marine biota was exposed to dissolved hydrocarbons prepared from oil mixtures, finding that 95% of species and life stages exhibited 50% population mortality (LC_{50}) between 6 and 400 ppb (with an average of 50 ppb) total PAH concentration after 96 hrs exposure. Therefore, concentrations lower than 6 ppb total PAH value should be protective of 97.5% of species and life stages even with exposure periods of days (at least 96 hours). Early life-history stages of fish appear to be more sensitive than older fish stages and invertebrates.

Exceedances of 10, 50 or 400 ppb over a 1-hour timestep (see Table 7.5) were applied in this study to indicate the increasing potential for sub-lethal to lethal toxic effects (or low to high), based on NOPSEMA (2019).

7.3.2 Entrained Hydrocarbons

Entrained hydrocarbons consist of oil droplets that are suspended in the water column and insoluble. Insoluble compounds in oil cannot be absorbed from the water column by aquatic organisms, therefore they are not bioavailable through absorption of compounds from the water. Exposure to these compounds would require routes of uptake other than absorption of soluble compounds. The route of exposure of organisms to whole oil alone include direct contact with tissues of organisms and uptake of oil by direct consumption, with potential for biomagnification through the food chain (NRC, 2003).

Thresholds of 10 ppb and 100 ppb were applied over a 1-hour time exposure (Table 7.5) as per NOPSEMA (2019).

The 10-ppb threshold exposure zone is not considered to be of significant biological impact and is therefore outside the adverse exposure zone. This exposure zone represents the area contacted by the spill.

Table 7.5 Dissolved and entrained hydrocarbon exposure thresholds assessed over a 1-hour time step used in the oil spill modelling study (in alignment NOPSEMA, 2019).

	Exposure level	In-water threshold (ppb)	Description
Dissolved hydrocarbons	Low	10	Establishes planning area for scientific monitoring based on potential for exceedance of water quality triggers
	Moderate	50	Approximates potential toxic effects, particularly sublethal effects to sensitive species
	High	400	Approximates toxic effects including lethal effects to sensitive species
Entrained hydrocarbons	Low	10	Establishes planning area for scientific monitoring based on potential for exceedance of water quality triggers
	Moderate	100	As appropriate given oil characteristics for informing risk evaluation

7.4 Dispersion Coefficients and Mixed Layer Depth

A horizontal dispersion coefficient of 10 m^2/s was used to account for dispersive processes acting on the floating oil on the sea surface that are below the scale of resolution of the current data and is based on typical values for open waters (Okubo, 1971).

A vertical dispersion coefficient (*Dv)* of 91 cm^2/s was used to represent the turbulent mixing and diffusion processes in the wave-mixed layer in the upper water column. It is a site-specific value computed using the 50^{th} percentile wind speed of approximately 12 knots at the operational area derived from the 10-year dataset (at 10 m above the sea surface, W_{10}) based on French-McCay (2004).

The mixed layer depth corresponds to the top layer of the water column, where vertical mixing is strong enough to cause uniform temperature and salinity, and is influenced by factors such as wind, ocean currents and waves. The 50^{th} percentile value at the site was calculated using Copernicus' 10 years (2010 to 2019) monthly averaged mixed layer depth data and was found to be 20 m.

8 OIL PROPERTIES

Table 8.1 and Table 8.2 present the physical properties and boiling point ranges of Wandoo crude and MDO used for Scenario 1 and Scenario 2 modelling, respectively.

Wandoo crude has a density of 937.0 kg/m^3 at 16ºC (API of 19.4) and a low pour point of -24°C, which ensures that this crude will remain in a liquid state over the annual temperature range observed on the North West Shelf. It is also low in wax content, typical of a biodegraded oil.

Generally, <2% of the crude should evaporate within the first 12 hours (Boiling point (BP) < 180°C); a further 10.2% is expected to evaporate within the first 24 hours (180°C < BP < 265°C); and an additional 33.1% should evaporate over several weeks (265°C < BP < 380°C). Additionally, 55% (by mass) of the crude will not evaporate, decaying slowly over time. It is categorised as a Group IV (or persistent) oil according to oil classifications by AMSA (2023). The classification is based on the specific gravity of hydrocarbons in combination with relevant boiling point ranges.

The MDO has a density of 890.0 kg/m^3 at 15ºC (API of 27.5) and a low pour point of -9.0°C. The low viscosity (14.0 cP at 25ºC) indicates that this oil will spread quickly when released and will form a thin to low thickness film on the sea surface, increasing the rate of evaporation. Generally, about 4% of the MDO mass should evaporate within the first 12 hours (Boiling point (BP) < 180°C); a further 32.0% should evaporate within the first 24 hours (180°C < BP < 265°C); and an additional 54.0% should evaporate over several days (265°C < BP < 380°C). Approximately 10% (by mass) of MDO will not evaporate, though will decay slowly over time. It is categorised as a Group II oil (light-persistent) according to the AMSA (2023) classifications.

It's noteworthy that the heavier components of the Wandoo crude and MDO, specifically the low volatile and persistent (residual) portions (i.e., ~88% and 64%, respectively), will have a strong tendency to become entrained into the water column in the presence of winds speeds above 7 knots and in turn breaking waves, however, it can re-surface under calm conditions (less than 7 knots).

Table 8.1 Physical properties for Wandoo crude and MDO.

Properties	Wandoo Crude	MDO
Density (kg/m^3)	937 (at 16 °C)	890.0 (at 15 °C)
API	19.4	27.5
Dynamic viscosity (cP)	161 (at 25 °C)	14.0 (at 25 °C)
Pour point (°C)	-24	-9.0
Hydrocarbon property category	Group IV	Group II
Hydrocarbon property classification	Persistent	Light persistent

Table 8.2 Boiling point ranges for Wandoo crude and MDO.

Characteristic Oil Type	Volatiles (%)	Semi-volatiles (%)	Low Volatiles (%)	Residual (%)
Boiling point (°C)	< 180	180-265	265-380	> 380
	Non persistent			Persistent
Wandoo crude	1.7	10.2	33.1	55.0
MDO	4.0	32.0	54.0	10.0

8.1 Weathering Characteristics

8.1.1 Wandoo crude

A series of weathering tests were conducted to illustrate the potential behaviour following a 50 m^3 instantaneous surface release of Wandoo crude when exposed to:

- 5 knot (2.6 m/s) constant wind speed, 27°C water temperature and currents; and
- Variable wind speeds (1 – 12 m/s or 2 to 24 knots), 27°C water temperature and currents.

The first case is indicative of the potential weathering rates under calm conditions that would not generate entrainment, while the second case would be more representative of the moderate winds experienced over the region.

The mass balance forecast for the constant wind case (Figure 8.1) shows that 13.0% of the crude is predicted to evaporate within 24 hours. The remaining hydrocarbon on the water surface will weather at a slower rate and be subject to more gradual decay through biological and photochemical processes.

In the variable wind speeds test (Figure 8.2), characterised by stronger average winds and breaking waves, there is an increased entrainment of the crude into the water column. Approximately 24 hours into the spill, the forecast indicates that 3.2% of the crude will have evaporated, with additional 93.9% expected to have entrained. Hence, less than 1% of floating oil remains on the water surface 24 hours into the spill.

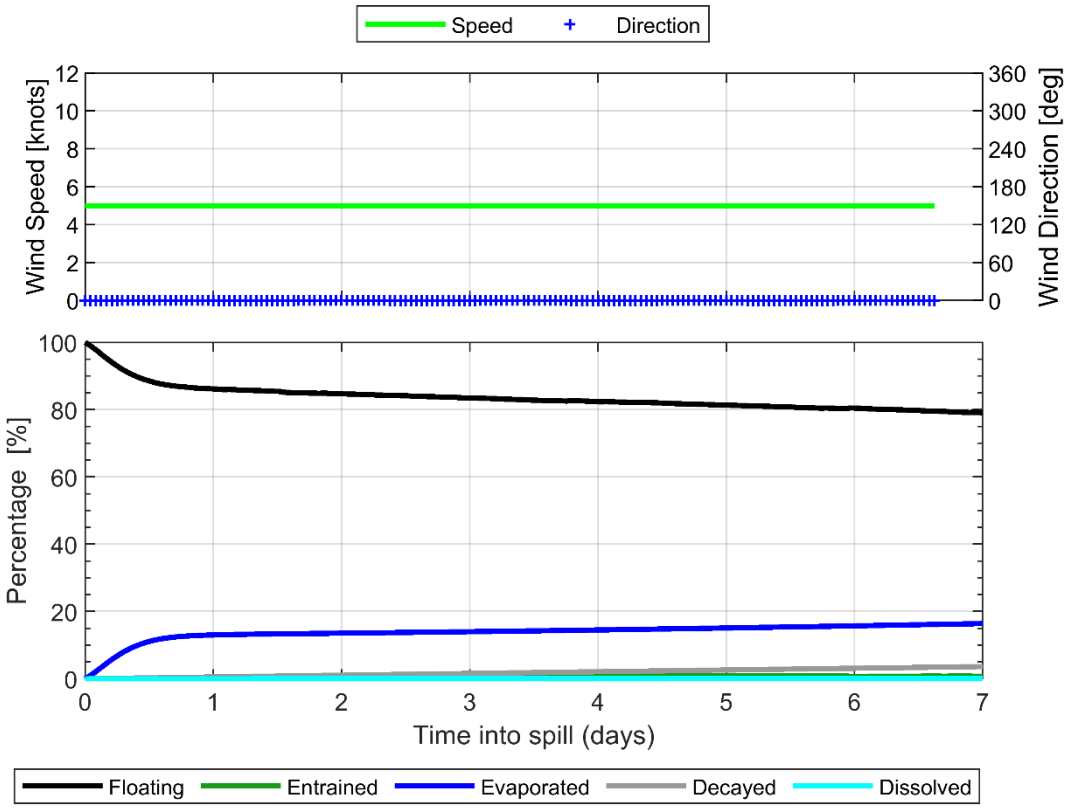


Figure 8.1 Mass balance plot for an instantaneous 50 m^3 surface release of Wandoo crude subjected to a constant 5 knot (2.6 m/s) wind, currents and 27°C water temperature.

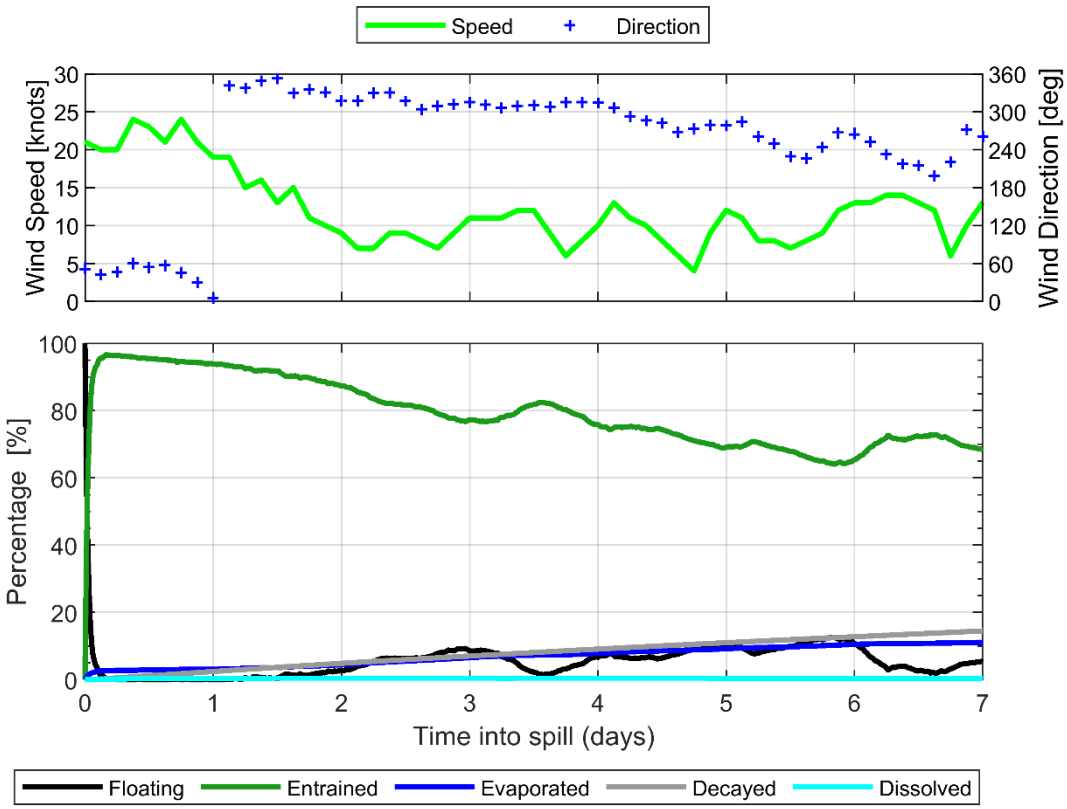


Figure 8.2 Mass balance plot for an instantaneous 50 m³ surface release of Wandoo crude subjected to variable wind speeds (1 – 12 m/s or 2 to 24 knots), currents and 27°C water temperature.

8.1.2 Marine Diesel Oil

A series of weathering tests were conducted to illustrate the potential behaviour following a 50 m³ instantaneous surface release of MDO when exposed to:

- 5 knot (2.6 m/s) constant wind speed, 27°C water temperature and currents; and
- Variable wind speeds (1 – 12 m/s or 2 to 23 knots), 27°C water temperature and currents.

The first case is indicative of the potential weathering rates under calm conditions that would not generate entrainment, while the second case would be more representative of the moderate winds experienced over the region.

The mass balance forecast for the constant wind case (Figure 8.1) shows that 36.1% of the MDO is predicted to evaporate within 24 hours. The remaining MDO on the water surface will weather at a slower rate and be subject to more gradual decay through biological and photochemical processes.

For the variable wind speed case (Figure 8.2), after 24 hours, 80.5% of the mass of MDO will have entrained, with an additional 15.0% expected to have evaporated. Hence, only a <1% of floating oil remains on the water surface. The low volatile and residual compounds are anticipated to entrain beneath the surface under conditions generating wind waves (winds approximately > 6 m/s). While the MDO is entrained, it is forecast to decay at a higher rate of 3% per day or 21% after 7 days, attributed to biological and photochemical degradation. This contrasts with a rate of 0.14% per day and a total of ~1% after 7 days for the constant-wind case. Given the proportion of entrained MDO and its tendency to remain mixed in the water column, the remaining hydrocarbons are expected to undergo decay over several weeks.

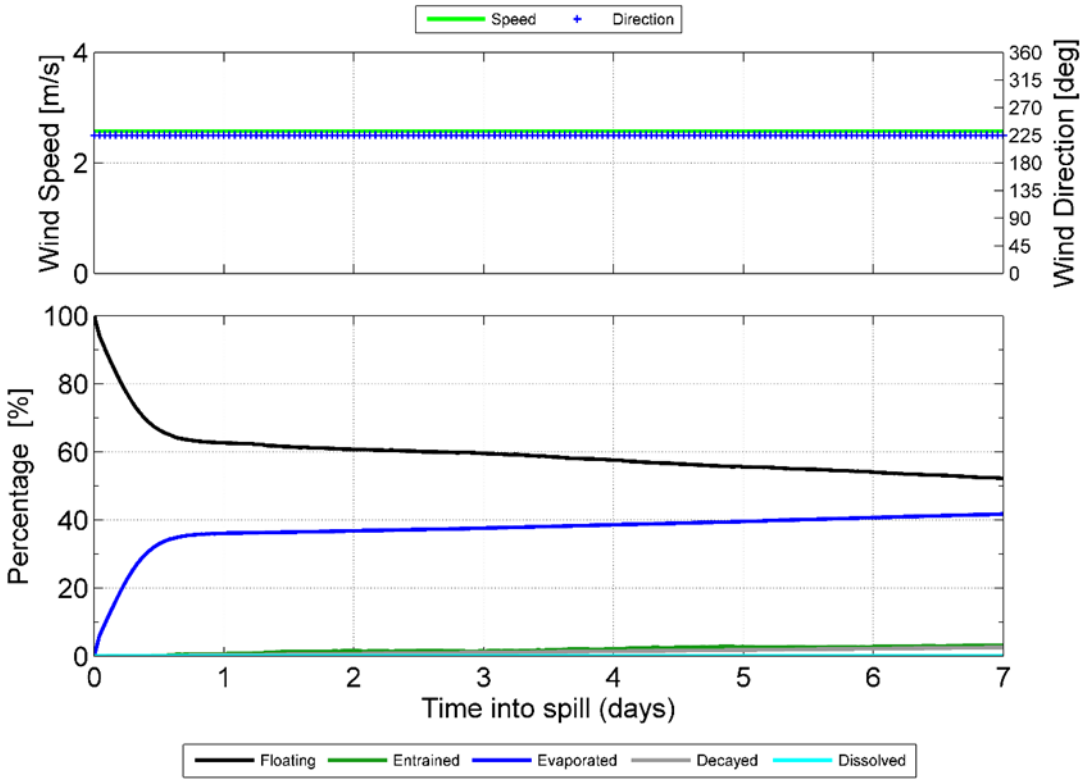


Figure 8.3 **Mass balance plot for an instantaneous 50 m^3 surface release of MDO subjected to a constant 5 knot (2.6 m/s) wind, currents and 27°C water temperature.**

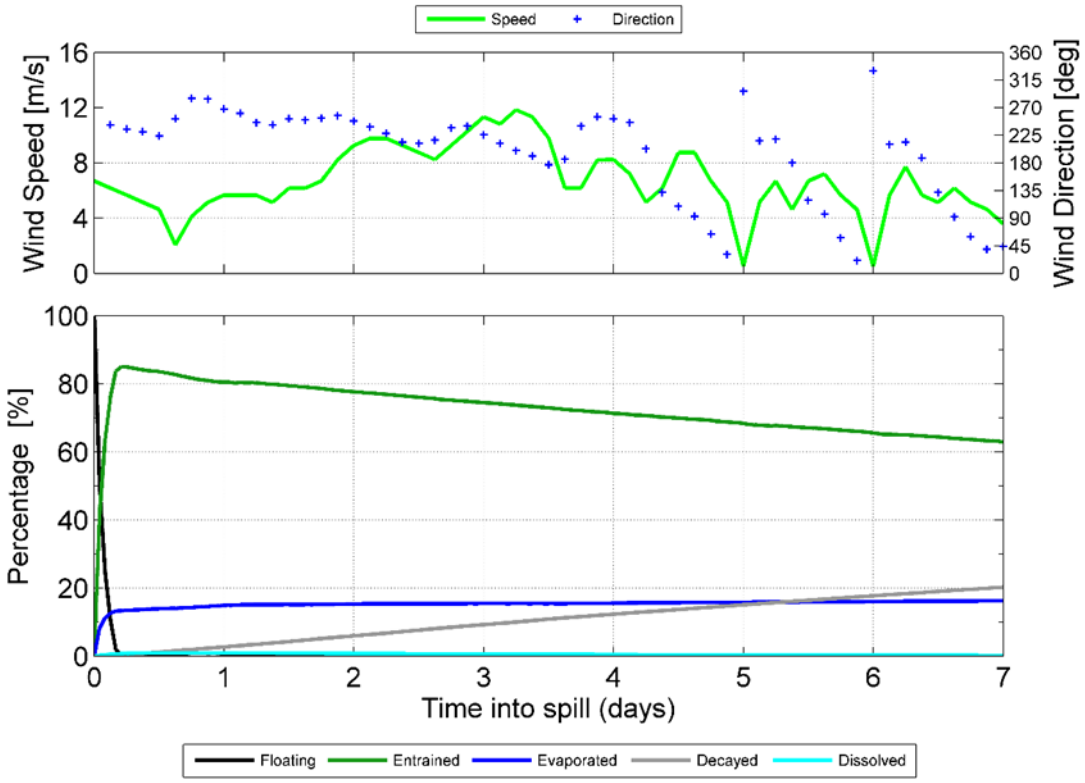


Figure 8.4 **Mass balance plot for an instantaneous 50 m^3 surface release of MDO subjected to variable wind speeds of 2 to 23 knots (1 – 12 m/s), currents and 27°C water temperature.**

9 RECEPTORS

A comprehensive receptor database was compiled from multiple sources to evaluate floating oil exposure, in-water column exposure (entrained and dissolved hydrocarbons), and shoreline oil accumulation. These sources include:

- Protected Matters Search Tool (PMST) from Department of Climate Change, Energy, the Environment and Water (https://pmst.awe.gov.au);
- Shoreline cells from the Western Australia Marine Oil Pollution Risk Assessment Protection Priorities (https://www.transport.wa.gov.au/imarine/preparedness-response-resources.asp); and
- Additional receptors, such as Habitat Critical to Turtles from Department of Climate Change, Energy, the Environment and Water (https://fed.dcceew.gov.au).

Table 9.1 summarises the receptors assessed for hydrocarbon exposure and presented in the report. Key receptor categories are presented in Figure 9.1 to Figure 9.19. Exposure risks were calculated separately for each receptor, and results are presented only for those receptors predicted to be exposed at, or above, the minimum thresholds. Additionally, exposure within Western Australian State Waters (WA State Waters) and Northern Territory Waters (NT Waters) was included as part of the study.

Table 9.1 Summary of receptors assessed for floating oil exposure, in-water column exposure (entrained and dissolved hydrocarbons), and shoreline oil accumulation. Results for these receptors have been presented.

Receptor Category	Acronym	Source	Hydrocarbon Exposure Assessment		
			Water Column	Floating oil	Shoreline
Australian Marine Park	AMP	https://pmst.awe.gov.au	✓	✓	×
Exclusive Economic Zone	EEZ	http://www.marineregions.org	✓	✓	×
Indigenous Protected Area	IPA	https://pmst.awe.gov.au	✓	✓	×
Key Ecological Feature	KEF	https://pmst.awe.gov.au	✓	✓	×
Management Agreement Area	MAA	https://pmst.awe.gov.au	✓	✓	×
Marine Park	MP	https://pmst.awe.gov.au	✓	✓	×
National Parks	NP	https://pmst.awe.gov.au	✓	✓	×
Nature Reserve	NR	https://pmst.awe.gov.au	✓	✓	×
Ramsar wetland	Ramsar	https://pmst.awe.gov.au	✓	✓	×
Reefs, Shoals and Banks	RSB	Digital nautical charts	✓	✓	×
State and Territory Waters	State and Territory Waters	https://www.ga.gov.au/scientific-topics/marine/jurisdiction	✓	✓	×
Western Australia Marine Oil Pollution Risk Assessment Protection Priorities (WAMOPRA)	Shoreline cells	http://www.transport.wa.gov.au	×	×	✓

Additionally, Table 9.2 lists other receptor categories that were assessed but not presented in the report for conciseness. However, these can be provided upon request if needed.

Table 9.2 Summary of receptors assessed for floating oil exposure, in-water column exposure (entrained and dissolved hydrocarbons), and shoreline oil accumulation. Results for these receptors have not been presented but can be provided upon request.

Receptor Category	Acronym	Source	Hydrocarbon Exposure Assessment		
			Water Column	Floating oil	Shoreline
5(1)(g) Reserve	S5G	https://pmst.awe.gov.au	✓	✓	×
5(1)(h) Reserve	S5H	https://pmst.awe.gov.au	✓	✓	×
Commonwealth Herritage Place Historic	CHPH	https://pmst.awe.gov.au	✓	✓	×
Commonwealth Herritage Place Natural	CHPN	https://pmst.awe.gov.au	✓	✓	×
Conservation Park	CP	https://pmst.awe.gov.au	✓	✓	×
Fish Habitat Protected Area	FHPA	https://pmst.awe.gov.au	✓	✓	×
Habitat Critical to Turtles	TUR	https://fed.dcceew.gov.au	✓	✓	×
Indigenous Cultural Heritage - WA	ICH	https://catalogue.data.wa.gov.au/dataset	✓	✓	×
Integrated Marine and Coastal Regionalisation of Australia (Meso-scale)	IMCRA	https://pmst.awe.gov.au	✓	✓	×
Nationally Important Wetlands	NIW	https://pmst.awe.gov.au	✓	✓	×
Shipwreck Protection Zones	SPZ	https://pmst.awe.gov.au	✓	✓	×
World Heritage Properties (Australia Only)	WHP	https://pmst.awe.gov.au	✓	✓	×

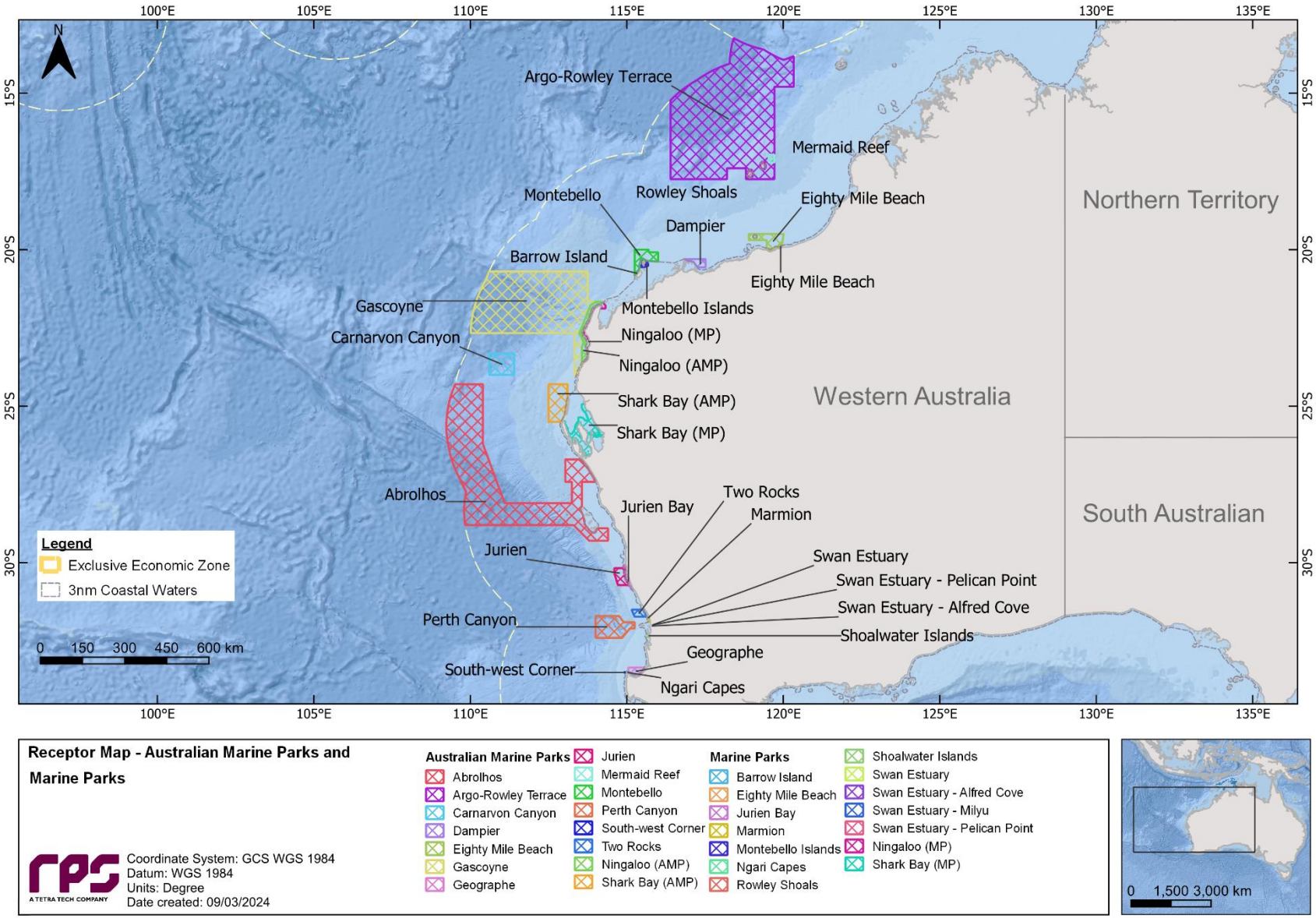


Figure 9.1 Receptor map for Australian Marine Parks and Marine Parks.

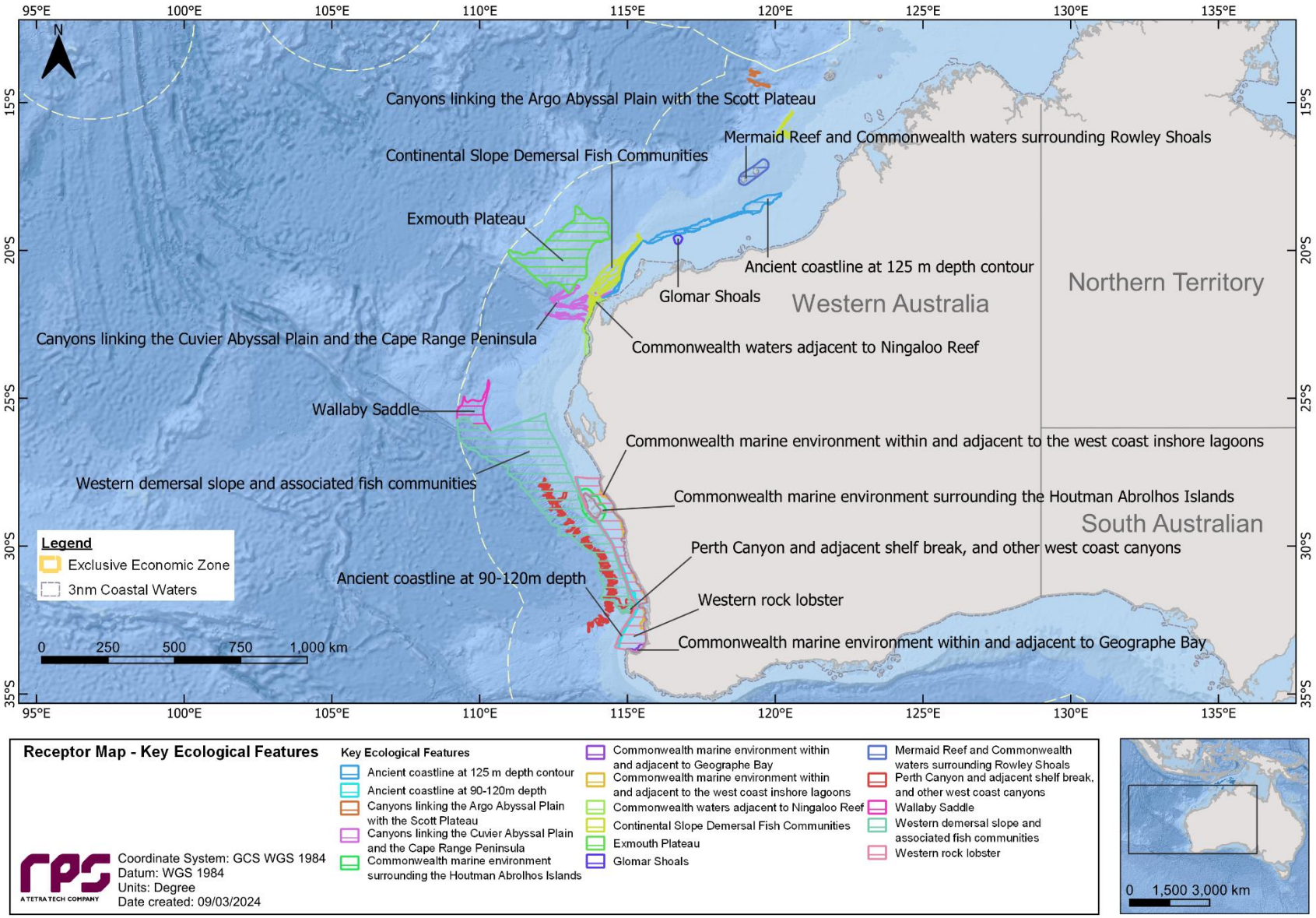


Figure 9.2 Receptor map of Key Ecological Features (KEF).

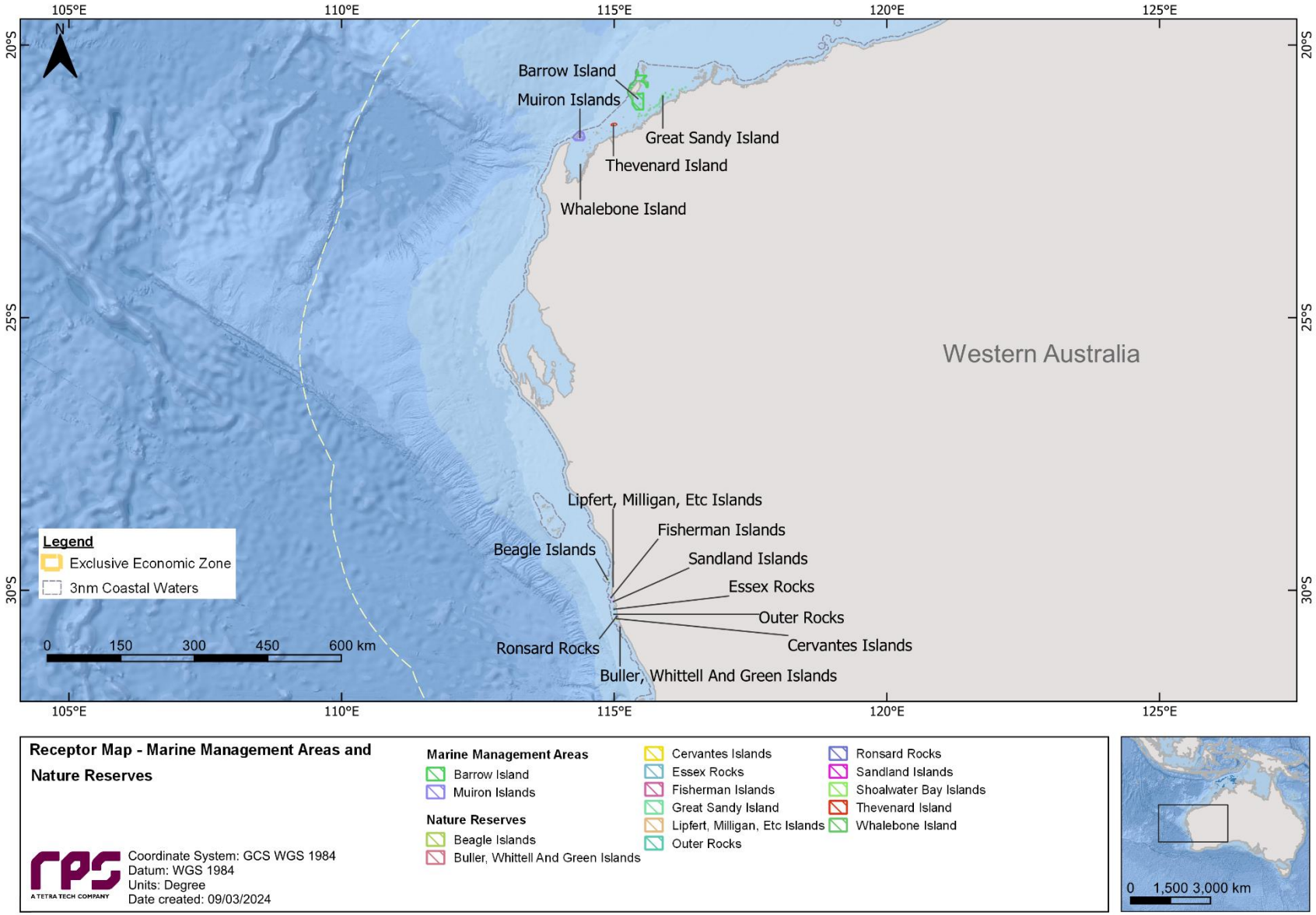


Figure 9.3 Receptor map of Marine Management Areas (MMA) and Nature Reserves (NR).

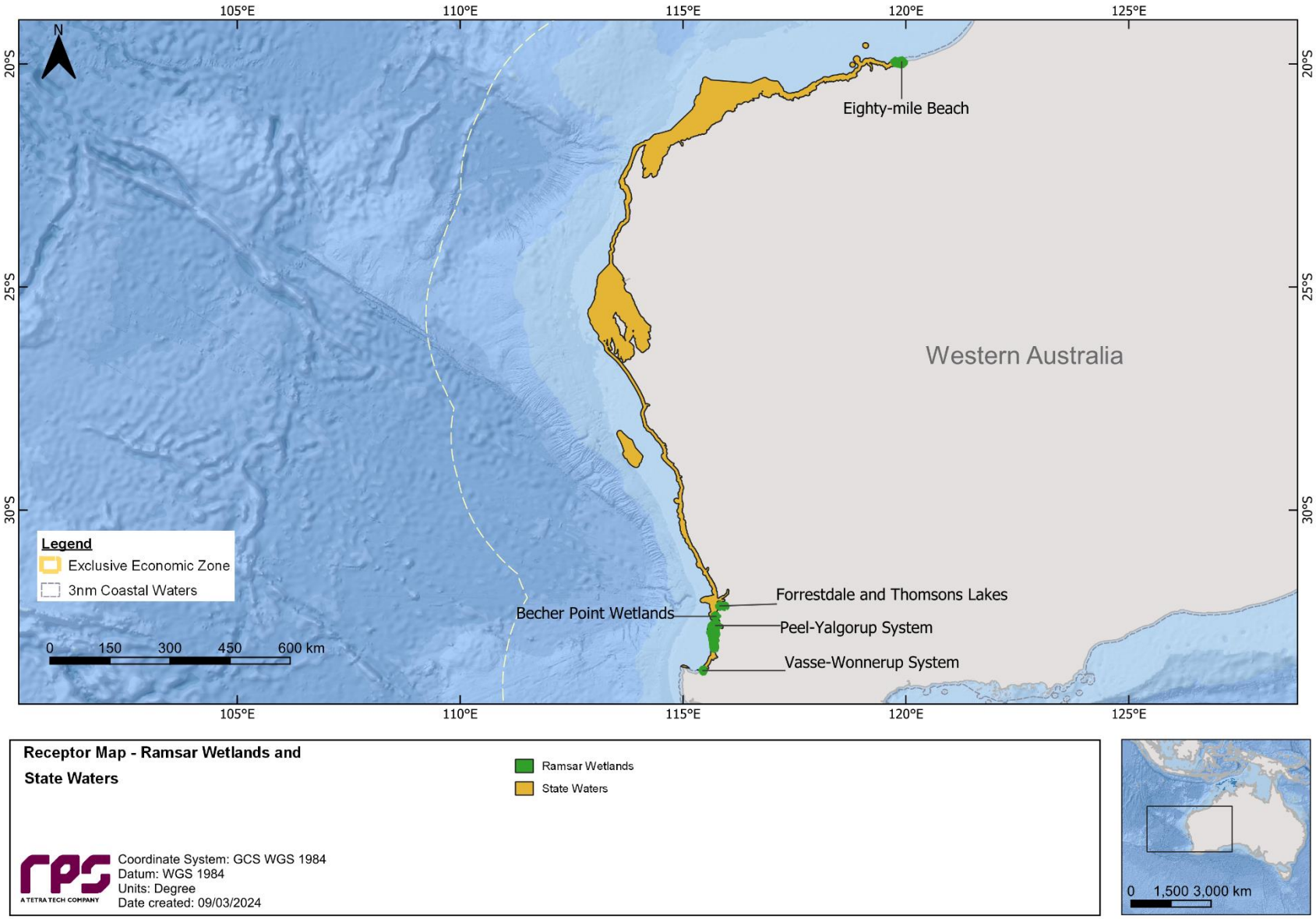


Figure 9.4 Receptor map for Ramsar wetlands and State and Territory Waters (1 of 2).

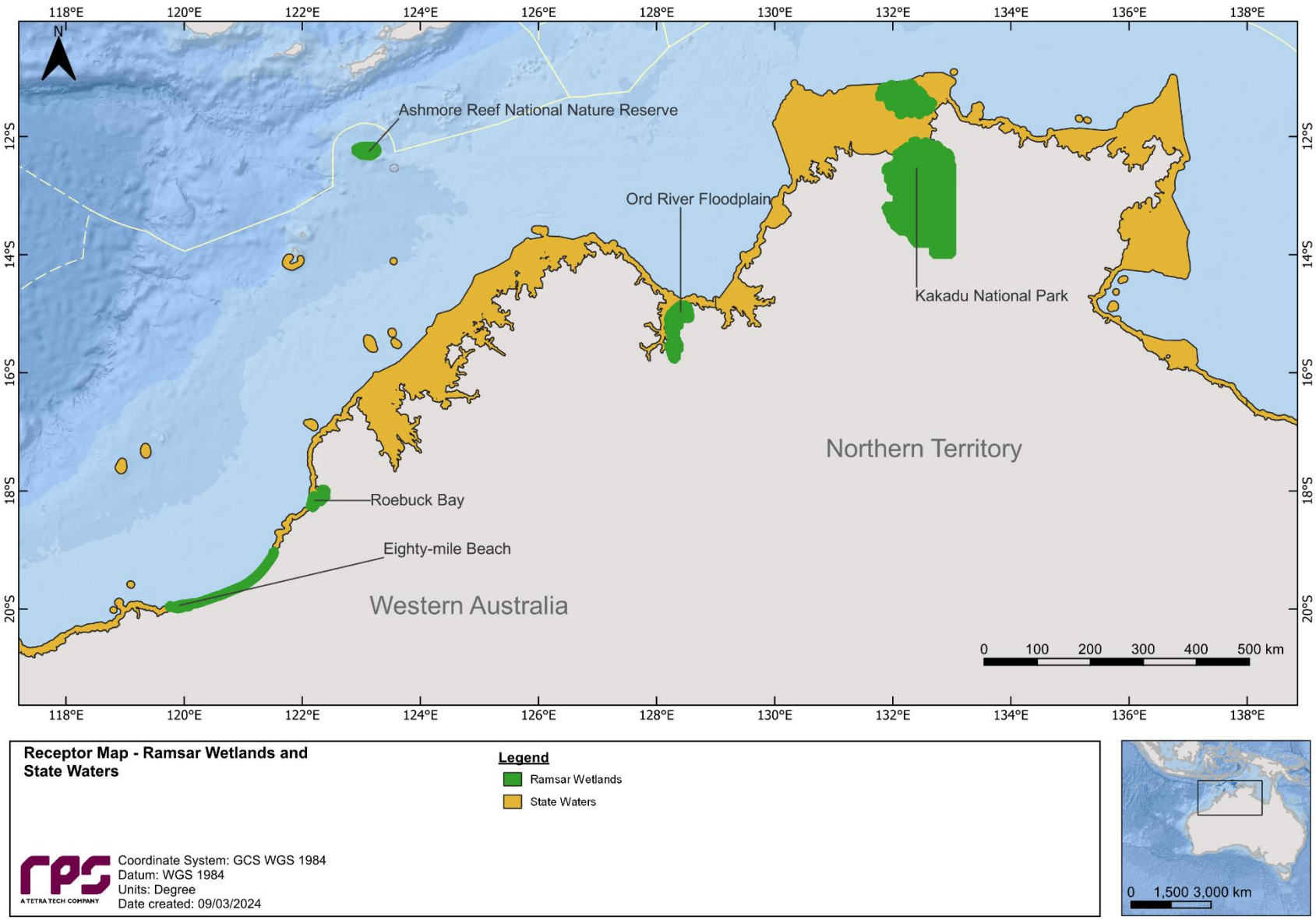


Figure 9.5 Receptor map for Ramsar wetlands and State and Territory Waters (2 of 2).

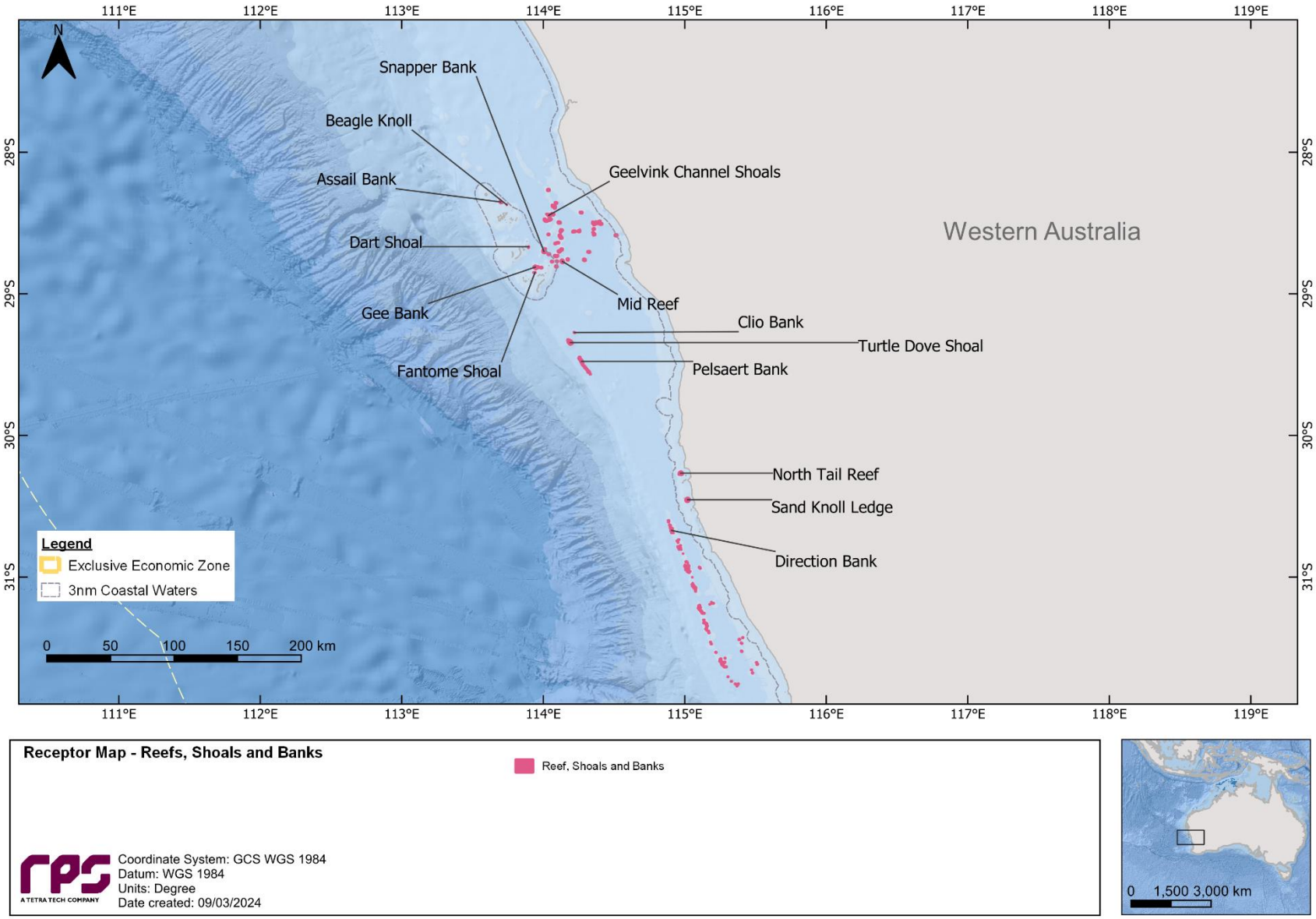


Figure 9.6 Receptor map for Reefs, Shoals and Banks (1 of 4)

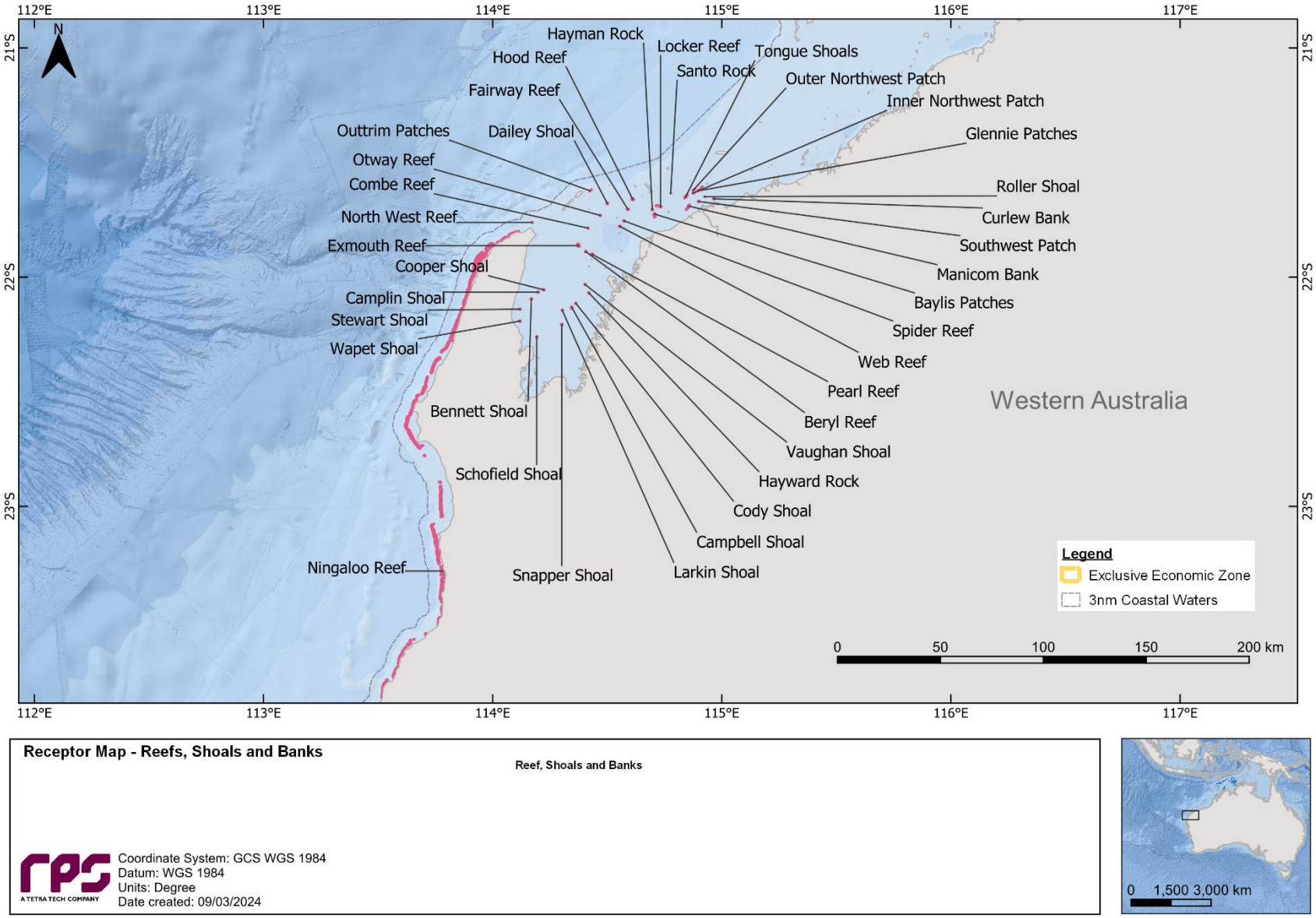


Figure 9.7 Receptor map for Reefs, Shoals and Banks (2 of 4)

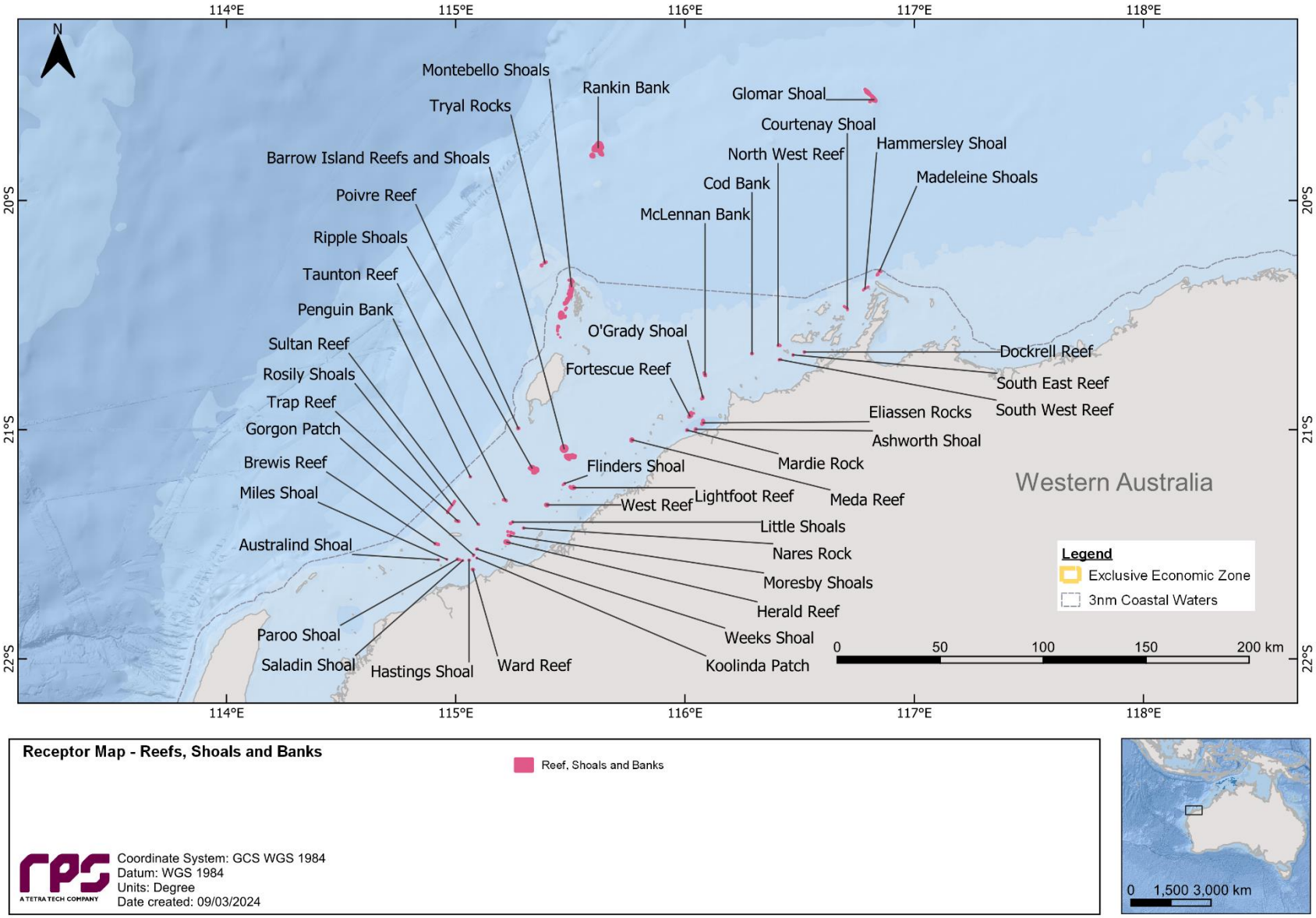


Figure 9.8 Receptor map for Reefs, Shoals and Banks (3 of 4)

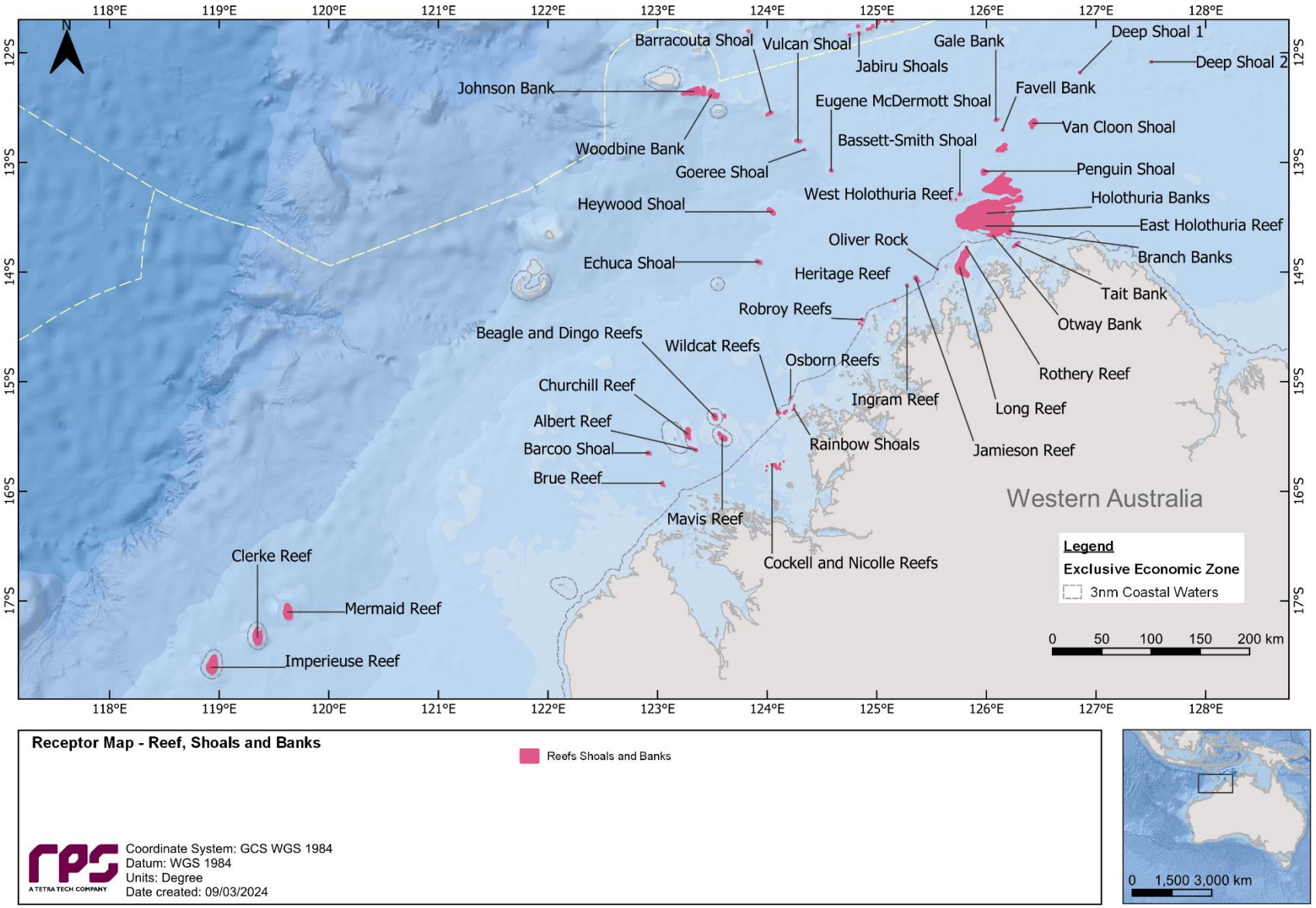


Figure 9.9 Receptor map for Reefs, Shoals and Banks (4 of 4)

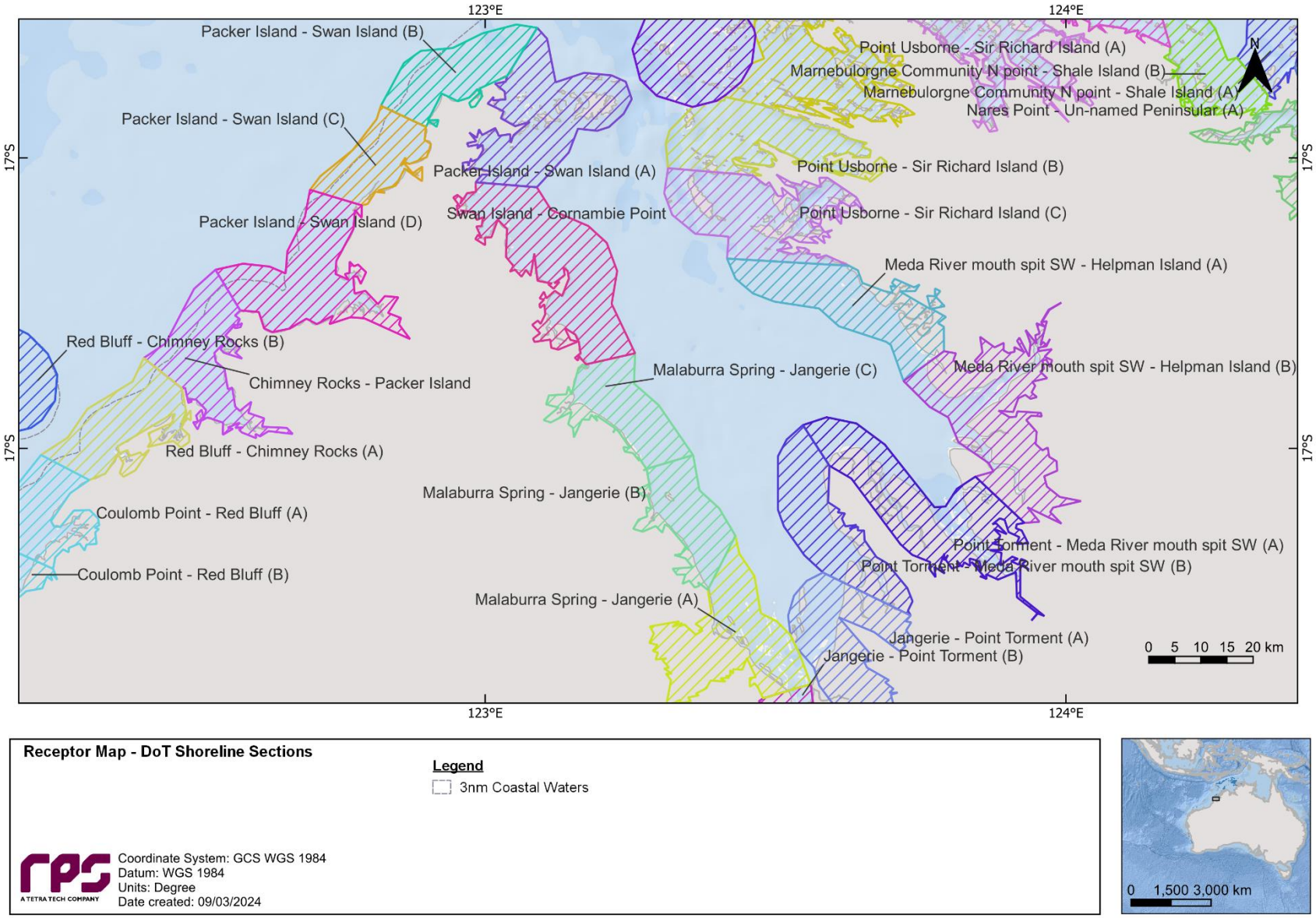


Figure 9.10 Receptor map for the WAMOPRA shoreline cells (1 of 10).

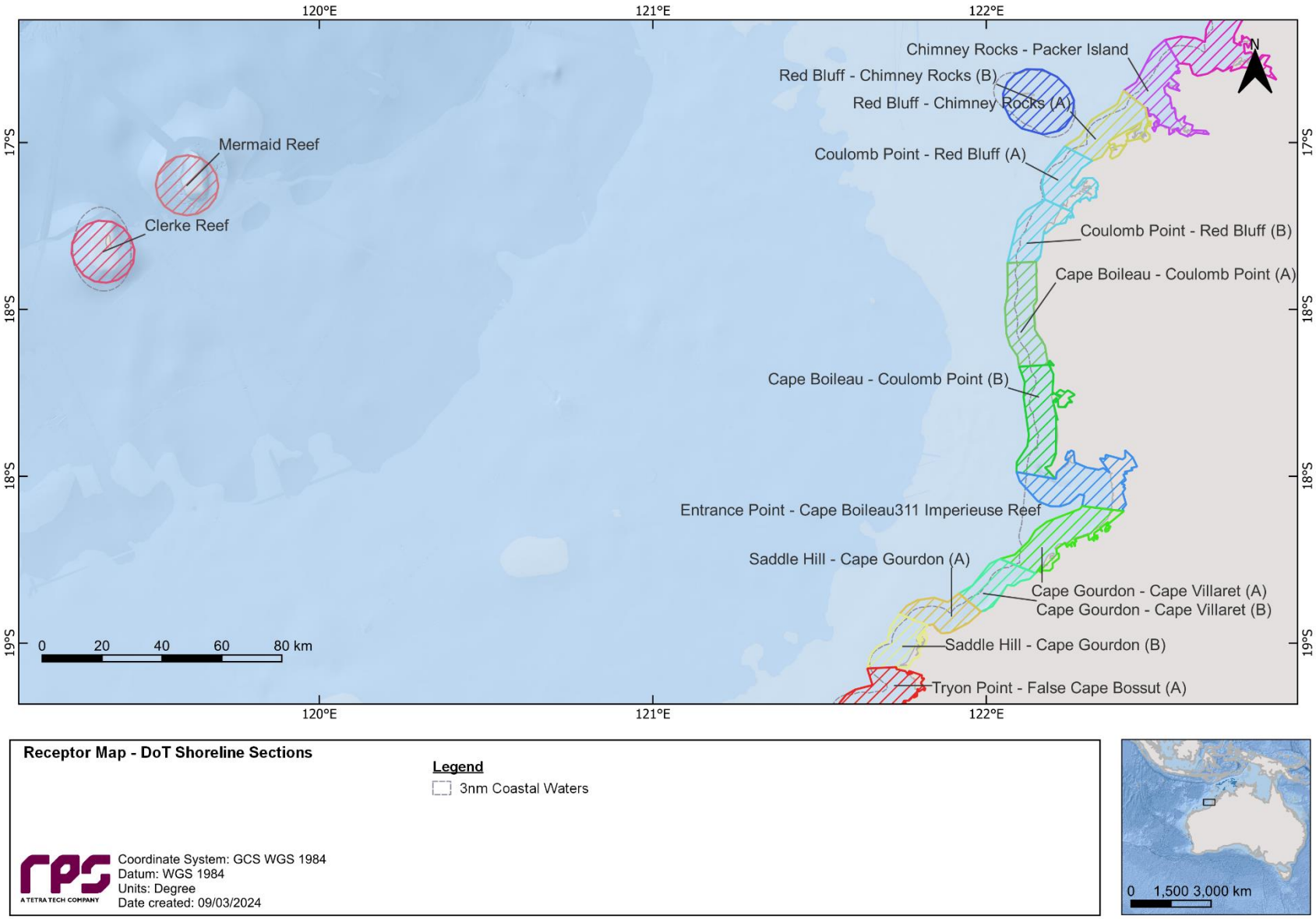


Figure 9.11 Receptor map for the WAMOPRA shoreline cells (2 of 10).

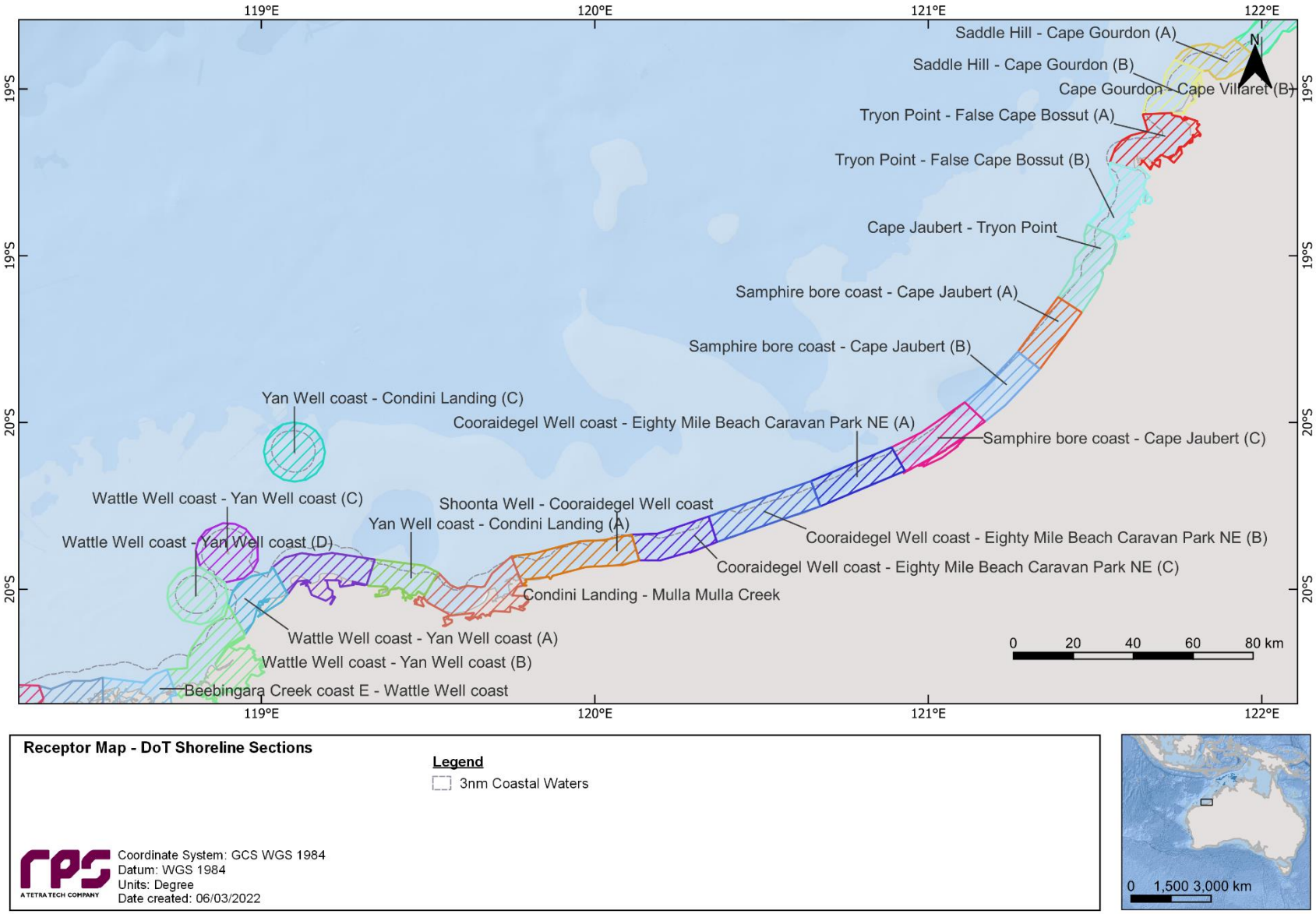


Figure 9.12 Receptor map for the WAMOPRA shoreline cells (3 of 10).

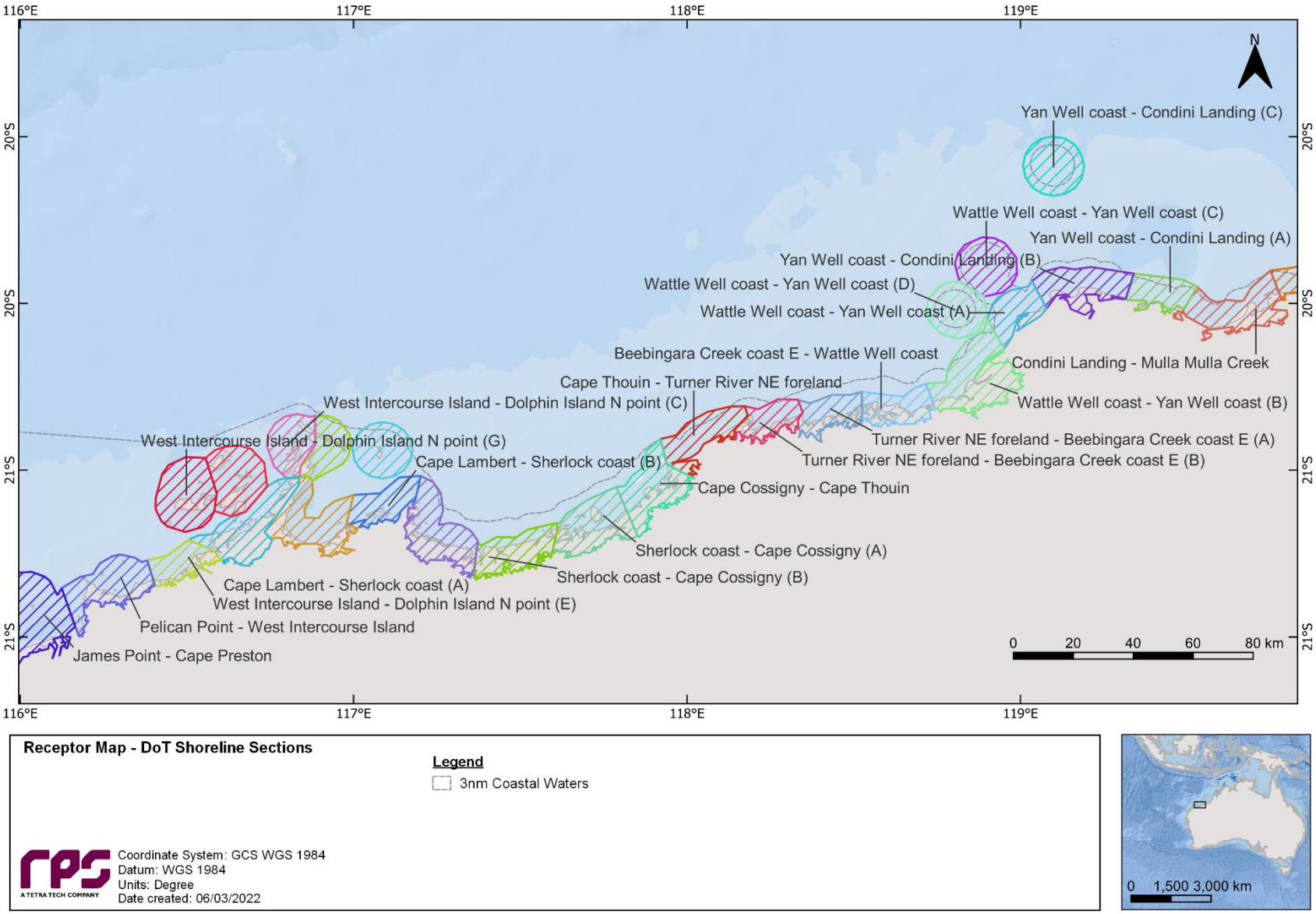


Figure 9.13 Receptor map for the WAMOPRA shoreline cells (4 of 10).

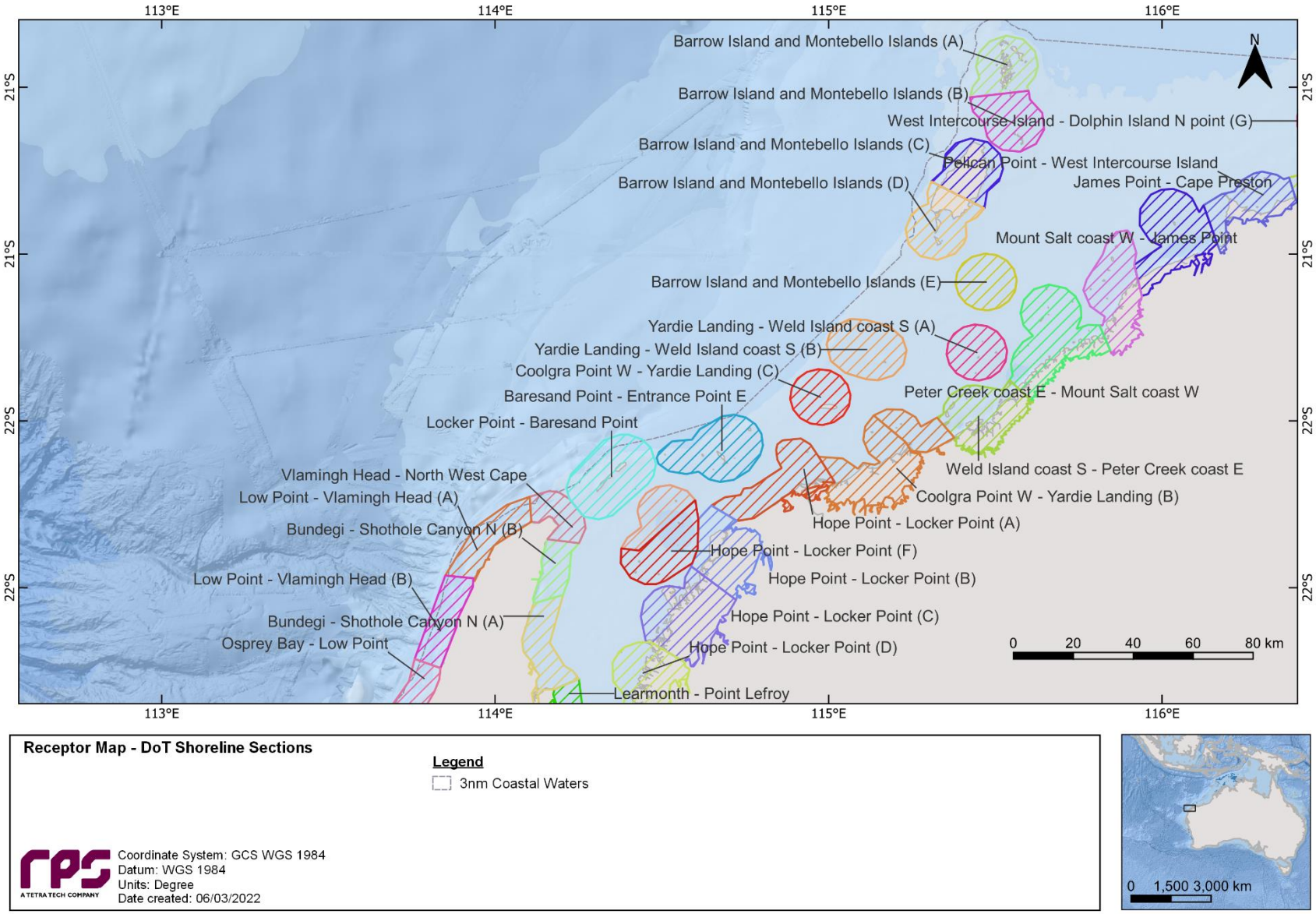


Figure 9.14 Receptor map for the WAMOPRA shoreline cells (5 of 10).

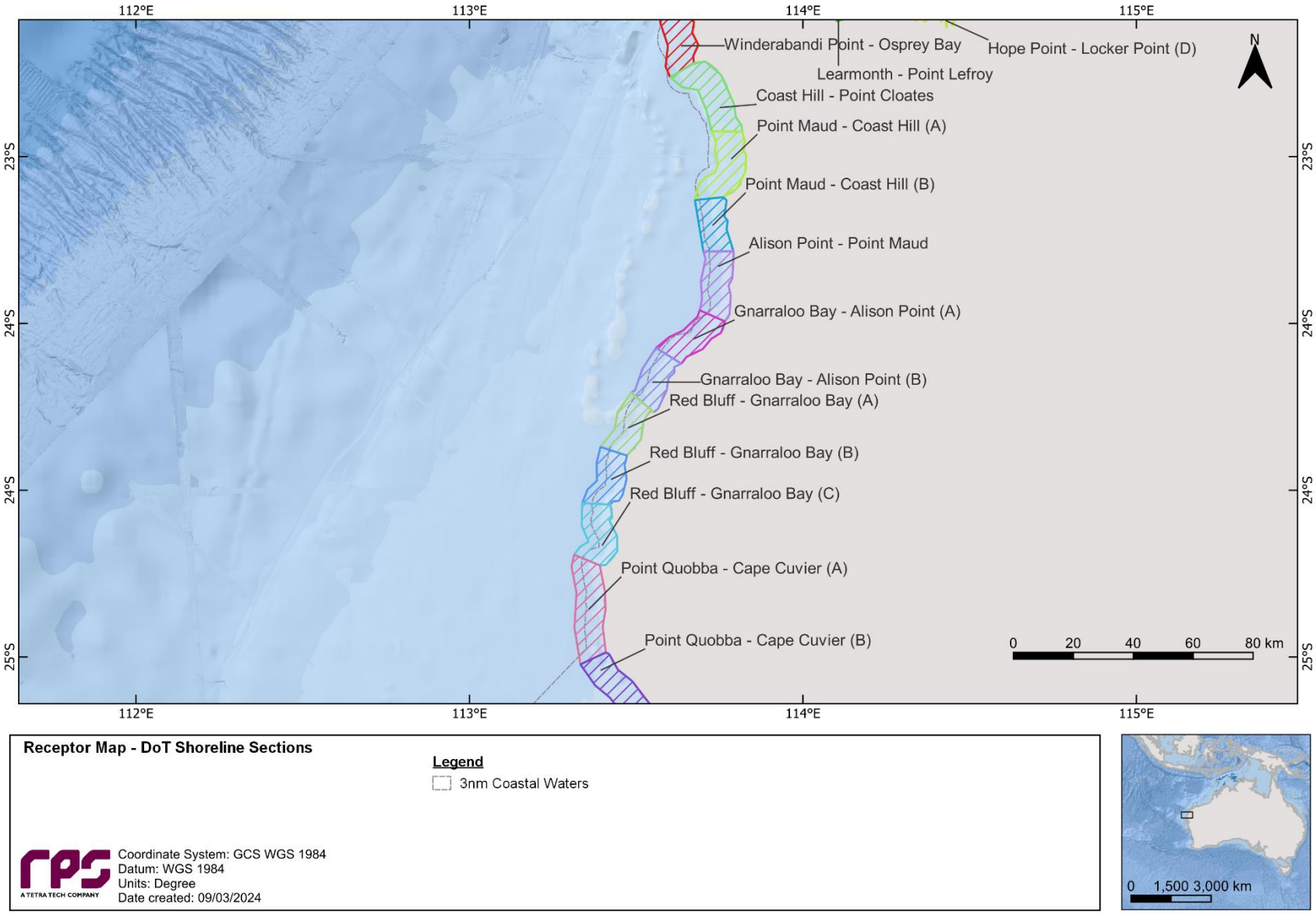


Figure 9.15 Receptor map for the WAMOPRA shoreline cells (6 of 10).

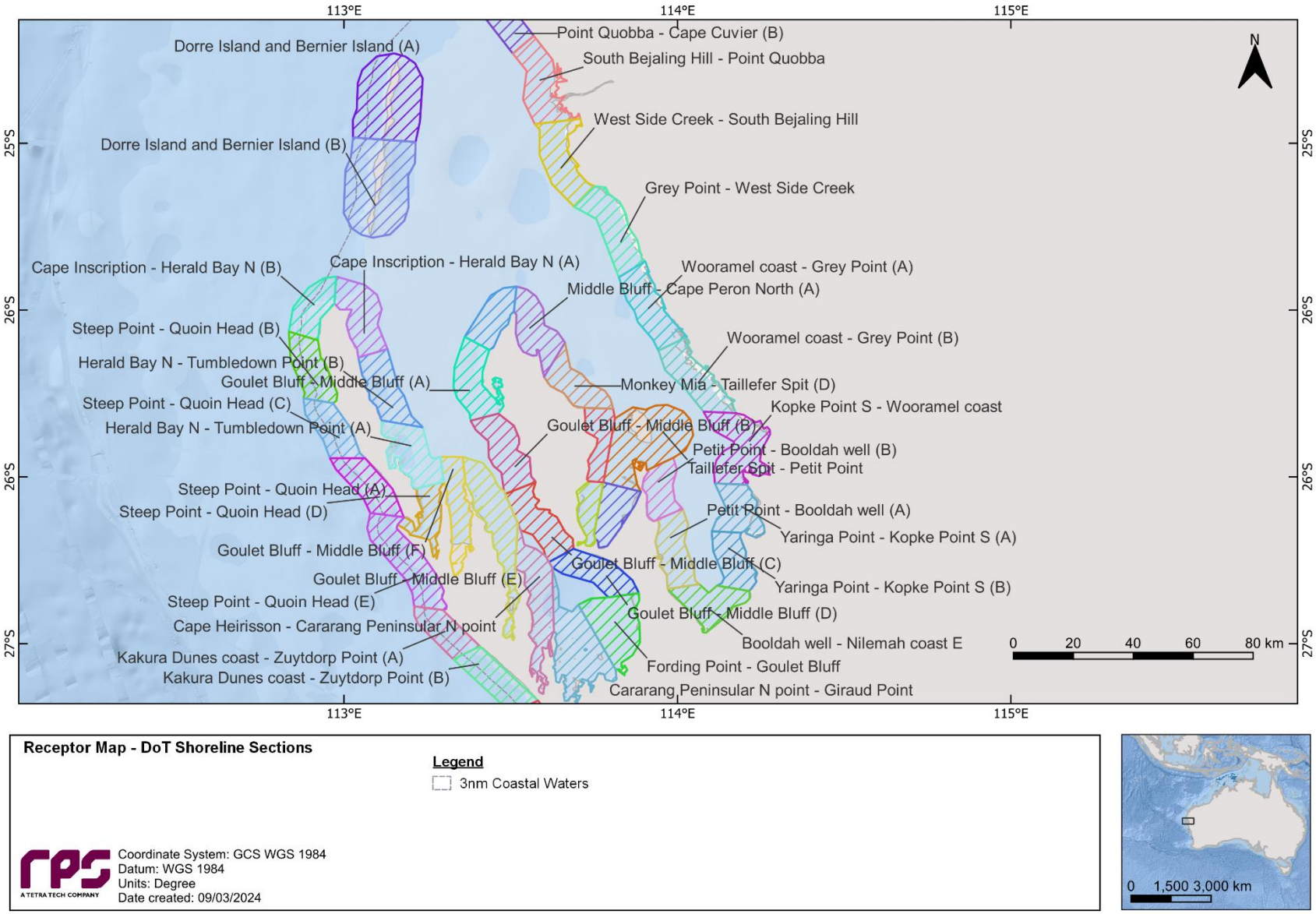


Figure 9.16 Receptor map for the WAMOPRA shoreline cells (7 of 10).

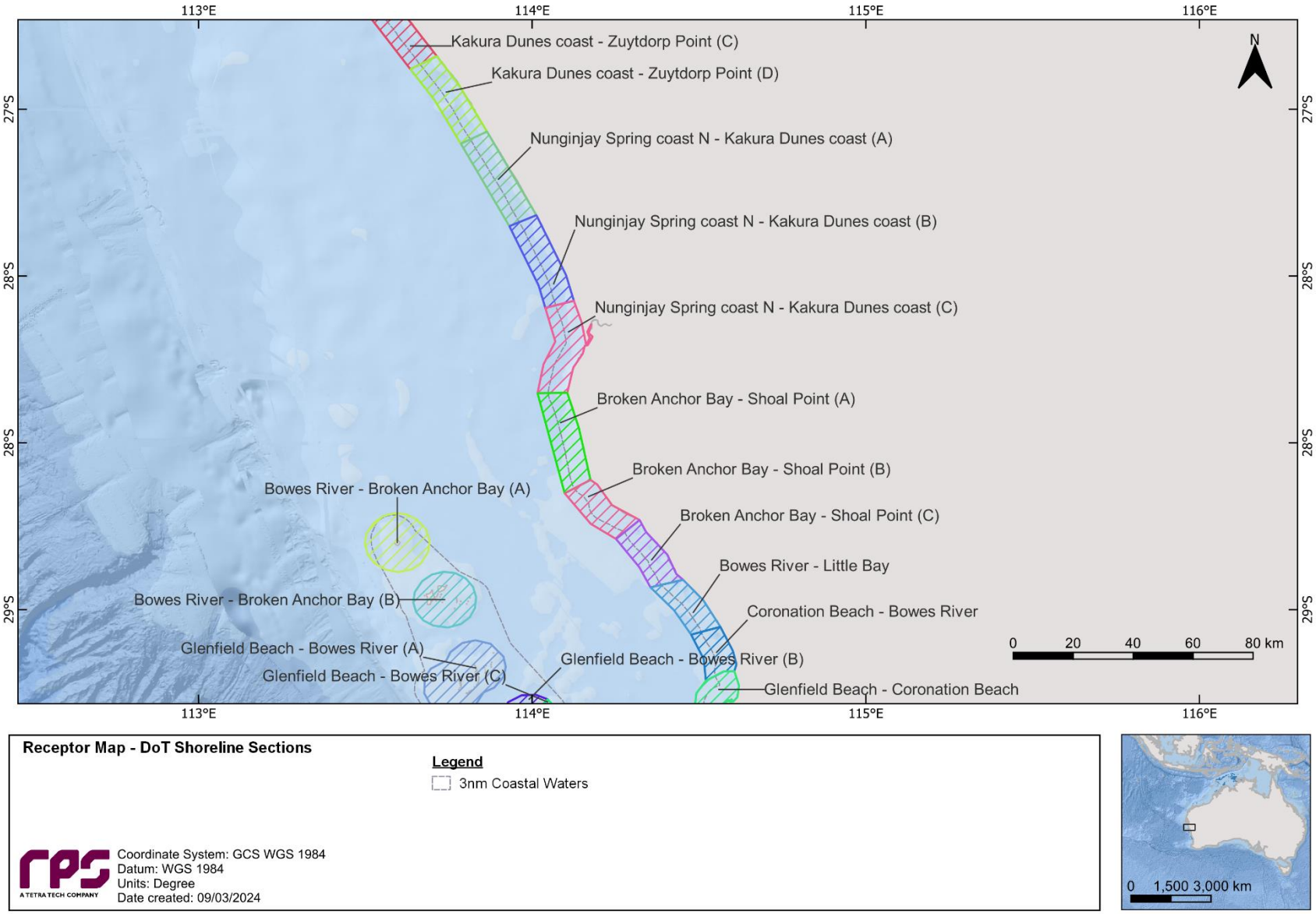


Figure 9.17 Receptor map for the WAMOPRA shoreline cells (8 of 10).

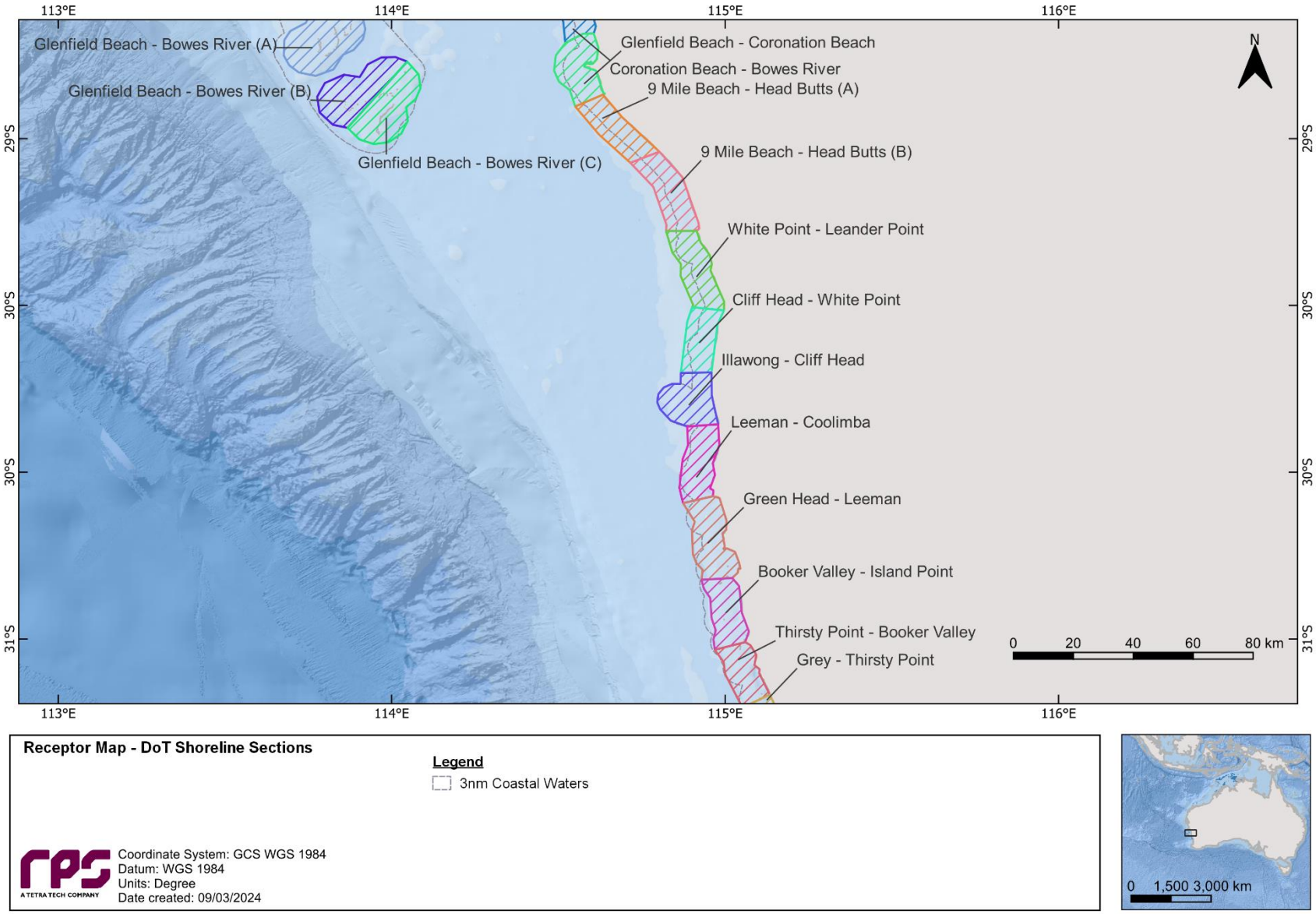


Figure 9.18 Receptor map for the WAMOPRA shoreline cells (9 of 10).

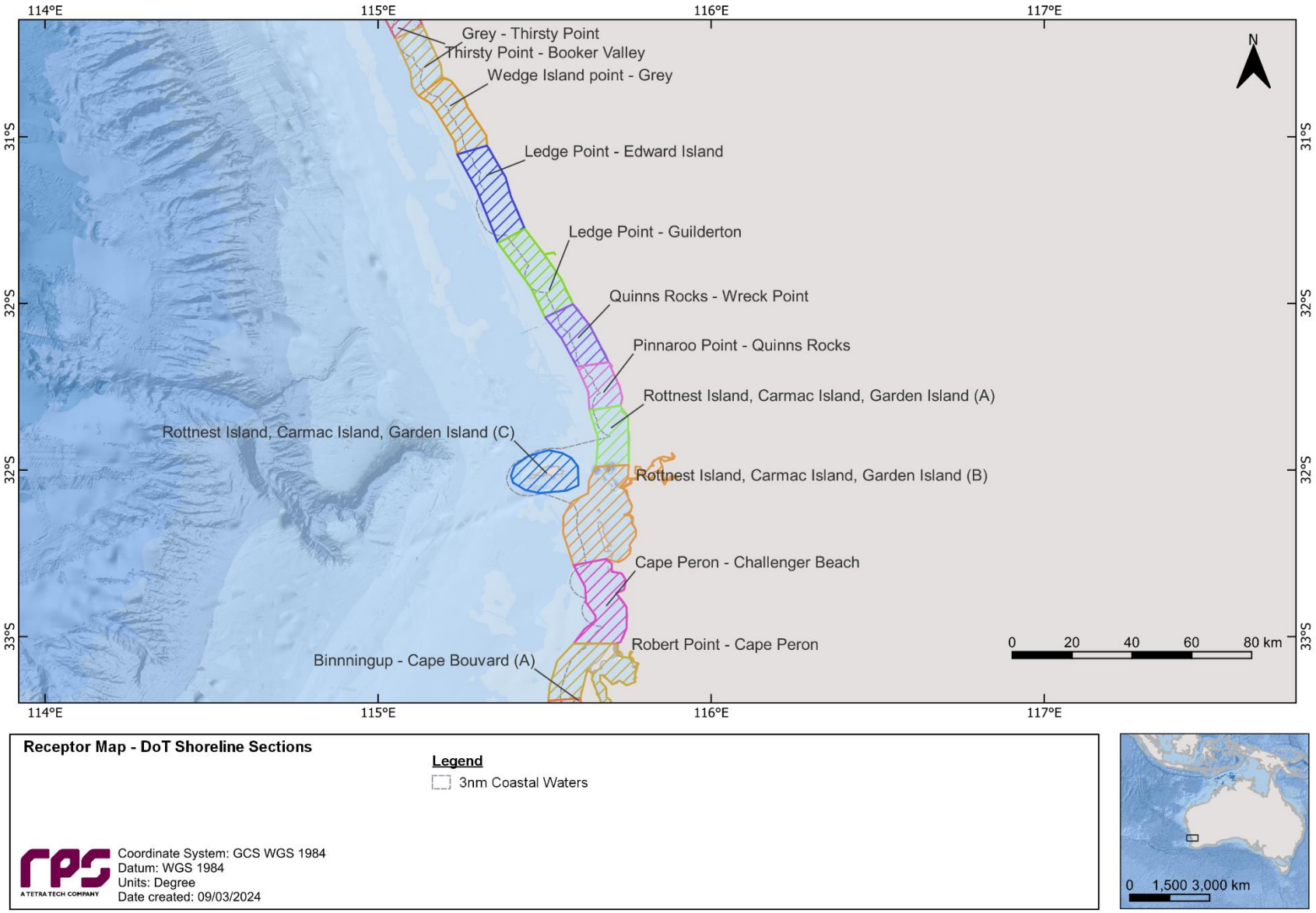


Figure 9.19 Receptor map for the WAMOPRA shoreline cells (10 of 10).

10 MODEL SETTINGS

Table 10.1 provides a summary of the oil spill model settings for Scenario 1 and Scenario 2. Additionally, Table 10.2 presents the summary of the daily varying oil rate applied for Scenario 1.

The simulation length for each scenario was carefully selected based on extensive sensitivity testing. During the sensitivity testing process, sample spill trajectories are run for longer than intended durations for each scenario. Upon completion of the spill trajectories, the results are carefully assessed to examine the persistence of the hydrocarbon (i.e. whether the maximum evaporative loss has been achieved for the period modelled; and whether a substantial volume of hydrocarbons remain in the water column (if any)) in conjunction with the extent of sea surface exposure based on reporting thresholds. Once there is agreement between the two factors (i.e., the final fate of hydrocarbon is accounted for, and the full exposure area is identified) the simulation length is deemed appropriate.

Table 10.1 Summary of the oil spill model settings used in this assessment.

	Scenario 1	Scenario 2
Description	Surface LOWC	Surface release from vessel collision
Number of spill simulations with randomly selected start times	100 per season	
Period	Summer (October to February) Winter (April to July) Transitional (March, August, and September)	
Spill volume	167,800 bbl (26,678 m^3)	300 m^3
Oil type	Wandoo crude	MDO
Release depth	0 m (surface)	0 m (surface)
Release duration	35 days	6 hours
Simulation length	56 days	30 days
Floating oil (NOPSEMA) thresholds	1 g/m^2, low exposure 10 g/m^2, moderate exposure 50 g/m^2, high exposure	
Shoreline accumulation (NOPSEMA) thresholds	10 g/m^2, low exposure 100 g/m^2, moderate exposure 1,000 g/m^2, high exposure	
Dissolved hydrocarbon (NOPSEMA) thresholds	10 ppb over 1 hour, low exposure 50 ppb over 1 hour, moderate exposure 400 ppb over 1 hour, high exposure	
Entrained hydrocarbon (NOPSEMA) thresholds	10 ppb over 1 hour, low exposure 100 ppb over 1 hour, moderate exposure	

Table 10.2 Summary of the daily varying oil rate applied for the surface LOWC.

Days	Oil Rate (stb/day)
1	5855.8
2	5767.2
3	5680.2
4	5594.6
5	5510.4
6	5427.7
7	5346.3
8	5266.3
9	5187.6
10	5110.2
11	5034.1
12	4959.3
13	4885.7
14	4813.3
15	4752.3
16	4741.1
17	4732.3
18	4723.6
19	4714.9
20	4706.2
21	4697.6
22	4689.0
23	4680.5
24	4672.0
25	4663.5
26	4655.1
27	4646.7
28	4638.4
29	4630.1
30	4621.8
31	4613.5
32	4605.3
33	4597.2
34	4589.0
35	4580.9

11 PRESENTATION AND INTERPRETATION OF MODEL RESULTS

The results from the modelling study are presented in a number of tables and figures, which aim to provide an understanding of the predicted sea-surface and water column (subsurface) exposure, and shoreline accumulation (if predicted).

11.1 Stochastic Modelling

If readers are not fully familiar with how to interpret stochastic modelling outputs, please refer to the relevant NOPSEMA factsheet (NOPSEMA, 2018) before reading this report section.

Predictions for the probability of contact and time to contact by oil concentrations equalling or exceeding defined thresholds for floating and shoreline oil, entrained oil and dissolved hydrocarbons are provided in the following sections to summarise the stochastic results, which are calculated and presented as follows:

a. ***Exposure Areas*** – encompasses the entire area that could be exposed and was derived from the annual stochastic modelling results based on the following thresholds:

   Low threshold Exposure Area (or EMBA)

   i. Floating oil – 1 g/m^2;
   ii. Shoreline oil accumulation – 10 g/m^2;
   iii. Dissolved hydrocarbons – 10 ppb; and
   iv. Entrained hydrocarbons –10 ppb.

   Moderate Threshold Exposure Area

   i. Floating oil – 10 g/m^2;
   ii. Shoreline oil accumulation – 100 g/m^2;
   iii. Dissolved hydrocarbons – 50 ppb; and
   iv. Entrained hydrocarbons –100 ppb.

   High Threshold Exposure Area

   i. Floating oil – 50 g/m^2;
   ii. Shoreline oil accumulation – 1,000 g/m^2; and
   iii. Dissolved hydrocarbons – 400 ppb.

b. ***Cross-sections of entrained and dissolved hydrocarbon concentrations*** – the predicted maximum entrained and dissolved hydrocarbon concentrations within the water column, along east-west and north-south transects in the vicinity of the release location.

c. ***Predicted zones of potential exposure*** – maps of floating oil exposure, shoreline oil accumulation, entrained and dissolved hydrocarbon exposure were generated based on the following thresholds:

   i. Floating oil – 1-10 g/m^2 (Low), 10-50 g/m^2 (Moderate) and ≥50 g/m^2 (High);
   ii. Shoreline oil accumulation – 10-100 g/m^2 (Low), 100-1,000 g/m^2 (Moderate) and ≥1,000 g/m^2 (High);
   iii. Entrained hydrocarbons – 10-100 ppb (Low) and ≥100 ppb (Moderate); and
   iv. Dissolved hydrocarbons – 10-50 ppb (Low), 50-400 ppb (Moderate) and ≥400 ppb (High).

d. ***The probability of oil exposure on the sea surface, in-water or shorelines*** – is calculated by dividing the number of spill simulations passing over a given grid cell at a given threshold, divided by the total number of simulations.

e. ***The minimum time before oil exposure on the sea surface, in-water or shorelines*** – is determined by ranking the elapsed time before sea surface exposure, entrained oil exposure or shoreline accumulation (at a given threshold) to a given location/grid cell for each of the spill simulations.

f. ***The maximum local accumulated concentration averaged over all replicate spills*** – the greatest concentration calculated for any point on the shoreline after averaging over all replicate simulations.

g. ***The maximum local accumulated concentration in the worst replicate spill*** – the greatest accumulation predicted for any point on the shoreline during any replicate simulation, and thus represents an extreme estimate.

h. ***The average volume of oil ashore*** – is determined by averaging the volume of oil ashore across all simulations predicted to make shoreline contact.

i. ***The maximum volume of oil ashore in the worst replicate spill*** – the greatest volume of oil predicted for any point on the shoreline during any replicate simulation, and thus represents an extreme estimate.

The mean and maximum shoreline concentrations indicate the concentrations forecast to potentially accumulate over time on any discrete part of a shoreline; calculated for individual portions of 1 km in length. Accumulated concentrations are calculated by summing the mass of oil that arrives at any concentration (including < threshold) over time at a model cell and subtracting any mass lost through evaporation and washing off, where relevant.

Note that it is possible that oil films arriving at concentrations that are less than the threshold may accumulate over the course of a spill event to result in concentrations that apparently exceed the threshold. Hence, the mean expected, and maximum concentrations of accumulated oil can exceed the threshold applied to the probability calculations for the arrival of floating oil even where no instantaneous exceedances above threshold are predicted. It is important to understand that the two parameters (floating concentration and shoreline concentration) are quite distinct, calculated in different ways and representative of alternative outcomes. The floating probability estimates, and the shoreline accumulative estimates should therefore be treated as independent estimators of different exposure outcomes, and not directly compared.

Readers should note that the contour maps presented in the stochastic modelling results, do not represent the predicted coverage of any one hydrocarbon spill or a depiction of a slick or plume at any instant in time. Rather, the contours are a composite of many theoretical slick paths, integrated over the full duration of the simulations relevant to each scenario. The stochastic modelling contour maps should be treated as indications of the probability of exposure at defined concentrations, for individual locations, at some point in time after the defined spill commences, given the trends and variations in metocean conditions that occur around the study area.

Locations with higher probability ratings were exposed during a greater number of spill simulations, indicating that the combination of the prevailing wind and current conditions are more likely to result in contact to these locations if the spill scenario were to occur in the future. The areas outside of the lowest-percentage contour indicate that contact will be less likely under the range of prevailing conditions for this region than areas falling within higher probability contours. It is important to note that the probabilities are derived from the samples of data used in the modelling. Therefore, locations that are not calculated to receive exposure at threshold concentrations or greater in any of the replicate simulations might possibly be contacted if very unusual conditions were to occur. Hence, we do not attribute a probability of nil to areas beyond the lowest probability contour.

11.2 Deterministic Modelling

While the stochastic modelling results provide an objective indication of all locations that may be exposed or contacted by oil above the reporting thresholds, the approach describes a larger potential area of influence than can be expected from any one single spill event. To inform spill response and OSM BIP capability requirements the following deterministic simulation for the LOWC scenario was identified and presented:

a. Greatest number of receptors with floating oil exposure at or above 1 g/m^2 within the first 7 days.

The following outputs have been presented for the deterministic simulation identified:

Tabulated results

- Minimum times to floating oil exposure for each threshold.
- Minimum times to entrained hydrocarbon exposure for each threshold.
- Minimum time to oil accumulation for each threshold at all shoreline receptors.
- Maximum loading and length of shoreline oil accumulation for each threshold; and
- Maximum shoreline oil accumulated volume for each threshold at all shoreline receptors.

Maps

- Map the outer boundaries of the EMBA derived from the 'low' threshold exposure values for floating oil exposure, in-water (entrained and dissolved) and shoreline accumulation.
- Maps of the predicted zones of floating oil exposure, in-water exposure (entrained and dissolved) and shoreline accumulation over the entire 56-day simulation; and
- Fates and weathering graph for the corresponding single spill trajectory, and a summary of the volumes at the conclusion of the simulation.

12 CALCULATION OF STOCHASTIC MODELLING EXPOSURE RISKS

During each simulation, the SIMAP model records the location (by latitude, longitude, and depth) of particles, which represent a mass of oil, on or, in the water column at regular time steps. For particles that contact the shoreline, the model records the accumulation of oil mass on each shoreline section over time, accounting for any mass lost to evaporation or removal by current and/or wind forces.

The data from all simulations are then analysed by dividing the study region into a three-dimensional grid. For particles classified as floating oil, the concentration of oil in each grid cell is estimated by summing the mass of all oil particles within that cell (factoring in spreading and dispersion) and dividing by the area of the grid cell. For entrained and dissolved oil, concentrations are calculated by dividing the mass of particles by the volume of the grid cell.

These oil concentrations are then examined to determine whether they exceed specific threshold levels over time. The risks are summarised as follows:

- The probability of exposure is calculated by dividing the number of spill simulations in which oil concentrations exceeded the threshold in a grid cell by the total number of simulations. For instance, if oil exposure above the threshold occurred in 21 out of 100 simulations, the probability of exposure for that location is 21%;
- The minimum potential time before exposure is determined by the shortest time it took for oil above the threshold concentration to travel from the release site to a grid cell in any of the simulations;
- Maximum potential oil accumulation on shorelines is calculated as the highest oil mass per square meter (m^2) in any simulation for a shoreline cell during any of the simulations;
- The average of the maximum oil accumulation is calculated as the average of the greatest oil mass per m^2 across all simulations.
- Similar calculations are undertaken for entrained oil and dissolved hydrocarbons.

Thus, the minimum time before oil accumulation on shorelines and maximum accumulation represent the worst case outcomes for each shoreline section, while the average provides a more general outlook of the potential outcomes.

It is important to clarify that each grid cell would be approximately 1 km and with shorelines stretching tens to hundreds of kilometres, that the maximum potential loading reported for any grid cell do not imply that such concentrations will occur uniformly across the entire section. Therefore, multiplying the maximum concentration estimates by the total area of the section would significantly overestimate the expected oil volume on that section. Furthermore, with a grid resolution of 1 km, it is not possible to resolve shorelines <100 m.

13 MODELLING RESULTS: LOSS OF WELL CONTROL

This scenario investigated the potential exposure from a 167,800 bbl (26,678 m^3) surface release of crude over 35 days resulting from a LOWC at Kullingal. The crude was tracked for an additional 21 days to allow the concentrations to decrease below the lowest thresholds. The modelling for this scenario assumed no mitigation efforts are undertaken to collect or otherwise affect the natural transport and weathering.

13.1 Stochastic Analysis

13.1.1 Exposure Areas

Figure 13.1 illustrates the exposure areas for the LOWC scenario, determined by integrating the low, moderate, and high threshold results of all 300 spill simulations.

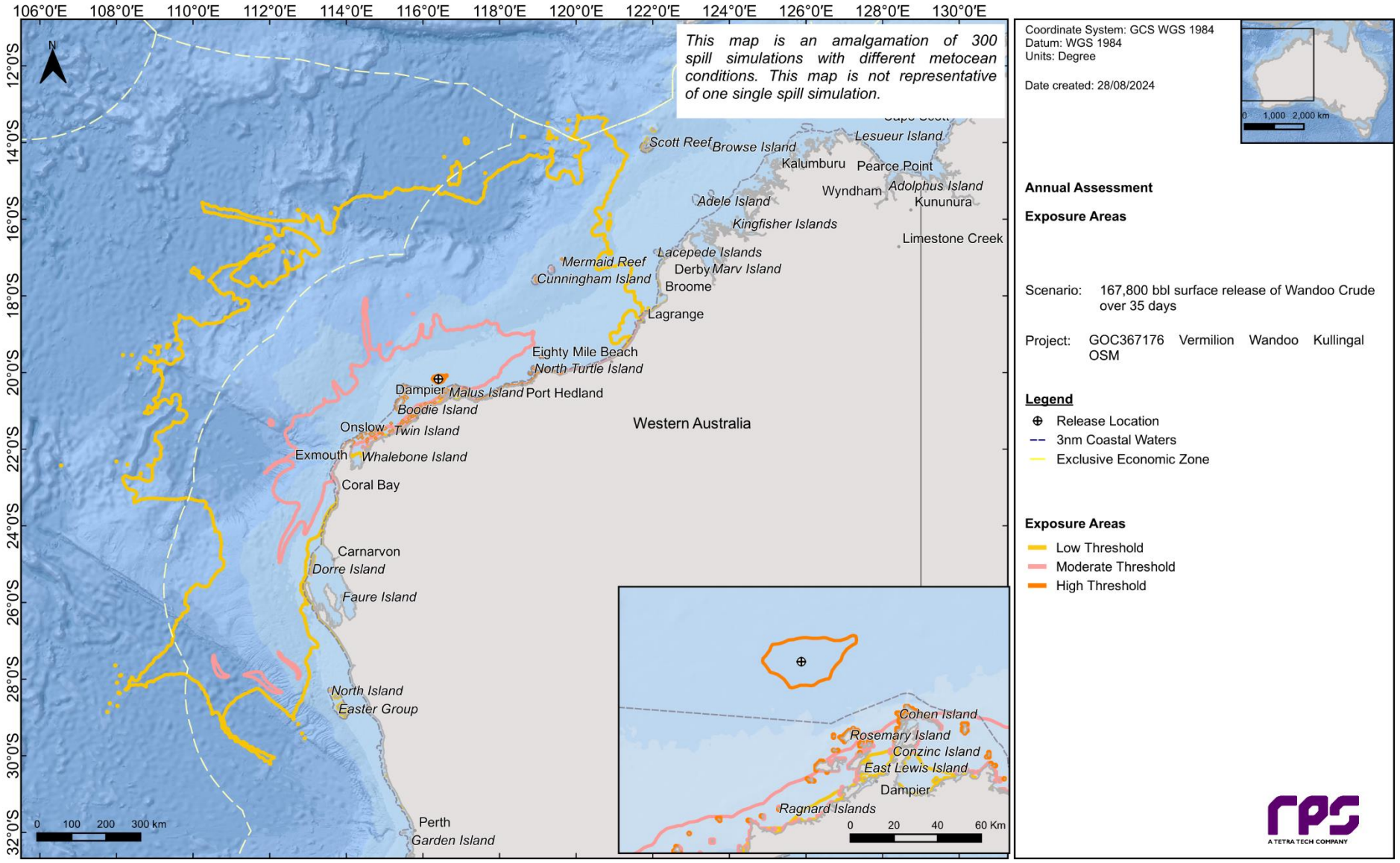


Figure 13.1 Predicted exposure areas following a surface LOWC at Kullingal, presented as an annual assessment. The exposure areas were determined by integrating the results of all 300 spill simulations across low, moderate and high thresholds.

13.1.2 Floating Oil Exposure

Table 13.1 summarises the maximum distances from the release location to floating oil exposure thresholds for each season. Concentrations exceeding 1 g/m^2 could extend up to 998 km from the release location. The maximum distances reduced to 473 km and 25 km as the threshold increases to 10 g/m^2 and 50 g/m^2, respectively.

Table 13.2 present the receptors predicted to be exposed by floating oil for each season.

The Glomar Shoals KEF (60%), Montebello AMP (79%) and Mermaid Reef AMP (97%) recorded the highest probability of exposure at, or above, 1 g/m^2 during summer, transitional and winter conditions, respectively. The Montebello AMP recorded the fastest time to exposure at 37 hours, for a spill commencing during transitional conditions.

Figure 13.2 to Figure 13.4 illustrate the extent floating oil exposure zones for each season. Figure 13.5 to Figure 13.22 depict the seasonal minimum times before exposure and probability of exposure for assessed thresholds.

Table 13.1 Maximum distances from the release location to floating oil exposure thresholds from a surface LOWC at Kullingal. Results were calculated from 100 spill simulations per season.

Season	Distance and direction travelled	Floating oil exposure thresholds		
		1 g/m^2	10 g/m^2	50 g/m^2
Summer	Maximum distance (km) from release location	647	55	15
	Direction	Northeast	West	East
Transitional	Maximum distance (km) from release location	998	473	25
	Direction	Southwest	West	Northeast
Winter	Maximum distance (km) from release location	741	311	13
	Direction	Northeast	Southwest	West

Table 13.2 Receptors predicted to be exposed by floating oil following a surface LOWC at Kullingal. Results were calculated from100 spill simulations per season.

Category	Name	Summer						Transitional						Winter					
		Probability (%) of floating oil at			Minimum times before floating oil exposure (hours)			Probability (%) of floating oil at			Minimum times before floating oil exposure (hours)			Probability (%) of floating oil at			Minimum times before floating oil exposure (hours)		
		≥ 1 g/m^2	≥ 10 g/m^2	≥ 50 g/m^2	≥ 1 g/m^2	≥ 10 g/m^2	≥ 50 g/m^2	≥ 1 g/m^2	≥ 10 g/m^2	≥ 50 g/m^2	≥ 1 g/m^2	≥ 10 g/m^2	≥ 50 g/m^2	≥ 1 g/m^2	≥ 10 g/m^2	≥ 50 g/m^2	≥ 1 g/m^2	≥ 10 g/m^2	≥ 50 g/m^2
AMP	Argo-Rowley Terrace	2	NC	NC	689	NC	NC	4	NC	NC	708	NC	NC	4	NC	NC	521	NC	NC
	Carnarvon Canyon	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	NC	1,265	NC	NC
	Dampier	32	NC	NC	76	NC	NC	12	NC	NC	261	NC	NC	2	NC	NC	415	NC	NC
	Gascoyne	5	NC	NC	317	NC	NC	23	1	NC	320	1,183	NC	29	1	NC	240	605	NC
	Mermaid Reef	2	NC	NC	925	NC	NC	1	NC	NC	1,286	NC	NC	97	2	NC	38	122	NC
	Montebello	53	4	NC	63	64	NC	79	3	NC	37	108	NC	NC	NC	NC	NC	NC	NC
KEF	Ancient coastline at 125 m depth contour	33	NC	NC	173	NC	NC	46	NC	NC	150	NC	NC	56	5	NC	109	335	NC
	Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	10	NC	NC	298	NC	NC	27	NC	NC	273	NC	NC	42	NC	NC	182	NC	NC
	Commonwealth waters adjacent to Ningaloo Reef	4	NC	NC	381	NC	NC	30	2	NC	298	696	NC	34	1	NC	218	474	NC
	Continental Slope Demersal Fish Communities	18	NC	NC	201	NC	NC	42	1	NC	193	1,078	NC	31	3	NC	168	508	NC
	Exmouth Plateau	5	NC	NC	429	NC	NC	9	NC	NC	319	NC	NC	7	NC	NC	415	NC	NC
	Glomar Shoals	60	NC	NC	100	NC	NC	47	NC	NC	109	NC	NC	48	7	NC	63	101	NC
	Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	3	NC	NC	688	NC	NC	1	NC	NC	913	NC	NC	4	NC	NC	639	NC	NC
	Western demersal slope and associated fish communities	NC	NC	NC	NC	NC	NC	1	NC	NC	676	NC	NC	NC	NC	NC	NC	NC	NC
MP	Barrow Island	14	NC	NC	199	NC	NC	29	NC	NC	144	NC	NC	38	NC	NC	108	NC	NC

	Eighty Mile Beach	2	NC	NC	573	NC	NC	1	NC	NC	770	NC	NC	NC	NC	NC	NC	NC	NC
	Montebello Islands	18	NC	NC	170	NC	NC	37	3	NC	130	768	NC	72	5	NC	78	570	NC
	Ningaloo	4	NC	NC	381	NC	NC	30	2	NC	298	696	NC	34	1	NC	218	474	NC
	Rowley Shoals	1	NC	NC	719	NC	NC	NC	NC	NC	NC	NC	NC	4	NC	NC	683	NC	NC
NR	Barrow Island	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	NC	420	NC	NC
	Great Sandy Island	2	NC	NC	562	NC	NC	1	NC	NC	657	NC	NC	3	NC	NC	627	NC	NC
	Lowendal Islands	2	NC	NC	906	NC	NC	1	NC	NC	919	NC	NC	19	NC	NC	268	NC	NC
	Thevenard Island	1	NC	NC	743	NC	NC	7	NC	NC	203	NC	NC	9	NC	NC	290	NC	NC
RSB	Australind Shoal	1	NC	NC	759	NC	NC	NC	NC	NC	NC	NC	NC	4	NC	NC	445	NC	NC
	Barrow Island Reefs and Shoals	2	NC	NC	942	NC	NC	2	NC	NC	556	NC	NC	4	NC	NC	589	NC	NC
	Baylis Patches	1	NC	NC	792	NC	NC	NC	NC	NC	NC	NC	NC	4	NC	NC	482	NC	NC
	Brewis Reef	1	NC	NC	720	NC	NC	8	NC	NC	204	NC	NC	9	NC	NC	308	NC	NC
	Clerke Reef	1	NC	NC	796	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Cod Bank	10	NC	NC	377	NC	NC	8	NC	NC	552	NC	NC	1	NC	NC	617	NC	NC
	Combe Reef	NC	NC	NC	NC	NC	NC	2	NC	NC	638	NC	NC	2	NC	NC	381	NC	NC
	Courtenay Shoal	4	NC	NC	190	NC	NC	3	NC	NC	748	NC	NC	NC	NC	NC	NC	NC	NC
	Curlew Bank	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	NC	475	NC	NC
	Dailey Shoal	3	NC	NC	719	NC	NC	12	NC	NC	428	NC	NC	8	NC	NC	263	NC	NC
	Dockrell Reef	NC	NC	NC	NC	NC	NC	4	NC	NC	712	NC	NC	1	NC	NC	1,310	NC	NC
	Fairway Reef	1	NC	NC	709	NC	NC	2	NC	NC	423	NC	NC	1	NC	NC	373	NC	NC
	Flinders Shoal	2	NC	NC	945	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Glennie Patches	1	NC	NC	781	NC	NC	NC	NC	NC	NC	NC	NC	3	NC	NC	444	NC	NC
	Glomar Shoal	39	NC	NC	201	NC	NC	28	NC	NC	208	NC	NC	32	NC	NC	108	NC	NC
	Gorgon Patch	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	4	NC	NC	450	NC	NC
	Hammersley Shoal	20	2	NC	166	207	NC	8	NC	NC	458	NC	NC	2	NC	NC	1,087	NC	NC
	Hastings Shoal	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	5	NC	NC	342	NC	NC
	Hayman Rock	1	NC	NC	795	NC	NC	NC	NC	NC	NC	NC	NC	3	NC	NC	481	NC	NC
	Herald Reef	1	NC	NC	1,051	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Hood Reef	2	NC	NC	672	NC	NC	4	NC	NC	613	NC	NC	6	NC	NC	272	NC	NC
	Imperieuse Reef	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	2	NC	NC	905	NC	NC
	Inner Northwest Patch	1	NC	NC	769	NC	NC	NC	NC	NC	NC	NC	NC	4	NC	NC	448	NC	NC
	Koolinda Patch	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	4	NC	NC	475	NC	NC
	Lightfoot Reef	1	NC	NC	1,056	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Little Shoals	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	5	NC	NC	350	NC	NC
	Locker Reef	1	NC	NC	719	NC	NC	1	NC	NC	625	NC	NC	5	NC	NC	476	NC	NC
	Madeleine Shoals	28	NC	NC	167	NC	NC	9	NC	NC	277	NC	NC	2	NC	NC	528	NC	NC

	Manicom Bank	1	NC	NC	790	NC	NC	NC	NC	NC	NC	NC	NC	4	NC	NC	466	NC	NC
	McLennan Bank	5	NC	NC	713	NC	NC	1	NC	NC	500	NC	NC	9	NC	NC	372	NC	NC
	Meda Reef	1	NC	NC	564	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Mermaid Reef	2	NC	NC	930	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Miles Shoal	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	4	NC	NC	461	NC	NC
	Montebello Shoals	13	NC	NC	246	NC	NC	30	NC	NC	145	NC	NC	42	NC	NC	123	NC	NC
	Moresby Shoals	1	NC	NC	1,144	NC	NC	NC	NC	NC	NC	NC	NC	5	NC	NC	364	NC	NC
	Nares Rock	1	NC	NC	1,148	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Ningaloo Reef	1	NC	NC	935	NC	NC	6	NC	NC	663	NC	NC	NC	NC	NC	NC	NC	NC
	North West Reef	5	NC	NC	495	NC	NC	5	NC	NC	572	NC	NC	1	NC	NC	1,307	NC	NC
	O'Grady Shoal	NC	NC	NC	NC	NC	NC	1	NC	NC	617	NC	NC	1	NC	NC	400	NC	NC
	Otway Reef	1	NC	NC	1,148	NC	NC	7	NC	NC	628	NC	NC	7	NC	NC	342	NC	NC
	Outtrim Patches	3	NC	NC	699	NC	NC	9	NC	NC	419	NC	NC	6	NC	NC	283	NC	NC
	Paroo Shoal	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	4	NC	NC	455	NC	NC
	Penguin Bank	6	NC	NC	409	NC	NC	18	NC	NC	252	NC	NC	24	NC	NC	224	NC	NC
	Poivre Reef	3	NC	NC	455	NC	NC	17	NC	NC	295	NC	NC	16	NC	NC	287	NC	NC
	Rankin Bank	21	NC	NC	321	NC	NC	30	NC	NC	267	NC	NC	47	NC	NC	190	NC	NC
	Ripple Shoals	2	NC	NC	887	NC	NC	3	NC	NC	350	NC	NC	6	NC	NC	306	NC	NC
	Roller Shoal	1	NC	NC	807	NC	NC	NC	NC	NC	NC	NC	NC	3	NC	NC	466	NC	NC
	Rosily Shoals	6	NC	NC	424	NC	NC	17	NC	NC	184	NC	NC	26	NC	NC	186	NC	NC
	Saladin Shoal	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	4	NC	NC	457	NC	NC
	Santo Rock	3	NC	NC	732	NC	NC	2	NC	NC	731	NC	NC	3	NC	NC	456	NC	NC
	South East Reef	2	NC	NC	504	NC	NC	1	NC	NC	890	NC	NC	NC	NC	NC	NC	NC	NC
	South West Reef	4	NC	NC	503	NC	NC	1	NC	NC	875	NC	NC	NC	NC	NC	NC	NC	NC
	Southwest Patch	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	3	NC	NC	480	NC	NC
	Spider Reef	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	NC	678	NC	NC
	Sultan Reef	1	NC	NC	761	NC	NC	2	NC	NC	305	NC	NC	6	NC	NC	291	NC	NC
	Taunton Reef	NC	NC	NC	NC	NC	NC	3	NC	NC	614	NC	NC	6	NC	NC	306	NC	NC
	Tongue Shoals	1	NC	NC	758	NC	NC	NC	NC	NC	NC	NC	NC	4	NC	NC	448	NC	NC
	Trap Reef	2	NC	NC	708	NC	NC	7	NC	NC	285	NC	NC	8	NC	NC	359	NC	NC
	Tryal Rocks	19	NC	NC	125	NC	NC	40	NC	NC	86	NC	NC	65	NC	NC	137	NC	NC
	Ward Reef	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	5	NC	NC	391	NC	NC
	Web Reef	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	NC	686	NC	NC
	Weeks Shoal	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	4	NC	NC	327	NC	NC
	West Reef	1	NC	NC	1,048	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
State and Territory Waters	WA	40	4	NC	53	125	NC	52	9	NC	37	52	NC	89	5	NC	31	74	NC

NC: No contact to receptor predicted for specified threshold.

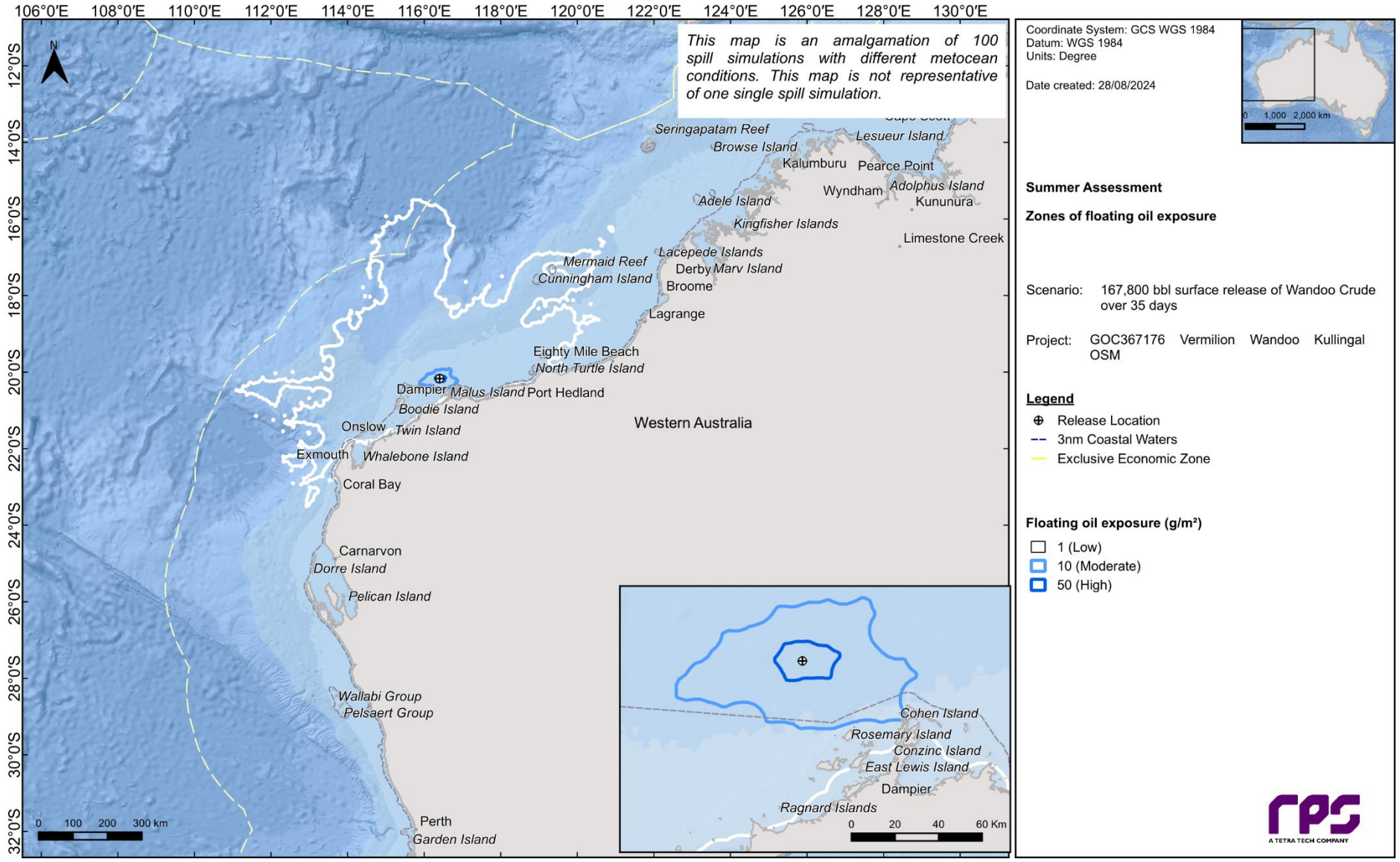


Figure 13.2 Predicted zones of floating oil exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

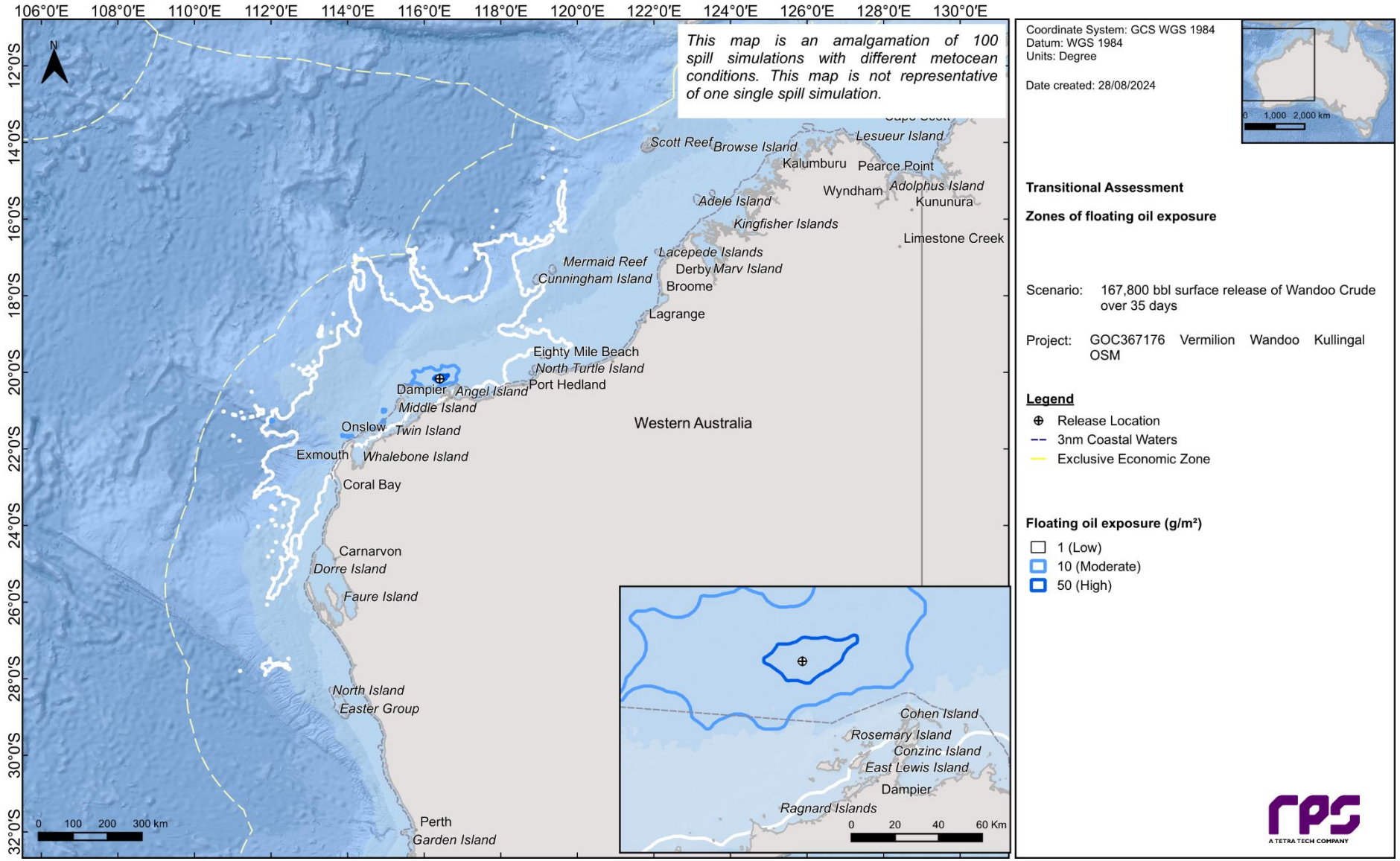


Figure 13.3 Predicted zones of floating oil exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

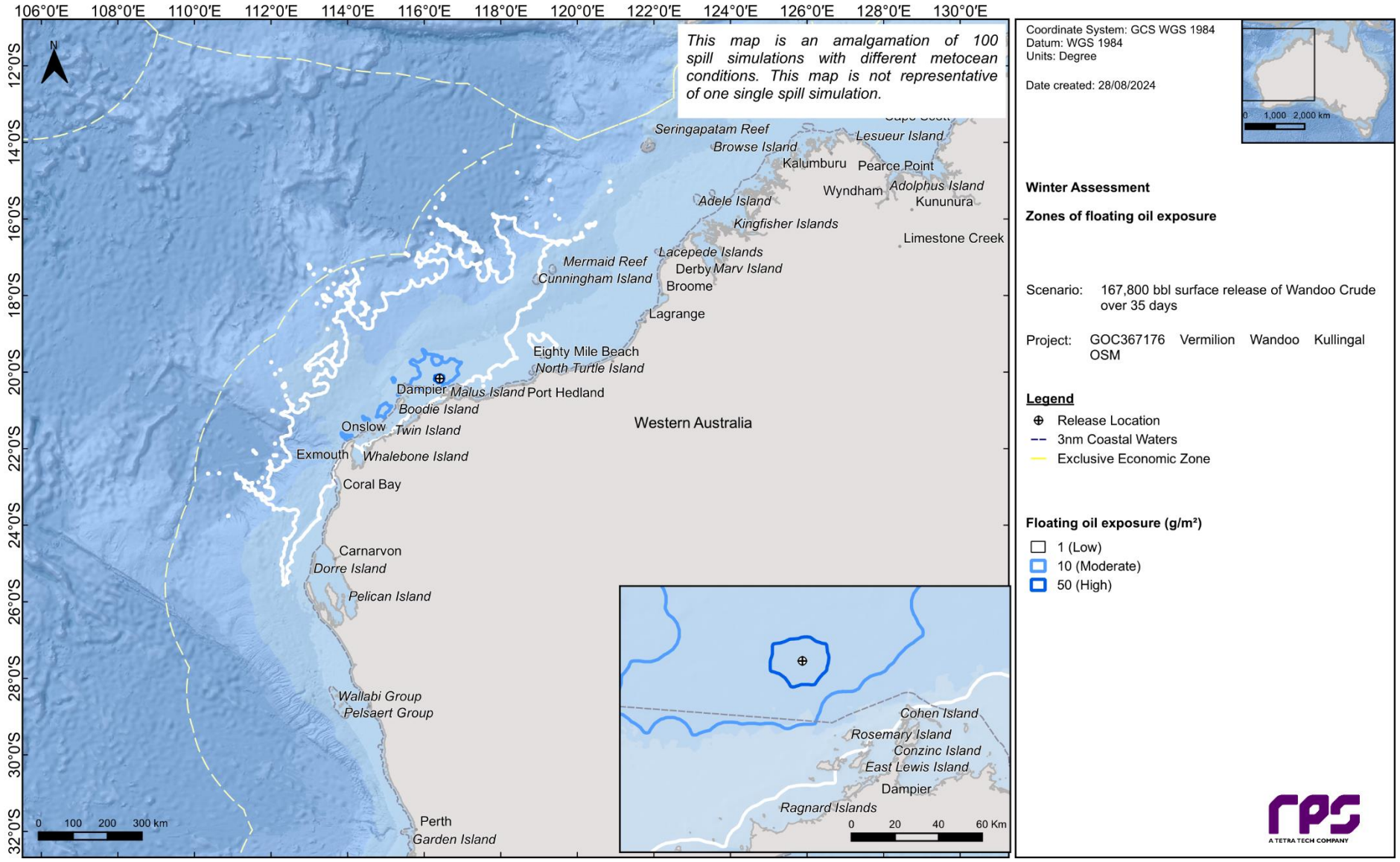


Figure 13.4 Predicted zones of floating oil exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

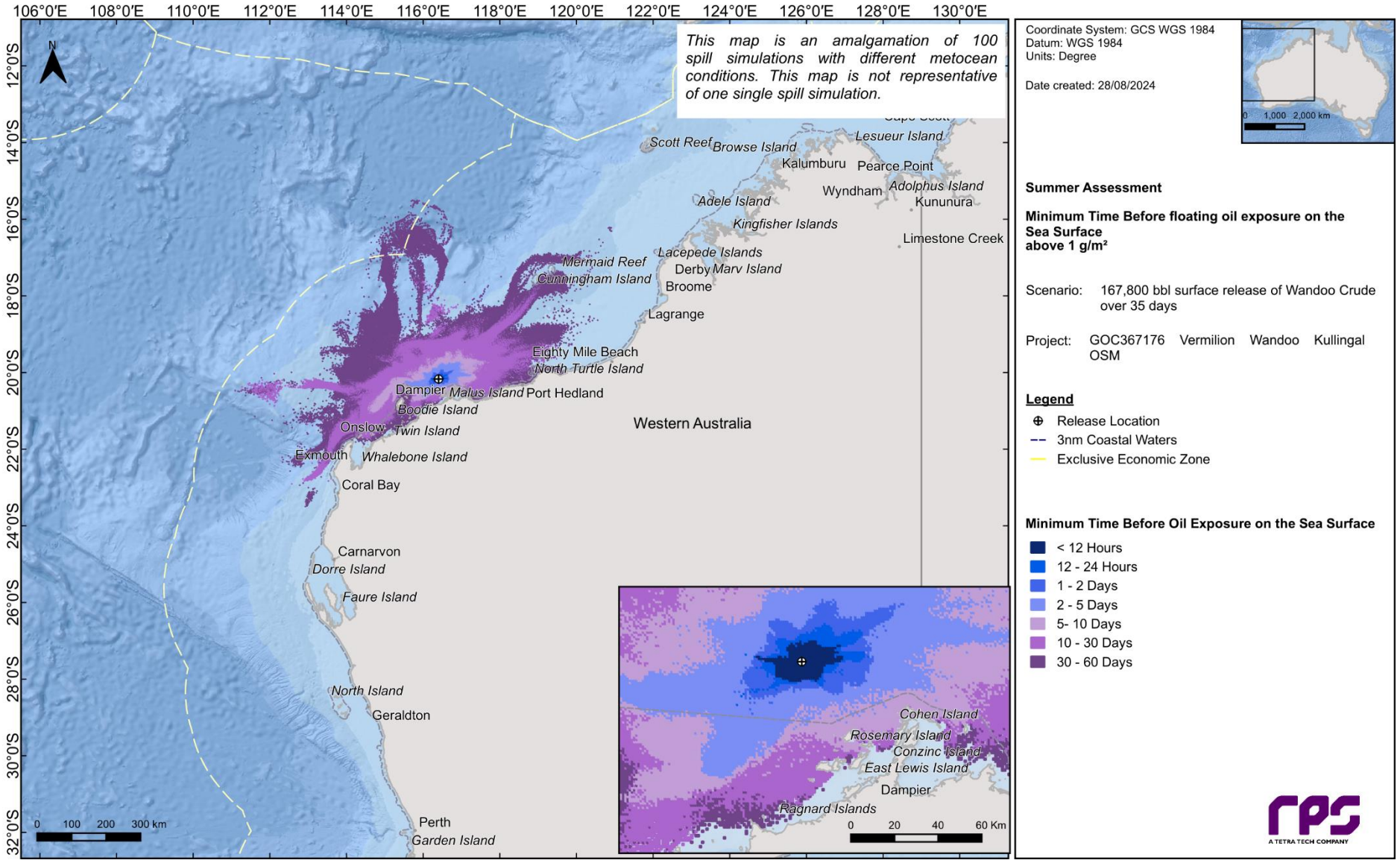


Figure 13.5 Minimum time before floating oil exposure at, or above, 1 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

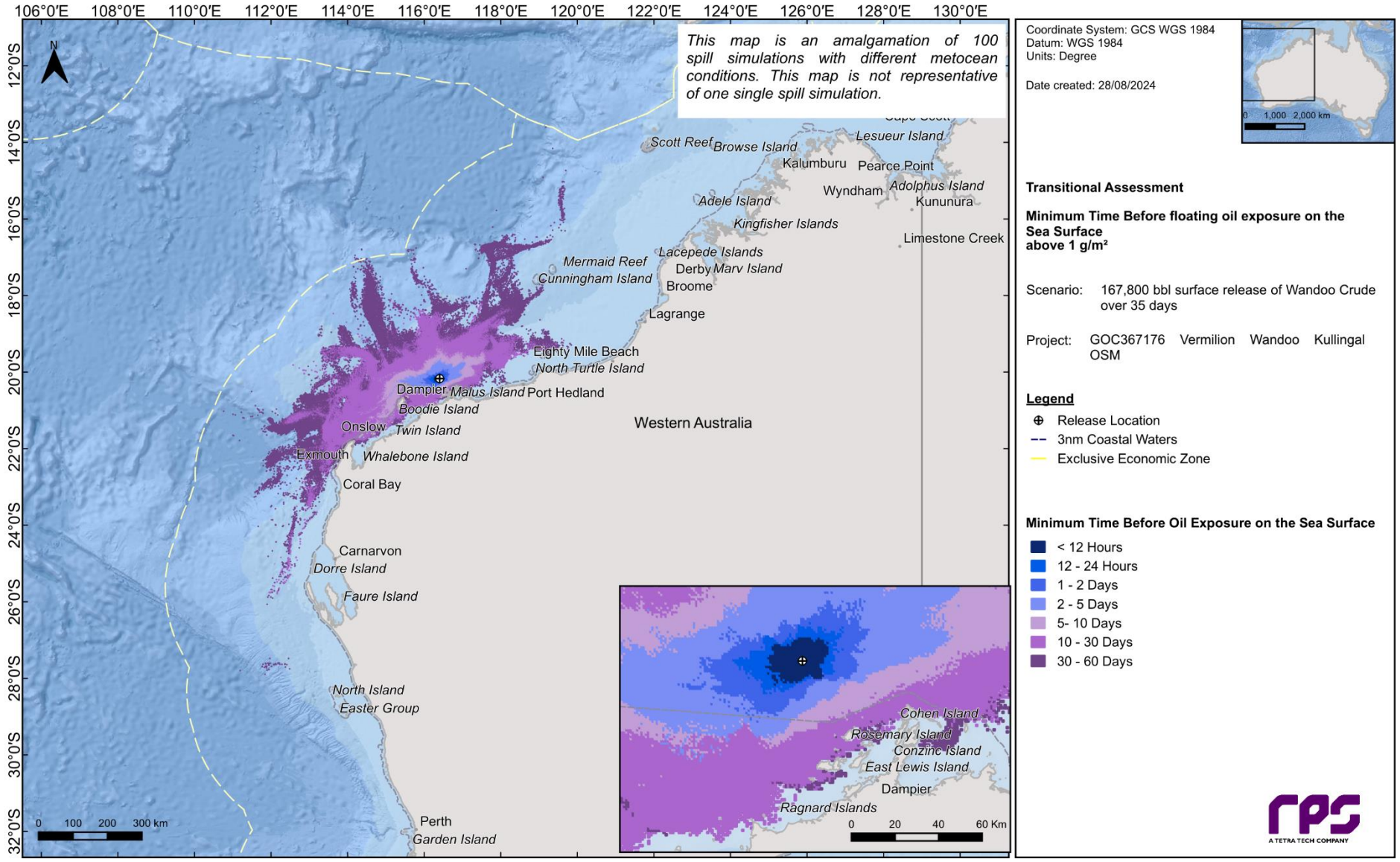


Figure 13.6 Minimum time before floating oil exposure at, or above, 1 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

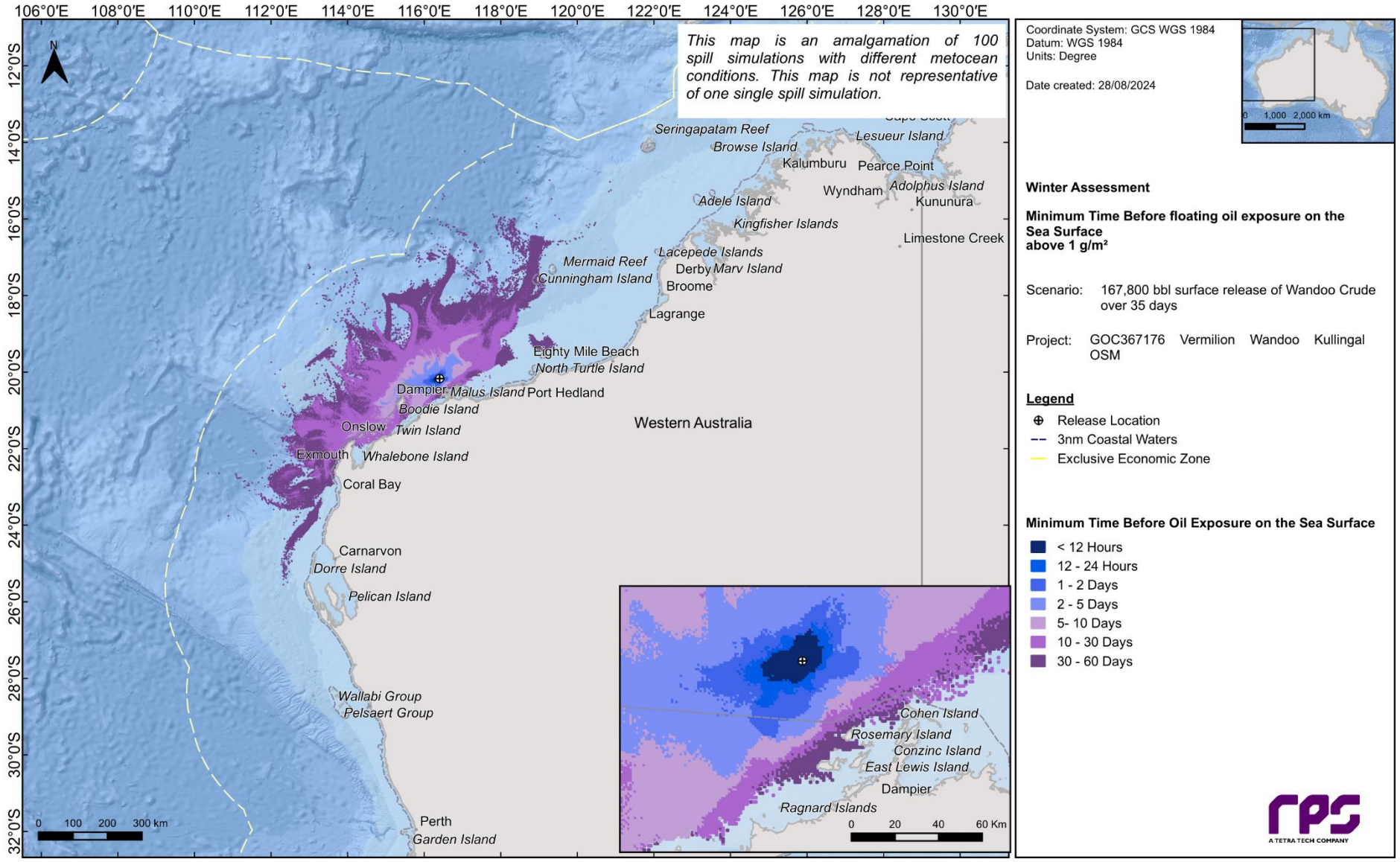


Figure 13.7 Minimum time before floating oil exposure at, or above, 1 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

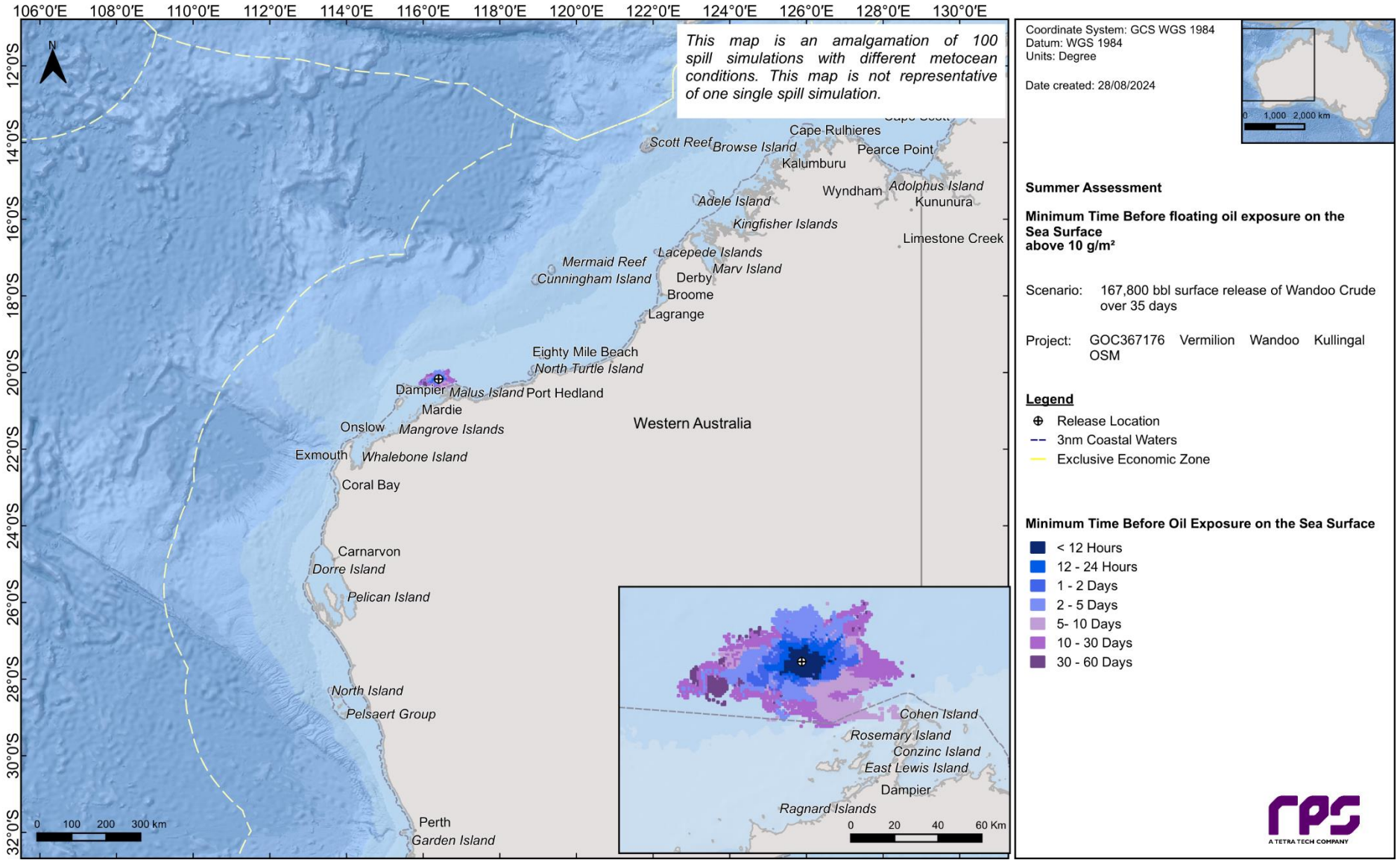


Figure 13.8 Minimum time before floating oil exposure at, or above, 10 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

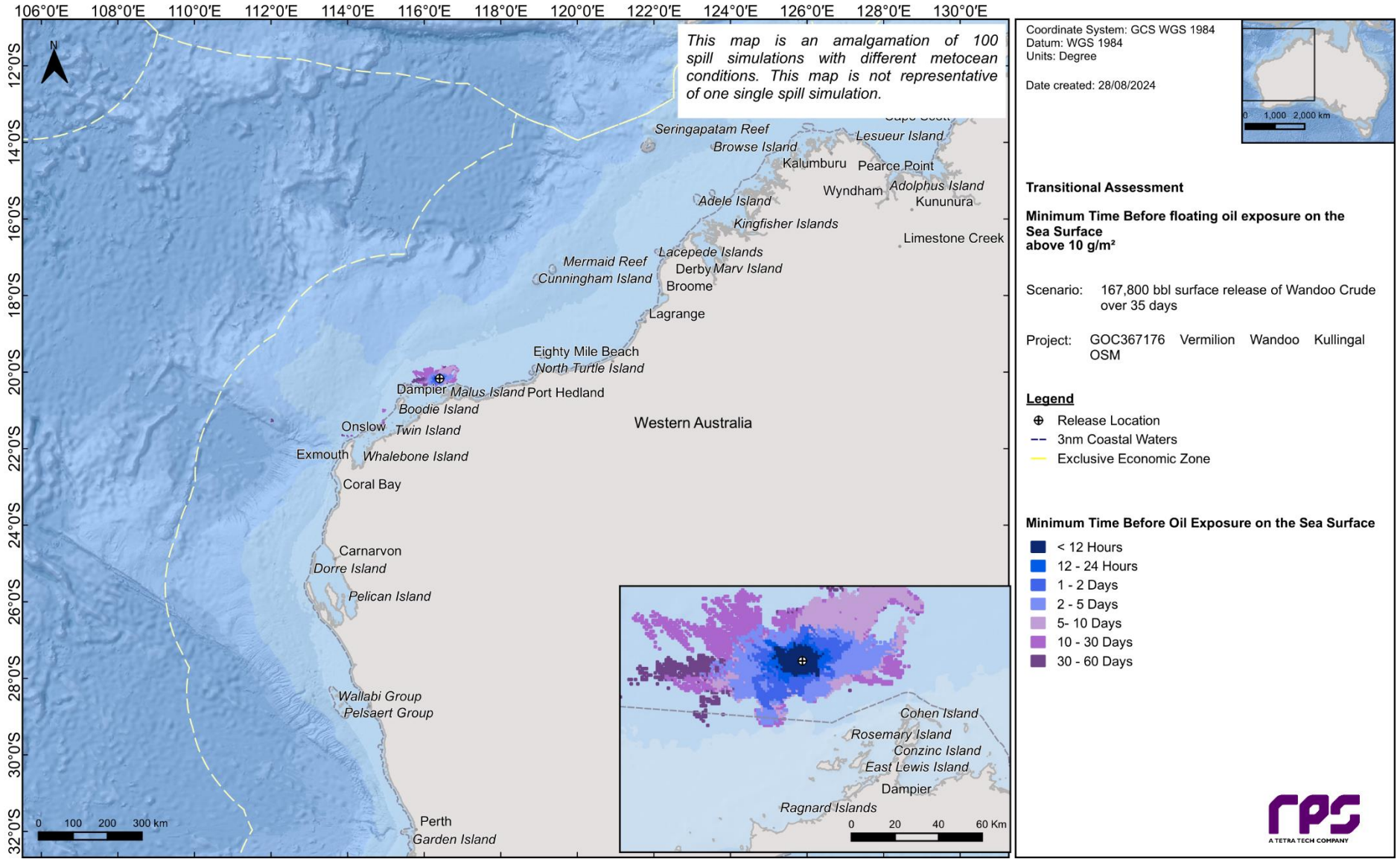


Figure 13.9 Minimum time before floating oil exposure at, or above, 10 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

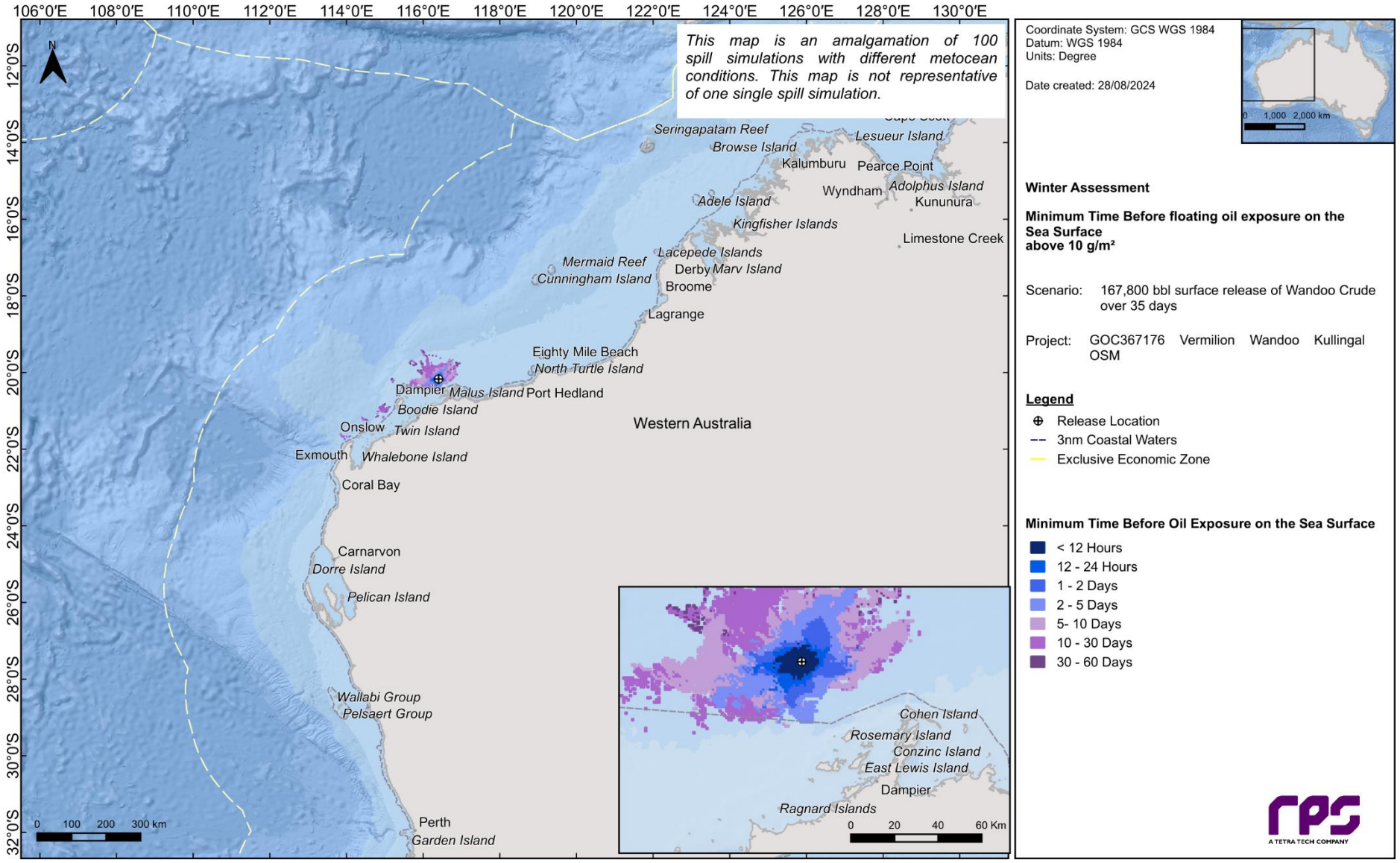


Figure 13.10 Minimum time before floating oil exposure at, or above, 10 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

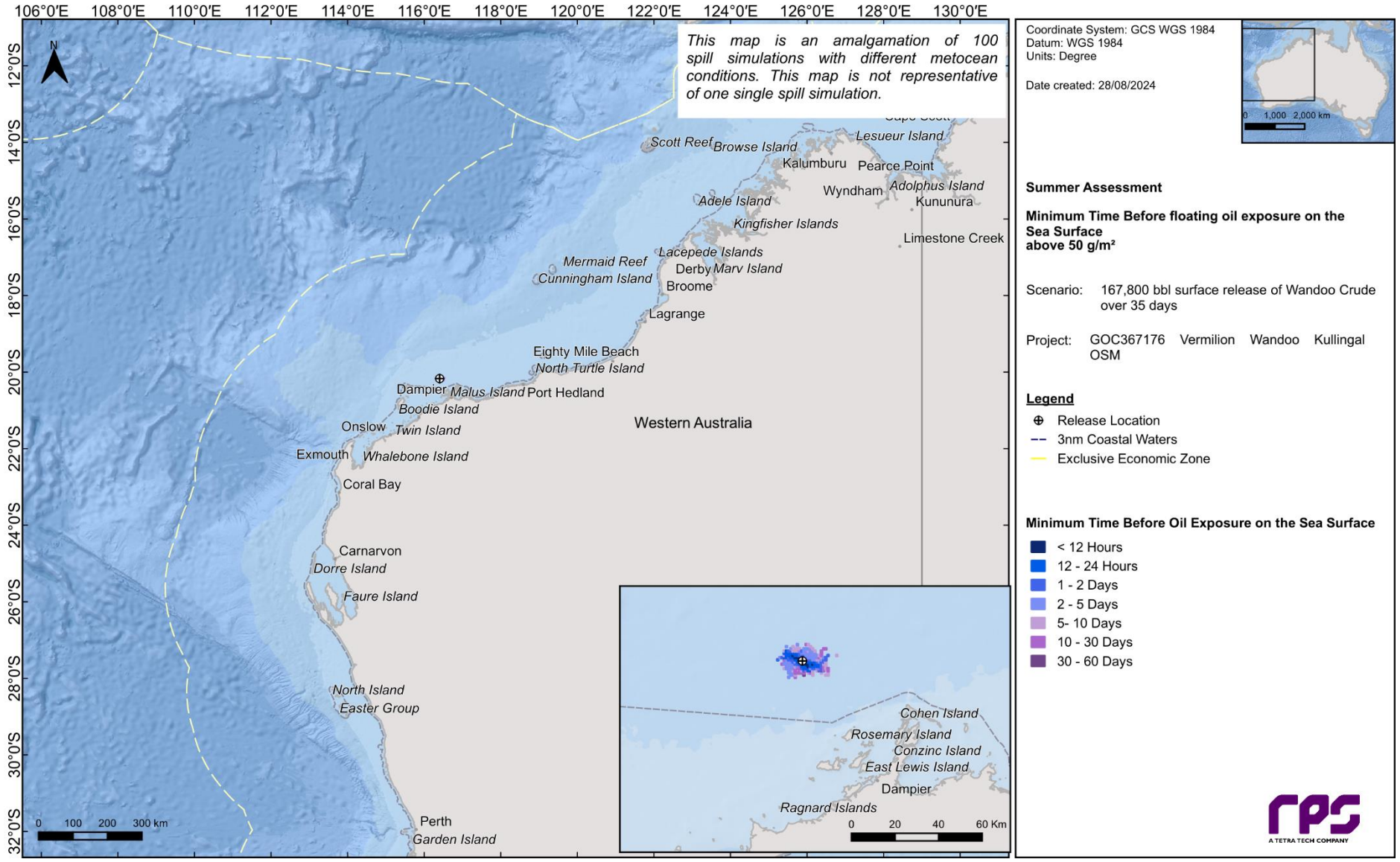


Figure 13.11 Minimum time before floating oil exposure at, or above, 50 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

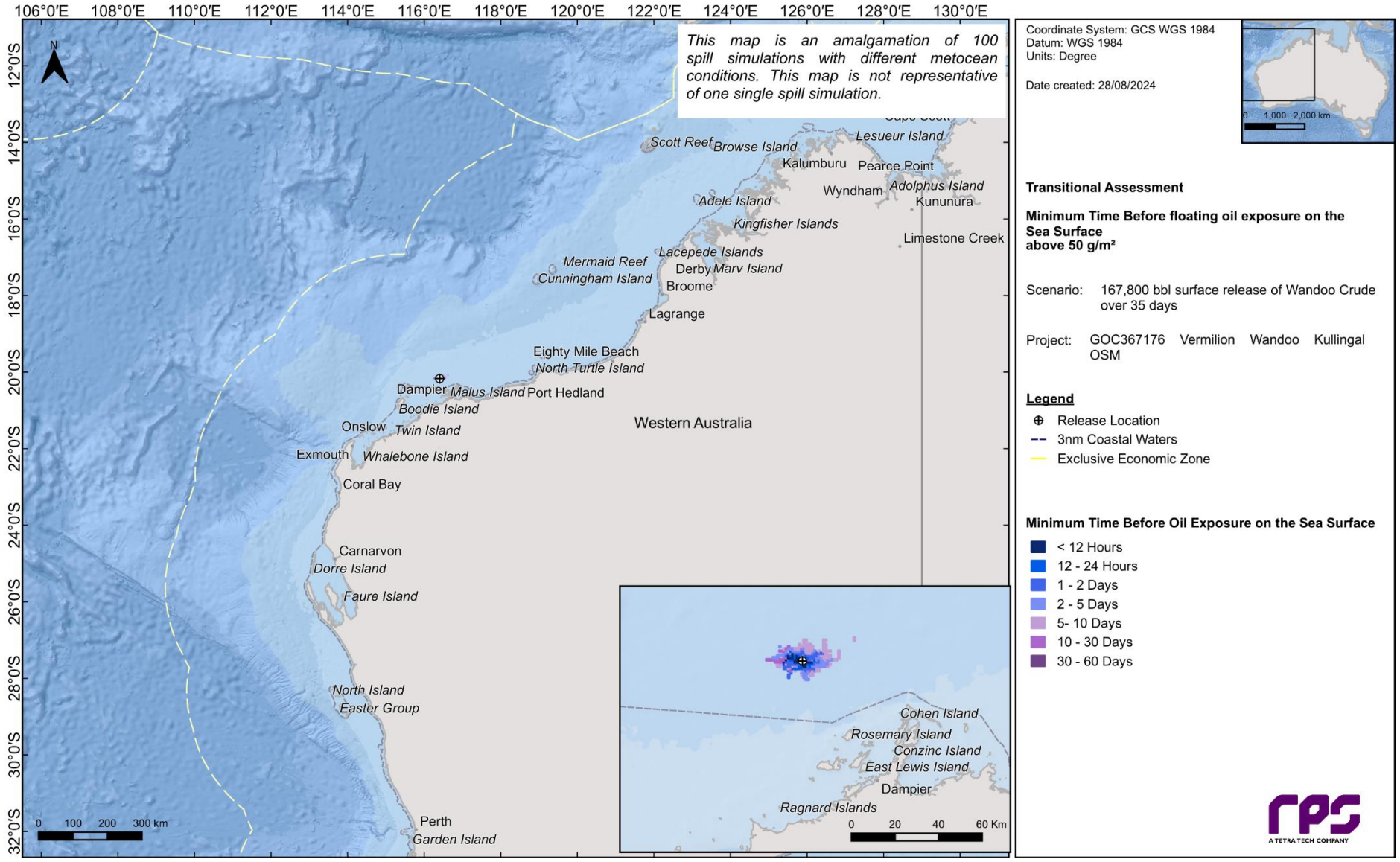


Figure 13.12 Minimum time before floating oil exposure at, or above, 50 g/m^2 following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

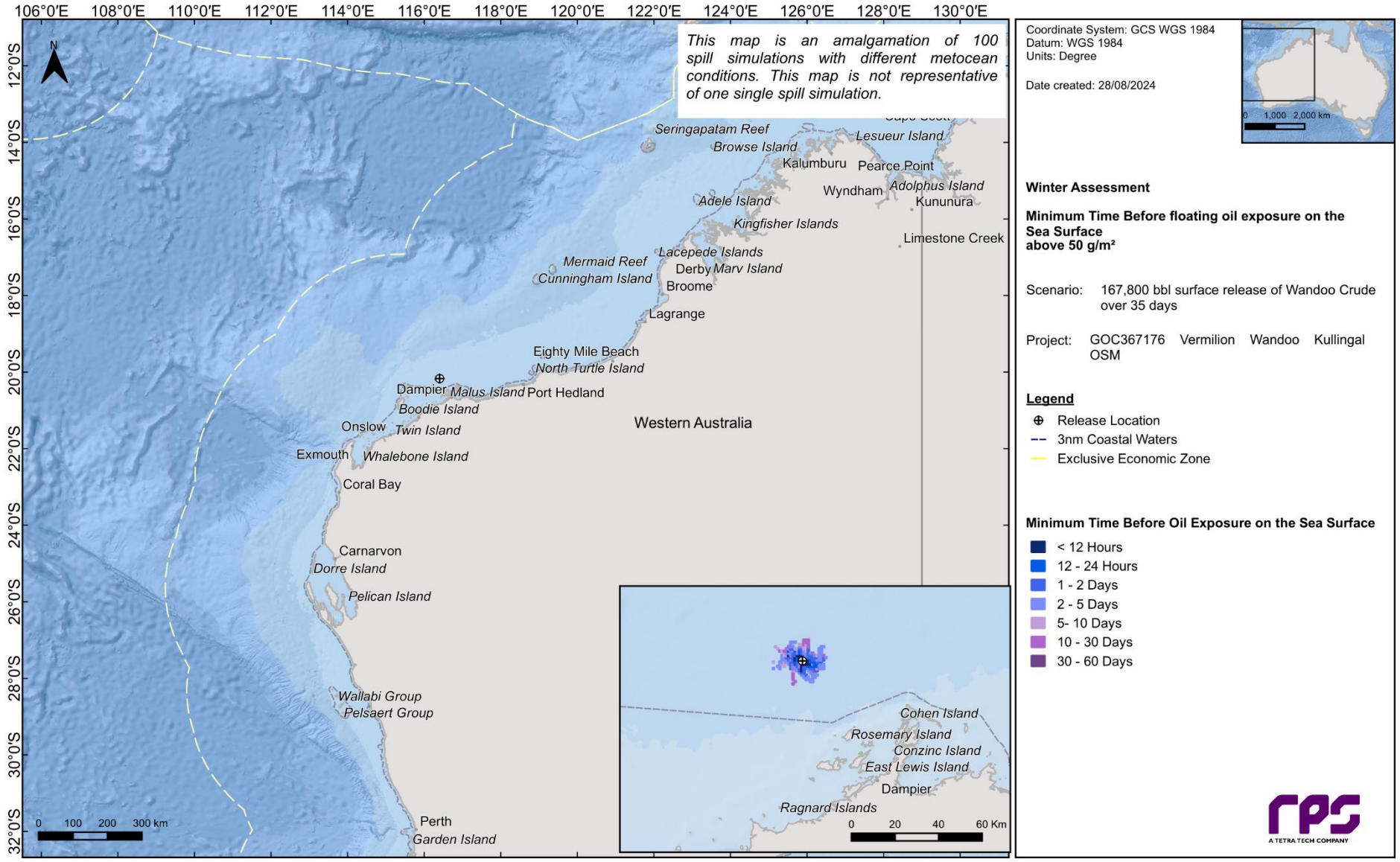


Figure 13.13 Minimum time before floating oil exposure at, or above, 50 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

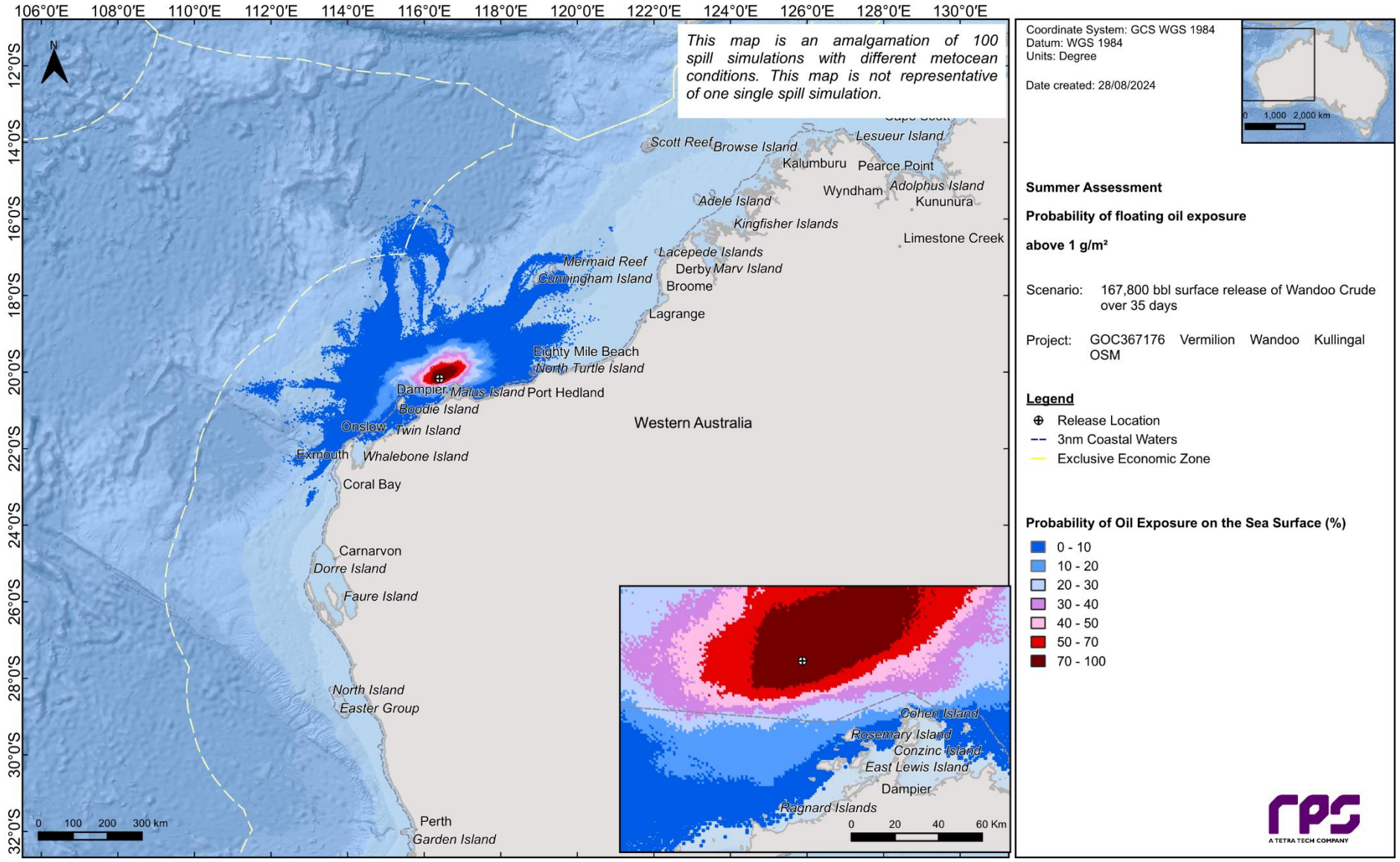


Figure 13.14 Probability of floating oil exposure at, or above, 1 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

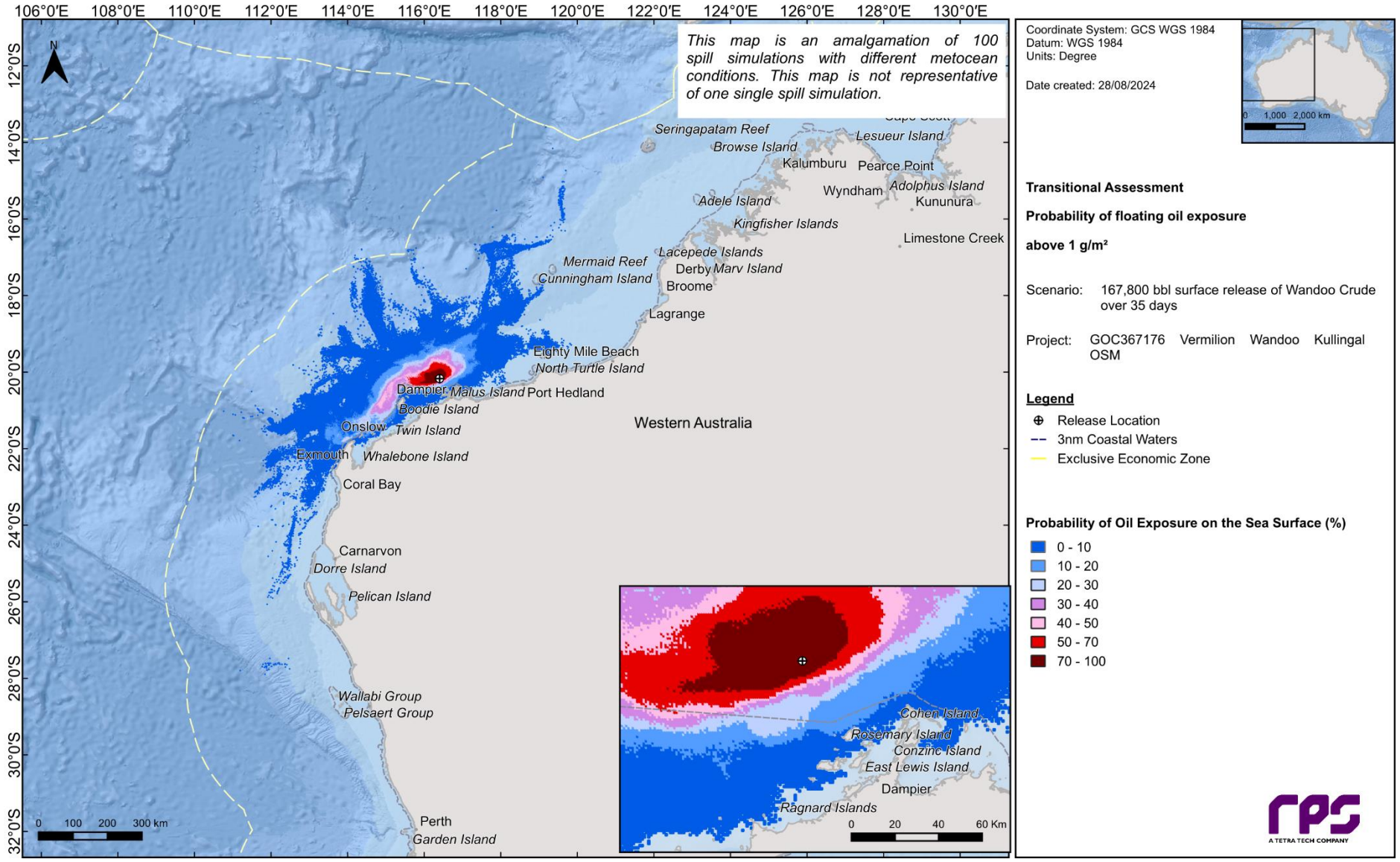


Figure 13.15 Probability of floating oil exposure at, or above, 1 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

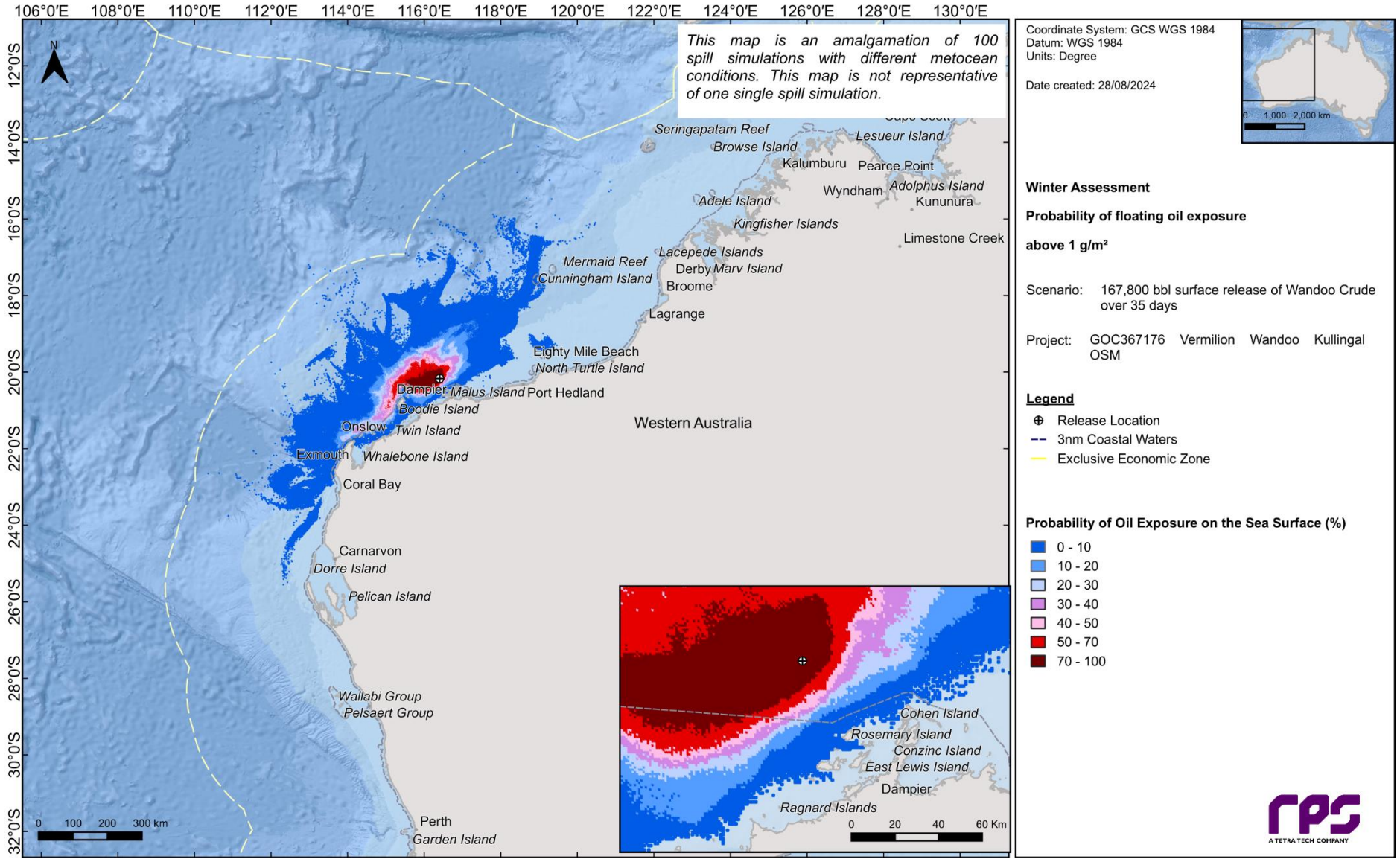


Figure 13.16 Probability of floating oil exposure at, or above, 1 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

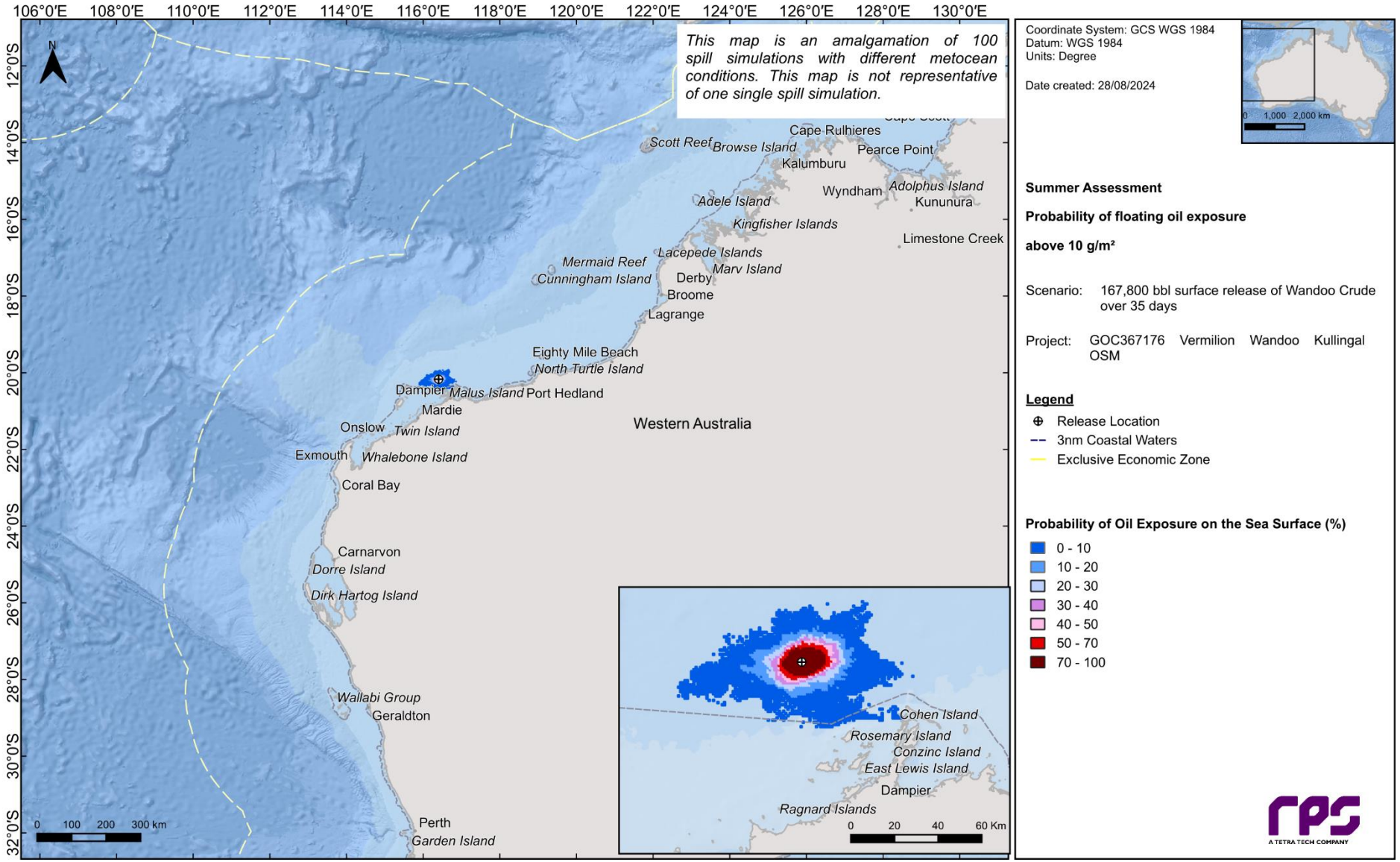


Figure 13.17 Probability of floating oil exposure at, or above, 10 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

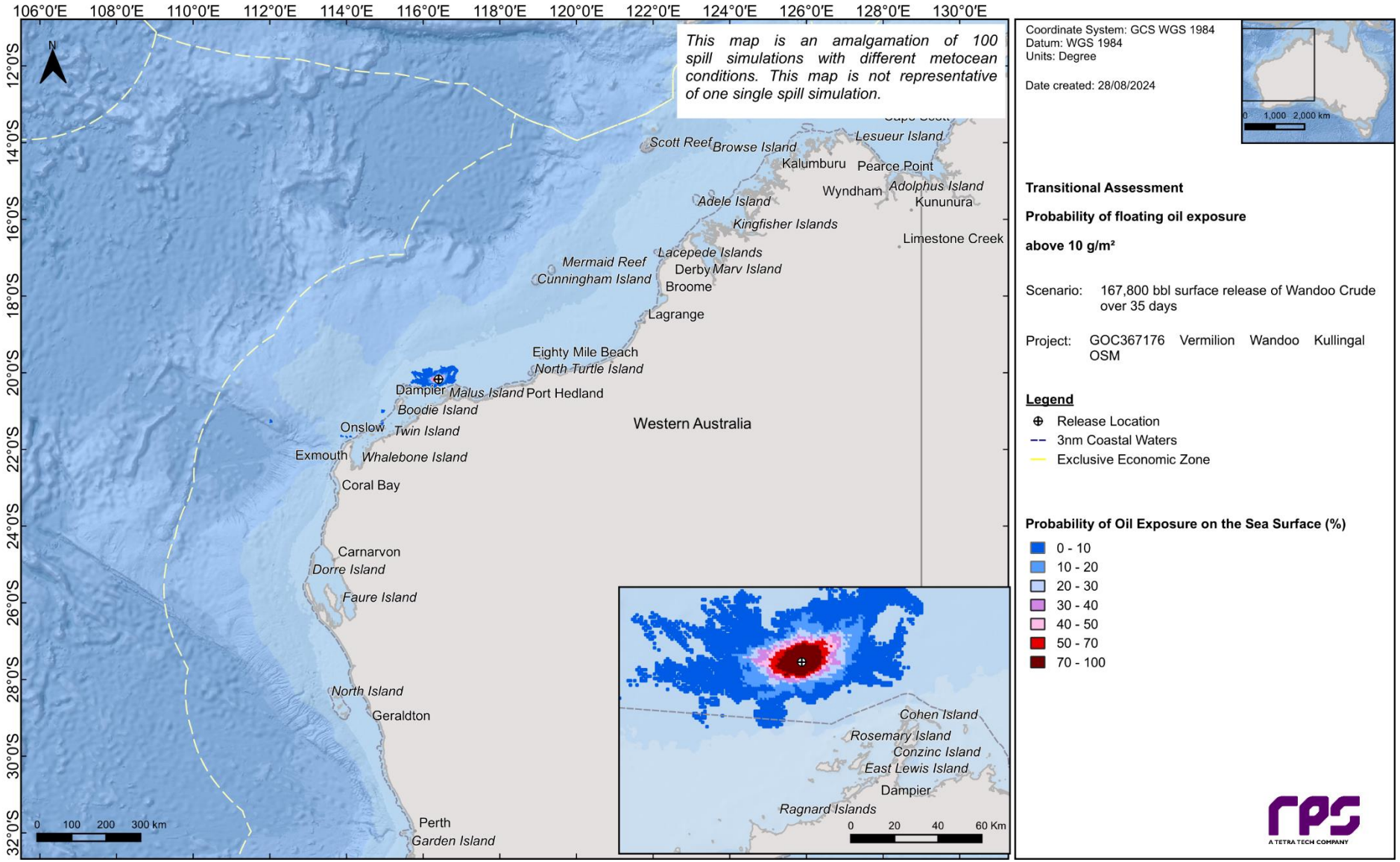


Figure 13.18 Probability of floating oil exposure at, or above, 10 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

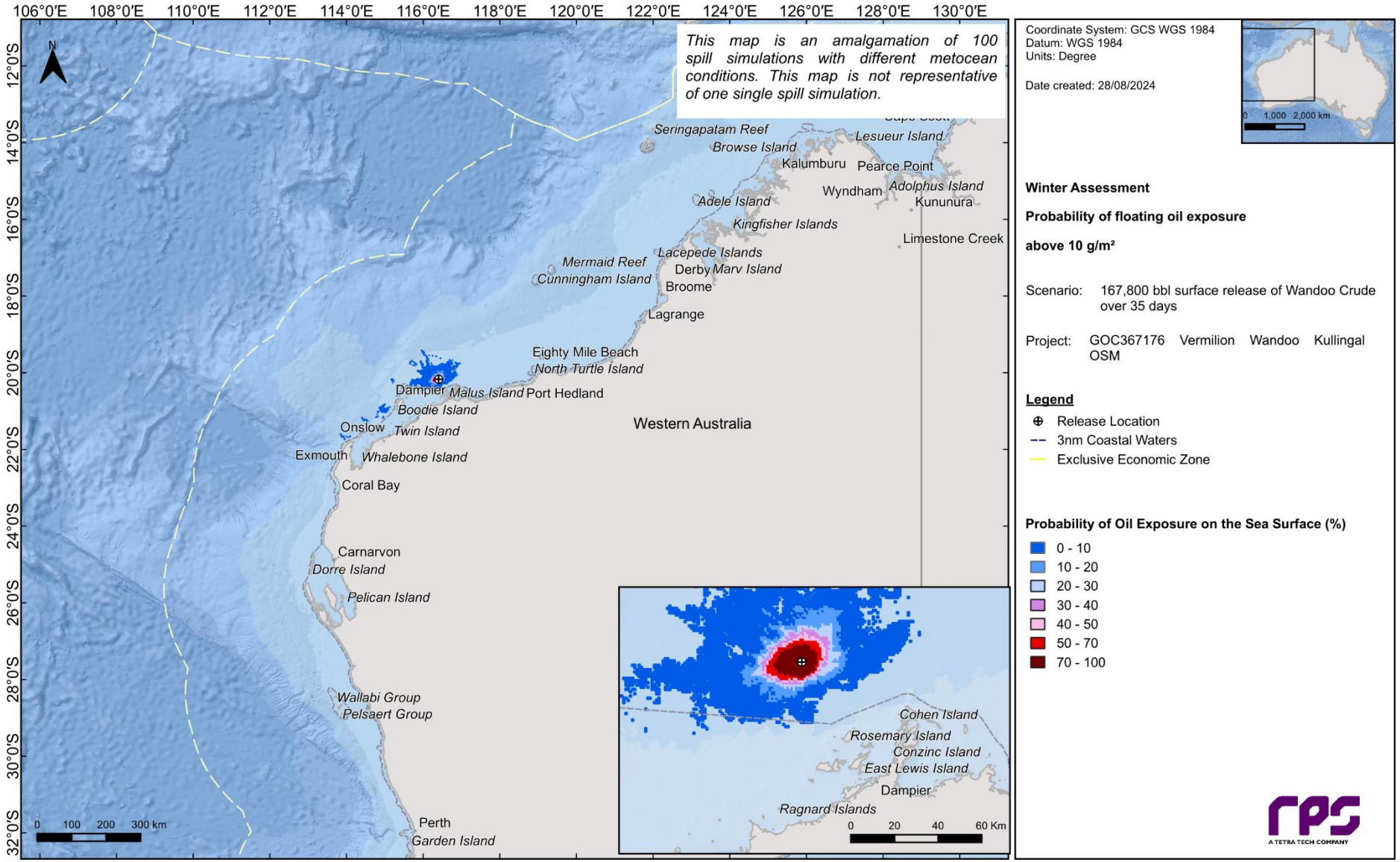


Figure 13.19 Probability of floating oil exposure at, or above, 10 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

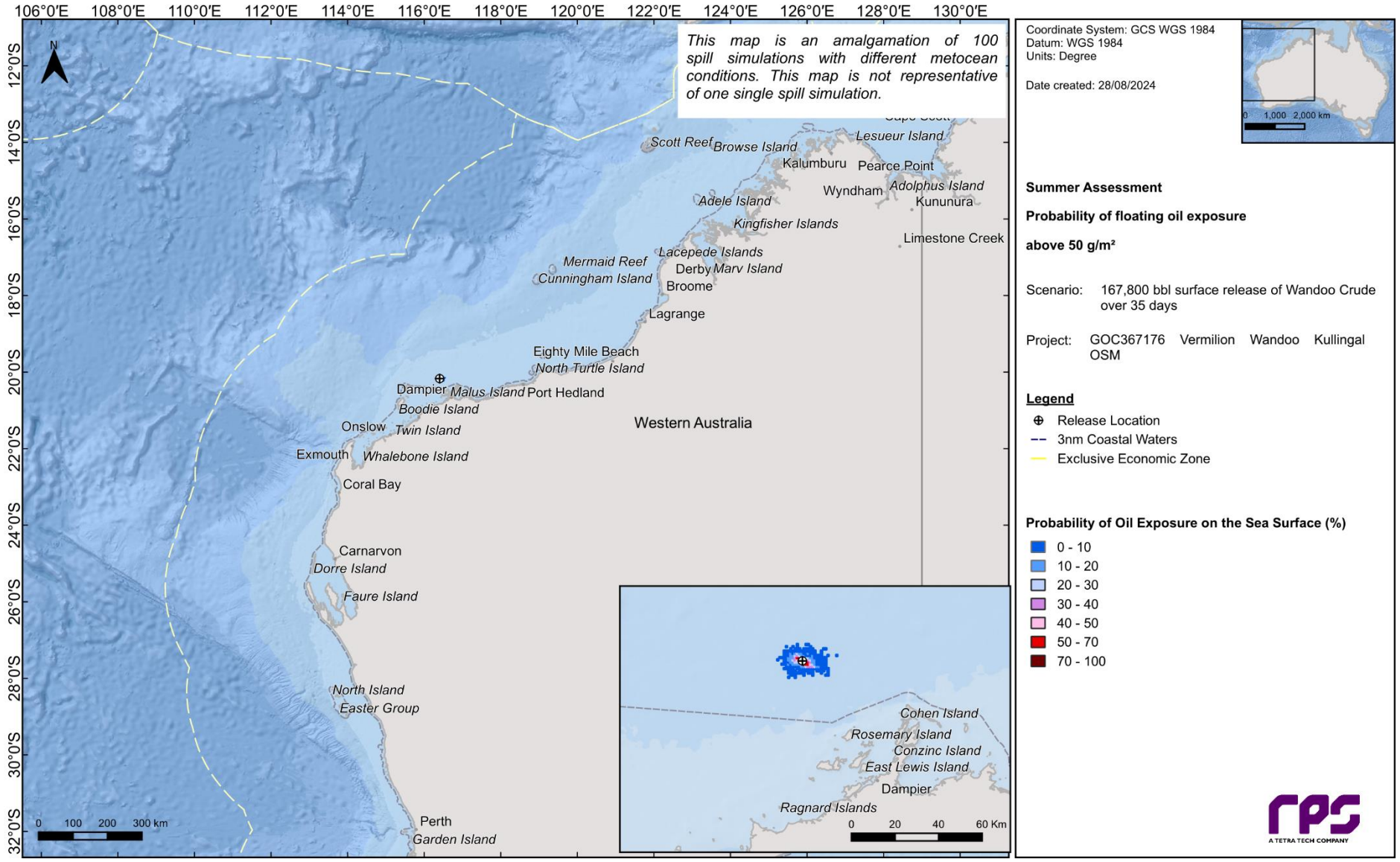


Figure 13.20 Probability of floating oil exposure at, or above, 50 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

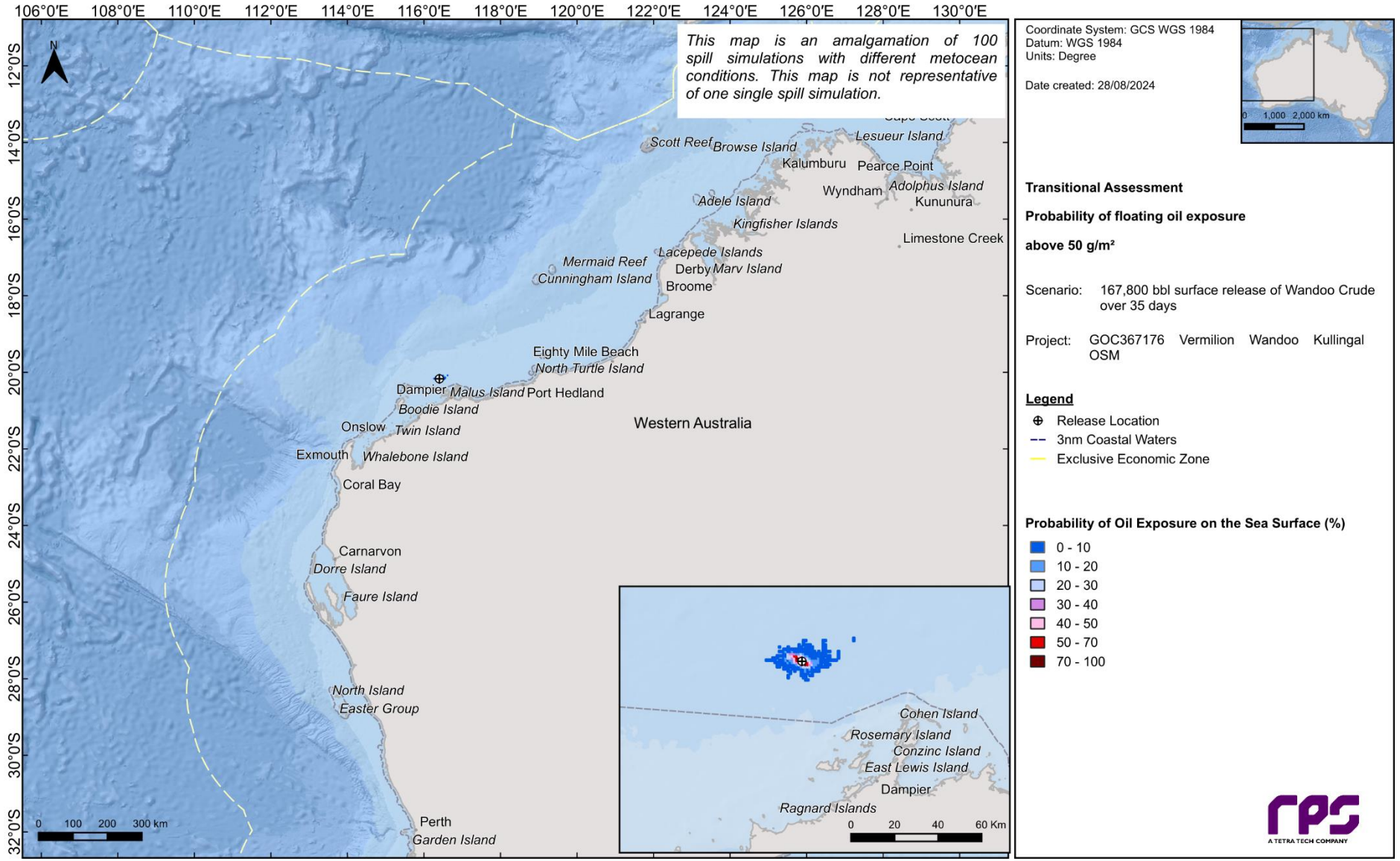


Figure 13.21 Probability of floating oil exposure at, or above, 50 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

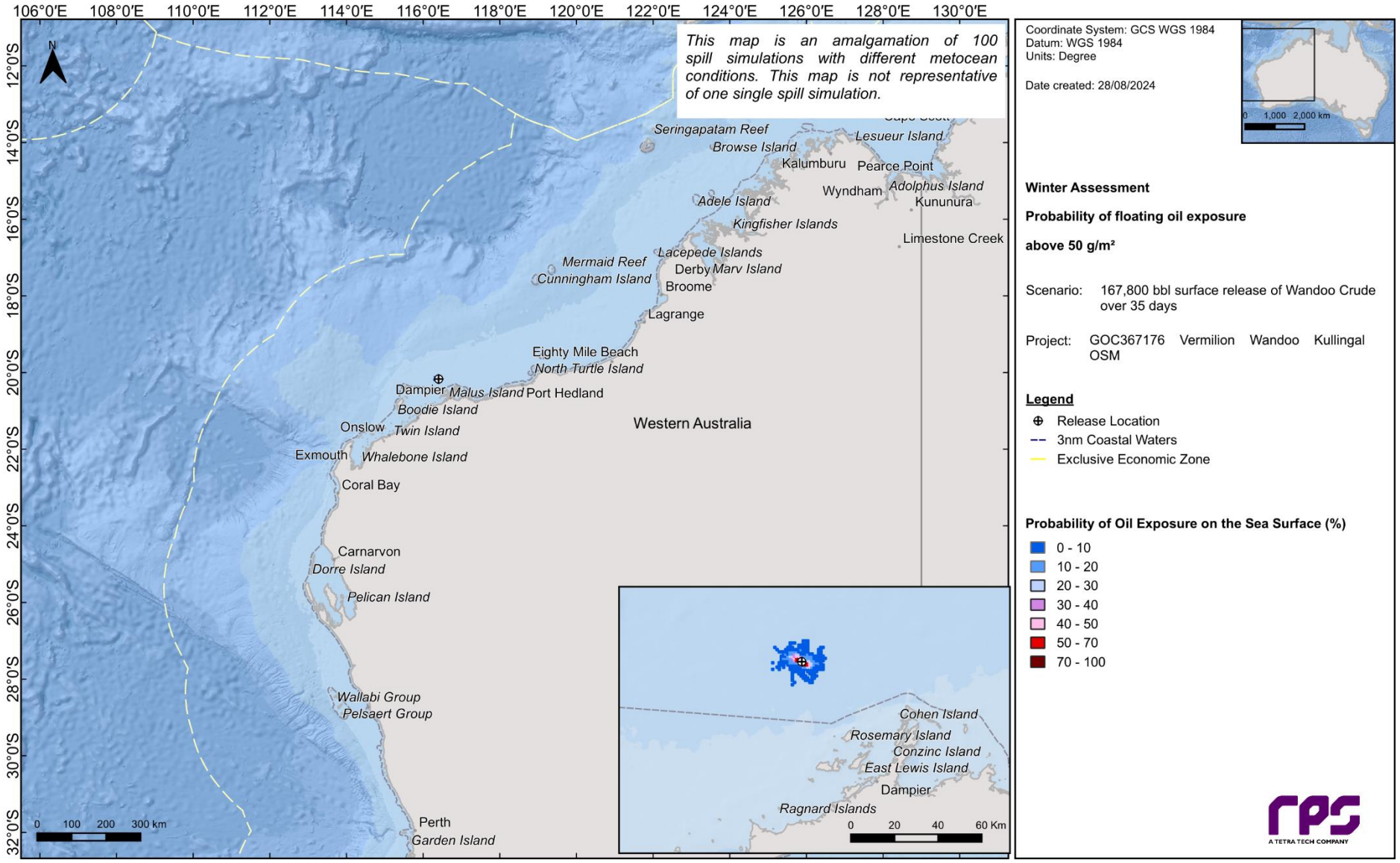


Figure 13.22 Probability of floating oil exposure at, or above, 50 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

13.1.3 Shoreline accumulation

Table 13.3 summarizes the predicted oil accumulation on shorelines across different seasons and thresholds. The highest probability of accumulation at, or above, the 10 g/m^2 threshold was recorded during winter, reaching 100%. The shortest time for oil to accumulate on any shoreline at this threshold was 69 hours, also during winter. The maximum volume of oil ashore from a single spill was 4,550.0 m^3, occurring during the summer season.

Table 13.4 to Table 13.6 present the predicted oil accumulation for specific shoreline cells for each season.

The highest probability of shoreline oil accumulation at, or above, the 10 g/m^2 threshold for a specific shoreline cell was forecast for WA11.West (318) - Barrow Island and Montebello Islands (A), with probabilities of 51%, 61%, and 92% during the summer, transitional, and winter seasons, respectively. During summer conditions, WA11.East (316) - West Intercourse Island - Dolphin Island North Point (F) shoreline cell recorded the fastest oil accumulation at 78 hours. During the transitional (85 hours) and winter (69 hours) conditions, WA11.West (318) - Barrow Island and Montebello Islands (A) recorded the quickest time for oil accumulation at, or above, the 10 g/m^2 threshold. Additionally, WA11.West (318) - Barrow Island and Montebello Islands (A) registered the highest volume of oil ashore across all shoreline cells, with 2,570 m^3, during a spill simulation that commenced under transitional conditions (see Table 13.5).

The maximum potential shoreline oil accumulation for each season are presented in Figure 13.23 to Figure 13.25. Probabilities of oil accumulation for each of the thresholds and seasons are presented in Figure 13.26 to Figure 13.34.

Table 13.3 Summary of oil accumulation on any shoreline following a surface LOWC at Kullingal. Results were calculated from 100 spill simulations per season.

Shoreline statistics	Summer			Transitional			Winter		
	Shoreline accumulation thresholds			Shoreline accumulation thresholds			Shoreline accumulation thresholds		
	10 g/m^2	100 g/m^2	1000 g/m^2	10 g/m^2	100 g/m^2	1,000 g/m^2	10 g/m^2	100 g/m^2	1,000 g/m^2
Probability of contact to any shoreline (%)	93	79	56	87	75	57	100	99	82
Absolute minimum time to shore (hours)	78	93	158	85	108	167	69	78	111
Maximum accumulated volume (m^3) from a single spill simulation	4,550.0	4,431.1	3,474.1	3,670.2	3,589.5	3,179.4	3,637.2	3,579.2	2,972.3
Average accumulated volume (m^3) across all spill simulations	719.9	668.5	400.0	719.0	688.6	516.3	1208.6	1170.0	901.7
Maximum length of shoreline (km) from a single spill simulation	1,320.0	588.0	122.0	524.0	268.0	102.0	518.0	248.0	85.0
Average length of shoreline (km) across all spill simulations	248.4	97.2	17.3	166.5	65.2	17.0	224.6	105.8	30.0

Table 13.4 Summary of shoreline oil accumulation on WAMOPRA shoreline cells following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

WAMOPRA shoreline cells	Probability (%) of shoreline oil on receptors at			Minimum time to receptor (hours) for shoreline oil at			Maximum local accumulated concentration (g/m²)		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 10 g/m²		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 100 g/m²		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 1,000 g/m²		Maximum length of shoreline (km) with concentrations ≥ 10 g/m²		Maximum length of shoreline (km) with concentrations ≥ 100 g/m²		Maximum length of shoreline (km) with concentrations ≥ 1,000 g/m²	
	≥ 10 g/m²	≥ 100 g/m²	≥ 1,000 g/m²	≥ 10 g/m²	≥ 100 g/m²	≥ 1,000 g/m²	averaged over all replicate spills	in the worst replicate spill	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation
WA06 (199) - Wreck Point - Guilderton	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA07 (195) - Thirsty Point - Booker Valley	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA08 (332) - Bowes River - Broken Anchor Bay (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA08 (333) - Bowes River - Broken Anchor Bay (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA08 (334) - Glenfield Beach - Bowes River (A)	1	NC	NC	1,284	NC	NC	0.1	12	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA08 (335) - Glenfield Beach - Bowes River (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA08 (336) - Glenfield Beach - Bowes River (C)	1	NC	NC	1,263	NC	NC	0.1	12	<1	<1	NC	NC	NC	NC	<1	2	NC	NC	NC	NC
WA09 (169) - Cape Inscription - Herald Bay N (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (170) - Steep Point - Quoin Head (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (171) - Steep Point - Quoin Head (C)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (172) - Steep Point - Quoin Head (D)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (173) - Steep Point - Quoin Head (E)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (174) - Kakura Dunes coast - Zuytdorp Point (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (175) - Kakura Dunes coast - Zuytdorp Point (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (176) - Kakura Dunes coast - Zuytdorp Point (C)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (177) - Kakura Dunes coast - Zuytdorp Point (D)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (178) - Nunginjay Spring coast N - Kakura Dunes coast (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (330) - Dorre Island and Bernier Island (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (331) - Dorre Island and Bernier Island (B)	1	NC	NC	1,219	NC	NC	0.1	14	<1	<1	NC	NC	NC	NC	<1	2	NC	NC	NC	NC
WA10 (120) - Bundegi - Shothole Canyon N (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA10 (121) - Bundegi - Shothole Canyon N (B)	1	NC	NC	1,188	NC	NC	0.1	14	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA10 (122) - Vlamingh Head - North West Cape	10	3	NC	462	932	NC	12	362	<1	9	<1	7	NC	NC	<1	9	<1	3	NC	NC
WA10 (123) - Low Point - Vlamingh Head (A)	11	4	NC	445	933	NC	8.8	275	<1	17	<1	15	NC	NC	2	15	<1	10	NC	NC
WA10 (124) - Low Point - Vlamingh Head (B)	11	4	NC	919	933	NC	17	636	2	50	2	47	NC	NC	2	19	<1	13	NC	NC
WA10 (125) - Osprey Bay - Low Point	5	4	NC	691	933	NC	15	540	2	51	2	50	NC	NC	<1	16	<1	15	NC	NC
WA10 (126) - Winderabandi Point - Osprey Bay	5	3	NC	651	929	NC	16	659	<1	27	<1	22	NC	NC	<1	18	<1	10	NC	NC
WA10 (127) - Coast Hill - Point Cloates	5	3	NC	813	979	NC	7.3	309	<1	22	<1	18	NC	NC	<1	16	<1	10	NC	NC
WA10 (128) - Point Maud - Coast Hill (A)	3	2	NC	1,047	1,196	NC	4.2	221	<1	5	<1	3	NC	NC	<1	11	<1	1	NC	NC
WA10 (130) - Alison Point - Point Maud	3	NC	NC	1,086	NC	NC	0.6	36	<1	<1	NC	NC	NC	NC	<1	5	NC	NC	NC	NC
WA10 (132) - Gnarraloo Bay - Alison Point (B)	1	NC	NC	1,271	NC	NC	0.1	13	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA10 (133) - Red Bluff - Gnarraloo Bay (A)	3	NC	NC	1,066	NC	NC	0.4	25	<1	<1	NC	NC	NC	NC	<1	5	NC	NC	NC	NC
WA10 (134) - Red Bluff - Gnarraloo Bay (B)	3	NC	NC	1,037	NC	NC	0.6	25	<1	<1	NC	NC	NC	NC	<1	3	NC	NC	NC	NC
WA10 (135) - Red Bluff - Gnarraloo Bay (C)	2	NC	NC	1,182	NC	NC	0.3	25	<1	<1	NC	NC	NC	NC	<1	2	NC	NC	NC	NC
WA10 (136) - Point Quobba - Cape Cuvier (A)	1	NC	NC	1,171	NC	NC	0.1	13	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA11.East (100) - Sherlock coast - Cape Cossigny (B)	20	10	3	409	525	710	84	2,988	7	262	6	260	3	146	4	36	1	31	<1	8
WA11.East (101) - Cape Lambert - Sherlock coast (A)	12	4	2	497	548	1,221	34	1,475	3	89	2	82	<1	29	2	42	<1	25	<1	2
WA11.East (102) - Cape Lambert - Sherlock coast (B)	26	13	3	337	525	694	153	5,573	5	160	5	153	3	131	3	26	<1	14	<1	5
WA11.East (103) - West Intercourse Island - Dolphin Island N point (A)	4	NC	NC	584	NC	NC	1.4	67	<1	2	NC	NC	NC	NC	<1	10	NC	NC	NC	NC

WA11.East (104) - West Intercourse Island - Dolphin Island N point (B)	32	15	4	214	288	652	126	3,379	5	107	4	104	2	73	4	25	<1	11	<1	3
WA11.East (105) - West Intercourse Island - Dolphin Island N point (C)	43	35	27	110	165	204	1,148	18,921	72	1,331	71	1,328	54	1,270	12	45	7	36	2	25
WA11.East (106) - West Intercourse Island - Dolphin Island N point (D)	16	5	NC	196	711	NC	13	264	<1	12	<1	6	NC	NC	3	25	<1	4	NC	NC
WA11.East (107) - West Intercourse Island - Dolphin Island N point (E)	10	4	NC	165	876	NC	6.6	142	<1	12	<1	5	NC	NC	2	22	<1	4	NC	NC
WA11.East (108) - Pelican Point - West Intercourse Island	19	10	4	126	563	737	104	1,963	6	107	5	101	<1	32	4	45	2	21	<1	2
WA11.East (109) - James Point - Cape Preston	18	14	9	318	487	576	159	2,127	8	125	7	116	4	61	4	40	2	24	<1	3
WA11.East (315) - Dolphin Island N point - Cinders Rd coast	34	22	5	215	230	288	315	7,435	10	223	9	222	6	210	3	12	2	10	<1	7
WA11.East (316) - West Intercourse Island - Dolphin Island N point (F)	39	30	21	78	93	158	829	12,152	54	737	52	728	41	638	12	63	5	43	2	17
WA11.East (317) - West Intercourse Island - Dolphin Island N point (G)	34	29	21	84	130	158	1,151	12,791	37	465	35	458	26	358	9	48	4	35	<1	11
WA11.East (95) - Turner River NE foreland - Beebingara Creek coast E (A)	39	21	8	424	470	756	194	2,614	12	154	11	150	4	95	8	28	3	20	<1	5
WA11.East (96) - Turner River NE foreland - Beebingara Creek coast E (B)	35	25	9	395	413	649	203	2,372	12	141	11	136	4	74	7	29	3	18	<1	4
WA11.East (97) - Cape Thouin - Turner River NE foreland	33	25	10	377	399	496	253	2,968	29	304	28	302	16	264	7	29	5	22	<1	16
WA11.East (98) - Cape Cossigny - Cape Thouin	26	20	3	378	400	502	145	3,512	16	381	15	376	9	326	6	30	3	22	<1	15
WA11.East (99) - Sherlock coast - Cape Cossigny (A)	23	15	3	377	449	684	135	3,624	14	383	12	377	8	288	6	55	2	35	<1	14
WA11.West (110) - Mount Salt coast W - James Point	16	11	5	284	499	570	79	1,992	12	319	11	315	5	190	4	48	2	40	<1	12
WA11.West (111) - Peter Creek coast E - Mount Salt coast W	17	10	3	301	326	949	118	3,649	12	398	11	389	7	286	4	55	2	40	<1	13
WA11.West (112) - Weld Island coast S - Peter Creek coast E	6	4	3	307	627	1,055	52	1,859	5	159	5	146	2	54	3	52	<1	30	<1	4
WA11.West (113) - Coolgra Point W - Yardie Landing (A)	6	4	2	299	833	1,050	35	1,219	2	43	2	40	<1	13	<1	14	<1	8	<1	1
WA11.West (114) - Coolgra Point W - Yardie Landing (B)	6	3	NC	596	1,009	NC	23	794	<1	26	<1	21	NC	NC	<1	22	<1	8	NC	NC
WA11.West (115) - Hope Point - Locker Point (A)	11	9	1	565	575	782	57	1,504	2	64	2	60	<1	41	2	31	<1	6	<1	3
WA11.West (116) - Hope Point - Locker Point (B)	6	2	NC	585	1,055	NC	4.9	184	<1	15	<1	8	NC	NC	<1	20	<1	5	NC	NC
WA11.West (117) - Hope Point - Locker Point (C)	3	NC	NC	1,014	NC	NC	1.8	68	<1	3	NC	NC	NC	NC	<1	11	NC	NC	NC	NC
WA11.West (318) - Barrow Island and Montebello Islands (A)	51	38	22	84	115	401	1,330	20,212	161	1,388	157	1,382	124	1,339	23	67	13	59	4	34
WA11.West (319) - Barrow Island and Montebello Islands (B)	46	33	8	142	204	801	311	4,969	26	382	25	382	17	368	5	15	3	15	<1	14
WA11.West (320) - Barrow Island and Montebello Islands (C)	33	21	5	169	196	660	113	1,664	19	240	17	232	5	152	10	56	4	34	<1	11
WA11.West (321) - Barrow Island and Montebello Islands (D)	40	22	10	173	194	398	188	2,320	20	271	18	269	7	167	9	44	4	33	<1	10
WA11.West (323) - Yardie Landing - Weld Island coast S (A)	13	6	3	275	314	941	138	5,904	7	240	7	240	6	240	<1	7	<1	7	<1	7
WA11.West (324) - Yardie Landing - Weld Island coast S (B)	17	13	4	195	219	805	85	2,055	3	59	3	59	2	59	<1	3	<1	3	<1	3
WA11.West (325) - Coolgra Point W - Yardie Landing (C)	16	11	3	193	499	764	76	1,984	5	103	5	103	<1	47	2	14	2	14	<1	3
WA11.West (326) - Baresand Point - Entrance Point E	27	17	6	406	487	541	203	6,645	18	345	17	342	9	295	4	24	3	23	<1	12
WA11.West (327) - Hope Point - Locker Point (E)	11	8	NC	552	584	NC	33	755	<1	13	<1	13	NC	NC	<1	2	<1	2	NC	NC
WA11.West (328) - Hope Point - Locker Point (F)	9	5	NC	564	580	NC	21	495	<1	22	<1	21	NC	NC	<1	13	<1	9	NC	NC
WA11.West (329) - Locker Point - Baresand Point	25	13	4	376	401	740	92	2,768	11	257	10	253	4	209	5	30	2	23	<1	12
WA12 (308) - Red Bluff - Chimney Rocks (B)	2	NC	NC	1,263	NC	NC	0.3	22	<1	<1	NC	NC	NC	NC	<1	3	NC	NC	NC	NC
WA12 (309) - Mermaid Reef	11	5	1	804	881	953	72	5,454	2	111	2	111	2	111	<1	2	<1	2	<1	2
WA12 (310) - Clerke Reef	14	5	NC	722	787	NC	23	641	2	30	<1	27	NC	NC	<1	11	<1	6	NC	NC
WA12 (311) - Imperieuse Reef	22	9	3	621	665	826	75	2,553	6	163	5	161	3	143	3	19	<1	16	<1	10
WA12 (312) - Yan Well coast - Condini Landing (C)	39	31	15	433	455	587	277	3,197	7	72	7	72	4	62	2	4	<1	4	<1	2

WA12 (313) - Wattle Well coast - Yan Well coast (C)	43	32	14	445	469	564	371	4,256	10	100	9	100	6	100	2	4	2	4	<1	4
WA12 (314) - Wattle Well coast - Yan Well coast (D)	42	37	18	426	469	520	733	8,861	8	92	8	92	7	92	<1	1	<1	1	<1	1
WA12 (69) - Red Bluff - Chimney Rocks (A)	1	NC	NC	1,227	NC	NC	0.1	12	<1	<1	NC	NC	NC	NC	<1	2	NC	NC	NC	NC
WA12 (70) - Coulomb Point - Red Bluff (A)	2	NC	NC	1,302	NC	NC	0.2	12	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA12 (72) - Cape Boileau - Coulomb Point (A)	1	NC	NC	1,298	NC	NC	0.1	12	<1	<1	NC	NC	NC	NC	<1	4	NC	NC	NC	NC
WA12 (73) - Cape Boileau - Coulomb Point (B)	1	NC	NC	1,298	NC	NC	0.1	12	<1	<1	NC	NC	NC	NC	<1	2	NC	NC	NC	NC
WA12 (75) - Cape Gourdon - Cape Villaret (A)	2	NC	NC	1,245	NC	NC	0.4	33	<1	<1	NC	NC	NC	NC	<1	5	NC	NC	NC	NC
WA12 (76) - Cape Gourdon - Cape Villaret (B)	2	NC	NC	1,127	NC	NC	0.9	87	<1	4	NC	NC	NC	NC	<1	9	NC	NC	NC	NC
WA12 (77) - Saddle Hill - Cape Gourdon (A)	2	NC	NC	1,105	NC	NC	1.1	98	<1	4	NC	NC	NC	NC	<1	8	NC	NC	NC	NC
WA12 (78) - Saddle Hill - Cape Gourdon (B)	3	2	NC	1,067	1,312	NC	2.3	131	<1	12	<1	7	NC	NC	<1	16	<1	5	NC	NC
WA12 (79) - Tryon Point - False Cape Bossut (A)	2	2	NC	1,046	1,201	NC	4.2	265	<1	18	<1	12	NC	NC	<1	28	<1	6	NC	NC
WA12 (80) - Tryon Point - False Cape Bossut (B)	3	2	NC	979	1,235	NC	5	404	<1	27	<1	22	NC	NC	<1	21	<1	12	NC	NC
WA12 (81) - Cape Jaubert - Tryon Point	4	2	NC	878	1,108	NC	4	273	<1	22	<1	18	NC	NC	<1	14	<1	9	NC	NC
WA12 (82) - Samphire bore coast - Cape Jaubert (A)	5	2	NC	921	1,115	NC	5.1	274	<1	12	<1	12	NC	NC	<1	5	<1	5	NC	NC
WA12 (83) - Samphire bore coast - Cape Jaubert (B)	6	2	NC	895	1,031	NC	7	327	<1	19	<1	18	NC	NC	<1	9	<1	8	NC	NC
WA12 (84) - Samphire bore coast - Cape Jaubert (C)	11	3	NC	793	909	NC	9.5	451	2	49	<1	47	NC	NC	2	23	<1	18	NC	NC
WA12 (85) - Cooraidegel Well coast - Eighty Mile Beach Caravan Park NE (A)	17	6	NC	684	853	NC	17	541	2	34	<1	33	NC	NC	2	10	<1	9	NC	NC
WA12 (86) - Cooraidegel Well coast - Eighty Mile Beach Caravan Park NE (B)	17	10	NC	679	773	NC	26	619	3	48	2	47	NC	NC	3	16	<1	14	NC	NC
WA12 (87) - Cooraidegel Well coast - Eighty Mile Beach Caravan Park NE (C)	17	11	NC	633	746	NC	28	569	3	40	2	39	NC	NC	3	14	<1	14	NC	NC
WA12 (88) - Shoonta Well - Cooraidegel Well coast	21	15	NC	563	631	NC	89	976	7	70	6	67	NC	NC	5	25	2	22	NC	NC
WA12 (89) - Condini Landing - Mulla Mulla Creek	27	17	1	508	609	1,195	91	1,834	9	210	8	205	2	114	7	44	3	31	<1	8
WA12 (90) - Yan Well coast - Condini Landing (A)	27	15	1	493	615	1,077	62	2,105	4	106	3	106	<1	65	3	13	<1	13	<1	4
WA12 (91) - Yan Well coast - Condini Landing (B)	37	26	10	422	506	603	279	3,552	21	283	20	280	9	189	9	39	4	28	<1	9
WA12 (92) - Wattle Well coast - Yan Well coast (A)	37	25	10	434	531	885	217	2,500	20	228	19	228	11	189	6	19	3	16	<1	10
WA12 (93) - Wattle Well coast - Yan Well coast (B)	37	23	9	462	514	835	219	2,984	29	326	27	323	14	242	10	34	5	25	<1	12
WA12 (94) - Beebingara Creek coast E - Wattle Well coast	38	28	8	439	533	811	196	2,392	14	156	12	154	4	77	9	34	3	24	<1	4
WA13 (305) - Seringapatam Reef	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA13 (306) - Scott Reef North	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA13 (307) - Scott Reef South	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

Table 13.5 Summary of shoreline oil accumulation on WAMOPRA shoreline cells following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

WAMOPRA shoreline cells	Probability (%) of shoreline oil on receptors at			Minimum time to receptor (hours) for shoreline oil at			Maximum local accumulated concentration (g/m²)		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 10 g/m²		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 100 g/m²		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 1,000 g/m²		Maximum length of shoreline (km) with concentrations ≥ 10 g/m²		Maximum length of shoreline (km) with concentrations ≥ 100 g/m²		Maximum length of shoreline (km) with concentrations ≥ 1,000 g/m²	
	≥ 10 g/m²	≥ 100 g/m²	≥ 1,000 g/m²	≥ 10 g/m²	≥ 100 g/m²	≥ 1,000 g/m²	averaged over all replicate spills	in the worst replicate spill	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation
WA06 (199) - Wreck Point - Guilderton	1	NC	NC	1,253	NC	NC	0.1	14	<1	<1	NC	NC	NC	NC	<1	2	NC	NC	NC	NC
WA07 (195) - Thirsty Point - Booker Valley	1	NC	NC	1,322	NC	NC	0.1	13	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA08 (332) - Bowes River - Broken Anchor Bay (A)	6	1	NC	1,167	1,315	NC	2.6	107	<1	2	<1	2	NC	NC	<1	5	<1	1	NC	NC
WA08 (333) - Bowes River - Broken Anchor Bay (B)	6	NC	NC	1,179	NC	NC	2.3	97	<1	6	NC	NC	NC	NC	<1	22	NC	NC	NC	NC
WA08 (334) - Glenfield Beach - Bowes River (A)	7	NC	NC	1,170	NC	NC	2.1	62	<1	5	NC	NC	NC	NC	<1	16	NC	NC	NC	NC
WA08 (335) - Glenfield Beach - Bowes River (B)	6	NC	NC	1,191	NC	NC	2.5	82	<1	3	NC	NC	NC	NC	<1	6	NC	NC	NC	NC
WA08 (336) - Glenfield Beach - Bowes River (C)	5	NC	NC	1,174	NC	NC	1.2	49	<1	3	NC	NC	NC	NC	<1	11	NC	NC	NC	NC
WA09 (169) - Cape Inscription - Herald Bay N (B)	3	NC	NC	869	NC	NC	0.7	34	<1	<1	NC	NC	NC	NC	<1	3	NC	NC	NC	NC
WA09 (170) - Steep Point - Quoin Head (B)	9	NC	NC	847	NC	NC	2.9	59	<1	4	NC	NC	NC	NC	<1	13	NC	NC	NC	NC
WA09 (171) - Steep Point - Quoin Head (C)	6	NC	NC	860	NC	NC	2.2	70	<1	4	NC	NC	NC	NC	<1	12	NC	NC	NC	NC
WA09 (172) - Steep Point - Quoin Head (D)	6	NC	NC	980	NC	NC	3.2	85	<1	6	NC	NC	NC	NC	<1	10	NC	NC	NC	NC
WA09 (173) - Steep Point - Quoin Head (E)	7	2	NC	1,116	1,198	NC	4.8	152	<1	11	<1	2	NC	NC	2	20	<1	1	NC	NC
WA09 (174) - Kakura Dunes coast - Zuytdorp Point (A)	5	NC	NC	1,139	NC	NC	1.8	82	<1	4	NC	NC	NC	NC	<1	11	NC	NC	NC	NC
WA09 (175) - Kakura Dunes coast - Zuytdorp Point (B)	3	NC	NC	1,200	NC	NC	0.6	25	<1	<1	NC	NC	NC	NC	<1	6	NC	NC	NC	NC
WA09 (176) - Kakura Dunes coast - Zuytdorp Point (C)	4	NC	NC	1,222	NC	NC	0.6	25	<1	<1	NC	NC	NC	NC	<1	5	NC	NC	NC	NC
WA09 (177) - Kakura Dunes coast - Zuytdorp Point (D)	3	NC	NC	1,138	NC	NC	0.4	14	<1	<1	NC	NC	NC	NC	<1	4	NC	NC	NC	NC
WA09 (178) - Nunginjay Spring coast N - Kakura Dunes coast (A)	1	NC	NC	1,230	NC	NC	0.2	24	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA09 (330) - Dorre Island and Bernier Island (A)	5	NC	NC	851	NC	NC	0.9	61	<1	3	NC	NC	NC	NC	<1	19	NC	NC	NC	NC
WA09 (331) - Dorre Island and Bernier Island (B)	11	1	NC	862	967	NC	3.3	132	<1	10	<1	2	NC	NC	3	40	<1	1	NC	NC
WA10 (120) - Bundegi - Shothole Canyon N (A)	3	NC	NC	1,045	NC	NC	0.4	15	<1	<1	NC	NC	NC	NC	<1	2	NC	NC	NC	NC
WA10 (121) - Bundegi - Shothole Canyon N (B)	36	12	NC	461	742	NC	50	956	<1	16	<1	15	NC	NC	2	10	<1	4	NC	NC
WA10 (122) - Vlamingh Head - North West Cape	45	33	4	400	437	777	199	2,927	9	101	8	101	3	96	4	9	2	9	<1	6
WA10 (123) - Low Point - Vlamingh Head (A)	37	20	3	491	593	788	69	1,238	6	74	5	74	<1	13	5	15	2	14	<1	1
WA10 (124) - Low Point - Vlamingh Head (B)	36	15	2	499	507	1,031	63	2,029	7	186	6	186	2	113	5	19	2	19	<1	8
WA10 (125) - Osprey Bay - Low Point	22	8	NC	588	801	NC	16	677	2	25	<1	23	NC	NC	3	15	<1	10	NC	NC
WA10 (126) - Winderabandi Point - Osprey Bay	22	4	NC	637	982	NC	12	171	<1	10	<1	5	NC	NC	3	15	<1	3	NC	NC
WA10 (127) - Coast Hill - Point Cloates	20	7	NC	727	1,014	NC	15	195	<1	5	<1	4	NC	NC	<1	10	<1	2	NC	NC
WA10 (128) - Point Maud - Coast Hill (A)	4	1	NC	1,142	1,335	NC	1.8	121	<1	5	<1	2	NC	NC	<1	11	<1	1	NC	NC
WA10 (130) - Alison Point - Point Maud	2	NC	NC	1,297	NC	NC	0.5	25	<1	2	NC	NC	NC	NC	<1	8	NC	NC	NC	NC
WA10 (132) - Gnarraloo Bay - Alison Point (B)	3	NC	NC	1,222	NC	NC	0.4	25	<1	<1	NC	NC	NC	NC	<1	5	NC	NC	NC	NC
WA10 (133) - Red Bluff - Gnarraloo Bay (A)	5	NC	NC	1,115	NC	NC	0.8	35	<1	2	NC	NC	NC	NC	<1	7	NC	NC	NC	NC

WA10 (134) - Red Bluff - Gnarraloo Bay (B)	5	NC	NC	1,169	NC	NC	0.7	36	<1	<1	NC	NC	NC	NC	<1	4	NC	NC	NC	NC
WA10 (135) - Red Bluff - Gnarraloo Bay (C)	5	NC	NC	1,142	NC	NC	0.9	40	<1	2	NC	NC	NC	NC	<1	9	NC	NC	NC	NC
WA10 (136) - Point Quobba - Cape Cuvier (A)	1	NC	NC	1,245	NC	NC	0.1	13	<1	<1	NC	NC	NC	NC	<1	4	NC	NC	NC	NC
WA11.East (100) - Sherlock coast - Cape Cossigny (B)	2	NC	NC	1,222	NC	NC	0.6	42	<1	2	NC	NC	NC	NC	<1	4	NC	NC	NC	NC
WA11.East (101) - Cape Lambert - Sherlock coast (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA11.East (102) - Cape Lambert - Sherlock coast (B)	3	NC	NC	581	NC	NC	0.4	32	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA11.East (103) - West Intercourse Island - Dolphin Island N point (A)	1	1	NC	1,191	1,203	NC	3.2	321	<1	6	<1	5	NC	NC	<1	5	<1	2	NC	NC
WA11.East (104) - West Intercourse Island - Dolphin Island N point (B)	13	3	NC	451	589	NC	9.1	525	<1	38	<1	32	NC	NC	<1	27	<1	12	NC	NC
WA11.East (105) - West Intercourse Island - Dolphin Island N point (C)	23	18	10	196	404	485	283	4,547	13	183	12	177	7	119	5	37	2	22	<1	5
WA11.East (106) - West Intercourse Island - Dolphin Island N point (D)	5	3	NC	557	765	NC	4.7	150	<1	7	<1	6	NC	NC	<1	11	<1	4	NC	NC
WA11.East (107) - West Intercourse Island - Dolphin Island N point (E)	4	NC	NC	716	NC	NC	1.2	48	<1	3	NC	NC	NC	NC	<1	8	NC	NC	NC	NC
WA11.East (108) - Pelican Point - West Intercourse Island	6	2	1	475	484	517	19	1,592	2	112	2	105	<1	40	<1	40	<1	21	<1	3
WA11.East (109) - James Point - Cape Preston	8	5	1	401	426	627	30	2,189	2	68	<1	66	<1	44	<1	18	<1	7	<1	2
WA11.East (315) - Dolphin Island N point - Cinders Rd coast	15	6	NC	381	418	NC	30	817	<1	17	<1	15	NC	NC	<1	9	<1	4	NC	NC
WA11.East (316) - West Intercourse Island - Dolphin Island N point (F)	22	17	7	251	376	611	346	5,954	23	421	22	412	17	364	5	57	3	32	<1	10
WA11.East (317) - West Intercourse Island - Dolphin Island N point (G)	22	19	7	327	374	589	563	10,808	19	414	19	410	15	345	4	43	2	30	<1	10
WA11.East (95) - Turner River NE foreland - Beebingara Creek coast E (A)	4	2	NC	1,176	1,234	NC	11	579	<1	38	<1	33	NC	NC	<1	26	<1	11	NC	NC
WA11.East (96) - Turner River NE foreland - Beebingara Creek coast E (B)	6	2	NC	1,157	1,202	NC	16	830	<1	50	<1	48	NC	NC	<1	22	<1	15	NC	NC
WA11.East (97) - Cape Thouin - Turner River NE foreland	6	2	1	858	1,172	1,296	20	1,099	3	118	2	117	<1	23	<1	26	<1	21	<1	2
WA11.East (98) - Cape Cossigny - Cape Thouin	5	2	NC	656	1,178	NC	9.4	492	<1	42	<1	39	NC	NC	<1	24	<1	17	NC	NC
WA11.East (99) - Sherlock coast - Cape Cossigny (A)	3	2	NC	642	1,232	NC	2.2	128	<1	9	<1	3	NC	NC	<1	20	<1	2	NC	NC
WA11.West (110) - Mount Salt coast W - James Point	6	2	NC	427	1,013	NC	3	139	<1	9	<1	3	NC	NC	<1	24	<1	2	NC	NC
WA11.West (111) - Peter Creek coast E - Mount Salt coast W	11	3	NC	623	906	NC	7.1	221	<1	11	<1	6	NC	NC	<1	18	<1	3	NC	NC
WA11.West (112) - Weld Island coast S - Peter Creek coast E	3	1	NC	623	903	NC	2.3	104	<1	5	<1	2	NC	NC	<1	13	<1	1	NC	NC
WA11.West (113) - Coolgra Point W - Yardie Landing (A)	4	NC	NC	690	NC	NC	2.4	89	<1	2	NC	NC	NC	NC	<1	4	NC	NC	NC	NC
WA11.West (114) - Coolgra Point W - Yardie Landing (B)	6	3	NC	649	776	NC	7.1	235	<1	4	<1	3	NC	NC	<1	5	<1	1	NC	NC
WA11.West (115) - Hope Point - Locker Point (A)	24	13	NC	458	602	NC	38	585	<1	6	<1	6	NC	NC	<1	11	<1	2	NC	NC
WA11.West (116) - Hope Point - Locker Point (B)	3	NC	NC	896	NC	NC	0.9	57	<1	<1	NC	NC	NC	NC	<1	4	NC	NC	NC	NC
WA11.West (117) - Hope Point - Locker Point (C)	4	1	NC	907	1,340	NC	2.1	151	<1	5	<1	2	NC	NC	<1	12	<1	1	NC	NC
WA11.West (318) - Barrow Island and Montebello Islands (A)	61	56	47	85	108	167	3,597	22,688	335	2,570	331	2,565	287	2,493	28	65	18	56	7	31
WA11.West (319) - Barrow Island and Montebello Islands (B)	49	41	21	116	137	202	641	5,979	32	343	32	343	17	338	7	15	5	15	<1	14
WA11.West (320) - Barrow Island and Montebello Islands (C)	39	18	5	137	176	513	88	1,774	17	251	14	248	3	73	13	56	4	40	<1	6
WA11.West (321) - Barrow Island and Montebello Islands (D)	46	35	7	141	174	379	248	3,229	32	435	29	427	14	317	15	49	6	38	<1	17
WA11.West (323) - Yardie Landing - Weld Island coast S (A)	10	5	NC	604	641	NC	20	561	<1	12	<1	10	NC	NC	<1	7	<1	4	NC	NC
WA11.West (324) - Yardie Landing - Weld Island coast S (B)	28	15	2	205	229	772	91	1,644	3	48	3	48	<1	48	<1	3	<1	3	<1	3
WA11.West (325) - Coolgra Point W - Yardie Landing (C)	34	22	2	203	205	305	120	1,947	7	93	7	90	<1	57	4	14	2	13	<1	4

WA11.West (326) - Baresand Point - Entrance Point E	54	52	39	211	279	408	1,404	6,843	91	555	90	554	65	525	12	24	9	24	4	18
WA11.West (327) - Hope Point - Locker Point (E)	43	30	NC	290	493	NC	125	946	3	18	3	18	NC	NC	<1	2	<1	2	NC	NC
WA11.West (328) - Hope Point - Locker Point (F)	40	8	NC	326	776	NC	30	723	2	42	<1	41	NC	NC	2	13	<1	12	NC	NC
WA11.West (329) - Locker Point - Baresand Point	55	53	43	224	291	425	1,388	7,009	125	667	123	665	106	654	14	30	9	24	5	22
WA12 (308) - Red Bluff - Chimney Rocks (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (309) - Mermaid Reef	8	3	NC	1,082	1,159	NC	12	612	<1	11	<1	11	NC	NC	<1	2	<1	2	NC	NC
WA12 (310) - Clerke Reef	6	1	NC	656	1,017	NC	5.4	315	<1	10	<1	7	NC	NC	<1	8	<1	3	NC	NC
WA12 (311) - Imperieuse Reef	10	7	1	506	638	1,206	43	1,394	4	99	3	98	<1	51	2	19	<1	19	<1	4
WA12 (312) - Yan Well coast - Condini Landing (C)	9	4	NC	467	820	NC	12	339	<1	9	<1	9	NC	NC	<1	4	<1	4	NC	NC
WA12 (313) - Wattle Well coast - Yan Well coast (C)	6	1	NC	1,173	1,284	NC	2.5	168	<1	5	<1	4	NC	NC	<1	4	<1	2	NC	NC
WA12 (314) - Wattle Well coast - Yan Well coast (D)	6	2	NC	1,067	1,282	NC	5.2	191	<1	2	<1	2	NC	NC	<1	1	<1	1	NC	NC
WA12 (69) - Red Bluff - Chimney Rocks (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (70) - Coulomb Point - Red Bluff (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (72) - Cape Boileau - Coulomb Point (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (73) - Cape Boileau - Coulomb Point (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (75) - Cape Gourdon - Cape Villaret (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (76) - Cape Gourdon - Cape Villaret (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (77) - Saddle Hill - Cape Gourdon (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (78) - Saddle Hill - Cape Gourdon (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (79) - Tryon Point - False Cape Bossut (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (80) - Tryon Point - False Cape Bossut (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (81) - Cape Jaubert - Tryon Point	1	NC	NC	1,187	NC	NC	0.3	35	<1	<1	NC	NC	NC	NC	<1	3	NC	NC	NC	NC
WA12 (82) - Samphire bore coast - Cape Jaubert (A)	3	NC	NC	1,180	NC	NC	0.7	46	<1	<1	NC	NC	NC	NC	<1	4	NC	NC	NC	NC
WA12 (83) - Samphire bore coast - Cape Jaubert (B)	3	1	NC	1,178	1,333	NC	2.2	114	<1	4	<1	2	NC	NC	<1	8	<1	1	NC	NC
WA12 (84) - Samphire bore coast - Cape Jaubert (C)	4	2	NC	1,088	1,254	NC	3.6	216	<1	21	<1	14	NC	NC	<1	22	<1	9	NC	NC
WA12 (85) - Cooraidegel Well coast - Eighty Mile Beach Caravan Park NE (A)	4	1	NC	904	1,320	NC	2.4	103	<1	5	<1	2	NC	NC	<1	10	<1	1	NC	NC
WA12 (86) - Cooraidegel Well coast - Eighty Mile Beach Caravan Park NE (B)	4	NC	NC	889	NC	NC	1.1	58	<1	4	NC	NC	NC	NC	<1	12	NC	NC	NC	NC
WA12 (87) - Cooraidegel Well coast - Eighty Mile Beach Caravan Park NE (C)	2	NC	NC	858	NC	NC	0.4	24	<1	<1	NC	NC	NC	NC	<1	5	NC	NC	NC	NC
WA12 (88) - Shoonta Well - Cooraidegel Well coast	2	NC	NC	883	NC	NC	0.2	15	<1	<1	NC	NC	NC	NC	<1	2	NC	NC	NC	NC
WA12 (89) - Condini Landing - Mulla Mulla Creek	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (90) - Yan Well coast - Condini Landing (A)	1	NC	NC	750	NC	NC	0.2	17	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA12 (91) - Yan Well coast - Condini Landing (B)	2	NC	NC	1,022	NC	NC	0.3	23	<1	<1	NC	NC	NC	NC	<1	2	NC	NC	NC	NC
WA12 (92) - Wattle Well coast - Yan Well coast (A)	2	NC	NC	1,225	NC	NC	0.3	24	<1	<1	NC	NC	NC	NC	<1	6	NC	NC	NC	NC
WA12 (93) - Wattle Well coast - Yan Well coast (B)	3	1	NC	1,167	1,320	NC	1.7	141	<1	7	<1	2	NC	NC	<1	19	<1	1	NC	NC
WA12 (94) - Beebingara Creek coast E - Wattle Well coast	4	2	NC	1,240	1,254	NC	6.3	538	<1	27	<1	21	NC	NC	<1	25	<1	8	NC	NC
WA13 (305) - Seringapatam Reef	2	NC	NC	1,295	NC	NC	0.3	35	<1	3	NC	NC	NC	NC	<1	11	NC	NC	NC	NC
WA13 (306) - Scott Reef North	3	NC	NC	1,290	NC	NC	0.6	35	<1	3	NC	NC	NC	NC	<1	12	NC	NC	NC	NC
WA13 (307) - Scott Reef South	2	NC	NC	1,199	NC	NC	0.8	46	<1	2	NC	NC	NC	NC	<1	7	NC	NC	NC	NC

Table 13.6 Summary of shoreline oil accumulation on WAMOPRA shoreline cells following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

WAMOPRA shoreline cells	Probability (%) of shoreline oil on receptors at			Minimum time to receptor (hours) for shoreline oil at			Maximum local accumulated concentration (g/m²)		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 10 g/m²		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 100 g/m²		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 1,000 g/m²		Maximum length of shoreline (km) with concentrations ≥ 10 g/m²		Maximum length of shoreline (km) with concentrations ≥ 100 g/m²		Maximum length of shoreline (km) with concentrations ≥ 1,000 g/m²	
	≥ 10 g/m²	≥ 100 g/m²	≥ 1,000 g/m²	≥ 10 g/m²	≥ 100 g/m²	≥ 1,000 g/m²	averaged over all replicate spills	in the worst replicate spill	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation
WA06 (199) - Wreck Point - Guilderton	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA07 (195) - Thirsty Point - Booker Valley	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA08 (332) - Bowes River - Broken Anchor Bay (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA08 (333) - Bowes River - Broken Anchor Bay (B)	2	NC	NC	1,081	NC	NC	0.3	14	<1	<1	NC	NC	NC	NC	<1	5	NC	NC	NC	NC
WA08 (334) - Glenfield Beach - Bowes River (A)	3	NC	NC	1,084	NC	NC	0.5	35	<1	2	NC	NC	NC	NC	<1	8	NC	NC	NC	NC
WA08 (335) - Glenfield Beach - Bowes River (B)	1	NC	NC	1,103	NC	NC	0.1	14	<1	<1	NC	NC	NC	NC	<1	3	NC	NC	NC	NC
WA08 (336) - Glenfield Beach - Bowes River (C)	1	NC	NC	1,165	NC	NC	0.4	37	<1	<1	NC	NC	NC	NC	<1	3	NC	NC	NC	NC
WA09 (169) - Cape Inscription - Herald Bay N (B)	1	NC	NC	1,327	NC	NC	0.1	13	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA09 (170) - Steep Point - Quoin Head (B)	1	NC	NC	1,208	NC	NC	0.1	13	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA09 (171) - Steep Point - Quoin Head (C)	2	NC	NC	1,080	NC	NC	0.2	14	<1	<1	NC	NC	NC	NC	<1	4	NC	NC	NC	NC
WA09 (172) - Steep Point - Quoin Head (D)	1	NC	NC	1,294	NC	NC	0.2	24	<1	<1	NC	NC	NC	NC	<1	3	NC	NC	NC	NC
WA09 (173) - Steep Point - Quoin Head (E)	3	NC	NC	1,062	NC	NC	0.7	46	<1	<1	NC	NC	NC	NC	<1	6	NC	NC	NC	NC
WA09 (174) - Kakura Dunes coast - Zuytdorp Point (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (175) - Kakura Dunes coast - Zuytdorp Point (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (176) - Kakura Dunes coast - Zuytdorp Point (C)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (177) - Kakura Dunes coast - Zuytdorp Point (D)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (178) - Nunginjay Spring coast N - Kakura Dunes coast (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA09 (330) - Dorre Island and Bernier Island (A)	1	NC	NC	1,327	NC	NC	0.1	12	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA09 (331) - Dorre Island and Bernier Island (B)	2	NC	NC	918	NC	NC	0.3	23	<1	<1	NC	NC	NC	NC	<1	5	NC	NC	NC	NC
WA10 (120) - Bundegi - Shothole Canyon N (A)	8	1	NC	420	1,343	NC	2.3	104	<1	4	<1	2	NC	NC	<1	8	<1	1	NC	NC
WA10 (121) - Bundegi - Shothole Canyon N (B)	46	15	2	255	272	540	75	1,338	2	20	<1	17	<1	14	2	10	<1	4	<1	1
WA10 (122) - Vlamingh Head - North West Cape	59	45	5	238	249	413	283	3,476	10	110	9	109	3	107	5	9	3	9	<1	6
WA10 (123) - Low Point - Vlamingh Head (A)	45	16	1	242	295	877	56	1,177	4	71	3	71	<1	13	5	15	<1	14	<1	1
WA10 (124) - Low Point - Vlamingh Head (B)	48	13	3	293	357	607	92	2,706	9	211	8	211	4	160	7	19	2	19	<1	11
WA10 (125) - Osprey Bay - Low Point	26	5	NC	477	599	NC	20	551	2	26	<1	24	NC	NC	3	16	<1	11	NC	NC
WA10 (126) - Winderabandi Point - Osprey Bay	17	4	NC	477	609	NC	14	375	<1	19	<1	13	NC	NC	2	18	<1	6	NC	NC
WA10 (127) - Coast Hill - Point Cloates	14	3	NC	603	640	NC	7.5	251	<1	12	<1	7	NC	NC	<1	13	<1	4	NC	NC
WA10 (128) - Point Maud - Coast Hill (A)	3	NC	NC	781	NC	NC	1.1	83	<1	4	NC	NC	NC	NC	<1	8	NC	NC	NC	NC
WA10 (130) - Alison Point - Point Maud	1	NC	NC	845	NC	NC	0.1	15	<1	<1	NC	NC	NC	NC	<1	3	NC	NC	NC	NC
WA10 (132) - Gnarraloo Bay - Alison Point (B)	2	NC	NC	849	NC	NC	0.3	15	<1	<1	NC	NC	NC	NC	<1	5	NC	NC	NC	NC
WA10 (133) - Red Bluff - Gnarraloo Bay (A)	2	NC	NC	797	NC	NC	0.7	41	<1	2	NC	NC	NC	NC	<1	7	NC	NC	NC	NC

WA10 (134) - Red Bluff - Gnarraloo Bay (B)	2	NC	NC	803	NC	NC	0.3	29	<1	<1	NC	NC	NC	NC	<1	2	NC	NC	NC	NC
WA10 (135) - Red Bluff - Gnarraloo Bay (C)	1	NC	NC	890	NC	NC	0.4	42	<1	<1	NC	NC	NC	NC	<1	3	NC	NC	NC	NC
WA10 (136) - Point Quobba - Cape Cuvier (A)	2	NC	NC	849	NC	NC	0.3	16	<1	<1	NC	NC	NC	NC	<1	2	NC	NC	NC	NC
WA11.East (100) - Sherlock coast - Cape Cossigny (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA11.East (101) - Cape Lambert - Sherlock coast (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA11.East (102) - Cape Lambert - Sherlock coast (B)	1	NC	NC	1,198	NC	NC	0.2	25	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA11.East (103) - West Intercourse Island - Dolphin Island N point (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA11.East (104) - West Intercourse Island - Dolphin Island N point (B)	6	1	NC	633	1,197	NC	4	170	<1	5	<1	2	NC	NC	<1	9	<1	1	NC	NC
WA11.East (105) - West Intercourse Island - Dolphin Island N point (C)	13	6	2	409	483	1,168	46	1,078	3	56	2	50	<1	12	2	35	<1	16	<1	1
WA11.East (106) - West Intercourse Island - Dolphin Island N point (D)	1	NC	NC	1,318	NC	NC	0.6	64	<1	3	NC	NC	NC	NC	<1	7	NC	NC	NC	NC
WA11.East (107) - West Intercourse Island - Dolphin Island N point (E)	1	NC	NC	1,315	NC	NC	0.4	36	<1	2	NC	NC	NC	NC	<1	7	NC	NC	NC	NC
WA11.East (108) - Pelican Point - West Intercourse Island	17	1	NC	399	1,333	NC	6.9	113	<1	4	<1	2	NC	NC	<1	10	<1	1	NC	NC
WA11.East (109) - James Point - Cape Preston	28	17	6	184	206	393	99	1,478	3	26	2	24	<1	16	3	16	<1	4	<1	1
WA11.East (315) - Dolphin Island N point - Cinders Rd coast	4	2	NC	437	789	NC	4.3	188	<1	5	<1	2	NC	NC	<1	8	<1	1	NC	NC
WA11.East (316) - West Intercourse Island - Dolphin Island N point (F)	12	5	1	266	483	1,334	40	1,620	3	122	2	114	<1	73	2	37	<1	15	<1	5
WA11.East (317) - West Intercourse Island - Dolphin Island N point (G)	15	8	1	267	312	1,314	53	3,403	3	181	2	173	2	136	2	41	<1	22	<1	8
WA11.East (95) - Turner River NE foreland - Beebingara Creek coast E (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA11.East (96) - Turner River NE foreland - Beebingara Creek coast E (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA11.East (97) - Cape Thouin - Turner River NE foreland	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA11.East (98) - Cape Cossigny - Cape Thouin	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA11.East (99) - Sherlock coast - Cape Cossigny (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA11.West (110) - Mount Salt coast W - James Point	21	5	NC	293	424	NC	13	186	<1	7	<1	5	NC	NC	3	22	<1	3	NC	NC
WA11.West (111) - Peter Creek coast E - Mount Salt coast W	27	10	NC	417	566	NC	62	824	2	14	<1	13	NC	NC	2	19	<1	2	NC	NC
WA11.West (112) - Weld Island coast S - Peter Creek coast E	5	NC	NC	1,043	NC	NC	1.9	77	<1	4	NC	NC	NC	NC	<1	14	NC	NC	NC	NC
WA11.West (113) - Coolgra Point W - Yardie Landing (A)	10	1	NC	388	1,221	NC	4	137	<1	3	<1	2	NC	NC	<1	5	<1	1	NC	NC
WA11.West (114) - Coolgra Point W - Yardie Landing (B)	10	7	4	336	345	533	64	1,370	<1	15	<1	14	<1	14	<1	6	<1	1	<1	1
WA11.West (115) - Hope Point - Locker Point (A)	39	18	4	271	308	444	120	2,198	6	128	6	124	4	99	3	28	<1	16	<1	6
WA11.West (116) - Hope Point - Locker Point (B)	11	2	NC	292	665	NC	4.7	127	<1	4	<1	2	NC	NC	<1	12	<1	1	NC	NC
WA11.West (117) - Hope Point - Locker Point (C)	7	2	NC	543	853	NC	4.6	202	<1	9	<1	5	NC	NC	<1	17	<1	3	NC	NC
WA11.West (318) - Barrow Island and Montebello Islands (A)	92	88	75	69	78	111	7,498	22,738	683	2,377	676	2,371	611	2,319	49	65	33	53	15	31
WA11.West (319) - Barrow Island and Montebello Islands (B)	89	81	53	102	131	189	1,432	5,992	116	515	115	515	91	515	13	15	10	15	5	15
WA11.West (320) - Barrow Island and Montebello Islands (C)	79	60	6	127	222	557	321	2,380	53	213	47	208	7	99	29	53	13	39	<1	7
WA11.West (321) - Barrow Island and Montebello Islands (D)	78	64	14	116	120	318	380	3,010	65	327	59	323	20	216	30	51	14	40	2	15
WA11.West (323) - Yardie Landing - Weld Island coast S (A)	22	12	NC	557	668	NC	32	329	<1	9	<1	8	NC	NC	<1	7	<1	4	NC	NC
WA11.West (324) - Yardie Landing - Weld Island coast S (B)	57	35	7	288	296	335	280	3,514	8	94	8	94	5	94	2	3	<1	3	<1	3
WA11.West (325) - Coolgra Point W - Yardie Landing (C)	59	37	10	175	178	432	242	2,230	16	148	15	148	7	131	6	14	3	14	<1	8

WA11.West (326) - Baresand Point - Entrance Point E	76	70	54	174	175	244	1,648	8,305	102	682	100	681	64	644	16	24	12	24	4	16
WA11.West (327) - Hope Point - Locker Point (E)	61	46	2	236	274	846	179	1,141	4	21	4	21	<1	12	2	2	<1	2	<1	1
WA11.West (328) - Hope Point - Locker Point (F)	49	28	4	277	464	484	155	2,143	4	66	4	64	<1	22	3	13	<1	12	<1	1
WA11.West (329) - Locker Point - Baresand Point	74	68	52	200	214	323	1,836	10,168	141	608	138	601	114	591	19	30	12	25	5	14
WA12 (308) - Red Bluff - Chimney Rocks (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (309) - Mermaid Reef	6	2	NC	878	973	NC	5.6	302	<1	6	<1	6	NC	NC	<1	2	<1	2	NC	NC
WA12 (310) - Clerke Reef	20	4	NC	752	964	NC	11	170	<1	6	<1	2	NC	NC	2	10	<1	1	NC	NC
WA12 (311) - Imperieuse Reef	25	18	6	569	674	944	113	1,579	8	108	7	106	2	42	4	19	2	19	<1	3
WA12 (312) - Yan Well coast - Condini Landing (C)	3	NC	NC	1,185	NC	NC	0.7	45	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA12 (313) - Wattle Well coast - Yan Well coast (C)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (314) - Wattle Well coast - Yan Well coast (D)	2	NC	NC	1,269	NC	NC	0.2	13	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA12 (69) - Red Bluff - Chimney Rocks (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (70) - Coulomb Point - Red Bluff (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (72) - Cape Boileau - Coulomb Point (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (73) - Cape Boileau - Coulomb Point (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (75) - Cape Gourdon - Cape Villaret (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (76) - Cape Gourdon - Cape Villaret (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (77) - Saddle Hill - Cape Gourdon (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (78) - Saddle Hill - Cape Gourdon (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (79) - Tryon Point - False Cape Bossut (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (80) - Tryon Point - False Cape Bossut (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (81) - Cape Jaubert - Tryon Point	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (82) - Samphire bore coast - Cape Jaubert (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (83) - Samphire bore coast - Cape Jaubert (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (84) - Samphire bore coast - Cape Jaubert (C)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (85) - Cooraidegel Well coast - Eighty Mile Beach Caravan Park NE (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (86) - Cooraidegel Well coast - Eighty Mile Beach Caravan Park NE (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (87) - Cooraidegel Well coast - Eighty Mile Beach Caravan Park NE (C)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (88) - Shoonta Well - Cooraidegel Well coast	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (89) - Condini Landing - Mulla Mulla Creek	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (90) - Yan Well coast - Condini Landing (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (91) - Yan Well coast - Condini Landing (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (92) - Wattle Well coast - Yan Well coast (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (93) - Wattle Well coast - Yan Well coast (B)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA12 (94) - Beebingara Creek coast E - Wattle Well coast	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
WA13 (305) - Seringapatam Reef	1	NC	NC	1,328	NC	NC	0.1	12	<1	<1	NC	NC	NC	NC	<1	2	NC	NC	NC	NC
WA13 (306) - Scott Reef North	1	NC	NC	1,293	NC	NC	0.5	46	<1	4	NC	NC	NC	NC	<1	13	NC	NC	NC	NC
WA13 (307) - Scott Reef South	1	1	NC	1,262	1,329	NC	1	103	<1	10	<1	2	NC	NC	<1	30	<1	1	NC	NC

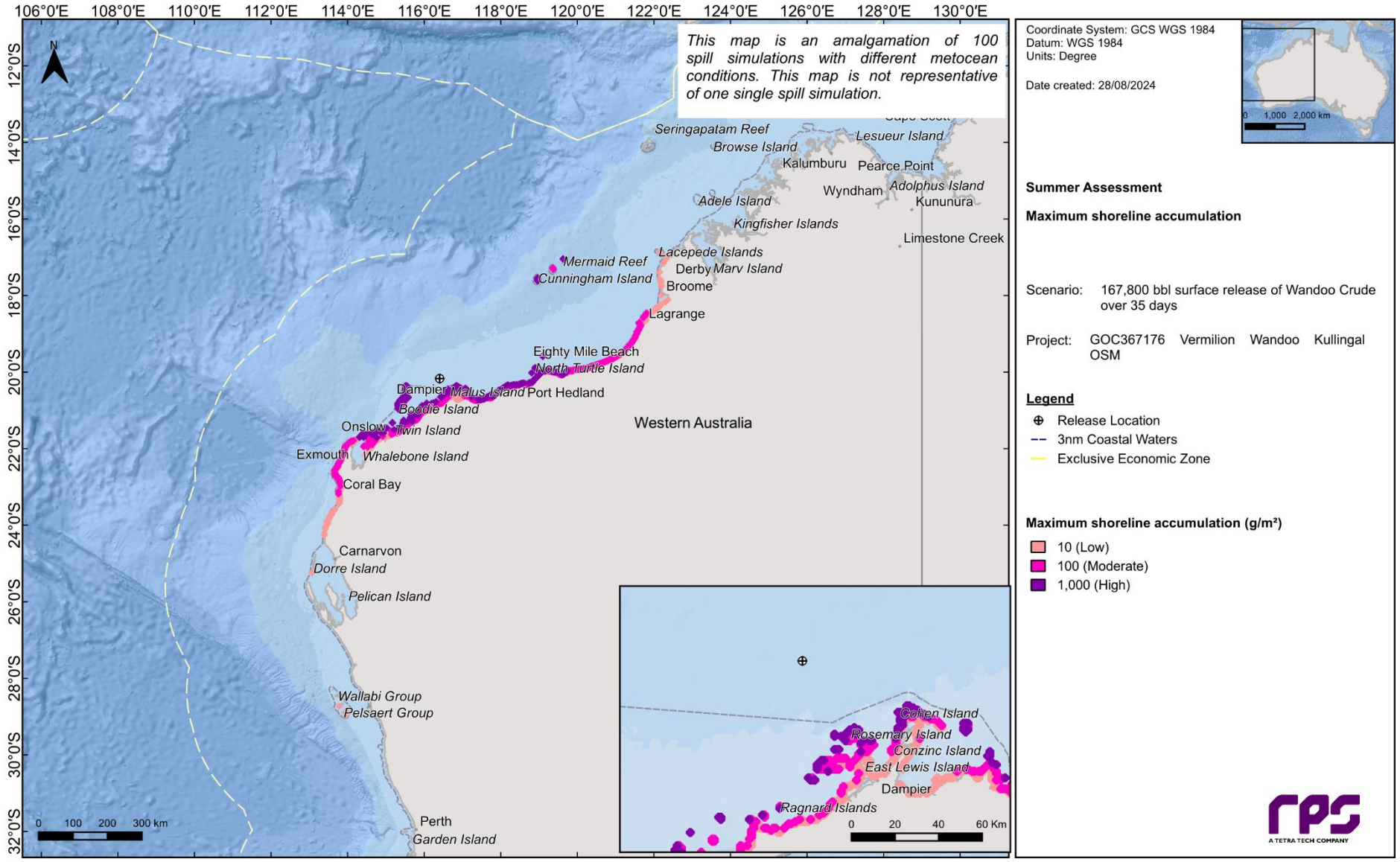


Figure 13.23 Maximum potential shoreline oil accumulation following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

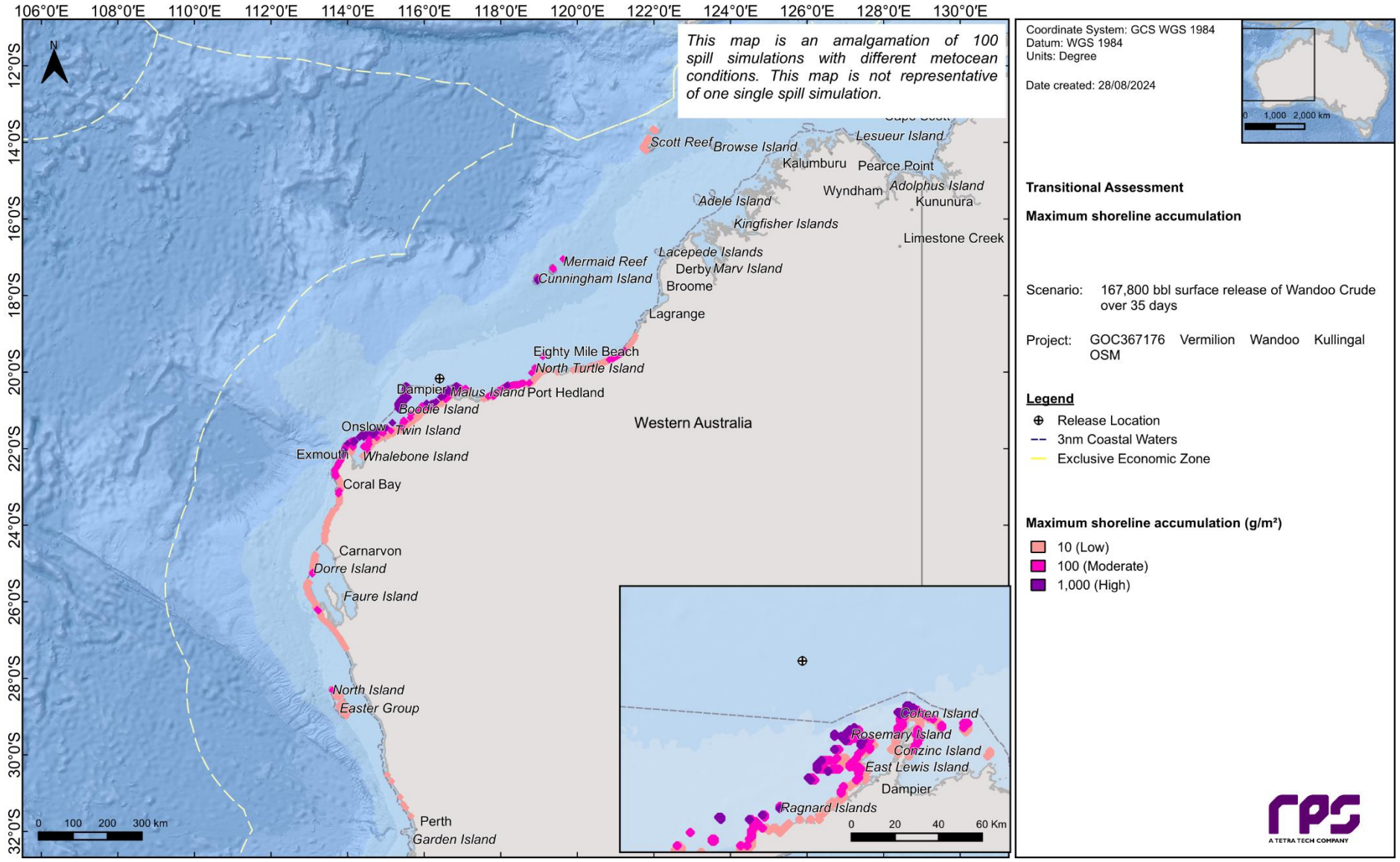


Figure 13.24 Maximum potential shoreline oil accumulation following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

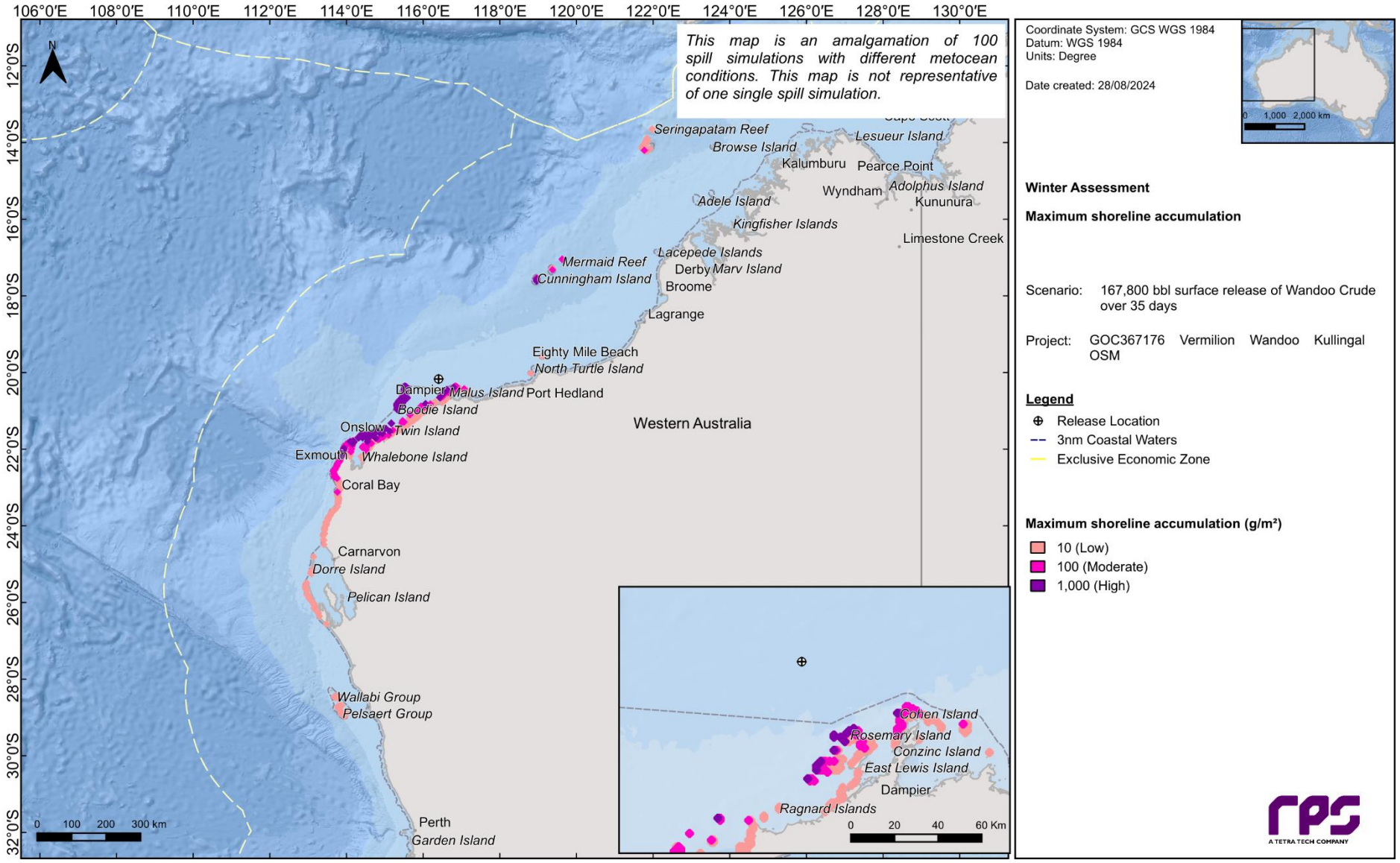


Figure 13.25 Maximum potential shoreline oil accumulation following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

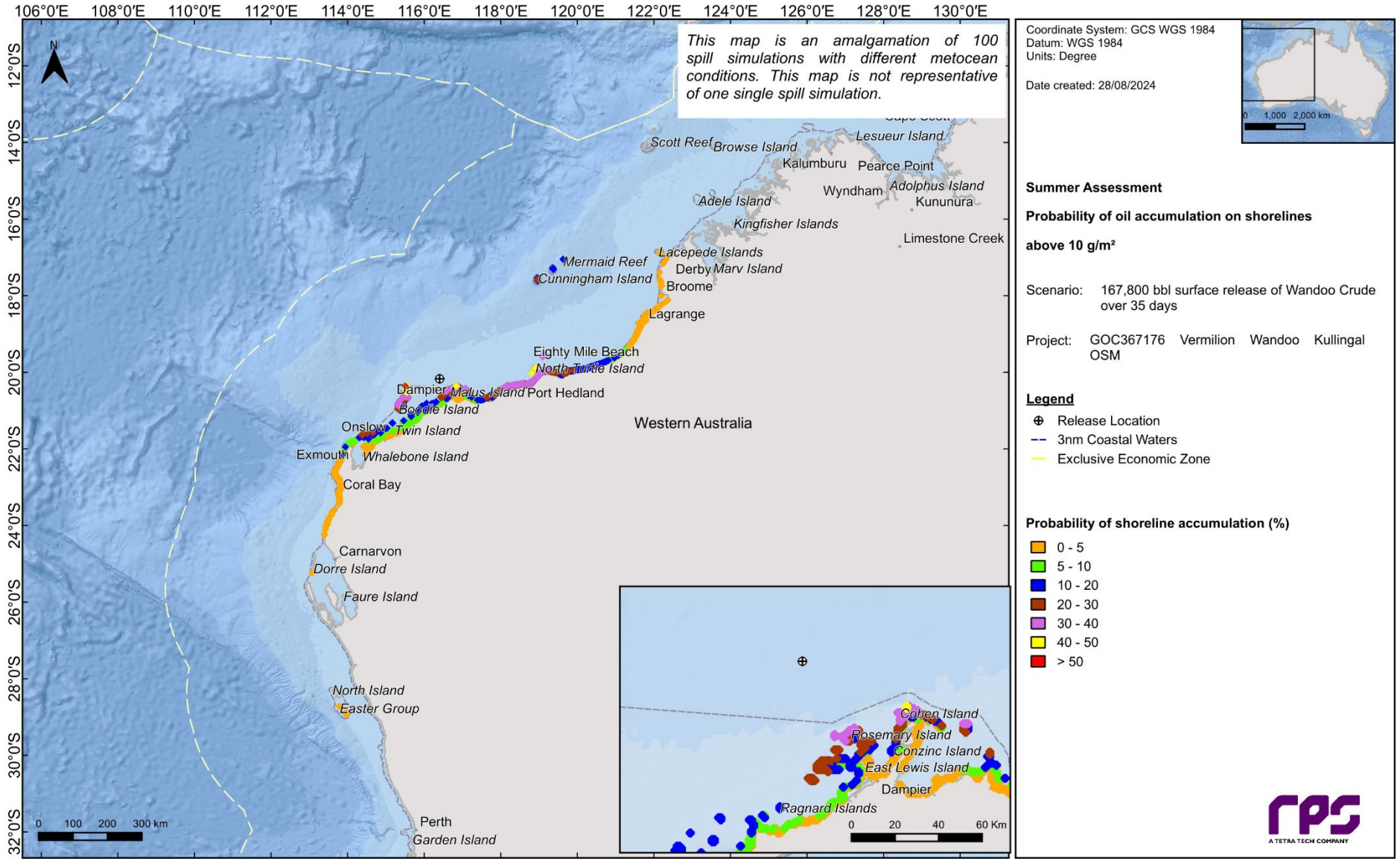


Figure 13.26 Predicted probability of shoreline oil accumulation at, or above, 10 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

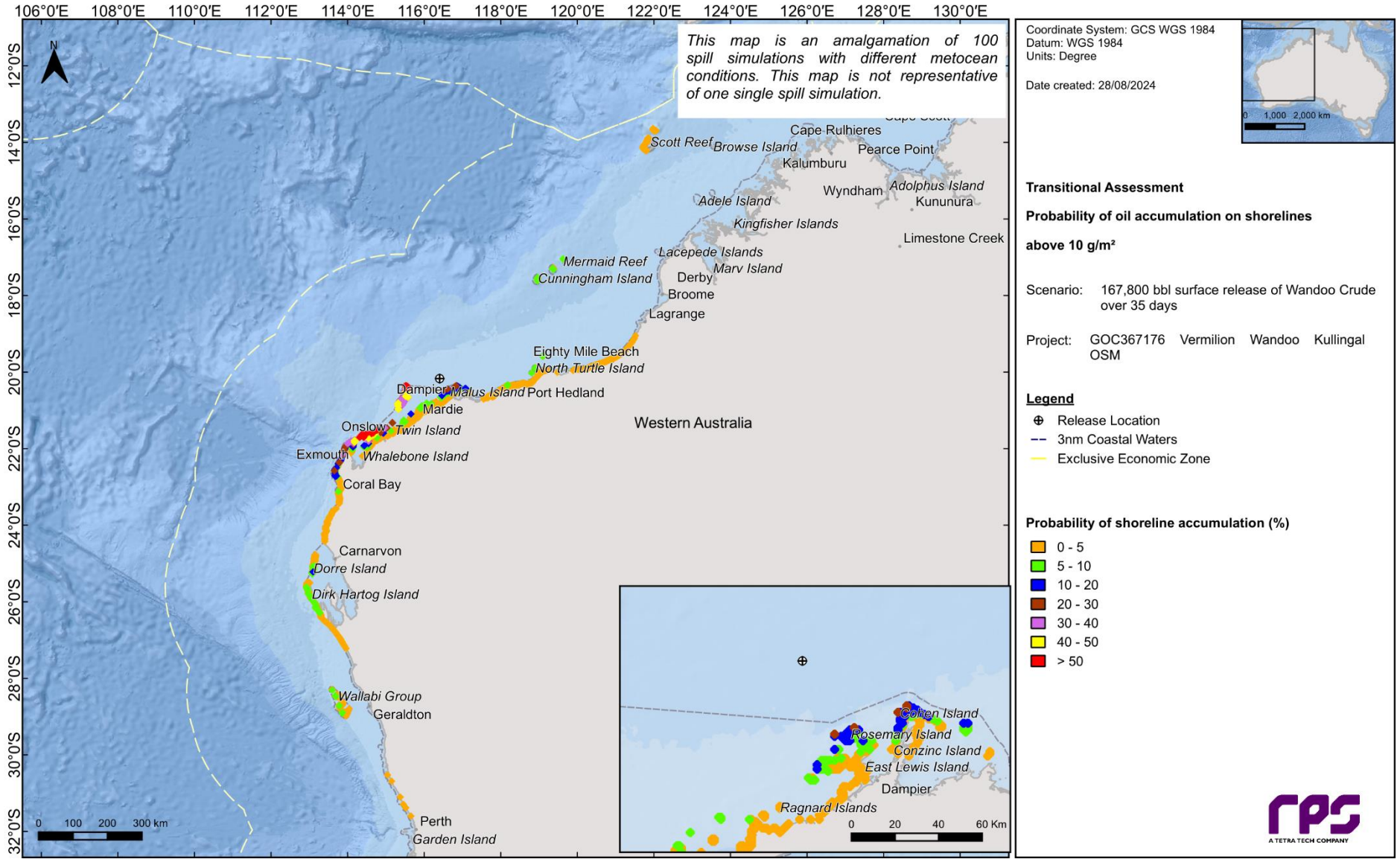


Figure 13.27 Predicted probability of shoreline oil accumulation at, or above, 10 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

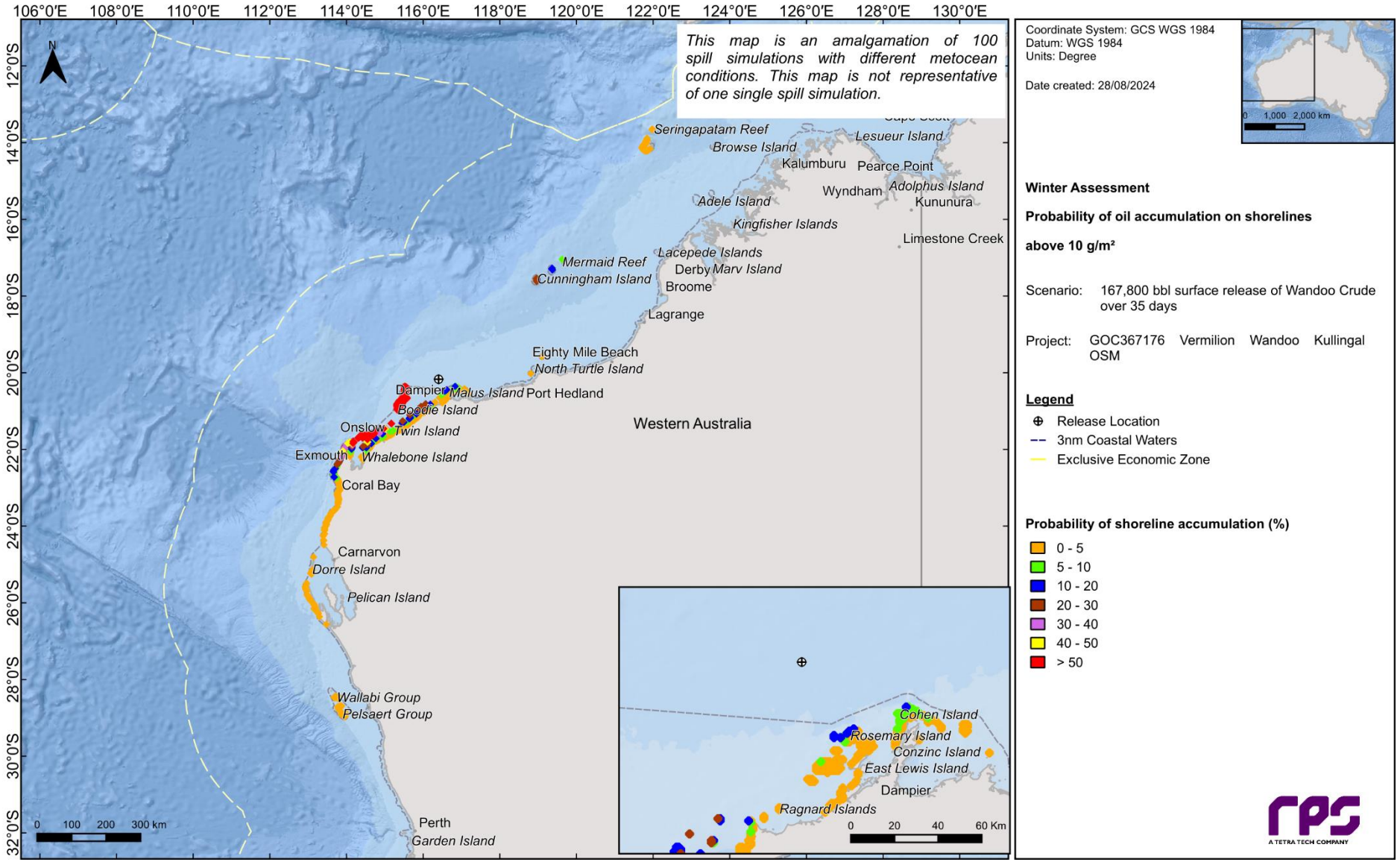


Figure 13.28 Predicted probability of shoreline oil accumulation at, or above, 10 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

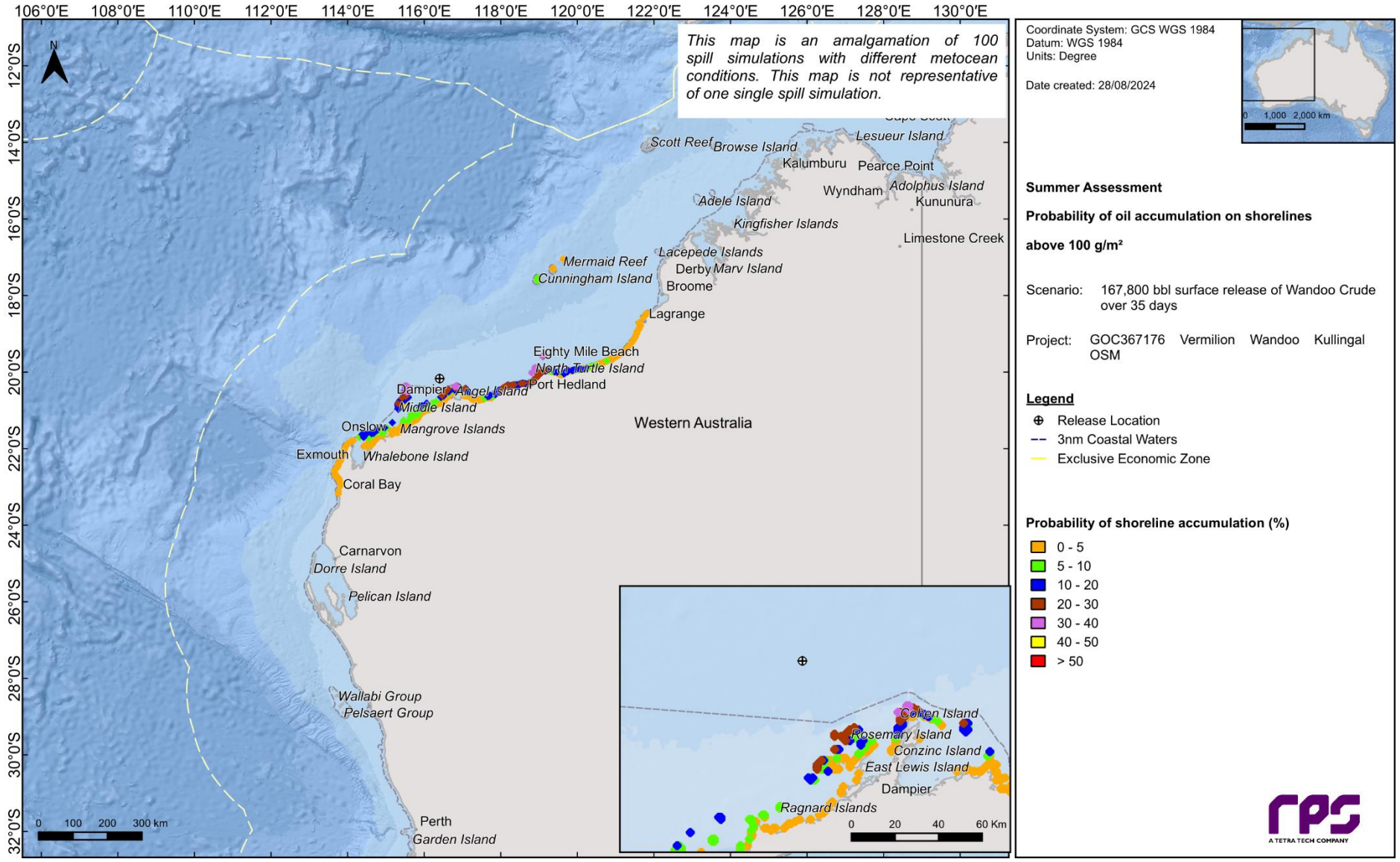


Figure 13.29 Predicted probability of shoreline oil accumulation at, or above, 100 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

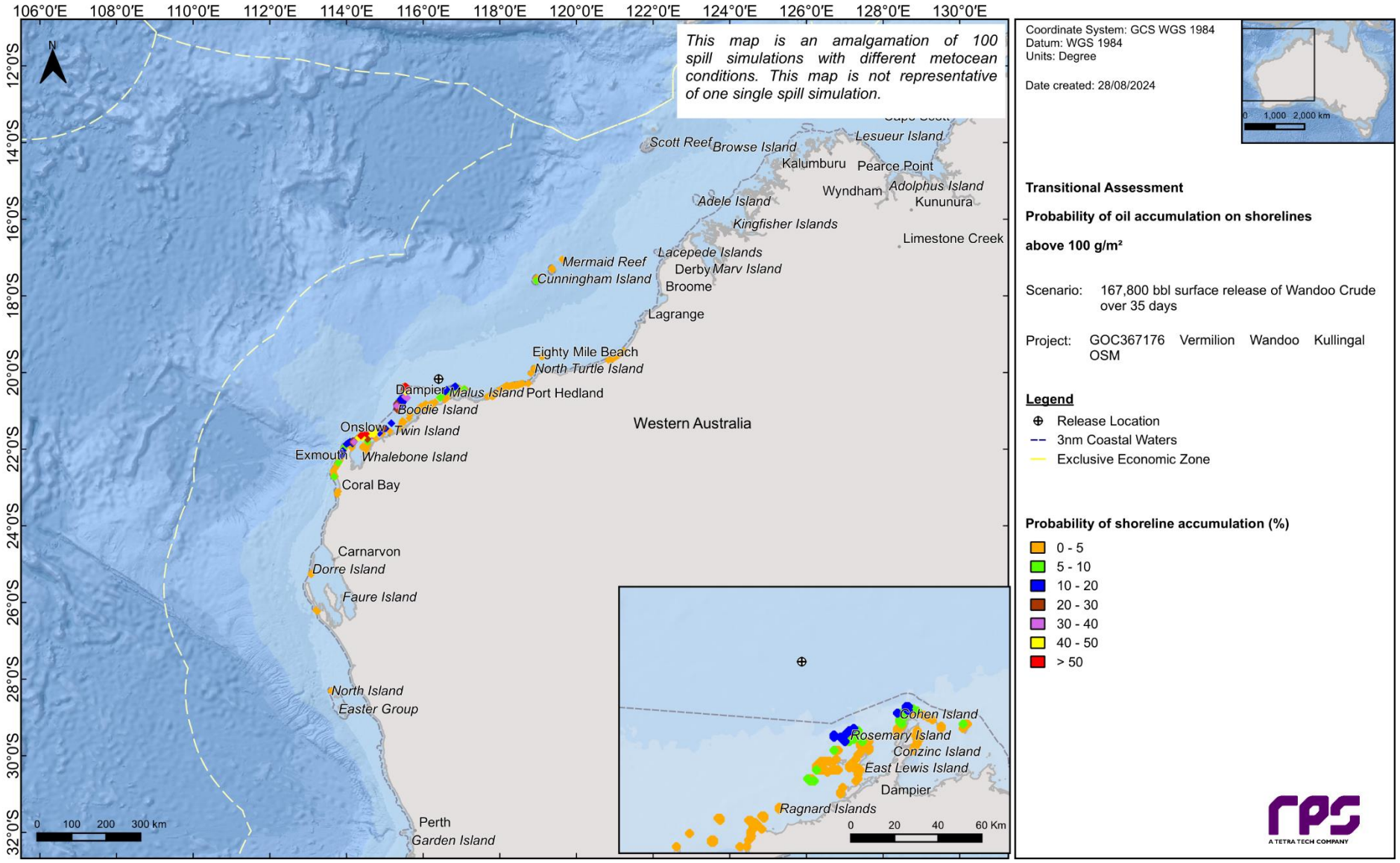


Figure 13.30 Predicted probability of shoreline oil accumulation at, or above, 100 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

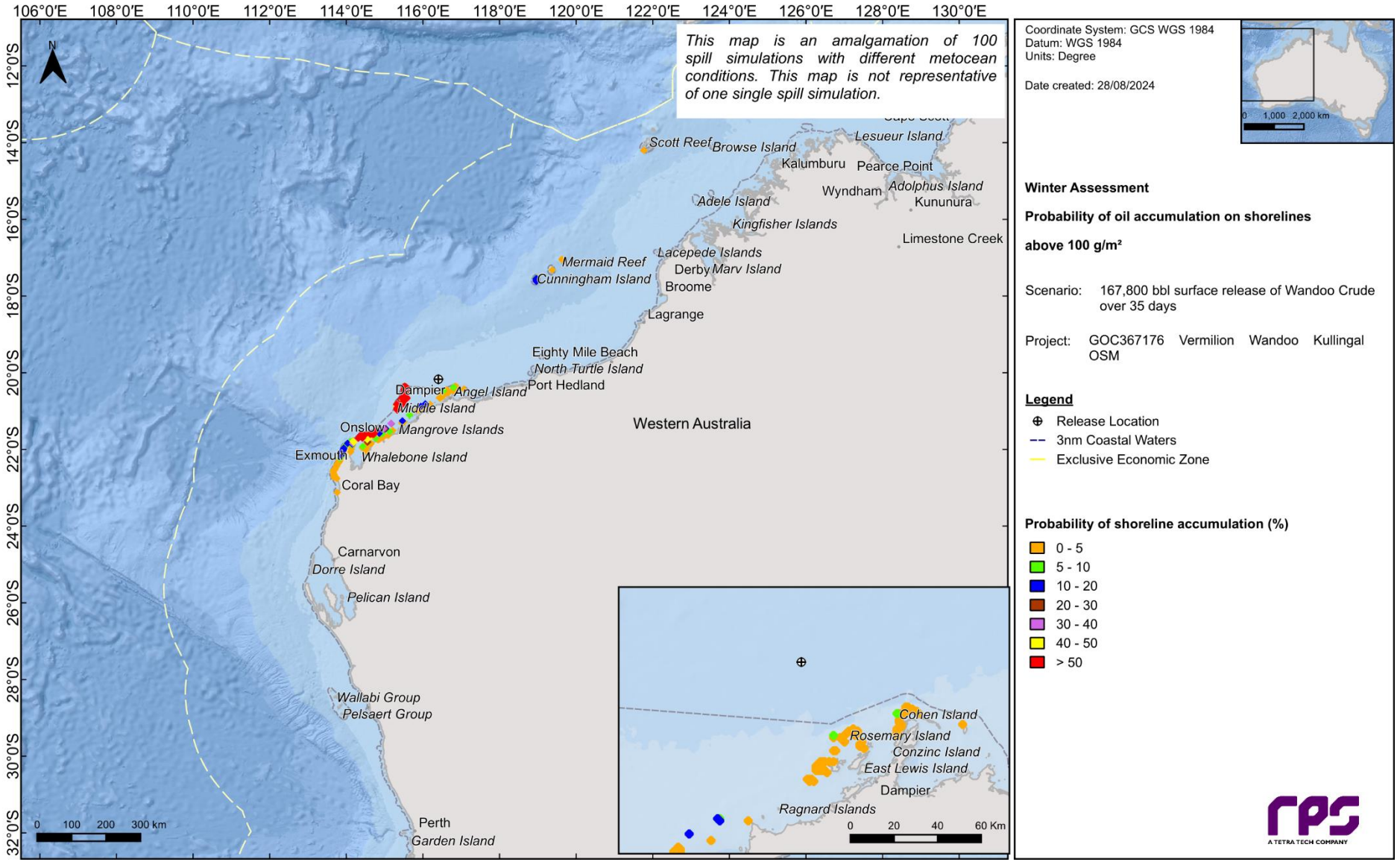


Figure 13.31 Predicted probability of shoreline oil accumulation at, or above, 100 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

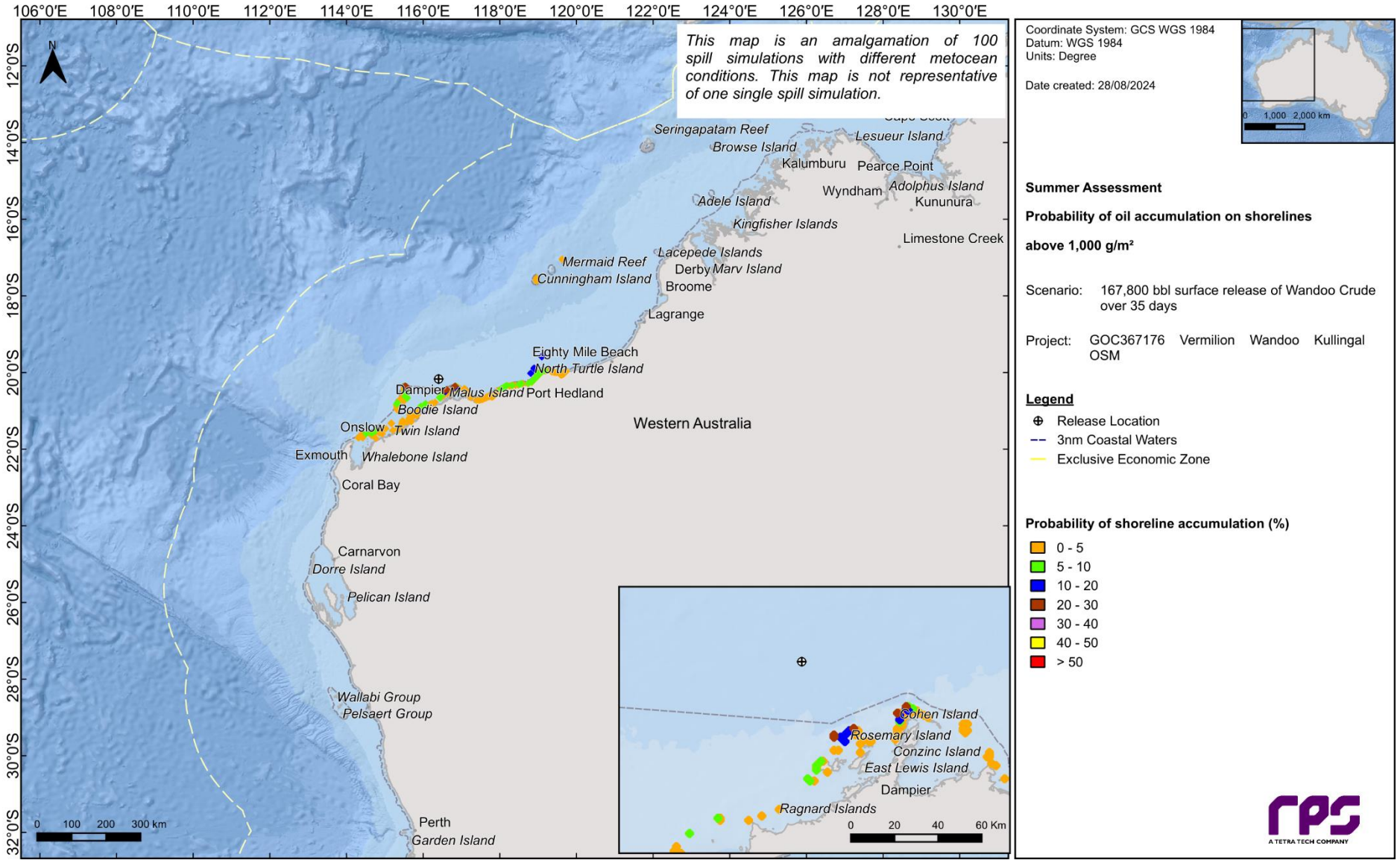


Figure 13.32 Predicted probability of shoreline oil accumulation at, or above, 1,000 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

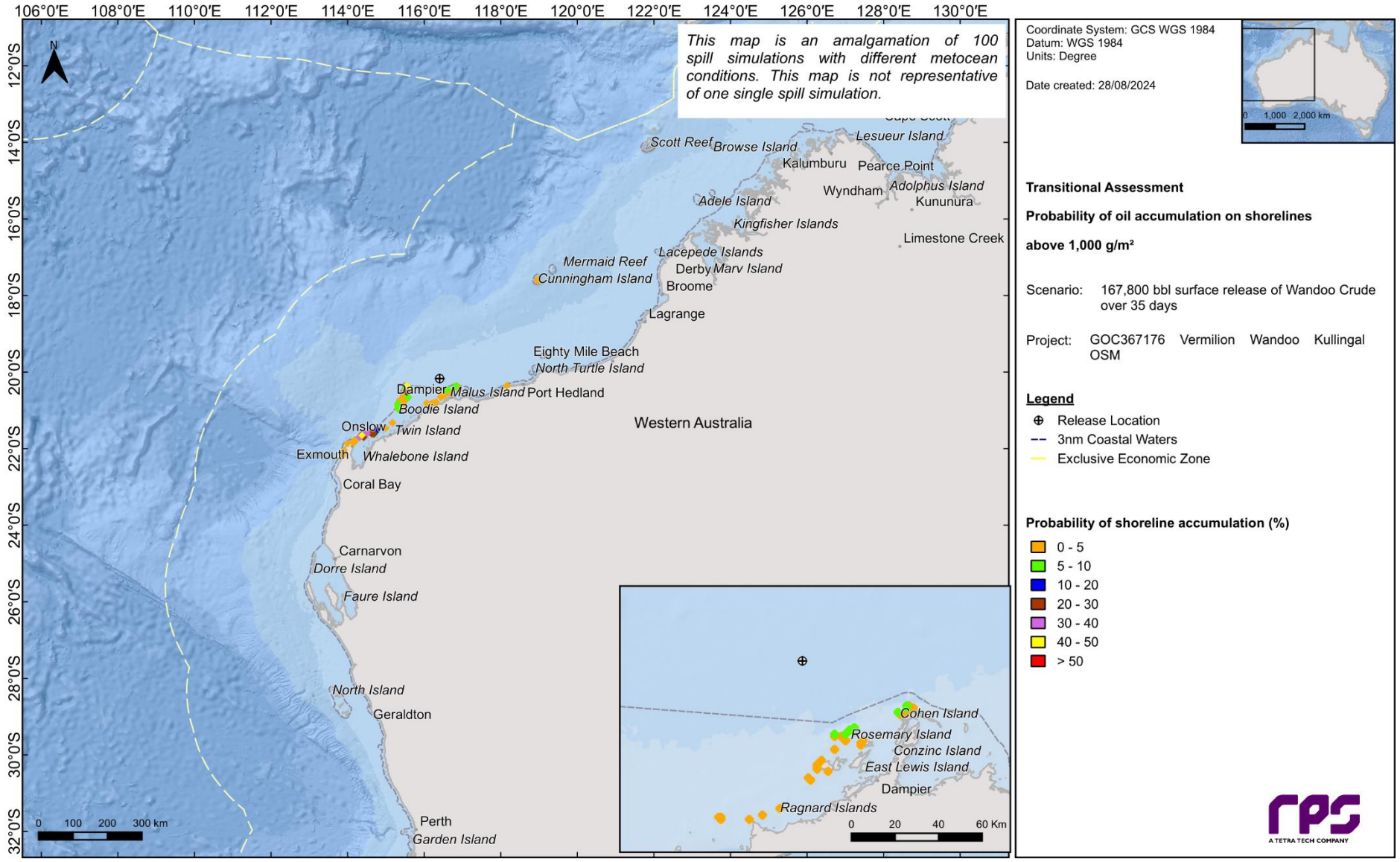


Figure 13.33 Predicted probability of shoreline oil accumulation at, or above, 1,000 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

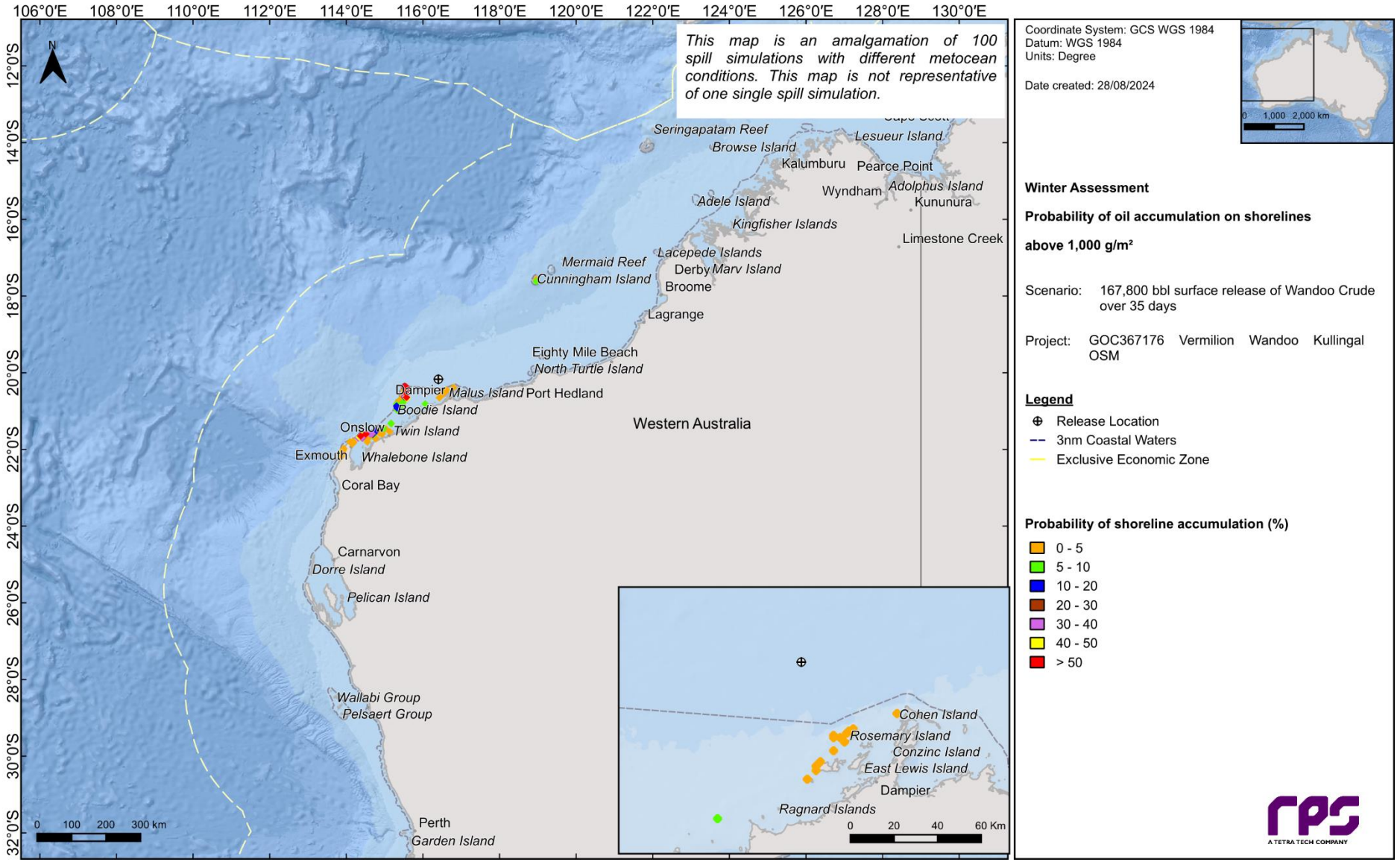


Figure 13.34 Predicted probability of shoreline oil accumulation at, or above, 1,000 g/m² following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

13.1.4 In-water exposure

13.1.4.1 Dissolved Hydrocarbons

Table 13.7 summarises the maximum distances from the release location to the dissolved hydrocarbon exposure thresholds for each season. Concentrations exceeding 10 ppb may potentially extend up to 790 km from the release location. As the threshold increases to 50 ppb, the maximum distance decreases to 425 km. No exposure was predicted above 400 ppb.

Table 13.8 summarises the predicted dissolved hydrocarbon exposure to receptors (either at, or above, receptors in the water column).

The Montebello AMP recorded the highest probabilities of exposure at, or above, 10 ppb during summer (50%), transitional (82%) and winter (89%) conditions. Additionally, the quickest time to exposure was recorded for Montebello AMP at, or above, 10 ppb during summer (26 hours), transitional (29 hours) and winter (27 hours) conditions. The Montebello AMP also recorded the highest concentration at 153 ppb during summer conditions.

Figure 13.35 to Figure 13.37 illustrate the dissolved hydrocarbon exposure zones for the three seasons, whilst Figure 13.38 to Figure 13.49 show the minimum times before exposure and probabilities of exposure at or above, 10 ppb and 50 ppb.

Seasonal cross-sectional transects (north-south and east-west) of the maximum dissolved hydrocarbons in the vicinity of the release site are presented in Figure 13.50 to Figure 13.55.

Table 13.7 Maximum distances from the release location to dissolved hydrocarbon exposure thresholds following a surface LOWC at Kullingal. Results were calculated from 100 spill simulations per season.

Season	Distance and direction travelled	Dissolved hydrocarbon exposure thresholds		
		10 ppb	50 ppb	400 ppb
Summer	Maximum distance (km) from release location	487	253	-
	Direction	West	Southwest	-
Transitional	Maximum distance (km) from release location	790	382	-
	Direction	Southwest	Southwest	-
Winter	Maximum distance (km) from release location	575	425	-
	Direction	Southwest	Southwest	-

Table 13.8 Receptors predicted to be exposed by dissolved hydrocarbons following a surface LOWC at Kullingal. Results were calculated from100 spill simulations per season.

Category	Name	Summer								Transitional								Winter							
		Probability (%) of dissolved concentration			Minimum time to receptor waters (hours) at			Maximum dissolved hydrocarbon concentration (ppb)		Probability (%) of dissolved concentration			Minimum time to receptor waters (hours) at			Maximum dissolved hydrocarbon concentration (ppb)		Probability (%) of dissolved concentration			Minimum time to receptor waters (hours) at			Maximum dissolved hydrocarbon concentration (ppb)	
		≥ 10 ppb	≥ 50 ppb	≥ 400 ppb	≥ 10 ppb	≥ 50 ppb	≥ 400 ppb	averaged over all replicate spills	in the worst replicate	≥ 10 ppb	≥ 50 ppb	≥ 400 ppb	≥ 10 ppb	≥ 50 ppb	≥ 400 ppb	averaged over all replicate spills	in the worst replicate	≥ 10 ppb	≥ 50 ppb	≥ 400 ppb	≥ 10 ppb	≥ 50 ppb	≥ 400 ppb	averaged over all replicate spills	in the worst replicate
AMP	Dampier	4	NC	NC	225	NC	NC	2	43	1	NC	NC	1,076	NC	NC	<1	11	11	1	NC	266	544	NC	4	59
	Gascoyne	1	NC	NC	639	NC	NC	<1	50	11	1	NC	341	364	NC	4	77	NC	NC	NC	NC	NC	NC	NC	NC
	Montebello	50	3	NC	26	67	NC	11	153	82	7	NC	29	58	NC	22	133	89	7	NC	27	38	NC	25	120
KEF	Ancient coastline at 125 m depth contour	7	1	NC	200	307	NC	3	98	20	2	NC	217	263	NC	6	86	21	2	NC	183	408	NC	6	93
	Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	2	NC	NC	541	NC	NC	<1	43	17	1	NC	277	321	NC	5	95	16	1	NC	195	419	NC	5	111
	Commonwealth waters adjacent to Ningaloo Reef	2	NC	NC	588	NC	NC	<1	43	16	2	NC	346	356	NC	5	69	20	1	NC	231	502	NC	5	58
	Continental Slope Demersal Fish Communities	4	NC	NC	309	NC	NC	2	50	11	1	NC	263	392	NC	4	72	13	1	NC	260	502	NC	4	73
	Exmouth Plateau	1	NC	NC	951	NC	NC	<1	11	2	NC	NC	574	NC	NC	<1	21	1	NC	NC	558	NC	NC	<1	20
	Glomar Shoals	19	3	NC	143	279	NC	6	86	23	1	NC	119	197	NC	6	82	11	NC	NC	77	NC	NC	4	47
MP	Barrow Island	3	1	NC	141	956	NC	2	76	17	NC	NC	140	NC	NC	5	43	26	1	NC	121	414	NC	8	103

	Montebello Islands	21	1	NC	97	111	NC	6	69	48	2	NC	80	118	NC	11	90	69	12	NC	71	73	NC	20	116
	Ningaloo	2	NC	NC	588	NC	NC	<1	43	16	2	NC	346	356	NC	5	69	20	1	NC	231	502	NC	5	58
NR	Lowendal Islands	1	NC	NC	874	NC	NC	<1	11	1	NC	NC	1,084	NC	NC	2	12	7	NC	NC	271	NC	NC	3	22
	Thevenard Island	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	NC	878	NC	NC	<1	11	NC	NC	NC	NC	NC	NC	NC	NC
RSB	Barrow Island Reefs and Shoals	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	NC	793	NC	NC	<1	12
	Combe Reef	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	NC	1,042	NC	NC	<1	13	2	NC	NC	482	NC	NC	<1	27
	Dailey Shoal	NC	NC	NC	NC	NC	NC	NC	NC	4	NC	NC	442	NC	NC	2	34	5	NC	NC	321	NC	NC	2	16
	Exmouth Reef	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	NC	502	NC	NC	<1	26
	Fairway Reef	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	2	NC	NC	372	NC	NC	<1	27
	Glomar Shoal	7	NC	NC	243	NC	NC	3	25	5	NC	NC	183	NC	NC	2	46	6	NC	NC	175	NC	NC	2	32
	Hammersley Shoal	2	NC	NC	776	NC	NC	<1	14	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Hood Reef	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	NC	982	NC	NC	2	14	4	NC	NC	365	NC	NC	2	45
	Madeleine Shoals	3	NC	NC	203	NC	NC	2	20	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Montebello Shoals	8	NC	NC	123	NC	NC	3	47	21	NC	NC	124	NC	NC	6	37	44	1	NC	129	433	NC	11	57
	Ningaloo Reef	NC	NC	NC	NC	NC	NC	NC	NC	3	NC	NC	397	NC	NC	2	23	6	NC	NC	532	NC	NC	2	34
	North West Reef	NC	NC	NC	NC	NC	NC	NC	NC	5	NC	NC	694	NC	NC	3	23	3	NC	NC	644	NC	NC	2	24
	Otway Reef	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	2	NC	NC	468	NC	NC	<1	19
	Outtrim Patches	1	NC	NC	746	NC	NC	<1	14	11	1	NC	434	486	NC	5	64	14	NC	NC	212	NC	NC	5	38
	Penguin Bank	NC	NC	NC	NC	NC	NC	NC	NC	11	NC	NC	472	NC	NC	4	29	17	NC	NC	186	NC	NC	6	48
	Poivre Reef	2	NC	NC	932	NC	NC	<1	22	4	NC	NC	598	NC	NC	2	18	4	NC	NC	217	NC	NC	3	21
	Rankin Bank	2	NC	NC	357	NC	NC	<1	27	3	NC	NC	363	NC	NC	2	20	2	NC	NC	694	NC	NC	2	15
	Ripple Shoals	1	NC	NC	933	NC	NC	<1	19	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	NC	439	NC	NC	<1	11
	Rosily Shoals	NC	NC	NC	NC	NC	NC	NC	NC	4	1	NC	494	918	NC	3	61	8	1	NC	283	470	NC	4	55
	Spider Reef	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	NC	765	NC	NC	<1	11	1	NC	NC	378	NC	NC	<1	19
	Trap Reef	NC	NC	NC	NC	NC	NC	NC	NC	2	NC	NC	594	NC	NC	2	13	1	NC	NC	510	NC	NC	<1	16
	Tryal Rocks	22	1	NC	181	488	NC	7	54	52	7	NC	95	201	NC	17	96	54	3	NC	65	169	NC	16	74
	Web Reef	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	2	NC	NC	387	NC	NC	<1	15

State and Territory Waters	WA	41	2	NC	27	86	NC	9	93	NC	NC	NC	NC	NC	NC	NC	NC	85	12	NC	44	54	NC	20	135

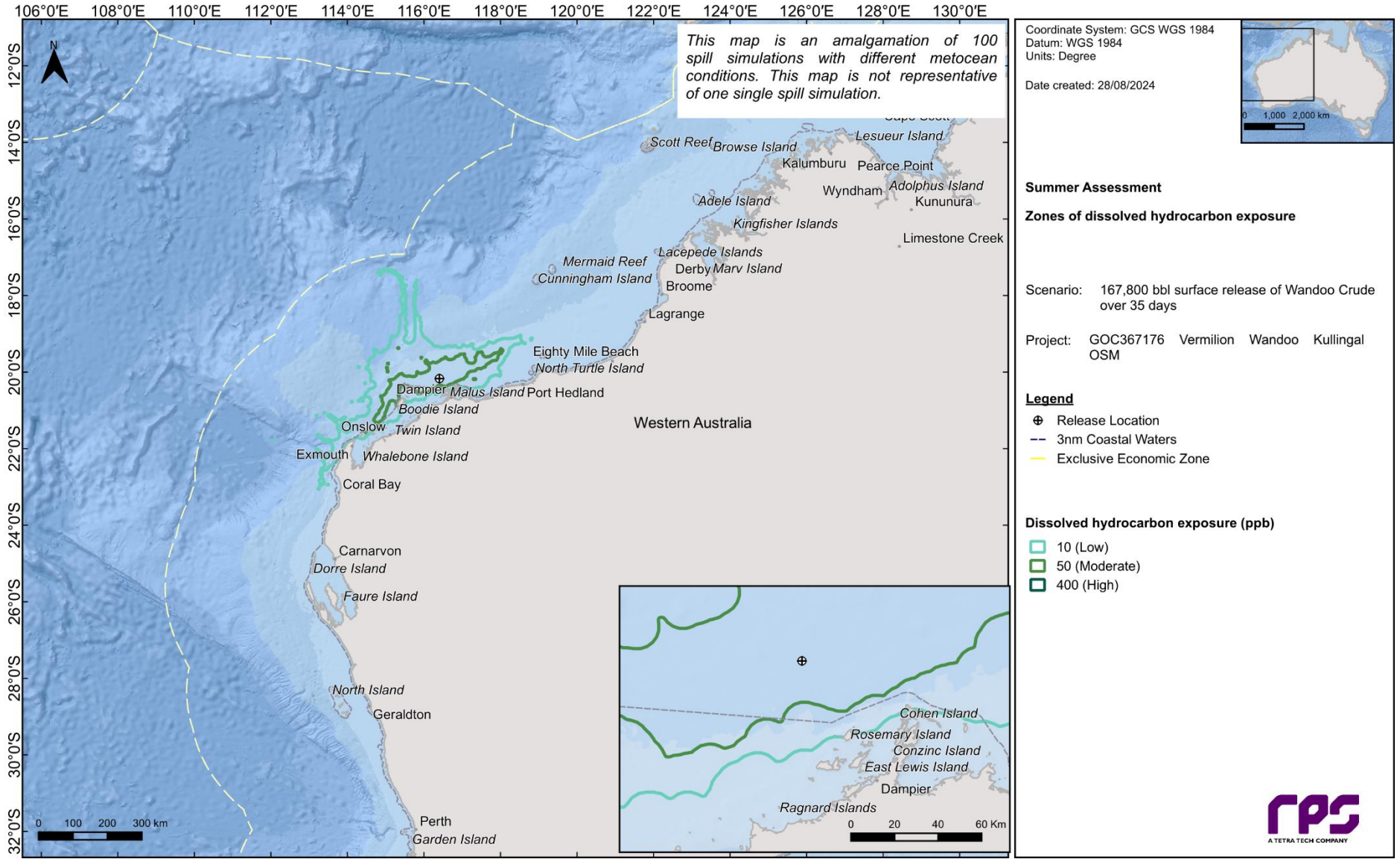


Figure 13.35 Predicted zones of dissolved hydrocarbon exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

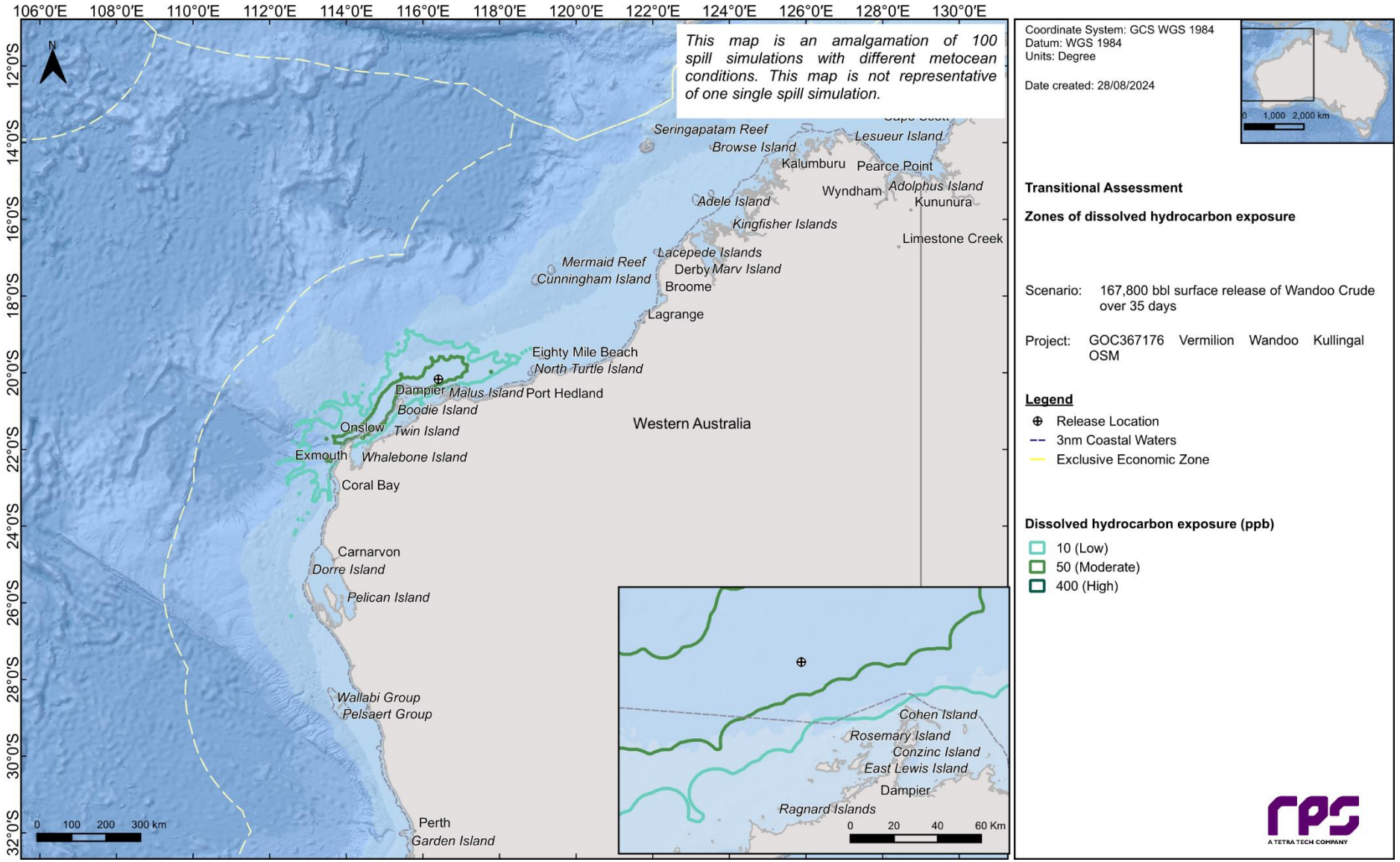


Figure 13.36 Predicted zones of dissolved hydrocarbon exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

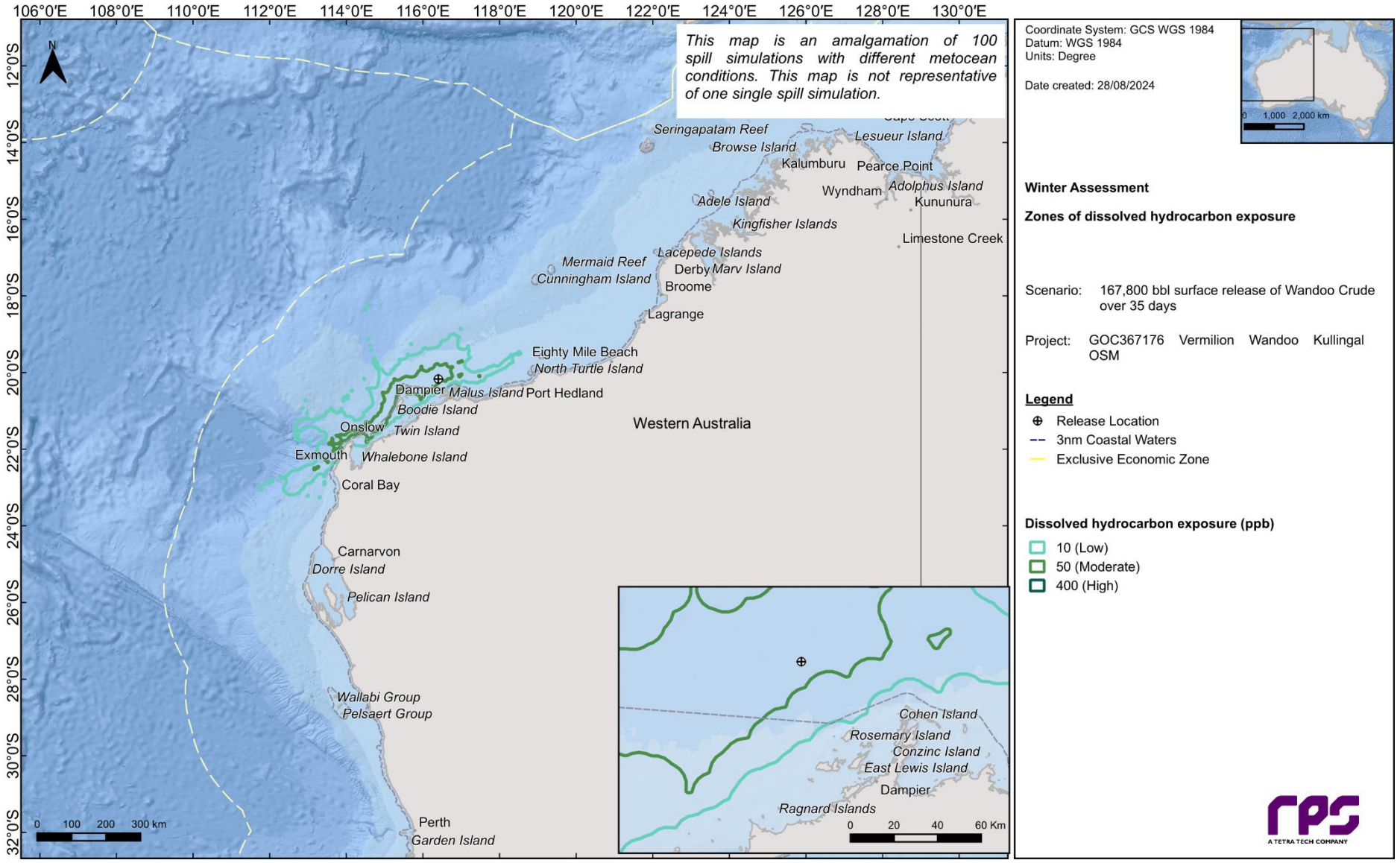


Figure 13.37 Predicted zones of dissolved hydrocarbon exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

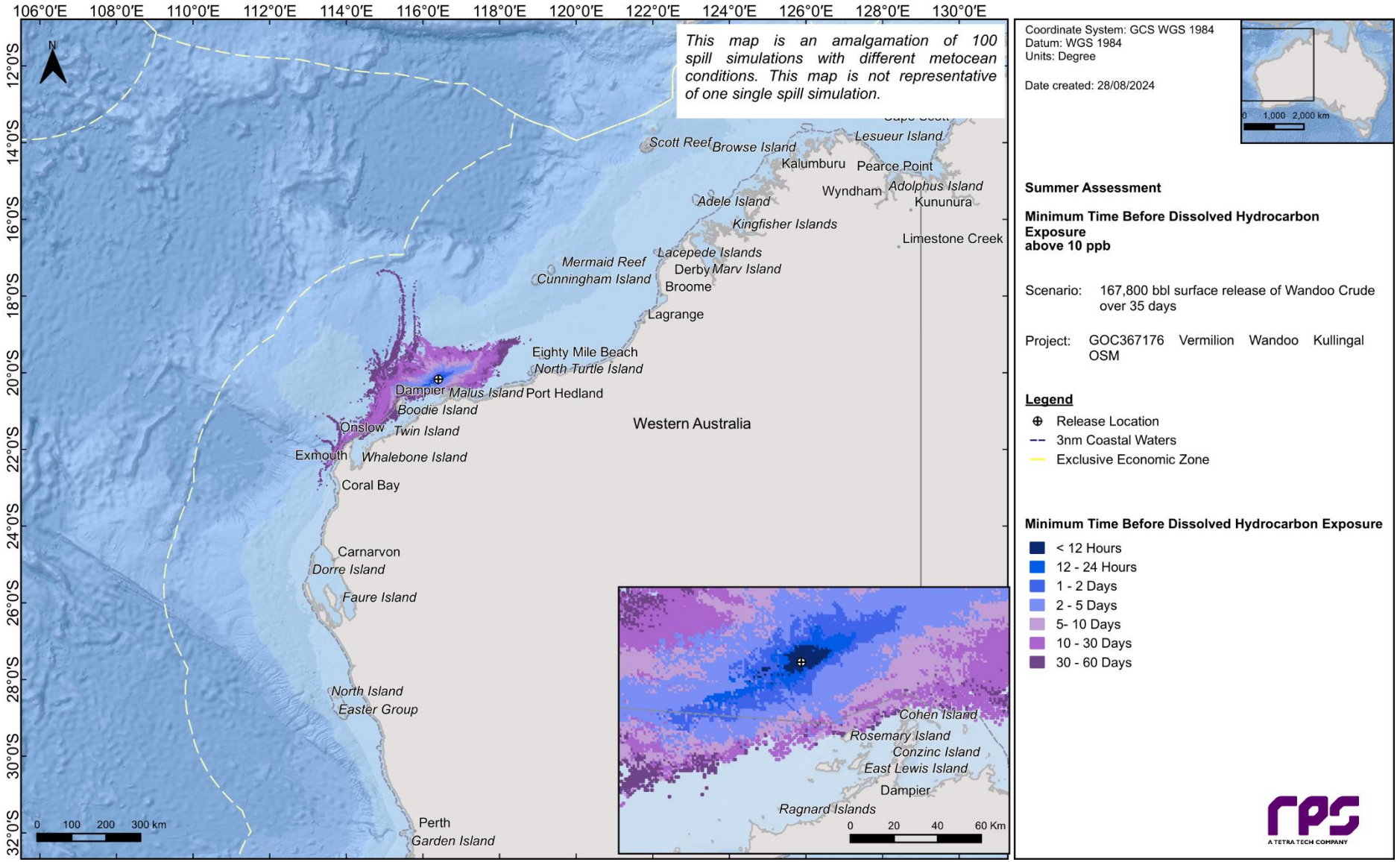


Figure 13.38 Minimum time before dissolved hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

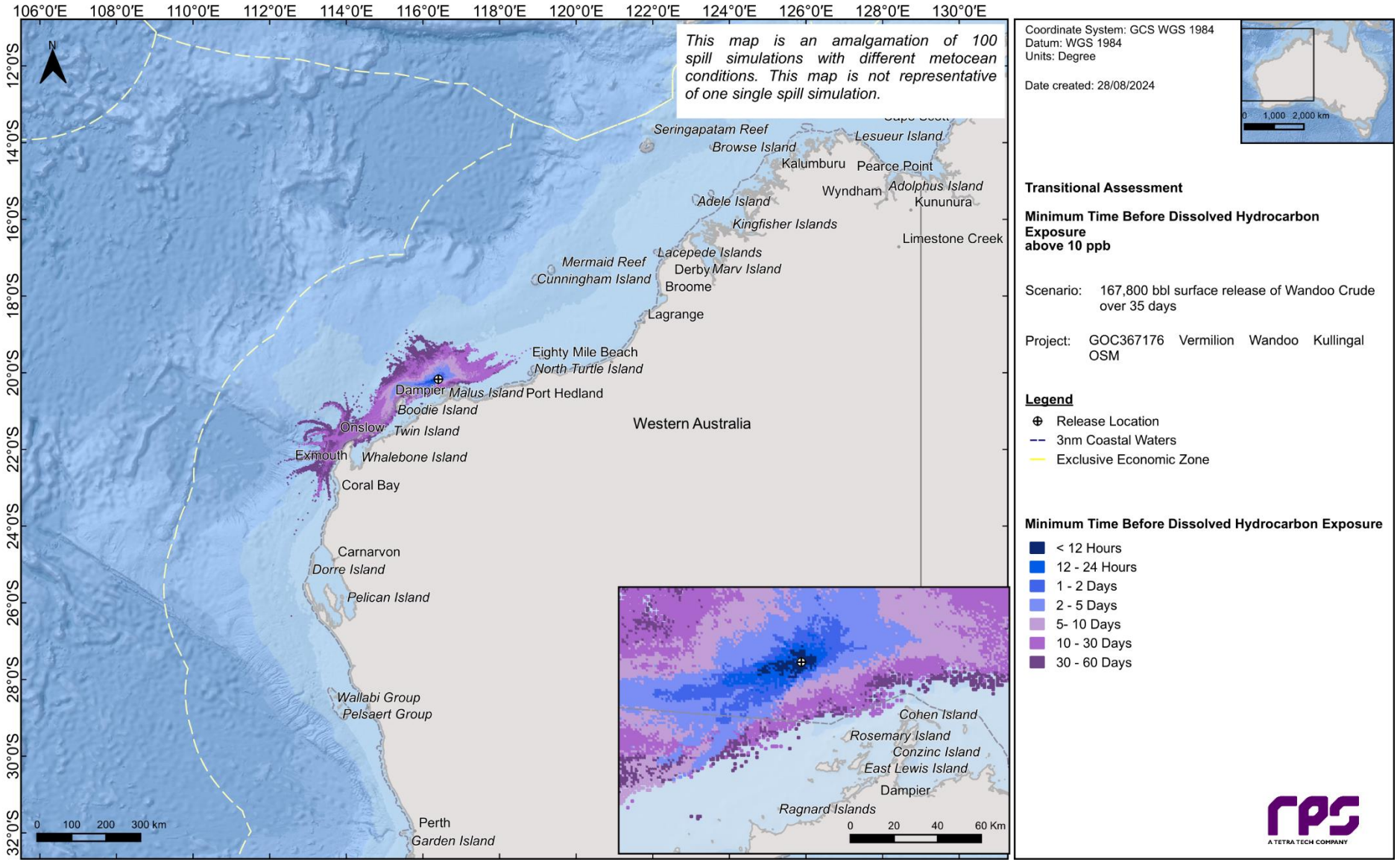


Figure 13.39 Minimum time before dissolved hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

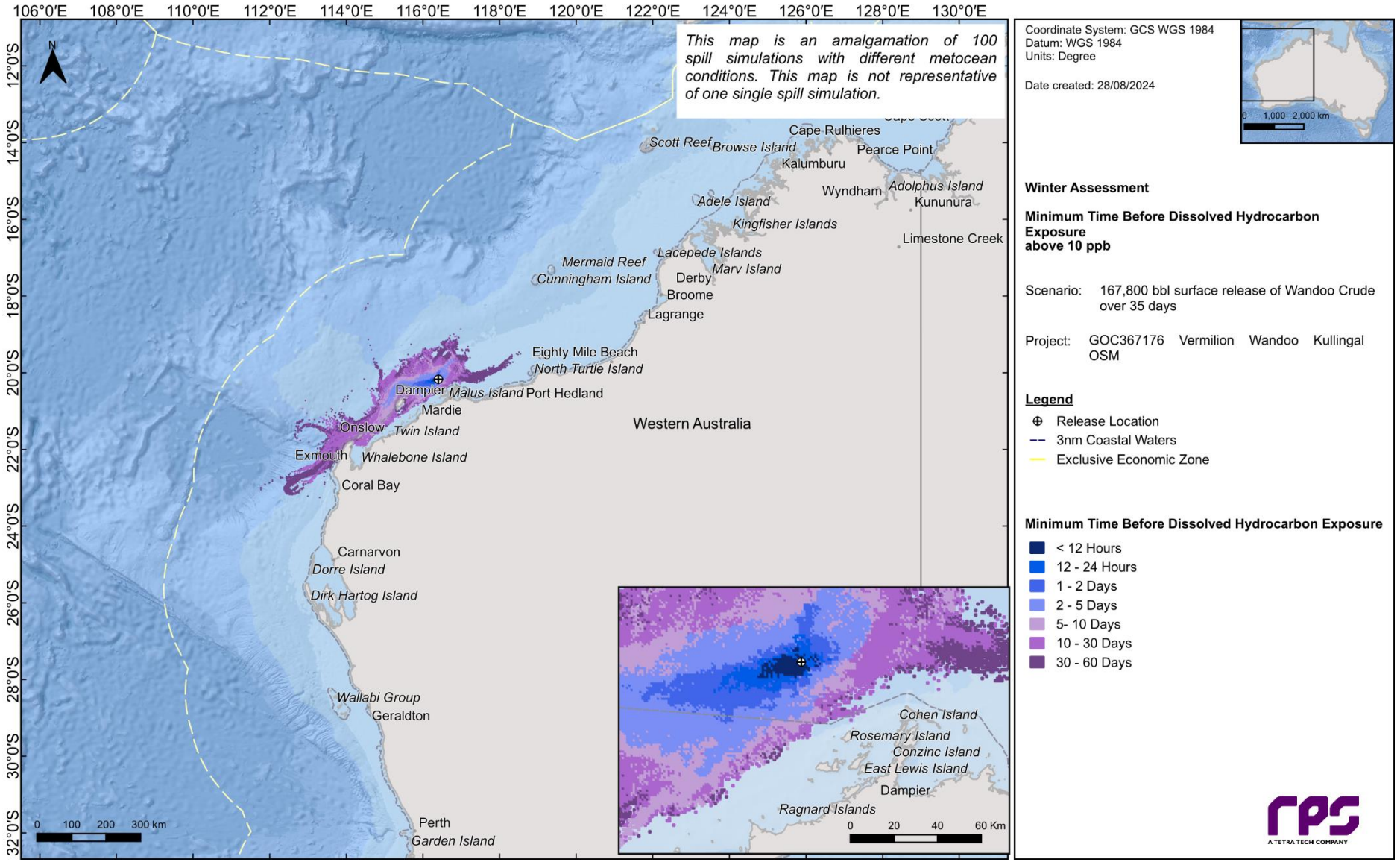


Figure 13.40 Minimum time before dissolved hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

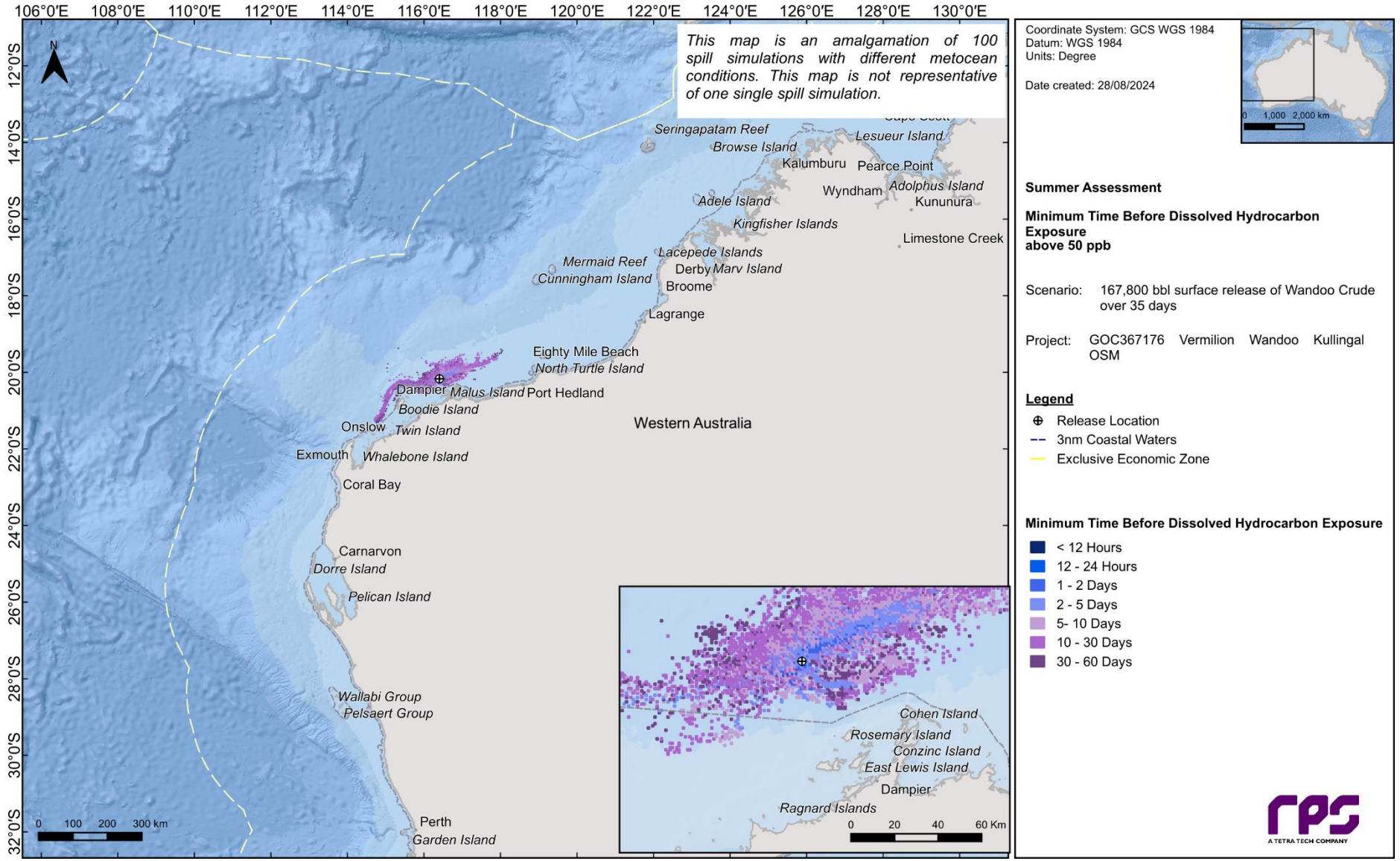


Figure 13.41 Minimum time before dissolved hydrocarbon exposure at, or above, 50 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

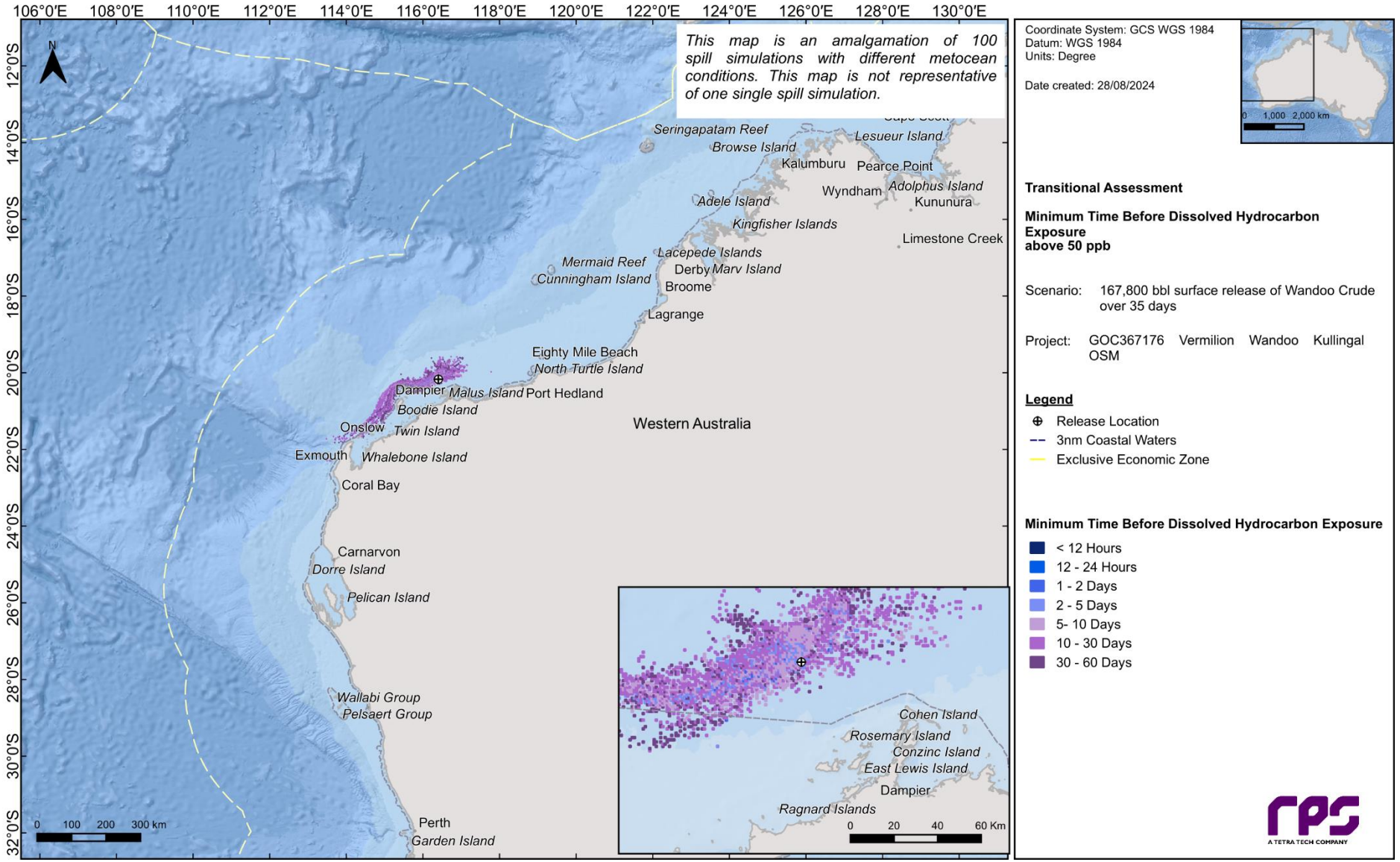


Figure 13.42 Minimum time before dissolved hydrocarbon exposure at, or above, 50 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

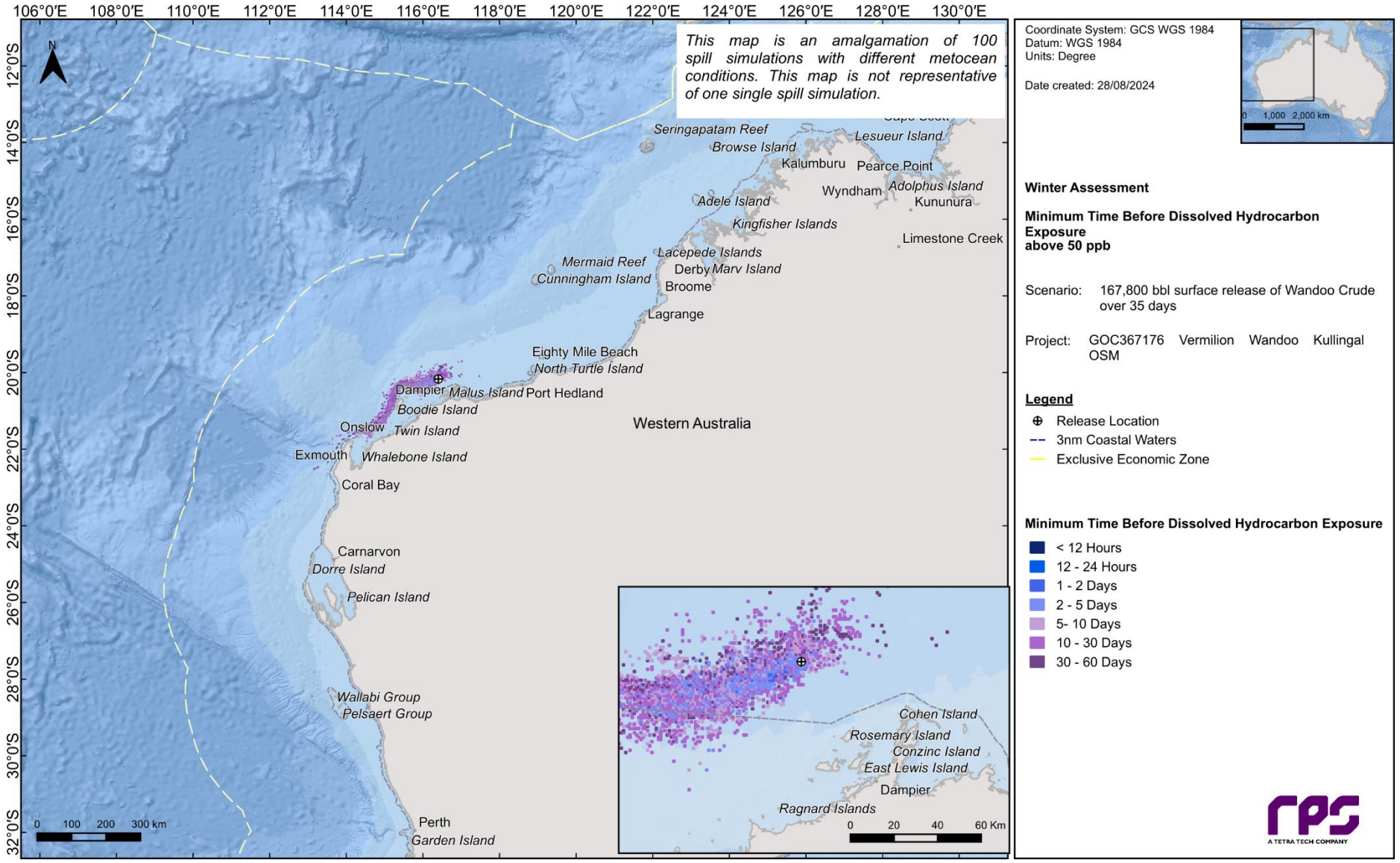


Figure 13.43 Minimum time before dissolved hydrocarbon exposure at, or above, 50 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

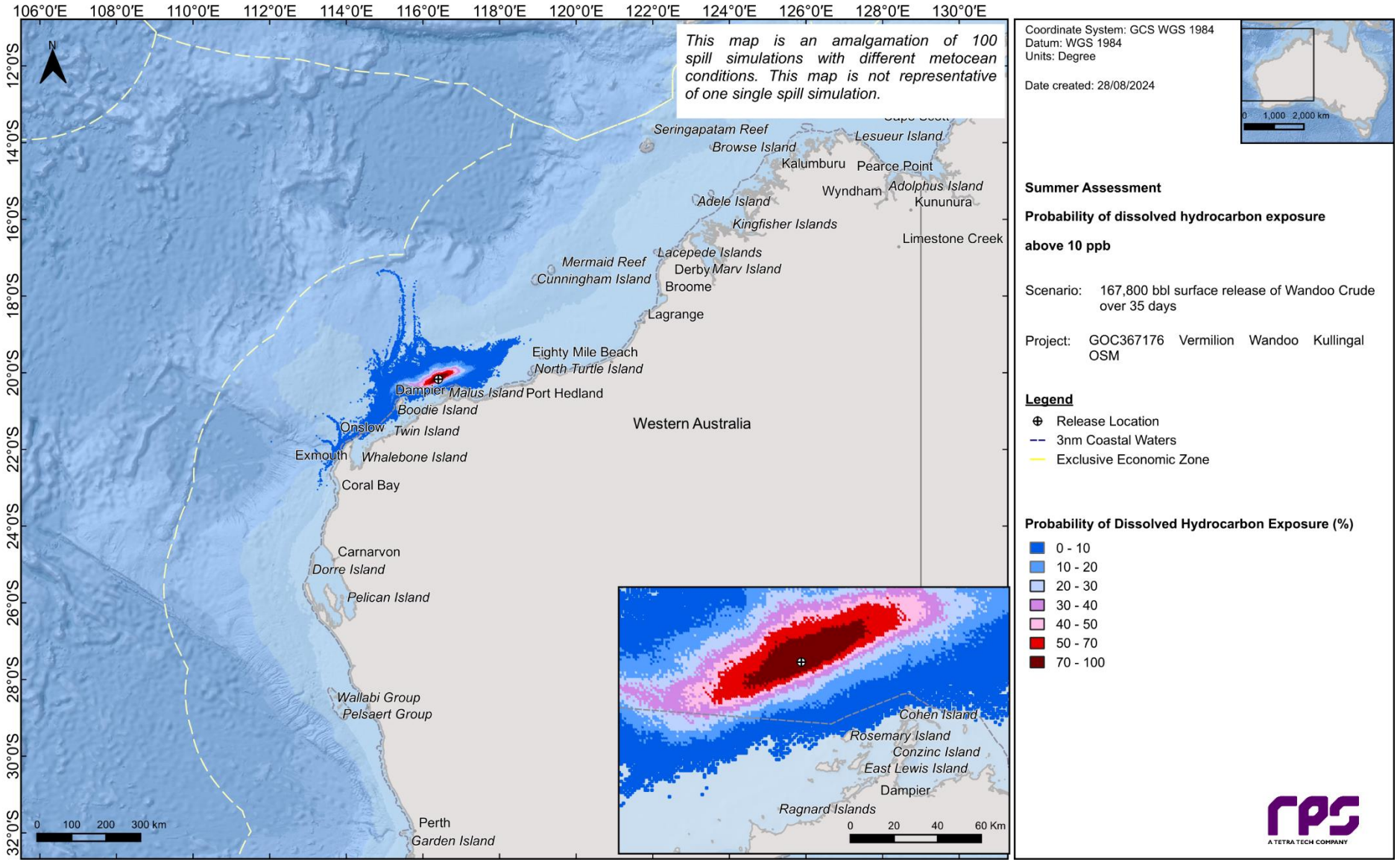


Figure 13.44 Probability of dissolved hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

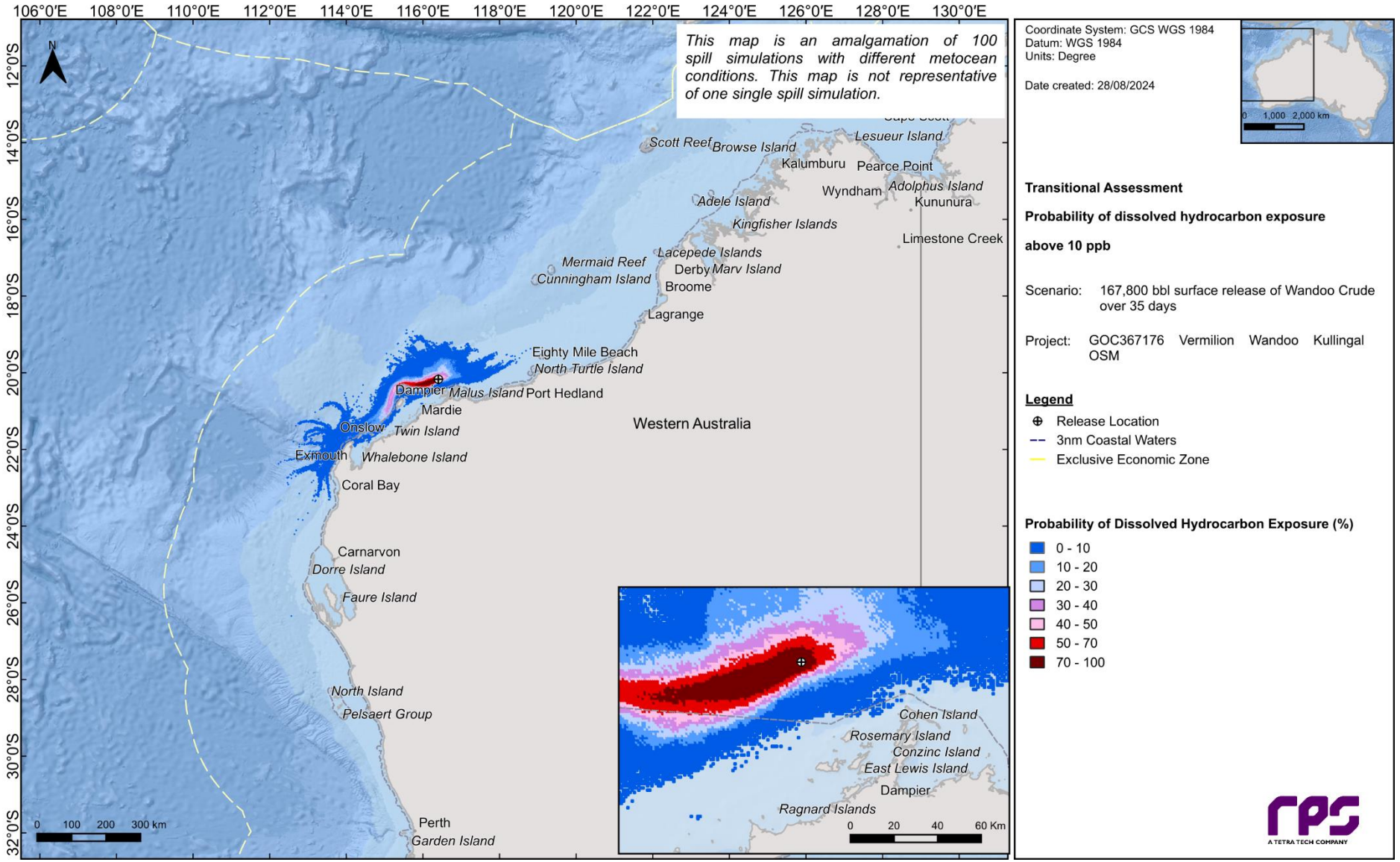


Figure 13.45 Probability of dissolved hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

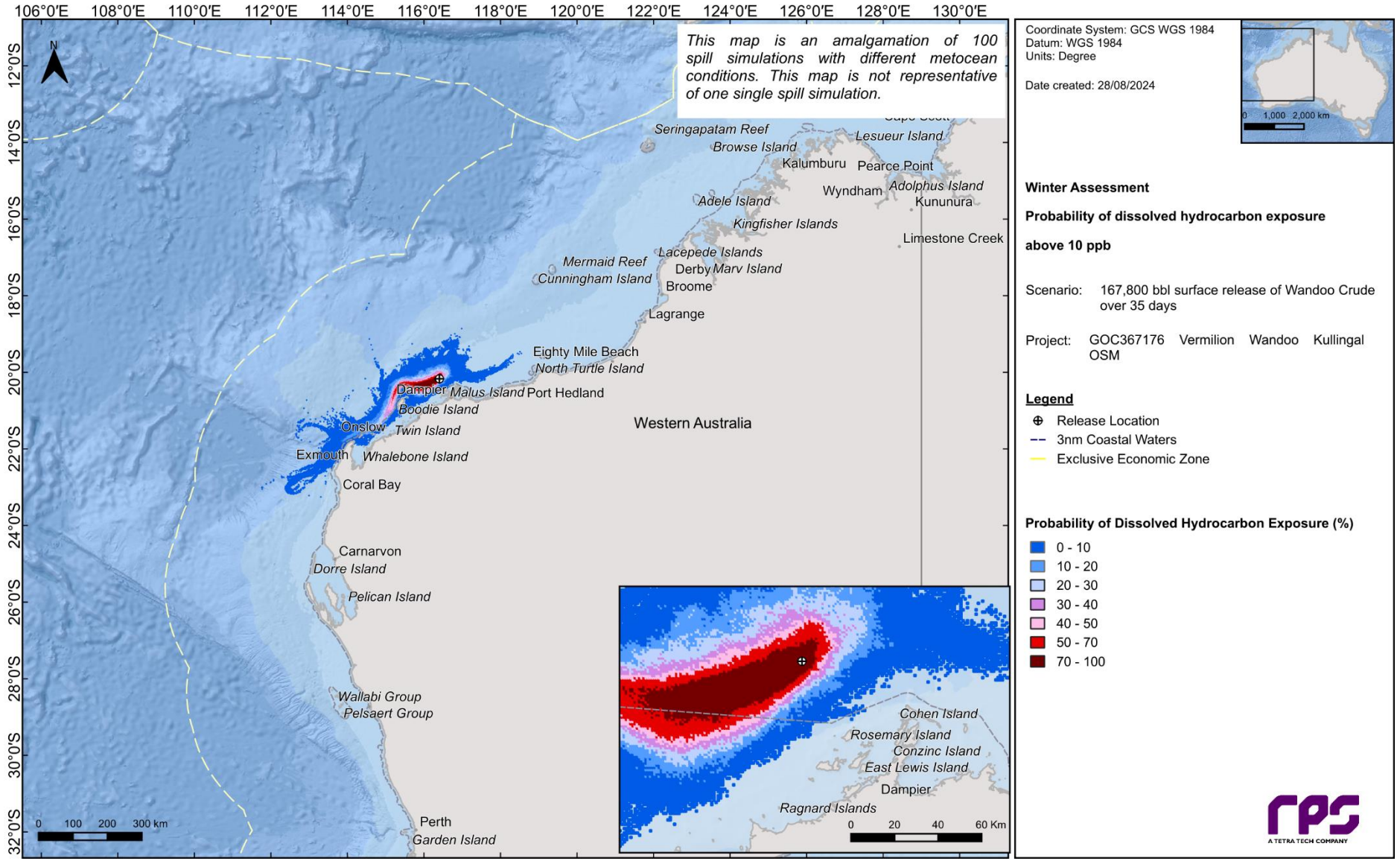


Figure 13.46 Probability of dissolved hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

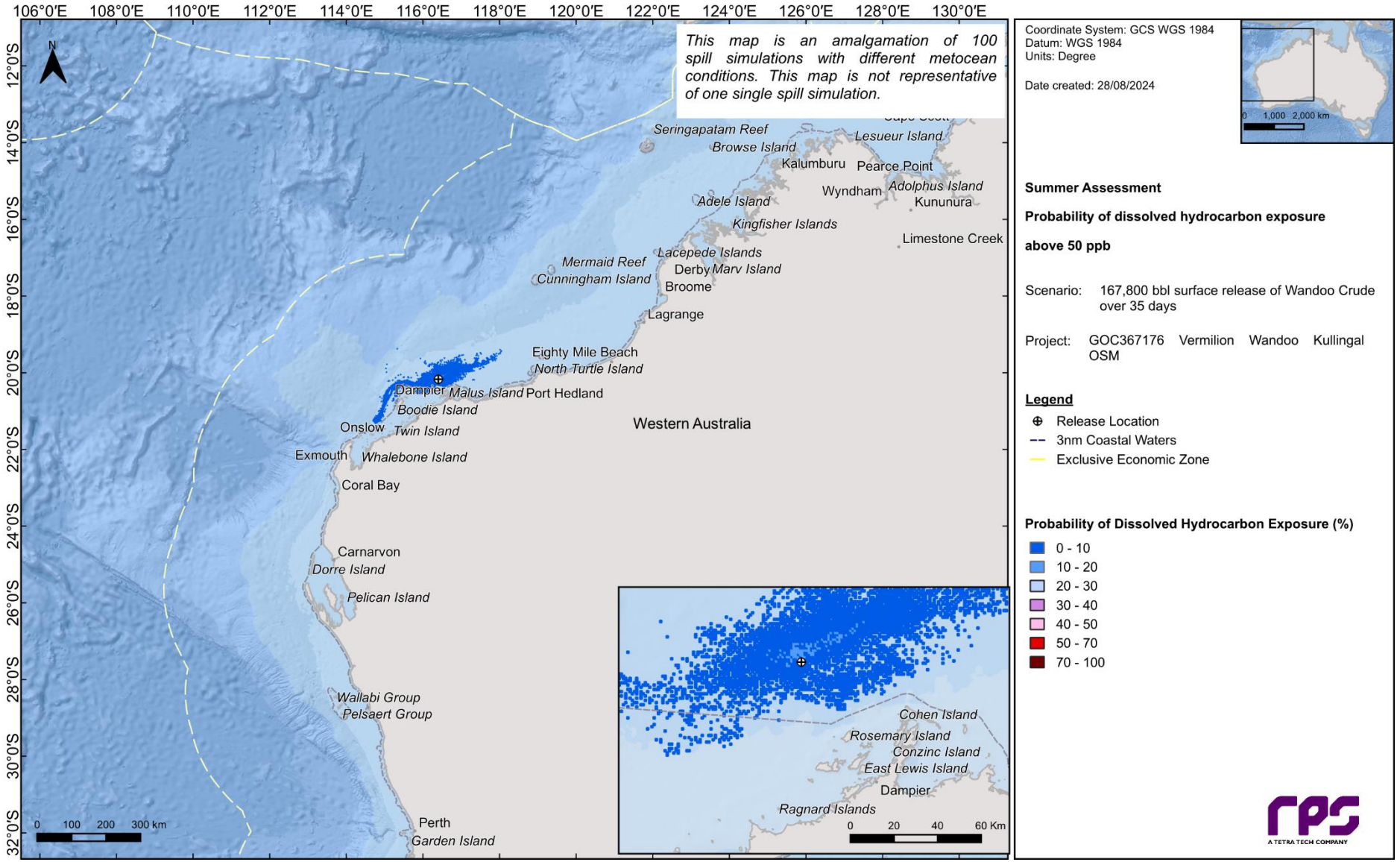


Figure 13.47 Probability of dissolved hydrocarbon exposure at, or above, 50 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

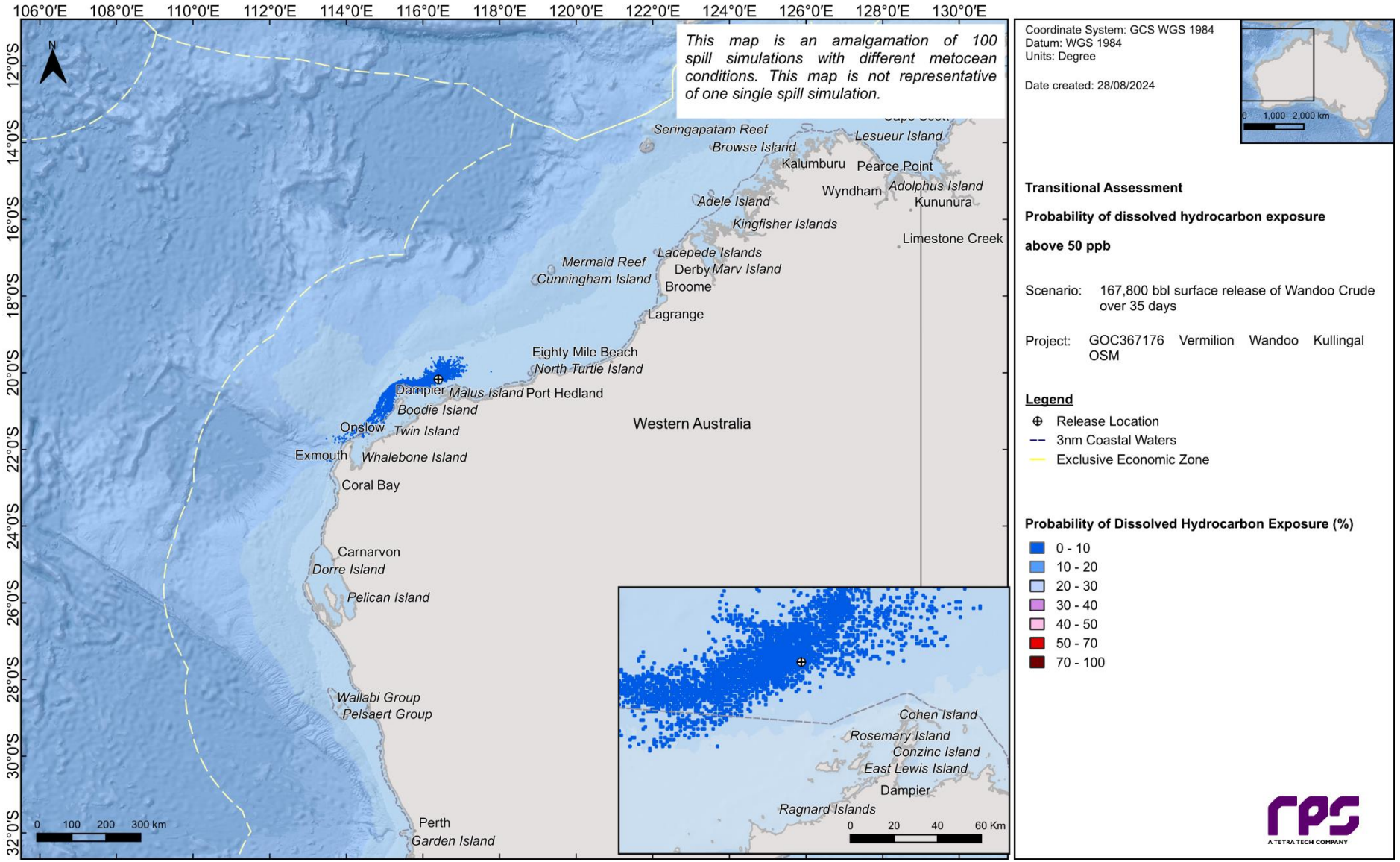


Figure 13.48 Probability of dissolved hydrocarbon exposure at, or above, 50 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

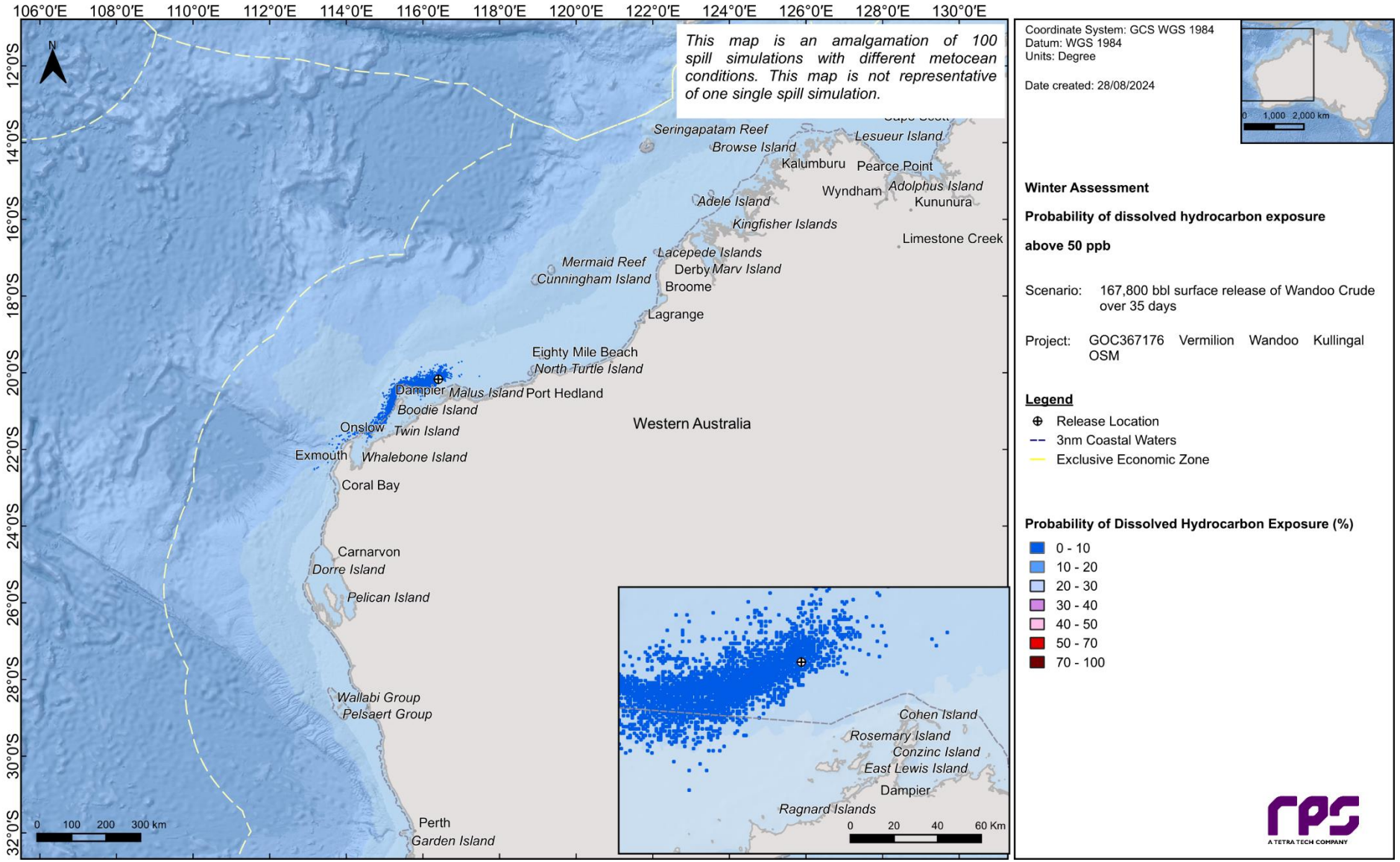


Figure 13.49 Probability of dissolved hydrocarbon exposure at, or above, 50 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

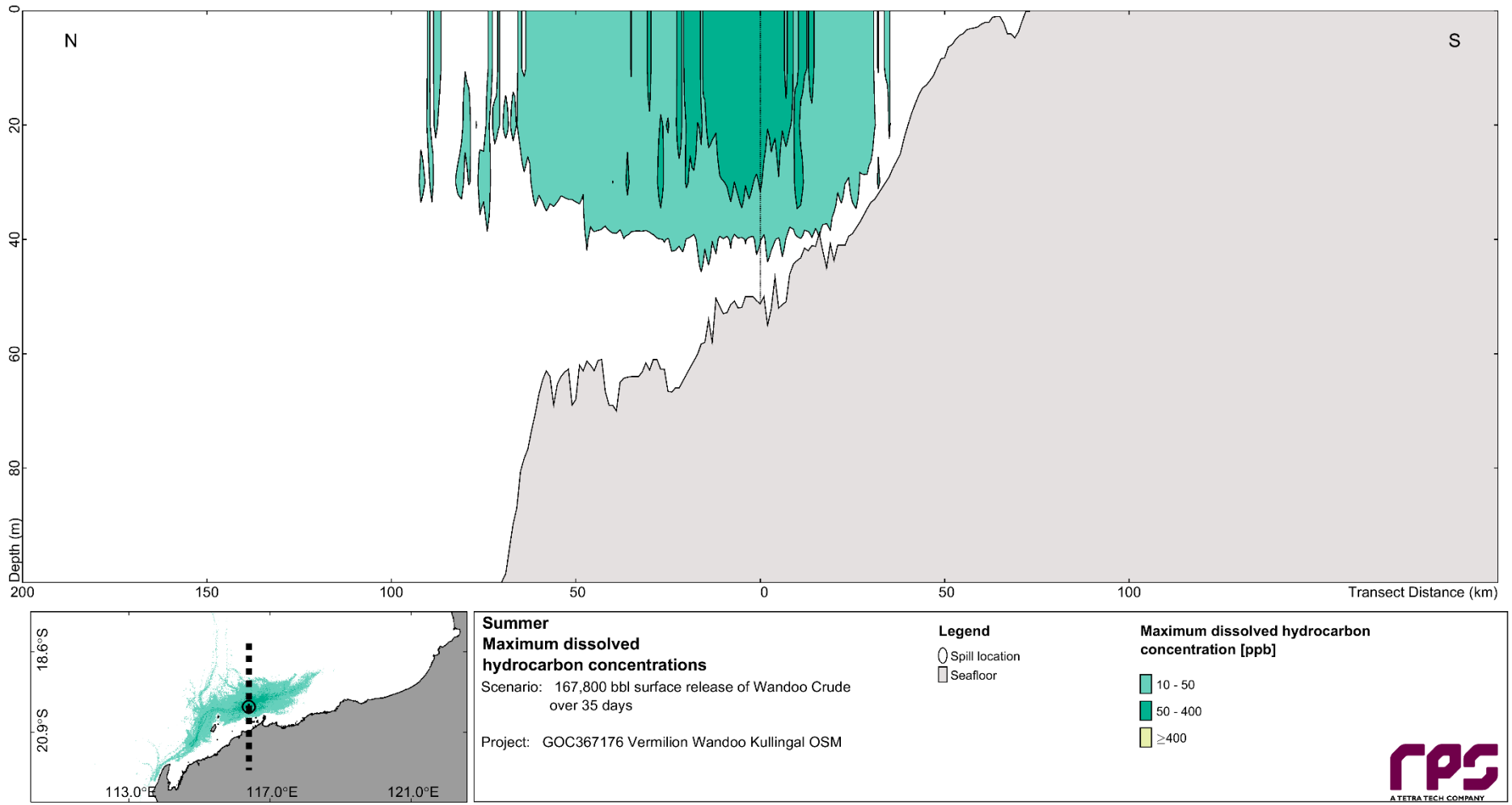


Figure 13.50 North-south cross-section transect of dissolved hydrocarbon concentrations exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

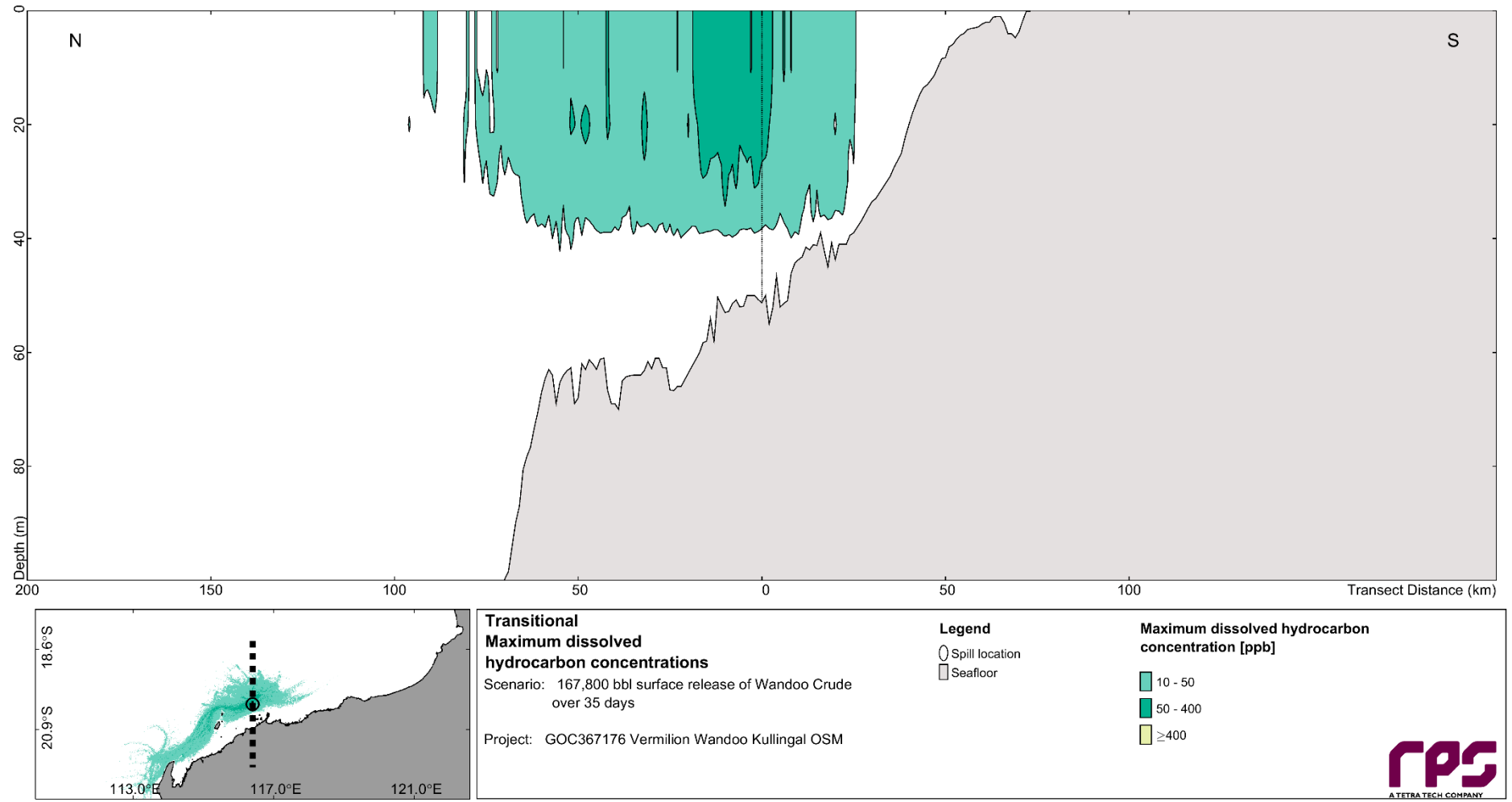


Figure 13.51 North-south cross-section transect of dissolved hydrocarbon concentrations exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

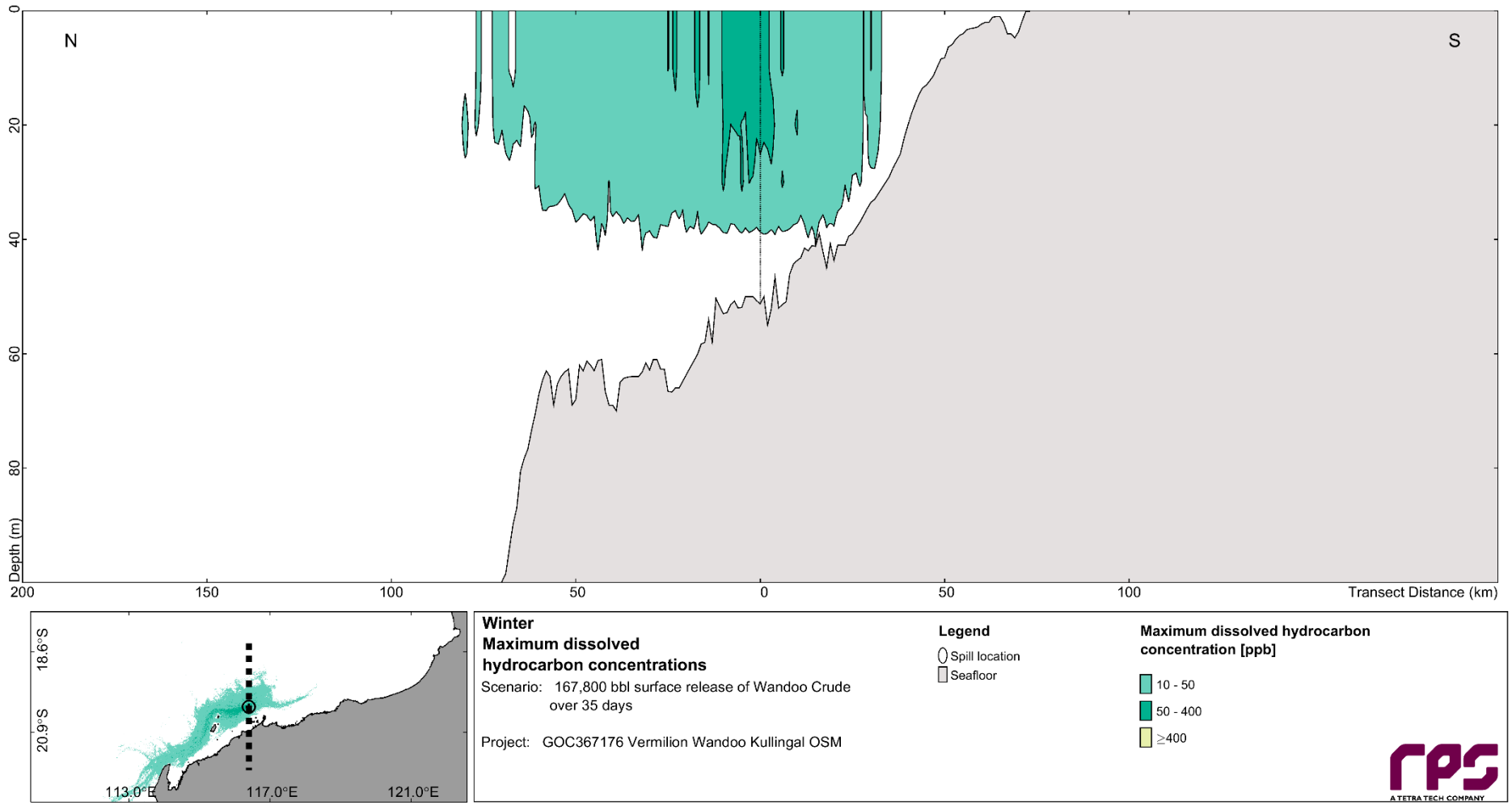


Figure 13.52 North-south cross-section transect of dissolved hydrocarbon concentrations exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

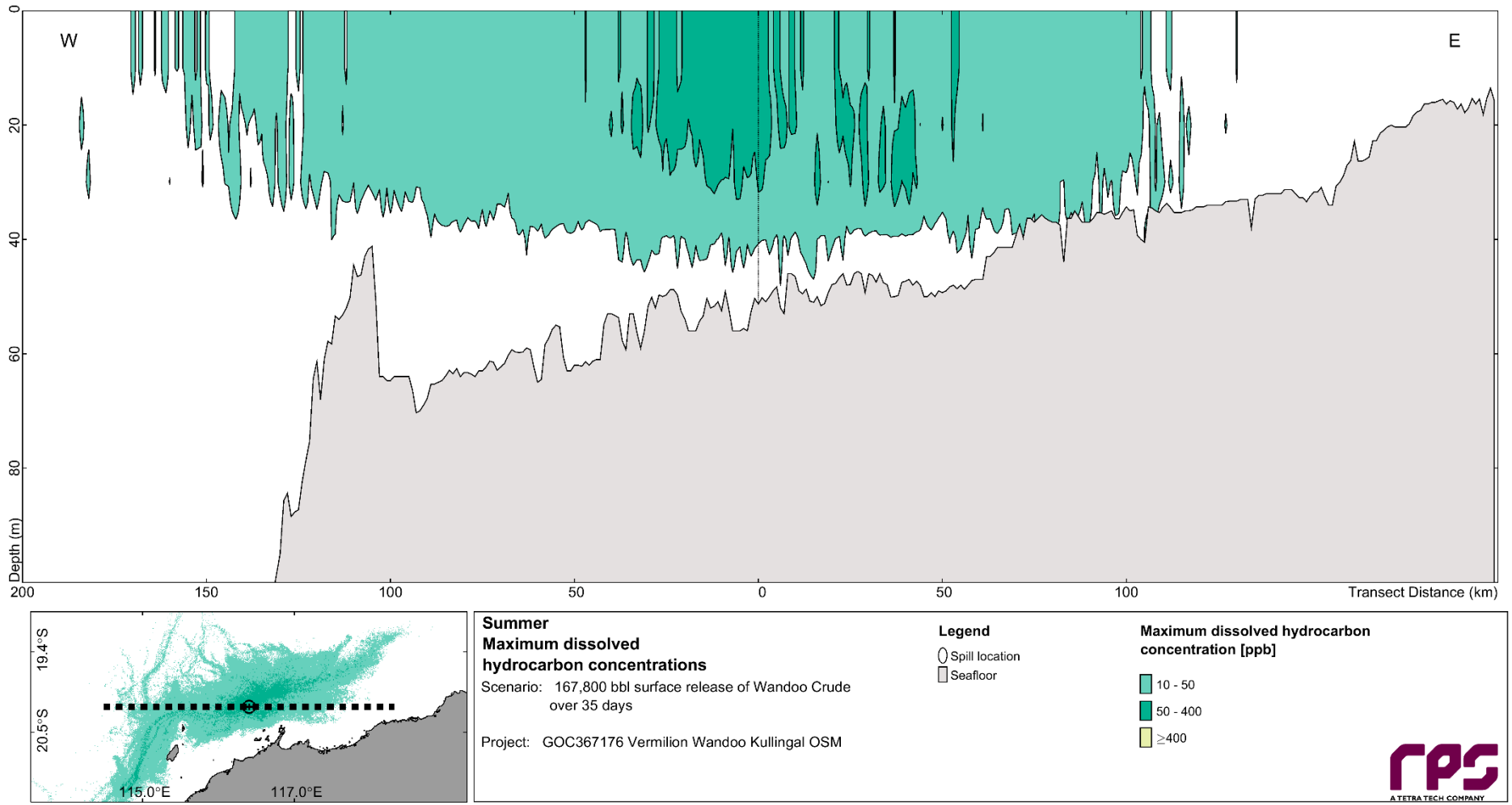


Figure 13.53 East-west cross-section transect of dissolved hydrocarbon concentrations exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

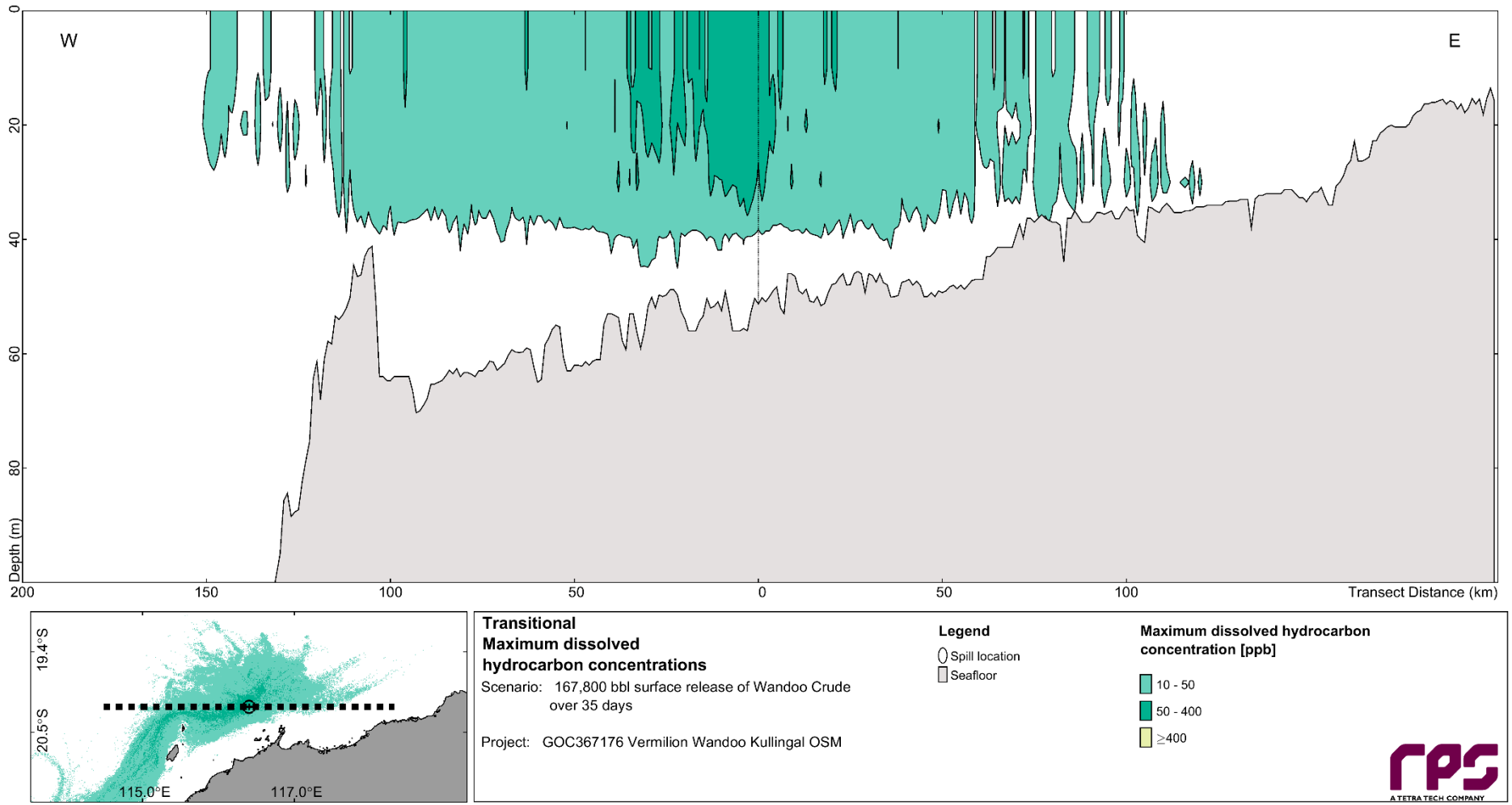


Figure 13.54 East-west cross-section transect of dissolved hydrocarbon concentrations exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

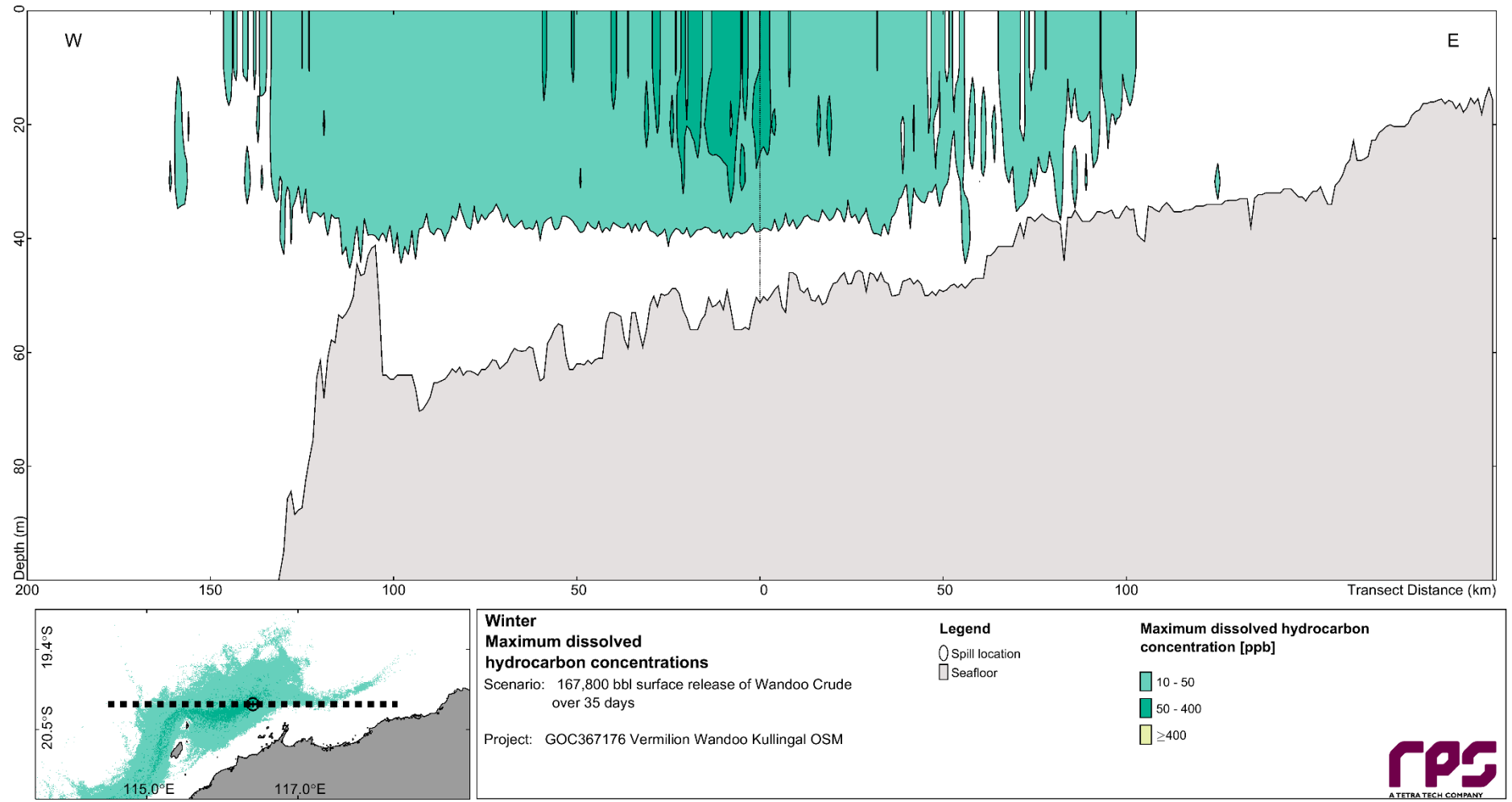


Figure 13.55 East-west cross-section transect of dissolved hydrocarbon concentrations exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

13.1.4.2 Entrained Hydrocarbons

Table 13.9 summarises the maximum distances from the release location to entrained hydrocarbon thresholds for each season. Concentrations exceeding 10 ppb may potentially extend up to 1,302 km from the release location. As the threshold increases to 100 ppb, the maximum distance decreases to 1,037 km.

Table 13.10 summarises the receptors exposed to entrained hydrocarbons per season (either at, or above, receptors in the water column).

For spills commencing during the summer months, the Glomar Shoals KEF recorded the highest probability (94%) of exposure to concentrations at, or above, 10 ppb, while the Montebello AMP recorded the highest probability of exposure for transitional (91%) and winter (99%) conditions. The shortest time to exposure at, or above, 10 ppb was recorded for the Montebello AMP with times of 21 hours during summer, 23 hours during transitional conditions, and 21 hours during winter. The highest recorded concentration, 3,007 ppb, occurred at Montebello AMP during winter.

Figure 13.56 to Figure 13.58 illustrate the zones of exposure to entrained hydrocarbons for each season, whilst Figure 13.59 to Figure 13.70 display the minimum exposure times and the probability of exposure to these hydrocarbons.

Seasonal cross-sectional transects (north-south and east-west) of the maximum entrained hydrocarbons in the vicinity of the release site, are presented in Figure 13.71 to Figure 13.76.

Table 13.9 Maximum distances from the release location to entrained hydrocarbon exposure thresholds following a surface LOWC at Kullingal. Results were calculated from 100 spill simulations per season.

Season	Distance and direction travelled	Entrained hydrocarbon exposure thresholds	
		10 ppb	100 ppb
Summer	Maximum distance (km) from release location	1,176	527
	Direction	Southwest	Southwest
Transitional	Maximum distance (km) from release location	1,302	1,037
	Direction	Southwest	Southwest
Winter	Maximum distance (km) from release location	1,224	574
	Direction	Southwest	Southwest

Table 13.10 Receptors predicted to be exposed by entrained hydrocarbons following a surface LOWC at Kullingal. Results were calculated from100 spill simulations per season.

Category	Name	Summer						Transitional						Winter					
		Probability (%) of entrained hydrocarbon concentration		Minimum time to receptor waters (hours) at		Maximum entrained hydrocarbon concentration (ppb)		Probability (%) of entrained hydrocarbon concentration		Minimum time to receptor waters (hours) at		Maximum entrained hydrocarbon concentration (ppb)		Probability (%) of entrained hydrocarbon concentration		Minimum time to receptor waters (hours) at		Maximum entrained hydrocarbon concentration (ppb)	
		≥ 10 ppb	≥ 100 ppb	≥ 10 ppb	≥ 100 ppb	averaged over all replicate spills	in the worst replicate	≥ 10 ppb	≥ 100 ppb	≥ 10 ppb	≥ 100 ppb	averaged over all replicate spills	in the worst replicate	≥ 10 ppb	≥ 100 ppb	≥ 10 ppb	≥ 100 ppb	averaged over all replicate spills	in the worst replicate
AMP	Abrolhos	1	NC	1,081	NC	<1	28	6	1	831	1,043	3	156	3	NC	986	NC	<1	17
	Argo-Rowley Terrace	7	NC	678	NC	2	46	18	NC	624	NC	4	38	15	NC	410	NC	5	59
	Carnarvon Canyon	3	NC	617	NC	<1	18	8	NC	740	NC	3	39	10	NC	762	NC	4	83
	Dampier	47	15	77	166	38	281	22	3	203	274	14	162	19	NC	314	NC	5	51
	Gascoyne	32	2	310	616	13	448	66	35	246	328	120	906	68	43	234	238	166	1,153
	Mermaid Reef	3	NC	1,010	NC	<1	23	NC	NC	NC	NC	NC	NC	1	NC	1,261	NC	<1	13
	Montebello	80	64	21	21	305	1,521	91	82	23	26	519	1,418	99	96	21	24	637	3,007
EEZ	Indonesia	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	2	NC	1,018	NC	<1	16
IPA	Nyangumarta Warrarn	4	NC	722	NC	2	27	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
KEF	Ancient coastline at 125 m depth contour	68	20	161	186	76	1,133	76	46	138	205	163	1,557	90	54	110	125	291	2,369

	Canyons linking the Argo Abyssal Plain with the Scott Plateau	38	7	266	395	27	445	62	44	209	272	126	1,592	1	NC	1,294	NC	<1	11
	Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	77	50	172	175	237	1,633
	Commonwealth waters adjacent to Ningaloo Reef	26	4	319	619	12	392	58	46	257	339	112	752	72	47	219	229	178	1,304
	Continental Slope Demersal Fish Communities	67	13	203	484	59	1,349	76	36	145	226	129	1,416	80	46	142	233	166	1,864
	Exmouth Plateau	24	NC	413	NC	6	84	50	6	381	555	22	207	57	12	350	367	32	382
	Glomar Shoals	94	61	73	94	164	732	67	42	80	105	125	608	68	42	63	72	219	1,149
	Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	5	NC	678	NC	2	46	4	NC	749	NC	2	41	8	NC	648	NC	3	53
	Wallaby Saddle	NC	NC	NC	NC	NC	NC	1	NC	1,263	NC	<1	21	2	NC	990	NC	<1	17

	Western demersal slope and associated fish communities	2	NC	778	NC	<1	39	15	1	666	953	4	187	5	NC	879	NC	2	35
MP	Barrow Island	46	11	104	115	30	474	69	42	114	123	91	415	86	46	85	121	126	537
	Eighty Mile Beach	26	NC	410	NC	8	65	5	NC	502	NC	2	28	2	NC	1,185	NC	<1	14
	Montebello Islands	58	35	79	83	208	1,942	76	58	60	66	294	2,062	93	78	57	60	622	2,586
	Ningaloo	26	4	319	619	12	392	58	46	257	339	112	752	72	47	219	229	178	1,304
	Rowley Shoals	3	NC	679	NC	2	33	3	NC	792	NC	<1	31	8	NC	670	NC	3	53
NR	Barrow Island	12	NC	338	NC	4	66	24	NC	196	NC	8	64	51	NC	262	NC	15	61
	Great Sandy Island	11	3	227	855	7	139	11	NC	585	NC	4	42	55	NC	257	NC	18	95
	Lowendal Islands	22	9	149	484	33	588	37	21	134	147	48	314	79	37	153	188	91	351
	Thevenard Island	10	NC	498	NC	4	73	43	9	217	493	22	144	57	2	188	408	21	160
RAM SAR	Eighty-mile Beach	8	NC	646	NC	2	29	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
RSB	Ashworth Shoal	2	NC	1,247	NC	<1	15	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Australind Shoal	8	NC	897	NC	2	34	2	NC	755	NC	2	21	8	NC	301	NC	5	36
	Barrow Island Reefs and Shoals	11	3	226	851	8	147	14	NC	360	NC	4	44	59	NC	256	NC	19	96
	Baylis Patches	4	NC	845	NC	<1	28	23	NC	680	NC	6	34	8	NC	495	NC	4	27
	Bennett Shoal	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	818	NC	2	13

	Beryl Reef	4	NC	909	NC	2	27	NC	NC	NC	NC	NC	NC	27	NC	263	NC	8	42
	Brewis Reef	10	NC	807	NC	4	46	43	NC	216	NC	14	81	56	3	175	421	23	114
	Camplin Shoal	NC	NC	NC	NC	NC	NC	2	NC	1,320	NC	<1	12	1	NC	757	NC	2	16
	Clerke Reef	2	NC	799	NC	<1	20	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Cod Bank	20	2	112	884	9	114	13	NC	470	NC	4	92	6	NC	620	NC	2	20
	Combe Reef	6	NC	794	NC	3	56	42	3	470	763	25	171	62	NC	235	NC	21	78
	Cooper Shoal	NC	NC	NC	NC	NC	NC	1	NC	1,344	NC	<1	12	1	NC	734	NC	2	18
	Courtenay Shoal	17	NC	153	NC	6	50	12	NC	462	NC	4	47	1	NC	1,193	NC	<1	11
	Dailey Shoal	17	1	485	721	9	106	53	28	292	421	64	346	67	30	208	210	75	365
	Dockrell Reef	5	NC	529	NC	2	32	1	NC	898	NC	<1	19	NC	NC	NC	NC	NC	NC
	Eliassen Rocks	3	NC	527	NC	<1	19	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Exmouth Reef	4	NC	896	NC	2	52	30	NC	508	NC	9	49	46	NC	260	NC	13	50
	Fairway Reef	9	NC	696	NC	3	43	43	3	422	719	20	110	58	NC	211	NC	21	88
	Flinders Shoal	5	1	266	1,091	4	108	5	NC	1,172	NC	2	25	12	NC	399	NC	4	20
	Fortescue Reef	6	NC	527	NC	2	24	NC	NC	NC	NC	NC	NC	8	NC	278	NC	3	24
	Glennie Patches	6	NC	890	NC	2	22	1	NC	756	NC	<1	13	4	NC	447	NC	3	41
	Glomar Shoal	77	33	152	222	84	450	51	25	140	154	54	330	45	22	108	148	72	699
	Gorgon Patch	3	NC	1,000	NC	<1	22	NC	NC	NC	NC	NC	NC	5	NC	393	NC	2	35
	Hammersley Shoal	31	11	154	177	24	236	17	NC	325	NC	8	79	3	NC	531	NC	2	30
	Hastings Shoal	3	NC	1,017	NC	<1	14	NC	NC	NC	NC	NC	NC	5	NC	393	NC	2	27
	Hayman Rock	4	NC	832	NC	2	25	11	NC	628	NC	4	16	15	NC	287	NC	6	43

	Hayward Rock	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	848	NC	<1	24
	Herald Reef	3	NC	904	NC	2	61	NC	NC	NC	NC	NC	NC	5	NC	408	NC	2	26
	Hood Reef	13	NC	660	NC	5	48	50	16	409	421	42	276	62	7	209	330	33	269
	Imperieuse Reef	3	NC	680	NC	2	22	3	NC	797	NC	<1	27	6	NC	695	NC	3	53
	Inner Northwest Patch	5	NC	994	NC	2	18	NC	NC	NC	NC	NC	NC	5	NC	414	NC	3	39
	Koolinda Patch	3	NC	1,014	NC	<1	19	NC	NC	NC	NC	NC	NC	5	NC	393	NC	2	32
	Lightfoot Reef	6	NC	280	NC	3	70	4	NC	1,184	NC	2	24	2	NC	941	NC	2	13
	Little Shoals	4	NC	282	NC	4	99	1	NC	1,244	NC	<1	14	5	NC	402	NC	3	25
	Locker Reef	4	NC	796	NC	2	23	14	NC	618	NC	4	18	15	NC	287	NC	7	53
	Madeleine Shoals	46	11	116	166	36	283	20	2	256	310	14	128	19	NC	324	NC	5	41
	Manicom Bank	2	NC	1,019	NC	<1	12	NC	NC	NC	NC	NC	NC	4	NC	528	NC	2	27
	Mardie Rock	3	NC	1,004	NC	<1	17	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	McLennan Bank	13	2	117	897	8	115	6	NC	507	NC	3	57	23	NC	155	NC	10	67
	Meda Reef	6	NC	514	NC	3	57	NC	NC	NC	NC	NC	NC	4	NC	798	NC	2	13
	Mermaid Reef	3	NC	1,010	NC	<1	17	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Miles Shoal	6	NC	901	NC	2	18	NC	NC	NC	NC	NC	NC	4	NC	536	NC	3	26
	Montebello Shoals	46	24	85	103	80	596	61	42	77	115	124	589	93	63	74	91	178	746
	Moresby Shoals	4	NC	319	NC	3	79	NC	NC	NC	NC	NC	NC	5	NC	400	NC	2	28
	Nares Rock	3	NC	893	NC	3	97	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Ningaloo Reef	10	2	586	687	5	144	49	18	384	398	46	372	58	8	257	470	31	372

	North West Reef	17	2	119	505	9	124	50	11	473	583	36	226	60	1	239	581	25	114
	O'Grady Shoal	9	NC	490	NC	3	38	1	NC	909	NC	<1	16	11	NC	399	NC	3	27
	Otway Reef	10	NC	541	NC	4	59	46	11	424	625	39	349	65	7	212	345	36	167
	Outtrim Patches	22	4	367	700	16	259	53	42	258	421	91	312	71	41	206	208	99	551
	Paroo Shoal	4	NC	900	NC	<1	17	NC	NC	NC	NC	NC	NC	4	NC	533	NC	2	20
	Pearl Reef	4	NC	919	NC	<1	16	14	NC	760	NC	4	27	21	NC	283	NC	6	41
	Penguin Bank	25	6	153	431	21	256	58	24	142	245	78	361	77	48	149	172	100	375
	Poivre Reef	19	7	153	166	18	278	55	10	161	524	38	273	75	26	138	219	55	217
	Rankin Bank	66	7	244	435	37	238	71	9	239	309	39	202	80	32	165	359	89	413
	Ripple Shoals	12	3	179	874	8	188	16	NC	306	NC	5	45	50	NC	299	NC	16	78
	Roller Shoal	3	NC	896	NC	<1	12	NC	NC	NC	NC	NC	NC	4	NC	534	NC	2	25
	Rosily Shoals	19	5	166	433	15	172	56	28	163	259	68	376	75	40	160	274	78	233
	Saladin Shoal	2	NC	1,015	NC	<1	13	NC	NC	NC	NC	NC	NC	4	NC	529	NC	2	21
	Santo Rock	7	NC	822	NC	2	33	25	NC	604	NC	7	35	24	NC	326	NC	10	90
	South East Reef	10	NC	526	NC	3	33	3	NC	718	NC	<1	18	NC	NC	NC	NC	NC	NC
	South West Reef	10	NC	505	NC	3	33	3	NC	532	NC	<1	15	4	NC	533	NC	<1	24
	Southwest Patch	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
	Spider Reef	6	NC	721	NC	2	30	36	NC	471	NC	10	52	48	NC	286	NC	12	64
	Sultan Reef	8	NC	869	NC	3	55	17	NC	305	NC	5	27	35	NC	189	NC	10	42
	Taunton Reef	10	2	205	998	6	151	21	NC	306	NC	5	30	42	NC	327	NC	13	59
	Tongue Shoals	6	NC	900	NC	2	25	NC	NC	NC	NC	NC	NC	5	NC	408	NC	4	43

	Trap Reef	14	NC	485	NC	7	98	44	13	204	484	44	291	66	2	175	383	30	155
	Tryal Rocks	58	36	81	88	109	782	82	61	70	78	173	791	93	80	51	56	310	2,012
	Vaughan Shoal	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	827	NC	2	24
	Ward Reef	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	5	NC	394	NC	2	23
	Web Reef	4	NC	757	NC	2	27	30	NC	484	NC	9	51	50	NC	336	NC	12	46
	Weeks Shoal	3	NC	906	NC	2	25	NC	NC	NC	NC	NC	NC	4	NC	527	NC	2	36
	West Reef	4	NC	290	NC	3	100	1	NC	1,218	NC	<1	14	4	NC	399	NC	2	14
State and Territory Waters	WA	71	48	23	24	210	1,942	84	67	36	40	294	2,062	99	96	40	41	622	2,586

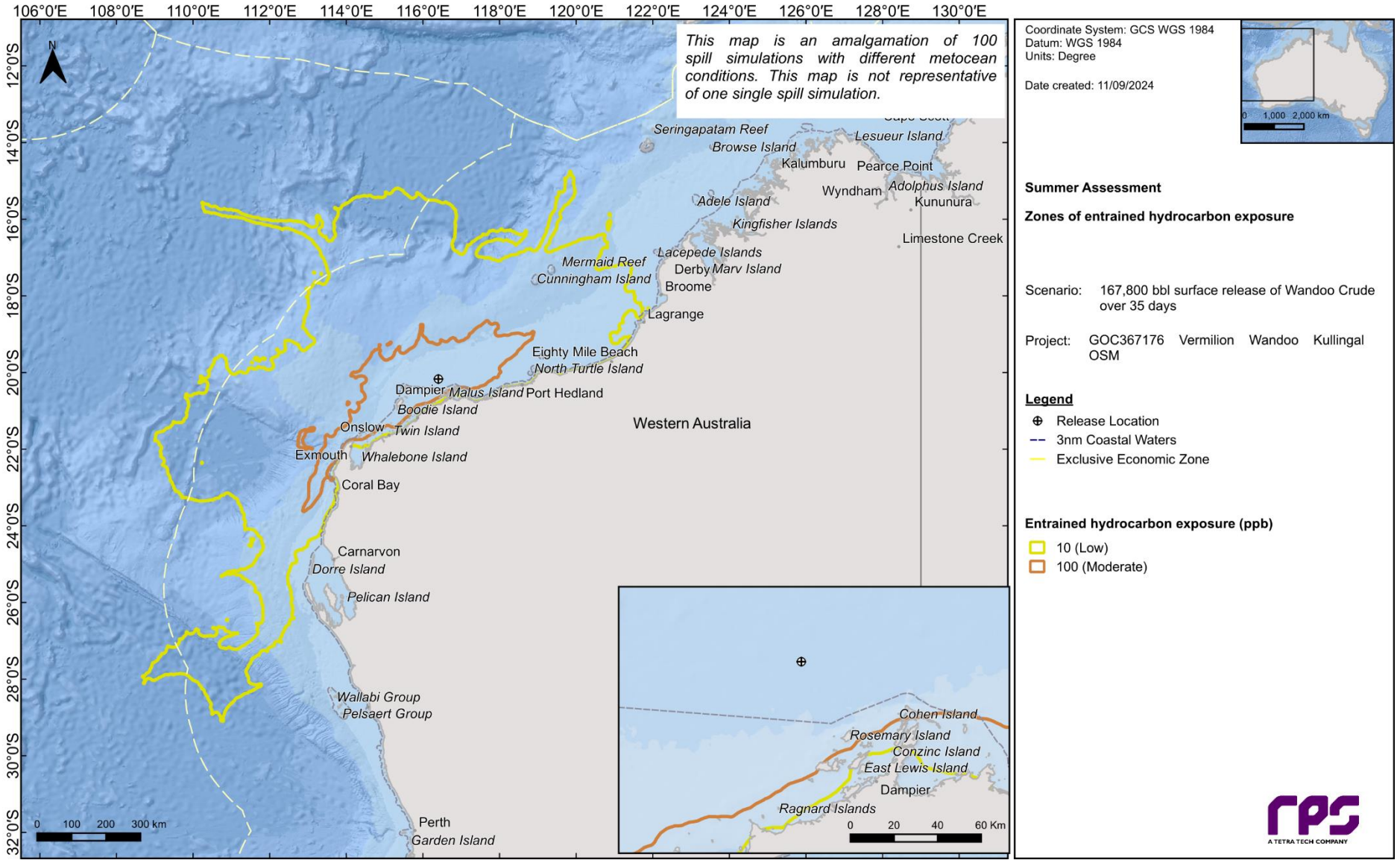


Figure 13.56 Predicted zones of entrained hydrocarbon exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

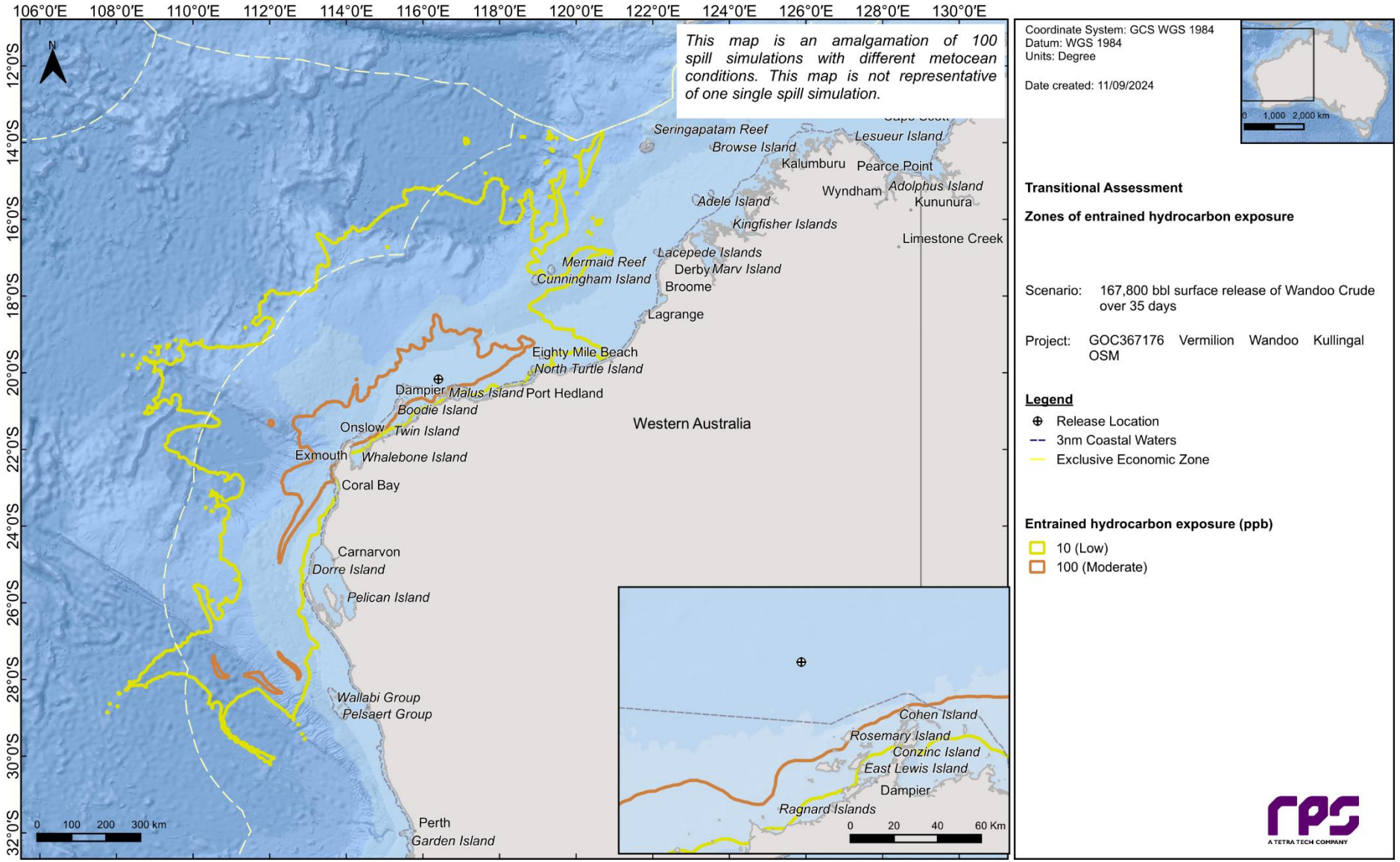


Figure 13.57 Predicted zones of entrained hydrocarbon exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

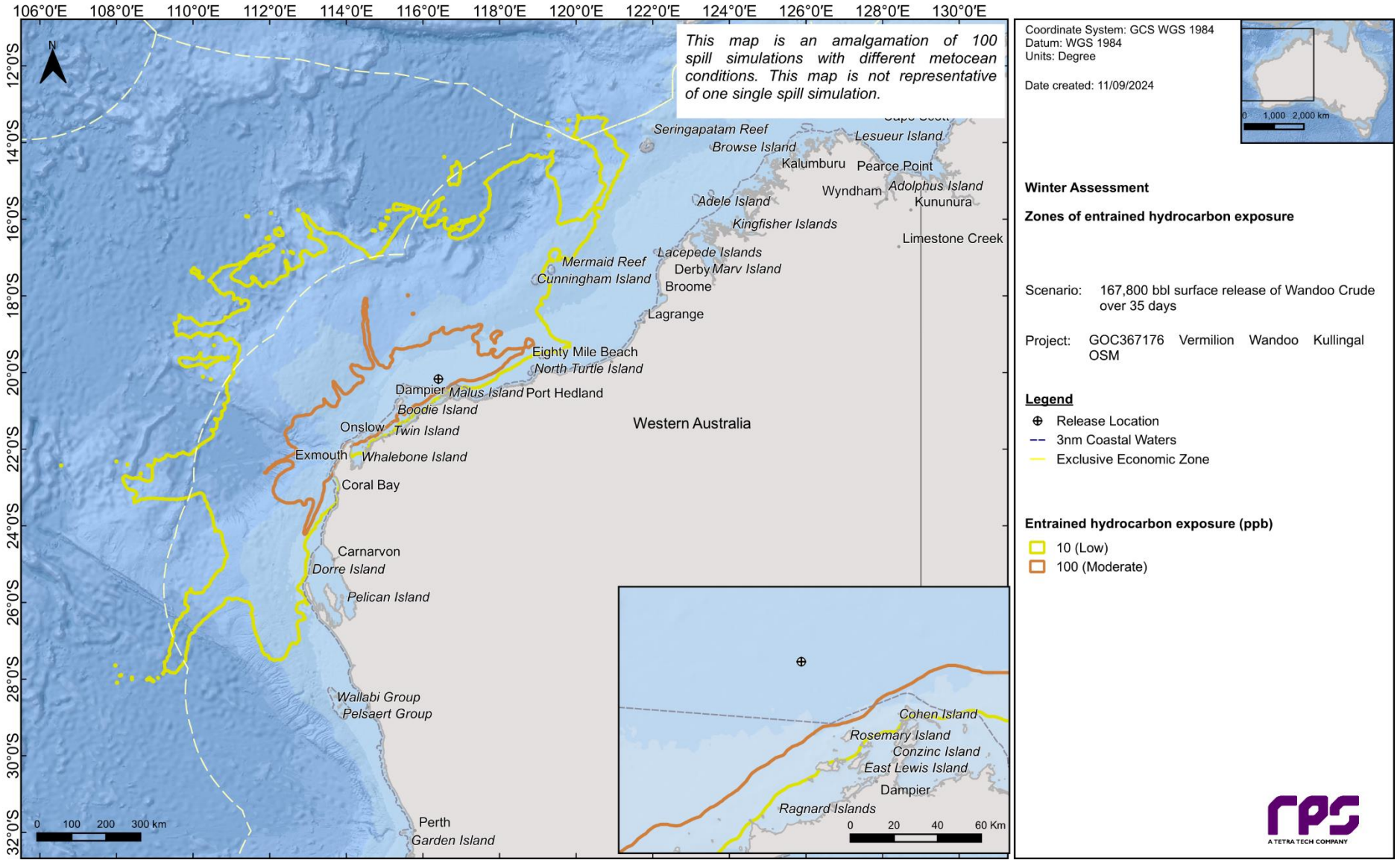


Figure 13.58 Predicted zones of entrained hydrocarbon exposure following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

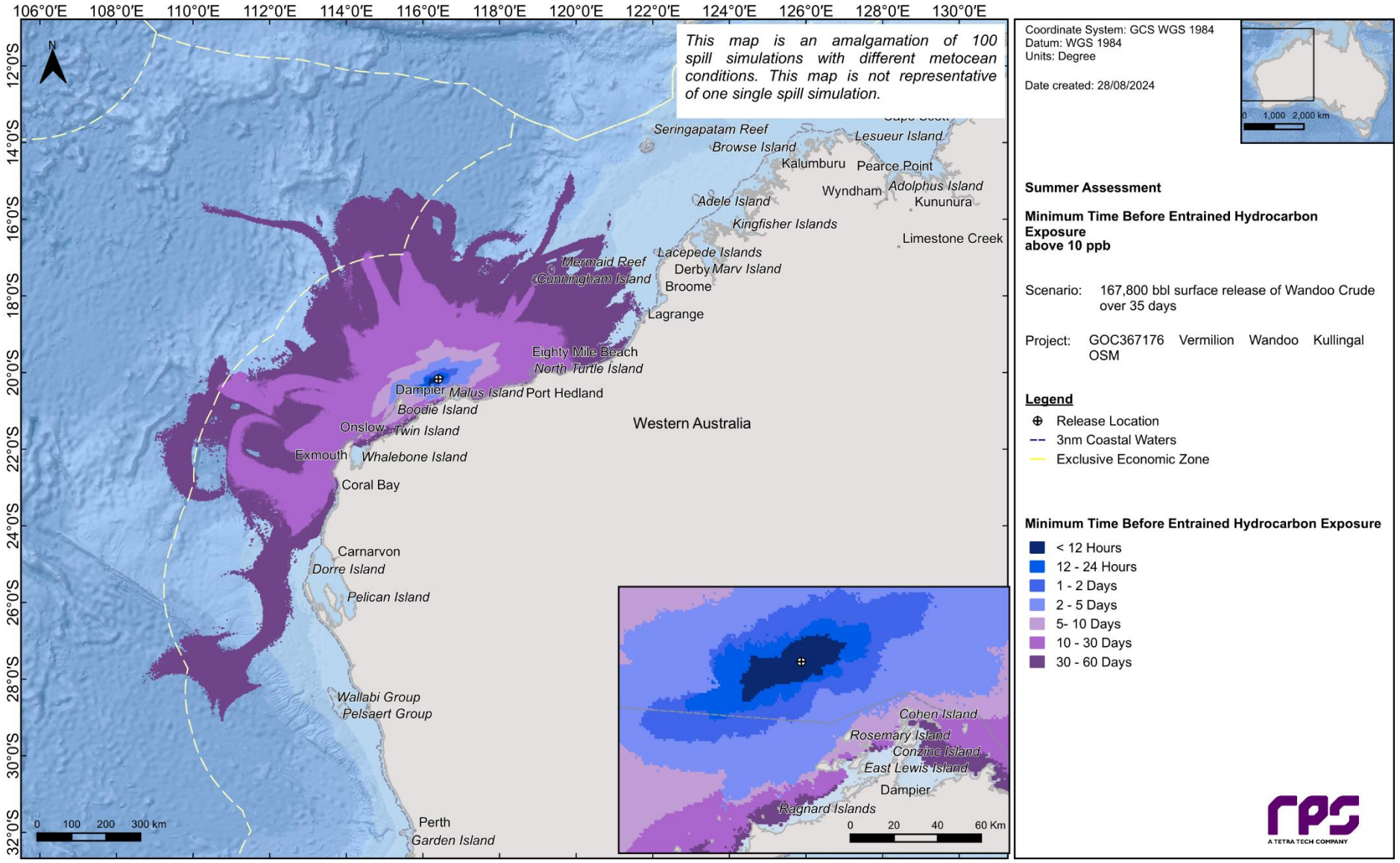


Figure 13.59 Minimum time before entrained hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

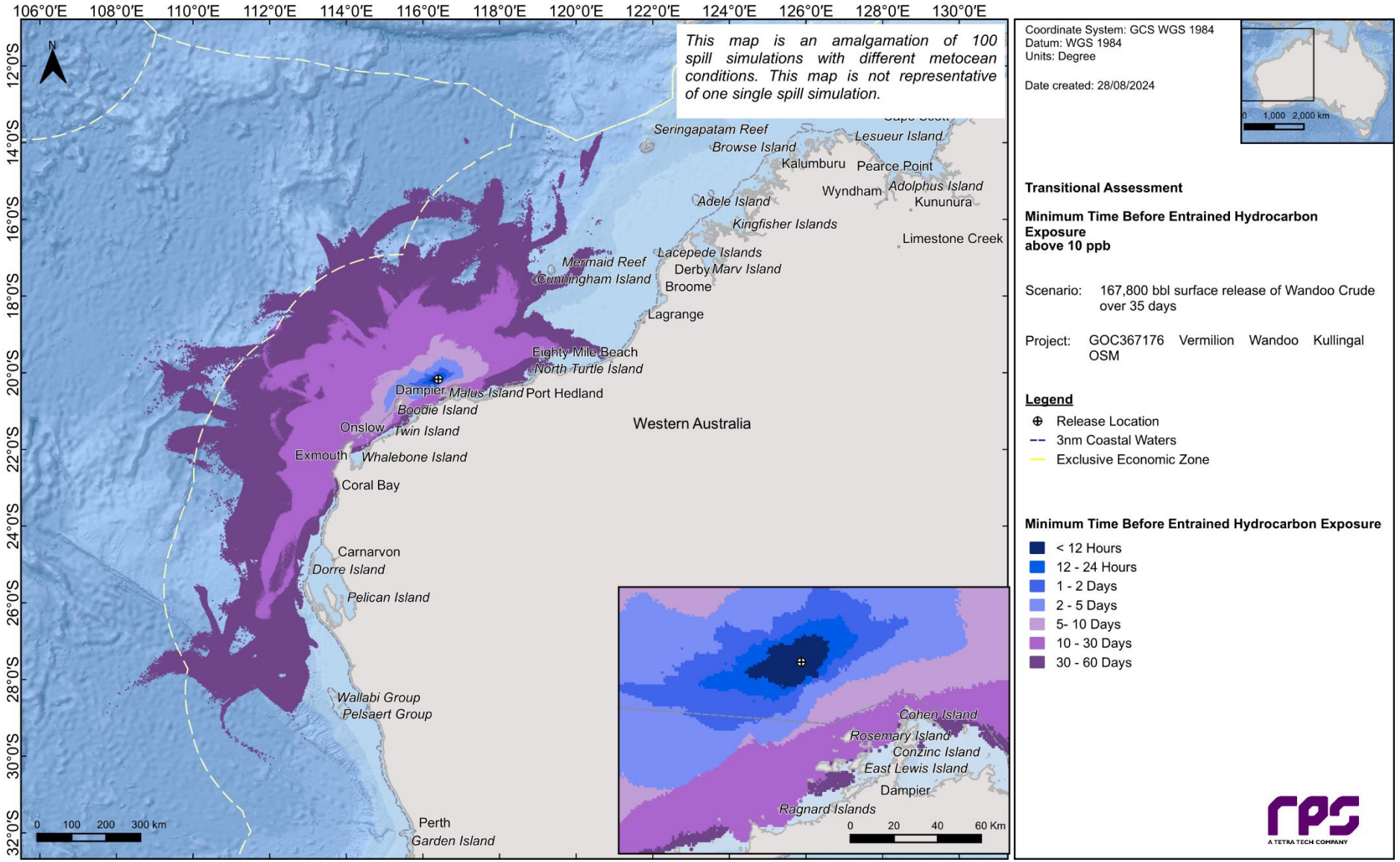


Figure 13.60 Minimum time before entrained hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

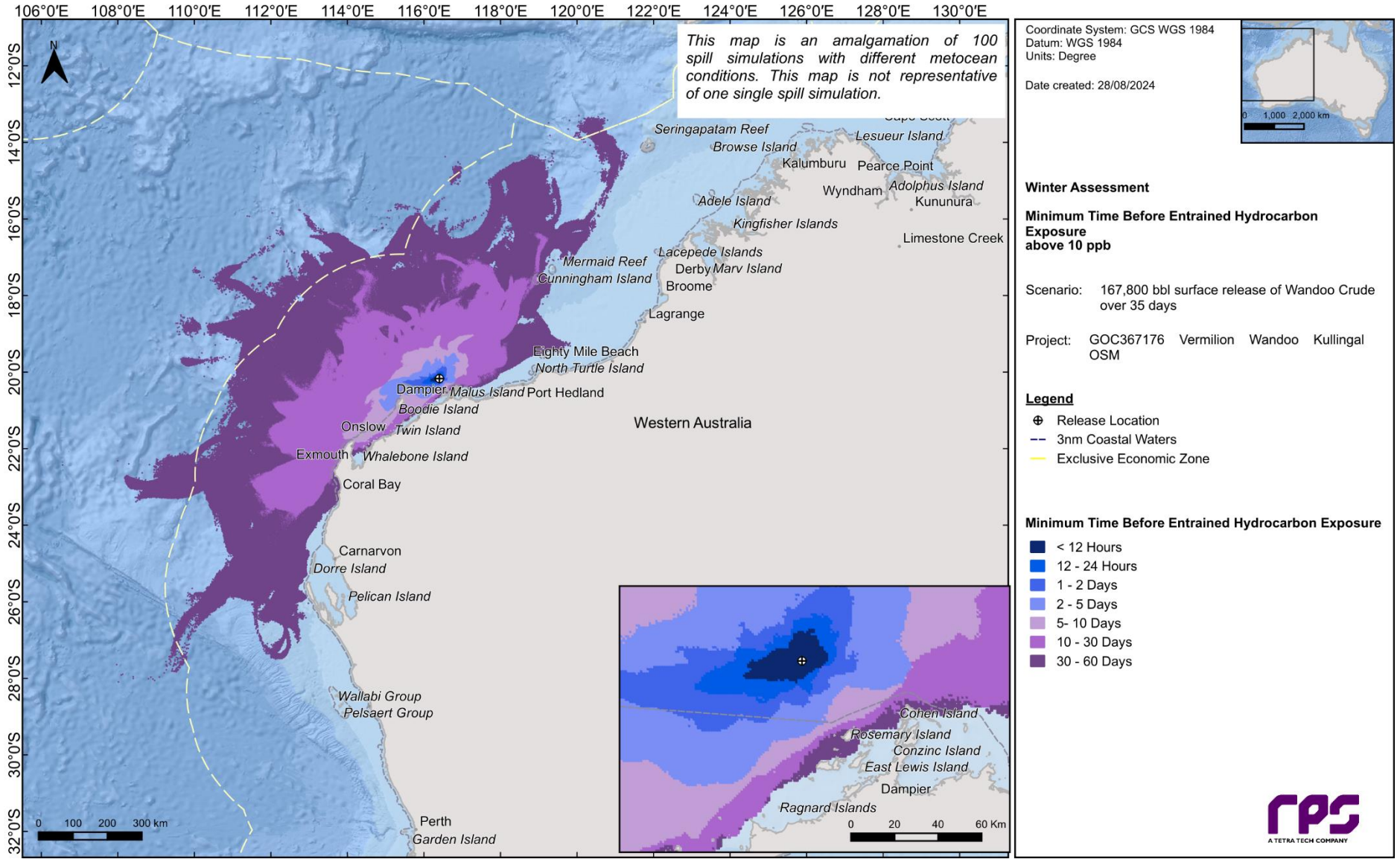


Figure 13.61 Minimum time before entrained hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

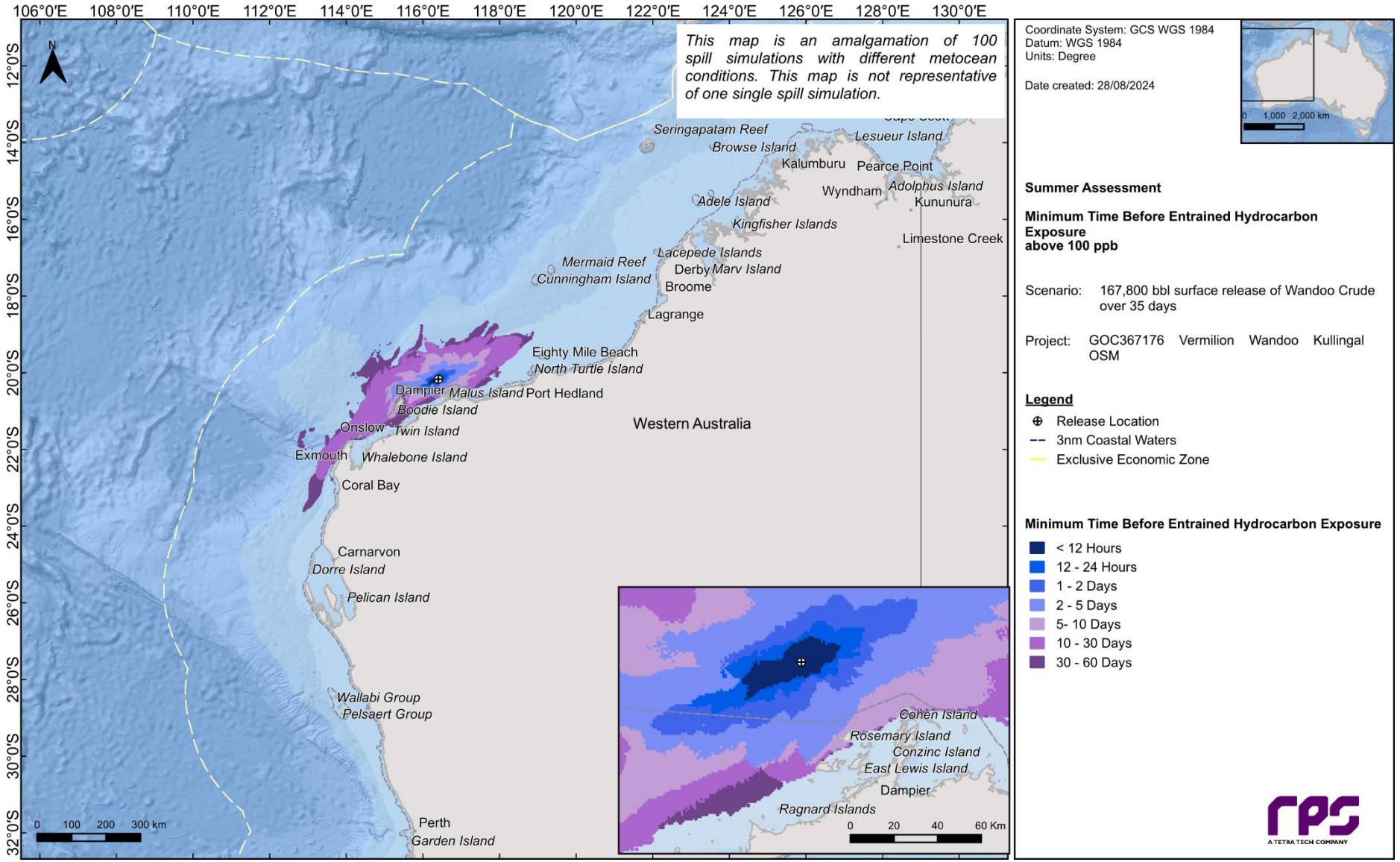


Figure 13.62 Minimum time before entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

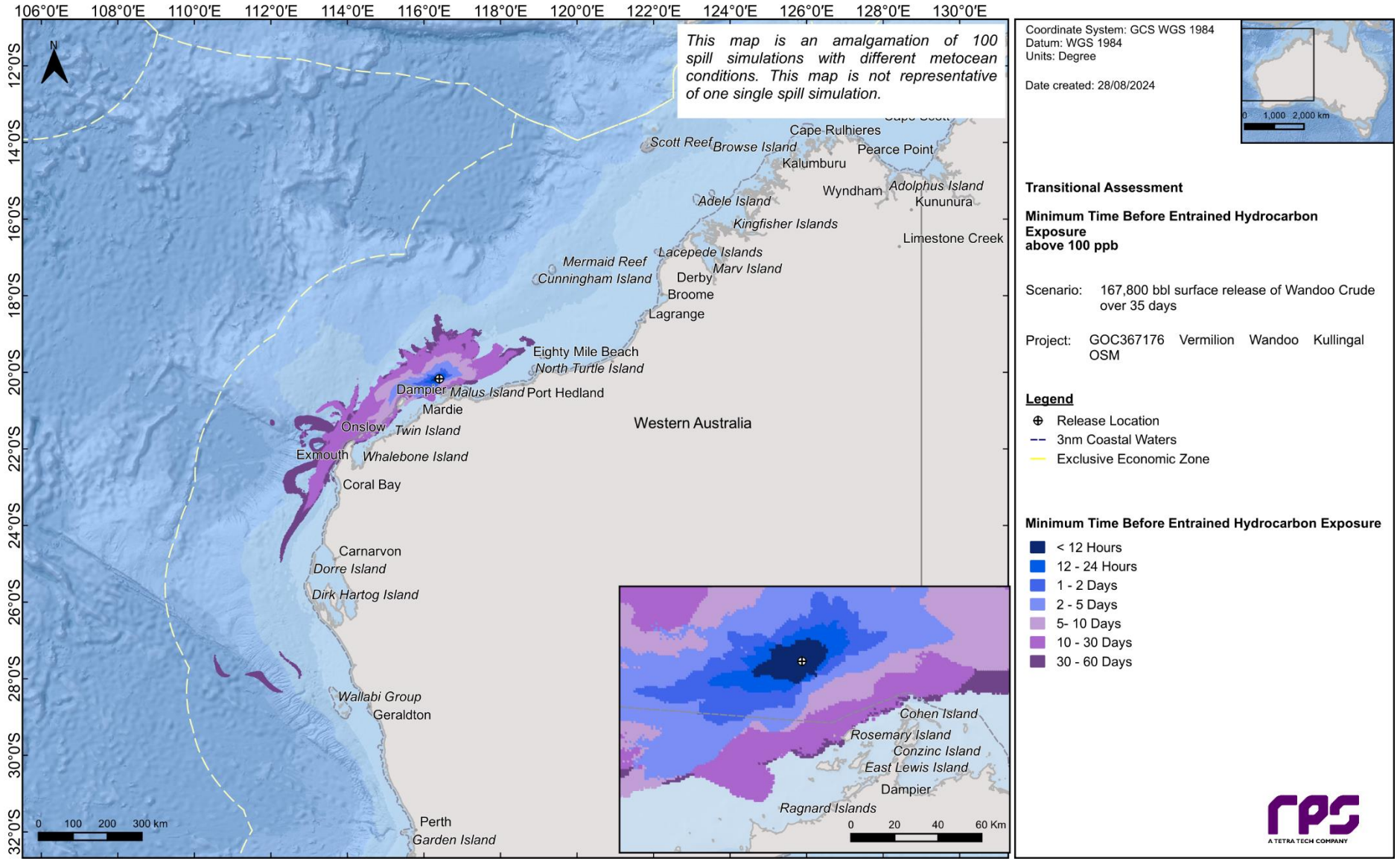


Figure 13.63 Minimum time before entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

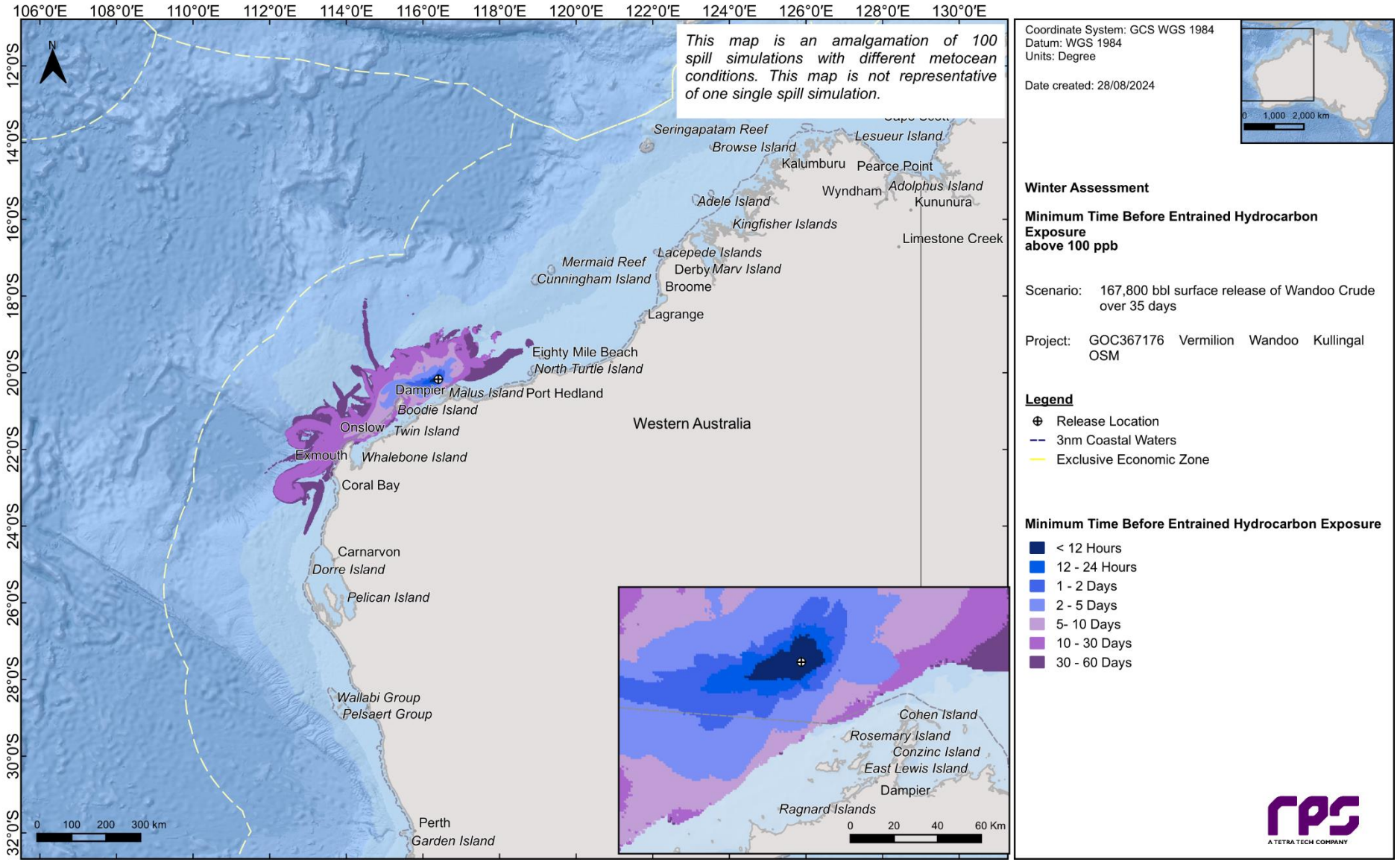


Figure 13.64 Minimum time before entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

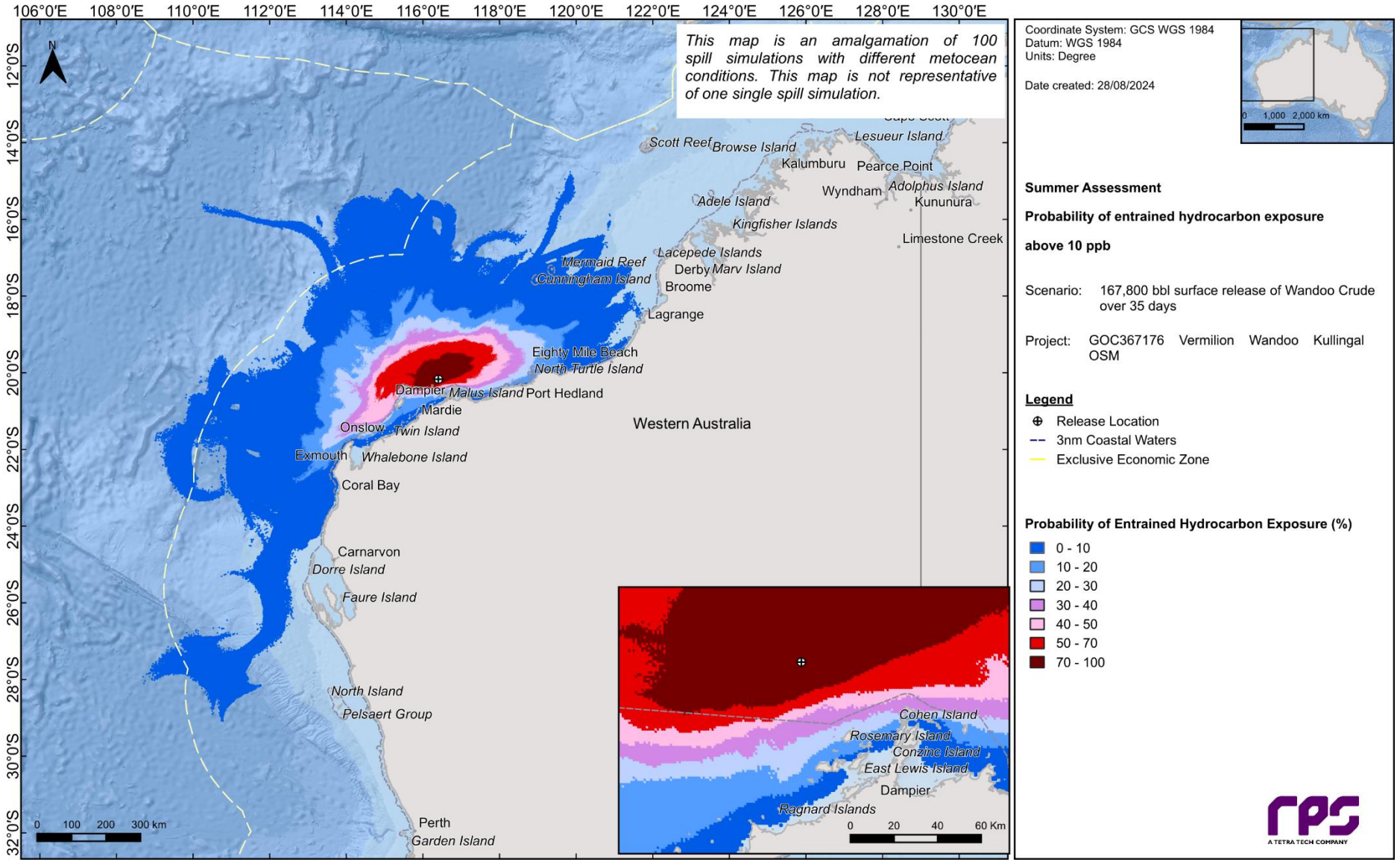


Figure 13.65 Probability of entrained hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

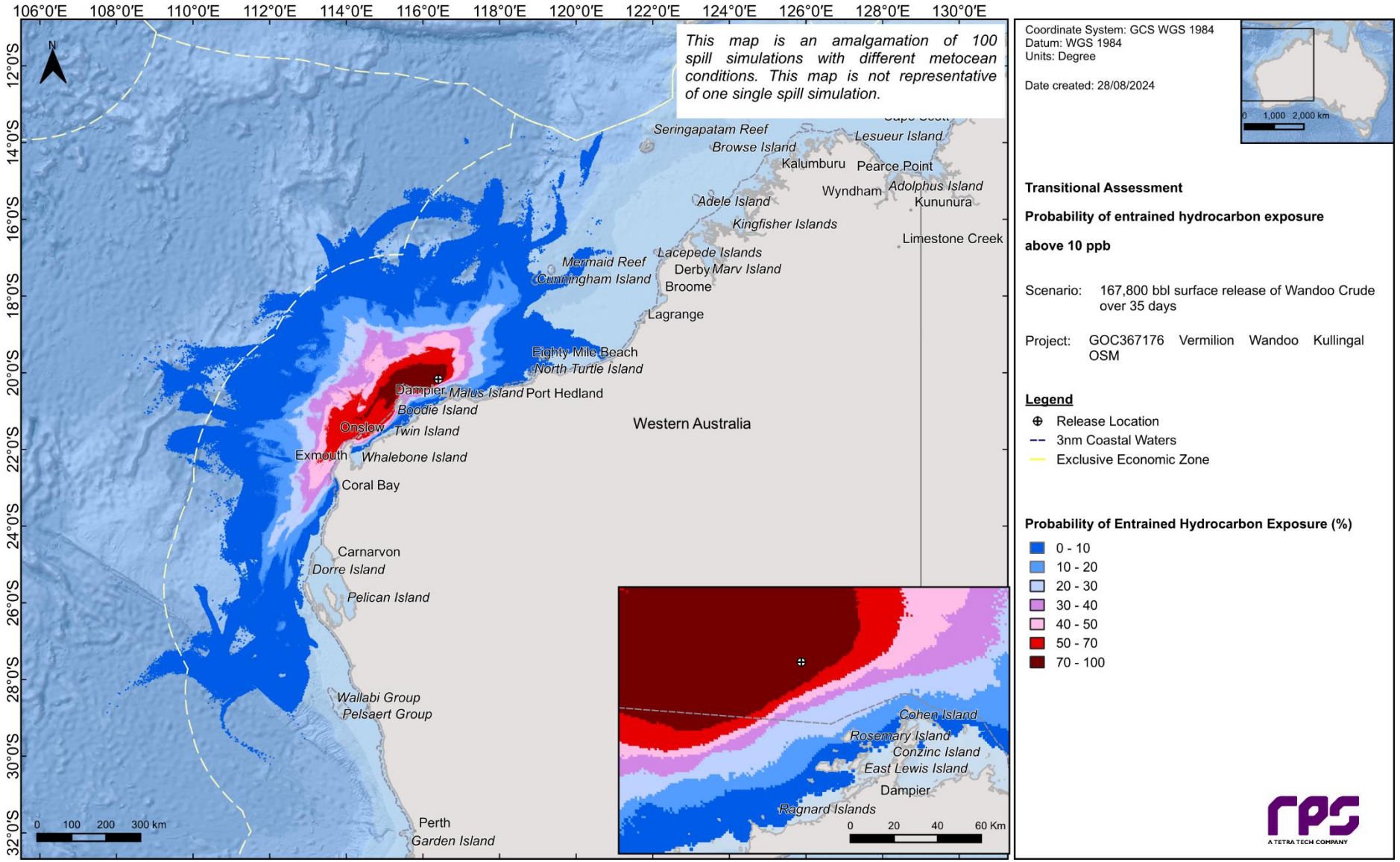


Figure 13.66 Probability of entrained hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

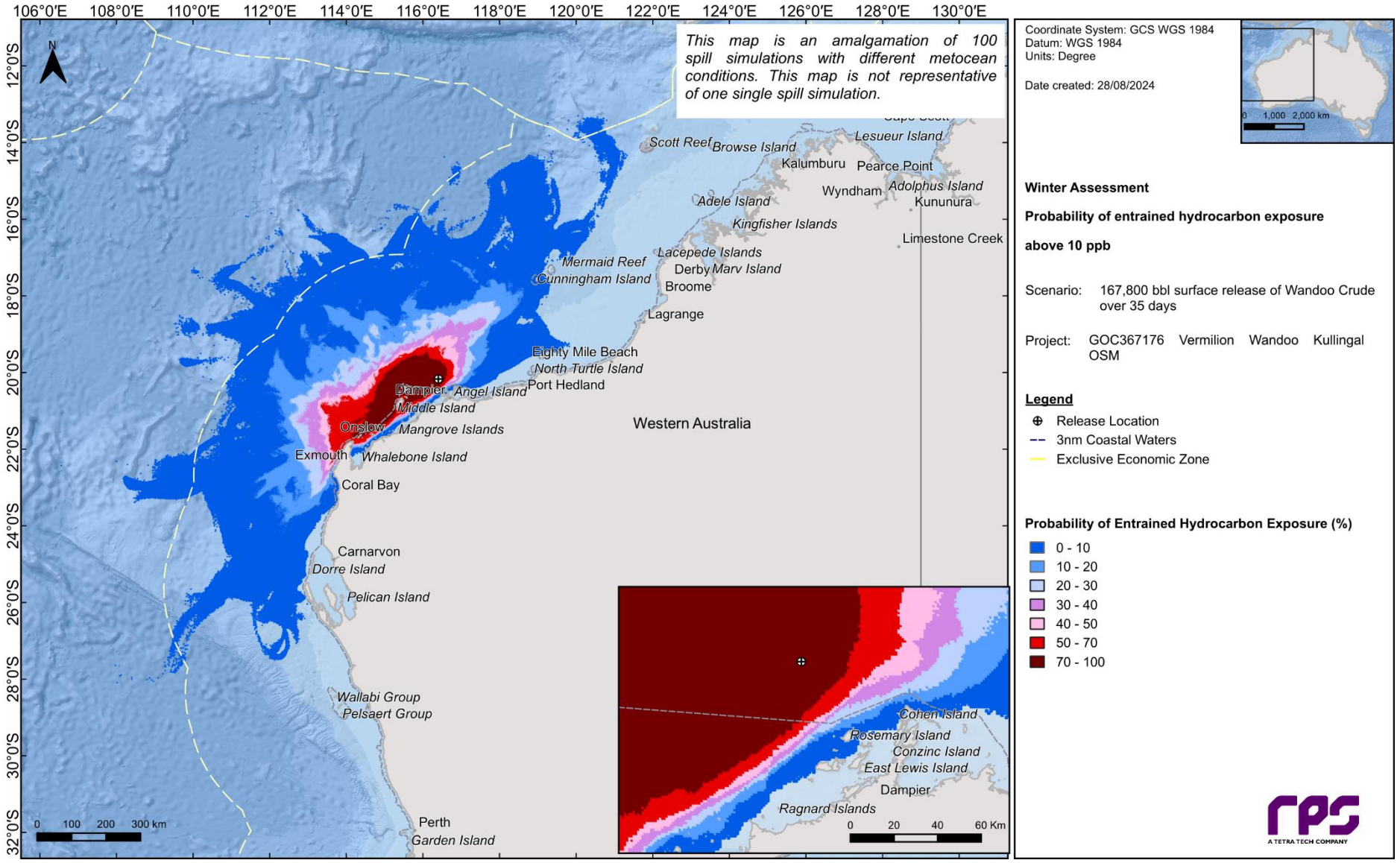


Figure 13.67 Probability of entrained hydrocarbon exposure at, or above, 10 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

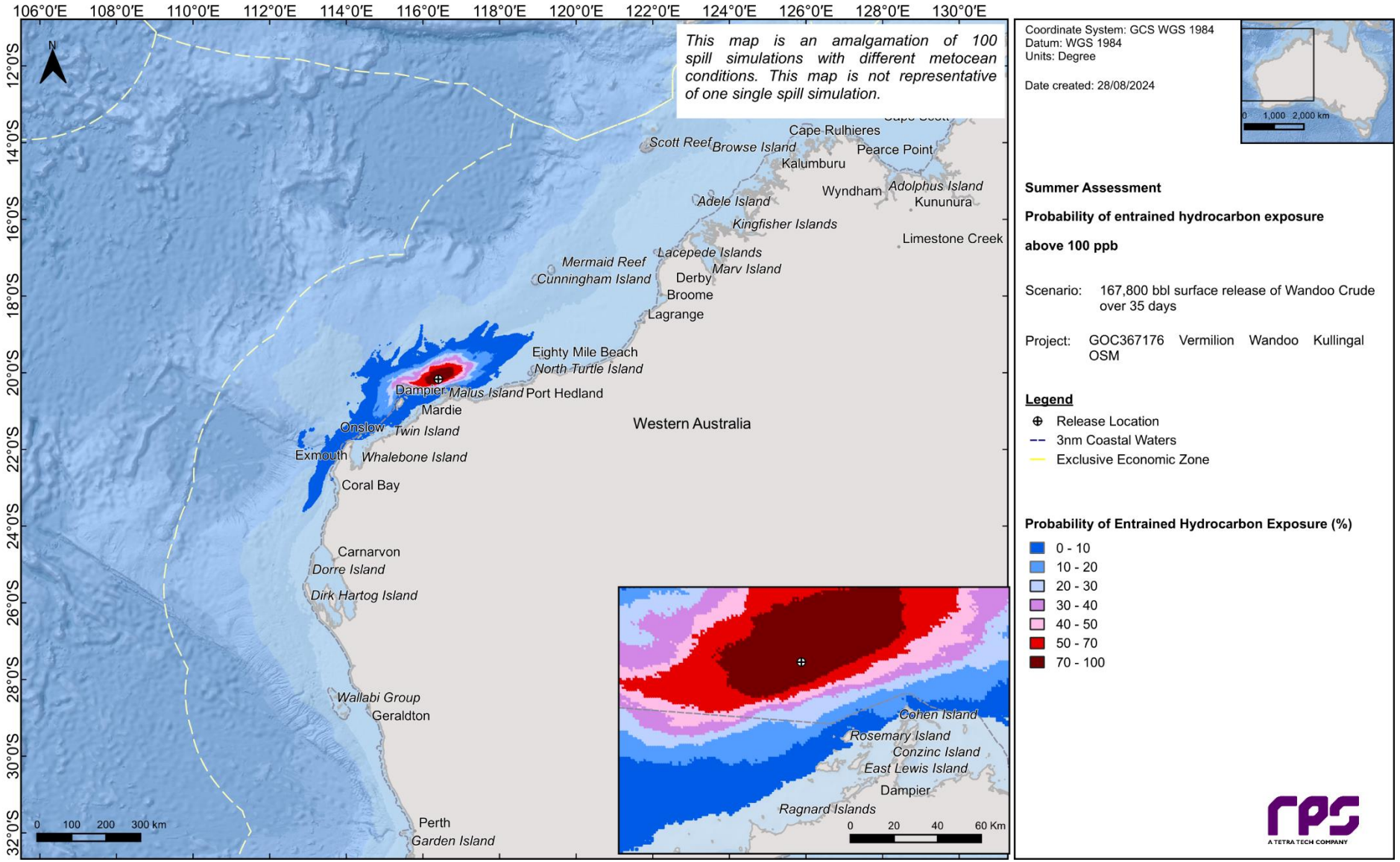


Figure 13.68 Probability of entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

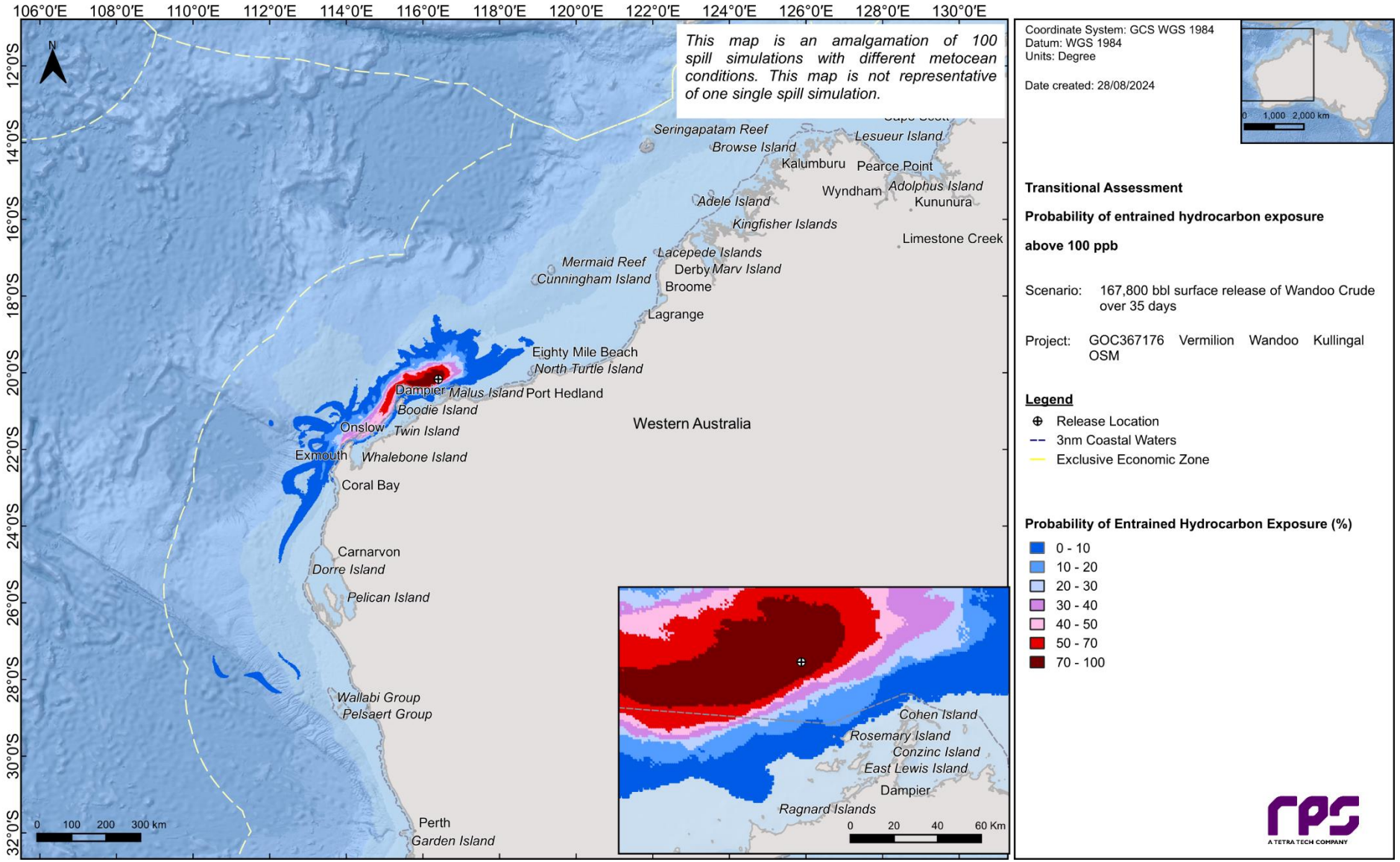


Figure 13.69 Probability of entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

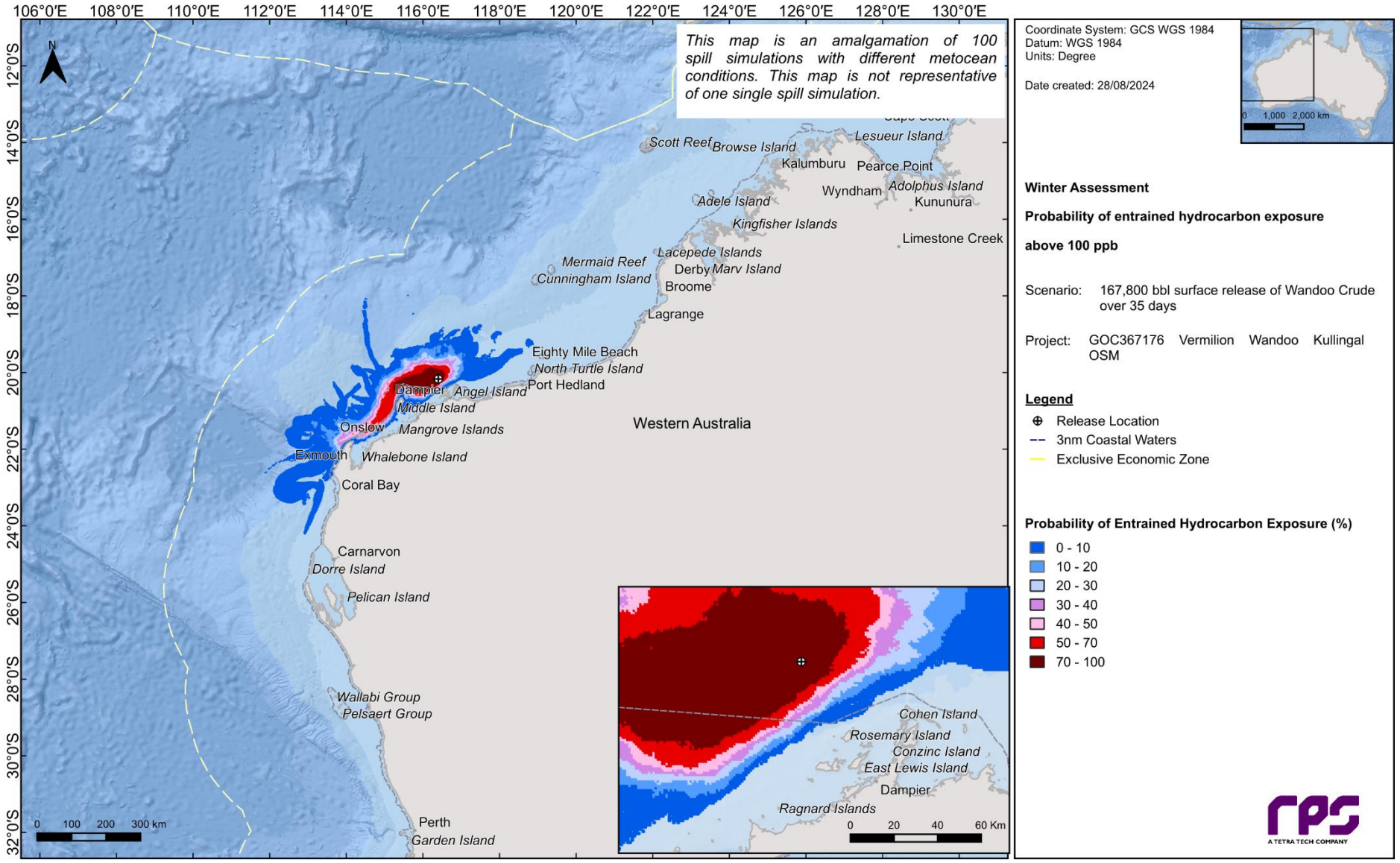


Figure 13.70 Probability of entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

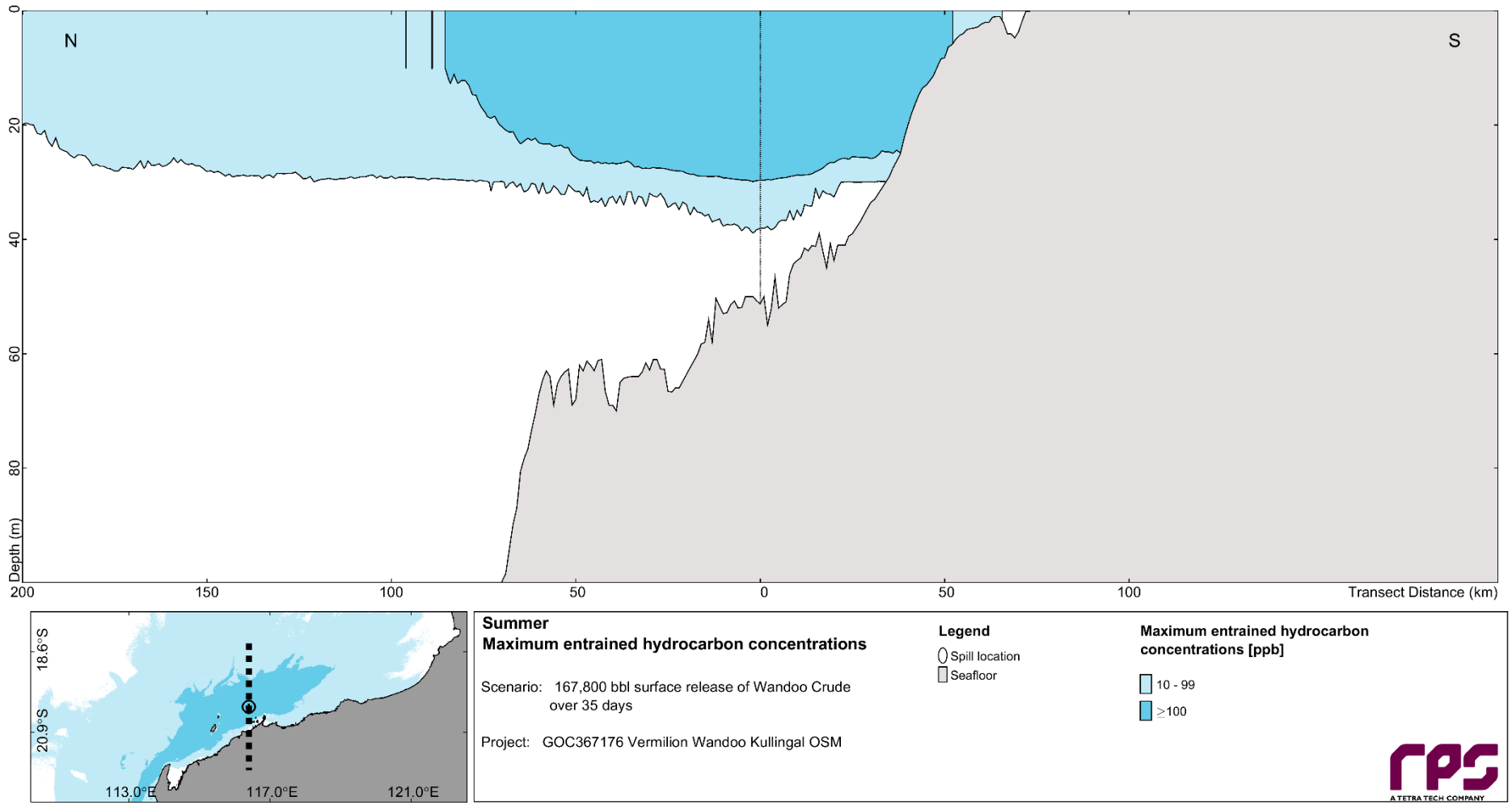


Figure 13.71 North-south cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

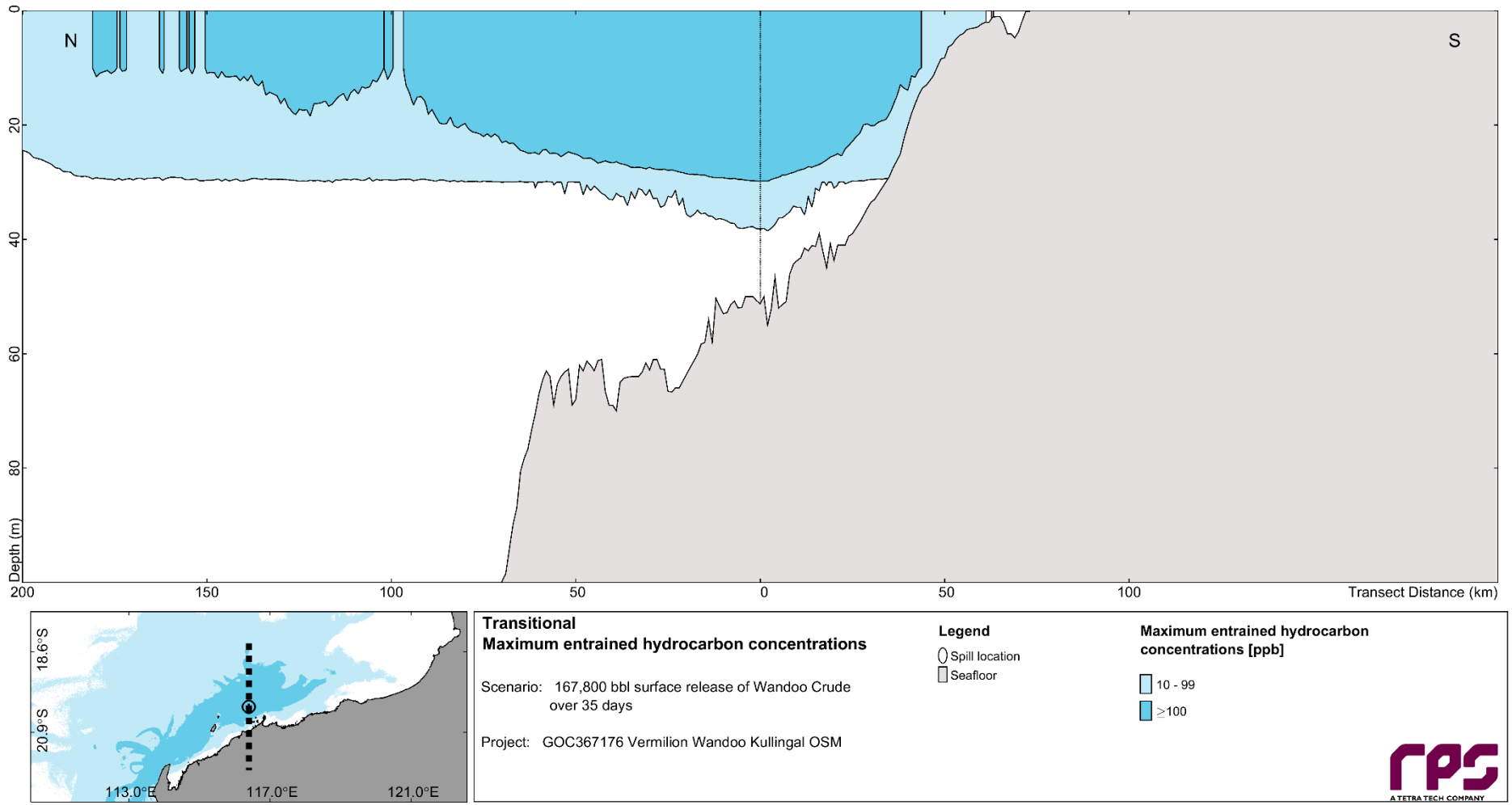


Figure 13.72 North-south cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

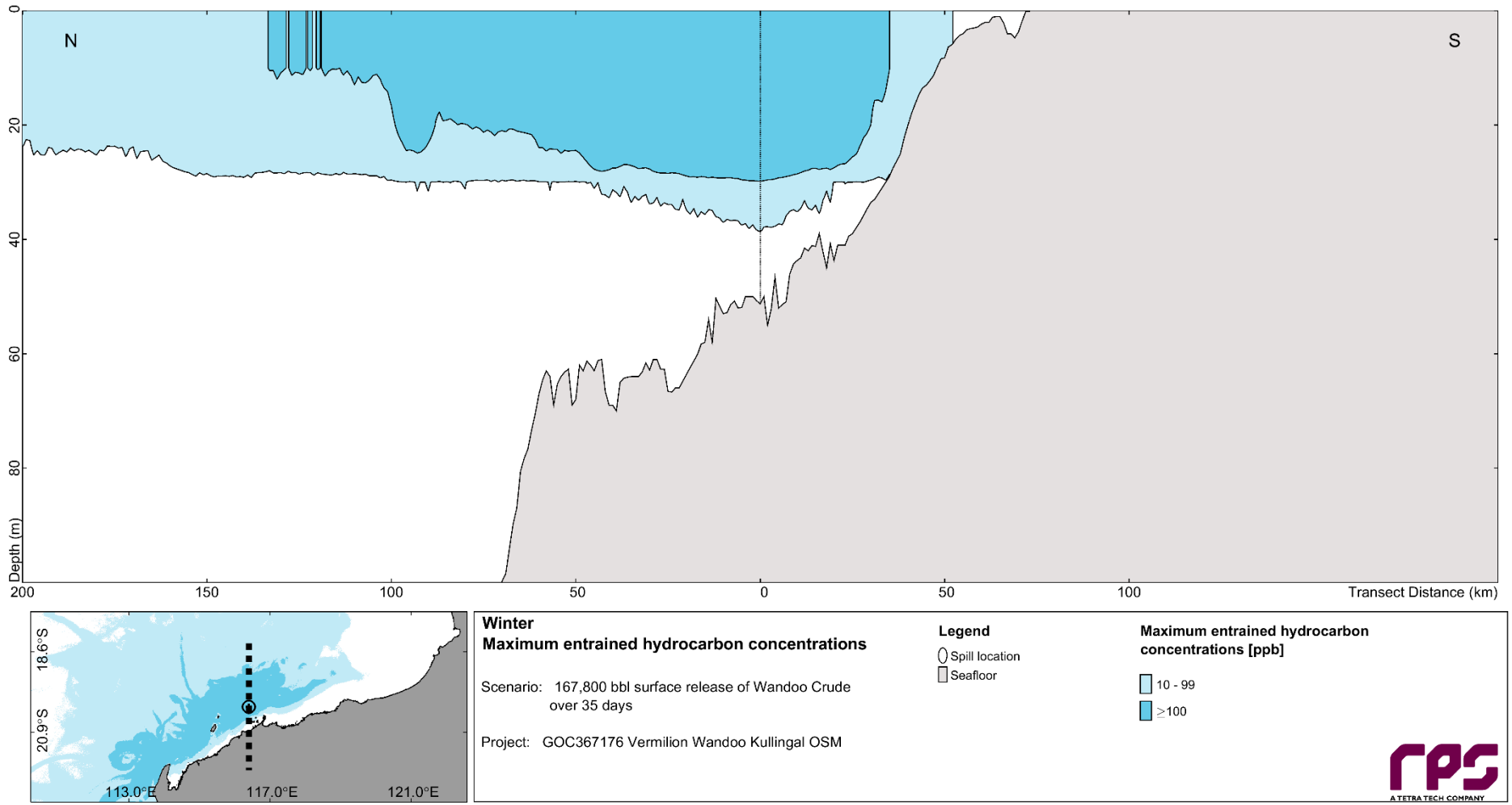


Figure 13.73 North-south cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

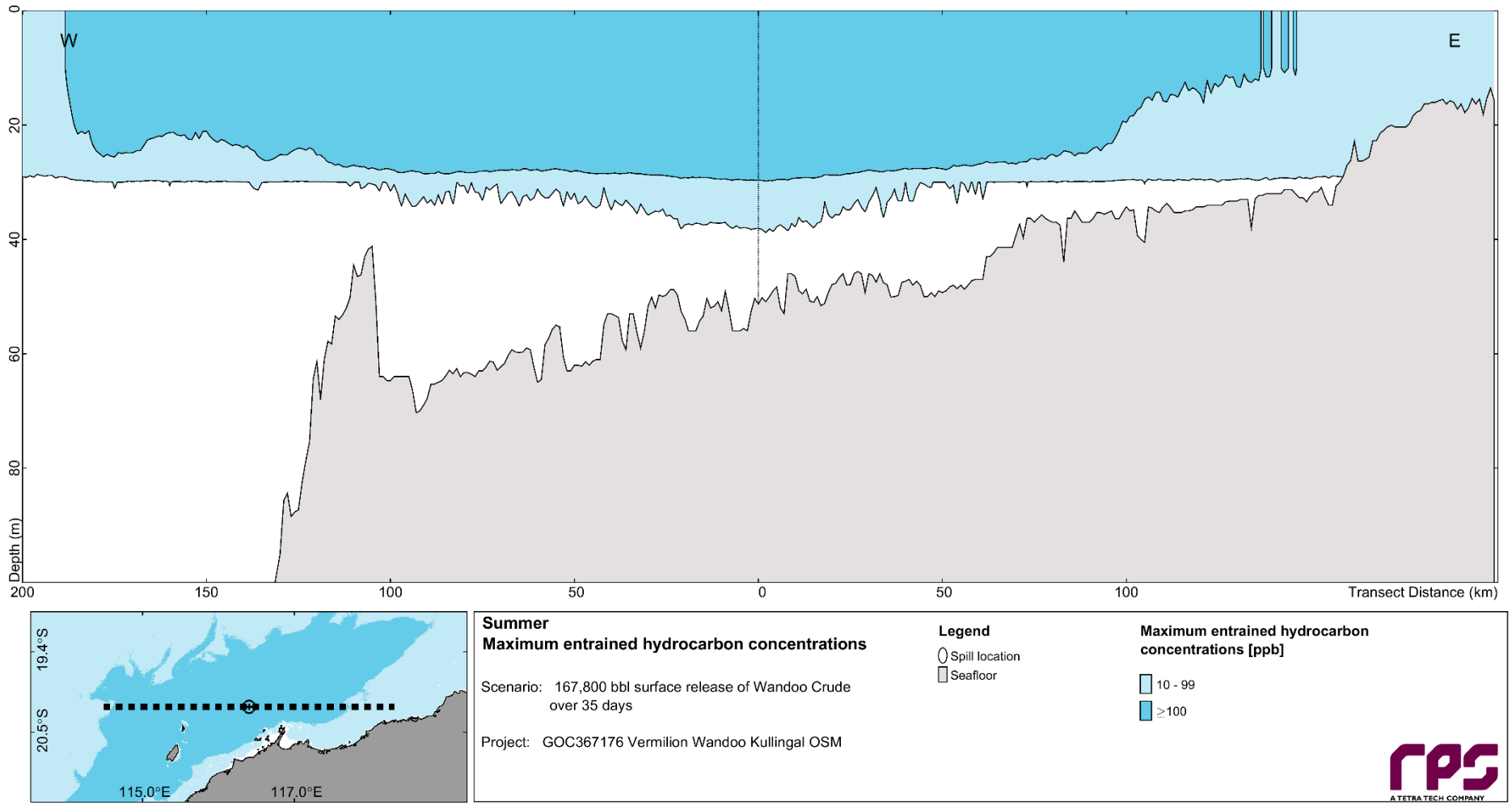


Figure 13.74 East-west cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

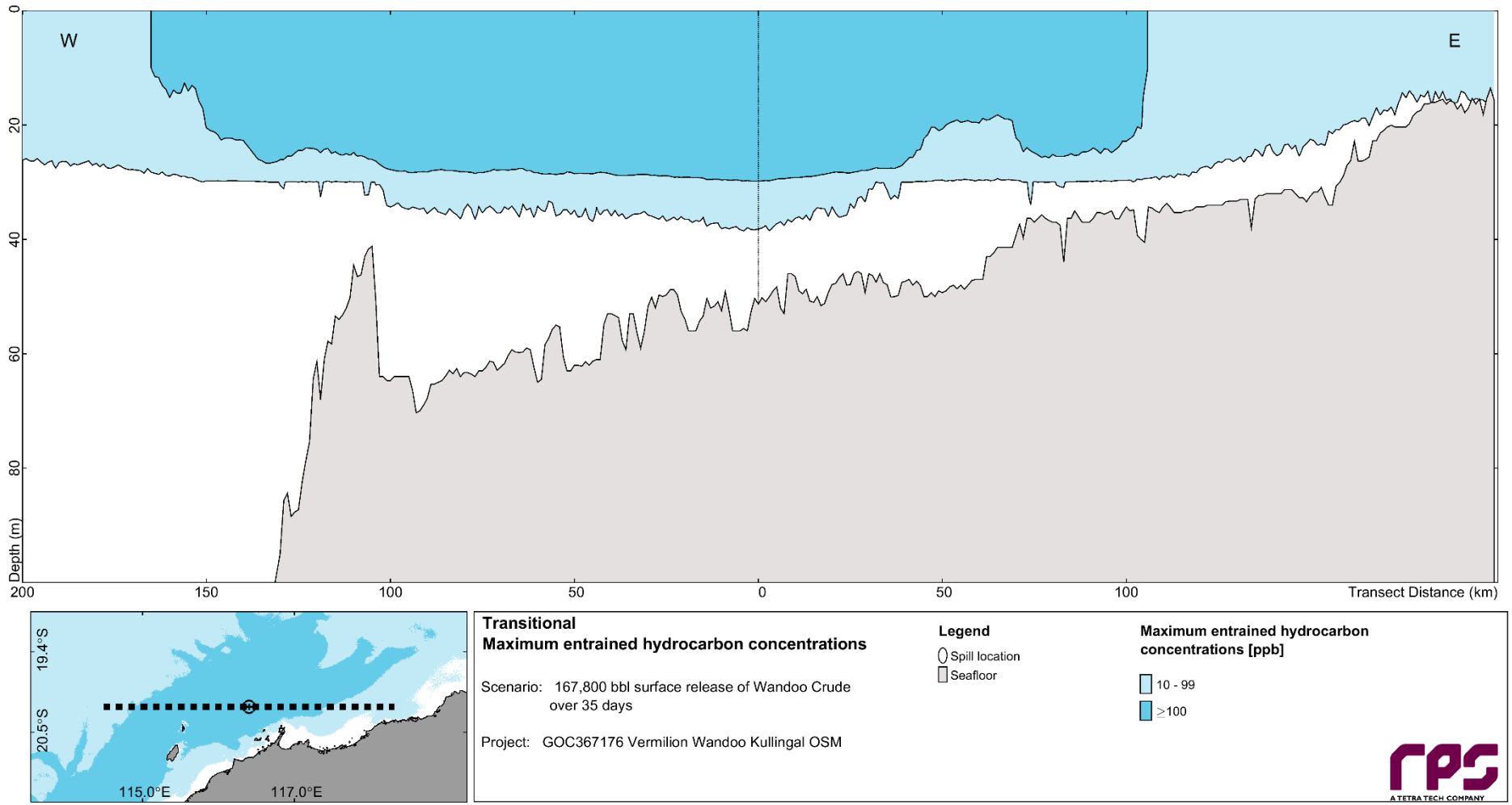


Figure 13.75 East-west cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

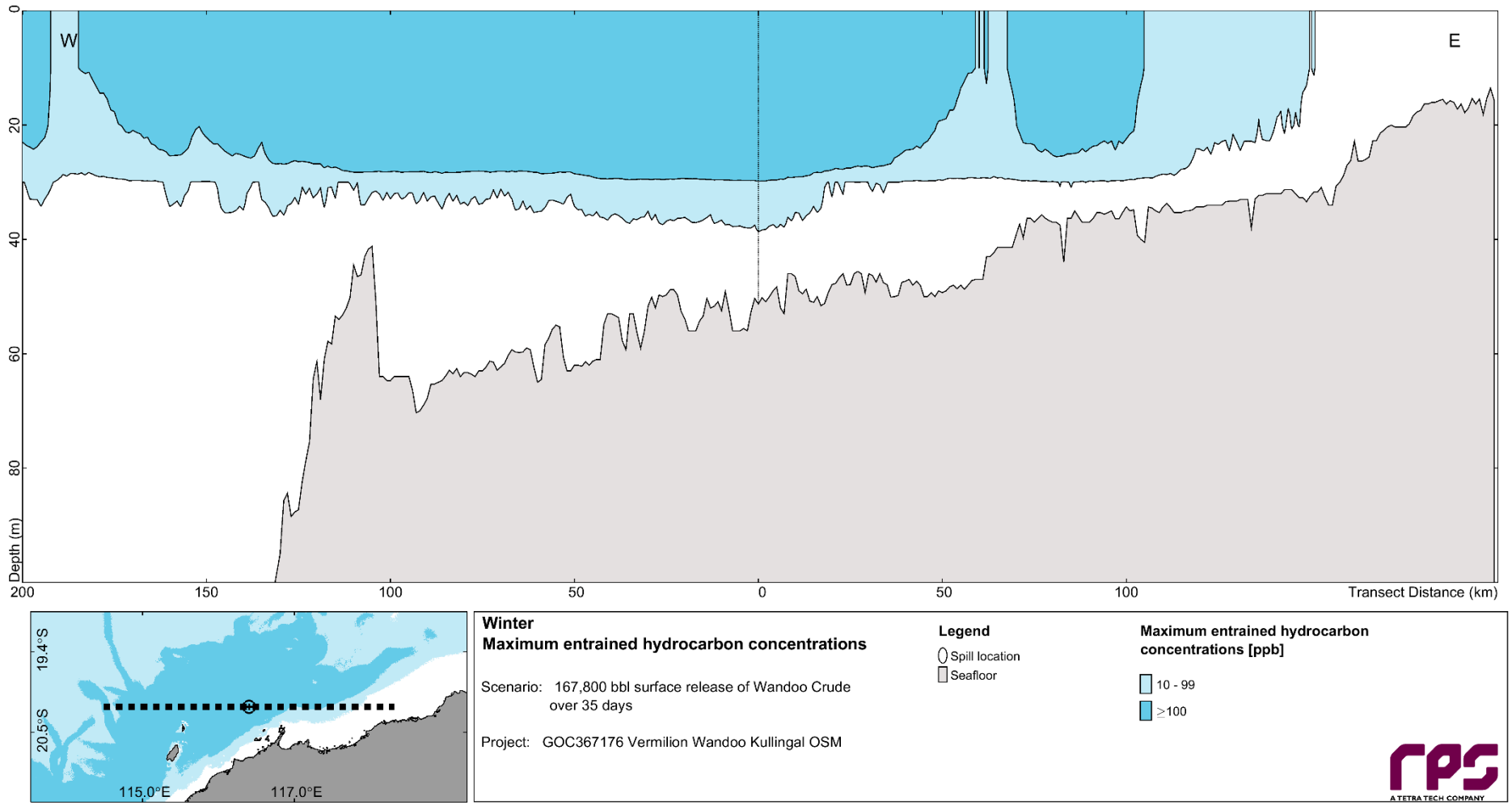


Figure 13.76 East-west cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

13.2 Deterministic Analysis

13.2.1 Greatest Number of Receptors with Floating Oil Exposure Within 7 days

A spill simulation commencing during transitional conditions (run 31) resulted in the greatest number of receptors with floating oil exposure at or above 1 g/m^2 within 7 days.

Figure 13.77 shows the outer boundaries of the low threshold exposure area (EMBA) for the simulation. Figure 13.78 show the floating oil exposure on the surface and shoreline accumulation. Figure 13.79 and Figure 13.80 show the extent of the entrained and dissolved hydrocarbon exposure, respectively, over the entire 56 day simulation.

Table 13.11 provides a summary of the exposure to receptors during the simulation.

The greatest volume of oil accumulation was 2,570 m^3 for WA11.West (318) - Barrow Island and Montebello Islands (A), which also revealed the maximum length of oil accumulation on shorelines at the 10 g/m^2 or above threshold (64 km). The minimum time before floating oil exposure was predicted to be 57 hours for the Montebello AMP.

Figure 13.81 depicts the weathering and fates graph for the corresponding simulation. At the end of the 56-day simulation, approximately 29.2% (49,000.5 bbl) of the crude is predicted to have decayed, whilst 22.6% (37,846.1 bbl) will have evaporated and 14.9% (25,011.2 bbl) is predicted to entrain. Approximately 13.8% (23,085.0 bbl) of the total volume of oil is predicted to remain on shorelines at the end of the simulation and 7.4% (12,379.9 bbl) will float on the sea surface.

Table 13.11 Receptors predicted to be exposed by floating oil, shoreline accumulation and in-water hydrocarbons following a surface LOWC at Kullingal for the deterministic simulation (transitional, run 31) which greatest number of receptors with floating oil exposure at or above 1 g/m² within 7 days.

Receptors		Floating oil minimum time to receptor (hours) at			Shoreline accumulation minimum time to receptor (hours) at			Maximum local accumulated concentration (g/m²)	Maximum local accumulated volume (m²)			Maximum length of shoreline (km) at			Entrained minimum time to receptor waters (hours) at		Maximum entrained hydrocarbon concentration (ppb)	Dissolved minimum time to receptor waters (hours) at			Maximum dissolved aromatic hydrocarbon concentration (ppb)
		≥ 1 g/m²	≥ 10 g/m²	≥ 50 g/m²	≥ 10 g/m²	≥ 100 g/m²	≥ 1,000 g/m²		≥ 10 g/m²	≥ 100 g/m²	≥ 1,000 g/m²	≥ 10 g/m²	≥ 100 g/m²	≥ 1,000 g/m²	≥ 10 ppb	≥ 100 ppb		≥ 10 ppb	≥ 50 ppb	≥ 400 ppb	
AMP	Gascoyne	703	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	451	NC	92	991	NC	NC	13
	Montebello	57	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	28	32	1,412	34	61	NC	94
KEF	Ancient coastline at 125 m depth contour	387	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	321	357	321	1,133	NC	NC	18
	Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	532	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	383	401	220	1,182	NC	NC	15
	Commonwealth waters adjacent to Ningaloo Reef	543	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	406	450	186	967	NC	NC	12
	Continental Slope Demersal Fish Communities	598	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	339	682	124	981	NC	NC	13
	Exmouth Plateau	751	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	658	NC	92	NC	NC	NC	5
	Western demersal slope and associated fish communities	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,101	NC	11	NC	NC	NC	<1
MMA	Muiron Islands	510	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	382	504	292	730	NC	NC	16
MP	Barrow Island	144	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	114	123	415	140	NC	NC	32
	Montebello Islands	141	779	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	65	72	2,062	82	118	NC	66
	Ningaloo	497	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	406	450	197	756	NC	NC	20
NR	Barrow Island	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	639	NC	63	NC	NC	NC	<1
	Lowendal Islands	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	326	451	294	NC	NC	NC	7
	Thevenard Island	623	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	635	NC	29	NC	NC	NC	3
RSB	Beryl Reef	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	759	NC	30	NC	NC	NC	<1
	Brewis Reef	635	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	589	NC	32	NC	NC	NC	2
	Camplin Shoal	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,321	NC	11	NC	NC	NC	<1
	Combe Reef	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	711	NC	69	NC	NC	NC	<1
	Dailey Shoal	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	475	689	182	NC	NC	NC	4
	Exmouth Reef	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	737	NC	39	NC	NC	NC	2
	Fairway Reef	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	516	NC	94	NC	NC	NC	<1
	Hood Reef	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	503	685	201	NC	NC	NC	3
	Locker Reef	625	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC	NC	8	NC	NC	NC	<1
	Montebello Shoals	145	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	83	115	581	124	NC	NC	32
	Ningaloo Reef	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	443	478	161	NC	NC	NC	9
	North West Reef	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	502	NC	92	NC	NC	NC	4
	Otway Reef	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	490	710	168	NC	NC	NC	<1
	Outtrim Patches	683	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	384	826	206	NC	NC	NC	3
	Pearl Reef	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	760	NC	21	NC	NC	NC	<1
	Penguin Bank	536	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	142	587	261	NC	NC	NC	7
	Poivre Reef	524	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	166	524	244	598	NC	NC	18

	Rosily Shoals	603	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	289	610	149	NC	NC	NC	5
	Santo Rock	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,223	NC	13	NC	NC	NC	<1
	Spider Reef	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	698	NC	16	NC	NC	NC	<1
	Sultan Reef	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	624	NC	24	NC	NC	NC	2
	Taunton Reef	614	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	613	NC	18	NC	NC	NC	<1
	Trap Reef	614	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	574	NC	61	NC	NC	NC	2
	Tryal Rocks	393	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	195	405	217	475	NC	NC	15
	Web Reef	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	784	NC	17	NC	NC	NC	<1
	WA09 (169) - Cape Inscription - Herald Bay N (B)	NC	NC	NC	1,300	NC	NC	12	<1	NC	NC	1	NC	NC	NC	NC	3	NC	NC	NC	<1
	WA09 (171) - Steep Point - Quoin Head (C)	NC	NC	NC	1,332	NC	NC	12	<1	NC	NC	1	NC	NC	NC	NC	2	NC	NC	NC	<1
	WA09 (330) - Dorre Island and Bernier Island (A)	NC	NC	NC	1,300	NC	NC	13	<1	NC	NC	1	NC	NC	NC	NC	4	NC	NC	NC	<1
	WA09 (331) - Dorre Island and Bernier Island (B)	NC	NC	NC	1,313	NC	NC	12	<1	NC	NC	1	NC	NC	NC	NC	2	NC	NC	NC	<1
	WA10 (120) - Bundegi - Shothole Canyon N (A)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1,247	NC	23	NC	NC	NC	<1
	WA10 (121) - Bundegi - Shothole Canyon N (B)	NC	NC	NC	521	1,003	NC	194	3	2	NC	3	1	NC	650	NC	67	NC	NC	NC	4
	WA10 (122) - Vlamingh Head - North West Cape	619	NC	NC	470	739	NC	770	42	42	NC	9	9	NC	413	1,179	157	778	NC	NC	15
SHORE-WAMOPRA	WA10 (123) - Low Point - Vlamingh Head (A)	615	NC	NC	499	1,260	NC	607	23	19	NC	13	6	NC	417	464	197	857	NC	NC	12
	WA10 (124) - Low Point - Vlamingh Head (B)	497	NC	NC	499	507	NC	470	28	24	NC	16	9	NC	453	478	192	NC	NC	NC	9
	WA10 (125) - Osprey Bay - Low Point	NC	NC	NC	600	1,039	NC	111	7	3	NC	13	2	NC	482	1,088	113	NC	NC	NC	4
	WA10 (126) - Winderabandi Point - Osprey Bay	NC	NC	NC	876	1,299	NC	120	5	3	NC	12	2	NC	823	NC	33	NC	NC	NC	5
	WA10 (127) - Coast Hill - Point Cloates	NC	NC	NC	1,214	NC	NC	36	2	NC	NC	7	NC	NC	868	NC	23	NC	NC	NC	3
	WA10 (128) - Point Maud - Coast Hill (A)	NC	NC	NC	1,237	1,335	NC	121	5	2	NC	11	1	NC	1,058	NC	27	NC	NC	NC	<1
	WA10 (129) - Point Maud - Coast Hill (B)	NC	NC	NC	1,264	1,335	NC	109	4	2	NC	10	1	NC	1,065	NC	24	NC	NC	NC	<1
	WA10 (130) - Alison Point - Point Maud	NC	NC	NC	1,297	NC	NC	25	2	NC	NC	8	NC	NC	NC	NC	7	NC	NC	NC	<1
	WA10 (131) - Gnarraloo Bay - Alison Point (A)	NC	NC	NC	1,294	NC	NC	25	<1	NC	NC	2	NC	NC	NC	NC	6	NC	NC	NC	<1
	WA10 (132) - Gnarraloo Bay - Alison Point (B)	NC	NC	NC	1,288	NC	NC	25	<1	NC	NC	5	NC	NC	NC	NC	5	NC	NC	NC	<1
	WA10 (133) - Red Bluff - Gnarraloo Bay (A)	NC	NC	NC	1,293	NC	NC	35	2	NC	NC	7	NC	NC	NC	NC	5	NC	NC	NC	<1

WA10 (134) - Red Bluff - Gnarraloo Bay (B)	NC	NC	NC	1,292	NC	NC	35	<1	NC	NC	4	NC	NC	NC	NC	5	NC	NC	NC	<1
WA10 (135) - Red Bluff - Gnarraloo Bay (C)	NC	NC	NC	1,278	NC	NC	24	2	NC	NC	9	NC	NC	NC	NC	5	NC	NC	NC	<1
WA10 (136) - Point Quobba - Cape Cuvier (A)	NC	NC	NC	1,293	NC	NC	13	<1	NC	NC	4	NC	NC	NC	NC	5	NC	NC	NC	<1
WA11.West (113) - Coolgra Point W - Yardie Landing (A)	NC	NC	NC	1,344	NC	NC	16	<1	NC	NC	1	NC	NC	NC	NC	2	NC	NC	NC	<1
WA11.West (114) - Coolgra Point W - Yardie Landing (B)	NC	NC	NC	1,295	NC	NC	30	<1	NC	NC	1	NC	NC	NC	NC	3	NC	NC	NC	<1
WA11.West (115) - Hope Point - Locker Point (A)	NC	NC	NC	601	1,299	NC	177	6	4	NC	11	2	NC	NC	NC	10	NC	NC	NC	<1
WA11.West (116) - Hope Point - Locker Point (B)	NC	NC	NC	1,303	NC	NC	29	<1	NC	NC	4	NC	NC	NC	NC	5	NC	NC	NC	<1
WA11.West (117) - Hope Point - Locker Point (C)	NC	NC	NC	1,272	1,340	NC	151	5	2	NC	12	1	NC	NC	NC	6	NC	NC	NC	<1
WA11.West (118) - Hope Point - Locker Point (D)	NC	NC	NC	1,333	NC	NC	12	<1	NC	NC	1	NC	NC	NC	NC	<1	NC	NC	NC	<1
WA11.West (318) - Barrow Island and Montebello Islands (A)	143	779	NC	85	129	329	22,688	2,570	2,565	2,493	64	50	29	81	115	2,062	116	118	NC	66
WA11.West (319) - Barrow Island and Montebello Islands (B)	166	NC	NC	141	166	458	5,979	187	187	133	15	14	5	127	134	766	451	NC	NC	49
WA11.West (320) - Barrow Island and Montebello Islands (C)	159	NC	NC	137	530	NC	298	32	23	NC	41	14	NC	131	566	110	NC	NC	NC	6
WA11.West (321) - Barrow Island and Montebello Islands (D)	149	NC	NC	141	174	NC	637	60	53	NC	41	20	NC	130	176	336	529	NC	NC	25
WA11.West (324) - Yardie Landing - Weld Island coast S (B)	516	NC	NC	613	615	NC	672	8	7	NC	3	1	NC	141	527	526	600	NC	NC	18
WA11.West (325) - Coolgra Point W - Yardie Landing (C)	610	NC	NC	603	624	NC	744	37	36	NC	9	7	NC	314	612	289	NC	NC	NC	10
WA11.West (326) - Baresand Point - Entrance Point E	497	637	NC	357	470	598	6,552	282	281	221	24	21	10	345	499	568	653	NC	NC	28
WA11.West (327) - Hope Point - Locker Point (E)	NC	NC	NC	604	630	NC	525	9	9	NC	2	2	NC	477	696	198	NC	NC	NC	3
WA11.West (328) - Hope Point - Locker Point (F)	1,322	NC	NC	624	1,274	NC	723	42	41	NC	13	11	NC	736	NC	34	NC	NC	NC	<1
WA11.West (329) - Locker Point - Baresand Point	510	NC	NC	377	416	545	4,271	404	400	374	30	21	14	375	430	292	726	NC	NC	18

NA: Not applicable for receptor; NC: No contact to receptor predicted for specified threshold.

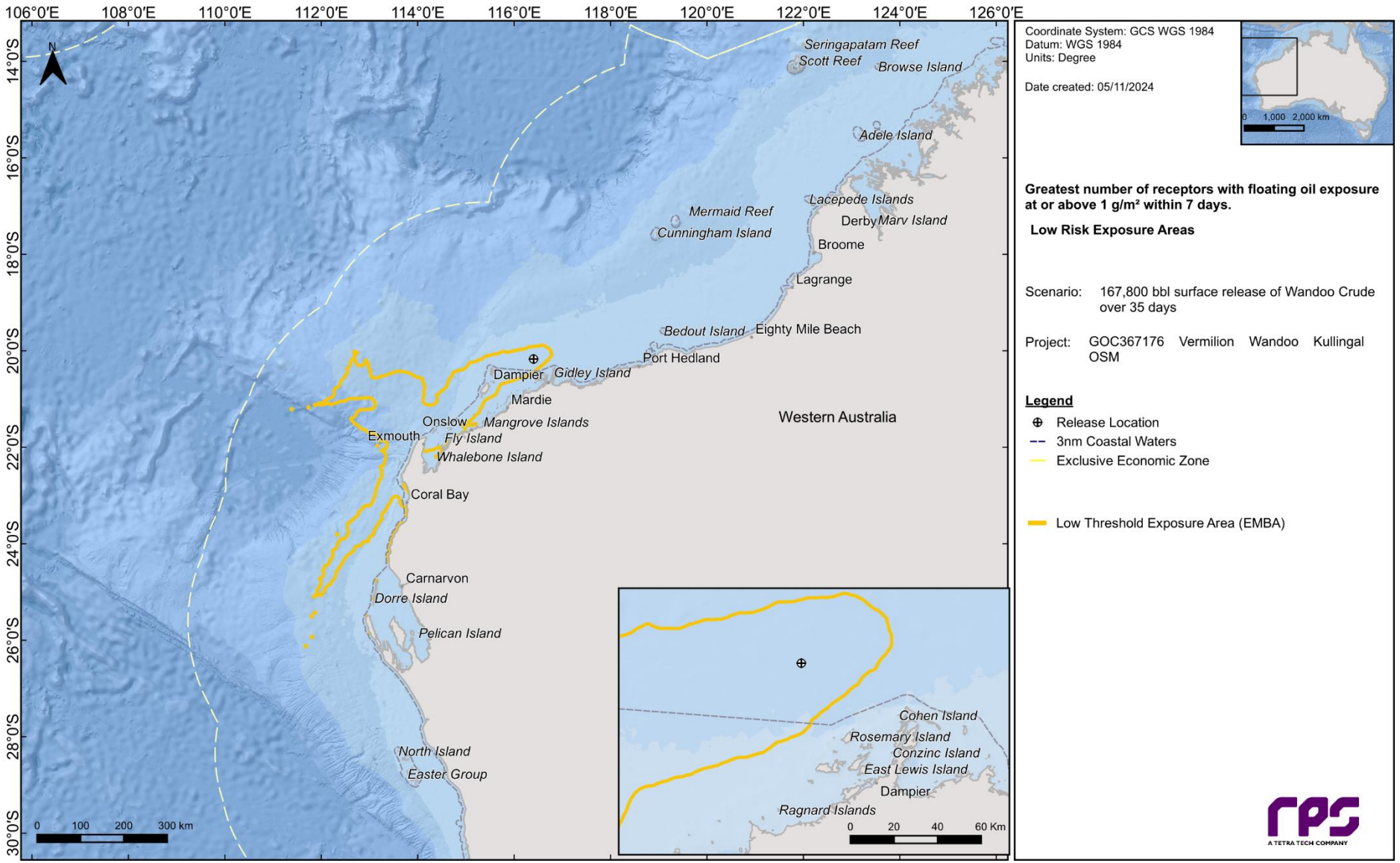


Figure 13.77 Predicted low threshold exposure area following a surface LOWC at Kullingal for the deterministic simulation (transitional, run 31) which resulted in the greatest number of receptors with floating oil exposure at or above 1 g/m² within 7 days.

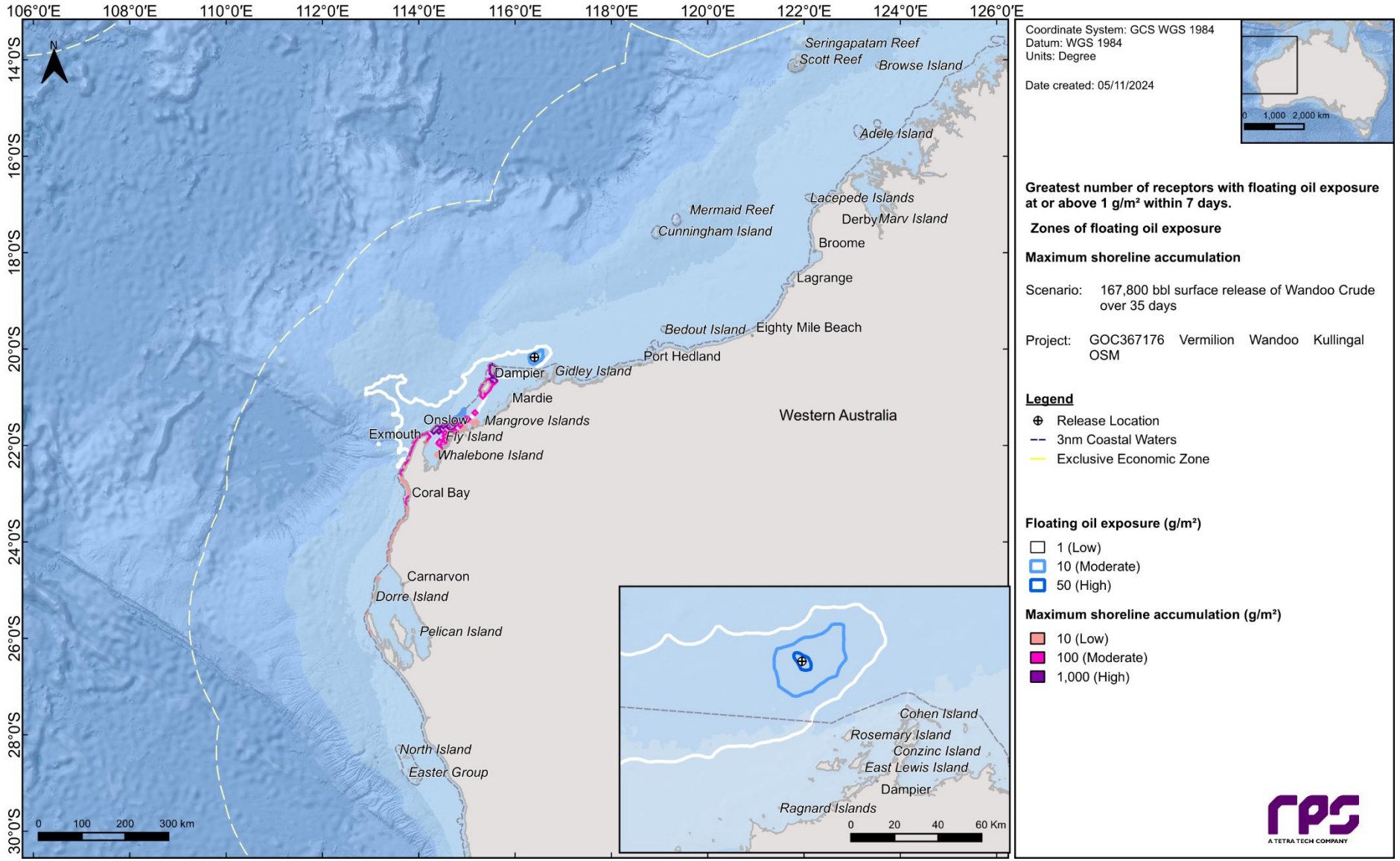


Figure 13.78 Predicted zones of floating oil exposure and maximum shoreline accumulation following a surface LOWC at Kullingal for the deterministic simulation (transitional, run 31) which resulted in the greatest number of receptors with floating oil exposure at or above 1 g/m² within 7 days.

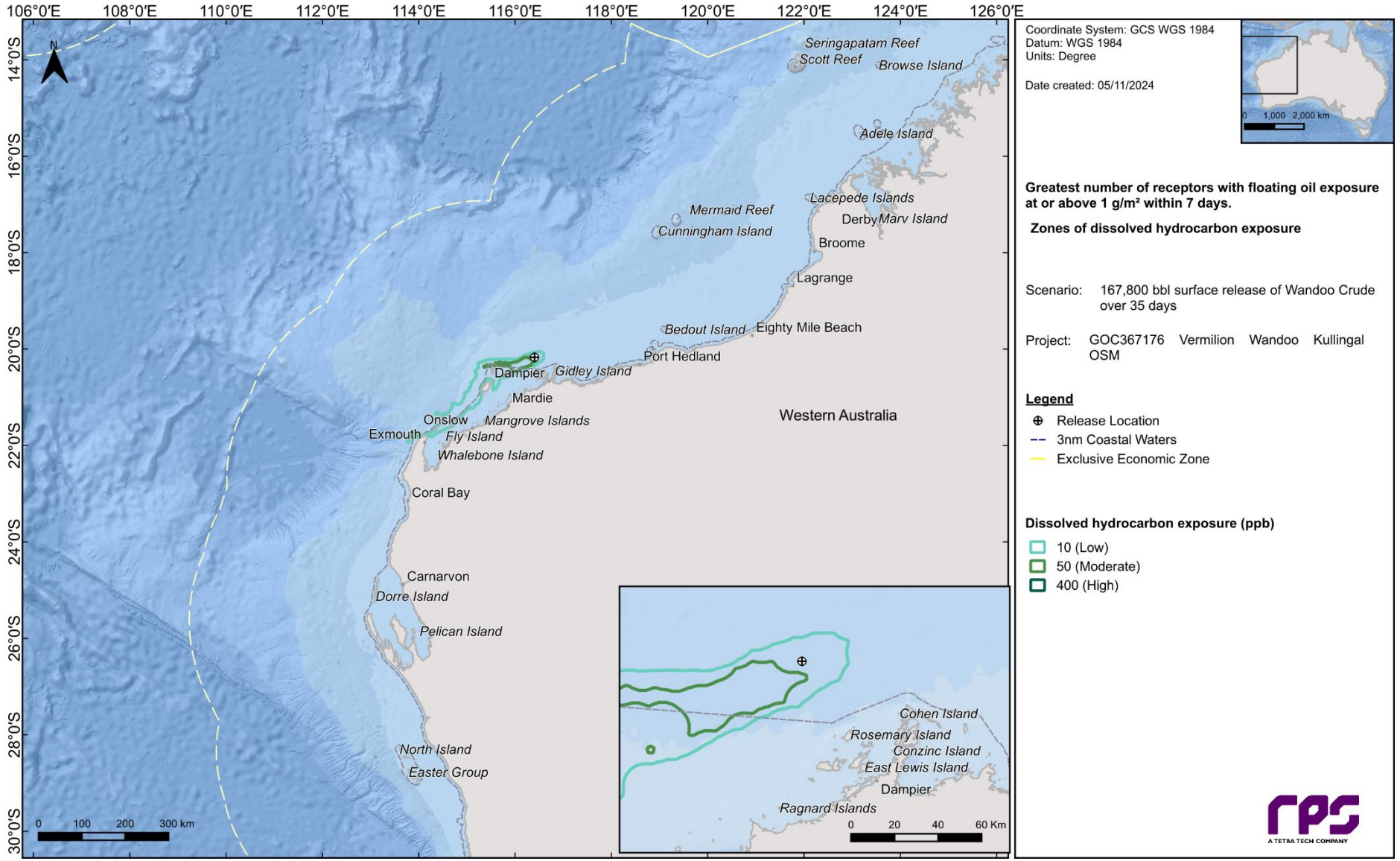


Figure 13.79 Predicted zones of dissolved oil exposure and maximum shoreline accumulation following a surface LOWC at Kullingal for the deterministic simulation (transitional, run 31) which resulted in the greatest number of receptors with floating oil exposure at or above 1 g/m² within 7 days.

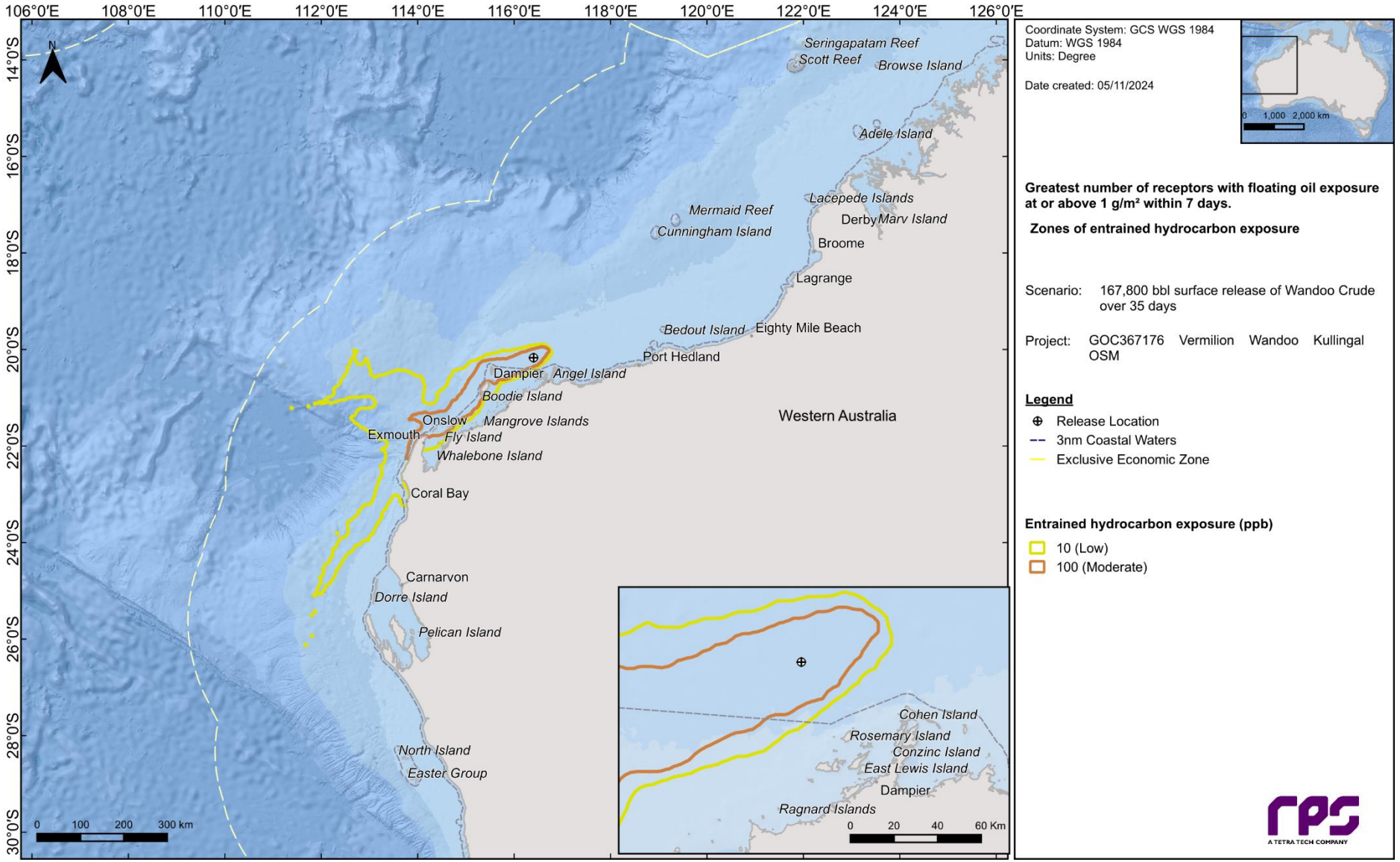


Figure 13.80 Predicted zones of entrained oil exposure and maximum shoreline accumulation following a surface LOWC at Kullingal for the deterministic simulation (transitional, run 31) which resulted in the greatest number of receptors with floating oil exposure at or above 1 g/m² within 7 days.

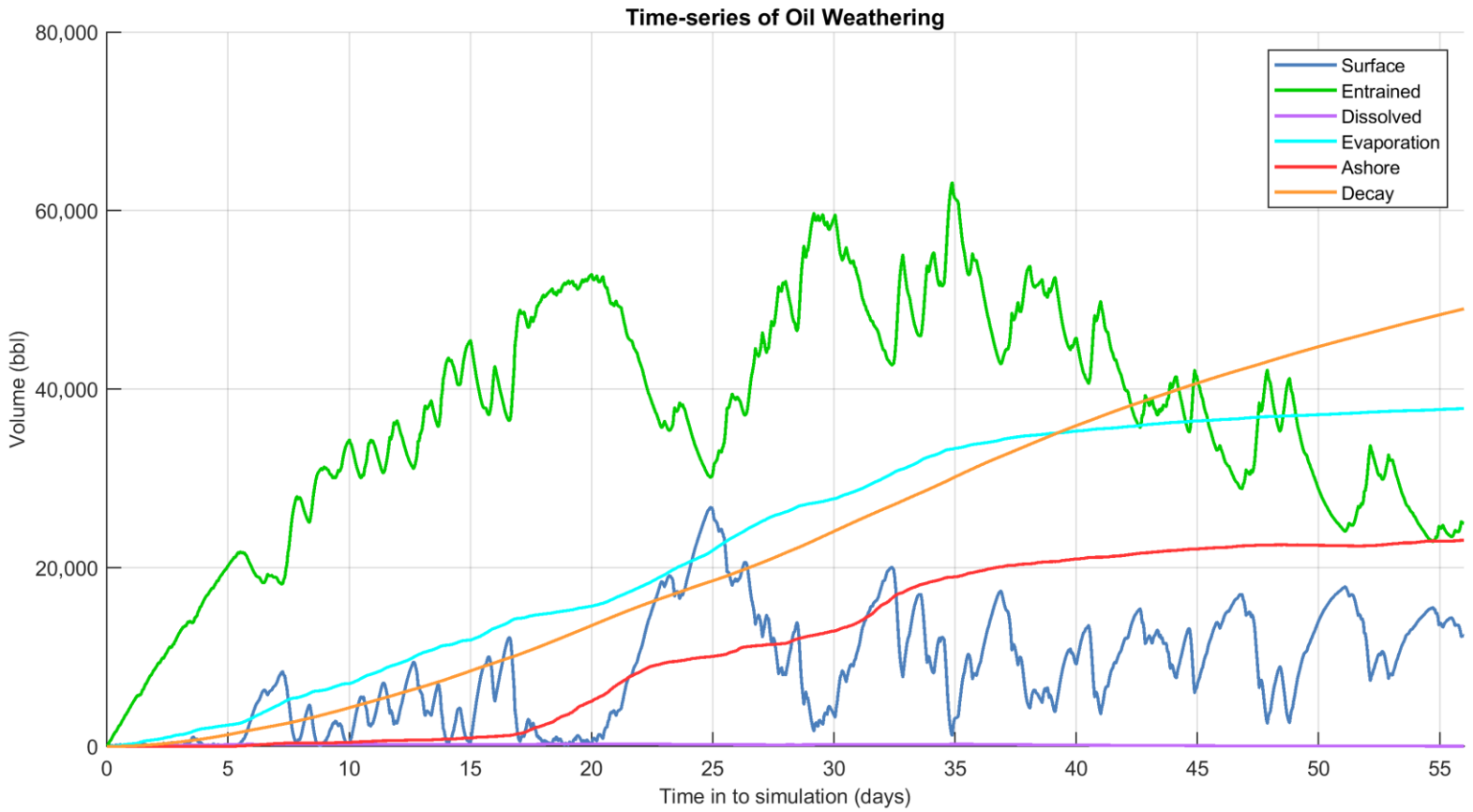


Figure 13.81 Predicted weathering and fates graph following a surface LOWC at Kullingal for the deterministic simulation (transitional, run 31) which resulted in the greatest number of receptors with floating oil exposure at or above 1 g/m^2 within 7 days.

14 MODELLING RESULTS: VESSEL COLLISION

This scenario investigated the potential exposure from a 300 m^3 surface release of MDO over 6 hours resulting from a vessel collision at Kullingal. The MDO was tracked for 30 days from the commencement of the spill to allow the concentrations to decrease below the lowest thresholds. The modelling for this scenario assumed no mitigation efforts are undertaken to collect or otherwise affect the natural transport and weathering.

14.1 Stochastic Analysis

14.1.1 Exposure Areas

Figure 14.1 illustrates the exposure areas for the vessel collision results, determined by integrating the low, moderate, and high threshold results of all 300 spill simulations.

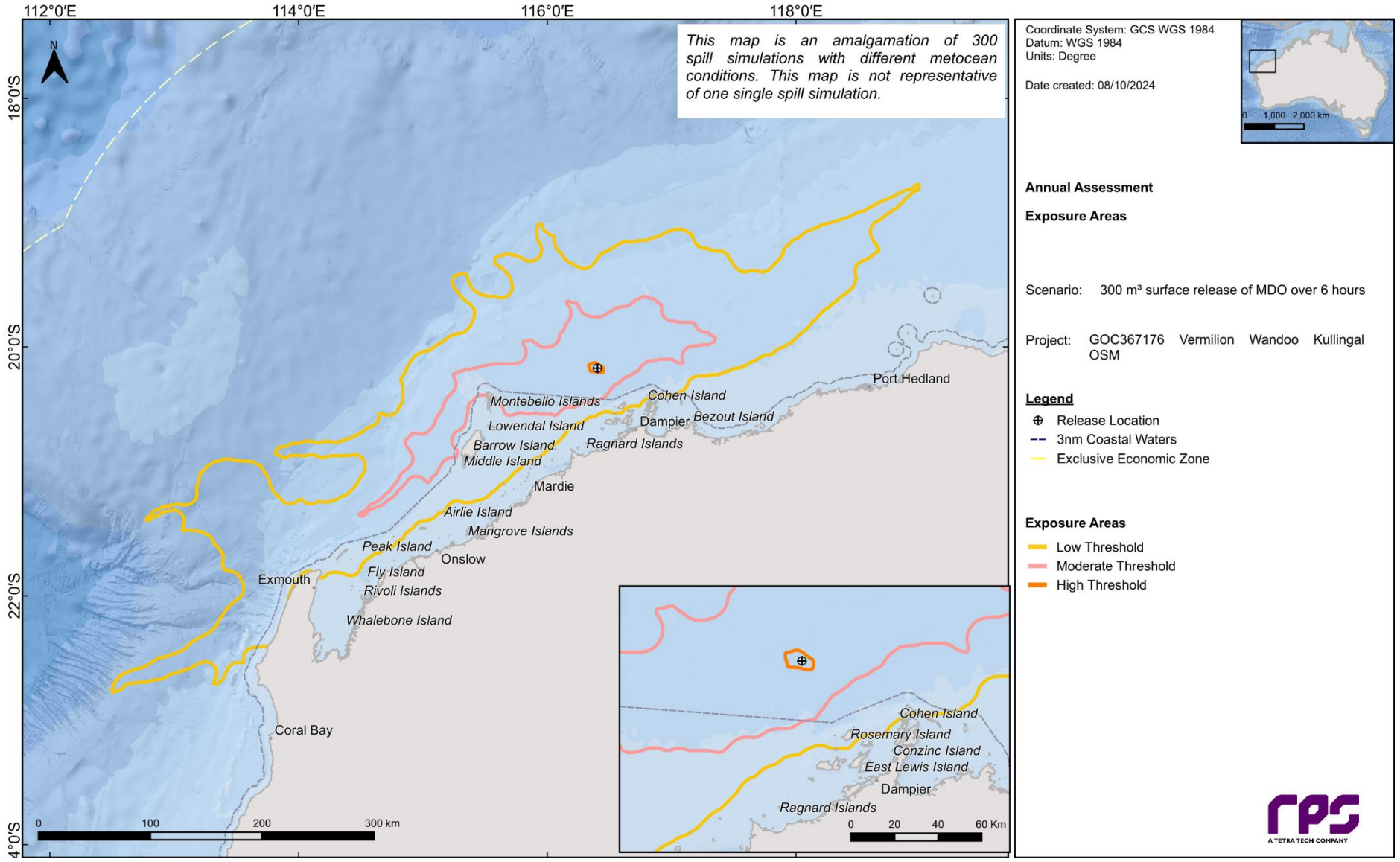


Figure 14.1 Predicted exposure areas following a vessel collision at Kullingal, presented as an annual assessment. The exposure areas were determined by integrating the results of all 300 spill simulations across low, moderate and high thresholds.

14.1.2 Floating Oil Exposure

Table 14.1 summarises the maximum distances from the release location to floating oil exposure thresholds for each season. Concentrations exceeding 1 g/m^2 could extend up to 31 km from the release location. The maximum distances reduced to 18 km and 6 km as the threshold increases to 10 g/m^2 and 50 g/m^2, respectively.

No receptors were predicted to be exposed to floating oil exposure at, or above, 1, g/m^2.

Figure 14.2 to Figure 14.4 illustrate the extent floating oil exposure zones for each season. Figure 14.5 to Figure 14.22 depict the seasonal minimum times before exposure and probability of exposure for assessed thresholds.

Table 14.1 Maximum distances from the release location to floating oil exposure thresholds from a vessel collision at Kullingal. Results were calculated from 100 spill simulations per season.

Season	Distance and direction travelled	Floating oil exposure thresholds		
		1 g/m^2	10 g/m^2	50 g/m^2
Summer	Maximum distance (km) from release location	21	14	5
	Direction	Northeast	Northeast	West
Transitional	Maximum distance (km) from release location	31	17	6
	Direction	East	Northwest	Northwest
Winter	Maximum distance (km) from release location	29	18	3
	Direction	South	South	East

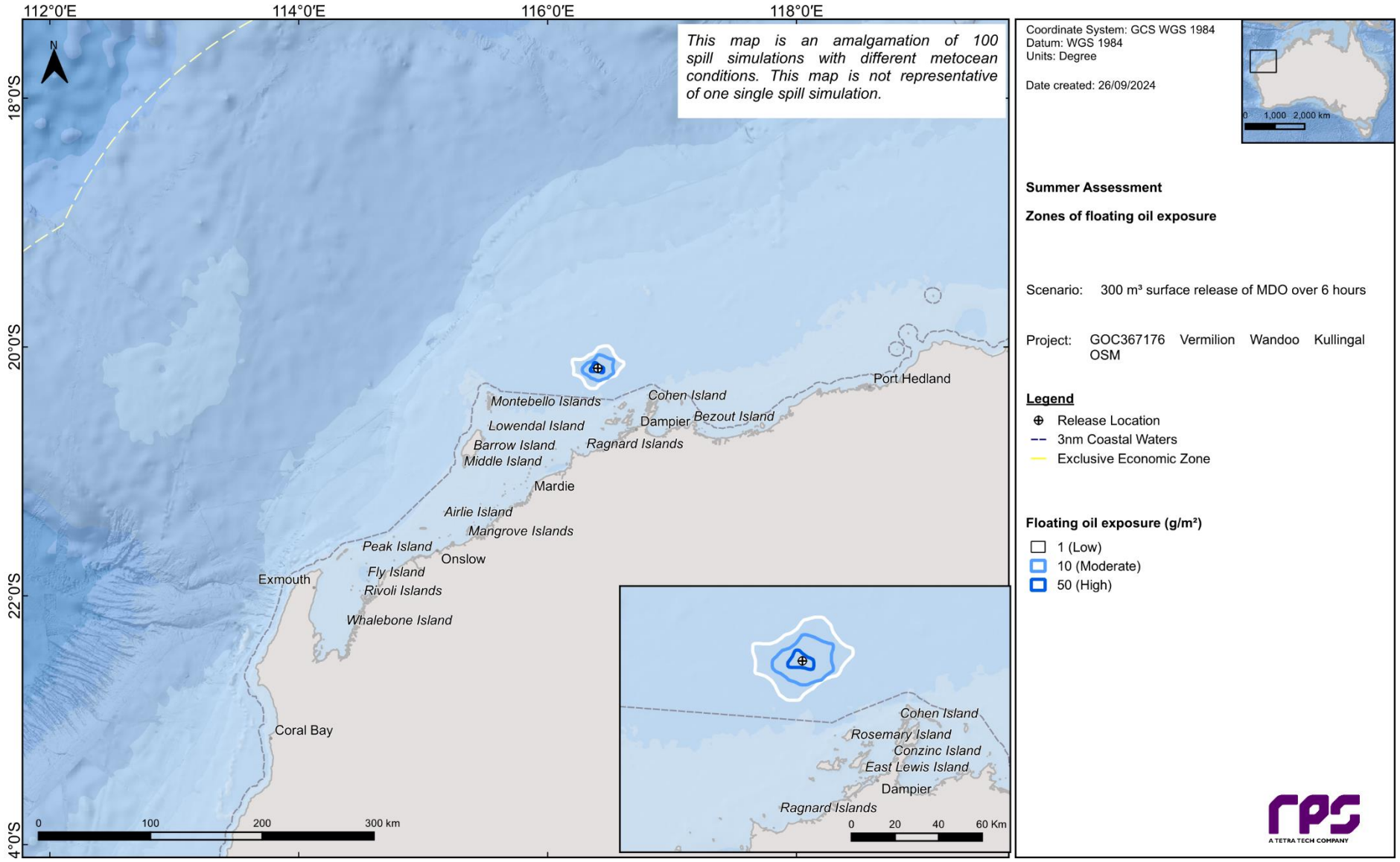


Figure 14.2 Predicted zones of floating oil exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

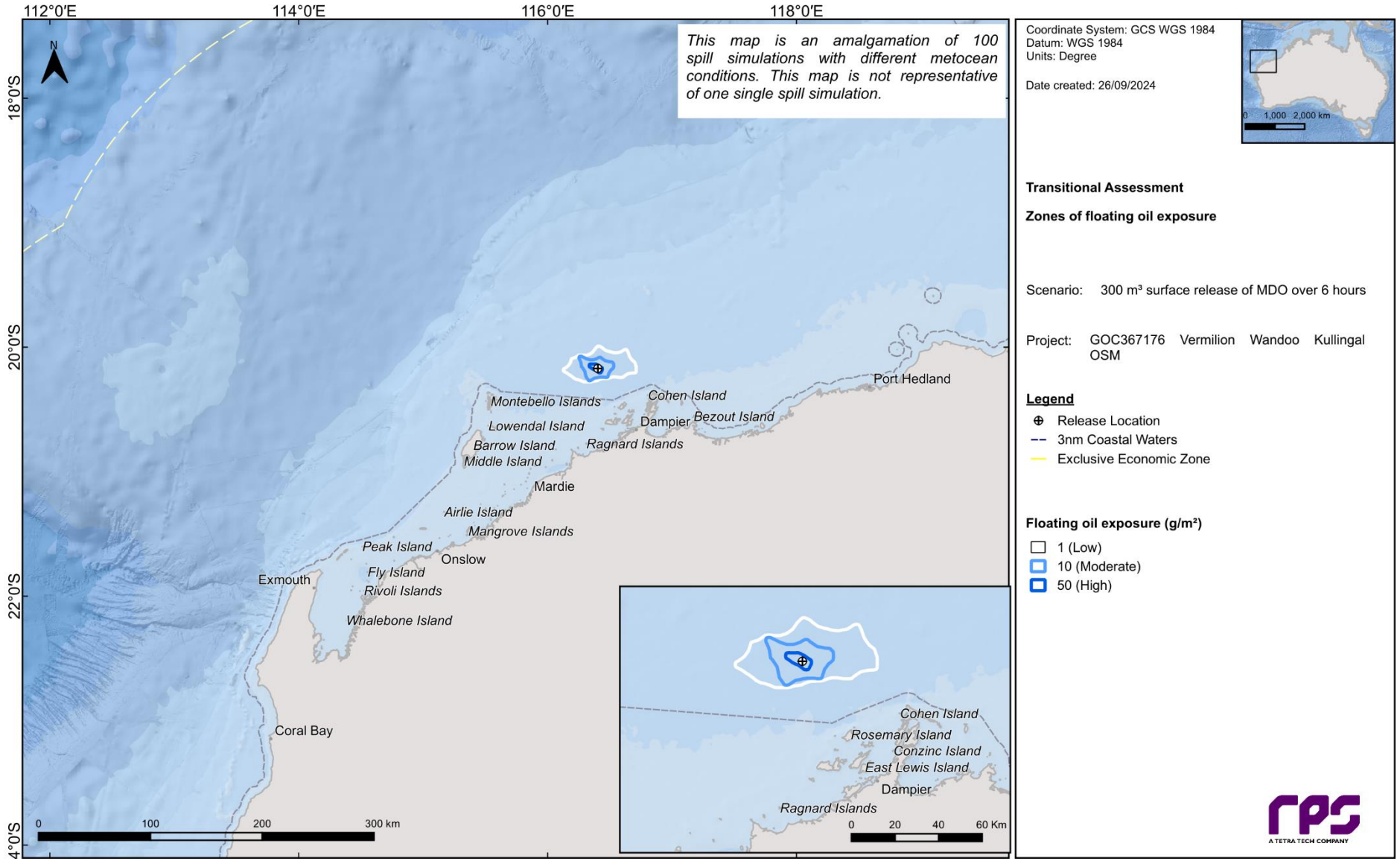


Figure 14.3 Predicted zones of floating oil exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

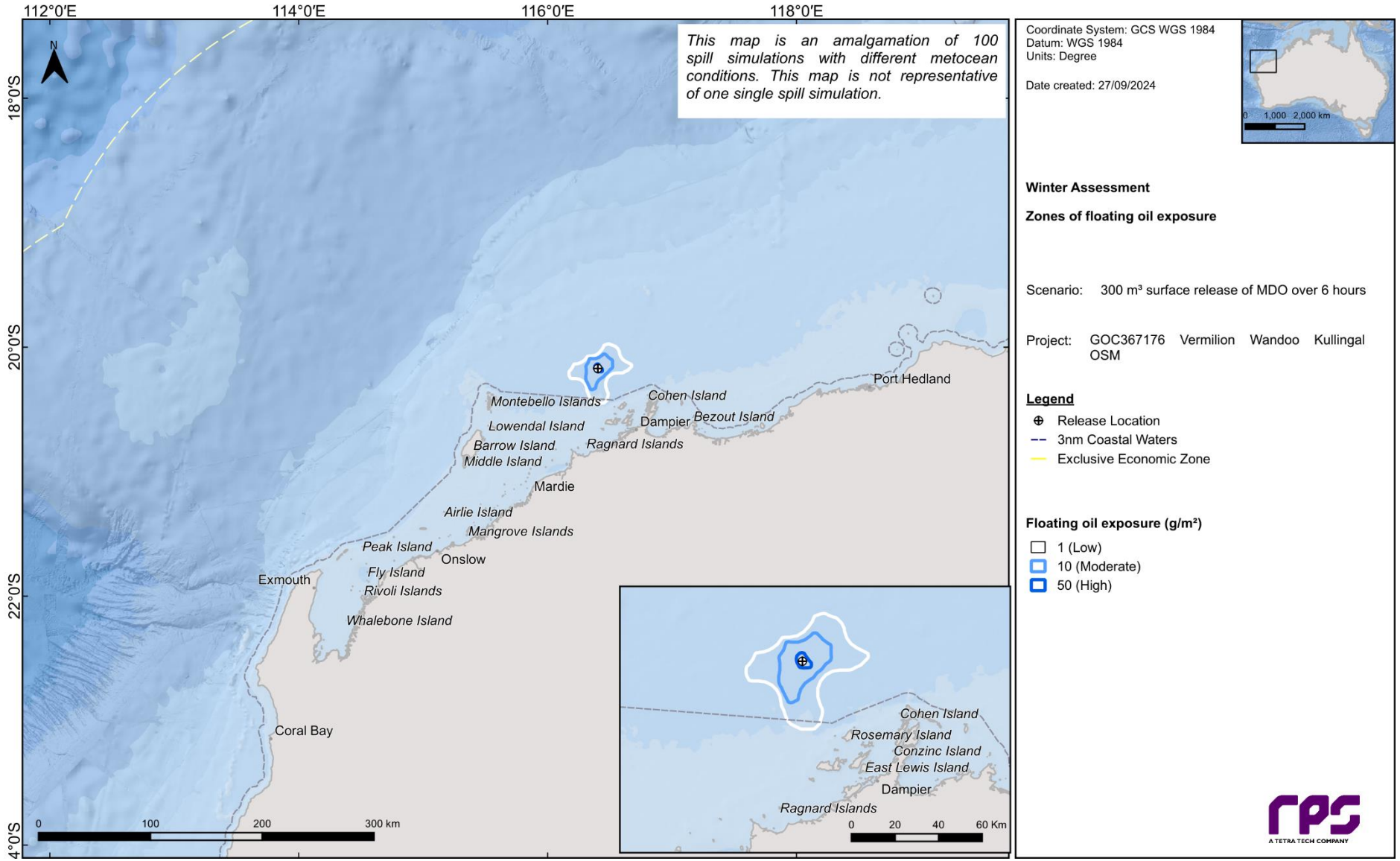


Figure 14.4 Predicted zones of floating oil exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

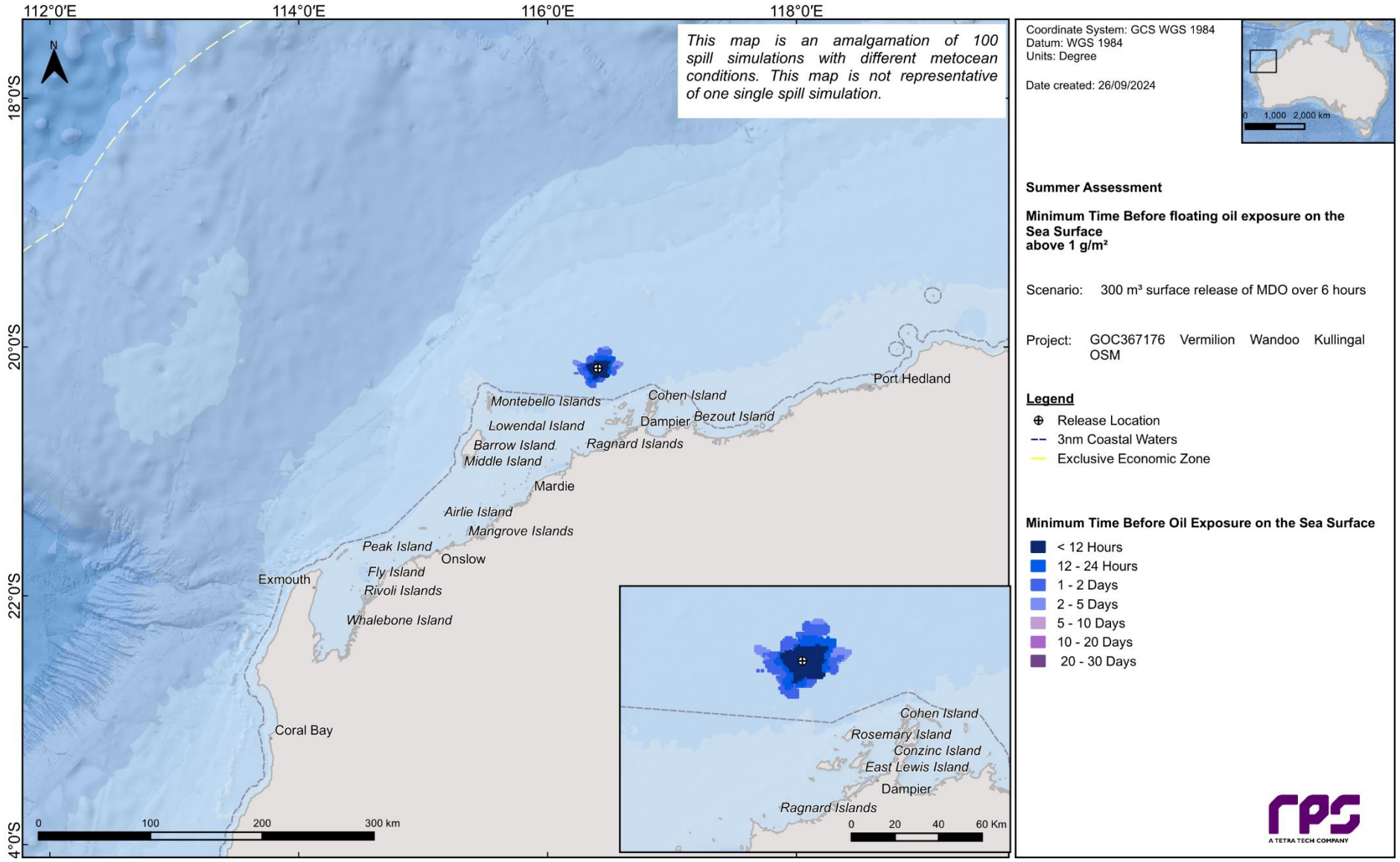


Figure 14.5 Minimum time before floating oil exposure at, or above, 1 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

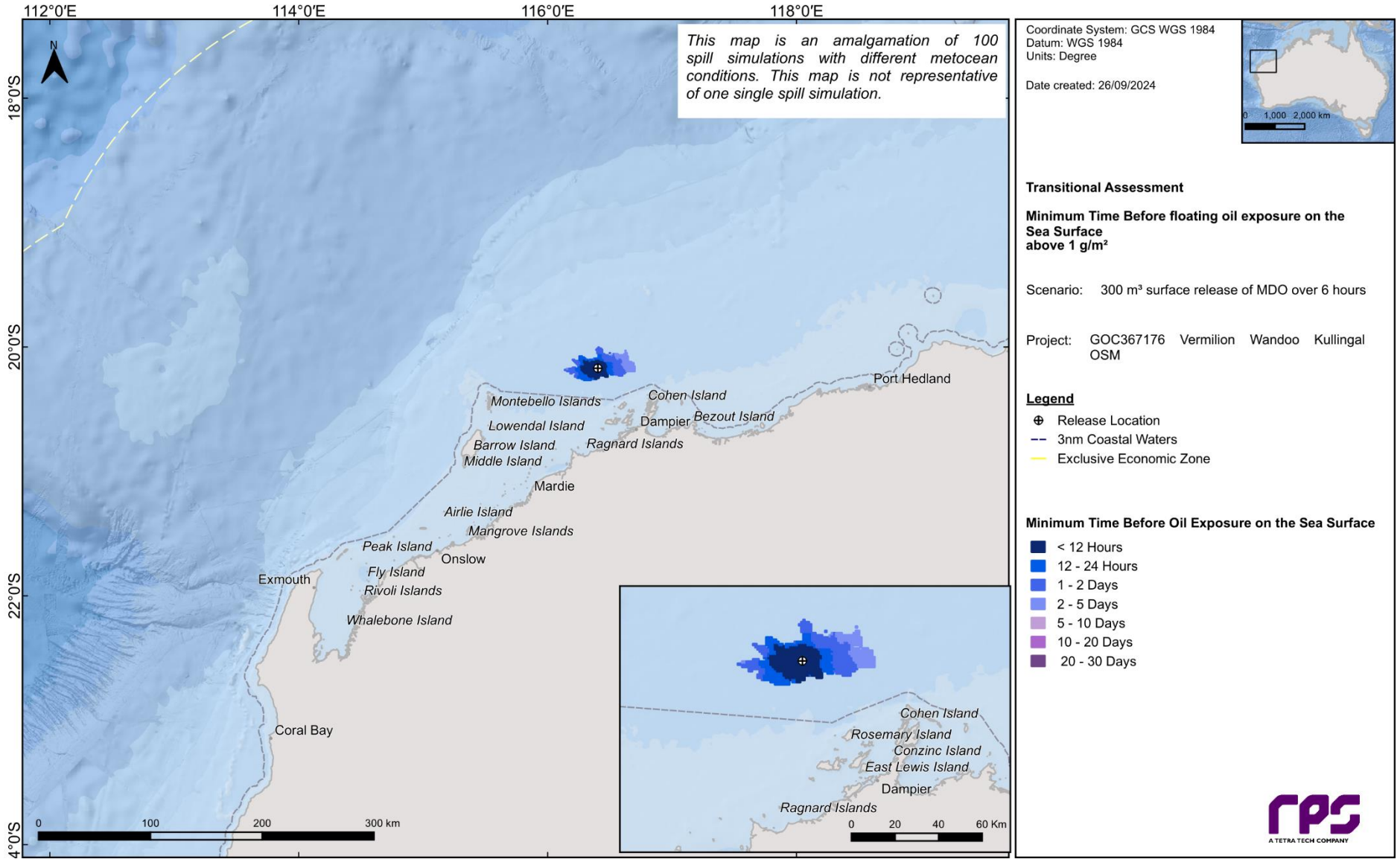


Figure 14.6 Minimum time before floating oil exposure at, or above, 1 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

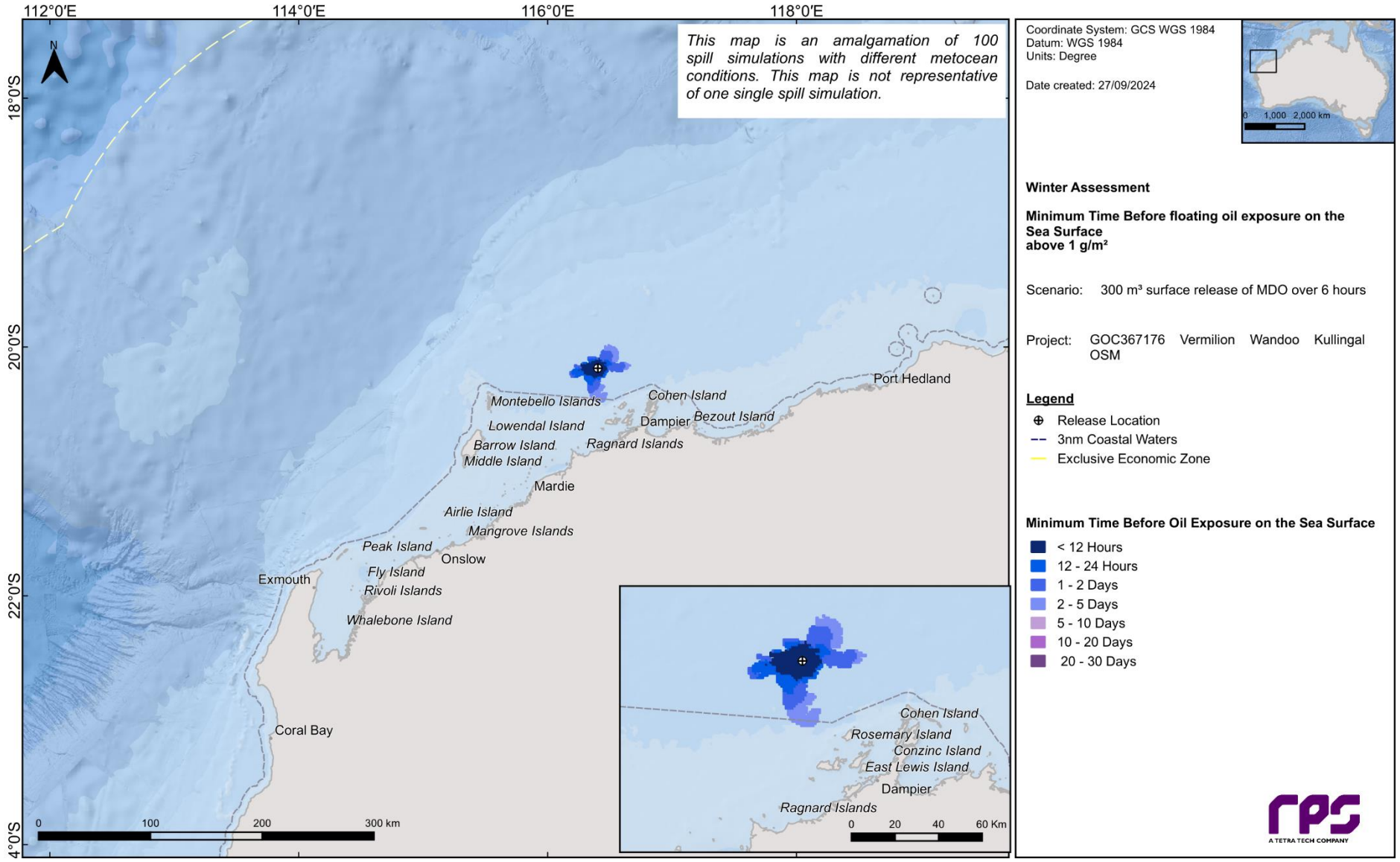


Figure 14.7 Minimum time before floating oil exposure at, or above, 1 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

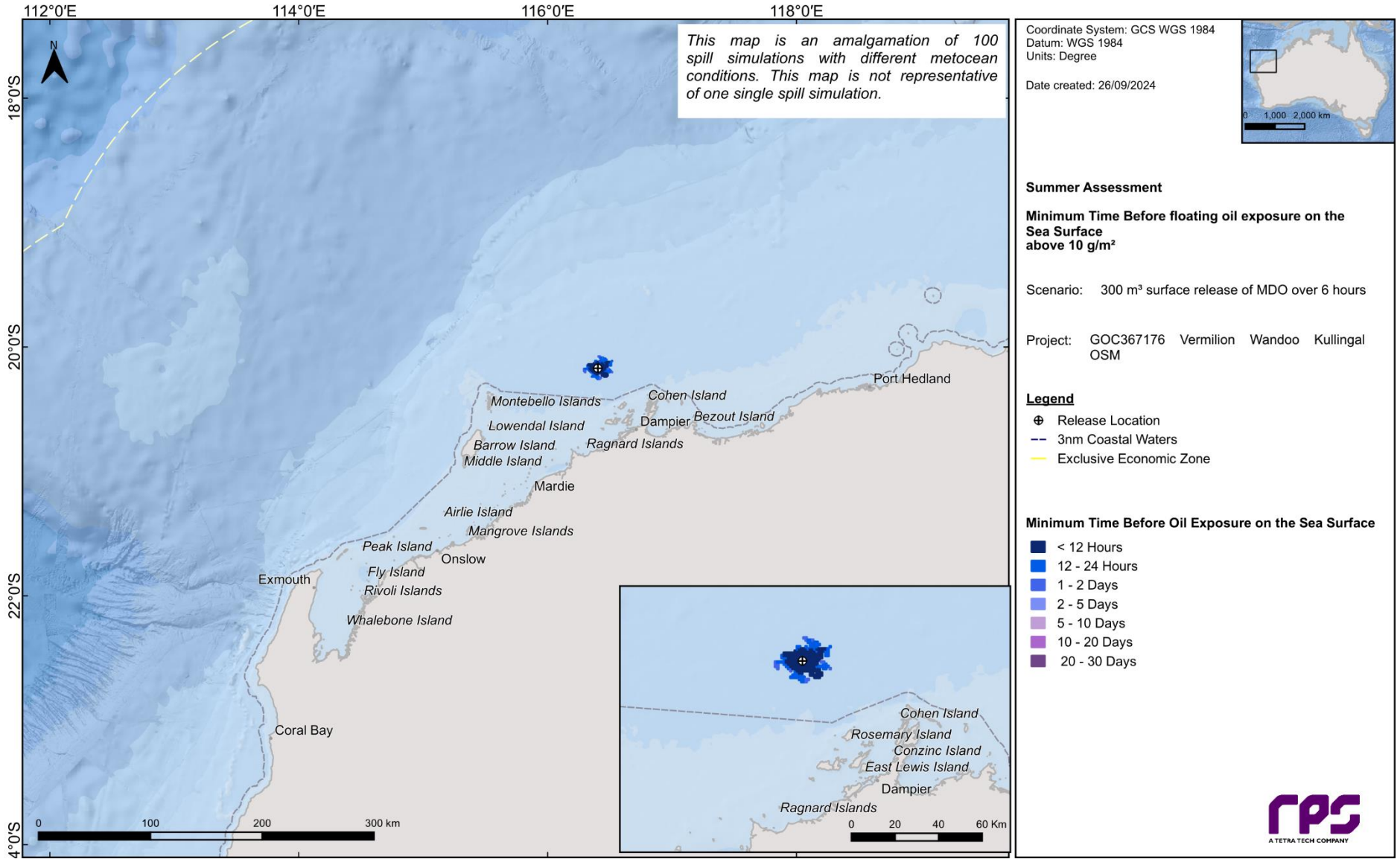


Figure 14.8 Minimum time before floating oil exposure at, or above, 10 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

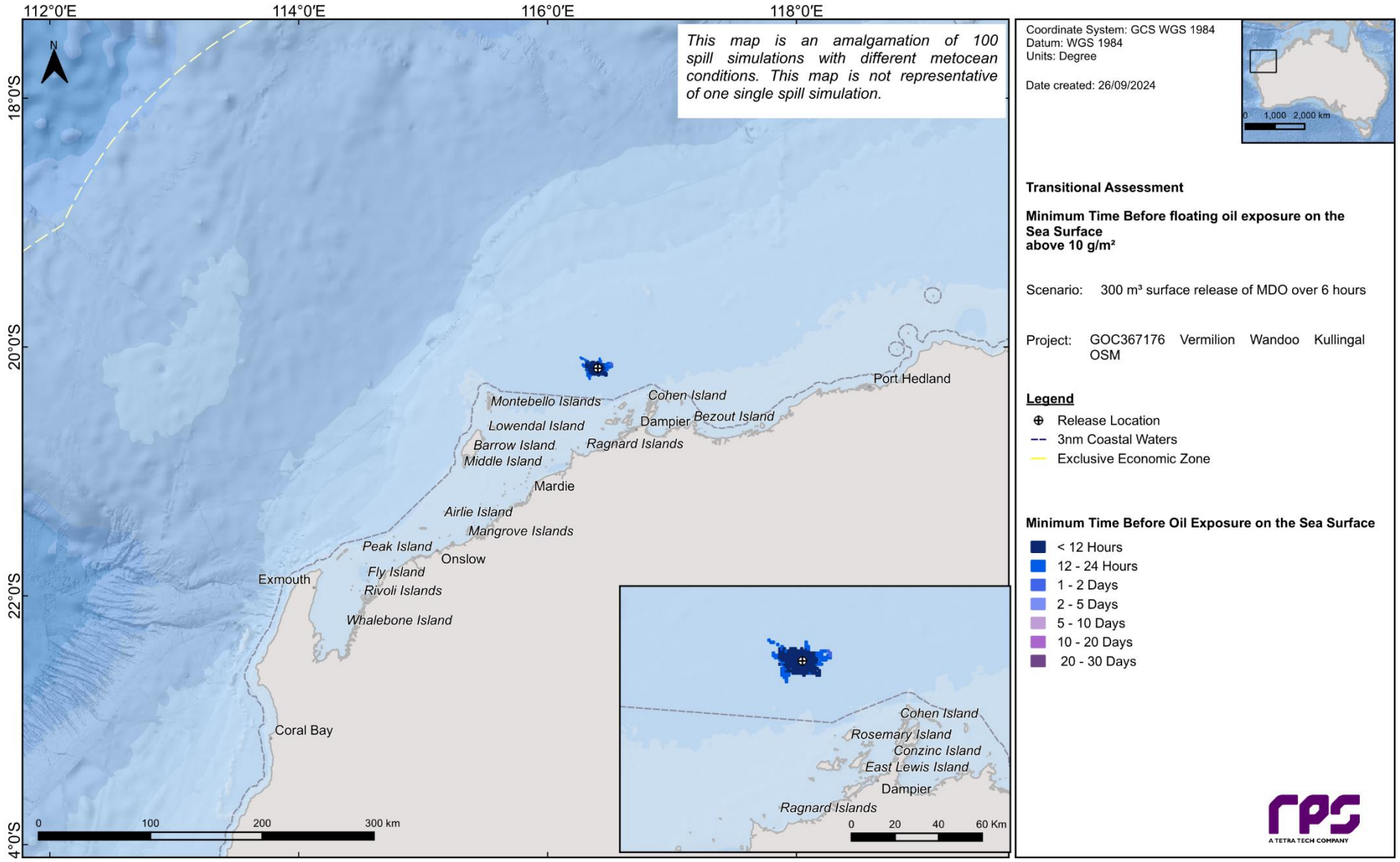


Figure 14.9 Minimum time before floating oil exposure at, or above, 10 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

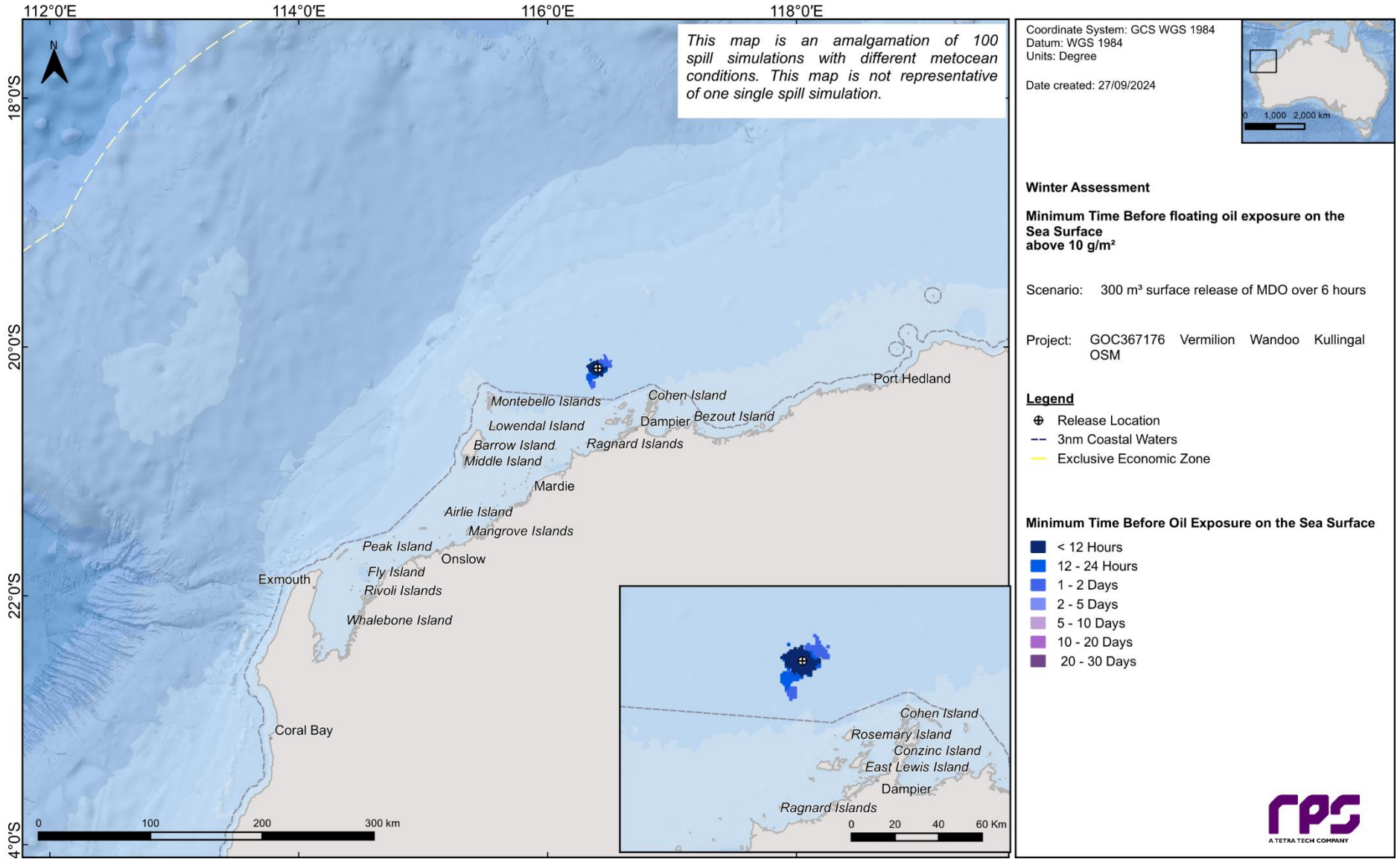


Figure 14.10 Minimum time before floating oil exposure at, or above, 10 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

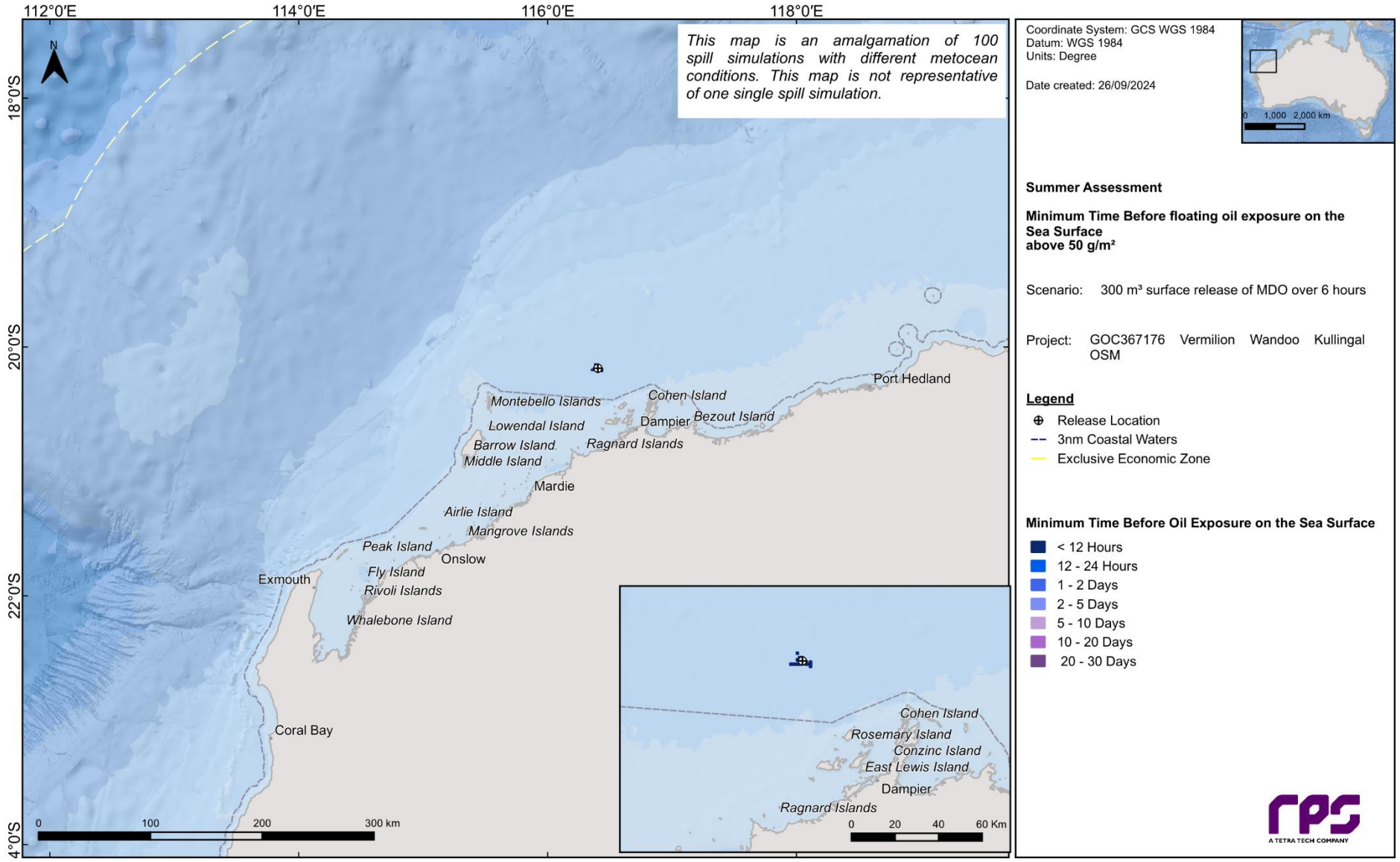


Figure 14.11 Minimum time before floating oil exposure at, or above, 50 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

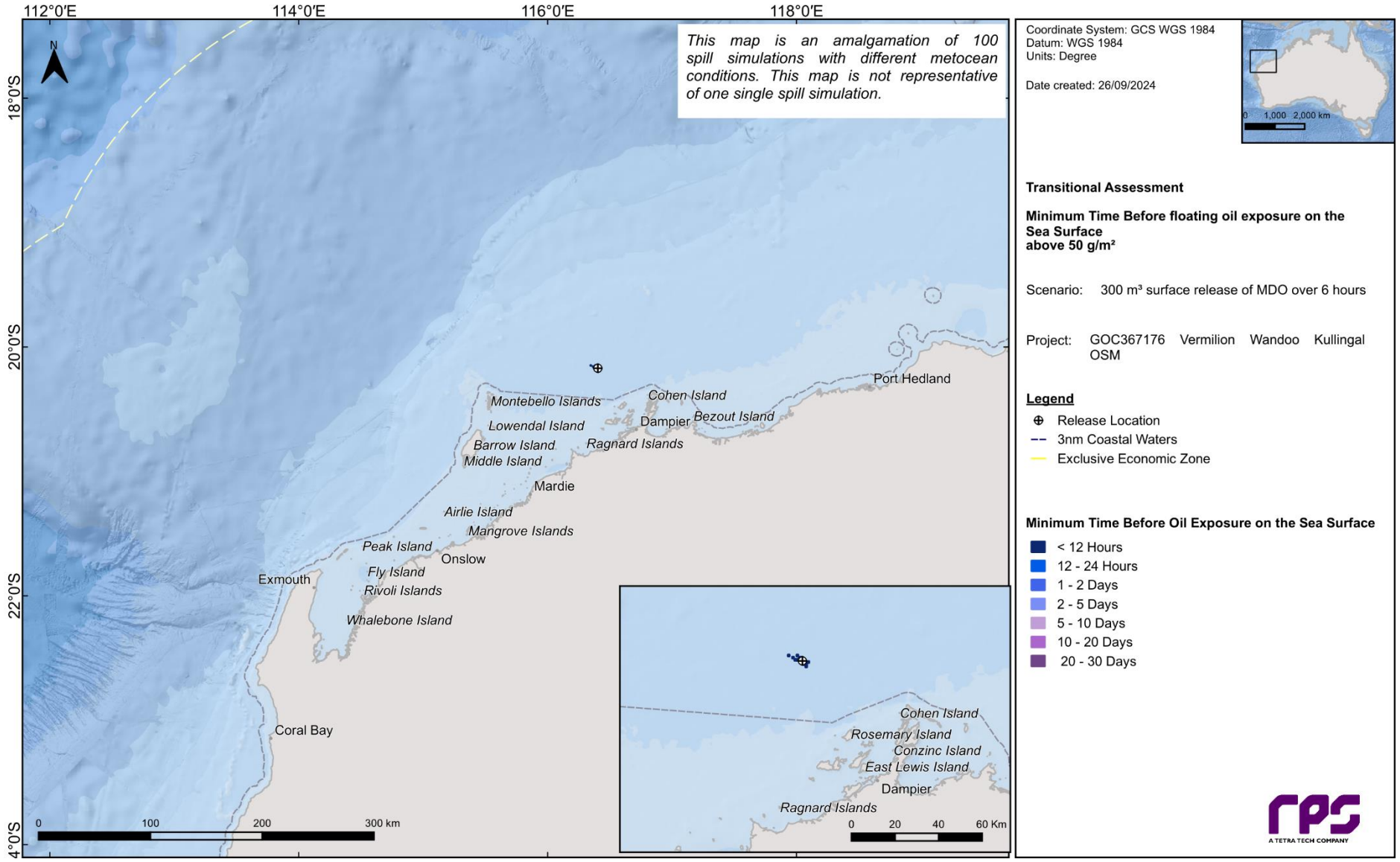


Figure 14.12 Minimum time before floating oil exposure at, or above, 50 g/m^2 following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

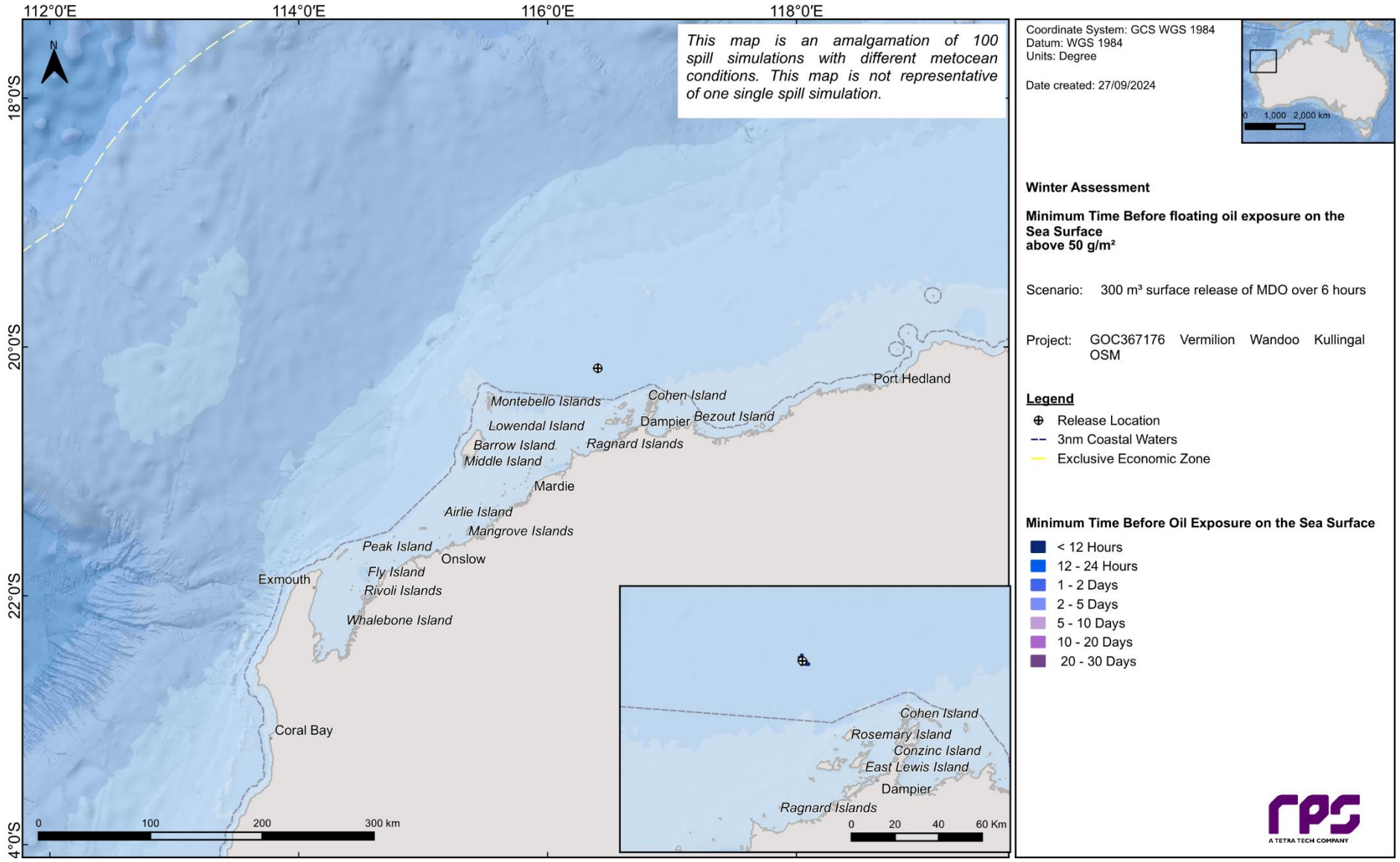


Figure 14.13 Minimum time before floating oil exposure at, or above, 50 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

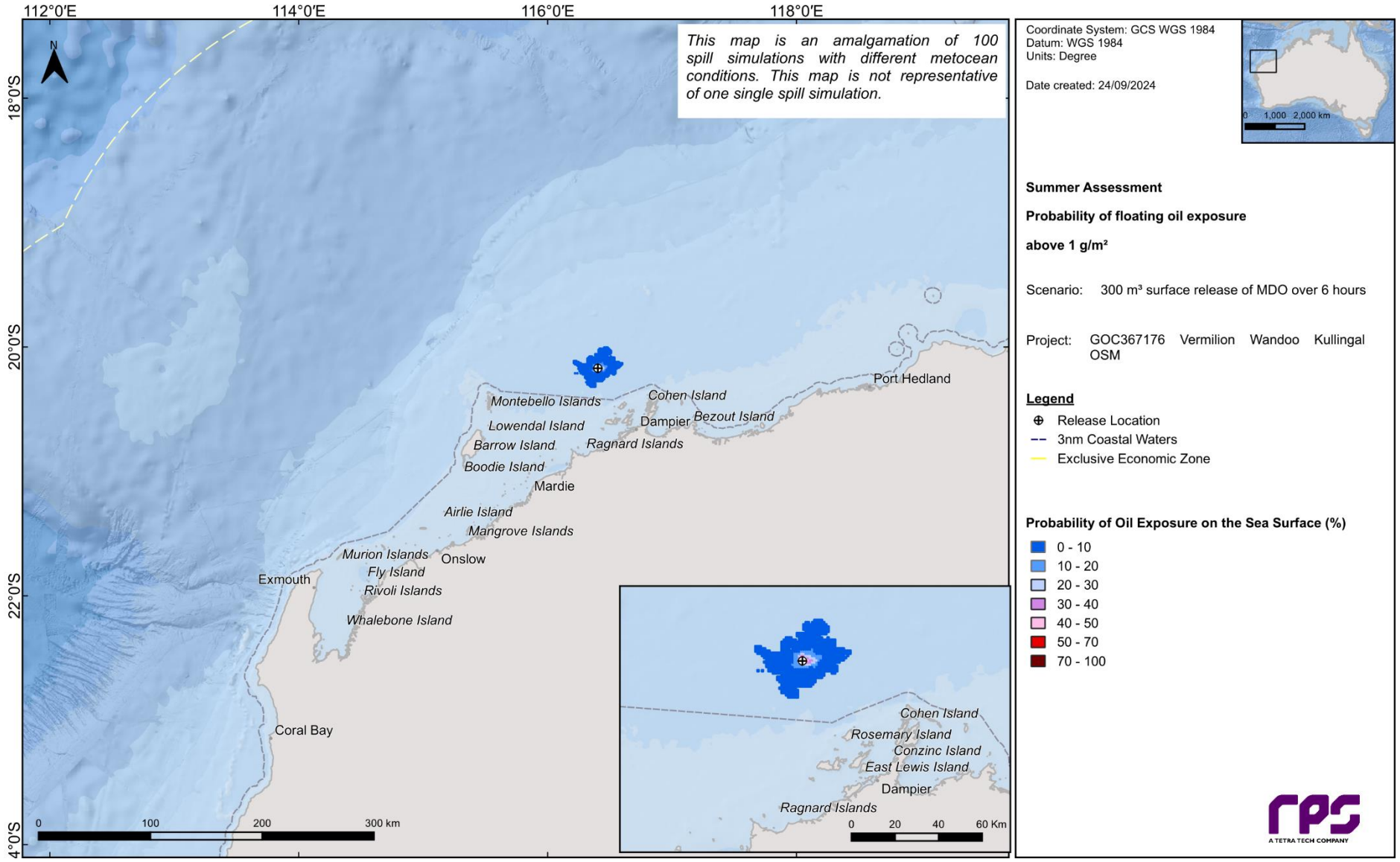


Figure 14.14 Probability of floating oil exposure at, or above, 1 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

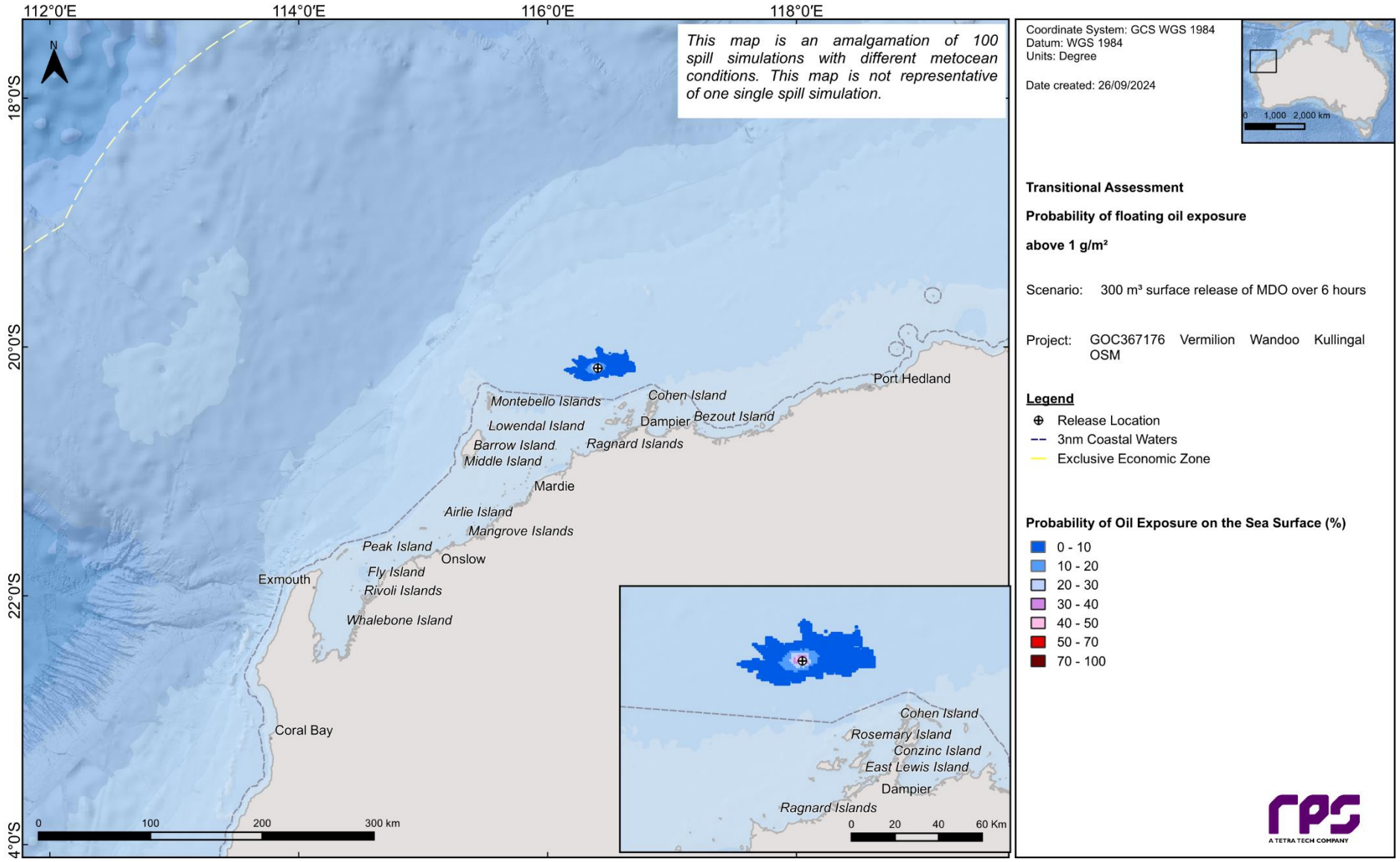


Figure 14.15 Probability of floating oil exposure at, or above, 1 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

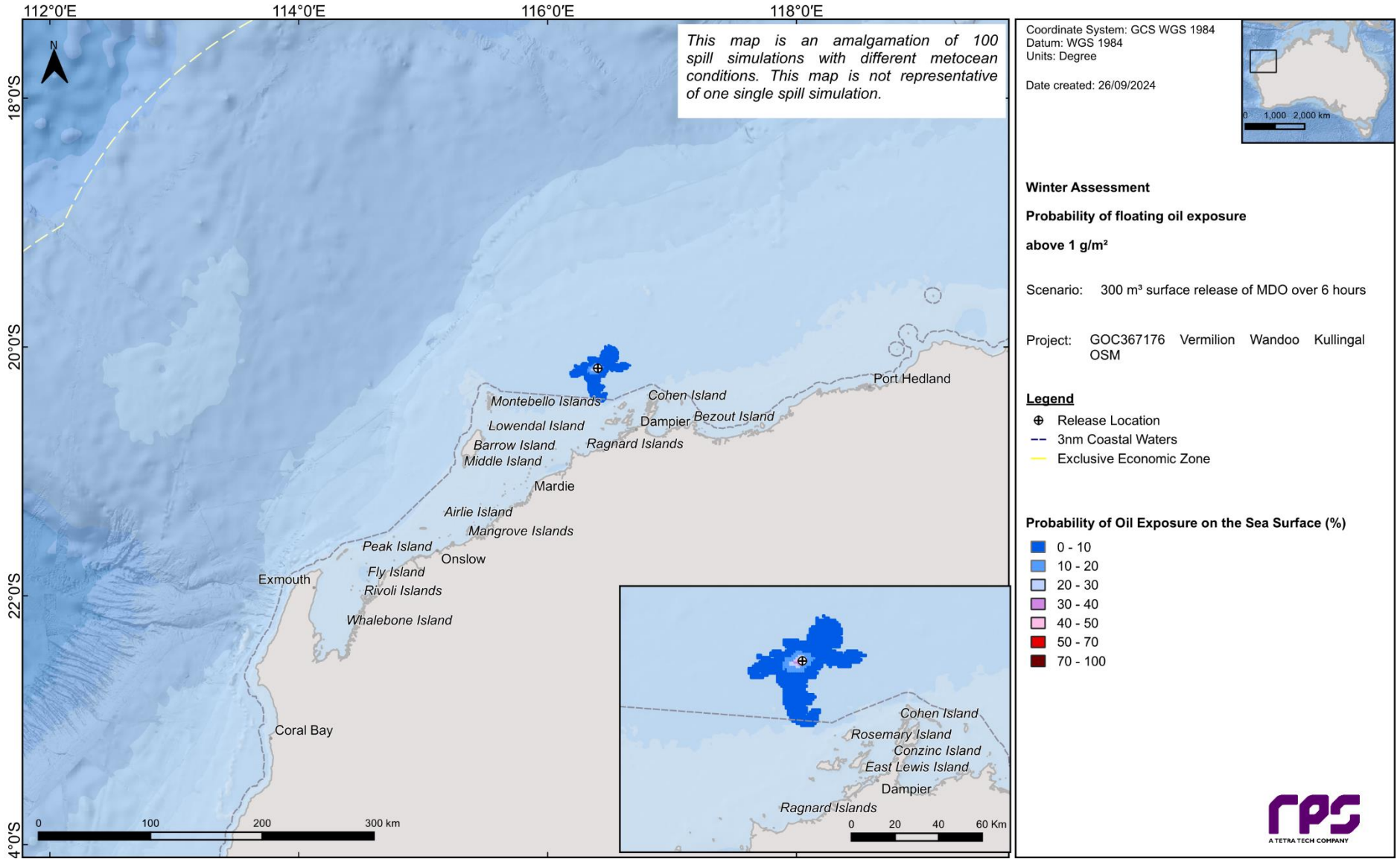


Figure 14.16 Probability of floating oil exposure at, or above, 1 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

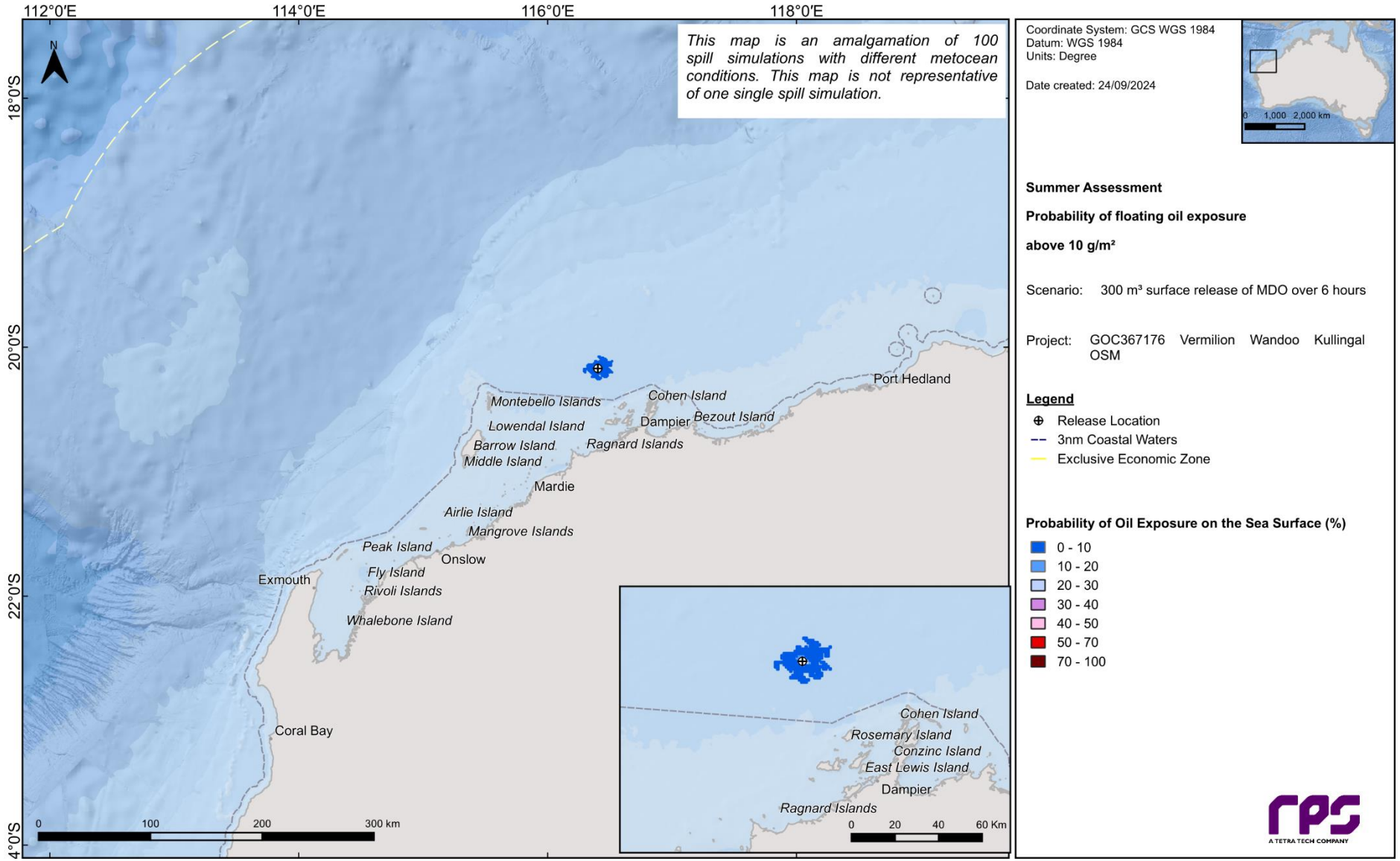


Figure 14.17 Probability of floating oil exposure at, or above, 10 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

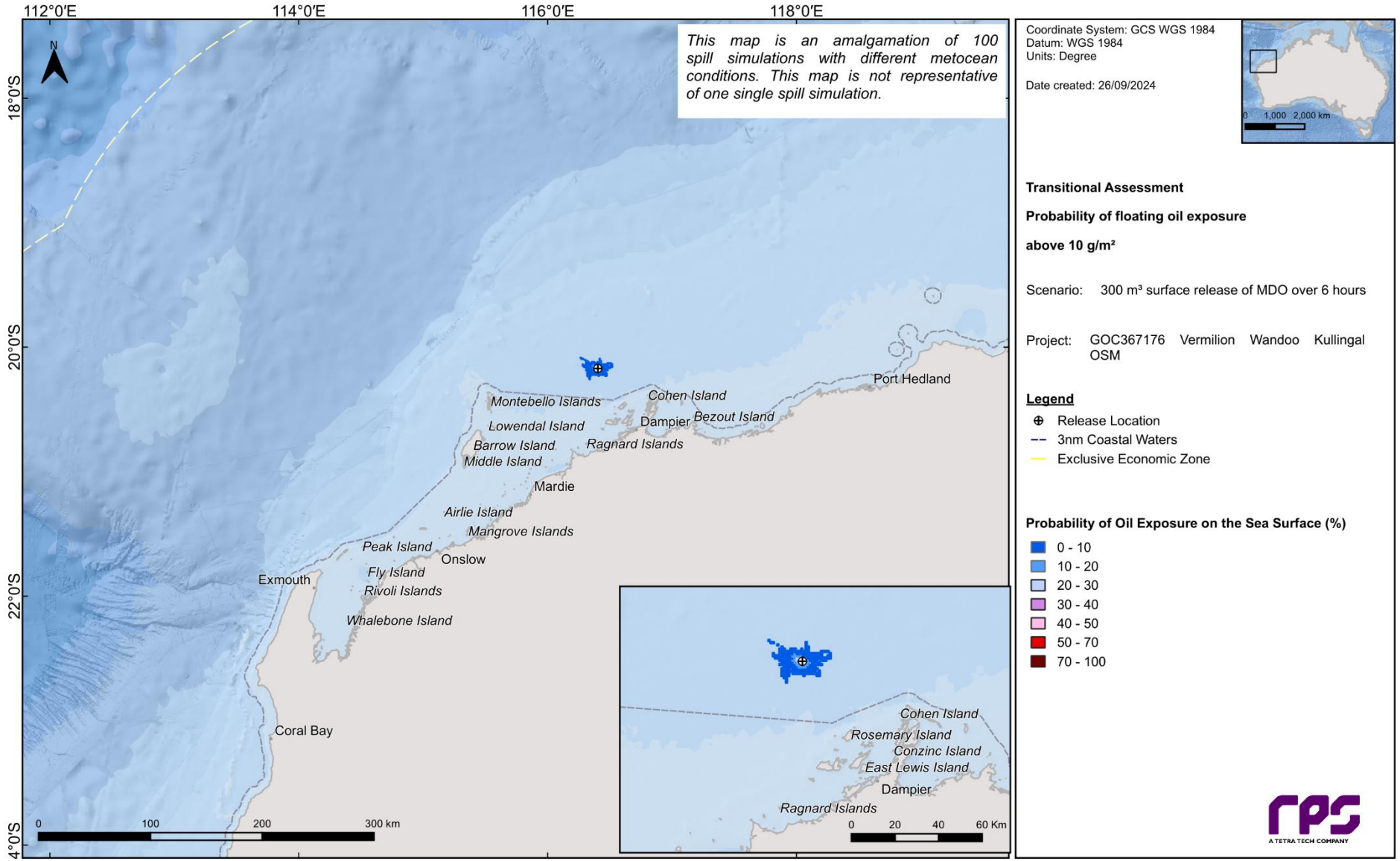


Figure 14.18 Probability of floating oil exposure at, or above, 10 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

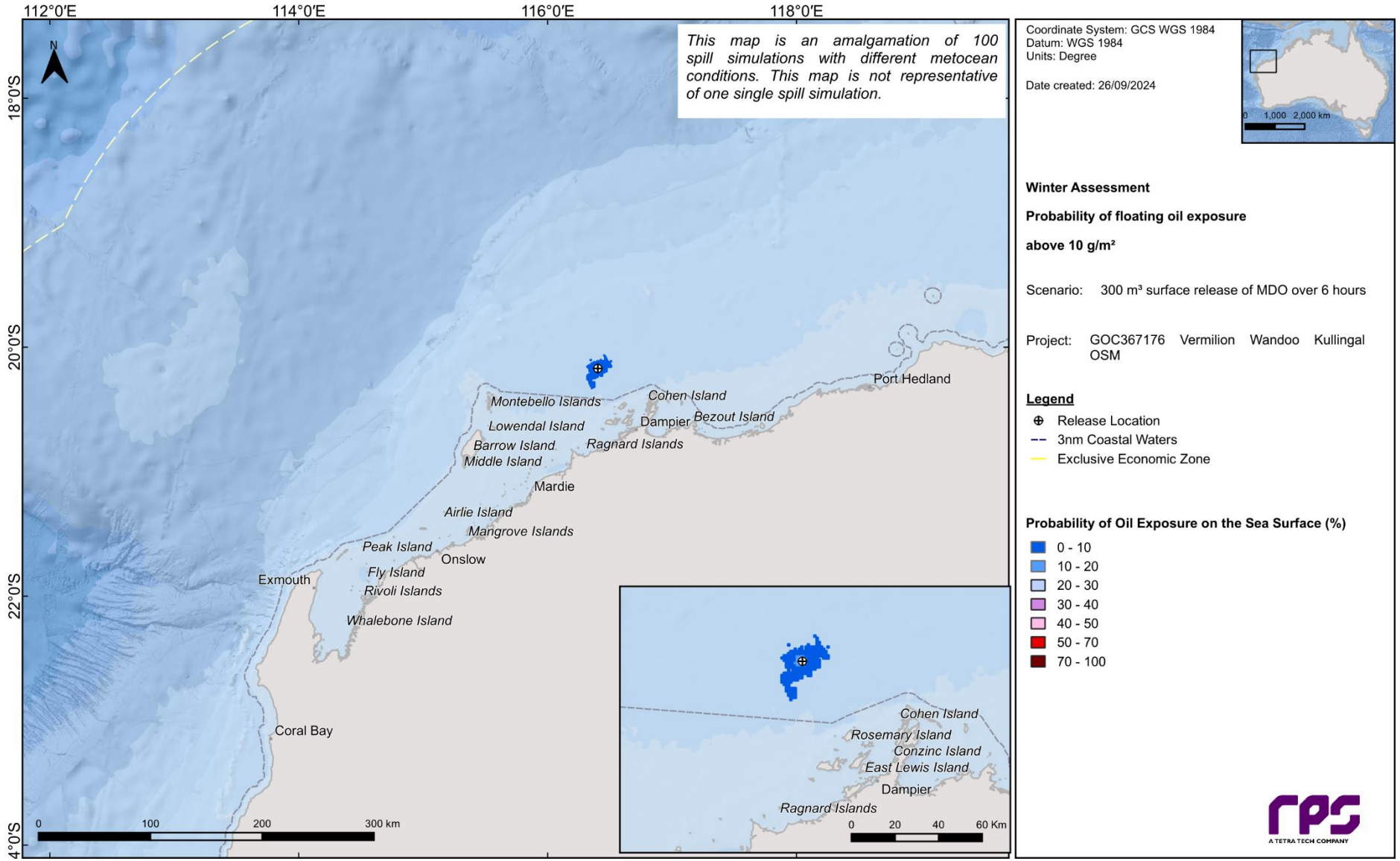


Figure 14.19 Probability of floating oil exposure at, or above, 10 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

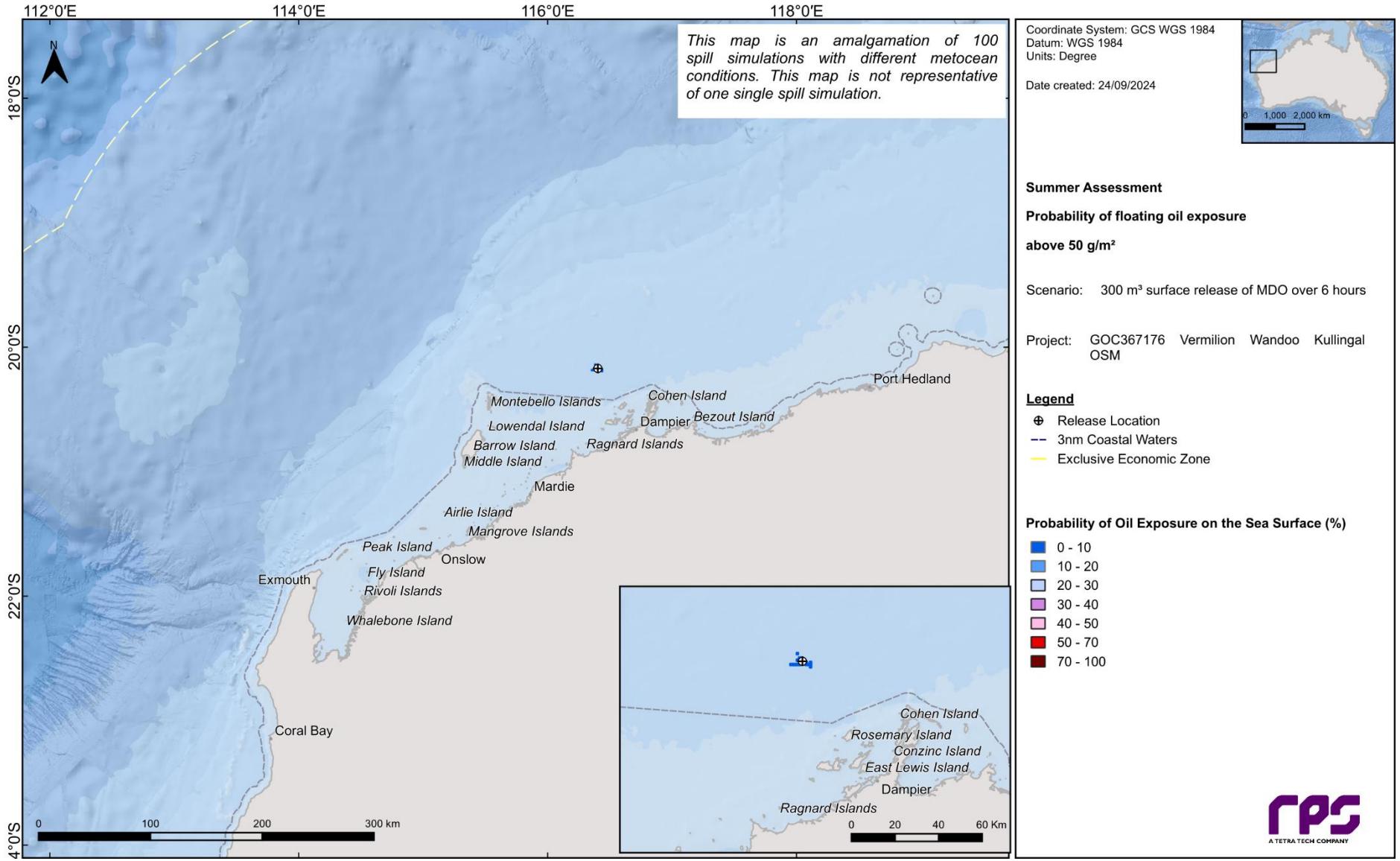


Figure 14.20 Probability of floating oil exposure at, or above, 50 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

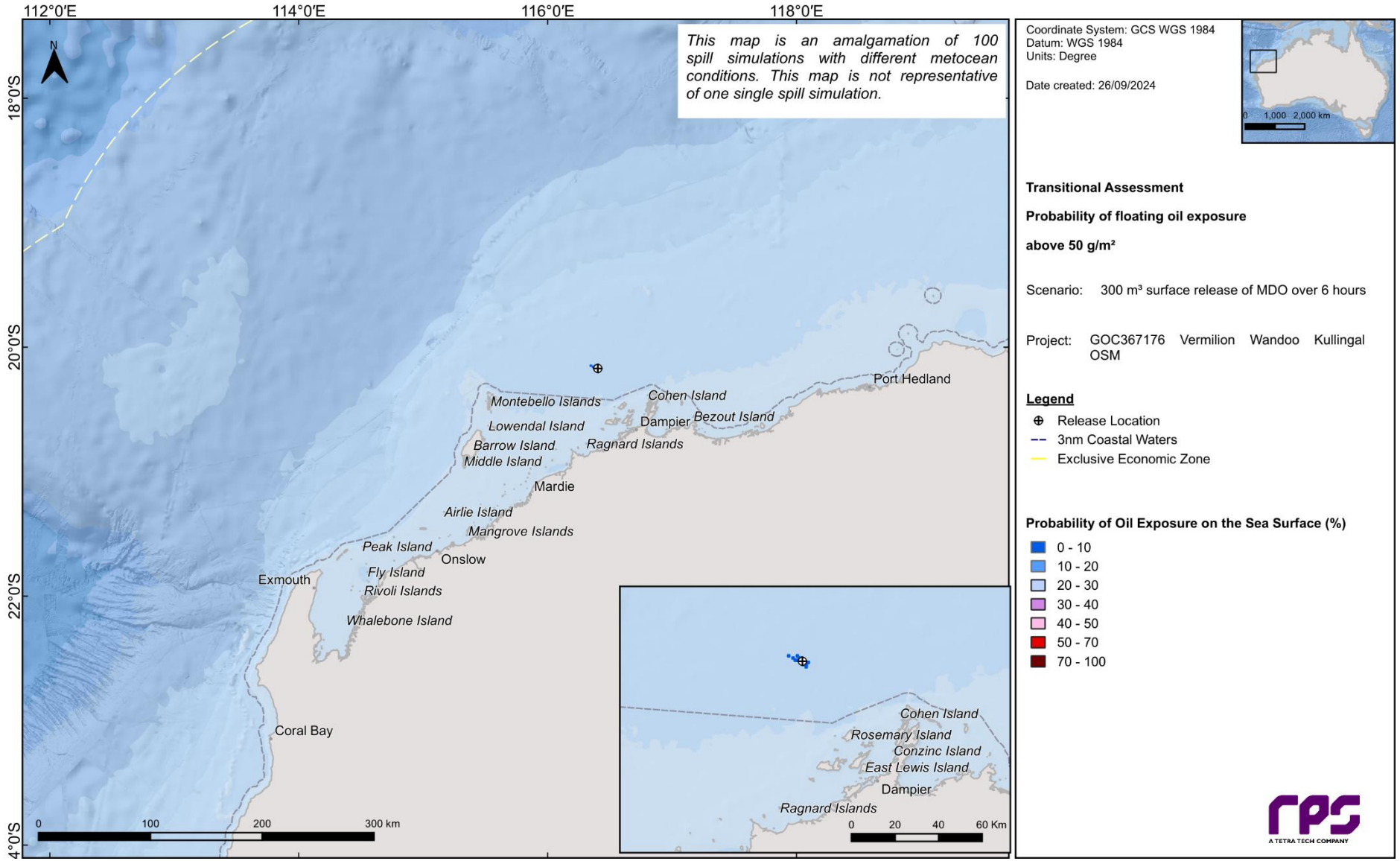


Figure 14.21 Probability of floating oil exposure at, or above, 50 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

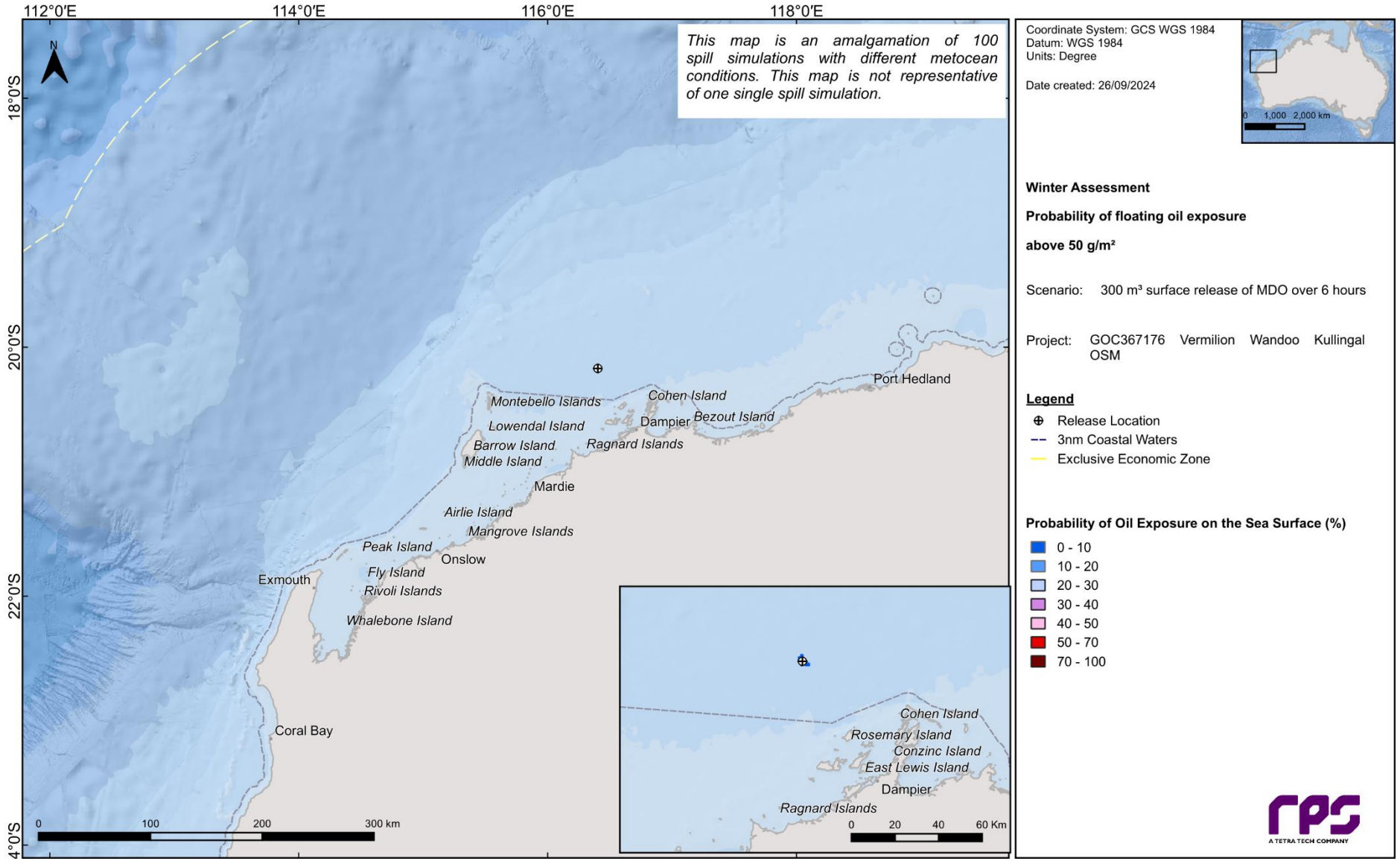


Figure 14.22 Probability of floating oil exposure at, or above, 50 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

14.1.3 Shoreline accumulation

Table 14.2 summarizes the predicted oil accumulation on shorelines across different seasons and thresholds. The highest probability of oil accumulation on any shoreline at, or above, the 10 g/m^2 threshold was recorded during winter, reaching 24%. The shortest time for oil to reach any shoreline at this threshold was 91 hours, also during winter. The maximum volume of oil ashore from a single spill was 23.2 m^3 also occurring during winter.

Table 14.3 to

Table 14.5 present the predicted oil accumulation for specific shoreline cells for each season.

The highest probability of shoreline oil accumulation at, or above, the 10 g/m^2 threshold was forecast for WA11.West (318) - Barrow Island and Montebello Islands (A), with probabilities of 2%, 6%, and 15% during the summer, transitional, and winter seasons, respectively. During summer, transitional and winter conditions, the same shoreline cell was predicted to experience quickest time before oil accumulation at 152 hours, 136 hours and 91 hours after the spill commencement. Additionally, the same shoreline cell recorded the highest volume of oil ashore with 23.2 m^3, during a spill simulation that commenced under winter conditions (see Table 14.5).

The seasonal maximum potential shoreline oil accumulation are presented in Figure 14.23 to Figure 14.25 and probabilities for each of the thresholds and seasons are presented in Figure 14.26 to Figure 14.30.

Table 14.2 Summary of oil accumulation on any shoreline following a vessel collision at Kullingal. Results were calculated from 100 spill simulations per season.

Shoreline statistics	Summer			Transitional			Winter		
	Shoreline accumulation thresholds			Shoreline accumulation thresholds			Shoreline accumulation thresholds		
	10 g/m^2	100 g/m^2	1,000 g/m^2	10 g/m^2	100 g/m^2	1,000 g/m^2	10 g/m^2	100 g/m^2	1,000 g/m^2
Probability of contact to any shoreline (%)	2	NC	NC	9	1	NC	24	6	NC
Absolute minimum time to shore (hours)	152	NC	NC	136	366	NC	91	110	NC
Maximum accumulated volume (m^3) from a single spill simulation	1.2	NC	NC	5.3	1.6	NC	23.2	20.3	NC
Average accumulated volume (m^3) across all spill simulations	<1	NC	NC	<1	<1	NC	1.0	<1	NC
Maximum length of shoreline (km) from a single spill simulation	5	NC	NC	19	1	NC	14	6	NC
Average length of shoreline (km) across all spill simulations	0.08	NC	NC	0.51	0.01	NC	1.55	0.23	NC

NC: No contact to receptor predicted for specified threshold.

Table 14.3 Summary of shoreline oil accumulation on WAMOPRA shoreline cells following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

WAMOPRA shoreline cells	Probability (%) of shoreline oil on receptors at			Minimum time to receptor (hours) for shoreline oil at			Maximum local accumulated concentration (g/m²)		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 10 g/m²		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 100 g/m²		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 1,000 g/m²		Maximum length of shoreline (km) with concentrations ≥ 10 g/m²		Maximum length of shoreline (km) with concentrations ≥ 100 g/m²		Maximum length of shoreline (km) with concentrations ≥ 1,000 g/m²	
	≥ 10 g/m²	≥ 100 g/m²	≥ 1,000 g/m²	≥ 10 g/m²	≥ 100 g/m²	≥ 1,000 g/m²	averaged over all replicate spills	in the worst replicate spill	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation
WA11.West (318) - Barrow Island and Montebello Islands (A)	2	NC	NC	152	NC	NC	<1	50	<1	2	NC	NC	NC	NC	<1	5	NC	NC	NC	NC

Table 14.4 Summary of shoreline oil accumulation on WAMOPRA shoreline cells following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

WAMOPRA shoreline cells	Probability (%) of shoreline oil on receptors at			Minimum time to receptor (hours) for shoreline oil at			Maximum local accumulated concentration (g/m²)		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 10 g/m²		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 100 g/m²		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 1,000 g/m²		Maximum length of shoreline (km) with concentrations ≥ 10 g/m²		Maximum length of shoreline (km) with concentrations ≥ 100 g/m²		Maximum length of shoreline (km) with concentrations ≥ 1,000 g/m²	
	≥ 10 g/m²	≥ 100 g/m²	≥ 1,000 g/m²	≥ 10 g/m²	≥ 100 g/m²	≥ 1,000 g/m²	averaged over all replicate spills	in the worst replicate spill	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation
WA11.West (318) - Barrow Island and Montebello Islands (A)	6	1	NC	136	366	NC	3.3	150	<1	4	<1	2	NC	NC	<1	11	<1	1	NC	NC
WA11.West (319) - Barrow Island and Montebello Islands (B)	1	NC	NC	158	NC	NC	<1	66	<1	3	NC	NC	NC	NC	<1	8	NC	NC	NC	NC
WA11.West (329) - Locker Point - Baresand Point	1	NC	NC	387	NC	NC	<1	18	<1	<1	NC	NC	NC	NC	<1	2	NC	NC	NC	NC

Table 14.5 Summary of shoreline oil accumulation on WAMOPRA shoreline cells following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

WAMOPRA shoreline cells	Probability (%) of shoreline oil on receptors at			Minimum time to receptor (hours) for shoreline oil at			Maximum local accumulated concentration (g/m²)		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 10 g/m²		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 100 g/m²		Maximum accumulated volume (m³) along this shoreline with concentrations ≥ 1,000 g/m²		Maximum length of shoreline (km) with concentrations ≥ 10 g/m²		Maximum length of shoreline (km) with concentrations ≥ 100 g/m²		Maximum length of shoreline (km) with concentrations ≥ 1,000 g/m²	
	≥ 10 g/m²	≥ 100 g/m²	≥ 1,000 g/m²	≥ 10 g/m²	≥ 100 g/m²	≥ 1,000 g/m²	averaged over all replicate spills	in the worst replicate spill	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation	averaged over all replicate simulations	in the worst replicate simulation
WA11.West (318) - Barrow Island and Montebello Islands (A)	15	6	NC	91	110	NC	26	634	<1	23	<1	21	NC	NC	2	14	<1	6	NC	NC
WA11.West (319) - Barrow Island and Montebello Islands (B)	4	NC	NC	163	NC	NC	1.4	41	<1	2	NC	NC	NC	NC	<1	6	NC	NC	NC	NC
WA11.West (321) - Barrow Island and Montebello Islands (D)	1	NC	NC	412	NC	NC	<1	22	<1	<1	NC	NC	NC	NC	<1	1	NC	NC	NC	NC
WA11.West (326) - Baresand Point - Entrance Point E	1	NC	NC	265	NC	NC	<1	17	<1	<1	NC	NC	NC	NC	<1	3	NC	NC	NC	NC
WA11.West (329) - Locker Point - Baresand Point	4	NC	NC	276	NC	NC	1.4	21	<1	<1	NC	NC	NC	NC	<1	6	NC	NC	NC	NC

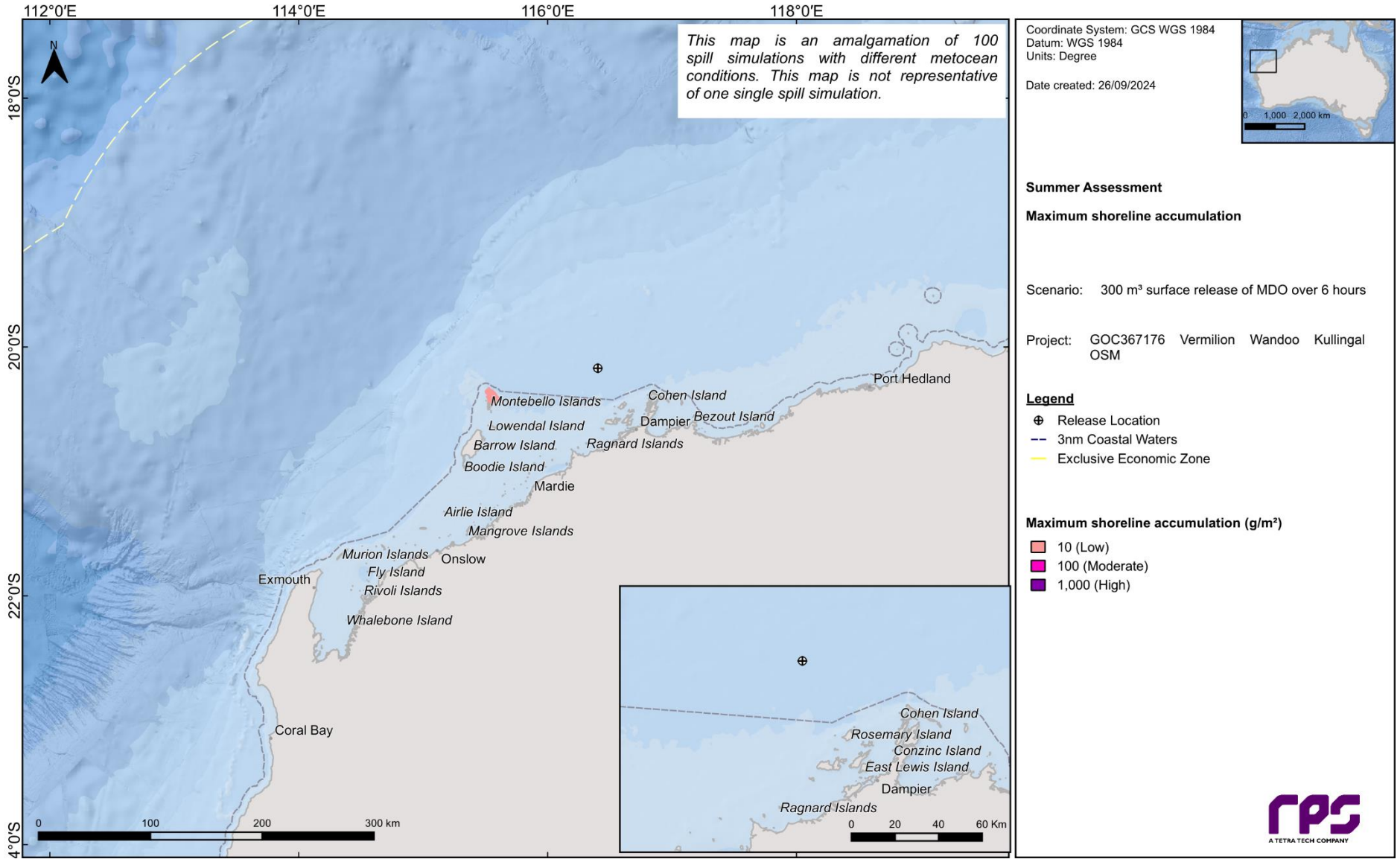


Figure 14.23 Maximum potential shoreline oil accumulation following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

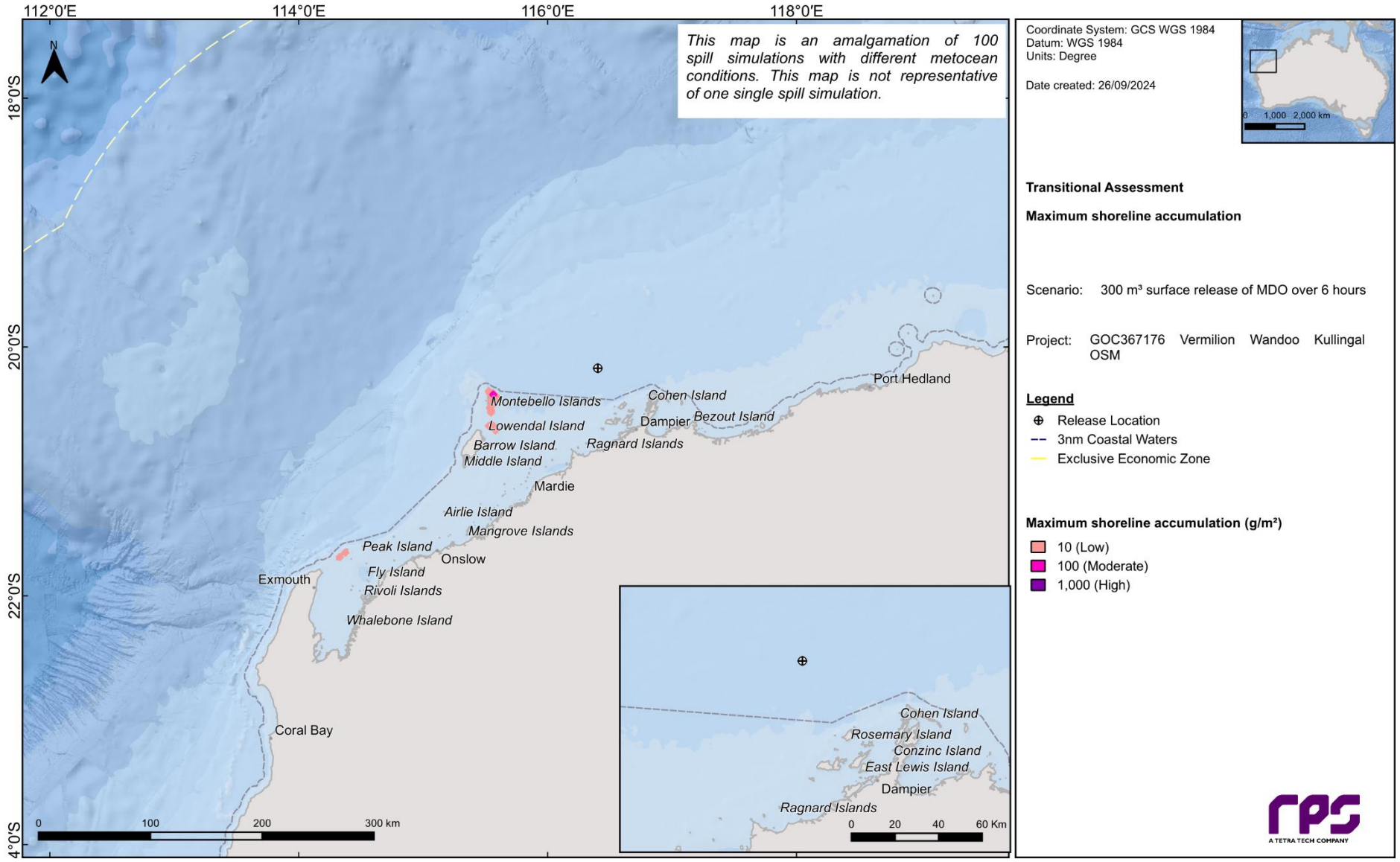


Figure 14.24 Maximum potential shoreline oil accumulation following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

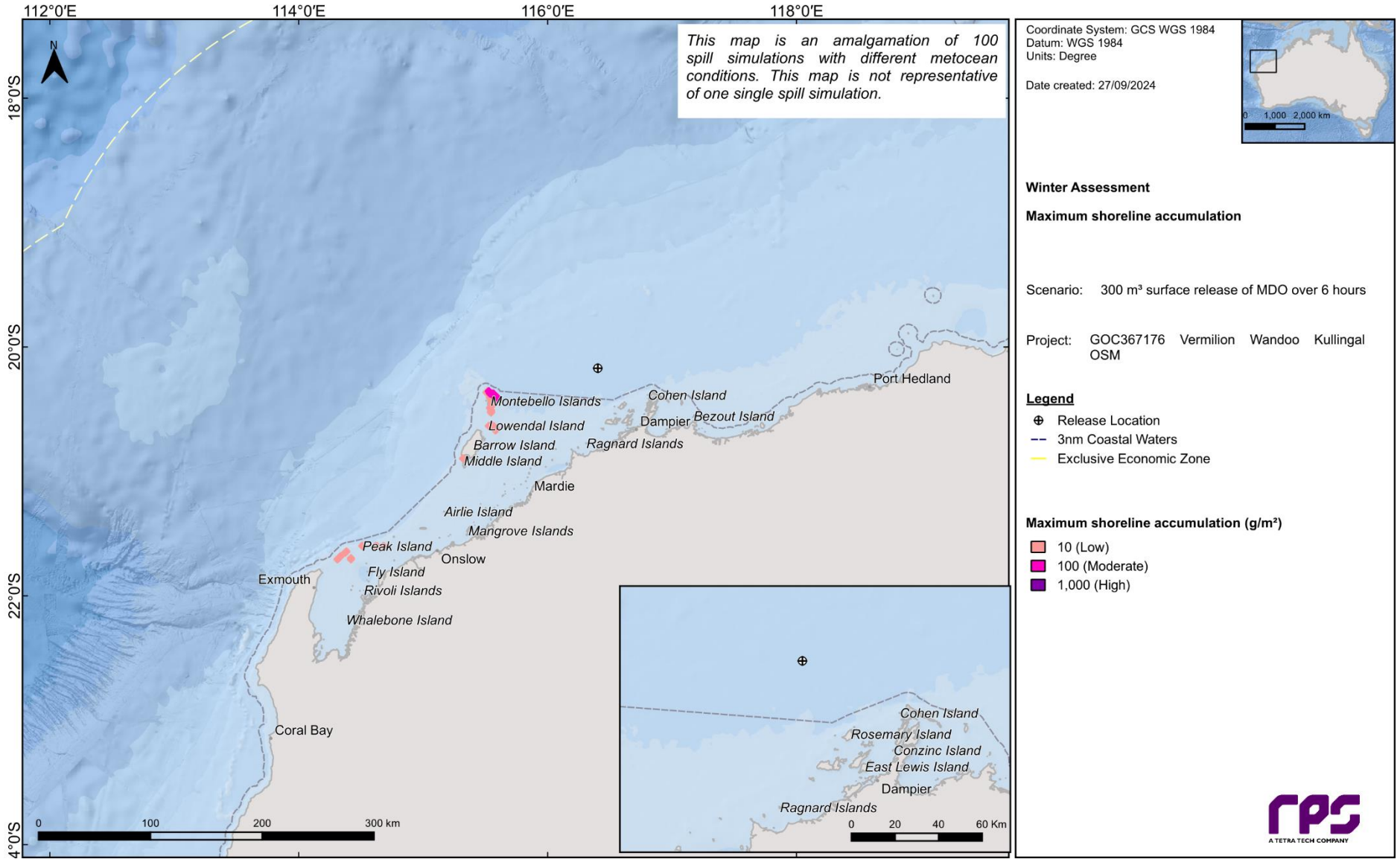


Figure 14.25 Maximum potential shoreline oil accumulation following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

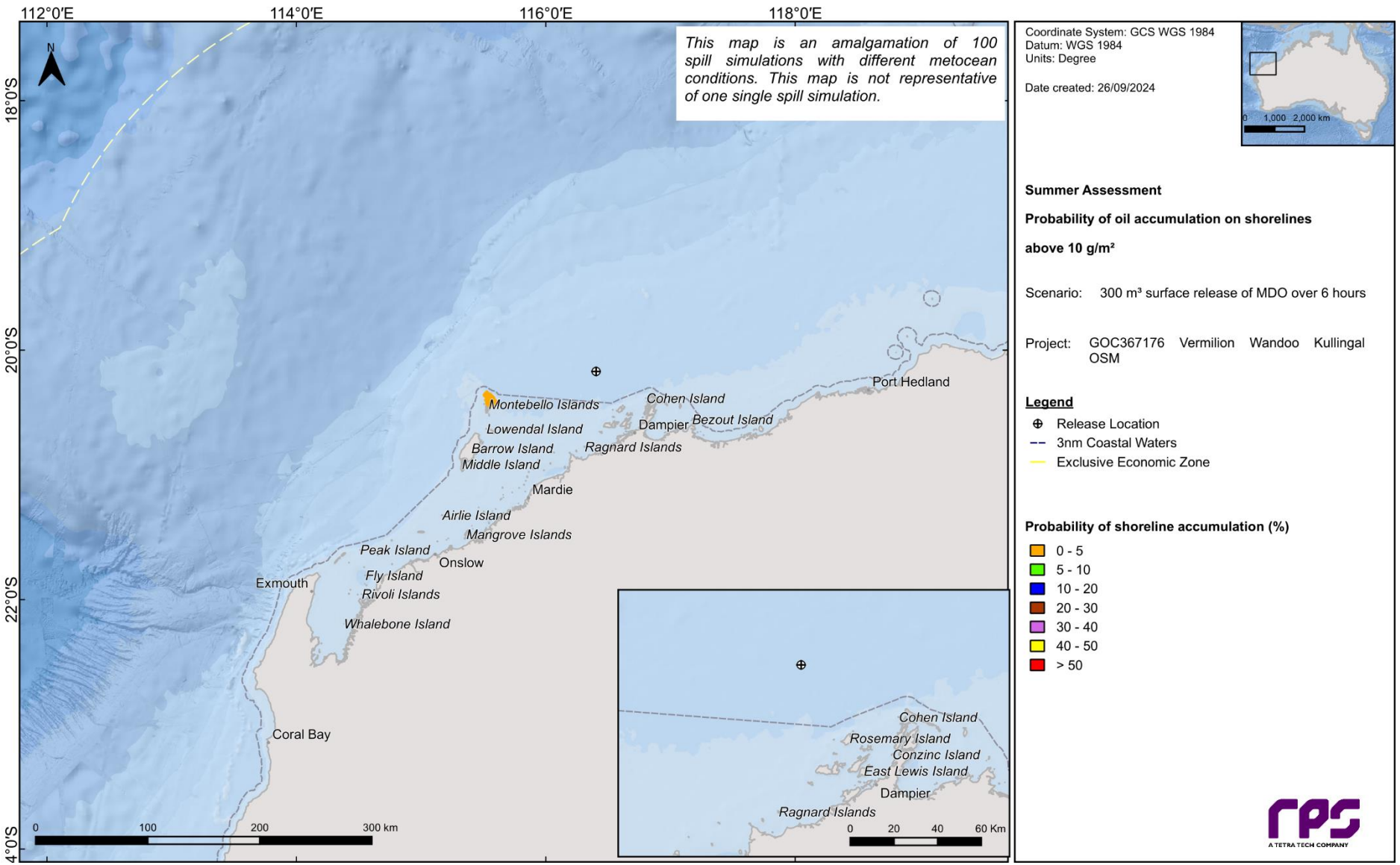


Figure 14.26 Predicted probability of shoreline oil accumulation at, or above, 10 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

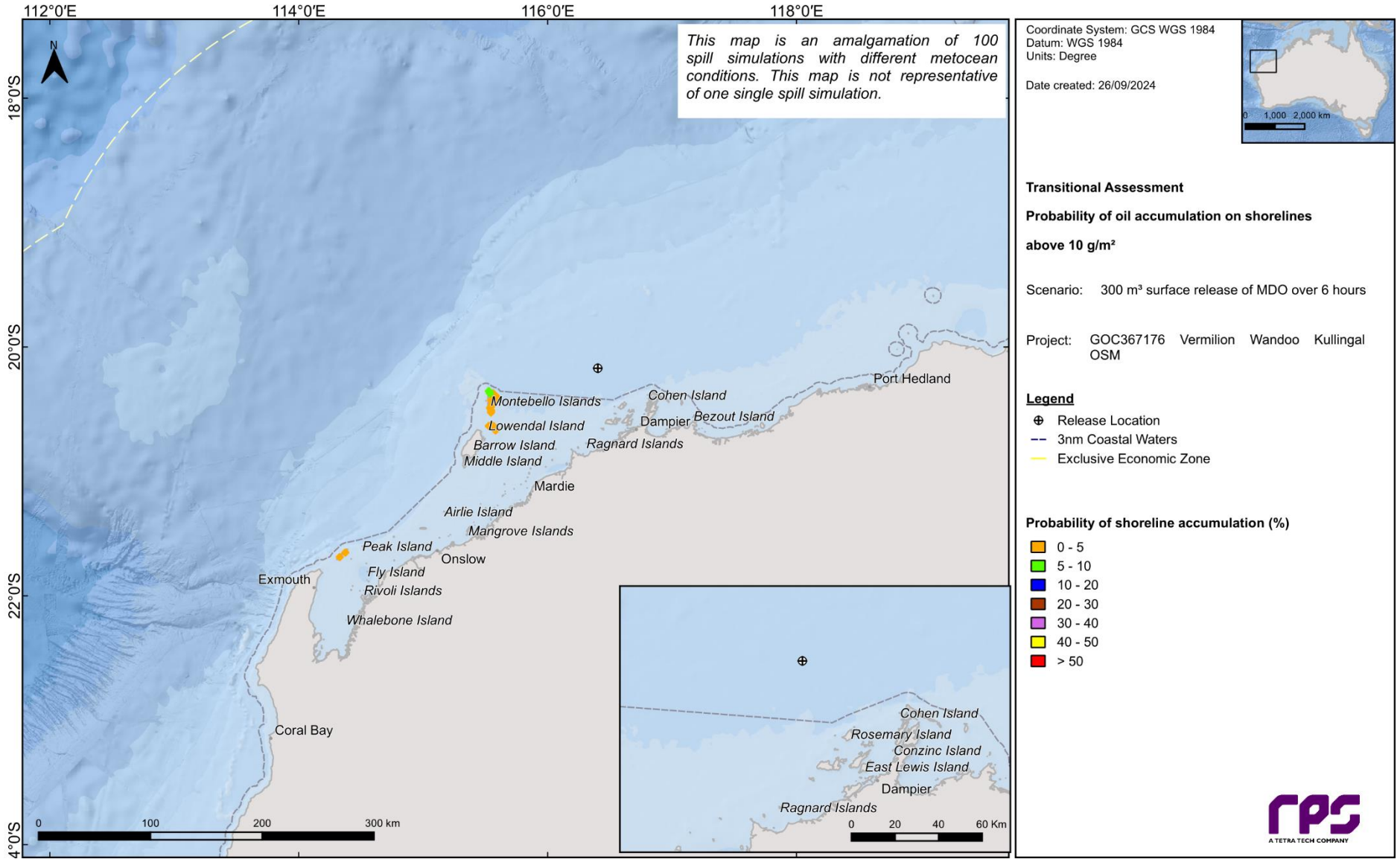


Figure 14.27 Predicted probability of shoreline oil accumulation at, or above, 10 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

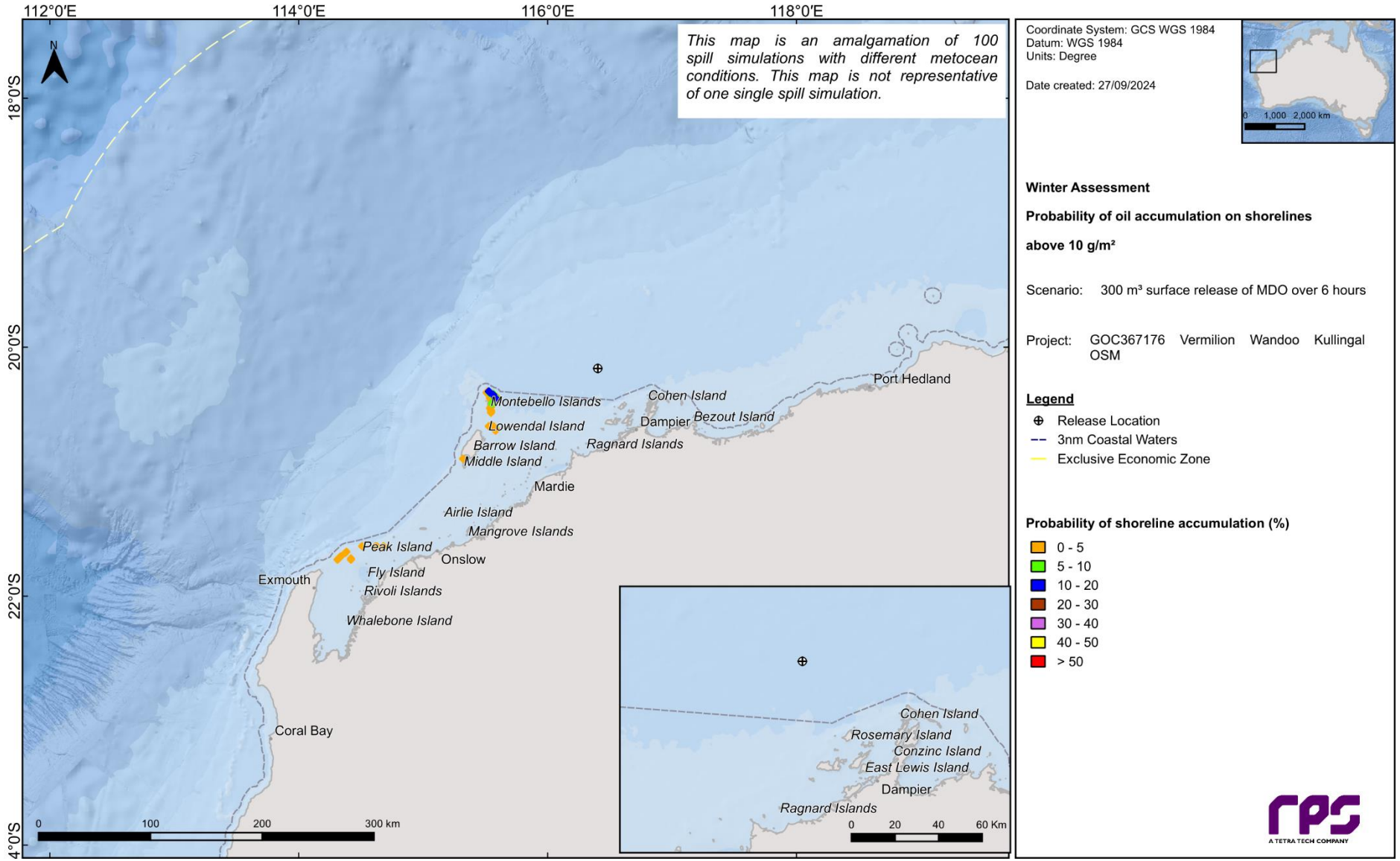


Figure 14.28 Predicted probability of shoreline oil accumulation at, or above, 10 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

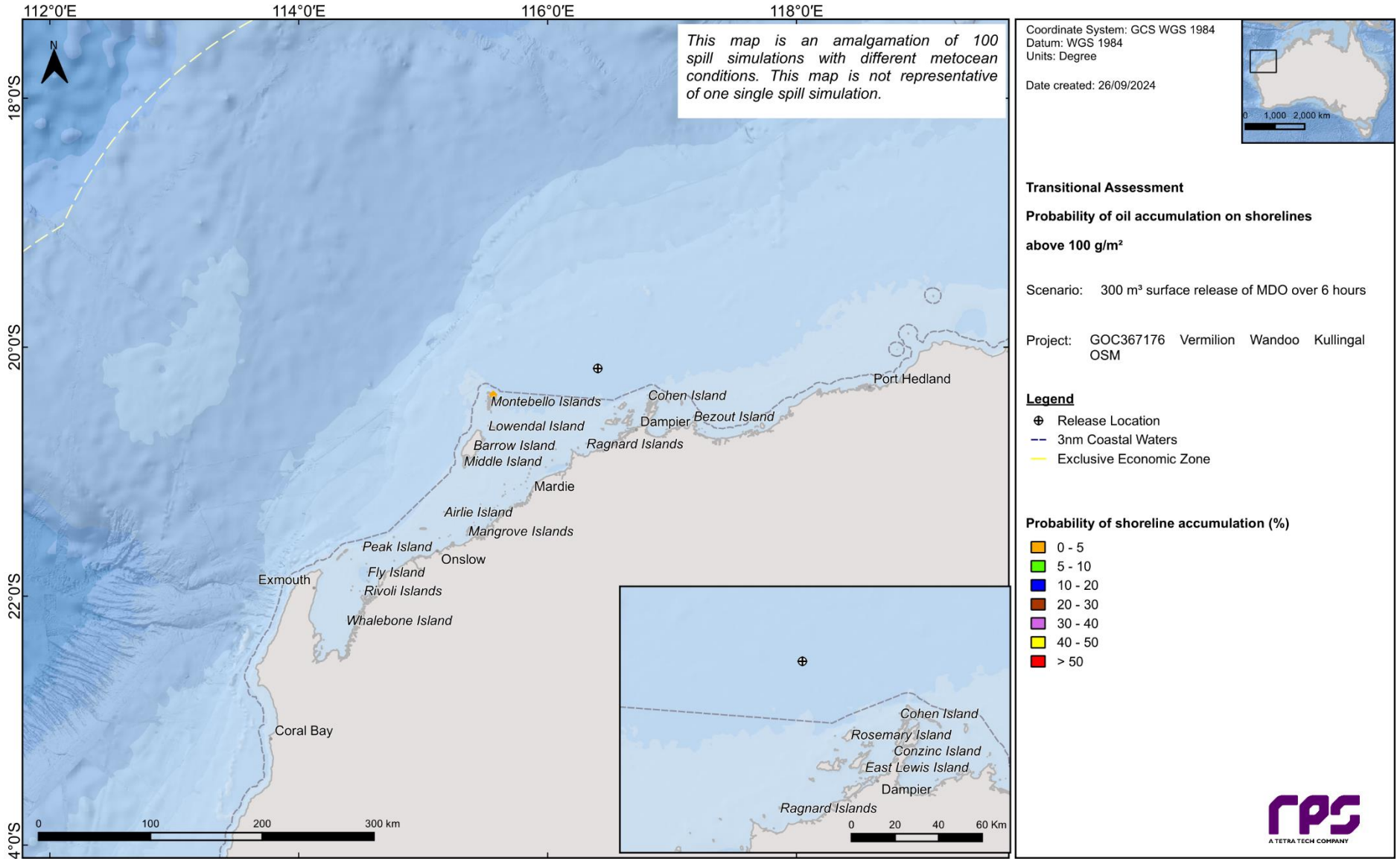


Figure 14.29 Predicted probability of shoreline oil accumulation at, or above, 100 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

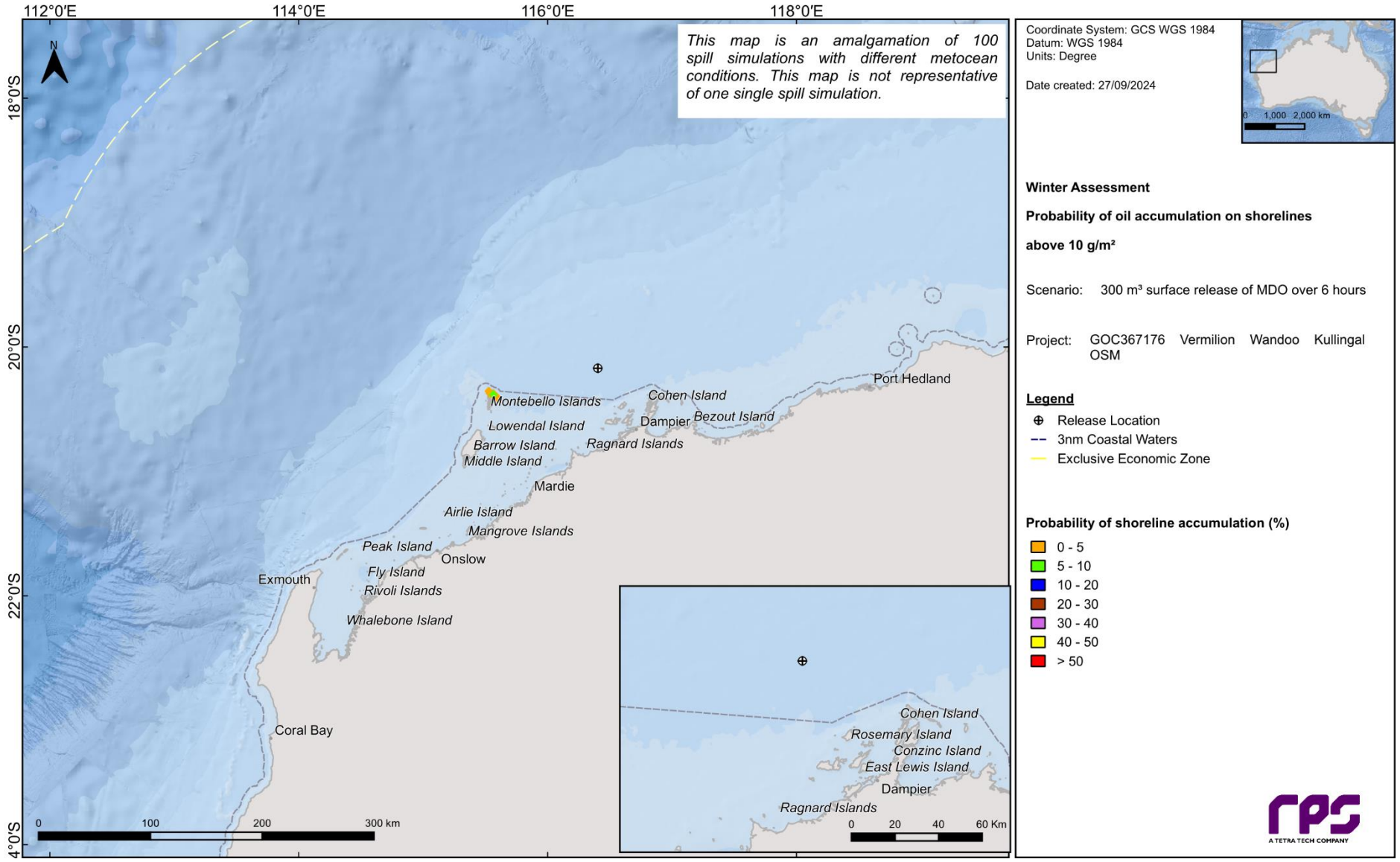


Figure 14.30 Predicted probability of shoreline oil accumulation at, or above, 100 g/m² following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

14.1.4 In-water exposure

14.1.4.1 Dissolved Hydrocarbons

Table 14.6 summarises the maximum distances from the release location to the dissolved hydrocarbon exposure thresholds for each season. Concentrations exceeding 10 ppb may potentially extend up to 169 km from the release location. As the threshold increases to 50 ppb, the maximum distance decreases to 58 km. No exposure was predicted above 400 ppb.

Table 14.7 summarises the predicted dissolved hydrocarbon exposure to receptors (either at, or above, receptors in the water column).

The Montebello AMP recorded the highest probabilities of exposure at, or above, 10 ppb during summer (2%), transitional (4%) and winter (7%) conditions. The same receptor recorded the quickest time to exposure during transitional conditions (27 hours). The Montebello AMP also recorded the highest concentration at 41 ppb during winter conditions.

Figure 14.31 to Figure 14.33 illustrate the dissolved hydrocarbon exposure zones for the three seasons, whilst Figure 14.34 to Figure 14.45 show the minimum times before exposure and probabilities of exposure at or above, 10 ppb and 50 ppb.

Seasonal cross-sectional transects (north-south and east-west) of the maximum dissolved hydrocarbons in the vicinity of the release site are presented in Figure 14.46 to Figure 14.51.

Table 14.6 Maximum distances from the release location to dissolved hydrocarbon exposure thresholds following a vessel collision at Kullingal. Results were calculated from 100 spill simulations per season.

Season	Distance and direction travelled	Dissolved hydrocarbon exposure thresholds		
		10 ppb	50 ppb	400 ppb
Summer	Maximum distance (km) from release location	148	32	-
	Direction	East	Northeast	-
Transitional	Maximum distance (km) from release location	155	58	-
	Direction	Southwest	West	-
Winter	Maximum distance (km) from release location	169	31	-
	Direction	Southwest	West	-

Table 14.7 Receptors predicted to be exposed by dissolved hydrocarbons following a vessel collision at Kullingal. Results were calculated from100 spill simulations per season.

Category	Name	Summer								Transitional								Winter							
		Probability (%) of dissolved concentration			Minimum time to receptor waters (hours) at			Maximum dissolved hydrocarbon concentration (ppb)		Probability (%) of dissolved concentration			Minimum time to receptor waters (hours) at			Maximum dissolved hydrocarbon concentration (ppb)		Probability (%) of dissolved concentration			Minimum time to receptor waters (hours) at			Maximum dissolved hydrocarbon concentration (ppb)	
		≥ 10 ppb	≥ 50 ppb	≥ 400 ppb	≥ 10 ppb	≥ 50 ppb	≥ 400 ppb	averaged over all replicate spills	in the worst replicate	≥ 10 ppb	≥ 50 ppb	≥ 400 ppb	≥ 10 ppb	≥ 50 ppb	≥ 400 ppb	averaged over all replicate spills	in the worst replicate	≥ 10 ppb	≥ 50 ppb	≥ 400 ppb	≥ 10 ppb	≥ 50 ppb	≥ 400 ppb	averaged over all replicate spills	in the worst replicate
AMP	Montebello	2	NC	NC	33	NC	NC	<1	29	4	1	NC	31	51	NC	2	56	7	NC	NC	27	NC	NC	2	41
KEF	Glomar Shoals	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	NC	121	NC	NC	<1	16	1	NC	NC	81	NC	NC	<1	18
MP	Montebello Islands	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	NC	79	NC	NC	<1	26	1	NC	NC	79	NC	NC	<1	26
State and Territory Waters	WA	1	NC	NC	26	NC	NC	<1	29	1	NC	NC	42	NC	NC	<1	26	1	NC	NC	42	NC	NC	<1	26

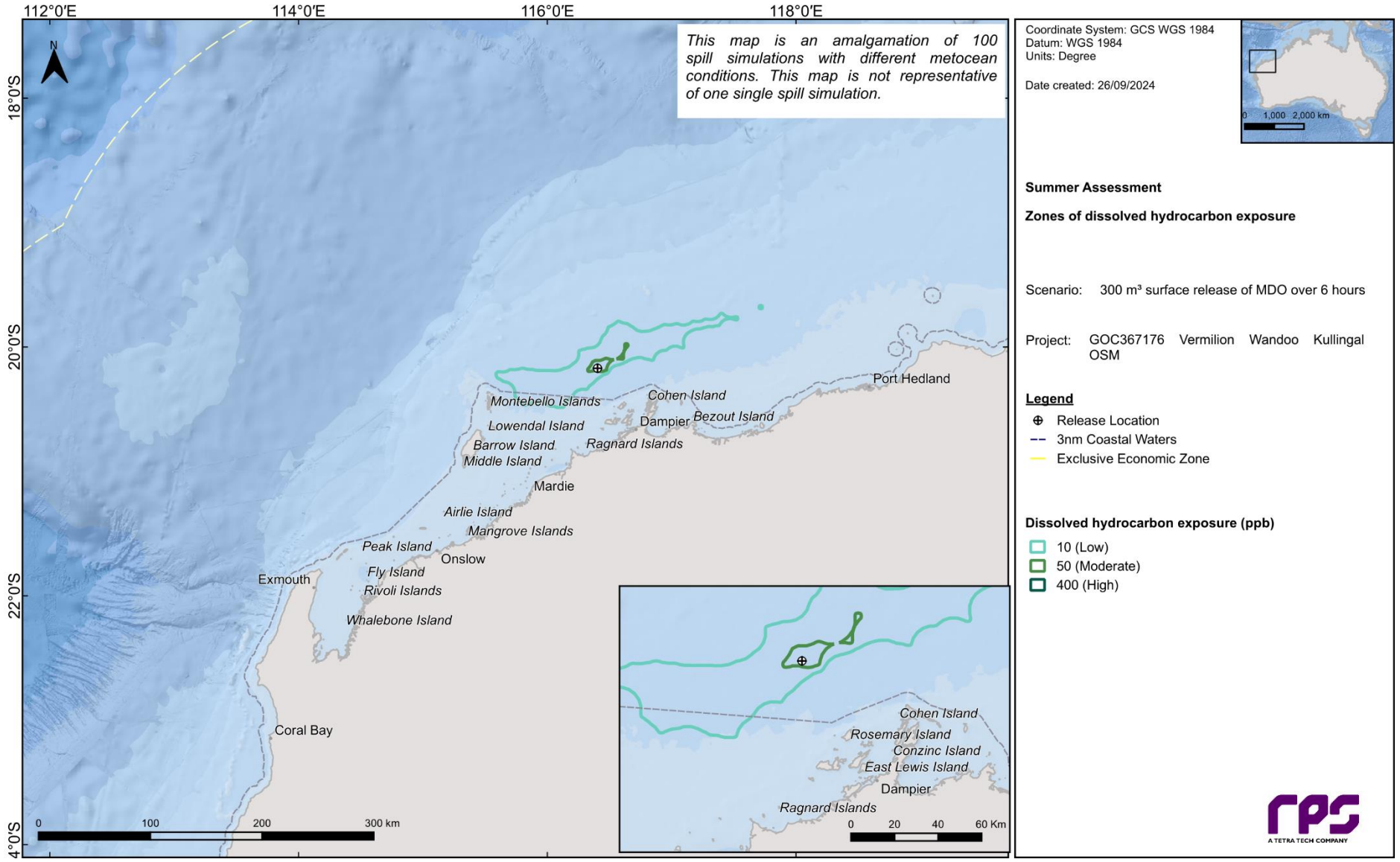


Figure 14.31 Predicted zones of dissolved hydrocarbon exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

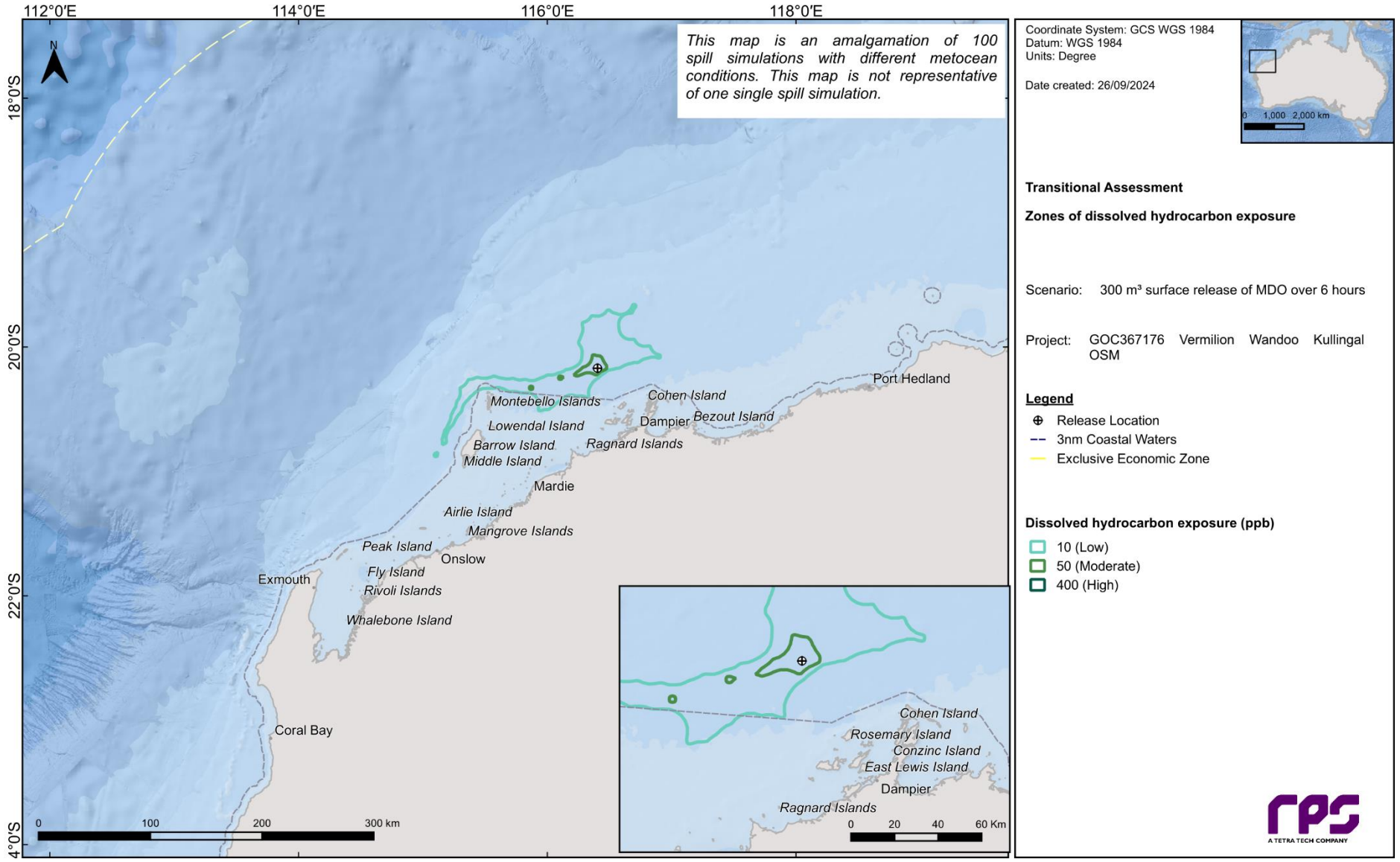


Figure 14.32 Predicted zones of dissolved hydrocarbon exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

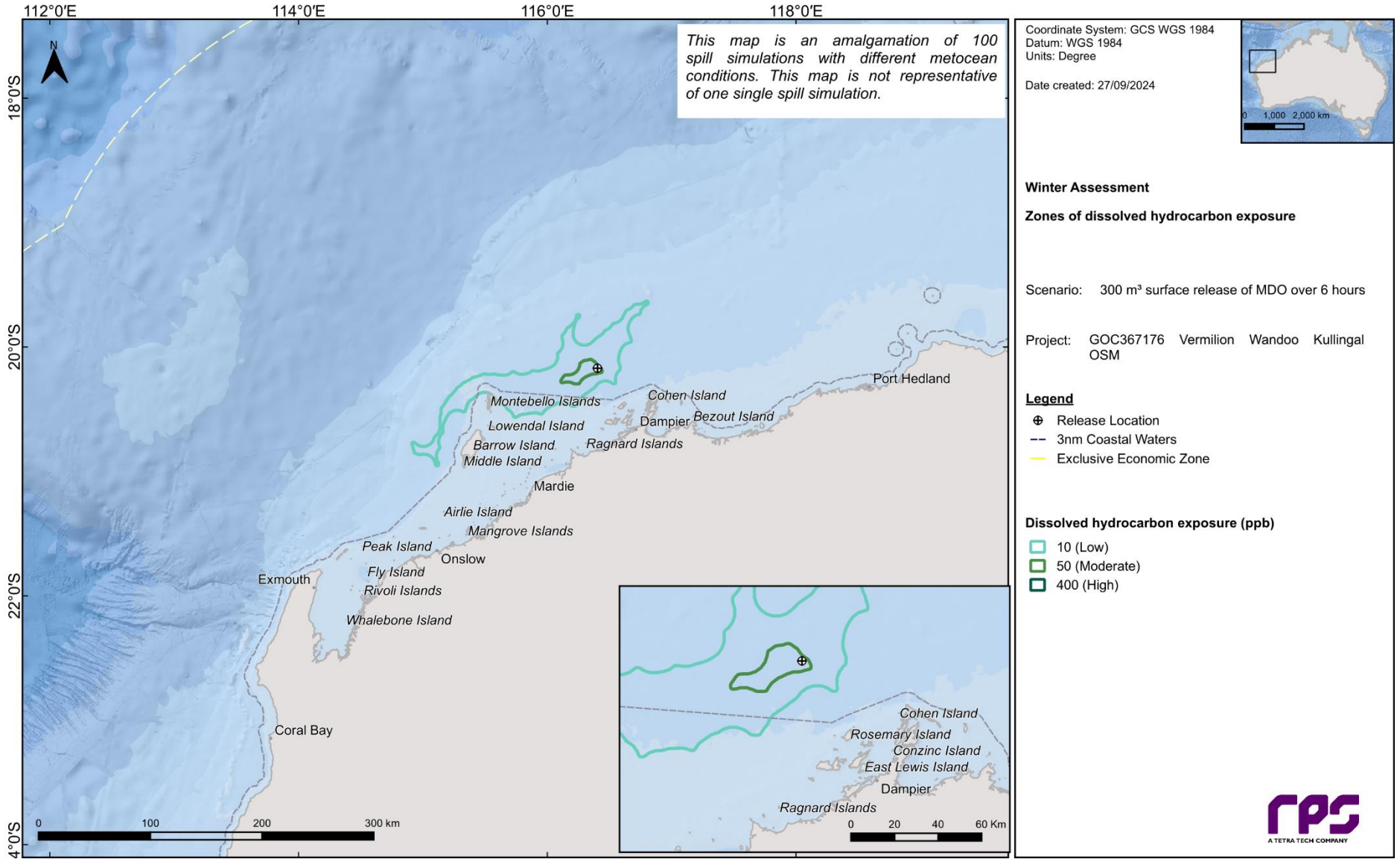


Figure 14.33 Predicted zones of dissolved hydrocarbon exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

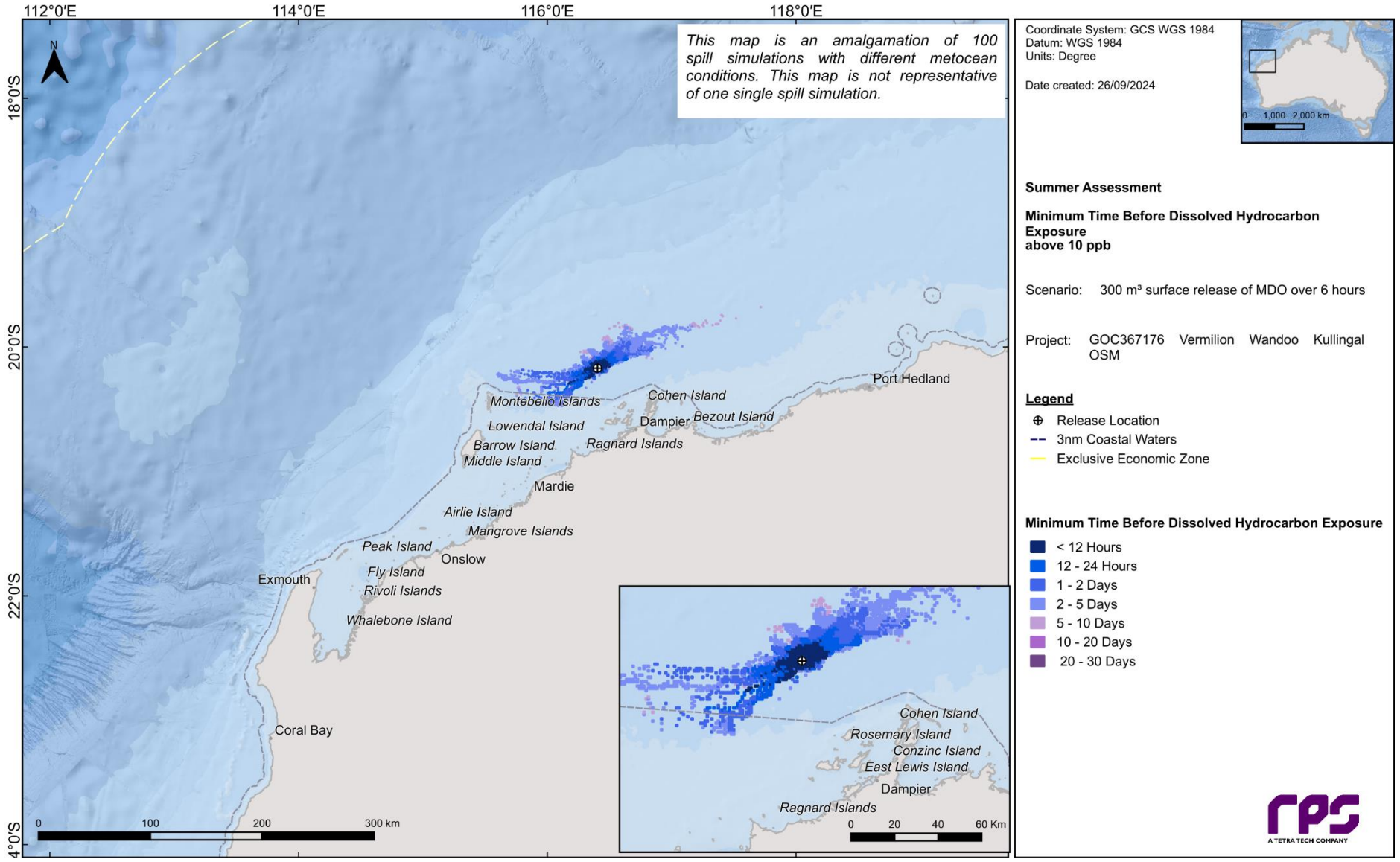


Figure 14.34 Minimum time before dissolved hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

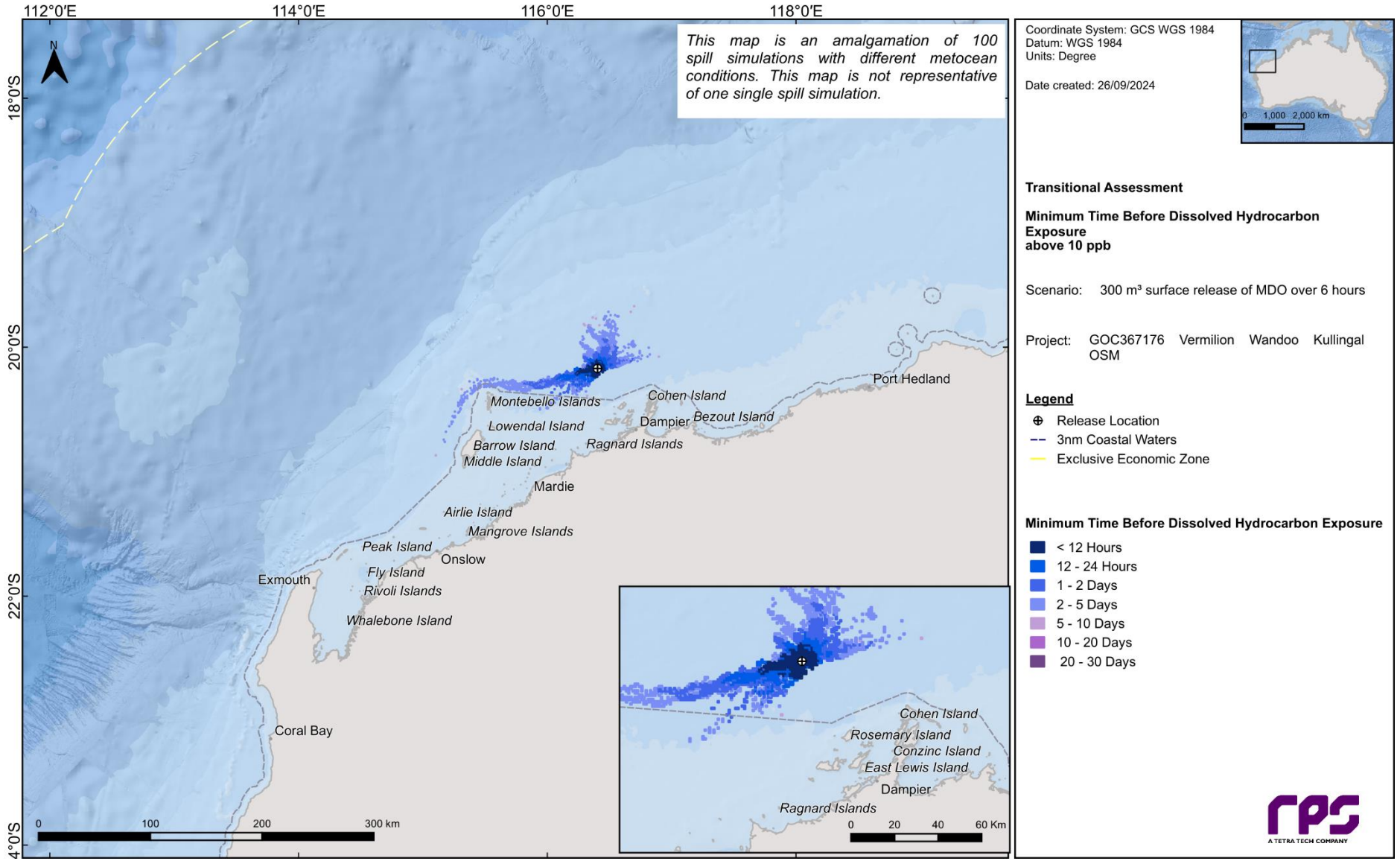


Figure 14.35 Minimum time before dissolved hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

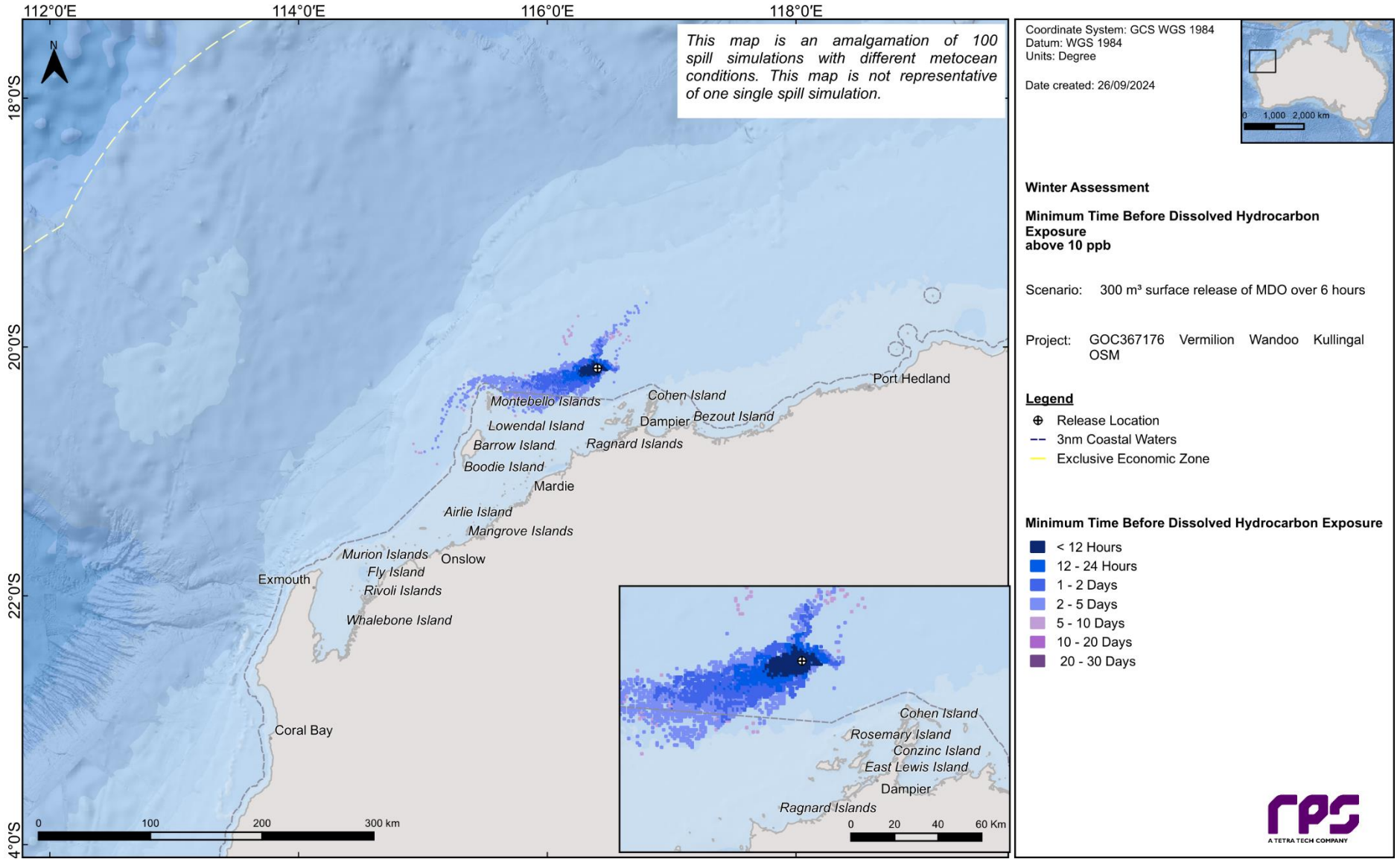


Figure 14.36 Minimum time before dissolved hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

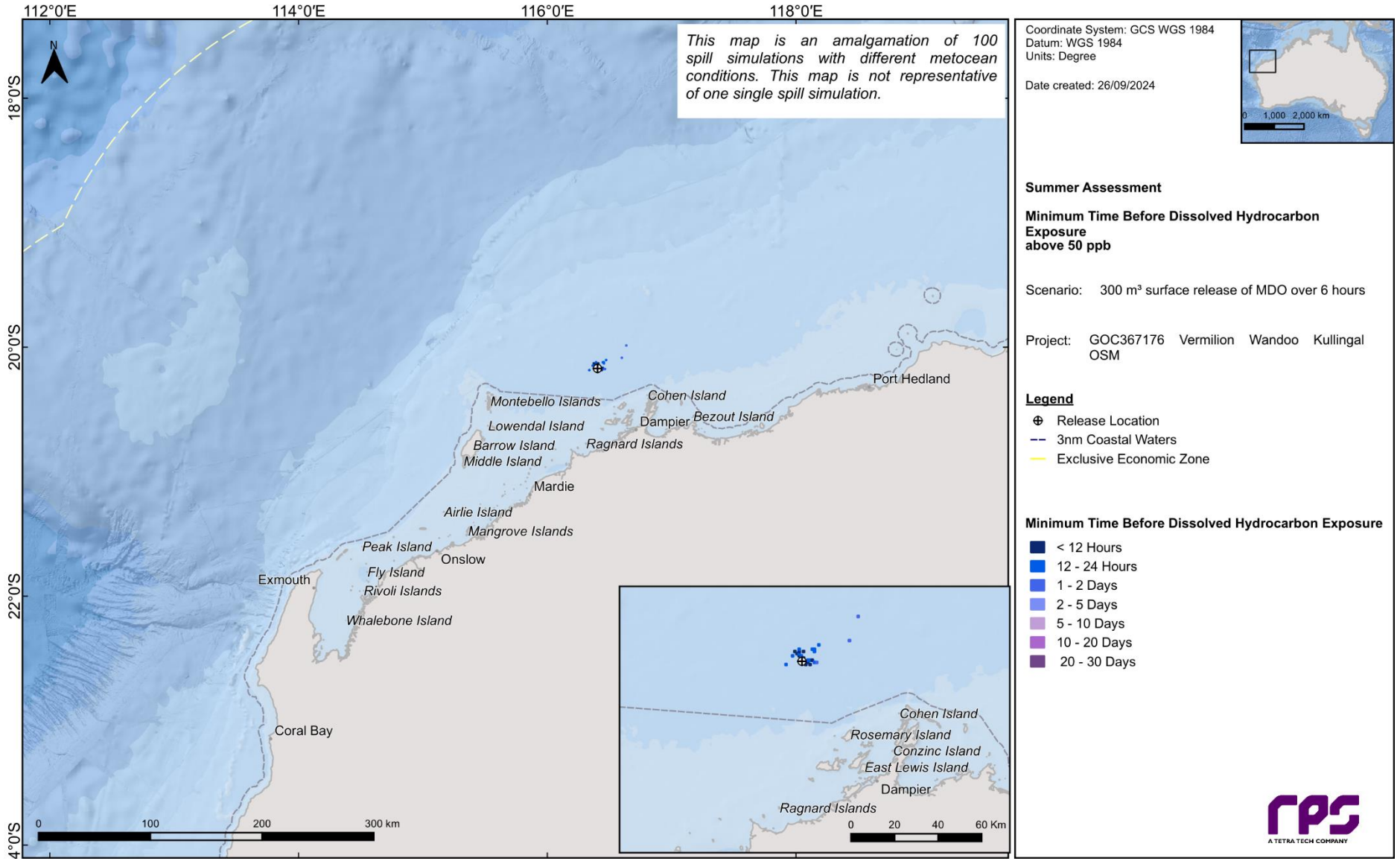


Figure 14.37 Minimum time before dissolved hydrocarbon exposure at, or above, 50 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

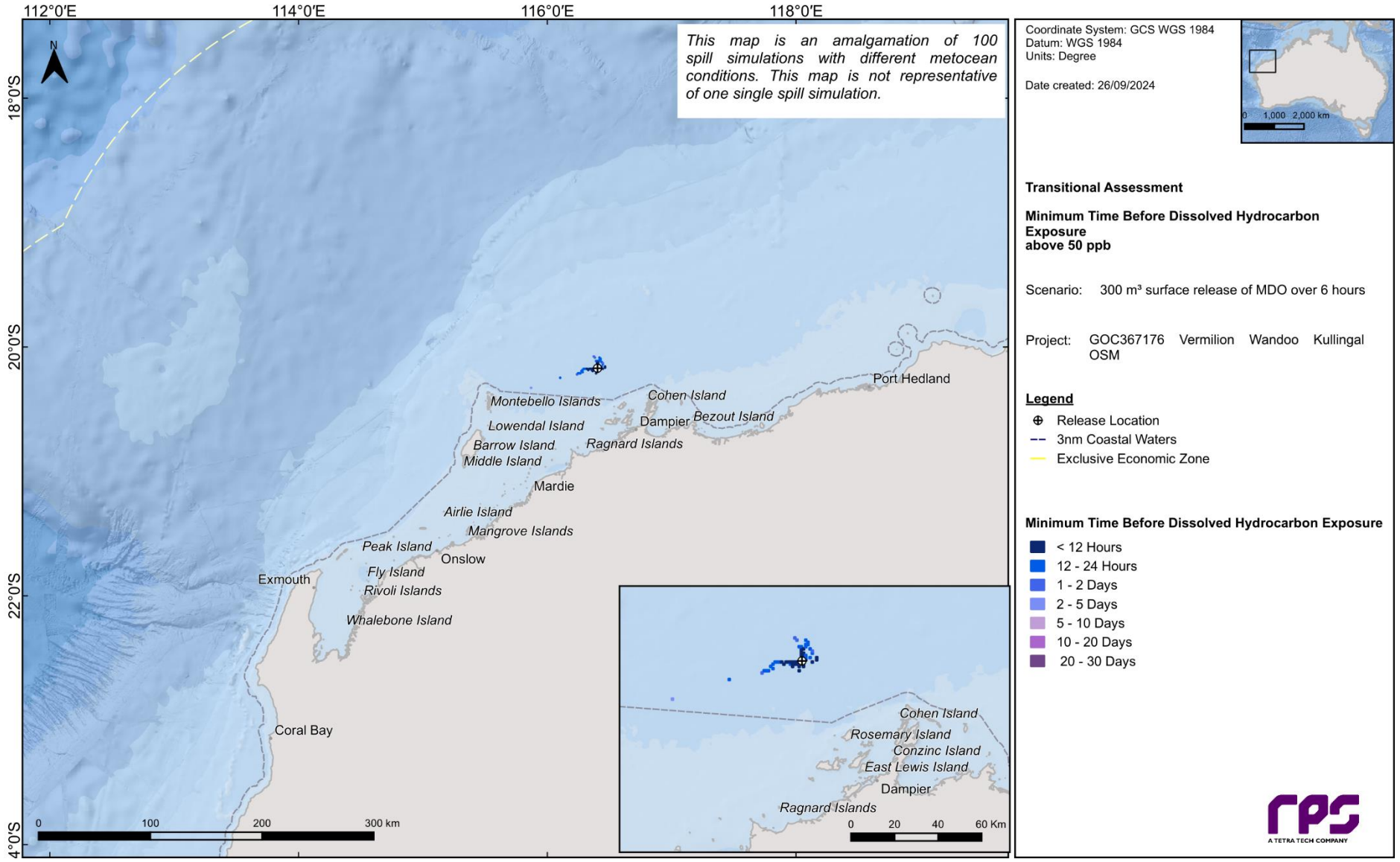


Figure 14.38 Minimum time before dissolved hydrocarbon exposure at, or above, 50 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

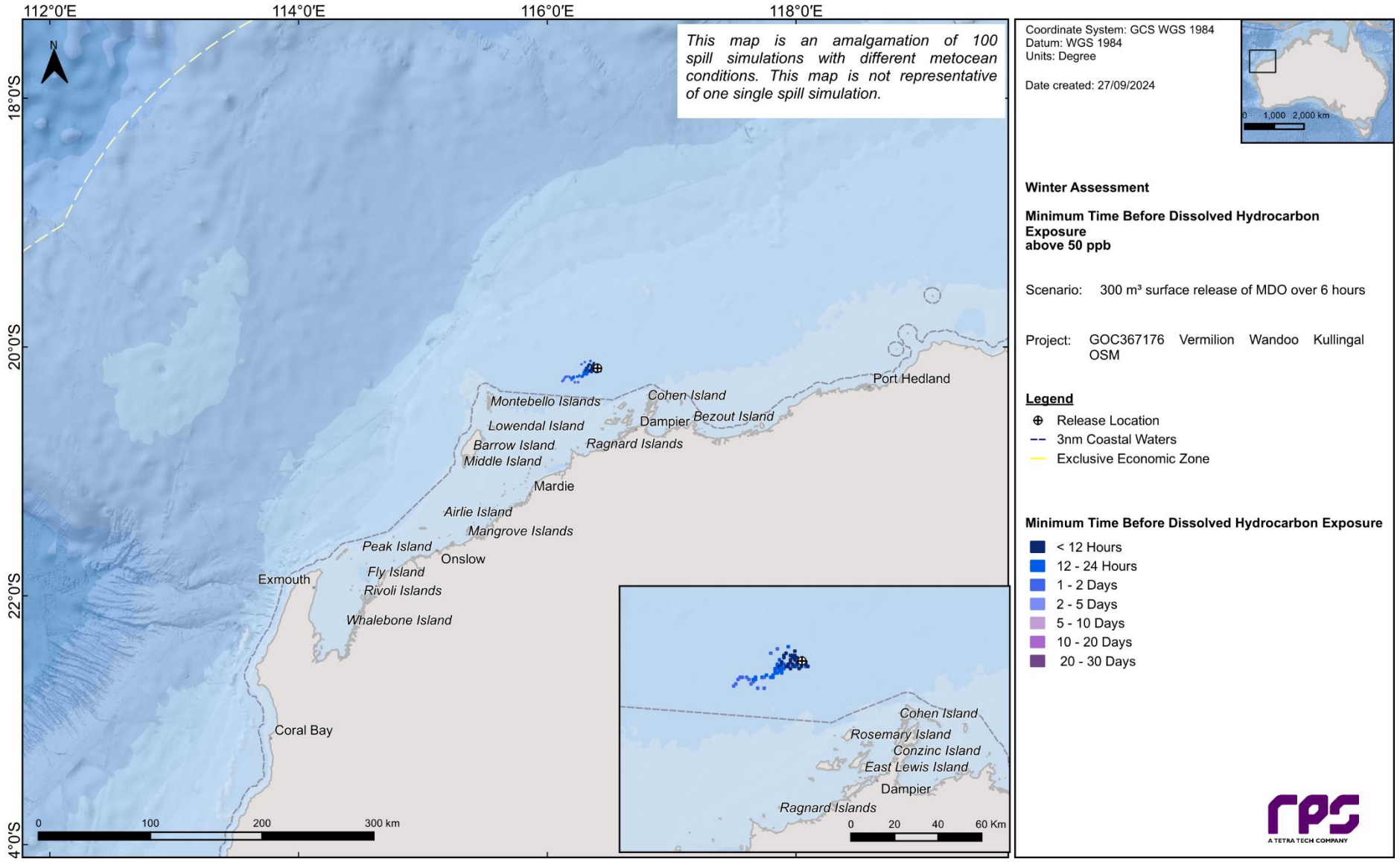


Figure 14.39 Minimum time before dissolved hydrocarbon exposure at, or above, 50 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

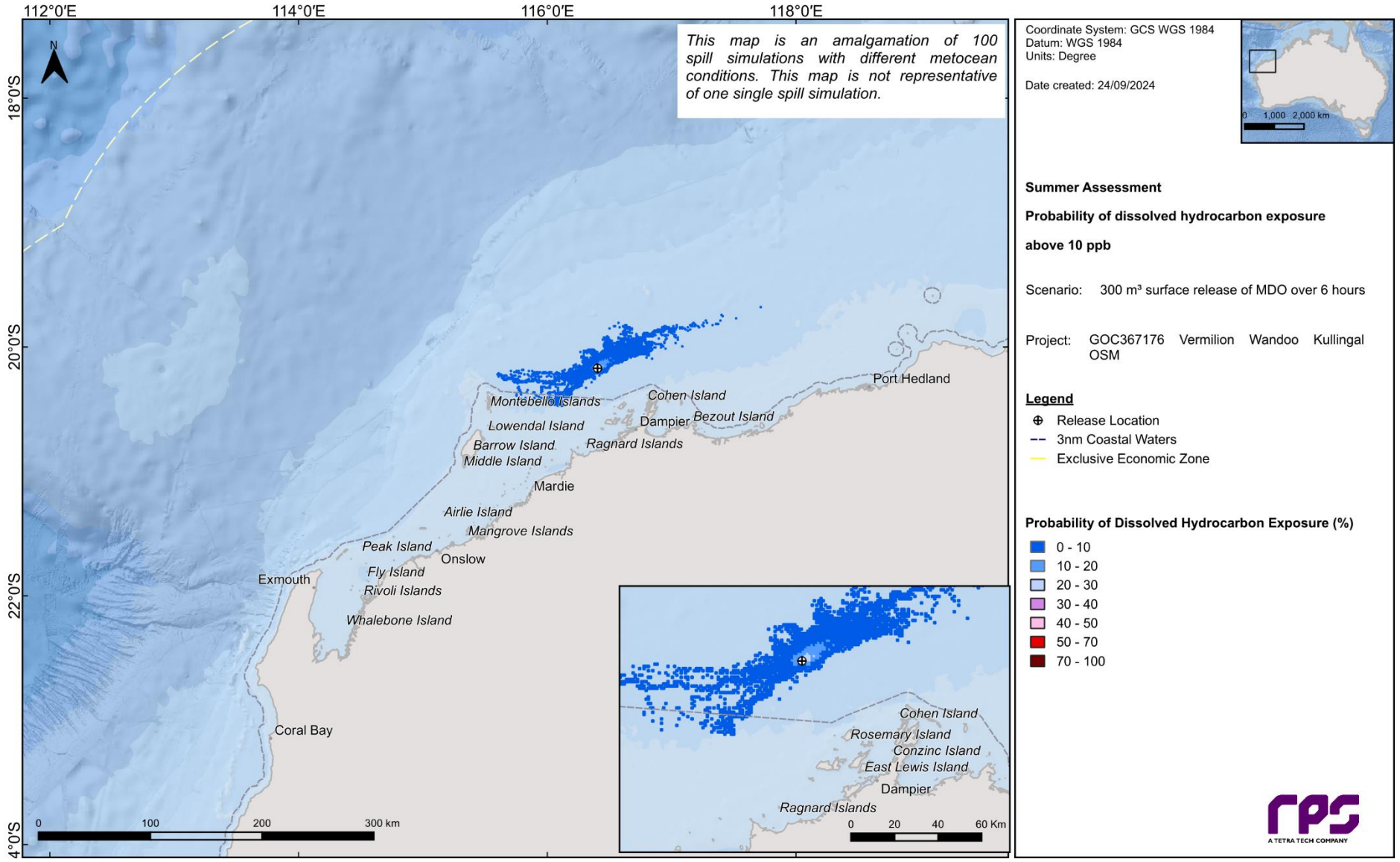


Figure 14.40 Probability of dissolved hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

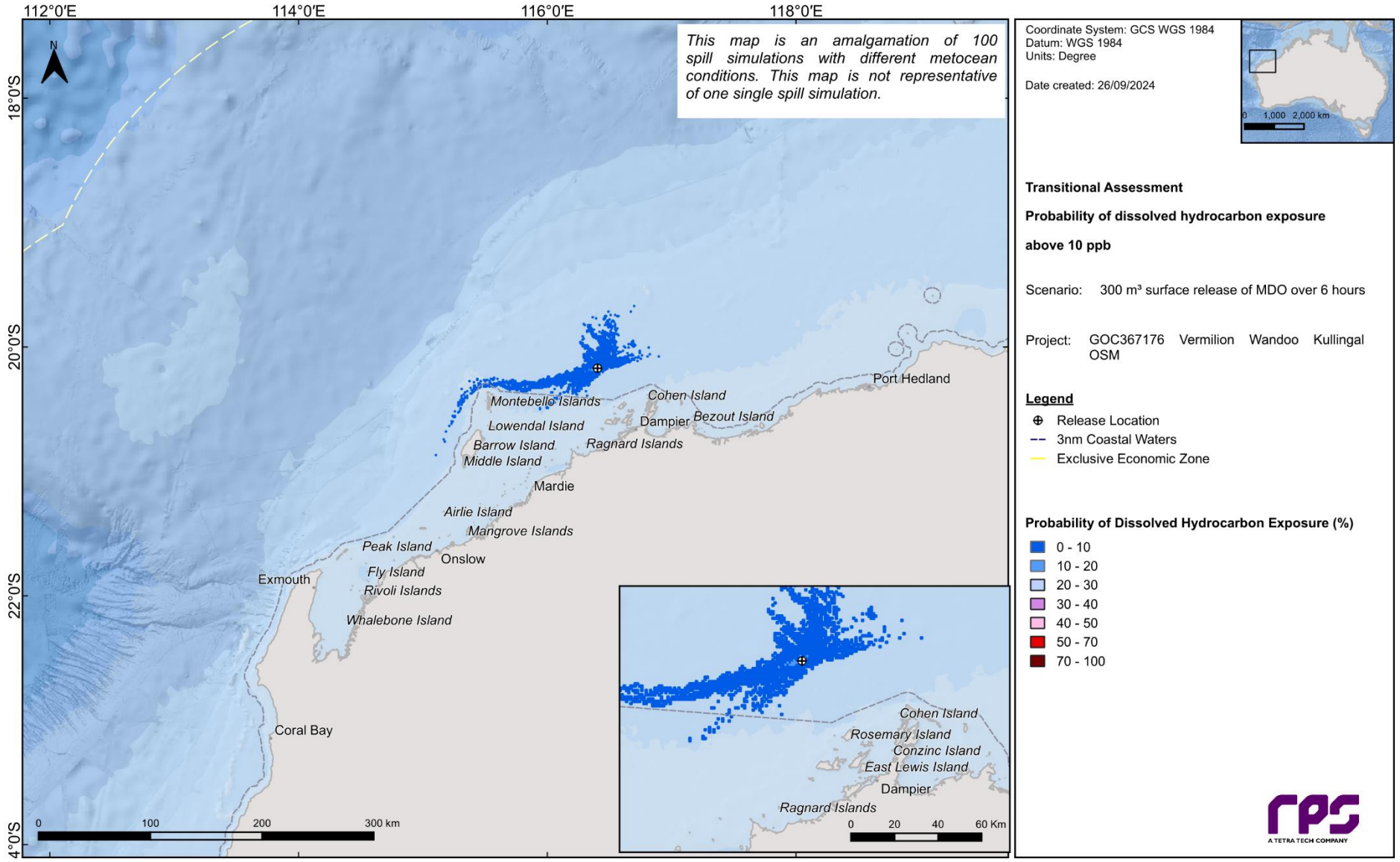


Figure 14.41 Probability of dissolved hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

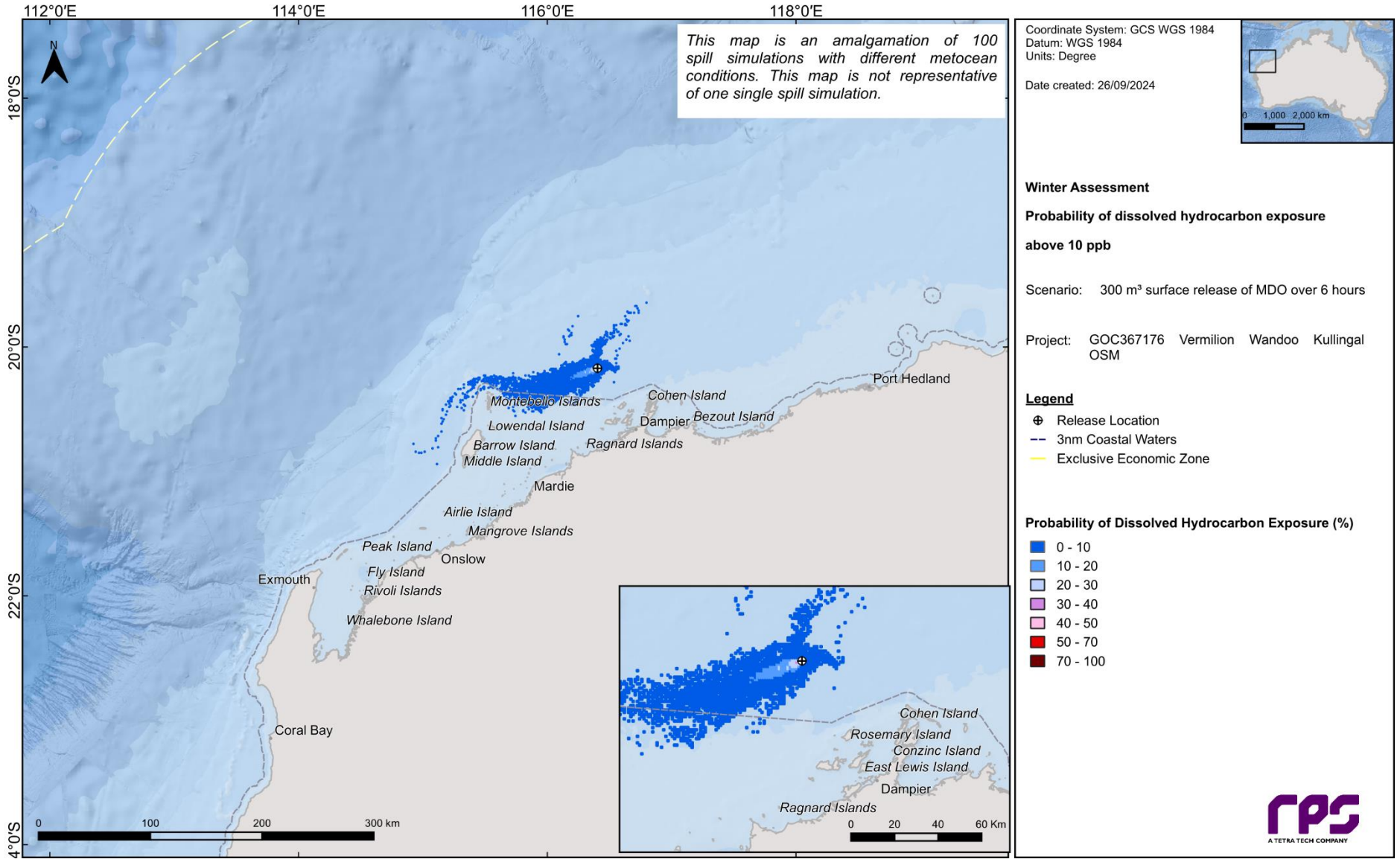


Figure 14.42 Probability of dissolved hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

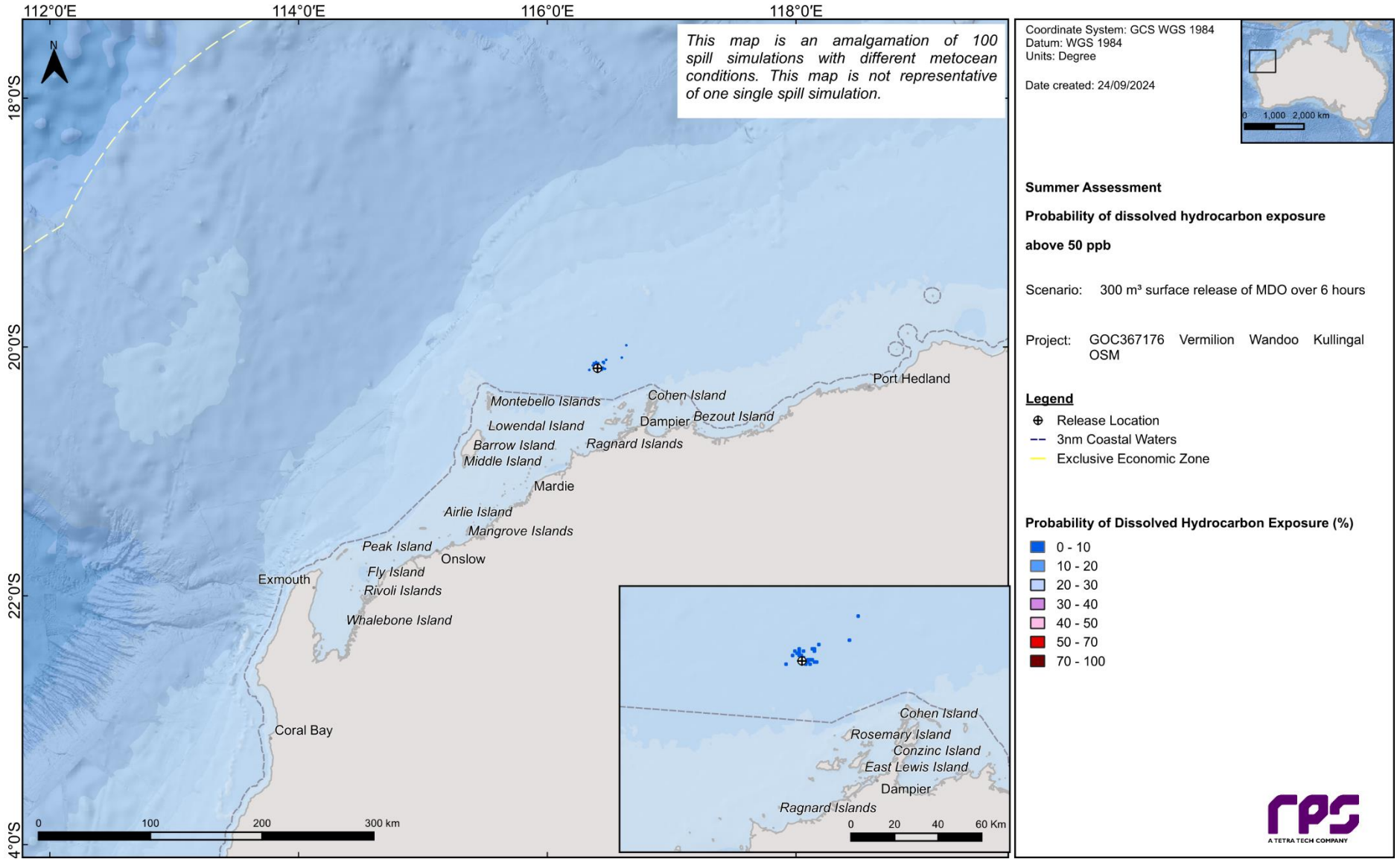


Figure 14.43 Probability of dissolved hydrocarbon exposure at, or above, 50 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

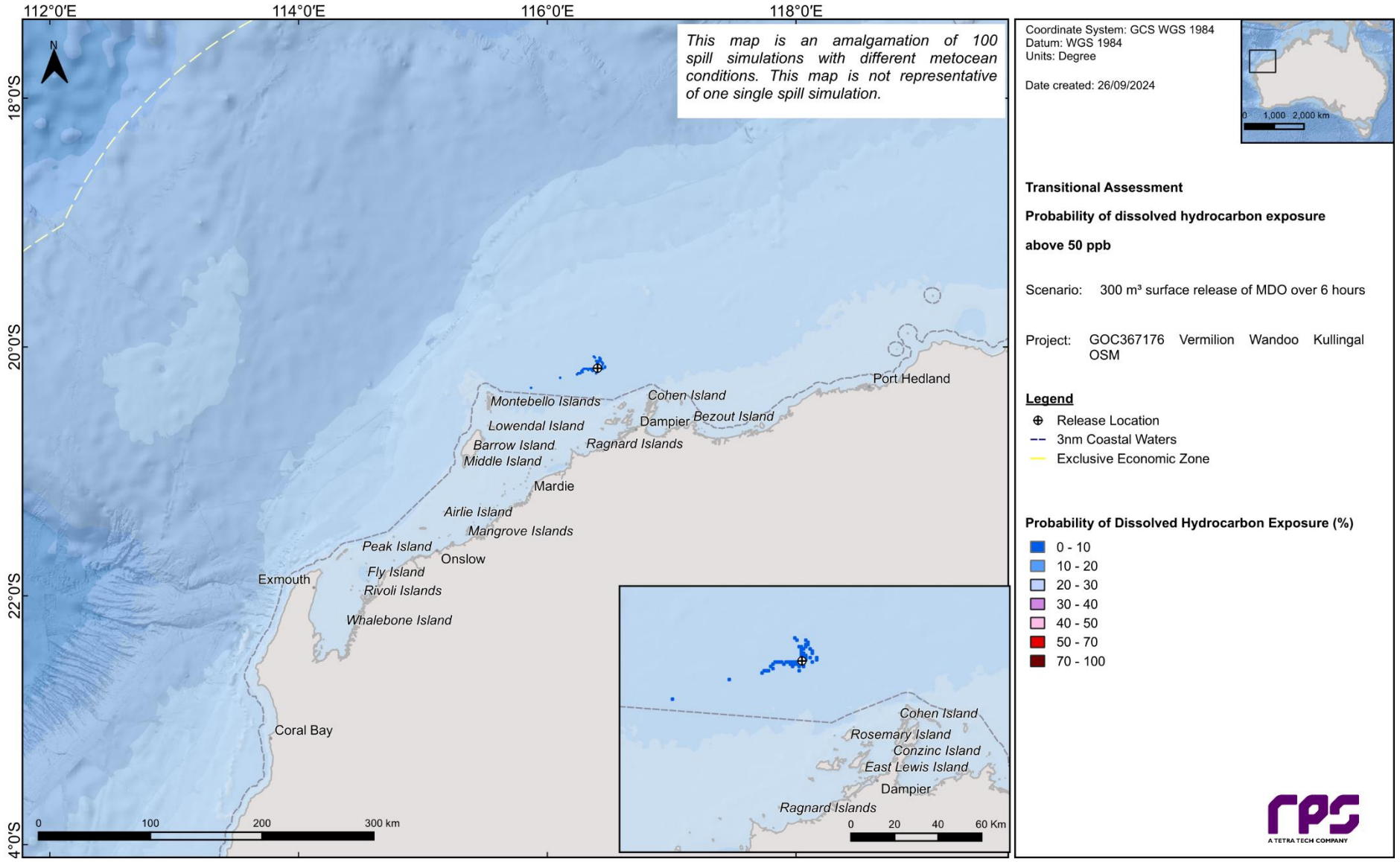


Figure 14.44 Probability of dissolved hydrocarbon exposure at, or above, 50 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

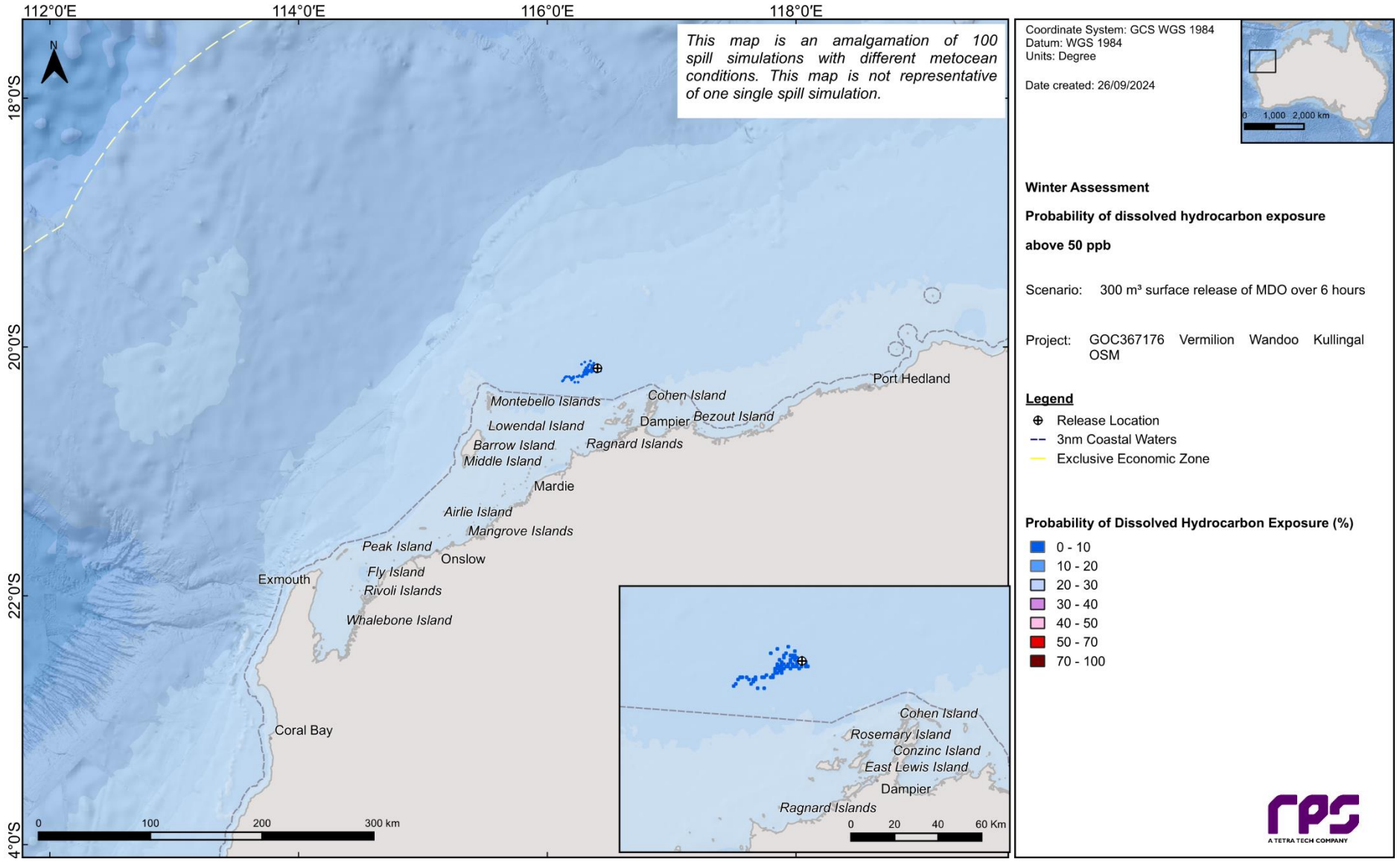


Figure 14.45 Probability of dissolved hydrocarbon exposure at, or above, 50 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

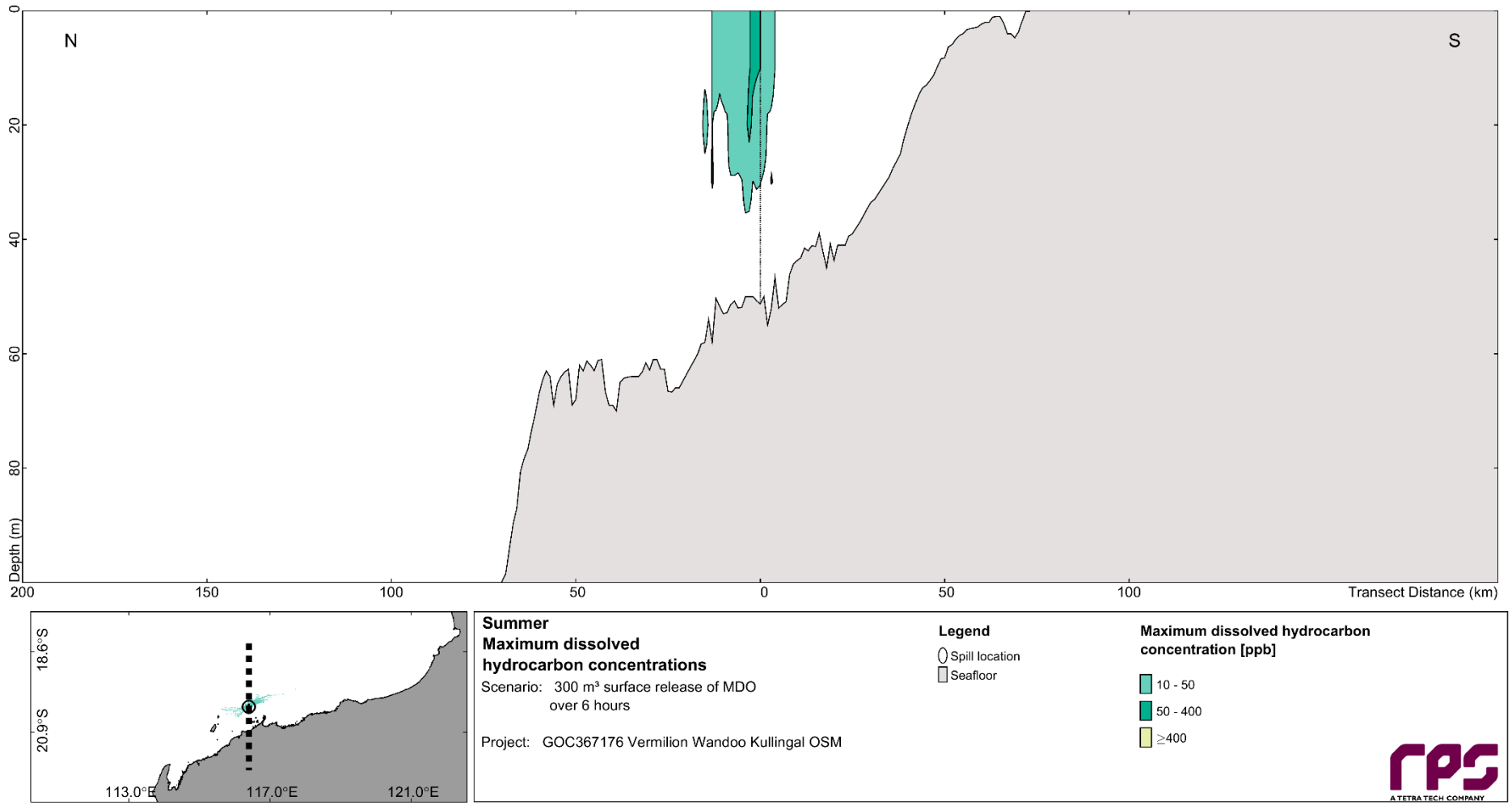


Figure 14.46 North-south cross-section transect of dissolved hydrocarbon concentrations exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

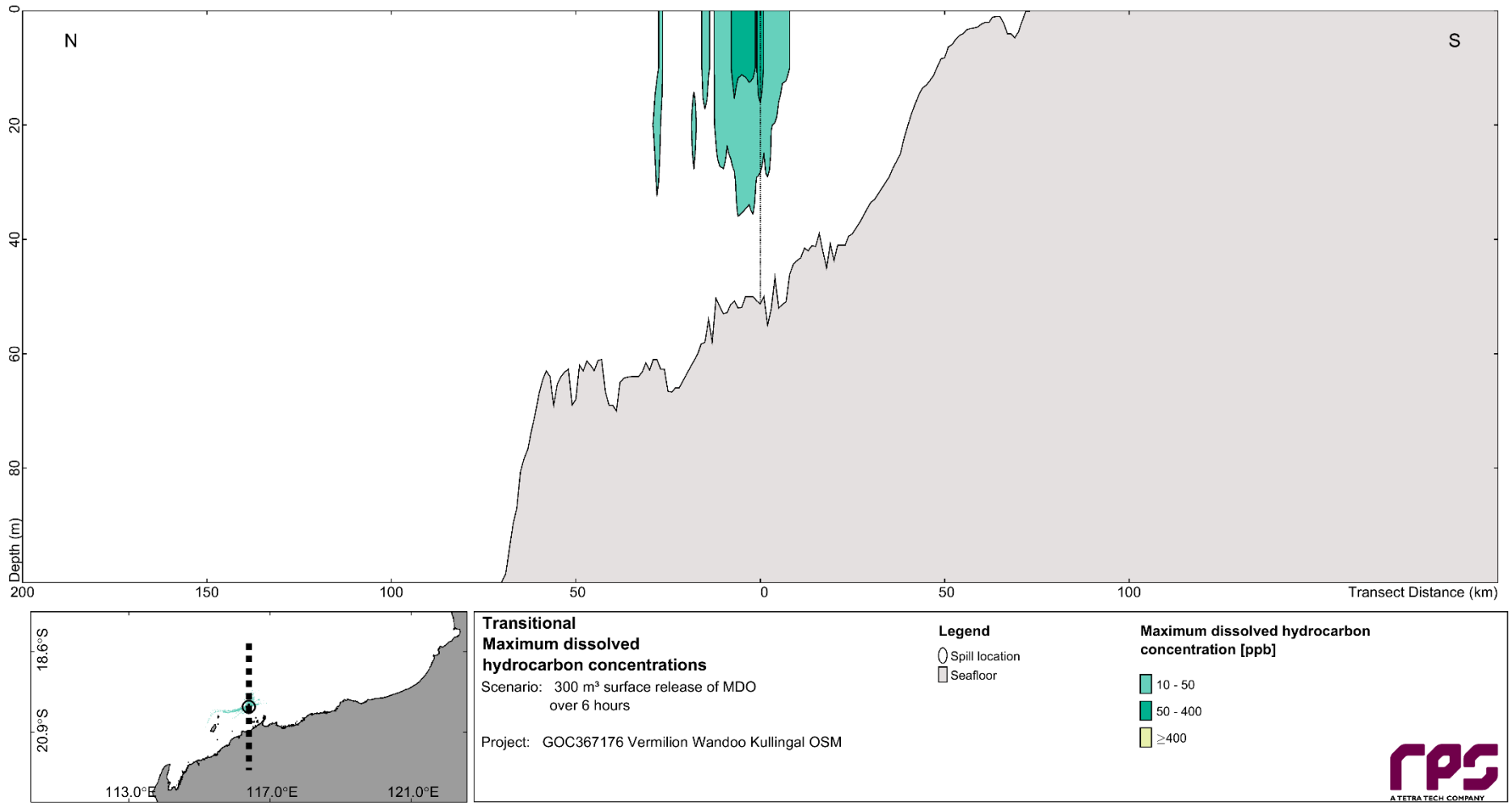


Figure 14.47 North-south cross-section transect of dissolved hydrocarbon concentrations exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

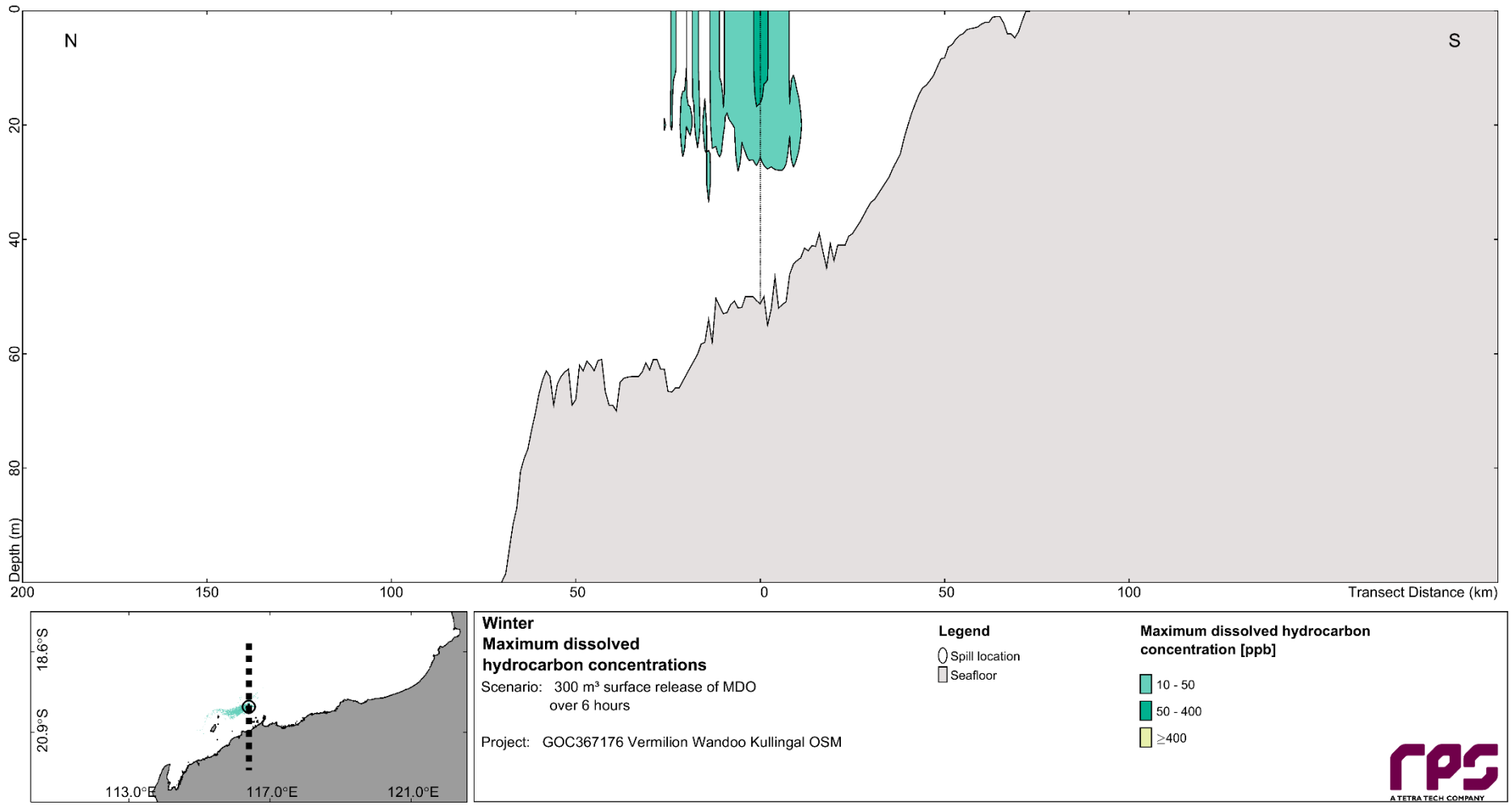


Figure 14.48 North-south cross-section transect of dissolved hydrocarbon concentrations exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

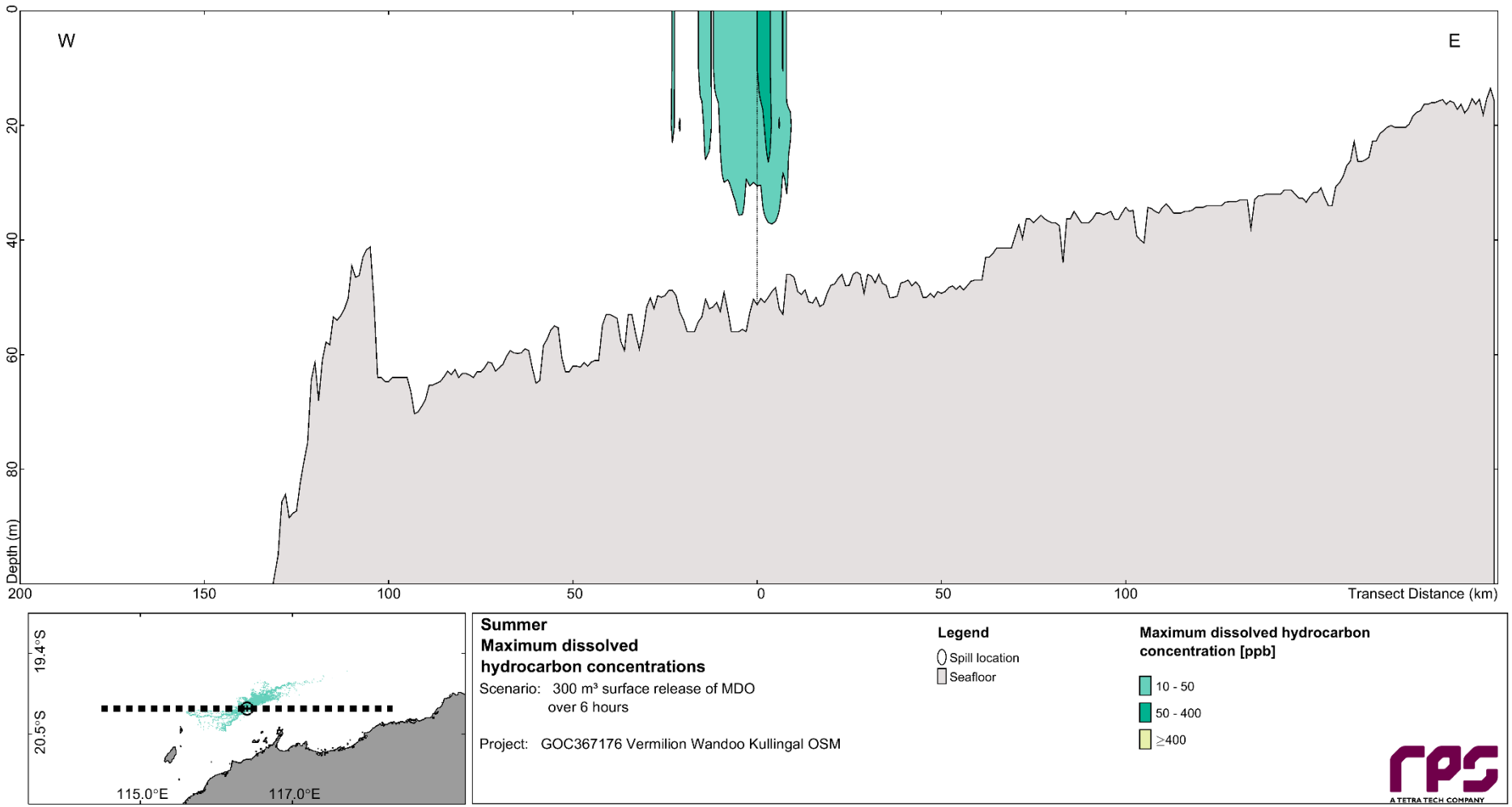


Figure 14.49 East-west cross-section transect of dissolved hydrocarbon concentrations exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

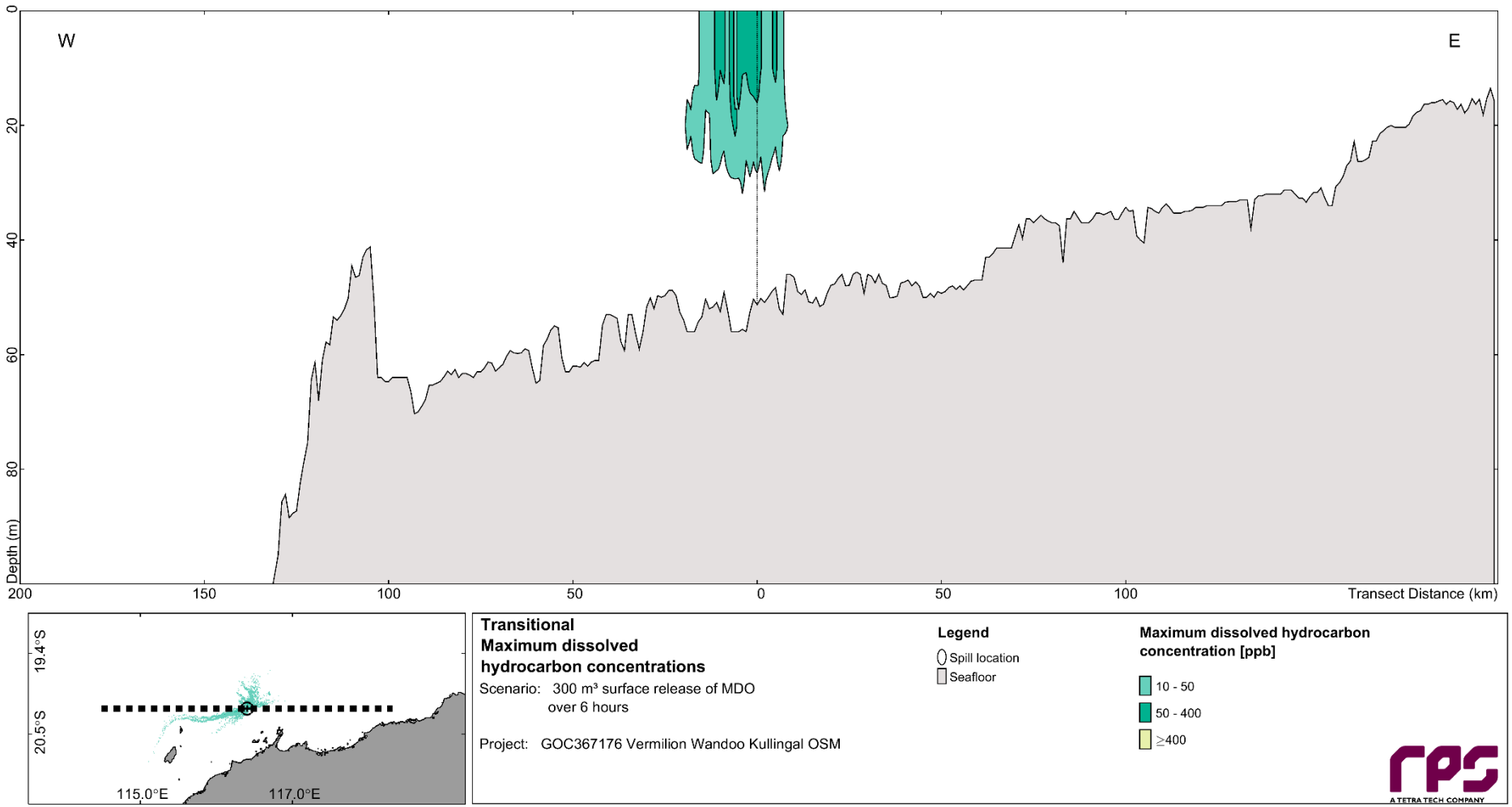


Figure 14.50 East-west cross-section transect of dissolved hydrocarbon concentrations exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

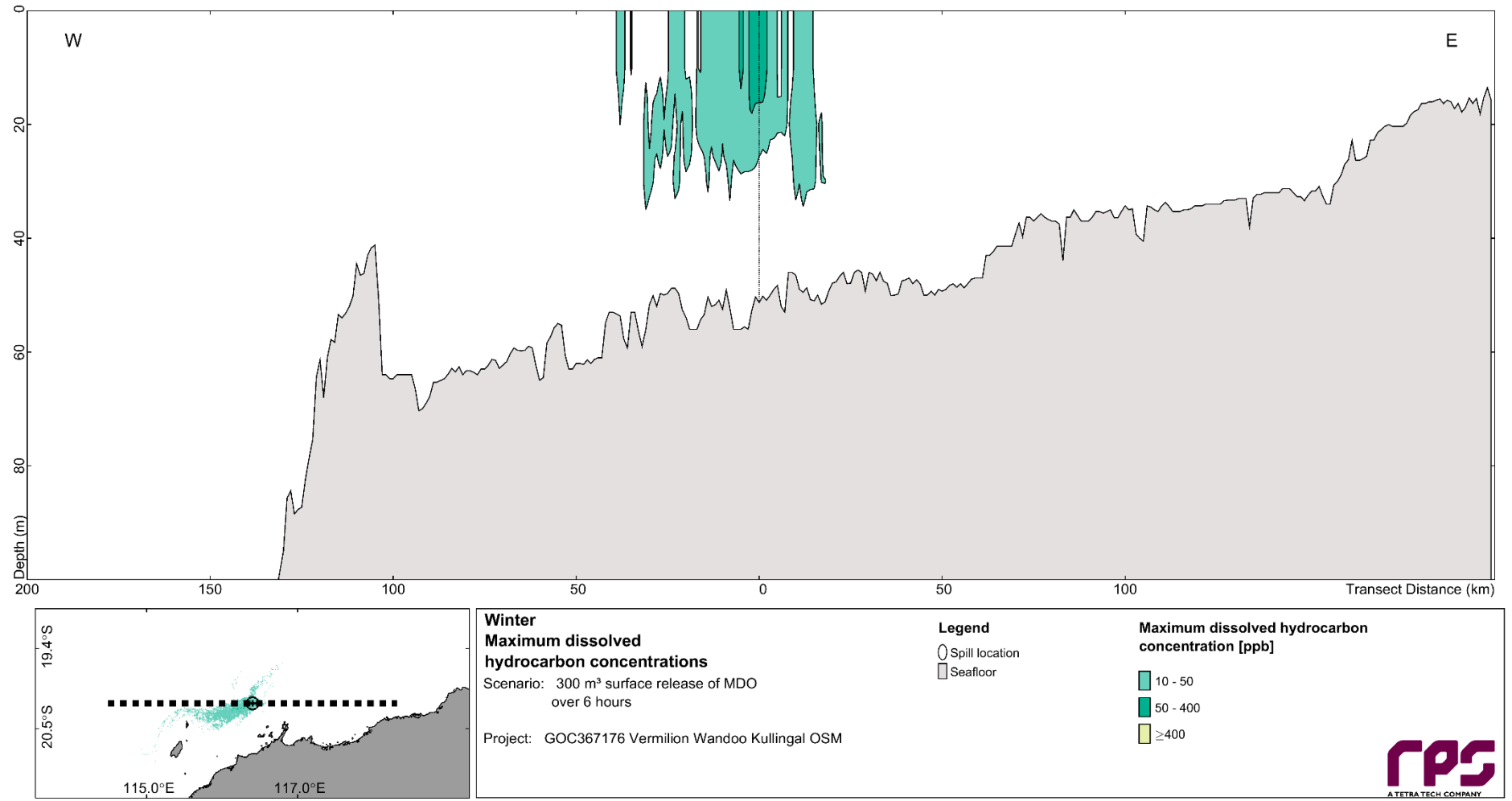


Figure 14.51 East-west cross-section transect of dissolved hydrocarbon concentrations exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

14.1.4.2 Entrained Hydrocarbons

Table 14.8 summarises the maximum distances from the release location to entrained hydrocarbon thresholds for each season. Concentrations exceeding 10 ppb may potentially extend up to 494 km from the release location. As the threshold increases to 100 ppb, the maximum distance decreases to 237 km.

Table 14.9 summarises the receptors exposed to entrained hydrocarbons per season (either at, or above, receptors in the water column).

The Montebello AMP recorded the highest probability of exposure to concentrations at, or above, 10 ppb, during all seasonal conditions, specifically 23%, 51% and 54% during summer, transitional and winter conditions, respectively. The same receptor registered the quickest time to exposure during summer and winter conditions at 22 hours.

Figure 14.52 to Figure 14.54 illustrate the zones of exposure to entrained hydrocarbons for each season, whilst Figure 14.55 to Figure 14.66 display the minimum exposure times and the probability of exposure to these hydrocarbons.

Seasonal cross-sectional transects (north-south and east-west) of the maximum entrained hydrocarbons in the vicinity of the release site, are presented in Figure 14.67 to Figure 14.72.

Table 14.8 Maximum distances from the release location to entrained hydrocarbon exposure thresholds following a vessel collision at Kullingal. Results were calculated from 100 spill simulations per season.

Season	Distance and direction travelled	Entrained hydrocarbon exposure thresholds	
		10 ppb	100 ppb
Summer	Maximum distance (km) from release location	315	101
	Direction	Northeast	East
Transitional	Maximum distance (km) from release location	424	132
	Direction	Southwest	West
Winter	Maximum distance (km) from release location	494	237
	Direction	Southwest	Southwest

Table 14.9 Receptors predicted to be exposed by entrained hydrocarbons following a vessel collision at Kullingal. Results were calculated from100 spill simulations per season.

Category	Name	Summer						Transitional						Winter					
		Probability (%) of entrained hydrocarbon concentration		Minimum time to receptor waters (hours) at		Maximum entrained hydrocarbon concentration (ppb)		Probability (%) of entrained hydrocarbon concentration		Minimum time to receptor waters (hours) at		Maximum entrained hydrocarbon concentration (ppb)		Probability (%) of entrained hydrocarbon concentration		Minimum time to receptor waters (hours) at		Maximum entrained hydrocarbon concentration (ppb)	
		≥ 10 ppb	≥ 100 ppb	≥ 10 ppb	≥ 100 ppb	averaged over all replicate spills	in the worst replicate	≥ 10 ppb	≥ 100 ppb	≥ 10 ppb	≥ 100 ppb	averaged over all replicate spills	in the worst replicate	≥ 10 ppb	≥ 100 ppb	≥ 10 ppb	≥ 100 ppb	averaged over all replicate spills	in the worst replicate
AMP	Dampier	NC	NC	NC	NC	NC	NC	1	NC	268	NC	<1	27	NC	NC	NC	NC	NC	NC
	Gascoyne	NC	NC	NC	NC	NC	NC	4	NC	349	NC	2	23	13	NC	238	NC	4	46
	Montebello	23	3	22	23	12	307	51	22	25	26	57	430	54	24	22	24	62	560
KEF	Ancient coastline at 125 m depth contour	4	NC	153	NC	2	46	8	NC	197	NC	3	41	17	1	115	289	6	117
	Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	NC	NC	NC	NC	NC	NC	7	NC	262	NC	2	33	16	NC	174	NC	6	90
	Commonwealth waters adjacent to Ningaloo Reef	NC	NC	NC	NC	NC	NC	5	NC	352	NC	2	42	13	NC	226	NC	4	53

	Continental Slope Demersal Fish Communities	3	NC	284	NC	<1	18	6	NC	269	NC	2	35	11	NC	157	NC	4	57
	Exmouth Plateau	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	2	NC	371	NC	<1	23
	Glomar Shoals	10	NC	87	NC	4	64	12	1	99	110	5	115	5	3	70	75	7	231
MP	Barrow Island	1	NC	251	NC	<1	21	6	NC	121	NC	2	43	13	1	86	183	6	104
	Montebello Islands	5	1	132	150	3	113	24	2	59	66	11	166	37	7	57	67	23	316
	Ningaloo	NC	NC	NC	NC	NC	NC	5	NC	352	NC	2	42	13	NC	226	NC	4	53
NR	Great Sandy Island	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	452	NC	<1	12
	Lowendal Islands	1	NC	298	NC	<1	22	2	NC	138	NC	<1	60	7	NC	161	NC	3	86
RSB	Barrow Island Reefs and Shoals	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	406	NC	<1	23
	Combe Reef	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	366	NC	<1	15
	Dailey Shoal	NC	NC	NC	NC	NC	NC	3	NC	297	NC	<1	13	5	NC	210	NC	2	29
	Glomar Shoal	5	NC	228	NC	2	30	4	NC	141	NC	2	79	2	NC	117	NC	<1	68
	Hammersley Shoal	NC	NC	NC	NC	NC	NC	1	NC	314	NC	<1	18	NC	NC	NC	NC	NC	NC
	Madeleine Shoals	NC	NC	NC	NC	NC	NC	1	NC	267	NC	<1	27	NC	NC	NC	NC	NC	NC
	Montebello Shoals	3	NC	139	NC	<1	37	12	NC	141	NC	4	49	22	NC	81	NC	9	69
	Ningaloo Reef	NC	NC	NC	NC	NC	NC	2	NC	395	NC	<1	23	2	NC	512	NC	<1	22
	Otway Reef	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	2	NC	301	NC	<1	15

	Outtrim Patches	1	NC	474	NC	<1	12	4	NC	292	NC	2	25	10	NC	209	NC	3	31
	Penguin Bank	1	NC	217	NC	<1	25	4	NC	170	NC	2	21	6	NC	156	NC	4	64
	Poivre Reef	NC	NC	NC	NC	NC	NC	2	NC	141	NC	<1	18	7	NC	139	NC	3	79
	Rankin Bank	NC	NC	NC	NC	NC	NC	2	NC	310	NC	<1	22	3	NC	393	NC	2	32
	Ripple Shoals	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1	NC	459	NC	<1	13
	Rosily Shoals	1	NC	229	NC	<1	15	NC	NC	NC	NC	NC	NC	2	NC	169	NC	2	27
	Tryal Rocks	6	NC	180	NC	2	28	23	NC	76	NC	7	56	23	4	51	69	13	125
State and Territory Waters	WA	8	2	16	16	7	324	27	3	38	40	13	266	44	13	39	41	35	406

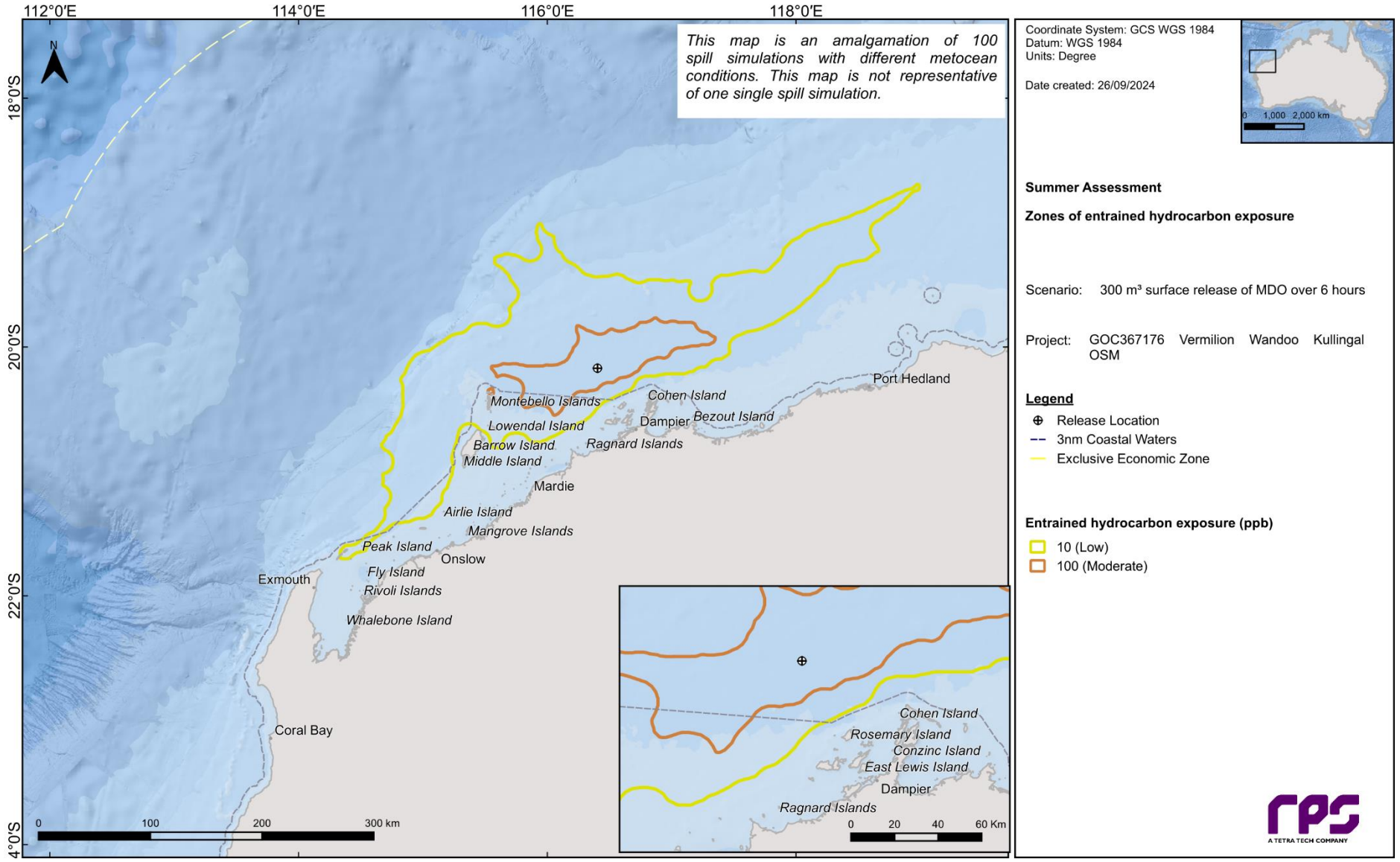


Figure 14.52 Predicted zones of entrained hydrocarbon exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

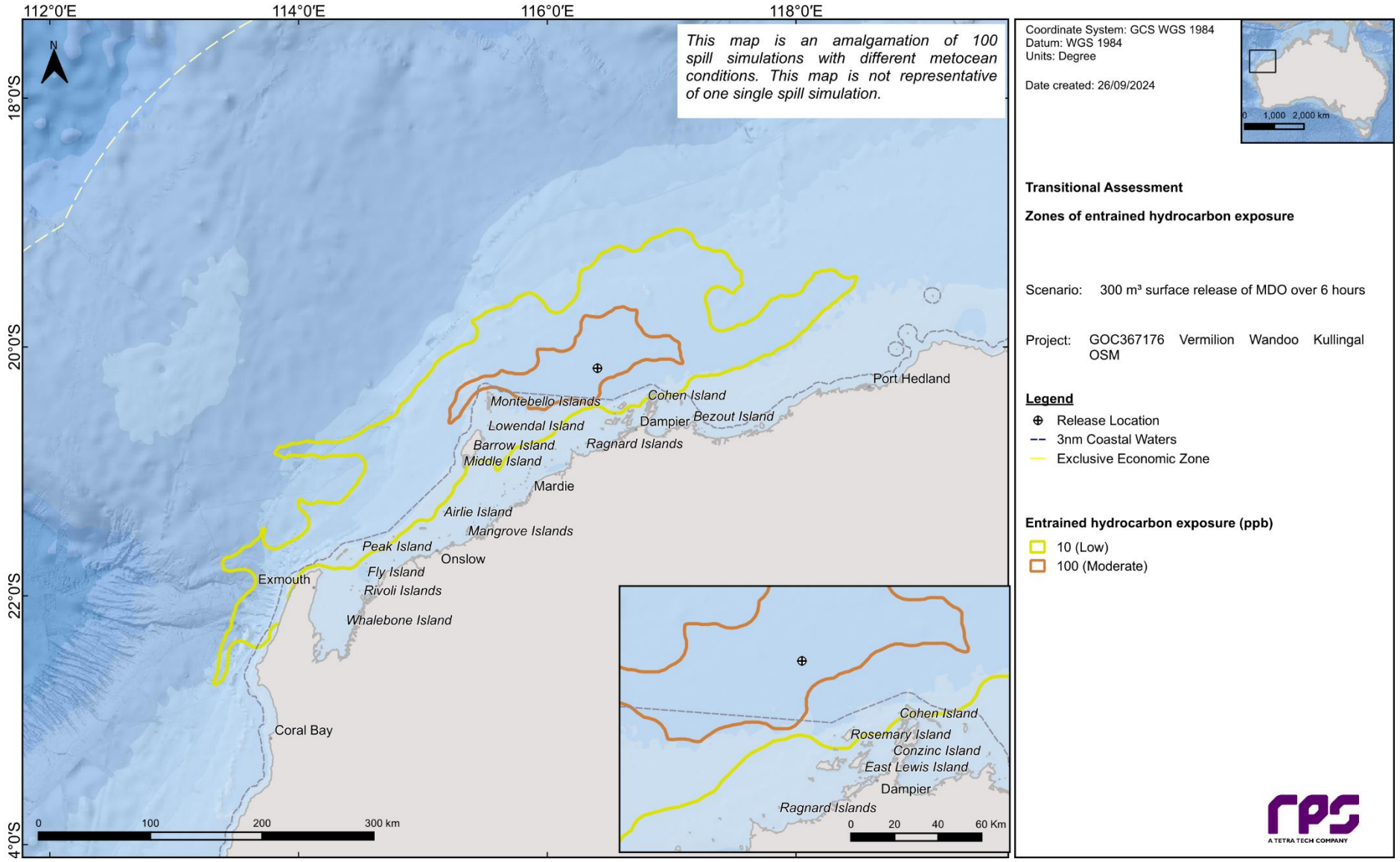


Figure 14.53 Predicted zones of entrained hydrocarbon exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

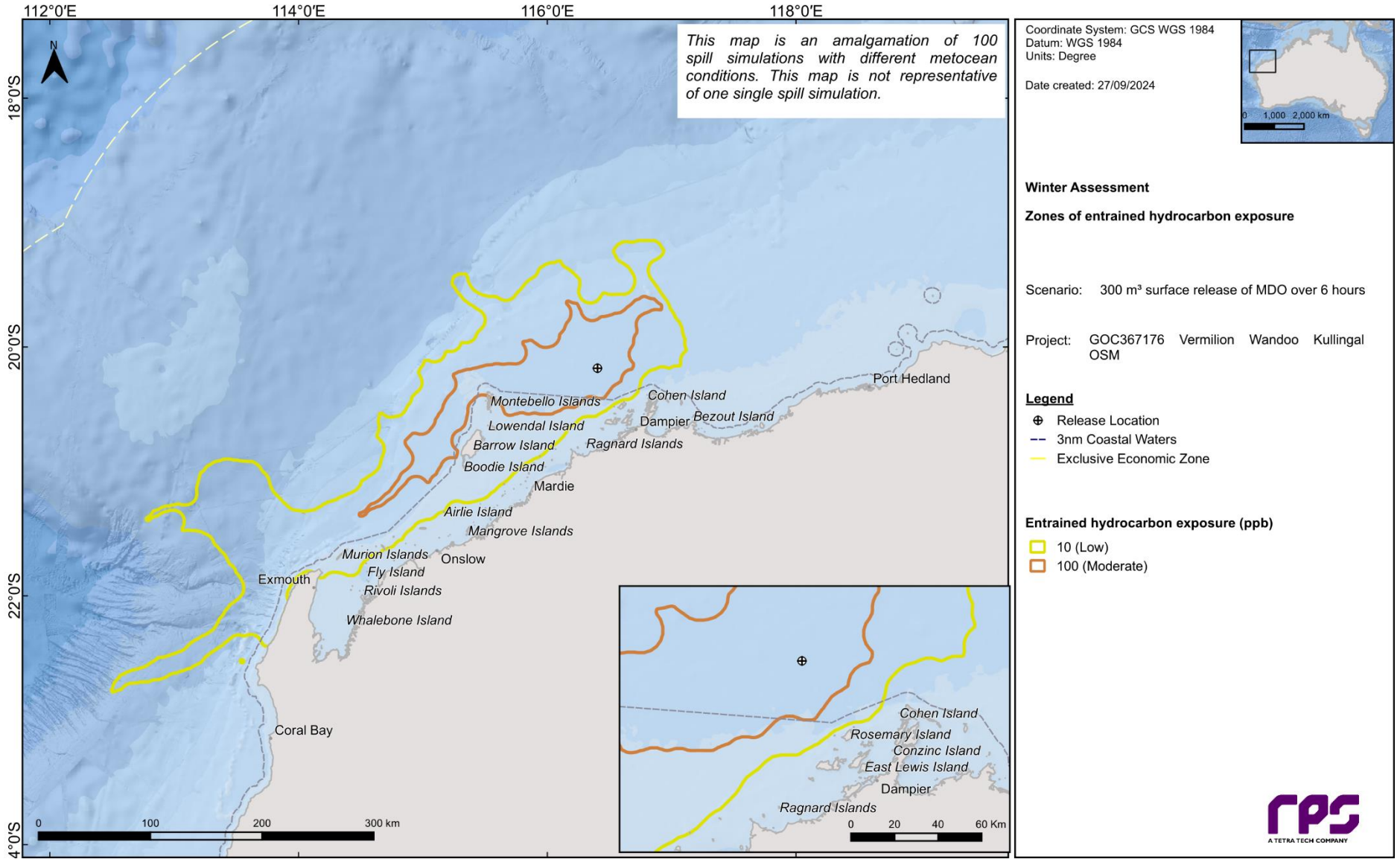


Figure 14.54 Predicted zones of entrained hydrocarbon exposure following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

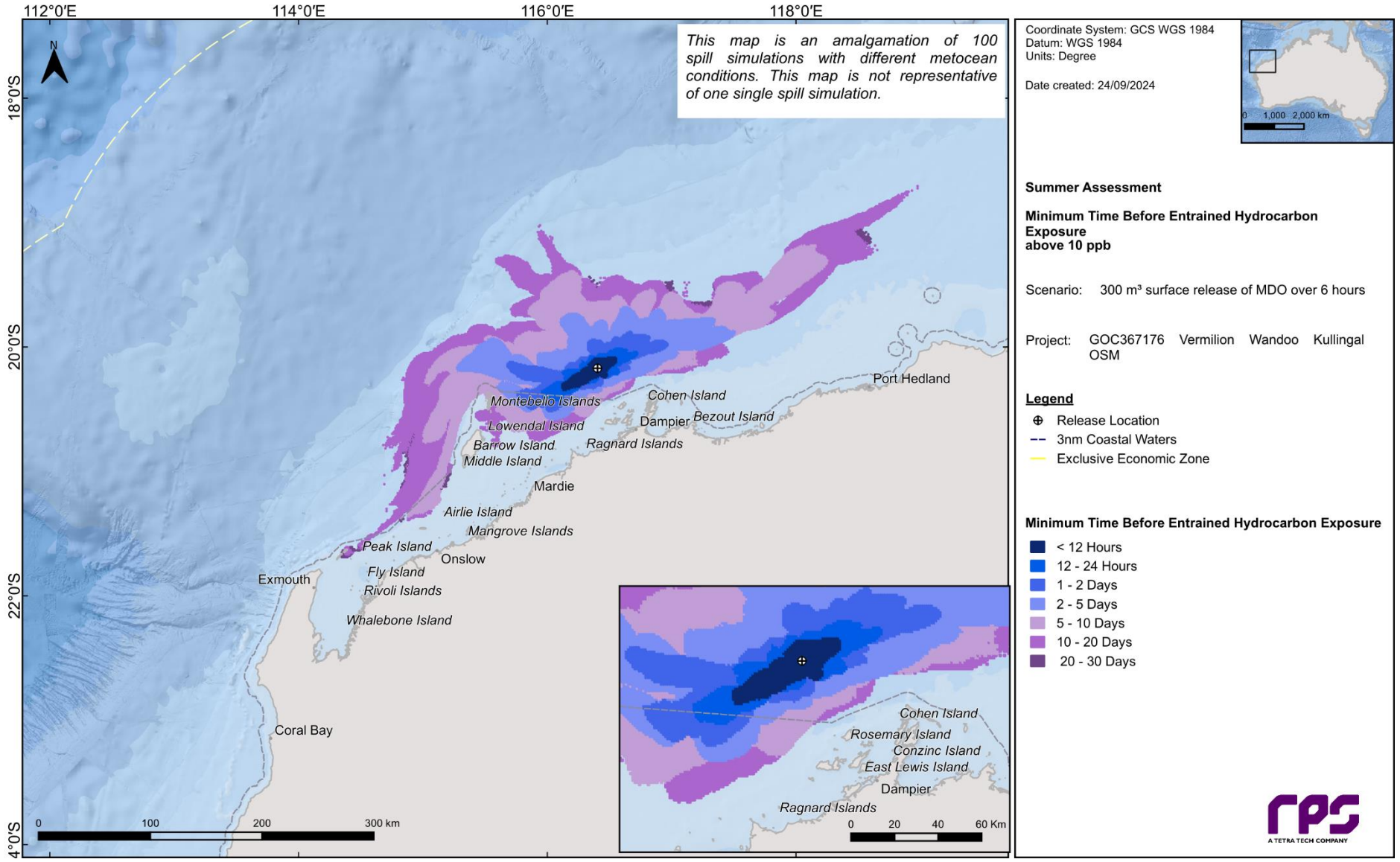


Figure 14.55 Minimum time before entrained hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

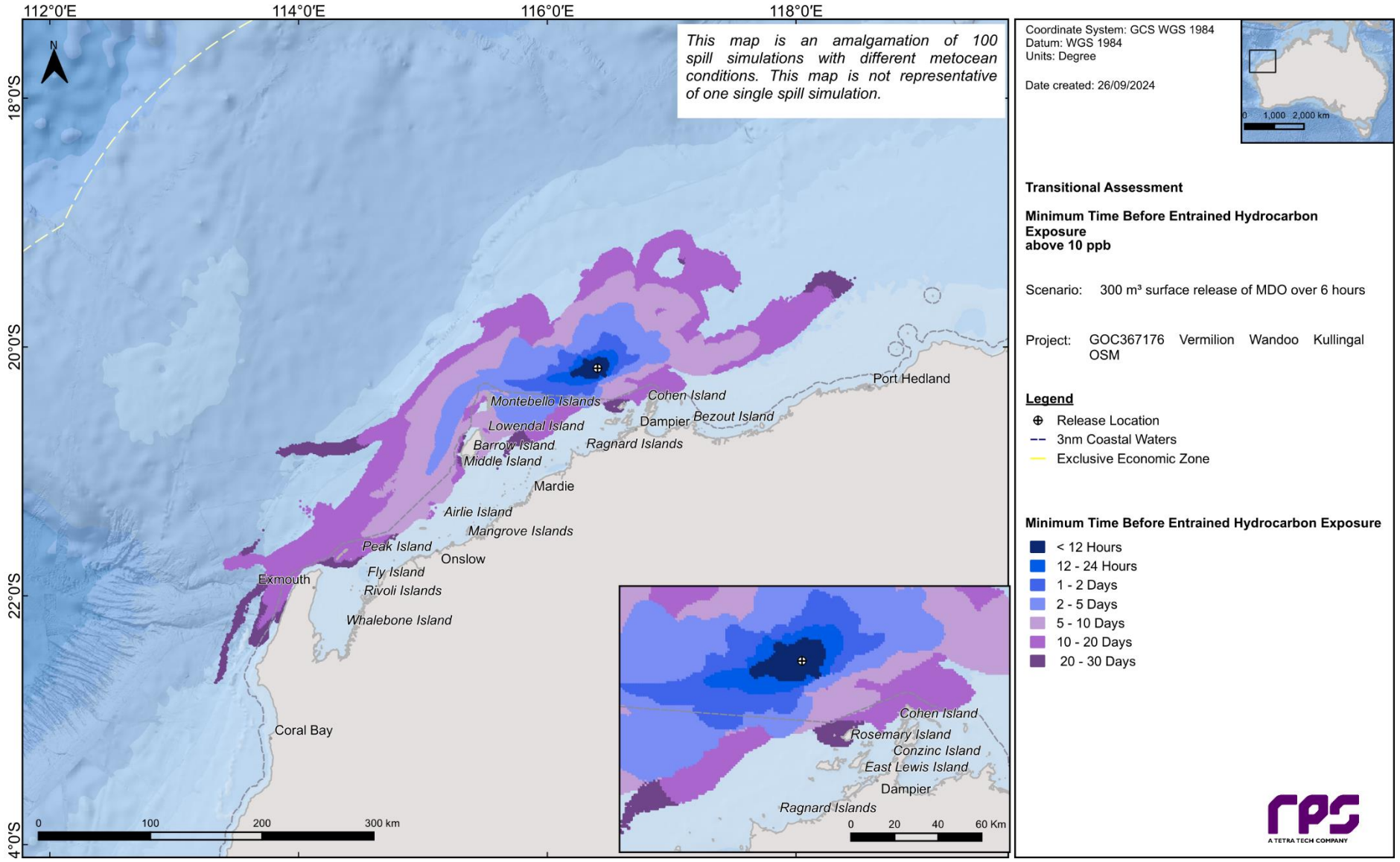


Figure 14.56 Minimum time before entrained hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

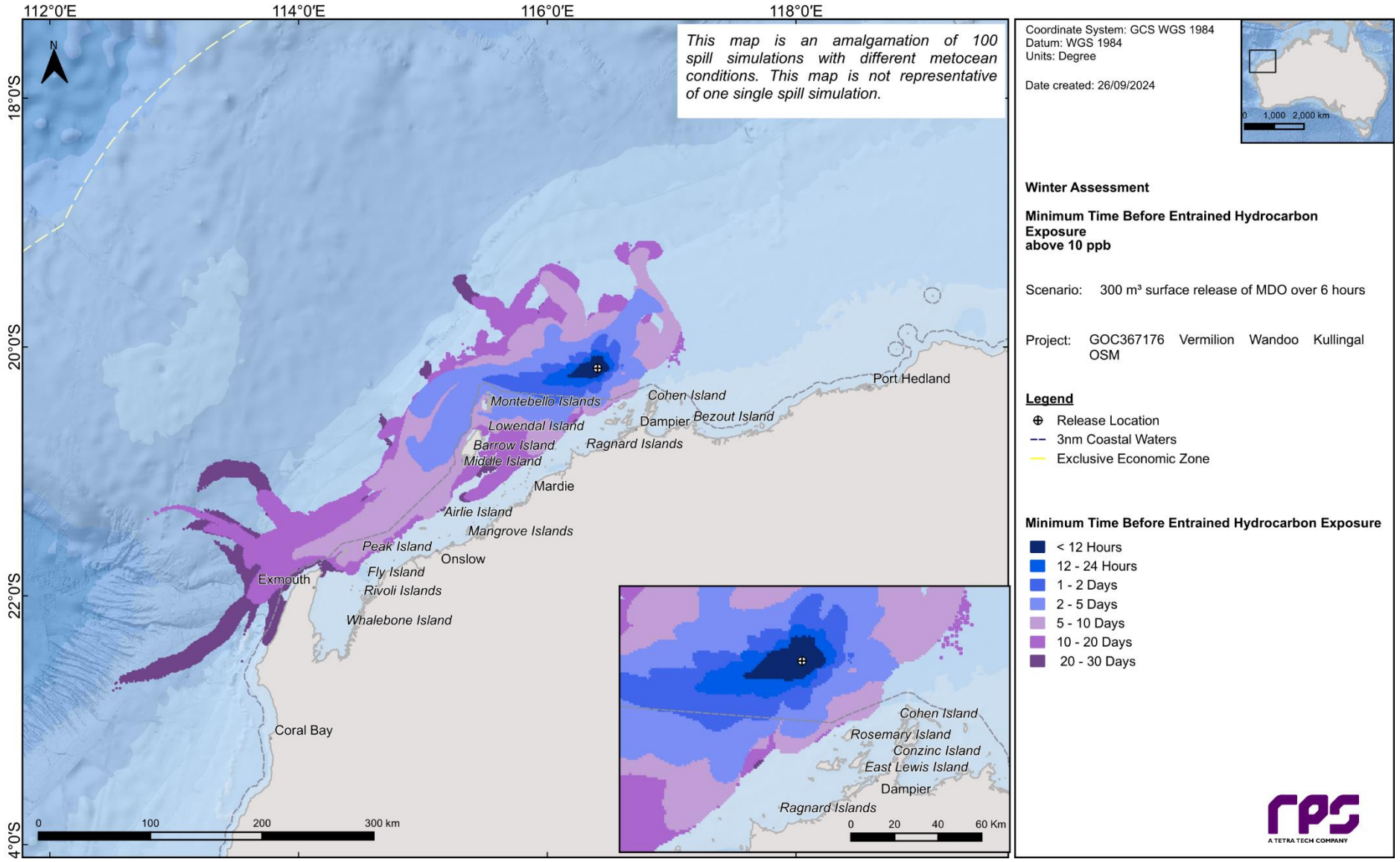


Figure 14.57 Minimum time before entrained hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

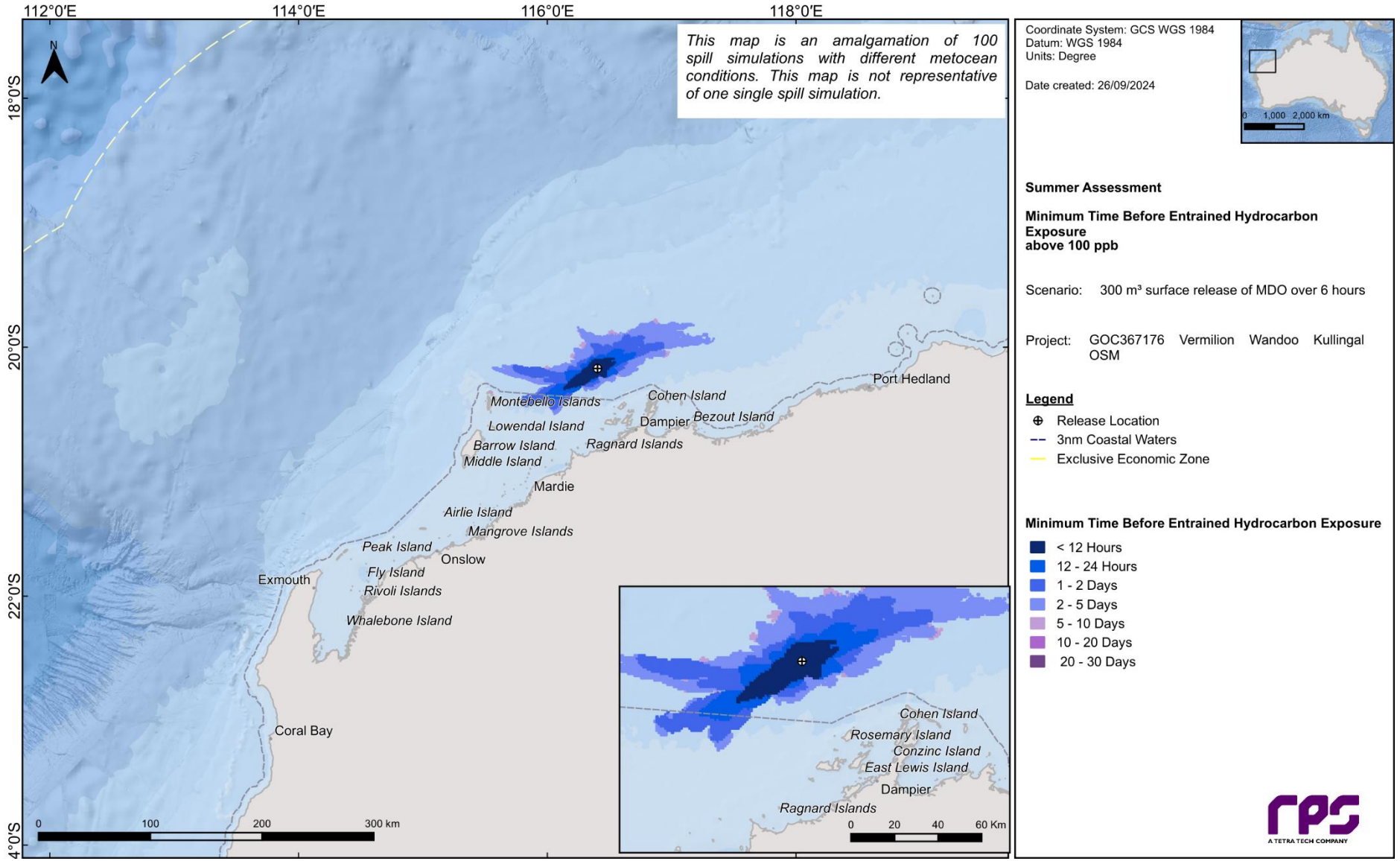


Figure 14.58 Minimum time before entrained hydrocarbon exposure at, or above, 100 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

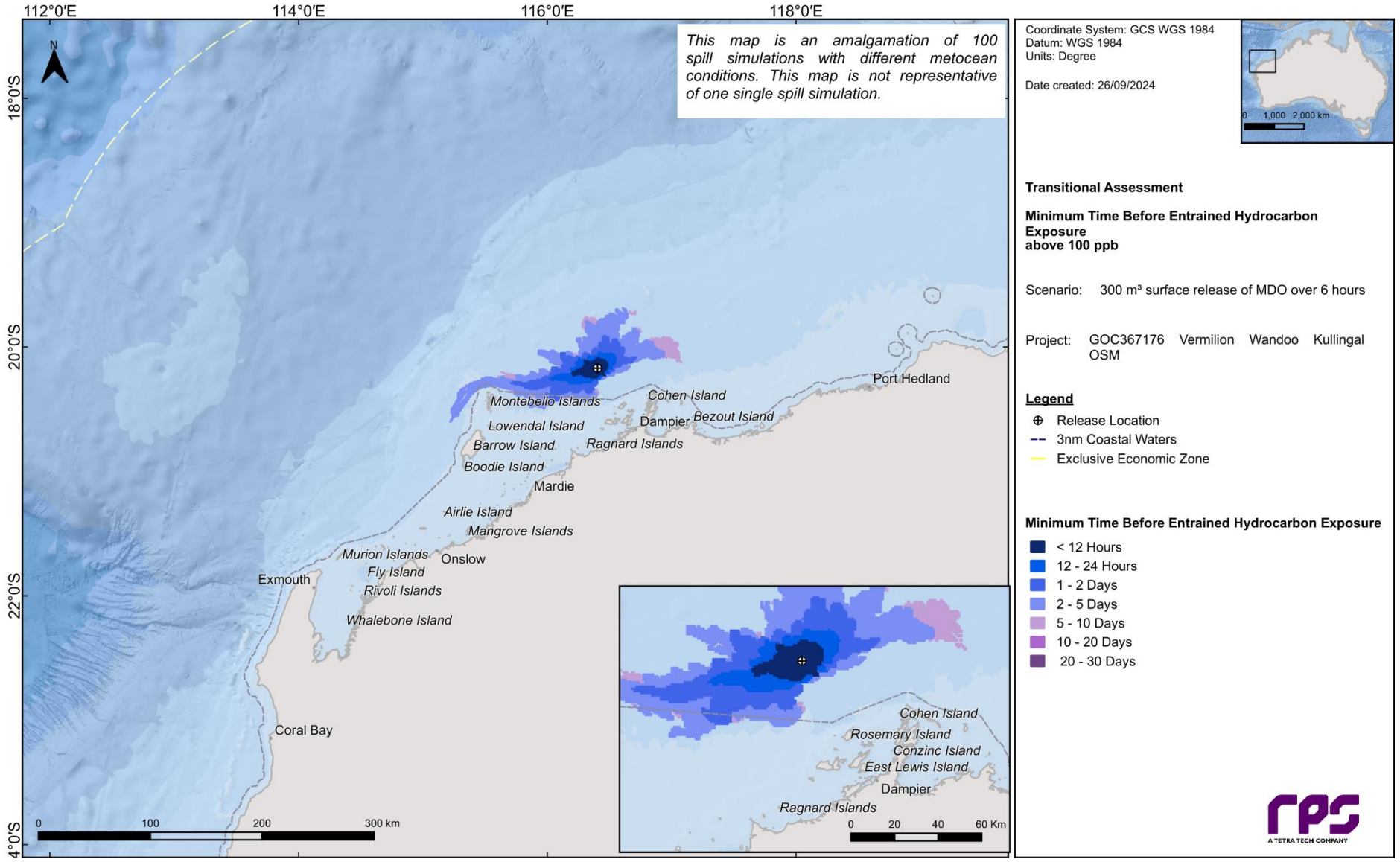


Figure 14.59 Minimum time before entrained hydrocarbon exposure at, or above, 100 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

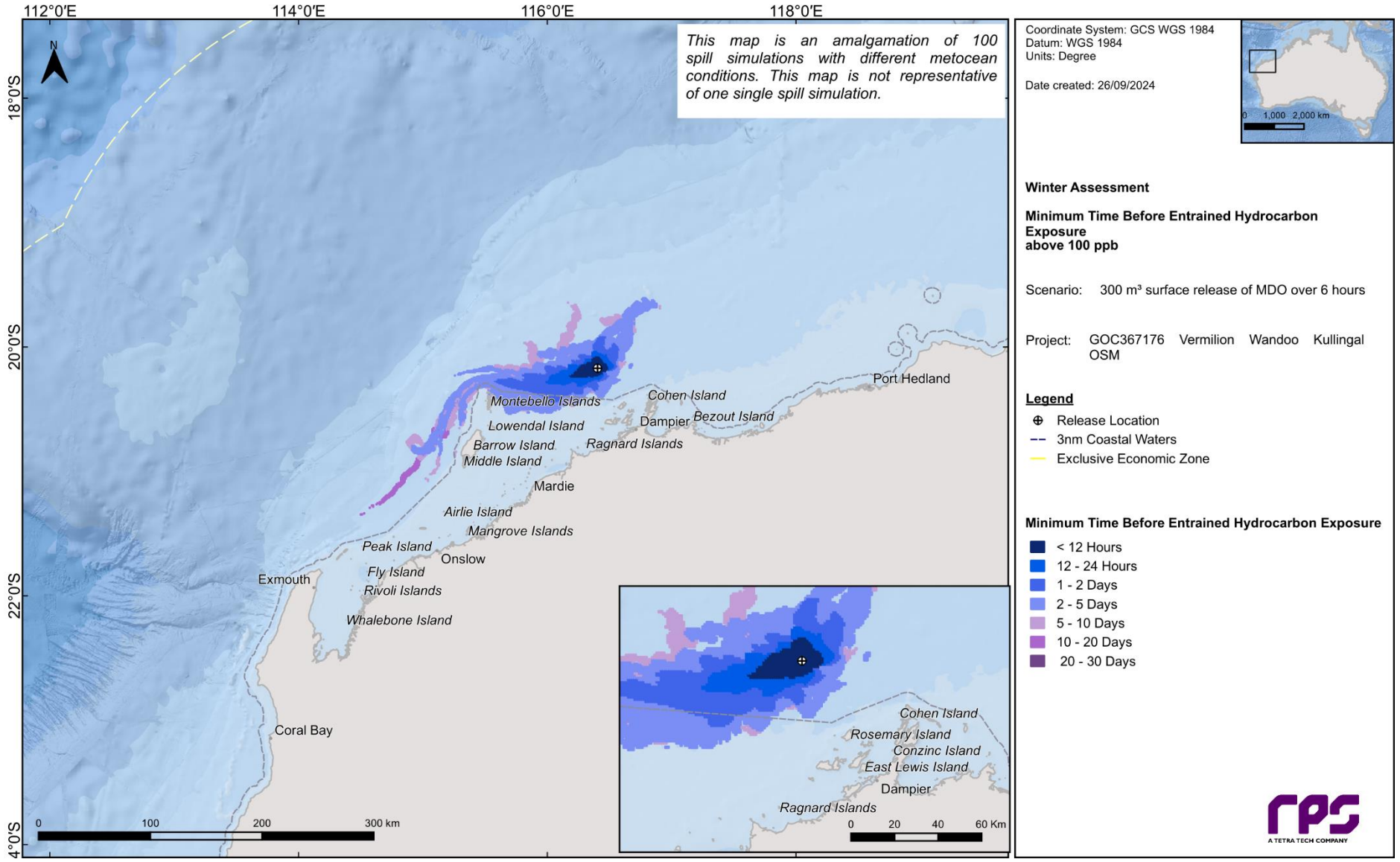


Figure 14.60 Minimum time before entrained hydrocarbon exposure at, or above, 100 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

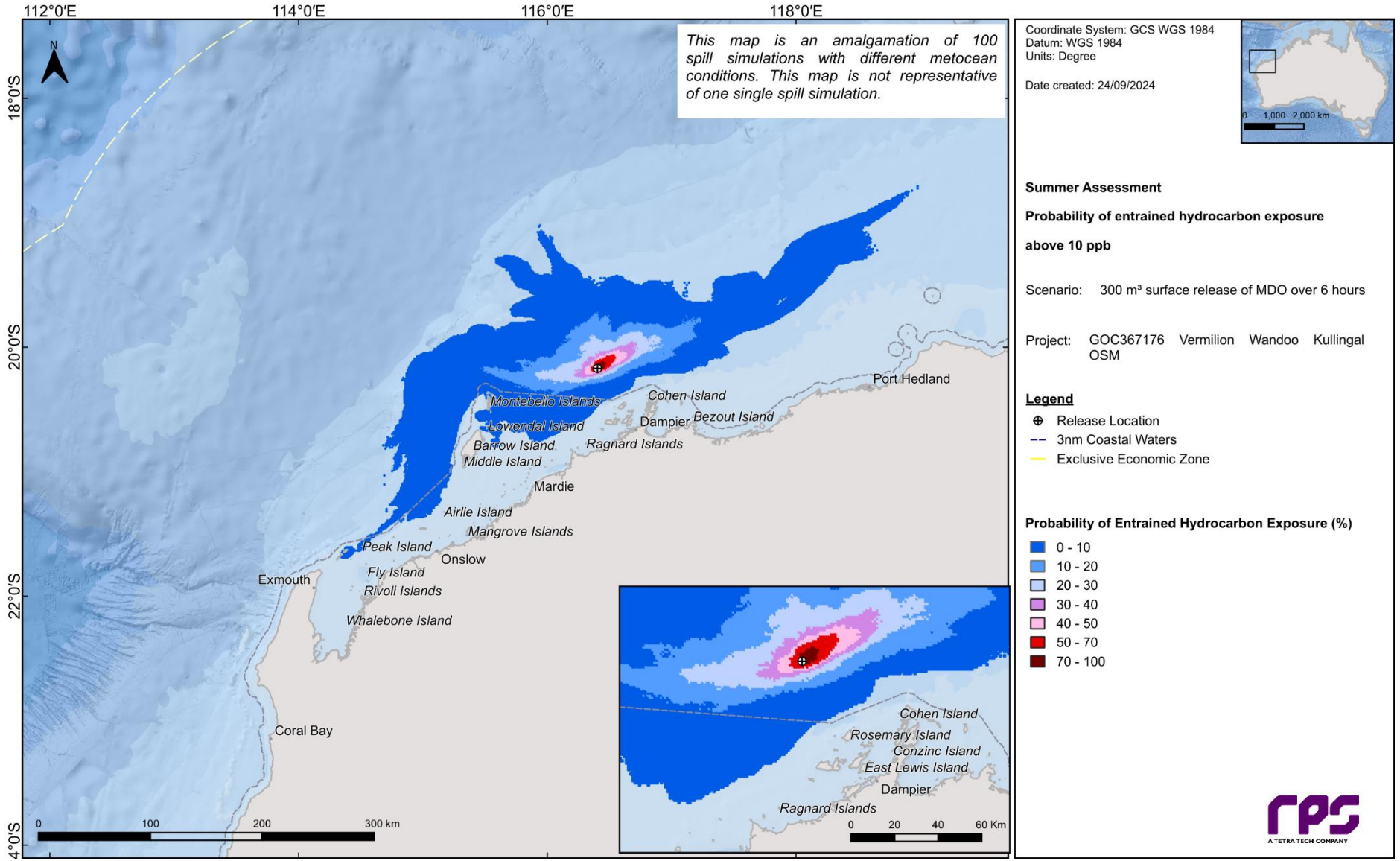


Figure 14.61 Probability of entrained hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

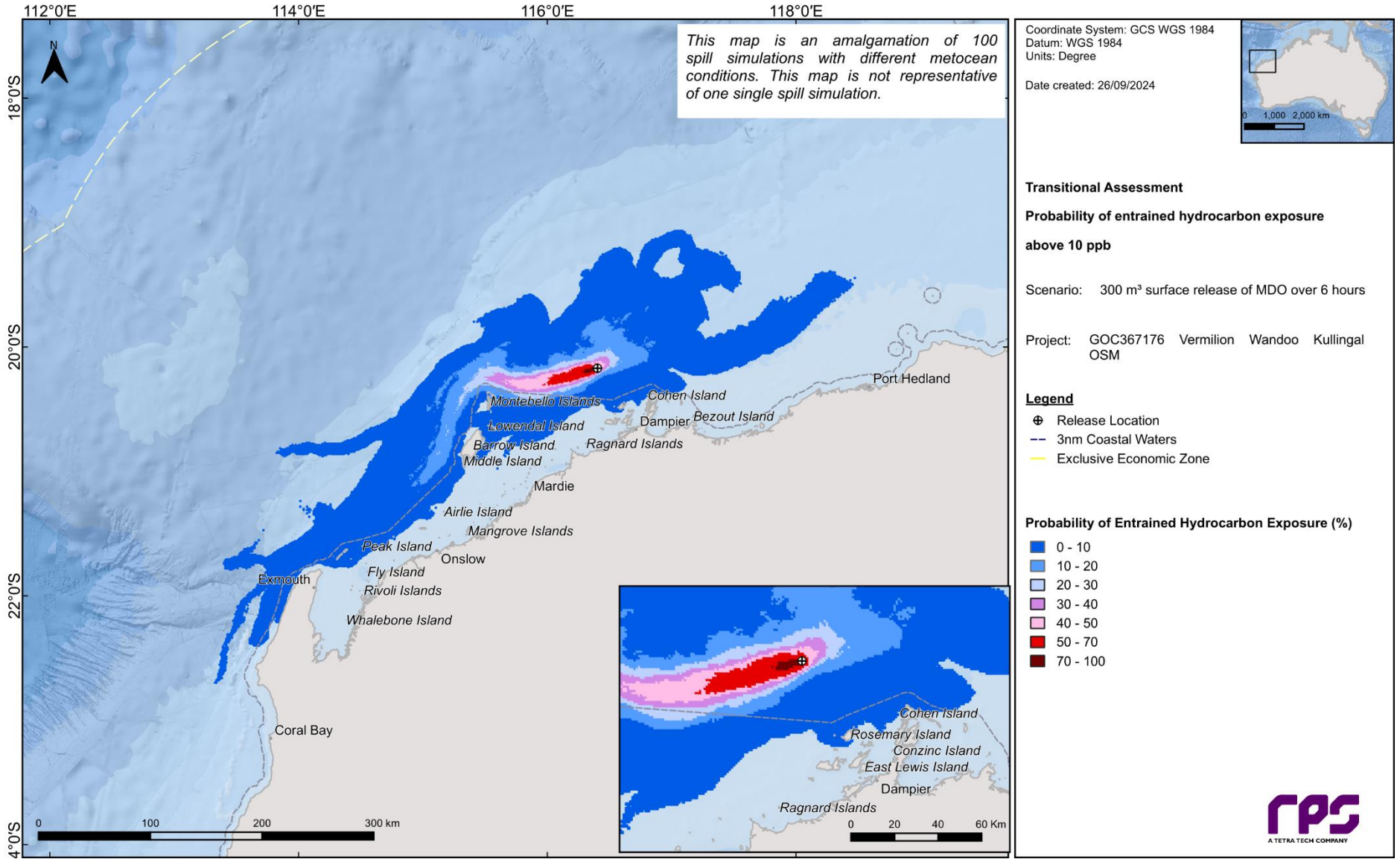


Figure 14.62 Probability of entrained hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

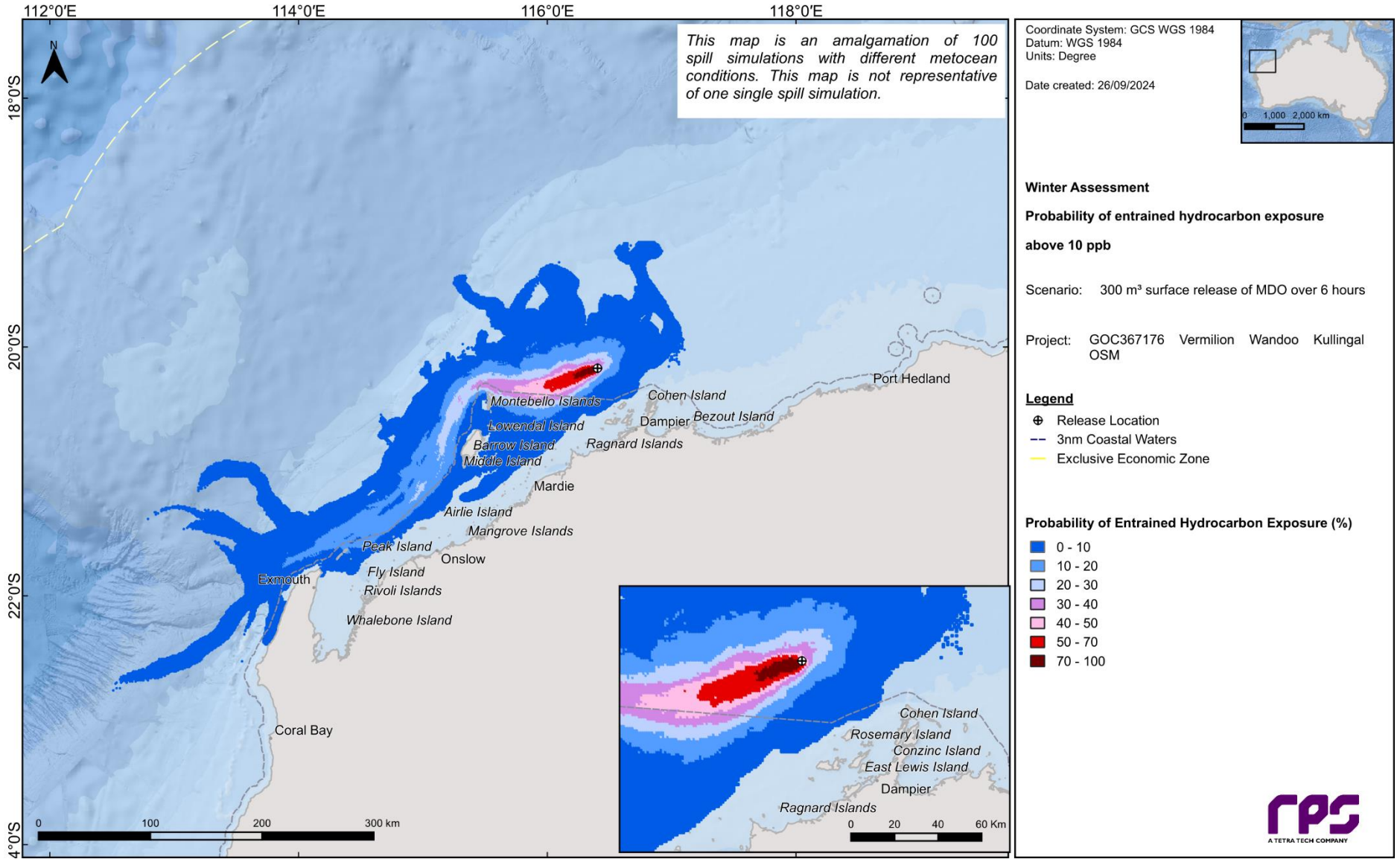


Figure 14.63 Probability of entrained hydrocarbon exposure at, or above, 10 ppb following a vessel collision at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

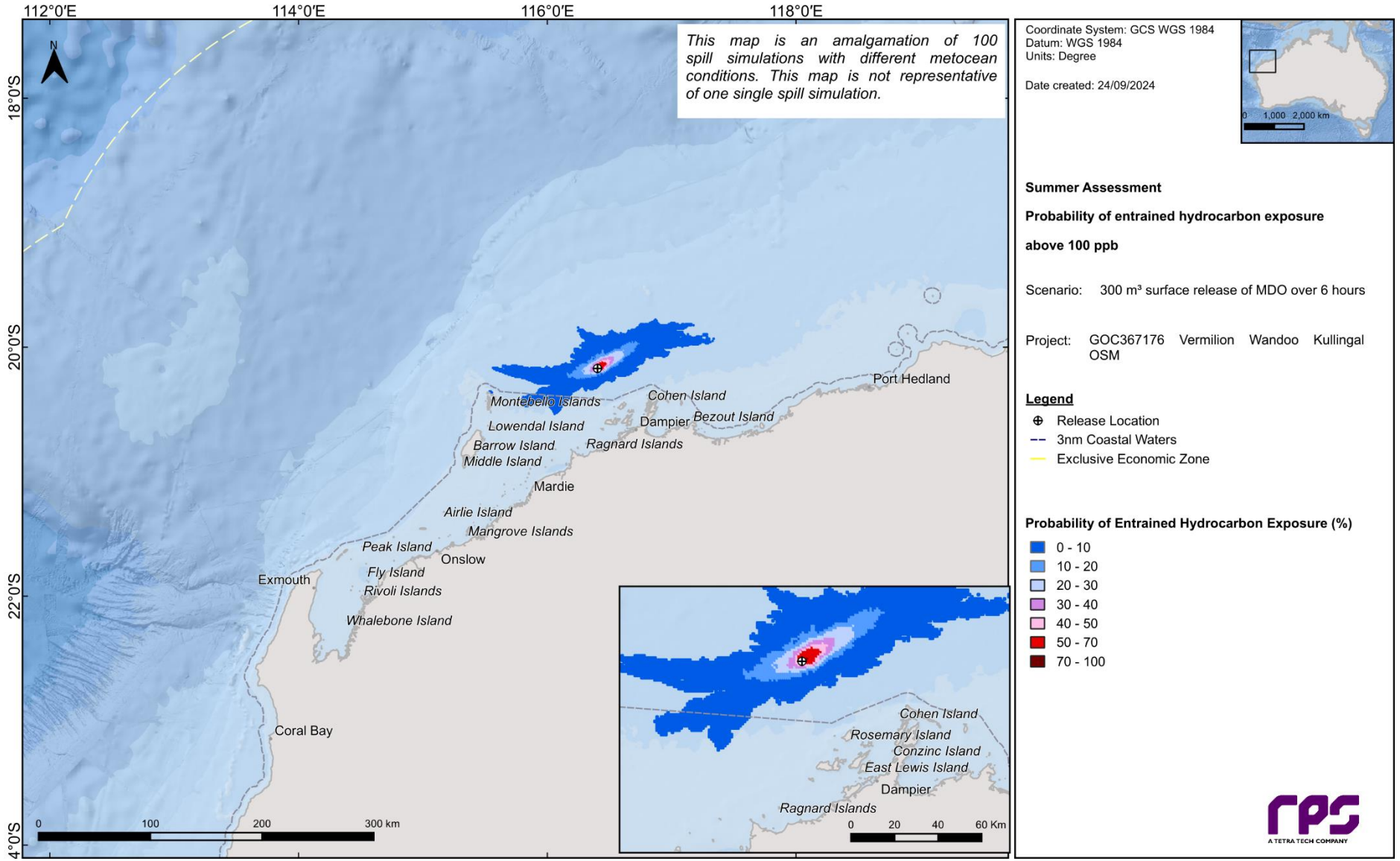


Figure 14.64 Probability of entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

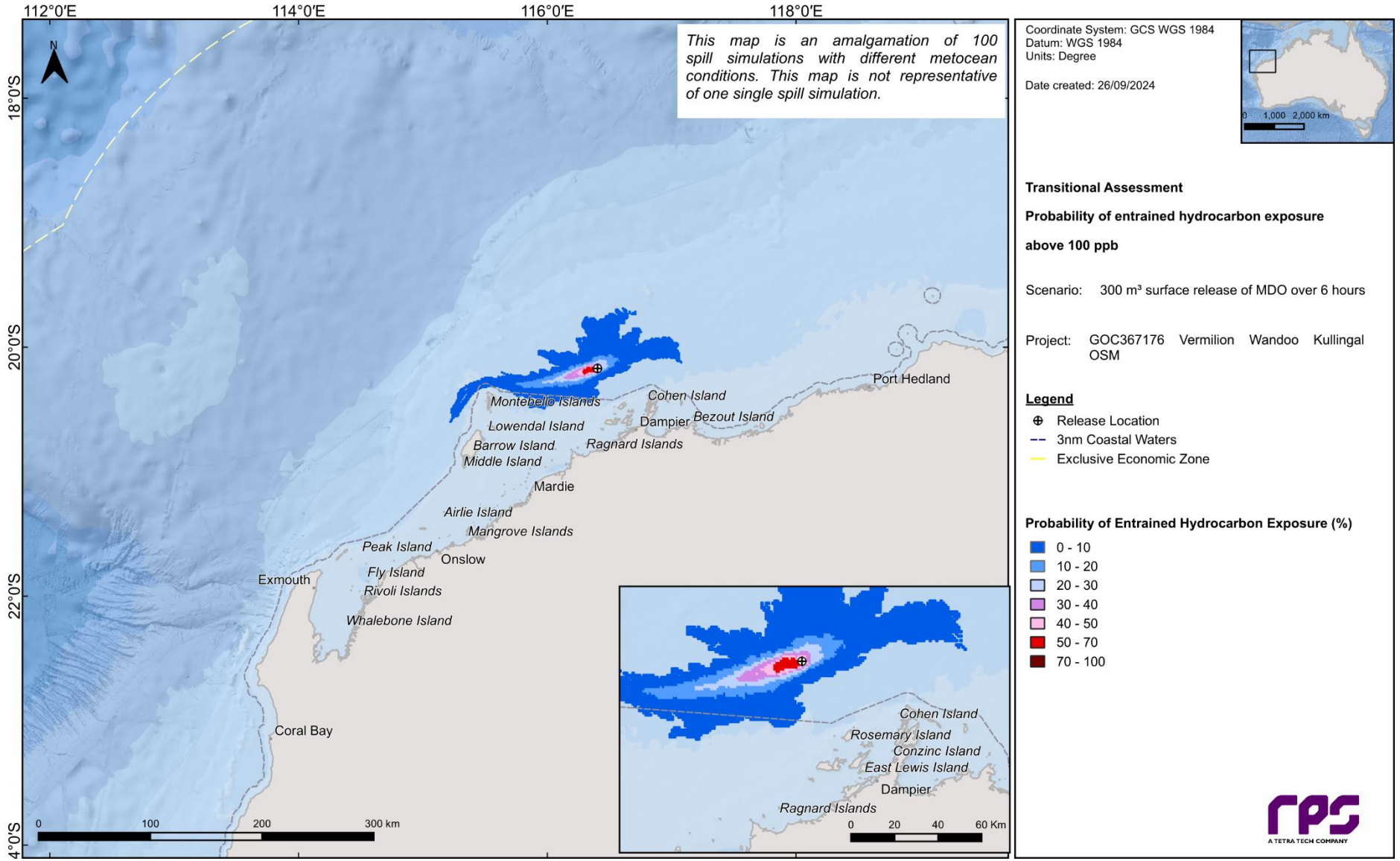


Figure 14.65 Probability of entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

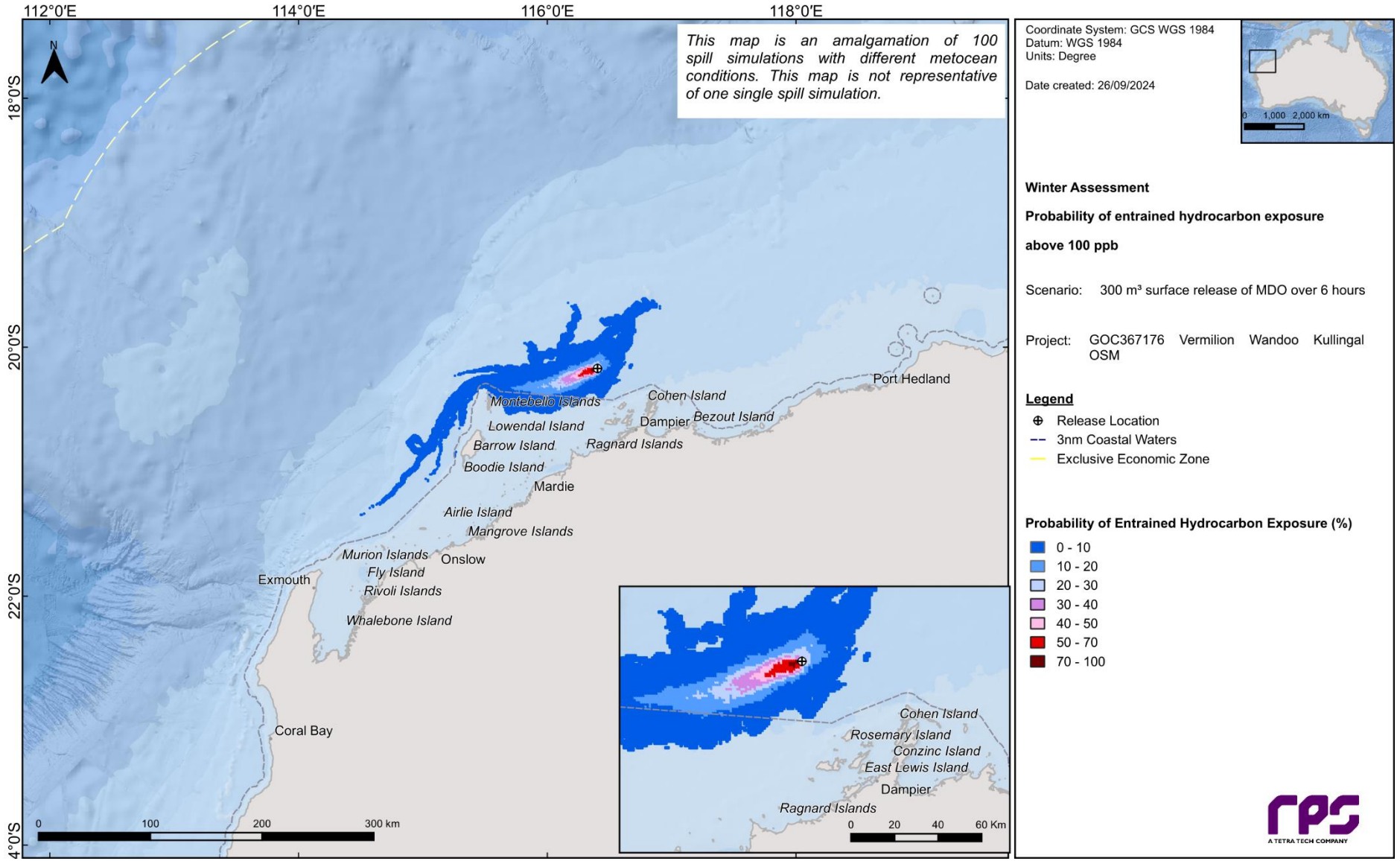


Figure 14.66 Probability of entrained hydrocarbon exposure at, or above, 100 ppb following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

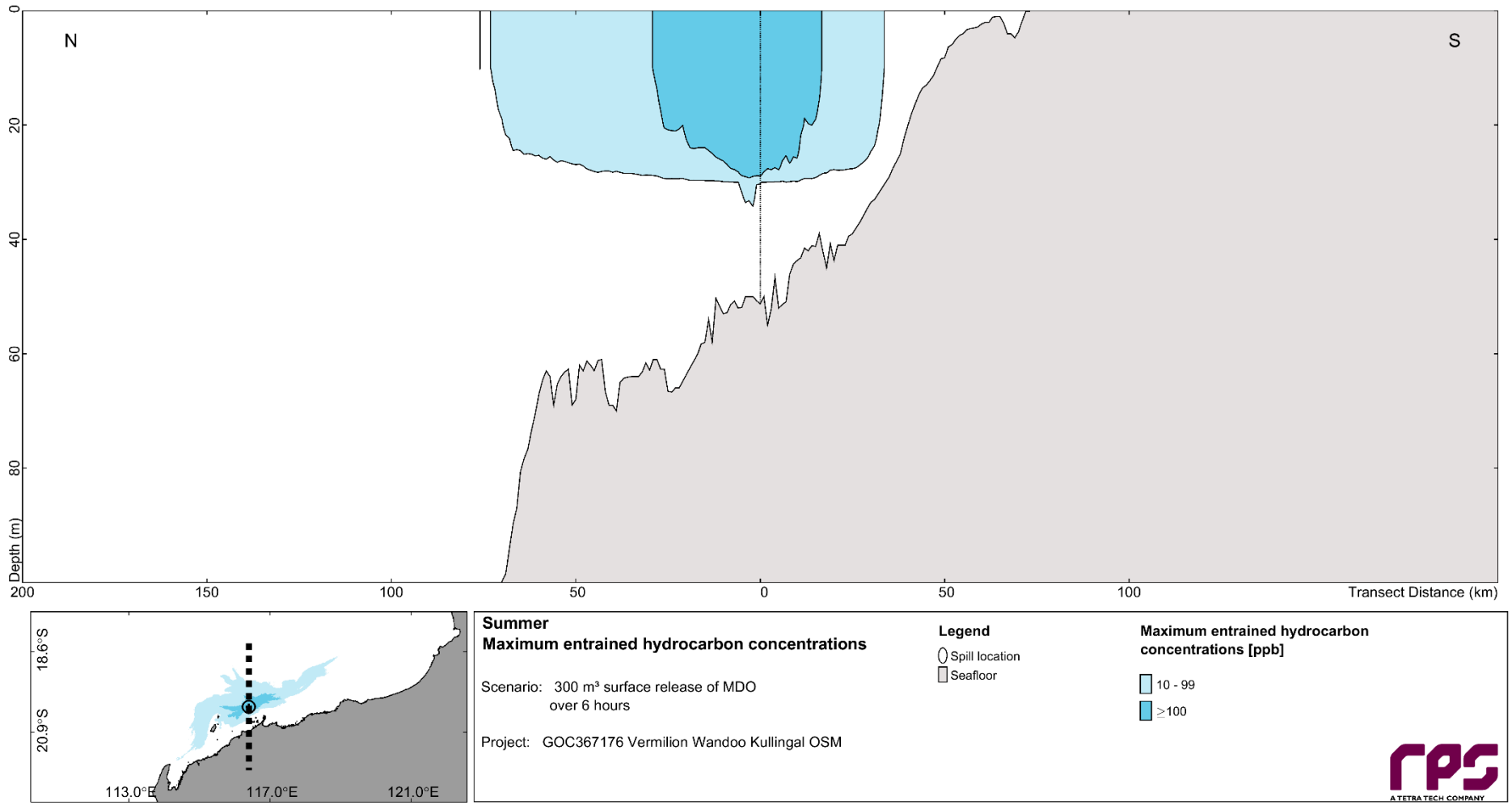


Figure 14.67 North-south cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

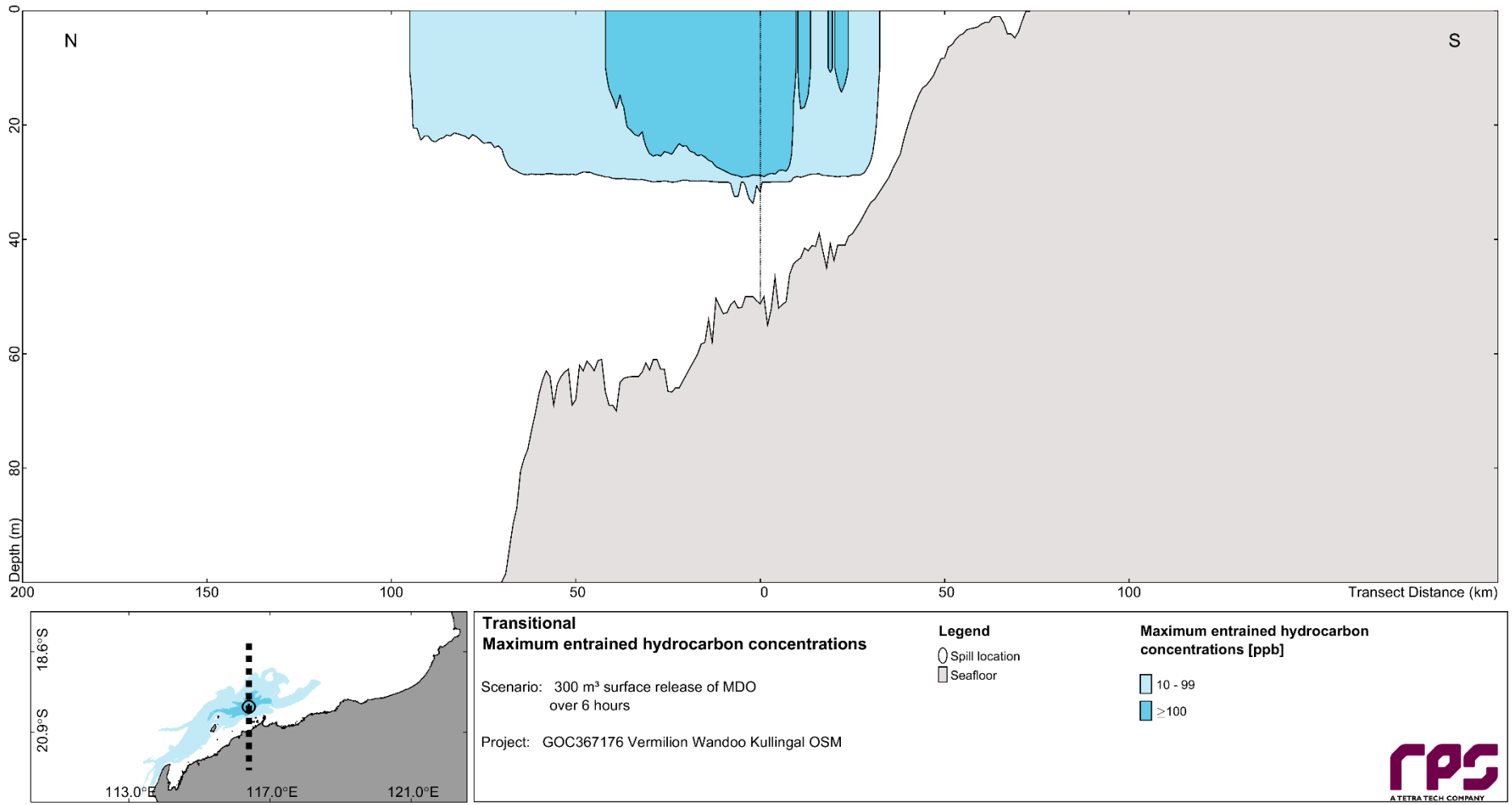


Figure 14.68 North-south cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

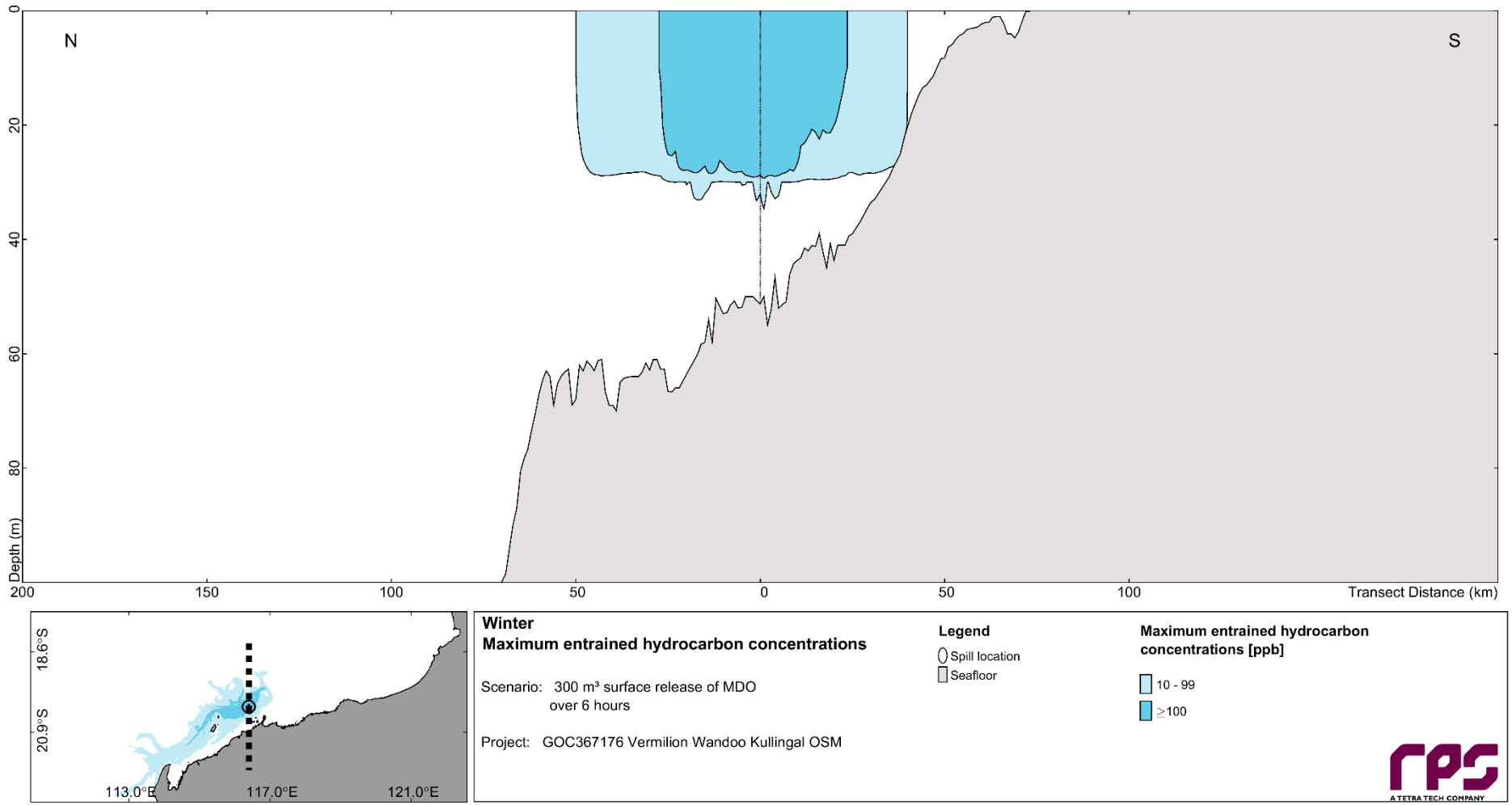


Figure 14.69 North-south cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

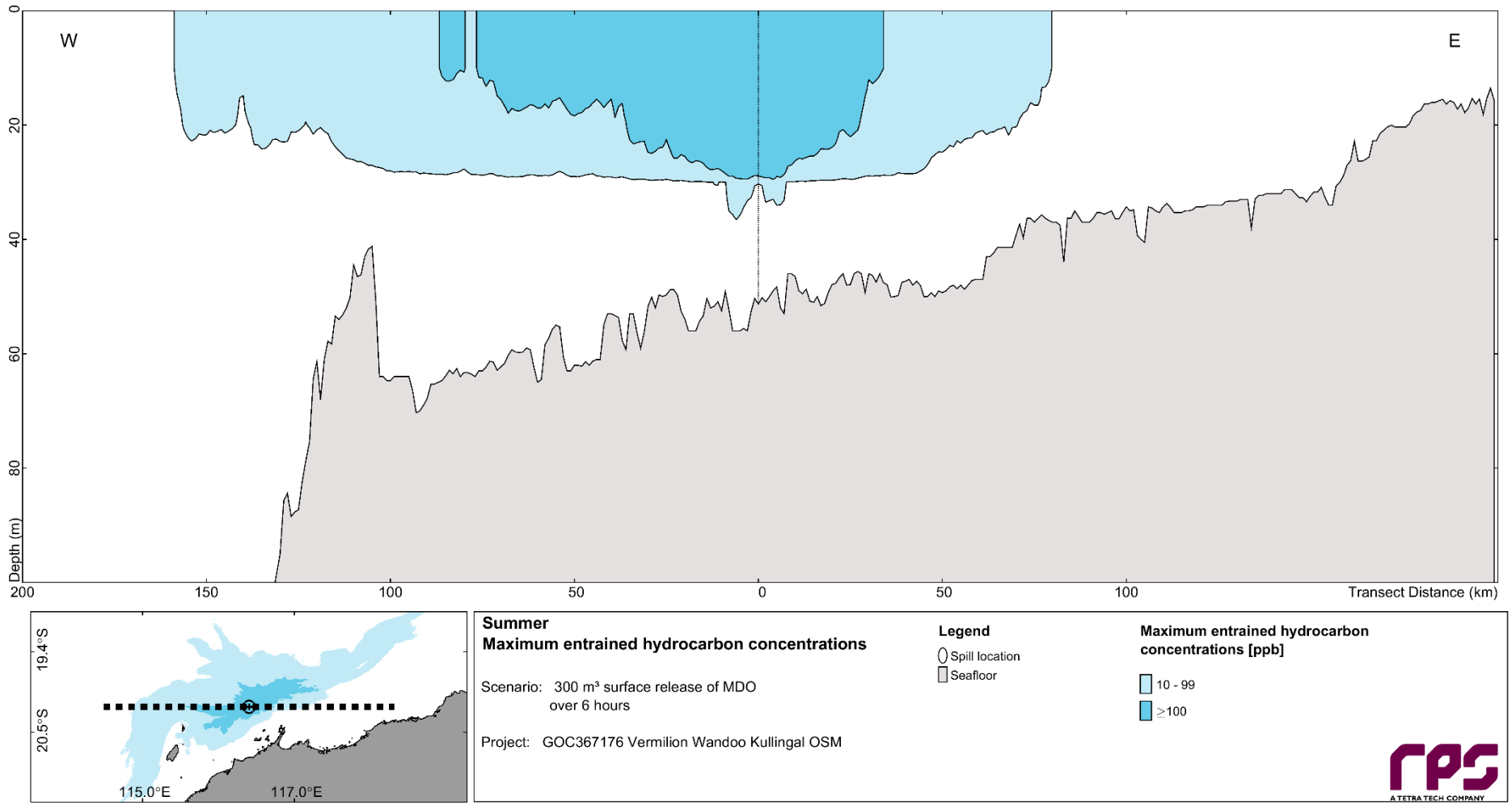


Figure 14.70 East-west cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent summer conditions.

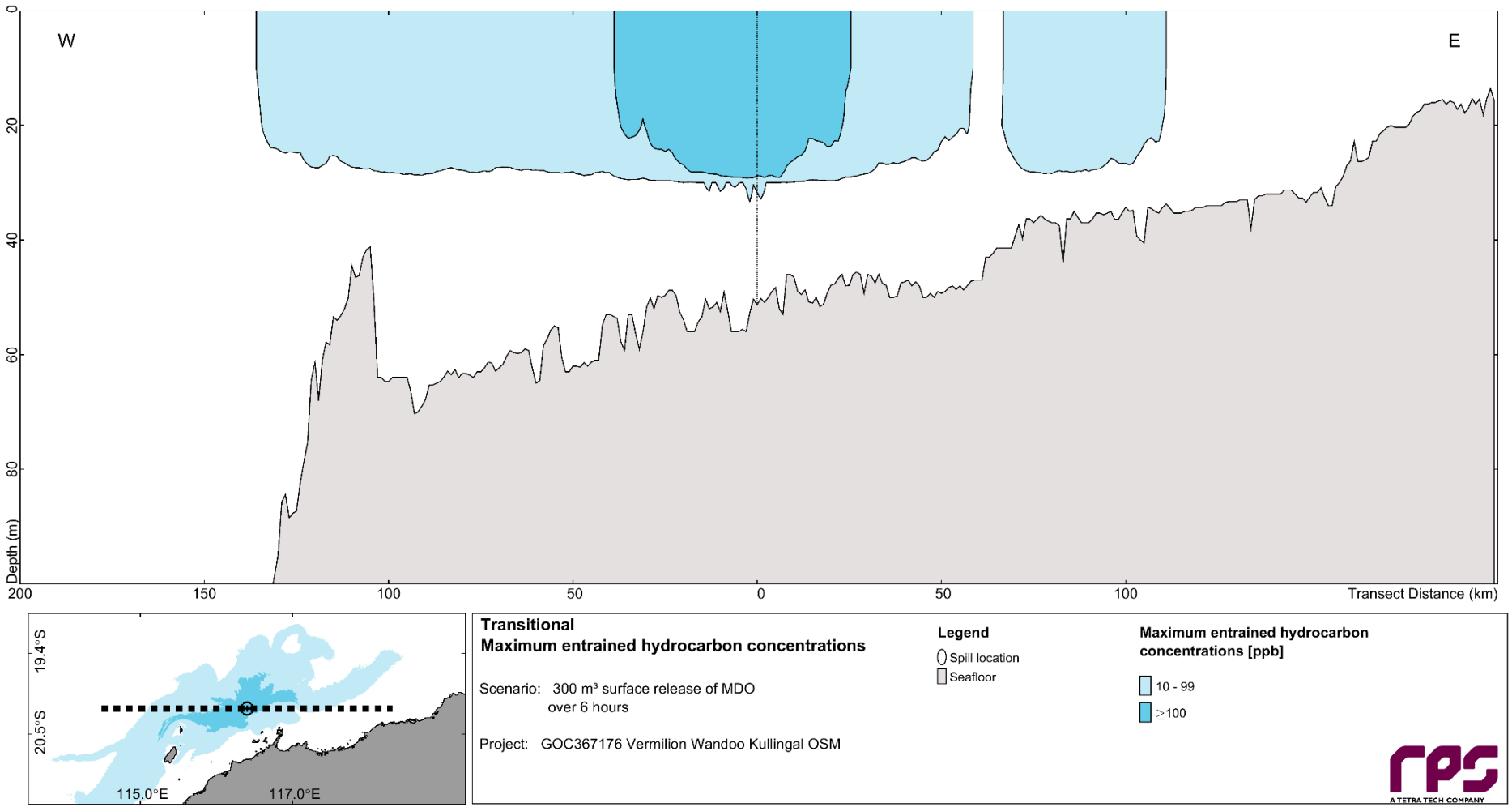


Figure 14.71 East-west cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent transitional conditions.

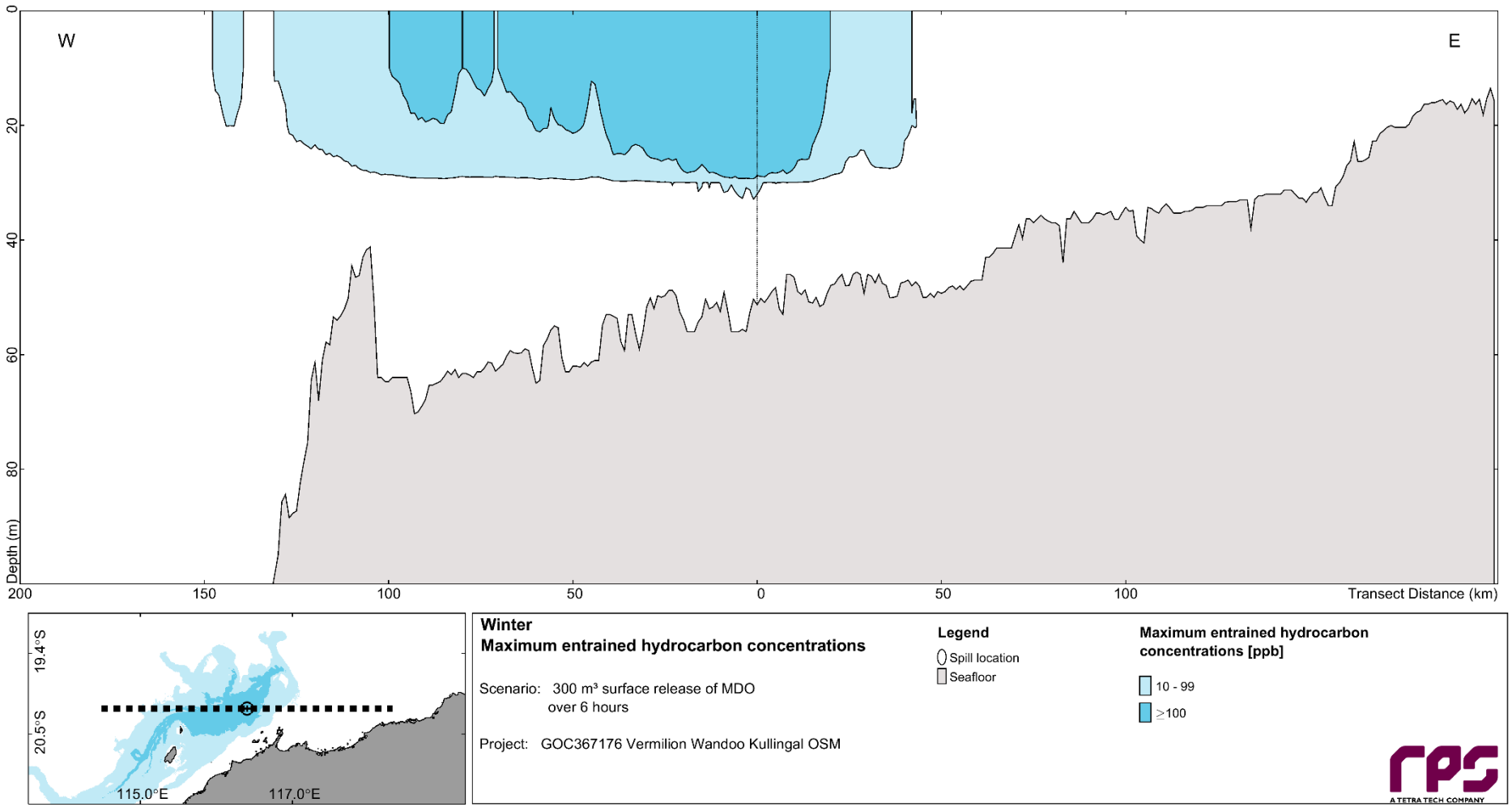


Figure 14.72 East-west cross-section transect of entrained hydrocarbon concentrations following a surface LOWC at Kullingal. The results were calculated from 100 spill simulations and represent winter conditions.

15 REFERENCES

American Society for Testing and Materials (ASTM) 2022, 'F2067-22 Standard Practice for Development and Use of Oil-Spill Trajectory Models', ASTM International, West Conshohocken, USA.

Amores, A, Jordà, G & Monserrat, S 2019, 'Ocean eddies in the Mediterranean Sea from satellite altimetry: Sensitivity to satellite track location', *Frontiers in Marine Science*, vol. 6, p.703.

Andersen, OB 1995, 'Global ocean tides from ERS 1 and TOPEX/POSEIDON altimetry', *Journal of Geophysical Research: Oceans*, vol. 100, no. C12, pp. 25249–25259.

Anderson JW, Neff JM, Cox BA, Tatem HE & Hightower GM 1974, 'Characteristics of dispersions and water-soluble extracts of crude and refined oils and their toxicity to estuarine crustaceans and fish', *Marine Biology*, vol. 27, no. 1, pp. 75–88.

Anderson JW, Riley R, Kiesser S & Gurtisen J 1987, 'Toxicity of dispersed and undispersed Prudhoe Bay crude oil fractions to shrimp and fish', Proceedings of the 1987 International Oil Spill Conference, American Petroleum Institute, pp. 235–240.

Australian Maritime Safety Authority (AMSA) 2014, 'Identification of oil on water: Aerial observations and identification guide', viewed 4 June 2020, https://www.amsa.gov.au/sites/default/files/2014-01-mp-amsa22-identification-oil-on-water.pdf.

Australian Maritime Safety Authority (AMSA) 2023, 'Technical Guideline for the Preparation of Marine Pollution Contingency Plans for Marine and Coastal Facilities Australian Maritime Safety Authority', viewed 14 March 2024, https://www.amsa.gov.au/sites/default/files/np-gui-012-technical-guidelines-contingency-plans-15082023_0.pdf

Becker, JJ, Sandwell, DT, Smith, WHF, Braud, J, Binder, B, Depner, J, Fabre, D, Factor, J, Ingalls, S, Kim, S-H, Ladner, R, Marks, K, Nelson, S, Pharaoh, A, Trimmer, R, Von Rosenberg, J, Wallace, G & Weatherall, P 2009, 'Global bathymetry and evaluation data at 30 arc seconds resolution: SRTM30_PLUS', *Marine Geodesy*, vol. 32, no. 4, pp. 355–371.

Blum DJ & Speece RE 1990, 'Determining chemical toxicity to aquatic species', *Environmental Science & Technology*, vol. 24, no. 3, pp. 284–293.

Bobra, M 1991, 'Water-in-oil emulsification: a physicochemical study', Proceedings of International Oil Spill Conference, American Petroleum Institute, no. 1, pp. 483–488.

Bonn Agreement 2009, 'Bonn Agreement aerial operations handbook, 2009 - Publication of the Bonn Agreement', London, viewed 13 January 2015, http://www.bonnagreement.org/site/assets/files/3947/ba-aoh_revision_2_april_2012.pdf.

Carls, MG, Holland, L, Larsen, M, Collier, TK, Scholz, NL & Incardona, JP 2008, 'Fish embryos are damaged by dissolved PAHs, not oil particles', *Aquatic toxicology*, 88(2), pp.121–127.

Chassignet, EP, Hurlburt, HE, Smedstad, OM, Halliwell, GR, Hogan, PJ, Wallcraft, AJ, Baraille, R & Bleck, R 2007, 'The HYCOM (hybrid coordinate ocean model) data assimilative system', *Journal of Marine Systems*, vol. 65, no. 1, pp. 60–83.

Chassignet, E, Hurlburt, H, Metzger, E, Smedstad, O, Cummings, J & Halliwell, G 2009, 'U.S. GODAE: Global Ocean Prediction with the HYbrid Coordinate Ocean Model (HYCOM)', *Oceanography*, vol. 22, no. 2, pp. 64–75.

Condie, SA, & Andrewartha, JR 2008, 'Circulation and connectivity on the Australian Northwest Shelf', *Continental Shelf Research*, vol. 28, pp. 1724–1739.

Daling PJ & Brandvik, PS 1991, 'W/O-emulsion formation and w/o-emulsion stability testing - an extended study with eight oil types', Technical Report IKU-R-02.0786.00/10/90, Institutt for Kontinentalundersoekelser og Petroleumsteknologi A/S, Trondheim (Norway), Norway.

Daling, PS, Aamo, OM, Lewis, A & Strøm-Kristiansen, T 1997, 'SINTEF/IKU Oil-Weathering model: Predicting oils' properties at sea', Proceedings of International Oil Spill Conference, American Petroleum Institute, no. 1, pp. 297–307.

Davies, AM 1977a, 'The numerical solutions of the three-dimensional hydrodynamic equations using a B-spline representation of the vertical current profile', in JC Nihoul (ed), Bottom Turbulence: Proceedings of the 8th Liège Colloquium on Ocean Hydrodynamics, Elsevier Scientific, Amsterdam, pp. 1–25.

Davies, AM 1977b, 'Three-dimensional model with depth-varying eddy viscosity', in JC Nihoul (ed), Bottom Turbulence: Proceedings of the 8th Liège Colloquium on Ocean Hydrodynamics, Elsevier Scientific, Amsterdam, pp. 27–48.

Delvigne, GA 1991, 'On scale modeling of oil droplet formation from spilled oil', Proceedings of International Oil Spill Conference, American Petroleum Institute, no. 1, pp. 501–506.

Delvigne, GAL & Sweeney, C 1988, 'Natural dispersion of oil', *Oil and Chemical Pollution*, vol. 4, no. 4, pp. 281–310.

Department of the Environment, Water, Heritage and the Arts (DEWHA) 2008, the North-West marine bioregional plan – bioregional profile, viewed 10 March 2015, http://www.environment.gov.au/system/files/resources/2e286b1a-c6e2-4e3d-95cf-c98a8dea60fd/files/bioregional-profile.pdf

Fingas, M, 1995, 'Water-in-oil emulsion formation: A review of physics and mathematical modelling', *Spill Science & Technology Bulletin*, vol. 2, no. 1, pp.55–59.

Fingas, M & Fieldhouse B 2004, 'Formation of water-in-oil emulsions and application to oil spill modelling', *Journal of Hazardous Materials*, vol. 107, pp. 37–50.

French, D, Reed, M, Jayko, K., Feng, S, Rines, H & Pavignano, S 1996, 'The CERCLA Type A Natural Resource Damage Assessment Model for Coastal and Marine Environments (NRDAM/CME), Technical Documentation, Vol. I - Model Description', Office of Environmental Policy and Compliance, U.S. Department of the Interior. Washington, D.C.: Contract No. 14-0001-91-C-11.

French, D, Schuttenberg, H & Isaji, T 1999, 'Probabilities of oil exceeding thresholds of concern: examples from an evaluation for Florida Power and Light', Proceedings of the 22nd Arctic and Marine Oil Spill Program (AMOP) Technical Seminar, Environment Canada, Alberta, pp. 243–270.

French-McCay, DP 2002, 'Development and application of an oil toxicity and exposure model, OilToxEx', *Environmental Toxicology and Chemistry*, vol. 21, no. 10, pp. 2080–2094.

French-McCay, DP 2003, 'Development and application of damage assessment modelling: example assessment for the North Cape oil spill', *Marine Pollution Bulletin*, vol. 47, no. 9, pp. 9–12.

French-McCay, DP 2004, 'Spill impact modelling: development and validation', *Environmental Toxicology and Chemistry*, vol. 23, no.10, pp. 2441–2456.

French-McCay, DP 2009, 'State-of-the-art and research needs for oil spill impact assessment modelling', Proceedings of the 32nd Arctic and Marine Oil Spill Program (AMOP) Technical Seminar, Environment Canada, Ottawa, pp. 601–653.

French-McCay, D, Rowe, JJ, Whittier, N, Sankaranarayanan, S, & Etkin, DS 2004, 'Estimate of potential impacts and natural resource damages of oil', *Journal of Hazardous Materials*, vol. 107, no. 1, pp. 11–25.

French-McCay, D, Whittier, N, Dalton, C, Rowe, J, Sankaranarayanan, S & Aurand, D 2005a, 'Modeling the fates of hypothetical oil spills in Delaware, Florida, Texas, California, and Alaska waters, varying response options including use of dispersants', Proceedings of the International Oil Spill Conference 2005, American Petroleum Institute, Washington DC, paper 399.

French-McCay, D, Whittier, N, Rowe, J, Sankaranarayanan, S, Kim, H-S & Aurand, D 2005b, 'Use of probabilistic trajectory and impact modeling to assess consequences of oil spills with various response strategies,' Proceedings of the 28th Arctic and Marine Oil Spill Program (AMOP) Technical Seminar, Environment Canada, Ottawa, pp. 253–271.

French-McCay, D, Reich, D, Rowe, J, Schroeder, M & Graham, E 2011, 'Oil spill modeling input to the offshore environmental cost model (OECM) for US-BOEMRE's spill risk and costs evaluations', Proceedings of the 34th Arctic and Marine Oil Spill Program (AMOP) Technical Seminar, Environment Canada, Ottawa.

French-McCay, D, Reich, D, Michel, J, Etkin, DS, Symons, L, Helton, D, & Wagner J 2012, 'Oil spill consequence analysis of potentially-polluting shipwrecks', Proceedings of the 35th Arctic and Marine Oil Spill Program (AMOP) Technical Seminar, Environment Canada, Ottawa.

French-McCay, DP, Jayko, K, Li, Z, Spaulding, ML, Crowley, D, Mendelsohn, D, Horn, M, Isaji, T, Kim, YH, Fontenault, J & Rowe, JJ 2021, 'Oil fate and mass balance for the Deepwater Horizon oil spill', *Marine Pollution Bulletin*, vol. 171, pp. 112681

French-McCay, DP, Frediani, M & Gloekler, MD 2022a, 'Modeling emulsification influence on oil properties and fate to inform effective spill response', *Frontiers in Environmental Science*, vol. 10, p. 908984.

French-McCay, DP, Robinson, H, Bock, M, Crowley, D Schuler, P & Rowe, JJ 2022b, 'Counter-historical study of alternative dispersant use in the Deepwater Horizon oil spill response', *Marine Pollution Bulletin*, vol. 180, p.113778.

Gordon, R 1982, 'Wind driven circulation in Narragansett Bay' PhD thesis, Department of Ocean Engineering, University of Rhode Island.

Grant, DL, Clarke, PJ & Allaway, WG 1993, 'The response of grey mangrove (*Avicennia marina* (Forsk.) Vierh) seedlings to spills of crude oil,' *The Journal of Experimental Marine Biological Ecology*, vol. 171, no. 2, pp. 273–295.

Isaji, T & Spaulding, M 1984, 'A model of the tidally induced residual circulation in the Gulf of Maine and Georges Bank', *Journal of Physical Oceanography*, vol. 14, no. 6, pp. 1119–1126.

Isaji, T, Howlett, E, Dalton C, & Anderson, E 2001, 'Stepwise-continuous-variable-rectangular grid hydrodynamics model', Proceedings of the 24th Arctic and Marine Oil spill Program (AMOP) Technical Seminar (including 18th TSOCS and 3rd PHYTO), Environment Canada, Edmonton, pp. 597–610.

King, B, Brushett, B & Lemckert, C 2010, 'A case study of consensus modelling for tracking oil spills', Proceedings of IOP Conference Series: Earth and Environmental Science, Vol. 11, no. 1, p. 012025, IOP Publishing.

Koops, W, Jak, RG & van der Veen, DPC 2004, 'Use of dispersants in oil spill response to minimise environmental damage to birds and aquatic organisms', Proceedings of the Interspill 2004: Conference and Exhibition on Oil Spill Technology, Trondheim, presentation 429.

Kostianoy, AG, Ginzburg, AI, Lebedev, SA, Frankignoulle, M & Delille, B 2003, 'Fronts and mesoscale variability in the southern Indian Ocean as inferred from the TOPEX/POSEIDON and ERS-2 Altimetry data', *Oceanology*, vol. 43, no. 5, pp. 632–642.

Levitus, S, Antonov, JI, Baranova, OK, Boyer, TP, Coleman, CL, Garcia, HE, Grodsky, AI, Johnson, DR, Locarnini, RA, Mishonov, AV, Reagan, JR, Sazama, CL, Seidov, D, Smolyar, I, Yarosh, ES & Zweng, MM 2013, 'The World Ocean Database', *Data Science Journal*, vol.12, no. 0, pp. WDS229–WDS234.

Lin, Q & Mendelssohn, IA 1996, 'A comparative investigation of the effects of south Louisiana crude oil on the vegetation of fresh, brackish and Salt Marshes', *Marine Pollution Bulletin*, vol. 32, no. 2, pp. 202–209.

Ludicone, D, Santoleri, R, Marullo, S & Gerosa, P 1998, 'Sea level variability and surface eddy statistics in the Mediterranean Sea from TOPEX/POSEIDON data', *Journal of Geophysical Research I*, vol. 103, no. C2, pp. 2995–3011.

Makarynskyy, O, Langtry, S, Zapata, M & Rayson, M 2010, 'Validations of Hydrodynamic, Wave, and Dredging Simulations in Nearshore Environments', in Estuarine and Coastal Modeling, pp. 547-565, ASCE Library, Reston, USA.

Makarynskyy, O, Makarynska, D, Rayson, M & Langtry, S 2015, 'Combining deterministic modelling with artificial neural networks for suspended sediment estimates', *Applied Soft Computing*, vol. 35, pp. 247-256.

Malins DC & Hodgins HO 1981, 'Petroleum and marine fishes: a review of uptake, disposition, and effects', *Environmental Science & Technology*, vol. 15, no. 11, pp.1272–1280.

Matsumoto, K, Takanezawa, T & Ooe, M 2000, 'Ocean tide models developed by assimilating TOPEX/POSEIDON altimeter data into hydrodynamical model: A global model and a regional model around Japan', *Journal of Oceanography*, vol. 56, no.5, pp. 567–581.

McAuliffe CD 1987, 'Organism exposure to volatile/soluble hydrocarbons from crude oil spills – a field and laboratory comparison', Proceedings of the 1987 International Oil Spill Conference, American Petroleum Institute, pp. 275–288.

McCarty LS 1986, 'The relationship between aquatic toxicity QSARs and bioconcentration for some organic chemicals', *Environmental Toxicology and Chemistry*, vol. 5, no. 12, pp. 1071–1080.

McCarty LS, Dixon DG, MacKay D, Smith AD & Ozburn GW 1992a, 'Residue-based interpretation of toxicity and bioconcentration QSARs from aquatic bioassays: Neutral narcotic organics', *Environmental Toxicology and Chemistry: An International Journal*, vol. 11, no. 7, pp.917–930.

McCarty LP, Flannagan DC, Randall SA & Johnson KA 1992b, 'Acute toxicity in rats of chlorinated hydrocarbons given via the intratracheal route', *Human & Experimental Toxicology*, vol. 11, no. 3, pp.173–117.

McCarty LS & Mackay D 1993, 'Enhancing ecotoxicological modelling and assessment. Body residues and modes of toxic action', *Environmental Science & Technology*, vol. 27, no. 9, pp. 1718–1728.

McGrath JA, & Di Toro DM 2009, 'Validation of the target lipid model for toxicity assessment of residual petroleum constituents: monocyclic and polycyclic aromatic hydrocarbons', *Environmental Toxicology and Chemistry*, vol. 28, no. 6, pp. 1130–1148.

National Oceanic and Atmospheric Administration (NOAA) 2013, 'Screening level risk assessment package Gulf state', Office of National Marine Sanctuaries & Office of Response and Restoration, Washington DC.

National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) 2018, 'At a glance: Oil spill modelling', viewed 15 November 2018, https://www.nopsema.gov.au/assets/Publications/A626200.pdf

National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) 2019, 'NOPSEMA Bulletin #1: Oil spill modelling', viewed April 2019, https://www.nopsema.gov.au/assets/Bulletins/A652993.pdf

National Research Council (NRC) 2003, 'Oil in the sea III: Inputs, fates and effects', The National Academic Press, Washington D.C.

Neff JM, Anderson JW 1981, 'Response of marine animals to petroleum and specific petroleum hydrocarbons' United States Department of Energy, United States.

Nirmalakhandan N & Speece RE 1998, 'Quantitative techniques for predicting the behaviour of chemicals in the ecosystem', *Environmental Science & Technology*, vol. 22, no. 6, pp. 606–615.

Nordtug, T, Olsen, AJ, Altin, D, Overrein, I, Storøy, W, Hansen, BH & De Laender, F 2011, 'Oil droplets do not affect assimilation and survival probability of first feeding larvae of North-East Arctic cod', *Science of the Total Environment*, 412, pp.148–153.

Oil Spill Solutions 2015, 'Evaluation - The Theory of Oil Slick Appearances', viewed 6 January 2015, http://www.oilspillsolutions.org/evaluation.htm

Okubo, A, 1971 'Oceanic diffusion diagrams', *Deep Sea Research and Oceanographic Abstracts*, vol. 18, no. 8, pp. 789–802.

Owen, A 1980, 'A three-dimensional model of the Bristol Channel', *Journal of Physical Oceanography*, vol. 10, no. 8, pp. 1290–1302.

Qiu, B & Chen, S 2010, 'Eddy-mean flow interaction in the decadally modulating Kuroshio Extension system', *Deep-Sea Research II*, vol. 57, no. 13, pp. 1098–1110.

Redman AD 2015, 'Role of entrained droplet oil on the bioavailability of petroleum substances in aqueous exposures', *Marine Pollution Bulletin*, vol. 97, no. (1–2), pp. 342–348.

Sagnieres, LB, Sharf, I & Deleflie, F 2020, 'Simulation of long-term rotational dynamics of large space debris: A TOPEX/Poseidon case study', *Advances in Space Research*, vol. 65, no. 4, pp. 1182–1195.

Saha, S, Moorthi, S, Pan, H-L, Wu, X, Wang, J & Nadiga, S 2010, 'The NCEP Climate Forecast System Reanalysis', *Bulletin of the American Meteorological Society*, vol. 91, no. 8, pp. 1015–1057.

Scholten, MCTh, Kaag, NHBM, Dokkum, HP van, Jak, R.G., Schobben, HPM & Slob, W 1996, Toxische effecten van olie in het aquatische milieu, TNO report TNO-MEP – R96/230, Den Helder.

Suprayogi, B & Murray, F 1999, 'A field experiment of the physical and chemical effects of two oils on mangroves', *Environmental and Experimental Botany*, vol. 42, no. 3, pp. 221–229.

Swartz RC, Schults DW, Ozretich RJ, Lamberson JO, Cole FA, Ferraro SP, Dewitt TH & Redmond MS 1995, 'ΣPAH: A Model to predict the toxicity of polynuclear aromatic hydrocarbon mixtures in field-collected sediments', *Environmental Toxicology and Chemistry*, vol. 14, no. 11, pp. 1977–1187.

Talouli, A, Gilbert, T & Monfils Gilbert, R 2009, 'Strategic Environmental Assessment and potential future shoreline impacts of the oil spill from WWII shipwreck Hoyo Maru Chuuk Lagoon-Federated States of Micronesia', Pacific Regional Environment Programme, Apia, Samoa.

Veng, T & Andersen, OB 2021, 'Consolidating sea level acceleration estimates from satellite altimetry', *Advances in Space Research*, vol. 68, no. 2, pp. 496–503.

Verhaar HJM, Van Leeuwen CJ & Hermens JLM 1992, 'Classifying environmental pollutants', *Chemosphere*, vol. 24, no. 4, pp. 471–491.

Verhaar HJM, de Jongh J & Hermens JLM 1999, 'Modelling the bioconcentration of organic compounds by fish: A novel approach', *Environmental Science & Technology*, vol. 33, no. 22, pp. 4069–4072.

Yaremchuk, M & Tangdong, Q 2004, 'Seasonal variability of the large-scale currents near the coast of the Philippines', *Journal of Physical Oceanography*, vol. 34, no., 4, pp. 844–855.

Zeitlhöfler, J, Bloßfeld, M, Rudenko, S, Dettmering, D & Seitz, F 2023, 'Station-dependent satellite laser ranging measurement corrections for TOPEX/Poseidon', *Advances in Space Research*, vol. 71, no. 1, pp. 975–996.

Zigic, S, Zapata, M, Isaji, T, King, B, & Lemckert, C 2003, 'Modelling of Moreton Bay using an ocean/coastal circulation model', Proceedings of the 16th Australasian Coastal and Ocean Engineering Conference, the 9th Australasian Port and Harbour Conference and the Annual New Zealand Coastal Society Conference, Institution of Engineers Australia, Auckland, paper 170.

Zigic, S, Makarynskyy, O, Langtry, S & Westbrook, G 2009, 'A numerical modelling study for the proposed increase in Barramundi production, Cone Bay, Western Australia', in Estuarine and Coastal Modeling, pp. 428-446, ASCE Library, Reston, USA.

Appendix C Protected Matters Search Report

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 14-Oct-2025

Summary
Details
Matters of NES
Other Matters Protected by the EPBC Act
Extra Information
Caveat
Acknowledgements

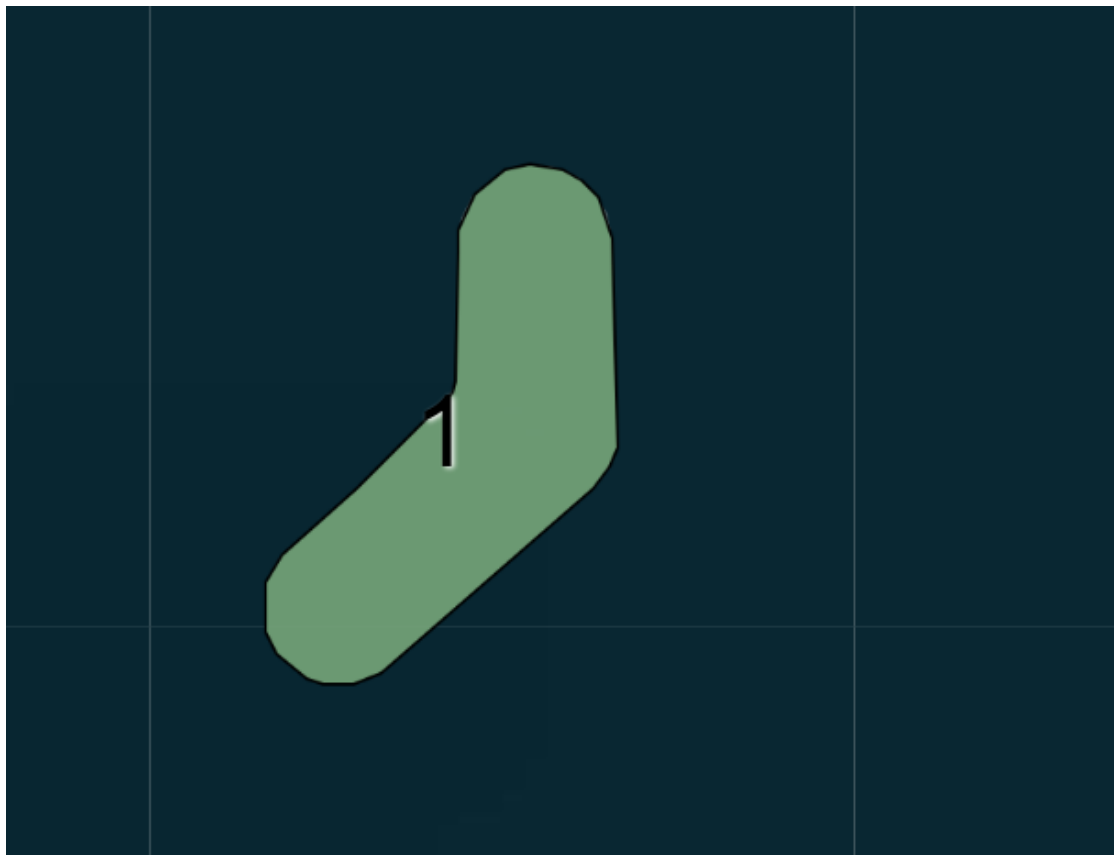


Figure: Operational Area

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	25
Listed Migratory Species:	42

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	71
Whales and Other Cetaceans:	17
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	1

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	7
Key Ecological Features (Marine):	None
Biologically Important Areas:	4

Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text

[Phaethon rubricauda westralis](#) Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
MAMMAL		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
[Orcaella heinsohni](#) Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area
[Sousa sahulensis](#) Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area
REPTILE		
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area

Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth Endangered [1768]		Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Scientific Name	Threatened Category	Presence Text
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
SHARK		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Scientific Name	Threatened Category	Presence Text
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area

Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
[Isurus oxyrinchus](#) Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
[Isurus paucus](#) Longfin Mako [82947]		Species or species habitat likely to occur within area
[Megaptera novaeangliae](#) Humpback Whale [38]		Breeding known to occur within area
Scientific Name	Threatened Category	Presence Text
[Mobula alfredi as Manta alfredi](#) Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
[Mobula birostris as Manta birostris](#) Giant Manta Ray [90034]		Species or species habitat likely to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
[Orcaella heinsohni](#) Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat may occur within area
[Pristis clavata](#) Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
[Pristis pristis](#) Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area

[Pristis zijsron](#) Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
[Sousa sahulensis as Sousa chinensis](#) Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area
[Tursiops aduncus (Arafura/Timor Sea populations)](#) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area

Migratory Wetlands Species		
Scientific Name	Threatened Category	Presence Text
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
[Pandion haliaetus](#)		

Osprey [952]	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor		

Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Fish		
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma		

Pacific Short-bodied Pipefish, Shortbodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Scientific Name	Threatened Category	Presence Text
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris		

Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Scientific Name	Threatened Category	Presence Text
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus		Species or species habitat may occur within area

Hedgehog Seahorse [66239]		Species or species habitat may occur within area
[Hippocampus trimaculatus](#) Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
[Micrognathus micronotopterus](#) Tidepool Pipefish [66255]		Species or species habitat may occur within area
[Phoxocampus belcheri](#) Black Rock Pipefish [66719]		Species or species habitat may occur within area
[Solegnathus hardwickii](#) Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
[Solegnathus lettiensis](#) Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Scientific Name	Threatened Category	Presence Text
[Solenostomus cyanopterus](#) Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
[Syngnathoides biaculeatus](#) Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
[Trachyrhamphus bicoarctatus](#) Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
[Trachyrhamphus longirostris](#) Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Reptile		
[Aipysurus duboisii](#)		

Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Hydrelaps darwiniensis		

Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus		

Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Orcaella heinsohni		

Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat may occur within area
Pseudorca crassidens		
False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis		
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area
Stenella attenuata		
Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus		
Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Tursiops truncatus s. str.		
Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Scientific Name	Behaviour	Presence
Natator depressus		
Flatback Turtle [59257]	Nesting	Known to occur

Extra Information

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092	Completed	
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260		Completed
Not controlled action (particular manner)			
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in WA 457-P & WA 458-P, North West Shelf, offshore WA	2013/6862	Not Controlled Action (Particular Manner)	Post-Approval
Reindeer gas reservior development, Devil Creek, Carnarvon Basin - WA	2007/3917	Not Controlled Action (Particular Manner)	Post-Approval
Stag 4D & Reindeer MAZ Marine Seismic Surveys, WA	2013/7080	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Marine Turtles		
Scientific Name	Behaviour	Presence
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		
Ardenna tenuirostris Short-tailed Shearwater [84292]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia

-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

© Commonwealth of Australia
Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

Australian Government

Department of Climate Change, Energy, the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

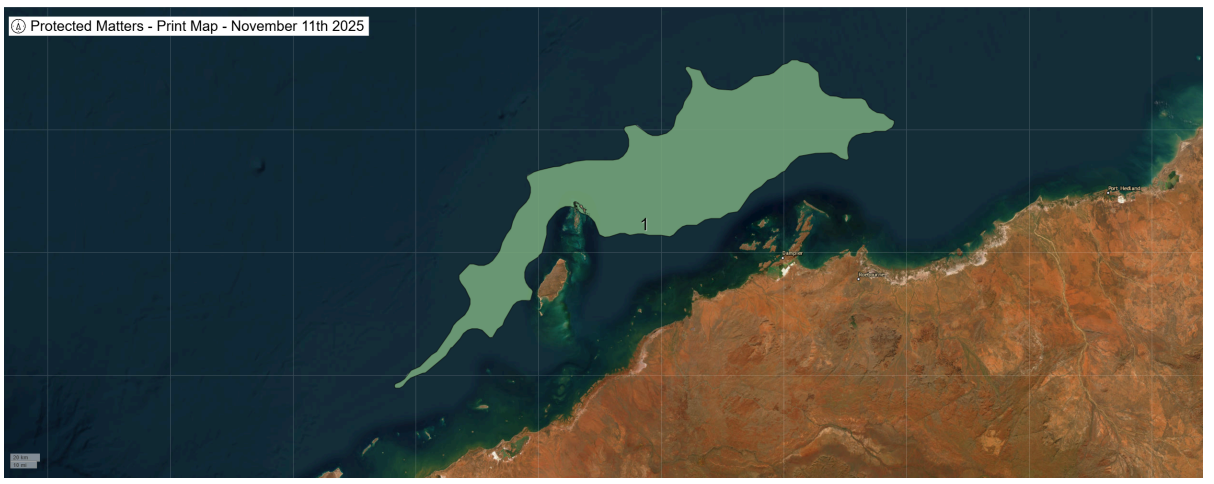


Figure 1: Well Construction EP Hydrocarbon EMBA

Report created: 11-Nov-2025

Summary

Details

- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat

Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	34
Listed Migratory Species:	59

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	94
Whales and Other Cetaceans:	31
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
Habitat Critical to the Survival of Marine Turtles:	3

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	4
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	93
Key Ecological Features (Marine):	4
Biologically Important Areas:	22
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus fulvus		
Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis		
Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Sternula albifrons		
Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis		
Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Bettongia lesueur Barrow and Boodie Islands subspecies		
Boodie, Burrowing Bettong (Barrow and Boodie Islands) [88021]	Vulnerable	Translocated population known to occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Lagorchestes hirsutus Central Australian subspecies		
Mala, Rufous Hare-Wallaby (Central Australia) [88019]	Endangered	Translocated population known to occur within area
Orcaella heinsohni		
Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Sousa sahulensis		
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
Aipysurus apraefrontalis		
Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama		
Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
SHARK		

Scientific Name	Threatened Category	Presence Text
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat may occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat may occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area
[Limosa lapponica](#) Bar-tailed Godwit [844]		Species or species habitat known to occur within area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
[Pandion haliaetus](#) Osprey [952]		Breeding known to occur within area
[Thalasseus bergii](#) Greater Crested Tern [83000]		Breeding known to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat may occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Thalasseus bengalensis as Sterna bengalensis](#) Lesser Crested Tern [66546]		Breeding known to occur within area
[Thalasseus bergii as Sterna bergii](#) Greater Crested Tern [83000]		Breeding known to occur within area
Fish		
[Acentronura larsonae](#) Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
[Bulbonaricus brauni](#) Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
[Campichthys tricarinatus](#) Three-keel Pipefish [66192]		Species or species habitat may occur within area
[Choeroichthys brachysoma](#) Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
[Choeroichthys latispinosus](#) Muiron Island Pipefish [66196]		Species or species habitat may occur within area
[Choeroichthys suillus](#) Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
[Corythoichthys flavofasciatus](#) Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
[Cosmocampus banneri](#) Roughridge Pipefish [66206]		Species or species habitat may occur within area
[Doryrhamphus dactyliophorus](#) Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis macdowelli as Hydrophis mcdowelli		
MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major		
Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus		
Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii		
Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus		
Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii		
Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata		
Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera omurai](#) Omura's Whale [87136]		Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Species or species habitat may occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area
[Kogia sima](#) Dwarf Sperm Whale [85043]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories
Montebello	Multiple Use Zone (IUCN VI)

Habitat Critical to the Survival of Marine Turtles [Resource Information]

Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Oct - Feb		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Oct - Mar		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Barrow Island	Marine Management Area	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Marine Park	WA

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
3D Seismic Survey in the Carnarvon Bsin on the North West Shelf	2002/778		Completed
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081		Completed
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092		Completed
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260		Completed
Gorgon Gas Development	2003/1294		Post-Approval
Project Highclere Cable Lay and Operation	2022/09203		Completed
Controlled action			
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Development of Angel gas and condensate field, North West Shelf	2004/1805	Controlled Action	Post-Approval
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Light Crude Oil Production	2001/365	Controlled Action	Post-Approval
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Pyrenees Oil Fields Development	2005/2034	Controlled Action	Post-Approval
Not controlled action			
'Goodwyn A' Low Pressure Train Project	2003/914	Not Controlled Action	Completed
'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)	2006/3148	Not Controlled Action	Completed
Carnarvon 3D Marine Seismic Survey	2004/1890	Not Controlled Action	Completed
Construction and operation of an unmanned sea platform and connecting pipeline to Varanus Island for	2004/1703	Not Controlled Action	Completed
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed
Drilling of an exploration well Gats-1 in Permit Area WA-261-P	2004/1701	Not Controlled Action	Completed
Exploration drilling well WA-155-P(1)	2003/971	Not Controlled Action	Completed
Exploration of appraisal wells	2006/3065	Not Controlled Action	Completed
Exploration Well in Permit Area WA-155-P(1)	2002/759	Not Controlled Action	Completed
HCA05X Macedon Experimental Survey	2004/1926	Not Controlled Action	Completed
Infill Production Well (Griffin-9)	2001/417	Not Controlled Action	Completed
Klammer 2D Seismic Survey	2002/868	Not Controlled Action	Completed
Maia-Gaea Exploration wells	2000/17	Not Controlled Action	Completed
North Rankin B gas compression facility	2005/2500	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Pipeline System Modifications Project	2000/3	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Searipple gas and condensate field development	2000/89	Not Controlled Action	Completed
Subsea Gas Pipeline From Stybarrow Field to Griffin Venture Gas Export Pipeline	2005/2033	Not Controlled Action	Completed
sub-sea tieback of Perseus field wells	2004/1326	Not Controlled Action	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836	Not Controlled Action	Completed
To construct and operate an offshore submarine fibre optic cable, WA	2014/7373	Not Controlled Action	Completed
Wanda Offshore Research Project, 80 km north-east of Exmouth, WA	2018/8293	Not Controlled Action	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Wheatstone 3D seismic survey, 70km north of Barrow Island	2004/1761	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Kate' 3D marine seismic survey, exploration permits WA-320-P and WA-345-P, 60km	2005/2037	Not Controlled Action (Particular Manner)	Post-Approval
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D seismic surveys	2005/2151	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2005/2146	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
2D Seismic Survey Permit Area WA-352-P	2008/4628	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in WA 457-P & WA 458-P, North West Shelf, offshore WA	2013/6862	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-13, offshore WA	2013/6901	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Balnaves Condensate Field Development	2011/6188	Not Controlled Action (Particular Manner)	Post-Approval
Cable Seismic Exploration Permit areas WA-323-P and WA-330-P	2008/4227	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
CVG 3D Marine Seismic Survey	2012/6654	Not Controlled Action (Particular Manner)	Post-Approval
Decommissioning of the Legendre facilities	2010/5681	Not Controlled Action (Particular Manner)	Post-Approval
Demeter 3D Seismic Survey, off Dampier, WA	2002/900	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
Effect of marine seismic sounds to demersal fish and pearl oysters, north-west WA	2018/8169	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Grimalkin 3D Seismic Survey	2008/4523	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA	2013/7003	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas phase 2 marine seismic survey, Exmouth Plateau, Northern Carnarvon Basin, WA	2013/7093	Not Controlled Action (Particular Manner)	Post-Approval
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action (Particular Manner)	Post-Approval
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Program, WA-264-P	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Survey	2005/2017	Not Controlled Action (Particular Manner)	Post-Approval
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees-Macedon 3D marine seismic survey	2005/2325	Not Controlled Action (Particular Manner)	Post-Approval
Reindeer gas reservior development, Devil Creek, Carnarvon Basin - WA	2007/3917	Not Controlled Action (Particular Manner)	Post-Approval
Santos Winchester three dimensional seismic survey - WA-323-P & WA-330-P	2011/6107	Not Controlled Action (Particular Manner)	Post-Approval
Stag 4D & Reindeer MAZ Marine Seismic Surveys, WA	2013/7080	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Stag Off-bottom Cable Seismic Survey	2007/3696	Not Controlled Action (Particular Manner)	Post-Approval
Tidepole Maz 3D Seismic Survey Campaign	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a 3D marine seismic survey	2010/5695	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5715	Not Controlled Action (Particular Manner)	Post-Approval
Warramunga Non-Inclusive 3D Seismic Survey	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone 3D MAZ Marine Seismic Survey	2011/6058	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2008/4134	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Wheatstone Iago Appraisal Well Drilling	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	North-west
Continental Slope Demersal Fish Communities	North-west
Glomar Shoals	North-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Mating	Known to occur

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Mating	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Mating	Known to occur
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Seabirds		
Ardenna tenuirostris Short-tailed Shearwater [84292]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula nereis Fairy Tern [82949]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Whales		
Balaenoptera musculus brevicauda		
Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae		
Humpback Whale [38]	Migration (north and south)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 11-Nov-2025

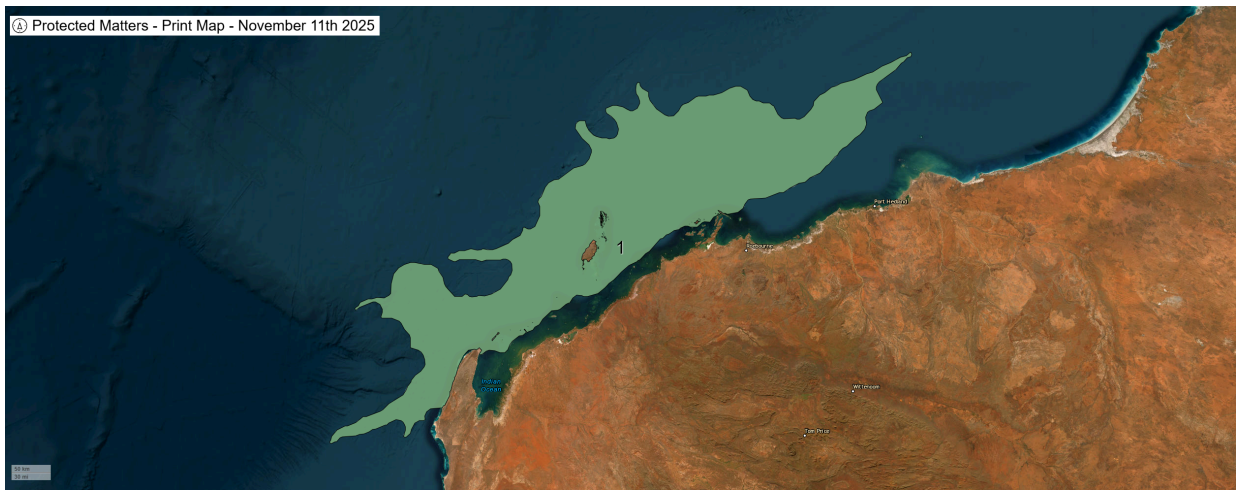


Figure 1: Well Construction EP EMBA

Summary
Details
Matters of NES
Other Matters Protected by the EPBC Act
Extra Information
Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	2
National Heritage Places:	2
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	56
Listed Migratory Species:	67

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	5
Commonwealth Heritage Places:	2
Listed Marine Species:	106
Whales and Other Cetaceans:	31
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	7
Habitat Critical to the Survival of Marine Turtles:	4

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	30
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	187
Key Ecological Features (Marine):	6
Biologically Important Areas:	41
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Legal Status
Murujuga Cultural Landscape	WA	Declared property
The Ningaloo Coast	WA	Declared property

National Heritage Places [Resource Information]

Name	State	Legal Status
Indigenous		
Dampier Archipelago (including Burrup Peninsula)	WA	Listed place
Natural		
The Ningaloo Coast	WA	Listed place

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Malurus leucopterus edouardi White-winged Fairy-wren (Barrow Island), Barrow Island Black-and-white Fairy-wren [26194]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon rubricauda westralis		
Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Pterodroma mollis		
Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula albifrons		
Little Tern [82849]	Vulnerable	Breeding known to occur within area
Sternula nereis nereis		
Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
CRUSTACEAN		
Kumonga exleyi		
Cape Range Remipede [86875]	Vulnerable	Species or species habitat likely to occur within area
FISH		
Milyeringa justitia		
Barrow Cave Gudgeon [86867]	Endangered	Species or species habitat known to occur within area
Milyeringa veritas		
Cape Range Cave Gudgeon, Blind Gudgeon [66676]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
[Ophisternon candidum](#) Blind Cave Eel [66678]	Vulnerable	Species or species habitat known to occur within area
MAMMAL		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Bettongia lesueur Barrow and Boodie Islands subspecies](#) Boodie, Burrowing Bettong (Barrow and Boodie Islands) [88021]	Vulnerable	Species or species habitat known to occur within area
[Dasyurus hallucatus](#) Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat may occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
[Isoodon auratus barrowensis](#) Golden Bandicoot (Barrow Island) [66666]	Vulnerable	Species or species habitat known to occur within area
[Lagorchestes conspicillatus conspicillatus](#) Spectacled Hare-wallaby (Barrow Island) [66661]	Vulnerable	Species or species habitat known to occur within area
[Lagorchestes hirsutus Central Australian subspecies](#) Mala, Rufous Hare-Wallaby (Central Australia) [88019]	Endangered	Translocated population known to occur within area

Scientific Name	Threatened Category	Presence Text
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat known to occur within area
Osphranter robustus isabellinus Barrow Island Wallaroo, Barrow Island Euro [89262]	Vulnerable	Species or species habitat likely to occur within area
Petrogale lateralis lateralis Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known to occur within area
Rhinonicteris aurantia (Pilbara form) Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat known to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat known to occur within area
REPTILE		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Ctenotus zastictus Hamelin Ctenotus [25570]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Liasis olivaceus barroni Pilbara Olive Python [66699]	Vulnerable	Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
SHARK		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		

Scientific Name	Threatened Category	Presence Text
[Balaenoptera omurai](#) Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
[Anous stolidus](#) Common Noddy [825]		Species or species habitat likely to occur within area
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area
[Ardenna carneipes](#) Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
[Ardenna pacifica](#) Wedge-tailed Shearwater [84292]		Breeding known to occur within area
[Calonectris leucomelas](#) Streaked Shearwater [1077]		Species or species habitat likely to occur within area
[Fregata ariel](#) Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
[Fregata minor](#) Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
[Hydroprogne caspia](#) Caspian Tern [808]		Breeding known to occur within area
[Macronectes giganteus](#) Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
[Onychoprion anaethetus](#) Bridled Tern [82845]		Breeding known to occur within area
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known to occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharias taurus Grey Nurse Shark [64469]		Congregation or aggregation known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis		
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
Hirundo rustica		
Barn Swallow [662]		Species or species habitat may occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - EXMOUTH VLF TRANSMITTER STATION [50122]	WA

Commonwealth Land Name	State
Defence - EXMOUTH VLF TRANSMITTER STATION [50123]	WA
Defence - LEARMONTH - AIR WEAPONS RANGE [50193]	WA
Defence - LEARMONTH RADAR SITE - VLAMING HEAD EXMOUTH [50001]	WA
Unknown	
Commonwealth Land - [52236]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Learmonth Air Weapons Range Facility	WA	Listed place
Ningaloo Marine Area - Commonwealth Waters	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat known to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Breeding known to occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalasseus bengalensis as Sterna bengalensis Lesser Crested Tern [66546]		Breeding known to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area

Fish		
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Breeding known to occur within area
Reptile		

Scientific Name	Threatened Category	Presence Text
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Whales and Other Cetaceans [Resource Information]

Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
[Peponocephala electra](#) Melon-headed Whale [47]		Species or species habitat may occur within area
[Physeter macrocephalus](#) Sperm Whale [59]		Species or species habitat may occur within area
[Pseudorca crassidens](#) False Killer Whale [48]		Species or species habitat likely to occur within area
[Sousa sahulensis](#) Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat known to occur within area
[Stenella attenuata](#) Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
[Stenella coeruleoalba](#) Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
[Stenella longirostris](#) Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
[Steno bredanensis](#) Rough-toothed Dolphin [30]		Species or species habitat may occur within area
[Tursiops aduncus](#) Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
[Tursiops aduncus (Arafura/Timor Sea populations)](#) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
[Tursiops truncatus s. str.](#) Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories
Dampier	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Dampier	Multiple Use Zone (IUCN VI)
Gascoyne	Multiple Use Zone (IUCN VI)
Montebello	Multiple Use Zone (IUCN VI)
Dampier	National Park Zone (IUCN II)
Ningaloo	Recreational Use Zone (IUCN IV)

Habitat Critical to the Survival of Marine Turtles [Resource Information]

Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Nov-Feb		
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur
Oct - Feb		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Oct - Mar		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Airlie Island	Nature Reserve	WA
Barrow Island	Nature Reserve	WA
Barrow Island	Marine Park	WA
Barrow Island	Marine Management Area	WA
Bessieres Island	Nature Reserve	WA
Boodie, Double Middle Islands	Nature Reserve	WA
Bundegi Coastal Park	5(1)(h) Reserve	WA
Cape Range	National Park	WA
Great Sandy Island	Nature Reserve	WA
Great Sandy Island	Nature Reserve	WA
Jurabi Coastal Park	5(1)(h) Reserve	WA
Lowendal Islands	Nature Reserve	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Marine Park	WA
Muiron Islands	Nature Reserve	WA
Muiron Islands	Marine Management Area	WA
Ningaloo	Marine Park	WA
North Sandy Island	Nature Reserve	WA
Round Island	Nature Reserve	WA
Serrurier Island	Nature Reserve	WA
Thevenard Island	Nature Reserve	WA
Thevenard Island	Nature Reserve	WA
Unnamed WA36909	5(1)(h) Reserve	WA

Protected Area Name	Reserve Type	State
Unnamed WA36910	5(1)(h) Reserve	WA
Unnamed WA36915	Nature Reserve	WA
Unnamed WA40322	5(1)(h) Reserve	WA
Unnamed WA40877	5(1)(h) Reserve	WA
Unnamed WA44665	5(1)(h) Reserve	WA
Unnamed WA44667	5(1)(h) Reserve	WA

Nationally Important Wetlands

[Resource Information]

Wetland Name	State
Cape Range Subterranean Waterways	WA

EPBC Act Referrals

[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
3D Seismic Survey in the Carnarvon Bsin on the North West Shelf	2002/778		Completed
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081		Completed
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092		Completed
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260		Completed
Development of Mutineer and Exeter petroleum fields for oil production, Permit	2003/1033		Completed
Gorgon Gas Development	2003/1294		Post-Approval
Ningaloo Lighthouse Development, 17km north west Exmouth, Western Australia	2020/8693		Post-Approval
North West Shelf Project Extension, Carnarvon Basin, WA	2018/8335		Approval
Offshore Dredge Spoil Disposal - Mardie Project	2024/10054		Referral Decision
Project Highclere Cable Lay and Operation	2022/09203		Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Action clearly unacceptable			
Highlands 3D Marine Seismic Survey	2012/6680	Action Clearly Unacceptable	Completed
Controlled action			
'Van Gogh' Petroleum Field Development	2007/3213	Controlled Action	Post-Approval
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Development of Angel gas and condensate field, North West Shelf	2004/1805	Controlled Action	Post-Approval
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
Development of Coniston/Novara fields within the Exmouth Sub-basin	2011/5995	Controlled Action	Post-Approval
Development of Stybarrow petroleum field incl drilling and facility installation	2004/1469	Controlled Action	Post-Approval
Echo-Yodel Production Wells	2000/11	Controlled Action	Post-Approval
Enfield full field development	2001/257	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Eramurra Industrial Salt Project	2021/9027	Controlled Action	Assessment Approach
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Gorgon Gas Revised Development	2008/4178	Controlled Action	Post-Approval
Greater Enfield (Vincent) Development	2005/2110	Controlled Action	Post-Approval
Greater Gorgon Development - Optical Fibre Cable, Mainland to Barrow Island	2005/2141	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Light Crude Oil Production	2001/365	Controlled Action	Post-Approval
Mardie Project, 80 km south west of Karratha, WA	2018/8236	Controlled Action	Post-Approval
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Pyrenees Oil Fields Development	2005/2034	Controlled Action	Post-Approval
Simpson Development	2000/59	Controlled Action	Completed
Simpson Oil Field Development	2001/227	Controlled Action	Post-Approval
Vincent Appraisal Well	2000/22	Controlled Action	Post-Approval
Yardie Creek Road Realignment Project	2021/8967	Controlled Action	Assessment Approach
Not controlled action			
'Goodwyn A' Low Pressure Train Project	2003/914	Not Controlled Action	Completed
'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)	2006/3148	Not Controlled Action	Completed
Airlie Island soil and groundwater investigations, Exmouth Gulf, offshore Pilbara coast	2014/7250	Not Controlled Action	Completed
Barrow Island 2D Seismic survey	2006/2667	Not Controlled Action	Completed
Bultaco-2, Laverda-2, Laverda-3 and Montesa-2 Appraisal Wells	2000/103	Not Controlled Action	Completed
Carnarvon 3D Marine Seismic Survey	2004/1890	Not Controlled Action	Completed
Construction and operation of an unmanned sea platform and connecting pipeline to Varanus Island for	2004/1703	Not Controlled Action	Completed
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Drilling of an exploration well Gats-1 in Permit Area WA-261-P	2004/1701	Not Controlled Action	Completed
Eagle-1 Exploration Drilling, North West Shelf, WA	2019/8578	Not Controlled Action	Completed
Echo A Development WA-23-L, WA-24-L	2005/2042	Not Controlled Action	Completed
Exploration drilling well WA-155-P(1)	2003/971	Not Controlled Action	Completed
Exploration of appraisal wells	2006/3065	Not Controlled Action	Completed
Exploration Well (Taunton-2)	2002/731	Not Controlled Action	Completed
Exploration Well in Permit Area WA-155-P(1)	2002/759	Not Controlled Action	Completed
Exploratory drilling in permit area WA-225-P	2001/490	Not Controlled Action	Completed
Extension of Simpson Oil Platforms & Wells	2002/685	Not Controlled Action	Completed
HCA05X Macedon Experimental Survey	2004/1926	Not Controlled Action	Completed
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Infill Production Well (Griffin-9)	2001/417	Not Controlled Action	Completed
Klammer 2D Seismic Survey	2002/868	Not Controlled Action	Completed
Maia-Gaea Exploration wells	2000/17	Not Controlled Action	Completed
Mermaid Marine Australia Desalination Project	2011/5916	Not Controlled Action	Completed
Montesa-1 and Bultaco-1 Exploration Wells	2000/102	Not Controlled Action	Completed
Murujuga archaeological excavation, collection and sampling, Dampier Archipelago, WA	2014/7160	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
North Rankin B gas compression facility	2005/2500	Not Controlled Action	Completed
Pipeline System Modifications Project	2000/3	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Searipple gas and condensate field development	2000/89	Not Controlled Action	Completed
Spool Base Facility	2001/263	Not Controlled Action	Completed
Subsea Gas Pipeline From Stybarrow Field to Griffin Venture Gas Export Pipeline	2005/2033	Not Controlled Action	Completed
sub-sea tieback of Perseus field wells	2004/1326	Not Controlled Action	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836	Not Controlled Action	Completed
Thevenard Island Retirement Project	2015/7423	Not Controlled Action	Completed
To construct and operate an offshore submarine fibre optic cable, WA	2014/7373	Not Controlled Action	Completed
Wanda Offshore Research Project, 80 km north-east of Exmouth, WA	2018/8293	Not Controlled Action	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Wheatstone 3D seismic survey, 70km north of Barrow Island	2004/1761	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Kate' 3D marine seismic survey, exploration permits WA-320-P and WA-345-P, 60km	2005/2037	Not Controlled Action (Particular Manner)	Post-Approval
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
2D and 3D seismic surveys	2005/2151	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2005/2146	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey Permit Area WA-352-P	2008/4628	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey within permit WA-291	2007/3265	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey	2008/4281	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in WA 457-P & WA 458-P, North West Shelf, offshore WA	2013/6862	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-13, offshore WA	2013/6901	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, WA	2008/4428	Not Controlled Action (Particular Manner)	Post-Approval
3D sesmic survey	2006/2781	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Acheron Non-Exclusive 2D Seismic Survey	2009/4968	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2008/4565	Not Controlled Action (Particular Manner)	Post-Approval
Apache Northwest Shelf Van Gogh Field Appraisal Drilling Program	2007/3495	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Artemis-1 Drilling Program (WA-360-P)	2010/5432	Not Controlled Action (Particular Manner)	Post-Approval
Balnaves Condensate Field Development	2011/6188	Not Controlled Action (Particular Manner)	Post-Approval
Cable Seismic Exploration Permit areas WA-323-P and WA-330-P	2008/4227	Not Controlled Action (Particular Manner)	Post-Approval
Cerberus exploration drilling campaign, Carnarvon Basin, WA	2016/7645	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Charon 3D Marine Seismic Survey	2007/3477	Not Controlled Action (Particular Manner)	Post-Approval
Consturction & operation of the Varanus Island kitchen & mess cyclone refuge building, compression p	2013/6952	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Coverack Marine Seismic Survey	2001/399	Not Controlled Action (Particular Manner)	Post-Approval
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
CVG 3D Marine Seismic Survey	2012/6654	Not Controlled Action (Particular Manner)	Post-Approval
Decommissioning of the Legendre facilities	2010/5681	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Drilling Program	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval
Demeter 3D Seismic Survey, off Dampier, WA	2002/900	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Earthworks for kitchen/mess, cyclone refuge building & Compression Plant, Varanus Island	2013/6900	Not Controlled Action (Particular Manner)	Post-Approval
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
Effect of marine seismic sounds to demersal fish and pearl oysters, north-west WA	2018/8169	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M3 & Vincent 4D Marine Seismic Surveys	2008/3981	Not Controlled Action (Particular	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Enfield M3 4D, Vincent 4D & 4D Line Test Marine Seismic Surveys	2008/4122	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M4 4D Marine Seismic Survey	2008/4558	Not Controlled Action (Particular Manner)	Post-Approval
Enfield oilfield 3D Seismic Survey	2006/3132	Not Controlled Action (Particular Manner)	Post-Approval
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Exploration drilling of Zeus-1 well	2008/4351	Not Controlled Action (Particular Manner)	Post-Approval
Fletcher-Finucane Development, WA26-L and WA191-P	2011/6123	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Gazelle 3D Marine Seismic Survey in WA-399-P and WA-42-L	2010/5570	Not Controlled Action (Particular Manner)	Post-Approval
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Grimalkin 3D Seismic Survey	2008/4523	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Guacamole 2D Marine Seismic Survey	2008/4381	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Harpy 1 exploration well	2001/183	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA	2013/7003	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas phase 2 marine seismic survey, Exmouth Plateau, Northern Carnarvon Basin, WA	2013/7093	Not Controlled Action (Particular Manner)	Post-Approval
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2009/4801	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2008/4630	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
Klimt 2D Marine Seismic Survey	2007/3856	Not Controlled Action (Particular Manner)	Post-Approval
Laverda 3D Marine Seismic Survey and Vincent M1 4D Marine Seismic Survey	2010/5415	Not Controlled Action (Particular Manner)	Post-Approval
Leopard 2D marine seismic survey	2005/2290	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Macedon Gas Field Development	2008/4605	Not Controlled Action (Particular Manner)	Post-Approval
Marine reconnaissance survey	2008/4466	Not Controlled Action (Particular Manner)	Post-Approval
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action (Particular Manner)	Post-Approval
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Program, WA-264-P	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Survey	2005/2017	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Canning Multi Client 2D Marine Seismic Survey	2010/5393	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Drilling Campaign	2011/5830	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Phoenix 3D Seismic Survey, Bedout Sub-Basin	2010/5360	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees 4D Marine Seismic Monitor Survey, HCA12A	2012/6579	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees-Macedon 3D marine seismic survey	2005/2325	Not Controlled Action (Particular Manner)	Post-Approval
Quiberon 2D Seismic Survey, permit area WA-385P, offshore of Carnarvon	2009/5077	Not Controlled Action (Particular Manner)	Post-Approval
Reindeer gas reservior development, Devil Creek, Carnarvon Basin - WA	2007/3917	Not Controlled Action (Particular Manner)	Post-Approval
Rose 3D Seismic Program	2008/4239	Not Controlled Action (Particular Manner)	Post-Approval
Rydal-1 Petroleum Exploration Well, WA	2012/6522	Not Controlled Action (Particular Manner)	Post-Approval
Salsa 3D Marine Seismic Survey	2010/5629	Not Controlled Action (Particular Manner)	Post-Approval
Santos Winchester three dimensional seismic survey - WA-323-P & WA-330-P	2011/6107	Not Controlled Action (Particular Manner)	Post-Approval
Scarborough Development nearshore component, NWS, WA	2018/8362	Not Controlled Action (Particular Manner)	Post-Approval
Skorpion Marine Seismic Survey WA	2001/416	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Stag 4D & Reindeer MAZ Marine Seismic Surveys, WA	2013/7080	Not Controlled Action (Particular Manner)	Post-Approval
Stag Off-bottom Cable Seismic Survey	2007/3696	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow 4D Marine Seismic Survey	2011/5810	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow Baseline 4D marine seismic survey	2008/4530	Not Controlled Action (Particular Manner)	Post-Approval
Tantabiddi Boat Ramp Sand Bypassing	2015/7411	Not Controlled Action (Particular Manner)	Post-Approval
Tidepole Maz 3D Seismic Survey Campaign	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
Tortilla 2D Seismic Survey, WA	2011/6110	Not Controlled Action (Particular Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a 3D marine seismic survey	2010/5695	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5715	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5679	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Vincent M1 and Enfield M5 4D Marine Seismic Survey	2010/5720	Not Controlled Action (Particular Manner)	Post-Approval
Warramunga Non-Inclusive 3D Seismic Survey	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone 3D MAZ Marine Seismic Survey	2011/6058	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2008/4134	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic Survey in the offshore northwest Carnarvon Basin	2011/6175	Referral Decision	Completed
3D Seismic Survey	2008/4219	Referral Decision	Completed
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed
CVG 3D Marine Seismic Survey	2012/6270	Referral Decision	Completed
Enfield 4D Marine Seismic Surveys, Production Permit WA-28-L	2005/2370	Referral Decision	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
Rose 3D Seismic acquisition survey	2008/4220	Referral Decision	Completed
Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-	2008/4165	Referral Decision	Completed
Two Dimensional Transition Zone Seismic Survey - TP/7 (R1)	2010/5507	Referral Decision	Completed
Varanus Island Compression Project	2012/6698	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	North-west
Commonwealth waters adjacent to Ningaloo Reef	North-west
Continental Slope Demersal Fish Communities	North-west
Exmouth Plateau	North-west
Glomar Shoals	North-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dugong		
Dugong dugon Dugong [28]	Breeding	Known to occur
Dugong dugon Dugong [28]	Calving	Known to occur
Dugong dugon Dugong [28]	Foraging (high density seagrass beds)	Known to occur
Dugong dugon Dugong [28]	Nursing	Known to occur

Scientific Name	Behaviour	Presence
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur
Chelonia mydas Green Turtle [1765]	Aggregation	Known to occur
Chelonia mydas Green Turtle [1765]	Basking	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Mating	Known to occur
Chelonia mydas Green Turtle [1765]	Migration corridor	Known to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur

Scientific Name	Behaviour	Presence
Eretmochelys imbricata Hawksbill Turtle [1766]	Mating	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Migration corridor	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Natator depressus Flatback Turtle [59257]	Aggregation	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Mating	Known to occur
Natator depressus Flatback Turtle [59257]	Migration corridor	Known to occur
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Seabirds		
Ardenna tenuirostris Short-tailed Shearwater [84292]	Breeding	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Breeding	Known to occur
Phaethon lepturus White-tailed Tropicbird [1014]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
Sternula nereis Fairy Tern [82949]	Breeding	Known to occur
Sula leucogaster Brown Booby [1022]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Rhincodon typus Whale Shark [66680]	Foraging (high density prey)	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Resting	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Appendix D Aboriginal Cultural Heritage Inquiry System (ACHIS)

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

For further important information on using this information please see the WA.gov.au website's Terms of Use at https://www.wa.gov.au/terms-of-use

Search Criteria

51 Aboriginal Cultural Heritage (ACH) Register in Shapefile - P100564_S00_WellConstructionEP_EMBA_GDA2020MGAZ50. Warning: Search area complex so results may be inaccurate. Contact DPLH for assistance.

Disclaimer

Aboriginal heritage holds significant value to Aboriginal people for their social, spiritual, historical, scientific, or aesthetic importance within Aboriginal traditions, and provides an essential link for Aboriginal people to their past, present and future. In Western Australia Aboriginal heritage is protected under the *Aboriginal Heritage Act 1972*.

All Aboriginal cultural heritage in Western Australia is protected, whether or not the ACH has been reported or exists on the Register.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you provide the details to the Department via https://achknowledge.dplh.wa.gov.au/ach-enquiry-form and we will make every effort to rectify it as soon as possible.

Copyright

Copyright in the information contained herein is and shall remain the property of the State of Western Australia. All rights reserved. This includes, but is not limited to, information from the Register established and maintained under the *Aboriginal Heritage Act 1972*.

Location information data licensed from Western Australian Land Information Authority (WALIA) trading as Landgate. Copyright in the location information data remains with WALIA. WALIA does not warrant the accuracy or completeness of the location information data or its suitability for any particular purpose.

Terminology

ID: ACH on the Register is assigned a unique ID by the Department of Planning, Lands and Heritage using the format: ACH-00000001. For ACH on the former Register the ID numbers remain unchanged and use the new format. For example the ACH ID of the place Swan River was previously '3536' and is now 'ACH-00003536'.

Access and Restrictions:

- **Boundary Reliable (Yes/No):** Indicates whether to the best knowledge of the Department, the location and extent of the ACH boundary is considered reliable.
- **Boundary Restricted = No:** Represents the actual location of the ACH as understood by the Department..
- **Boundary Restricted = Yes:** To preserve confidentiality the exact location and extent of the place is not displayed on the map. However, the shaded region (generally with an area of at least 4km²) provides a general indication of where the ACH is located. If you are a landowner and wish to find out more about the exact location of the place, please contact the Department of Planning, Lands and Heritage.
- **Culturally Sensitive = No:** Availability of information that the Department of Planning, Lands and Heritage holds in relation to the ACH is not restricted in any way.
- **Culturally Sensitive = Yes:** Some of the information that the Department of Planning, Lands and Heritage holds in relation to the ACH is restricted if it is considered culturally sensitive information. This information will only be made available if the Department of Planning, Lands and Heritage receives written approval from the people who provided the information. To request access please contact via https://achknowledge.dplh.wa.gov.au/ach-enquiry-form.
- **Culturally Sensitive Nature:**
  - **No Gender / Initiation Restrictions:** *Anyone* can view the information.
  - **Men only:** Only *males* can view restricted information.
  - **Women only:** Only *females* can view restricted information.

Status:

- **Register:** Aboriginal cultural heritage places that are assessed as meeting Section 5 of the *Aboriginal Heritage Act 1972*.
- **Lodged:** Information which has been received in relation to an Aboriginal cultural heritage place, but is yet to be assessed under Section 5 of the *Aboriginal Heritage Act 1972.*
- **Historic:** Aboriginal heritage places assessed as not meeting the criteria of Section 5 of the *Aboriginal Heritage Act 1972*. Includes places that no longer exist as a result of land use activities with existing approvals.

Place Type: The type of Aboriginal cultural heritage place. For example an artefact scatter place or engravings place.

Legacy ID: This is the former unique number that the former Department of Aboriginal Sites assigned to the place.

Coordinates

Map coordinates are based on the GDA 2020 Datum.

Basemap Copyright

Map was created using ArcGIS software by Esri. ArcGIS and ArcMap are the intellectual property of Esri and are used herein under license. Copyright © Esri. All rights reserved. For more information about Esri software, please visit www.esri.com.

Satellite, Hybrid, Road basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, HERE, DeLorme, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community.

Topographic basemap sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community.

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

For further important information on using this information please see the WA.gov.au website's Terms of Use at https://www.wa.gov.au/terms-of-use

ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
508	POINT MURAT 03	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07503
563	POINT MURAT 01	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07501
564	POINT MURAT 02	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07502
628	CAMP THIRTEEN BURIAL	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	P07434
873	MONTEBELLO IS: NOALA CAVE.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Rock Shelter	*Registered Knowledge Holder names available from DPLH	P07287
926	MONTEBELLO IS: HAYNES CAVE.	No	Yes	No	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Artefacts / Scatter; Midden; Rock Shelter	*Registered Knowledge Holder names available from DPLH	P07286
966	ROSEMARY IS.11: CHOOKIE BAY	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07219
967	ROSEMARY IS.12: CHOOKIE BAY	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	P07220
968	ROSEMARY IS.13	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	P07221
969	ROSEMARY IS.14	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	P07222
970	ROSEMARY IS.15: AIRSTRIP	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	P07223
971	ROSEMARY IS.16: AIRSTRIP	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Quarry	*Registered Knowledge Holder names available from DPLH	P07224
972	ROSEMARY IS.17: AIRSTRIP	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	P07225
973	ROSEMARY IS.18: DEEP WATER	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07226
974	ROSEMARY IS.19: CHITON	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07227
978	ROSEMARY IS.23: WADJURU R/H	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Traditional Structure; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	P07231
979	ROSEMARY IS.24: HUNGERFORD	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07232

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

For further important information on using this information please see the WA.gov.au website's Terms of Use at https://www.wa.gov.au/terms-of-use

ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
6311	POINT MURAT.	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Camp; Midden; Other	*Registered Knowledge Holder names available from DPLH	P06628
6754	OSPREY BAY 6	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06165
6755	OSPREY BAY INTERDUNAL 1	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06166
6757	BLOODWOOD CREEK MIDDEN 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06168
6758	BLOODWOOD CREEK MIDDEN 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06169
6759	BLOODWOOD CREEK MIDDEN 3	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06170
6760	BLOODWOOD CREEK SHORELINE	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06171
6762	MILYERING MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06173
6764	CAMP 17 SOUTH MIDDENS	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06175
6765	CAMP 17 NORTH MIDDENS	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06176
6782	28 MILE CREEK NORTH 1	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06140
6784	MANDU MANDU CREEK SOUTH	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06142
6785	MANDU MANDU CREEK NORTH	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06143
6790	YARDIE CREEK SOUTH 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06148
6799	YARDIE BEACH MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06157
6800	OYSTER STACKS MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06158
6802	OSPREY BAY 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06160

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

For further important information on using this information please see the WA.gov.au website's Terms of Use at https://www.wa.gov.au/terms-of-use

ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
6803	OSPREY BAY 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06161
6804	OSPREY BAY 3	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06162
6805	OSPREY BAY 4	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06163
6806	OSPREY BAY 5	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06164
7126	MESA CAMP	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05792
7254	SANDY BAY NORTH	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05652
7265	LAKE SIDE VIEW	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05664
7299	YARDIE CREEK	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05645
7300	MANDU MANDU CK ROCKSHELTERS	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	P05646
7303	TULKI WELL MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05649
7304	PILGRAMUNNA BAY MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05650
10381	VLAMING HEAD	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial; Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	P01799
11328	GAP WELL	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00836
11772	ROSEMARY ISLAND 09	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P00369
11773	ROSEMARY ISLAND 08	No	No	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P00370
11775	ROSEMARY ISLAND 06	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00372
11789	ROSEMARY ISLAND 01	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Midden; Quarry	*Registered Knowledge Holder names available from DPLH	P00386

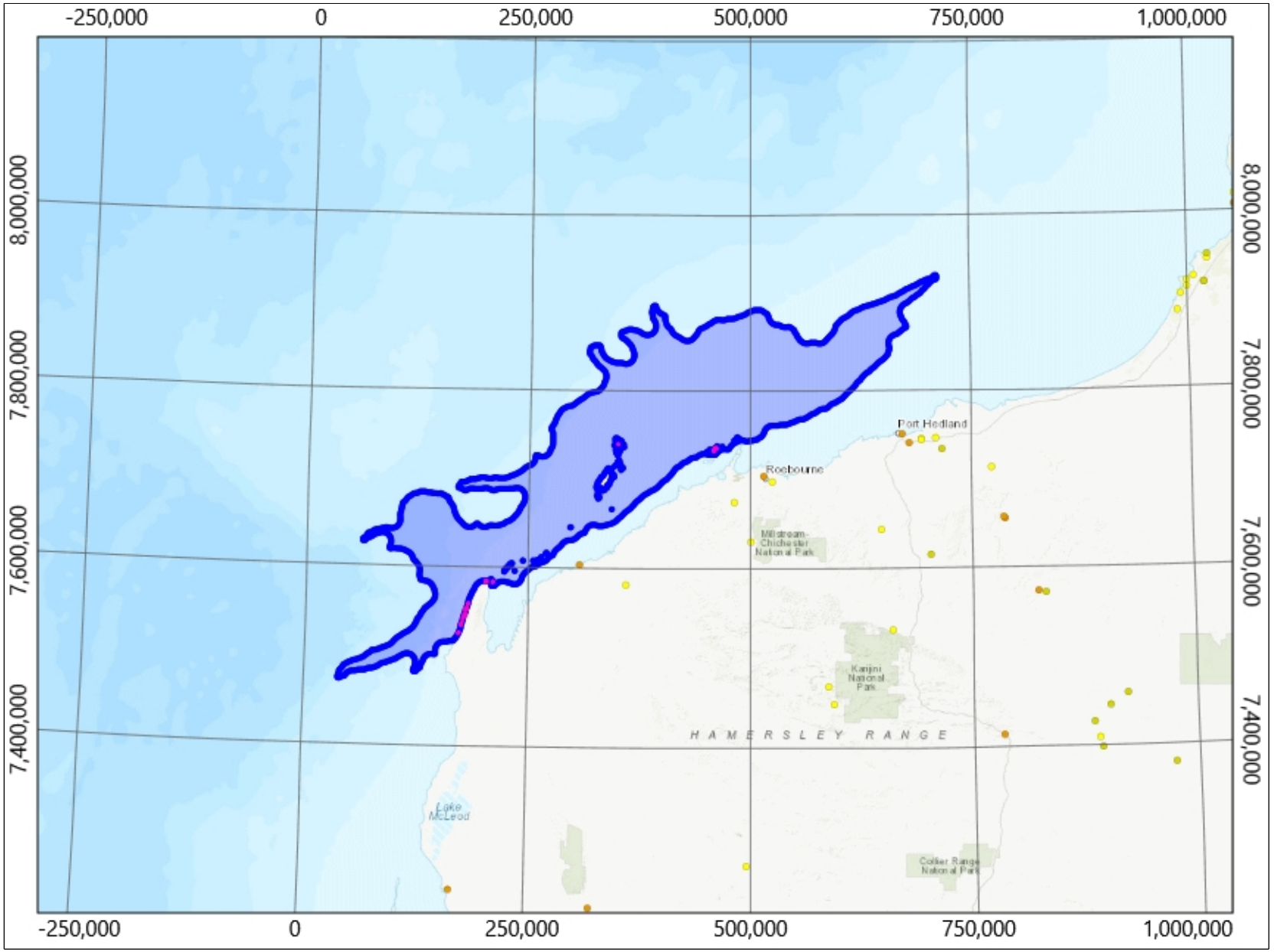
Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Aboriginal Cultural Heritage Inquiry System

Map of Aboriginal Cultural Heritage (ACH) Register

For further important information on using this information please see the WA.gov.au website's Terms of Use at https://www.wa.gov.au/terms-of-use



Legend

- Aboriginal Cultural Heritage (ACH) Register
- Search Area
- Aboriginal Community
  - *Permanent*
  - *Seasonal*
  - *Town Based*
- Town
- Road
- River
- Local Government Authority

230.82 kilometres

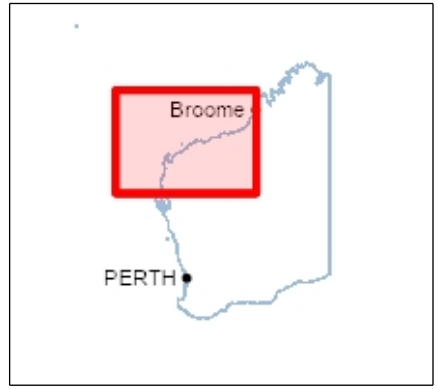
Map Scale 1 : 6,990,000

MGA Zone 50 (GDA2020)

Copyright for topographic map information shall at all times remain the property of the Commonwealth of Australia, Geoscience Australia - National Mapping Division. All rights reserved.

Aerial Photos, Cadastre, Local Government Authority, Native Title boundary, Roads data copyright © Western Australian Land Information Authority (Landgate).

Mining Tenement, Petroleum Application, Petroleum Title boundary data copyright © the State of Western Australia (Department of Mines, Industry Regulation and Safety).



Appendix E Wandoo Field OSCP [WAN-2000-RD-0001]

VERMILION
Oil & Gas
Australia Pty. Ltd.

VERMILION OIL & GAS AUSTRALIA

WANDOO FIELD OIL SPILL CONTINGENCY PLAN

WAN-2000-RD-0001

Revision 15

Revision	Date	Originator	Checker	Approver
15	25/02/2026	Mandy Walker	Namek Jivan	Barry Goodin
		Oil Spill Response Coordinator	HSE Manager	Engineering Manager

Revision History

Revision	Date	Description	Originator	Checker	Approver
0	03.08.05	Issued for use	R Bird	P Raitt	D Kerwin
1	10.03.09	Routine review	M Neiva	P Jernakoff	N Jivan
2	23.06.10	Routine review	P Jernakoff	N Jivan	B Lake
3	15.03.11	Includes DMP comments	P Jernakoff	N Jivan	B Lake
4	07.10.13	For revised EPs	M Dearden	N Jivan	B Lake
5	28.03.14	NOPSEMA comments	M Dearden	N Jivan	R Carty
6	11.07.14	NOPSEMA comments and WC EP	M Dearden	N Jivan	R Carty
7	29.08.14	NOPSEMA comments	M Dearden	N Jivan	R Carty
8	16.10.14	NOPSEMA comments	M Dearden	N Jivan	R Carty
9	07.10.16	Issued for Use	M Walker	N Jivan	R Carty
10	06.02.17	NOPSEMA comments	M Walker	N Jivan	R Carty
11	18.04.17	NOPSEMA comments	M Walker	N Jivan	R Carty
12	21.07.17	NOPSEMA comments (including RFI NOPSEMA comments)	M Walker	N Jivan	R Carty
13	16.11.18	Issued for use	G Nicholson	N Jivan	R Carty
14	18.02.25	OSM BIP updates and routine review	M Walker	B Petterlin	N Bennett
15	25.02.26	For revised EPs	M Walker	N Jivan	B Goodin

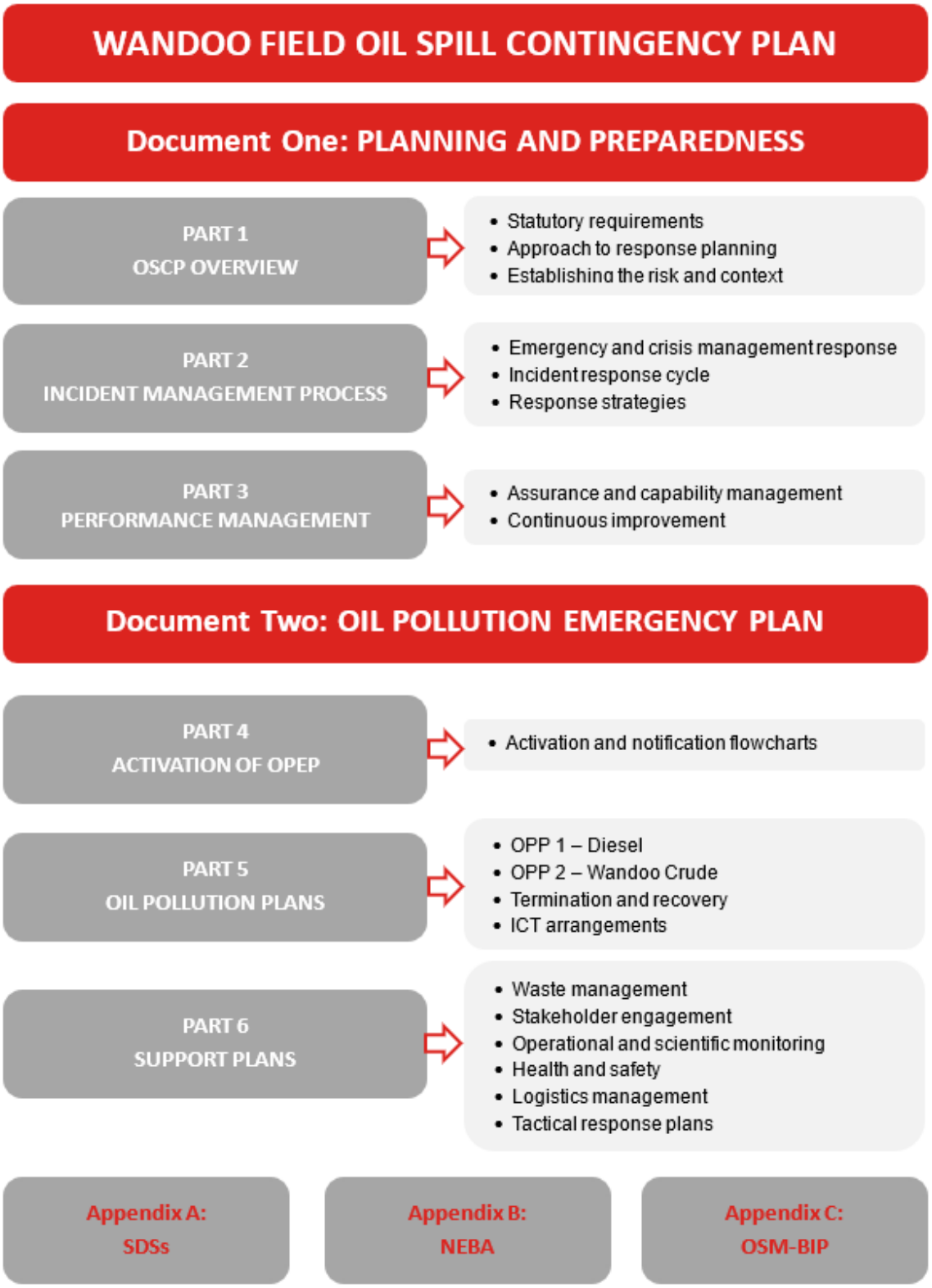
Distribution List

Copy no.	Position	Hard copy	E copy
1	Master copy – VOGA Document Control	X	X
2	VOGA Managing Director		X
3	VOGA Operations Manager		X
4	VOGA HSES Advisor		X
5	Wandoo Field Superintendent	X	X
6	VOGA Incident Commander	X	X
7	ICT Planning Chief	X	X
8	ICT Logistics Chief	X	X
9	ICT Finance Chief		X
10	ICT Operations Chief		X
11	ICT Safety Officer		X
12	ICT Stakeholder Liaison Officer		X
13	ICT Public Information Officer		X
14	Vermilion Corporate Command Operations Team		X
15	VOGA Well Construction QHSE Advisor		X
16	VOGA Environmental Advisor		X
17	MODU Offshore Installation Manager	X	X

Copy no.	Position	Hard copy	E copy
18	Manager Assessment and Compliance NOPSEMA – Perth		X
19	AMOSC		X
20	DTMI Oil Spill Response Coordinator		X

In the event of a spill go to DOCUMENT TWO: OPEP

The Wandoo Field Oil Spill Contingency Plan (OSCP) is divided into two documents, including the following parts and associated appendices:



VERMILION
Oil & Gas
Australia Pty. Ltd.

VERMILION OIL & GAS AUSTRALIA

WANDOO FIELD OIL SPILL CONTINGENCY PLAN
DOCUMENT 1: PLANNING AND PREPAREDNESS
WAN-2000-RD-0001.01

Revision	Date	Originator	Checker	Approver
15	25/02/2026	Mandy Walker	Namek Jivan	Barry Goodin
		Oil Spill Response Coordinator	HSE Manager	Engineering Manager

Revision History

Revision	Date	Description	Originator	Checker	Approver
0	03.08.05	Issued for use	R Bird	P Raitt	D Kerwin
1	10.03.09	Routine review	M Neiva	P Jernakoff	N Jivan
2	23.06.10	Routine review	P Jernakoff	N Jivan	B Lake
3	15.03.11	Includes DMP comments	P Jernakoff	N Jivan	B Lake
4	07.10.13	For revised EPs	M Dearden	N Jivan	B Lake
5	28.03.14	NOPSEMA comments	M Dearden	N Jivan	R Carty
6	11.07.14	NOPSEMA comments and WC EP	M Dearden	N Jivan	R Carty
7	29.08.14	NOPSEMA comments	M Dearden	N Jivan	R Carty
8	16.10.14	NOPSEMA comments	M Dearden	N Jivan	R Carty
9	07.10.16	Issued for Use	M Walker	N Jivan	R Carty
10	06.02.17	NOPSEMA comments	M Walker	N Jivan	R Carty
11	18.04.17	NOPSEMA comments	M Walker	N Jivan	R Carty
12	21.07.17	NOPSEMA comments (including RFI NOPSEMA comments)	M Walker	N Jivan	R Carty
13	16.11.18	Issued for Use	G Nicholson	N Jivan	R Carty
14	21.09.24	Routine review and updates	M Walker	B Petterlin	N Bennett
15	25.02.26	For revised EPs	M Walker	N Jivan	B Goodin

In the event of a spill go to DOCUMENT TWO: OPEP

The Wandoo Field Oil Spill Contingency Plan (OSCP) is divided into two documents, including the following parts and associated appendices:

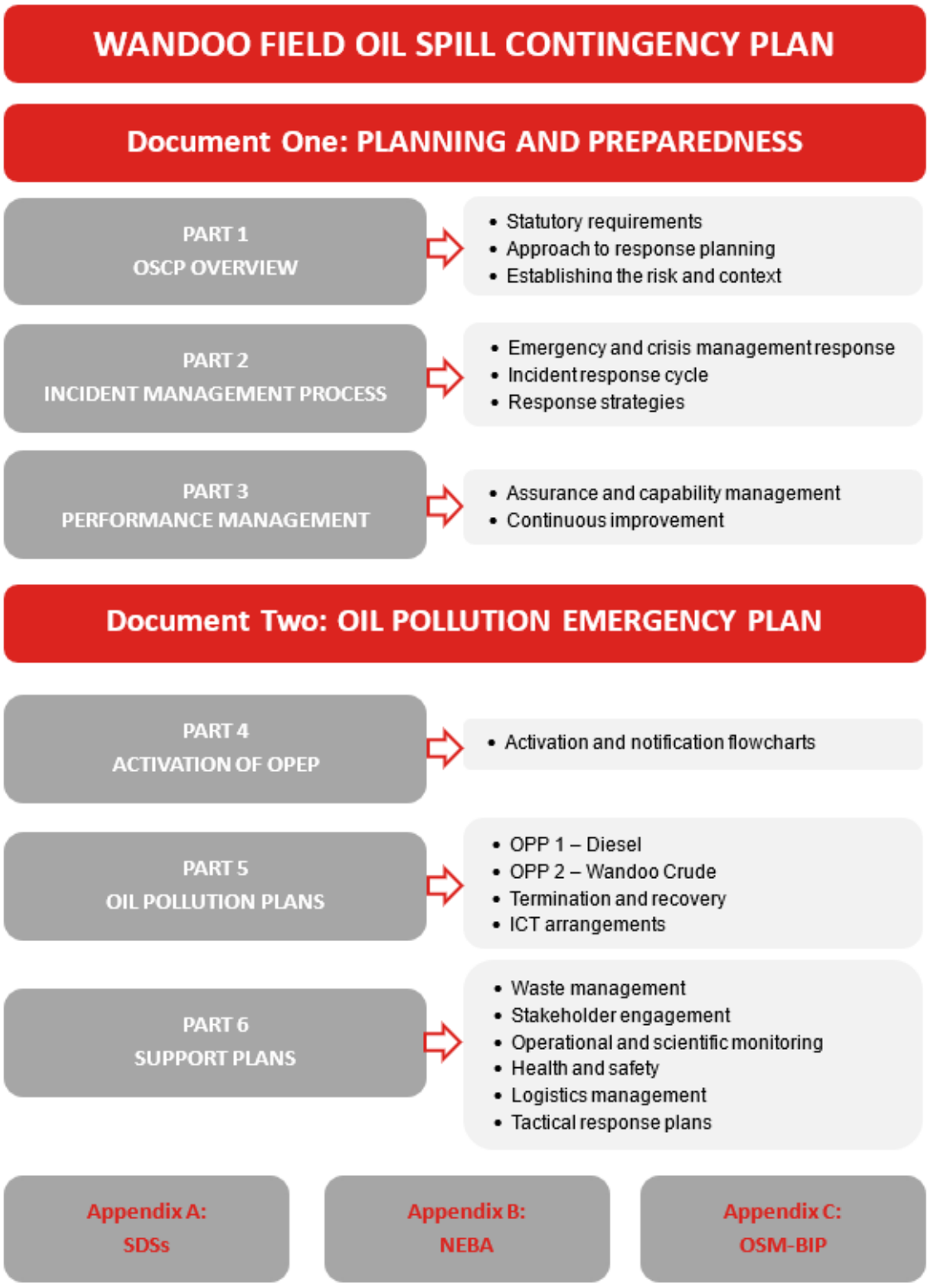


Table of Contents

DOCUMENT 1: PLANNING AND PREPAREDNESS

DOCUMENT 2: OIL POLLUTION EMERGENCY PLAN

T 1: PLANNING AND PREPAREDNESS

PART 1: OIL SPILL CONTINGENCY PLAN OVERVIEW

1 Introduction 3
1.1 Aim and Wandoo Field OSCP Outcomes 3
1.2 Scope 4
1.3 Location 5
1.4 Activity Description 6
1.4.1 Production Activities 6
1.4.2 Well Construction Activities 8
1.5 Interface With Other Plans 8
1.5.1 VOGA Plans 8
1.5.2 Government and Industry Plans 9
1.6 Response Priorities 11
1.7 Incident Classification 11

2 Statutory Requirements 13
2.1 International Conventions 13
2.2 Commonwealth, State or Territory laws 13
2.2.1 Commonwealth 13
2.2.2 State of Western Australia 14
2.3 Jurisdictional Authority and Control Agency Responsibilities 15
2.3.1 Jurisdictional Authority 15
2.3.2 Control Agency 16
2.3.3 Cross Jurisdictional Arrangements 17
2.4 Stakeholder Consultation for Planning 19

3 Approach to Response Planning 20
3.1 Overview 20
3.2 The Planning Phase 20
3.2.1 Response Thresholds 22
3.3 Spill Response Phase 23

4 Establishing the Risk and Context 27
4.1 Oil Characterisation 27

4.1.1 Oil Types 27
4.1.2 Diesel Fuel Oil 27
4.1.3 Wandoo Crude 28
4.2 Credible Spill Scenarios 29
4.2.1 Oil Spill Trajectory Modelling 29
4.3 Key Sensitivities 35

PART 2: INCIDENT MANAGEMENT PROCESS

5 Emergency and Crisis Management Response 39
5.1 Overview 39
5.2 Response Structure 39
5.3 Command and Control 39
5.4 Response Facilities 43
5.5 ICT Response Resources 43

6 Incident Response Cycle 45
6.1 Overview 45
6.2 Size-up the Situation 45
6.3 Identify Contingencies 46
6.4 Determine Objectives and Strategies 46
6.5 Net Environmental Benefit Analysis (NEBA) 47
6.6 Identify Needed Resources 49
6.7 Develop an IAP 49
6.7.1 Briefings 50
6.8 Take Action 50
6.9 Review Phase 50
6.10 Adjust Phase 51

7 Response Strategies 52
7.1 Overview 52
7.2 Source Control 61
7.3 Monitoring, Evaluation and Surveillance (MES) 61
7.3.1 Description of MES Response Strategy 61
7.3.2 Spill Scenarios for Which MES May Be Implemented 62
7.3.3 Operational Constraints for MES 62
7.4 Chemical Dispersant 62
7.4.1 Description of Chemical Dispersant Application 62
7.4.2 Dispersant Application 63
7.4.3 Operational Constraints for Dispersant Application 67
7.5 Mechanical Dispersion 67

7.5.1 Description of Mechanical Dispersion Operations 67
7.5.2 Spill Scenarios for Which Mechanical Dispersion May Be Implemented 68
7.5.3 Operational Constraints for Mechanical Dispersion 68
7.6 Containment and Recovery 68
7.6.1 Description of Containment and Recovery 68
7.6.2 Spill Scenarios for Which Containment and Recovery May Be Implemented 70
7.6.3 Operational Constraints for Containment and Recovery 70
7.7 Protection and Deflection 71
7.7.1 Description of Protection and Deflection Operations 71
7.7.2 Spill Scenarios for Which Protection and Deflection May be Implemented 72
7.7.3 Operational Constraints for Protection and Deflection 72
7.8 Shoreline Clean-up 72
7.8.1 Description of Shoreline Clean-up 72
7.8.2 Spill Scenarios for Which Shoreline Clean-up May Be Implemented 75
7.8.3 Determining Worst Case Shoreline Clean-up Scenarios 75
7.8.4 Shoreline Clean-up Personnel and Equipment 80
7.8.5 Operational Constraints for Shoreline Clean-up 83
7.9 Oiled Wildlife Response 83
7.9.1 Description of Oiled Wildlife Response 83
7.9.2 Spill Scenarios for Which Oiled Wildlife Response May Be Implemented 84
7.9.3 Operational Constraints for Oiled Wildlife Response 85
7.9.4 Response Structure 85
7.9.5 Approach to Response Planning 86
7.9.6 Response Actions 87
7.10 In-situ Burning 87

PART 3: PERFORMANCE MANAGEMENT

8 Assurance and Capability Management 89
8.1 Overview 89
8.2 Training and Competency 89
8.3 Capability 90
8.3.1 Determining Requirements 90
8.3.2 Assessment of Capability 90
8.3.3 Worst Case Requirements 91
8.3.4 Maintaining Capability for the Duration of a Response 91
8.3.5 Monitoring of Capability 91
8.4 Assurance Activities 92
8.4.1 Overview 92
8.4.2 Exercises 92
8.4.3 Inspections and Audits 96
8.5 Action Management 97

9 Continuous Improvement 98

DOCUMENT 2: OIL POLLUTION EMERGENCY PLAN

APPENDICES 3

Appendix A: Safety Data Sheets

Appendix B: Net Environmental Benefit Analysis (NEBA)

Appendix C: VOGA Operational and Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002]

Abbreviations and Acronyms

AIIMS	Australasian Inter-Service Incident Management System
ALARP	As Low As Reasonably Practicable
AMOSC	Australian Marine Oil Spill Centre
AMOS Plan	Australian Marine Oil Spill Plan
AMSA	Australian Maritime Safety Authority
APASA	Asia Pacific Applied Science Associates Pty Ltd
BAOAC	Bonn Agreement Oil Appearance Code
BER	Boom Encounter Rate
CALM Buoy	Catenary Anchor Leg Mooring Buoy
CCT	Corporate Command Team
CGS	Concrete Gravity Substructure
DEE	Department of Environment and Energy
DFAT	Department of Foreign Affairs and Trade
DMPE	Department of Mines, Petroleum and Exploration
DPIRD	Department of Primary Industries and Regional Development
DTMI	Department of Transport and Major Infrastructure
DBCA	Department of Biodiversity Conservation and Attractions
EMBA	Environment that May be Affected
EP	Environment Plan
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
ERP	Emergency Response Plan
ESC	Environmental and Scientific Coordinator
FWADC	Fixed Wing Aerial Dispersant Capability
GIS	Geographic Information System
HMA	Hazard Management Agency
hr	hour
HSES	Health, Safety, Environment and Security
HSE MS	Health, Safety and Environment Management System
IAP	Incident Action Plan
IBC	Intermediate Bulk Container
IC	Incident Commander
ICC	Incident Command Centre
ICT	Incident Command Team
IMO	International Maritime Organisation
JIP	Joint Industry Practice
kg	kilograms
km	kilometres
KPI	Key Performance Indicator

L	litres
m	metre
MEER Unit	Maritime Environmental Emergency Response Unit (within WA DTMI)
MODU	Mobile Offshore Drilling Unit
MOU	Memorandum of Understanding
National Plan	National Plan for Maritime Environmental Emergencies
NEBA	Net Environmental Benefit Analysis
NES	National Environmental Significance
nm	nautical mile
NOPSEMA	National Offshore Petroleum, Safety & Environmental Management Authority
NRT	National Response Team
OH&S	Occupational Health and Safety
OMP	Operational Monitoring Plan
OPGGSA	Offshore Petroleum and Greenhouse Gas Storage Act 2006
OPGGS(E)R	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009
OPP	Oil Pollution Plan
OPRC	Oil Pollution Preparedness, Response and Cooperation
OPRC	International Convention on Oil Pollution Preparedness, Response and Cooperation 1990
OSCA	Oil Spill Control Agents (Register)
OSCP	Oil Spill Contingency Plan
OSM-BIP	Operational and Scientific Monitoring Bridging Implementation Plan
OSR	Oil Spill Response
OSRA	Oil Spill Response Atlas or Agency
OSRL	Oil Spill Response Limited
OSRO	Oil Spill Response Organisation
OSTM	Oil Spill Trajectory Modelling
OWR	Oiled Wildlife Response
PIC	Person in Charge
POLREP	Pollution Report (Form)
PPE	Personal Protective Equipment
ppm	parts per million
P(SL)A	Petroleum (Submerged Lands) Act 1982
Ref	Reference
ROV	Remotely Operated Vehicle
SCAT	Shoreline Clean-up Assessment Technique
SDS	Safety Data Sheet
SIMOPS	Simultaneous Operations
SITREP	Situation Report (Form)
SMEACS	Situation, Mission, Execution, Administration and Logistics, Command, Control and Communication, Safety

SMOPC	State Marine Oil Pollution Committee
SMP	Scientific Monitoring Plan
SOPEP	Shipboard Oil Pollution Emergency Plan
T	tonnes
VOGA	Vermillion Oil & Gas Australia Pty Ltd
WA	Western Australia
WAOWRM	Western Australia Oiled Wildlife Response Manual
WAOWRP	Western Australia Oiled Wildlife Response Plan

PART 1: Oil Spill Contingency Plan Overview

1 Introduction

1.1 Aim and Wandoo Field OSCP Outcomes

The aim of the Vermilion Oil and Gas Australia Pty Ltd (VOGA) Wandoo Field Oil Spill Contingency Plan (OSCP) is to ensure that measures are in place to mitigate the oil spill hazards associated with petroleum activities within the Wandoo Field.

To achieve this, the Wandoo Field OSCP has established the following outcomes based on the following requirements:

- **Outcome 1:** The Wandoo Field OSCP is established to mitigate the oil spill hazards identified in the respective Environment Plans (EPs).
- **Outcome 2:** Response strategies provided in the oil pollution plans (OPPs) are appropriate to:
  - The nature and scale and associated environmental impact of the potential spill hazards
  - The nature and scale and associated environmental impact of the potential spill response strategies
  - The environmental sensitivities and priorities as outlined within the respective EPs.
- **Outcome 3:** The Wandoo Field OSCP describes incident management system and interfaces.
- **Outcome 4:** Decision making processes support mitigation of environmental impact of spills and assessment of effectiveness of response strategies using:
  - The Incident Action Plan (IAP) which includes a consideration for environmental impact of spill and response
  - Operational and scientific monitoring.
- **Outcome 5:** The Wandoo Field OSCP shall contain processes to assess, test and maintain arrangements to meet the outcomes of the OSCP through:
  - Assurance processes
  - Capability assessment
  - Review triggers.

To assist responders in the event of a spill, the Wandoo Field OSCP contains two documents, a planning document and a response document, referred to as the Oil Pollution Emergency Plan (OPEP) (Figure 1-1). In the event of a spill, responders will immediately refer to the OPEP.

The planning and preparedness document includes:

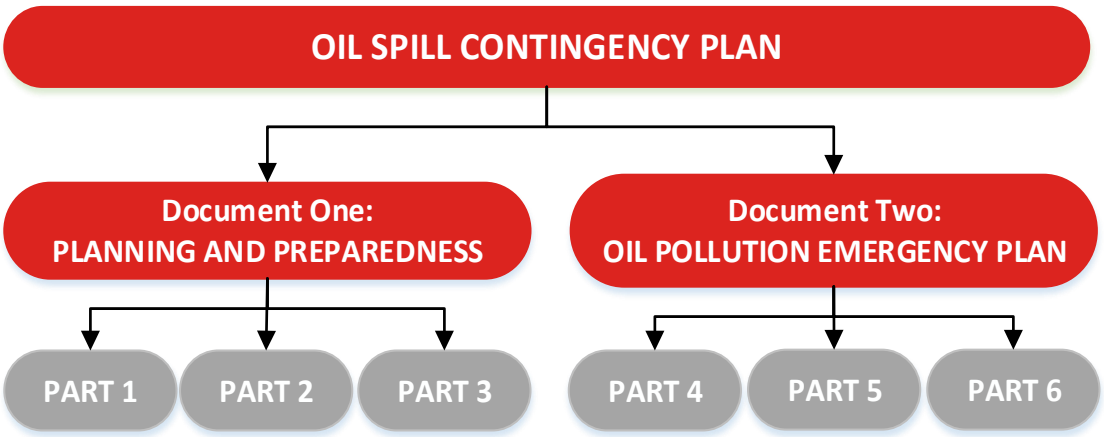
- Part 1 - an overview of the Wandoo Field OSCP
- Part 2 - the VOGA incident management process
- Part 3 - the management arrangements for the Wandoo Field OSCP.

The OPEP includes:

- Part 4 - notification and activation requirements of the OPPs

- Part 5 - OPPs detailing response strategies and arrangements for credible spill scenarios
- Part 6 - spill response support plans.

Figure 1-1: Structure of the Wandoo Field OSCP



1.2 Scope

This plan has been established by VOGA to respond to oil pollution associated with production and well construction activity within Permit Area WA-14L, see Section 1.3.

The Wandoo Field OSCP includes organisational responsibilities, actions, reporting requirements and resources available to ensure the effective and timely management of the response to an accidental oil spill resulting from the operations and well construction activities within the Wandoo Field. OSCP requirements and corresponding sections where these requirements are addressed are outlined in Table 1-1.

Table 1-1: Scope of OSCP

Description of OPGGS(E)R for OSCP	Part in Wandoo Field OSCP
22(9) - The oil pollution emergency plan must include adequate arrangements for responding to and monitoring oil pollution, including: (a) the control measures necessary for timely response to an emergency that results or may result in oil pollution; (b) the arrangements and capability that will be in place, for the duration of the activity, to ensure timely implementation of the control measures, including arrangements for ongoing maintenance of response capability; (c) the arrangements and capability that will be in place for monitoring the effectiveness of the control measures and ensuring that the environmental performance standards for the control measures are met; (d) the arrangements and capability in place for monitoring oil pollution to inform response activities.	Part 5, 6 and Appendix C
22(10) - The implementation strategy must provide for monitoring of impacts to the environment from oil pollution and response activities that: (a) is appropriate to the nature and scale of the risk of environmental impacts for the activity (b) is sufficient to inform any remediation activities.	Part 6 and Appendix C

Description of OPGGS(E)R for OSCP	Part in Wandoo Field OSCP
22(11) - The implementation strategy must include information demonstrating that the response arrangements in the OPEP are consistent with the national system for oil pollution preparedness and response.	Part 1 and 3
22(12) - The implementation strategy must include arrangements for testing the response arrangements in the oil pollution emergency plan that are appropriate to the response arrangements and to the nature and scale of the risk of oil pollution for the activity.	Part 3
22(13) - The arrangements for testing the response arrangements must include: (a) a statement of the objectives of testing (b) a proposed schedule of tests (c) mechanisms to examine the effectiveness of response arrangements against the objectives of testing (d) mechanisms to address recommendations arising from tests.	Part 3
22(14) - The proposed schedule of tests must provide for the following: (a) testing the response arrangements when they are introduced (b) testing the response arrangements when they are significantly amended (c) testing the response arrangements not later than 12 months after the most recent test (d) if a new location for the activity is added to the environment plan after the response arrangements have been tested, and before the next test is conducted—testing the response arrangements in relation to the new location as soon as practicable after it is added to the plan (e) if a facility becomes operational after the response arrangements have been tested and before the next test is conducted—testing the response arrangements in relation to the facility when it becomes operational.	Part 3

1.3 Location

The Wandoo Production Licence WA-14-L is located ~80 km northwest of Dampier, Western Australia (WA) in the offshore waters of the North West Shelf (NWS) region. The nearest landmass to the facility is the outer Islands of the Dampier Archipelago, approximately 40 km to the southeast. In brief, the Wandoo Facility consists of:

- Wandoo A, a normally unmanned monopod platform supported by a single column, which has the capacity of supporting a total of five production wells (dry trees). The platform has a helicopter landing facility.
- Wandoo B, the central oil production process and storage platform, is supported on a Concrete Gravity Substructure (CGS). This currently supports 17 production wells with one remaining spare conductor slot and one gas reinjection well, all with dry trees. The Wandoo B topside facilities include processing facilities, oil storage within the CGS, utilities, accommodation and a helipad. The configuration of the CGS provides storage for 66,350 m^3 of processed oil.
- Three infield flow lines including a production line, a gas lift line, and a test line connect Wandoo A to Wandoo B. The test line is no longer used for hydrocarbon service due to integrity concerns on the Wandoo B riser section. It is used for round trip flushing of the production line.

- The export pipeline system consists of two parallel flexible lines running between Wandoo B and the pipeline-end manifold and the Catenary Anchor Leg Mooring (CALM) Buoy system.

The location and field layout of the Wandoo facility are presented in Figure 1-2 and Figure 1-3; the coordinates of the main Wandoo infrastructure is presented in Table 1-2.

Table 1-2: Location of the main infrastructure of the Wandoo facility

Main infrastructure	Latitude	Longitude
Wandoo A	20° 08’ 14.61” S	116° 25’ 22.43” E
Wandoo B	20° 07’ 37.12” S	116° 26’ 08.23” E
Anchorage	20°05' 00" S	116°23' 48" E
CALM Buoy	20° 06’ 57.43” S	116° 26’ 06.51” E

1.4 Activity Description

This OSCP covers oil spill scenarios from production and well construction activities within the Wandoo Permit Area WA-14L as described in the Wandoo Facility EP [WPA-7000-YH-0007] and Wandoo Well Construction EP [WPA-7000-YH-0001].

1.4.1 Production Activities

The scope of production activities includes operational and maintenance activities associated with production, storage and offloading within the Wandoo Field. The well fluids produced from Wandoo A is piped to the Wandoo B platform where it is combined with Wandoo B well fluids, oil is separated from water and stored in the CGS. The oil is then offloaded through flexible pipelines to the supporting CALM Buoy located 1.2 km north of the Wandoo B platform. A floating hose is used in transferring the oil from the CALM Buoy to export tankers situated at a mooring facility (refer Figure 1-2). Export tankers are chartered on a spot basis to offload the crude.

Full details of the production related activities are outlined in the activity description with Wandoo Facility EP [WPA-7000-YH-0007].

Figure 1-2: Location of the Wandoo facility

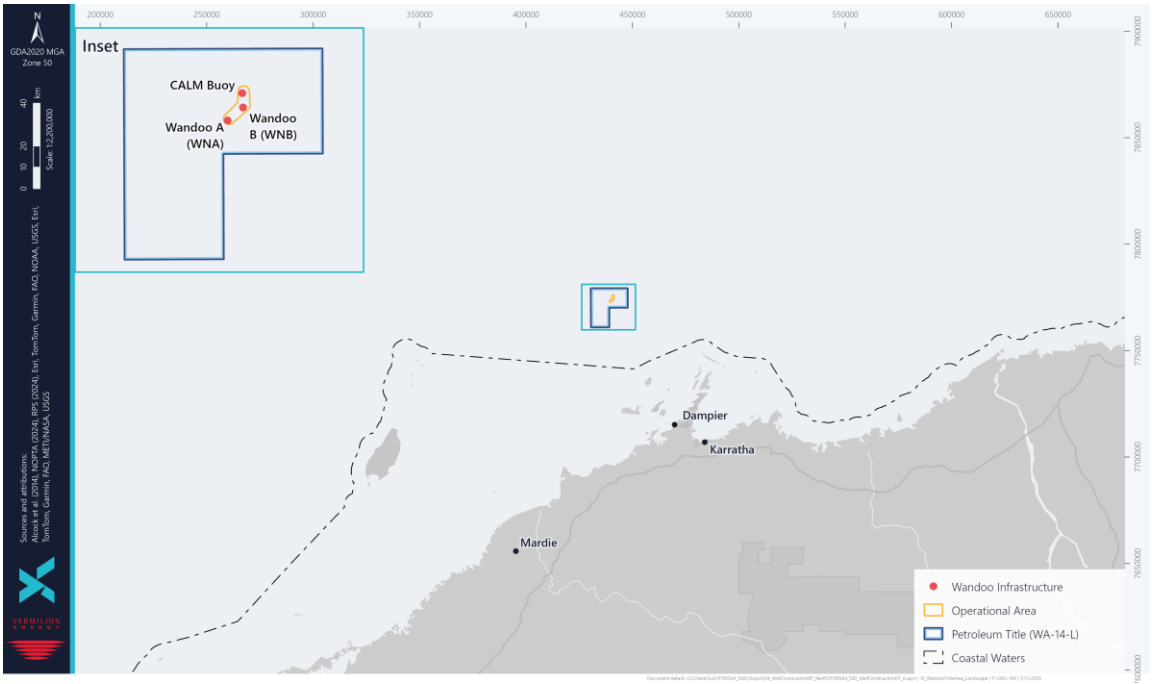
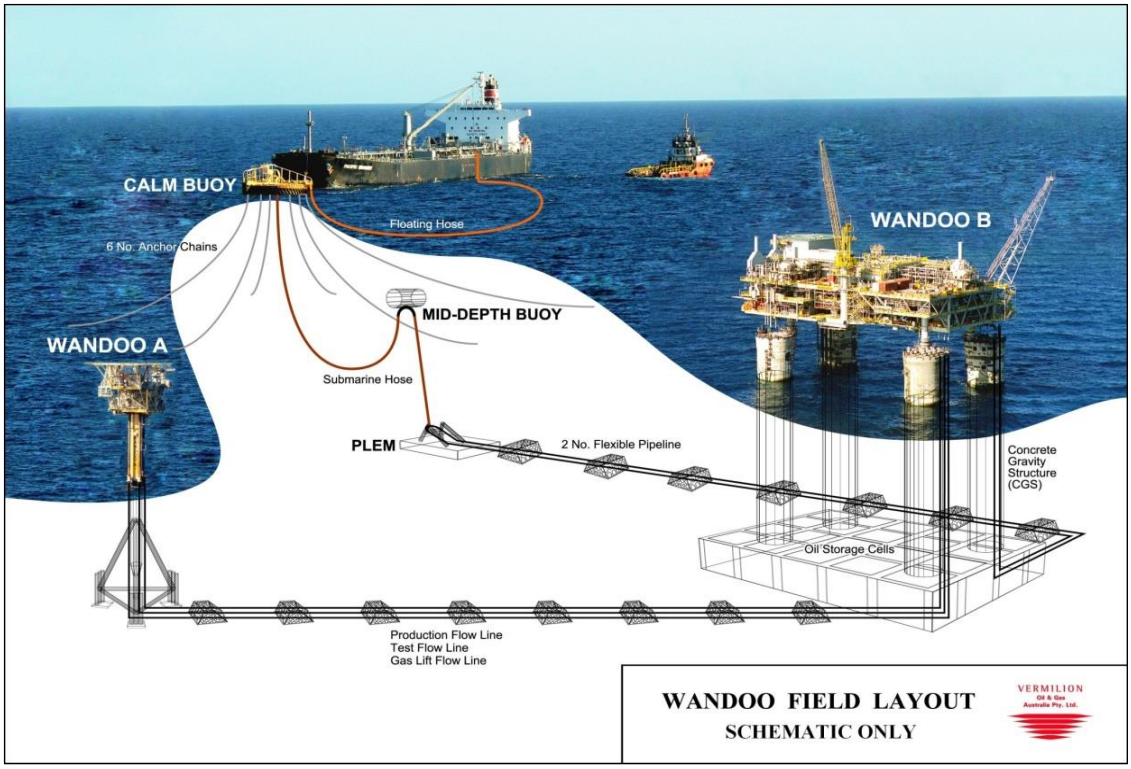


Figure 1-3: Wandoo field layout



1.4.2 Well Construction Activities

The scope of the well construction operations planned for the Wandoo Field over the next five years includes:

- Drilling activities:
  - Construction of new wells
  - Isolation of existing laterals and well bores
  - Well slot recoveries for drilling of new wells
  - Well interventions and side-tracks
- Temporary suspension
- Plug and Abandonment (P&A)
- Blowout Preventer (BOP) installation and testing
- Support operations.

No vertical seismic profiling is planned during well construction activities. The primary purpose of these activities will be to add new production intervals to access undrained oil in the Wandoo reservoir. A secondary aim will be to continue the evaluation of the Field boundaries to determine the extent of the Wandoo reservoir in the areas that the new trajectories will access. This evaluation process will provide critical information for the updating of VOGA's geological and reservoir models for the field, allowing both future development and production processes to be optimised. Full details of the well construction related activities are outlined in the activity description within the Wandoo Well Construction EP [WPA-7000-YH-0001].

1.5 Interface With Other Plans

1.5.1 VOGA Plans

This Wandoo Field OSCP interfaces with the following VOGA plans:

- **Wandoo Facility Emergency Response Plan [VOG-2000-RD-0017]** – This plan describes the immediate 'actions-on' for an unplanned emergency incident at one of VOGA's facilities. The Wandoo Facility Emergency Response Plan (ERP) is the plan that will be initially put in place to manage the immediate, life-threatening consequences of an emergency (e.g. fire, collision, etc.) and immediately mitigate, as far as possible, the consequences of these actions. The Wandoo Facility ERP will always have primacy over other plans.
- **CGS Source Control Plan [VOG-3000-YH-0001]** - The CGS Source Control Plan provides a response framework to implement to minimise the volume of oil spill originating from CGS. The response is under the Wandoo Facility ERP and runs in parallel to the oil spill ICT. Both teams interface at the incident command level of the emergency response structure.
- **Wandoo Facility EP [WPA-7000-YH-0007]** – The Wandoo Facility EP caters for all operation and maintenance activities associated with the Wandoo Oil Field. The Wandoo Operations EP is developed by VOGA and accepted by the Designated Authority under the OPGGS(E)R. The Wandoo Operations EP identifies the environmental risks and impacts associated with the activities covered within the plan. This OSCP addresses all potential oil spill risks identified in the Wandoo Operations EP.

- **Wandoo Well Construction EP [WPA-7000-YH-0001]** – The Wandoo Well Construction EP caters for well intervention and construction activities associated with the Wandoo A and Wandoo B platforms. The Wandoo Well Construction EP identifies the environmental risks and impacts associated with the activities covered within the plan, including oil spill response. The OSCP addresses all the response and recovery measures from the potential oil spill risks identified in the Wandoo Well Construction EP. This OSCP details the risk controls required to manage the environmental risks associated with the response activities.
- **Oil Spill Response Capability Review [VOG-7000-RH-0009]** – The report provides a capability review for all oil spill response spill scenarios associated with production and well construction activities within the Wandoo Permit Area WA-14L. The capability assessment included detailing the specification for each resource requirement (e.g. skills, vessels, equipment) and identifying what contracts and arrangements are in place, or required, to meet the resource requirements. The requirements are ascertained and assessed through workshops, surveys and review of existing contracts.

1.5.2 Government and Industry Plans

This OSCP interfaces with the following Australian Government, State Government and Industry plans:

Oil Spill Response Organisations (OSRO)

- Oil Spill Response Limited (OSRL):
  - VOGA has a signed Associate Agreement with OSRL for the Wandoo Production Area
  - VOGA is a member of the OSRL OSM Supplementary Service Agreement
  - VOGA has access to the Global Dispersant Stockpile (GDS)
  - OSRL has the capacity to provide personnel and equipment to combat Level 3 spills
  - Access to international resources is facilitated through the OSRL membership.
- Australian Marine Oil Spill Plan (AMOS Plan):
  - This plan is managed by the Australian Marine Oil Spill Centre (AMOSC), and will be activated by VOGA when the response to an oil spill incident is regarded by VOGA to be requiring resources beyond those of the company.
  - The plan coordinates the participation of the oil industry in response through the mobilisation of AMOSC personnel and/or equipment, which can be supplemented by personnel and equipment owned directly by other industry companies.
  - As members of AMOSC, Chevron and Santos will respond with equipment and/or personnel to respond to a VOGA spill impacting on Barrow or Lowendal Islands respectively.

National Plan for Maritime Environmental Emergencies

AMSA manages the National Plan for Maritime Environmental Emergencies (National Plan), Australia's key maritime emergency contingency and response plan (AMSA, 2020). AMSA fulfils its obligations under the National Plan for non-ship source pollution incidents on the formal request from the respective Offshore Petroleum Incident Controller/s (AMSA, 2021).

AMSA is to be notified immediately of all ship-source incidents through the AMSA Rescue Coordination Centre (RCC) Australia. The AMSA National Plan Incident Management System Policy (NP-POL-003) (AMSA, 2022a) describes the incident management system which is applied by AMSA, State Control Agencies and the offshore industry Australia wide for all marine oil spill response incidents and implemented through the National Plan for Maritime Environmental Emergencies.

The Department of Transport and Major Infrastructure (DTMI) is a signatory to the inter-governmental agreement under the National Plan. The State Response Team are members of the National Response Team and are trained and competent in roles ranging from team leader for equipment operations and shoreline response to ICT roles. The MEER Unit has access to AMSA's National Plan equipment to respond to spills in State waters. This equipment is located in Dampier and Fremantle.

Western Australian State Hazard Plan – Maritime Environmental Emergencies

The WA State Hazard Plan – Maritime Environmental Emergencies (MEE) provides an overview of arrangements for the management of marine oil pollution and marine transport emergencies in Western Australia. It enables the WA Government through the DTMI to prevent, prepare for, respond to and recover from maritime environmental emergencies as listed in the Emergency Management Act 2005 (WA) and prescribed in the Emergency Management Regulations 2006 (the EM Regulations).

For the purposes of the Wandoo Field OSCP, State Hazard Plan - MEE describes the response arrangements that the WA State Government will put in place for oil spills from the Wandoo Field, should they enter, or be predicted to enter, State waters and any shorelines or wildlife therein. This includes performing the function of Controlling Agency for response activities in State waters resulting from Level 2/3 incident in Australian Government waters as per the WA DoT Offshore Petroleum Industry Guidance Note MOP: Response and Consultation Arrangements (July 2020).

WA DTMI Incident Management Plan - Marine Oil Pollution (MOP)

- This plan describes the activities and actions that the WA DTMI will undertake to mount a credible and proportionate response to oil pollution in State waters. For the purposes of the VOGA Wandoo OSCP, the DTMI Incident Management MOP is complimentary in that it will be used to assist and guide the actions and activities that take place in State waters by the DTMI in response to a spill from the Wandoo Field.
- The DTMI MEER Unit will work with the VOGA to determine protection priorities and undertake an initial and ongoing environmental impact assessments to determine the most appropriate response in State waters. These protection priorities determined at the time of a spill may differ from those originally identified in the accepted OSCP.
- The MEER Unit, convenes the State-level maritime environmental emergency coordination committee, which includes representatives from relevant agencies and authorities involved in marine oil spill response. When a spill has the potential to impact State waters, the Department of Transport coordinates notification of the committee representatives and other key State roles in accordance with the State Hazard Plan for Maritime Environmental Emergencies and the Department of Transport Oil Spill Incident Management Guideline.

Third Party Vessels

Shipboard Oil Pollution Emergency Plans (SOPEPs) contain details about the ship, roles and responsibilities in the event of a spill, and spill response equipment on board. MARPOL 73/78 requires that every oil tanker of 150 tonnes gross tonnage and above, and every ship other of 400 gross tonnes and above, carry a SOPEP approved by the Administration. It is the same Shipboard Marine Pollution Plan that is required under the Oil Pollution, Preparedness, Response and Cooperation (OPRC) Convention.

Shipboard Marine Pollution Plans also include noxious liquid substances and should more correctly be called "Shipboard Marine Pollution Emergency Plan". The plans must be prepared in accordance with vessel class and flag State requirements and guidelines as lain down by the International Maritime Organisation (IMO).

For the purposes of this OSCP, all vessels that are involved in the activity will implement their SOPEP to assist in mitigating any spills from their shipping activities, which contributes to the mitigation of the overall oil spill risk from the petroleum activity.

1.6 Response Priorities

Consistent with the National Plan, the priorities for VOGA in responding to an oil spill will be:

- Human health and safety
- Habitat and cultural resources
- Rare and/or endangered flora and fauna
- Commercial resources (including commercial fisheries, other offshore oil and gas production and exploration facilities in the immediate surrounds)
- Community amenities for social and recreational activities (including recreational fishing, local beaches and culturally sensitive areas).

1.7 Incident Classification

The AMSA National Plan and the WA State Hazard Plan - MEE assign response levels to oil spills according to the criteria listed in Table 1-3.

The VOGA ERP [VOG-2000-RD-0017] provides details on the response arrangements and responsibilities VOGA has for the management of emergencies which may occur during Wandoo operations. Consistent with the National Plan, the VOGA ERP categorises incidents in relation to the response required:

- Level 1 incidents: Generally able to be resolved through the application of local or initial resources only (e.g. first strike response)
- Level 2 incidents: More complex in size, duration, resource management and risk and may require deployment of jurisdictional resources beyond the initial response
- Level 3 incidents: Characterised by a degree of complexity that requires the Incident Commander to delegate all incident management functions to focus on strategic leadership and response coordination and may be supported by national and international resources.

Table 1-3: Emergency classification levels (AMSA and WA DoT)

Characteristic	Level 1	Level 2	Level 3
Management			
Jurisdiction	Single jurisdiction	Multiple jurisdictions	Multiple jurisdictions
Delegation	Incident Controller responsible for all functions	Some functions delegated or divisions created	All functions delegated and/or divisions created
Number of agencies	First-response agency	Routine multi-agency response	Agencies from across government and industry
IAP	Simple/outline	Outline	Detailed
Resources	Resourced from within one area	Requires intra-state resources	Requires national or international resources
Type of Emergency			
Type of response	First-strike	Escalated	Campaign
Duration	Single shift	Multiple shifts Days to weeks	Extended response Weeks to months
Hazards	Single hazard	Single hazard	Multiple hazards
Resources at Risk			
Human	Potential for serious injuries	Potential for loss of life	Potential for multiple loss of life
Environment	Isolated impacts or with natural recovery expected within weeks	Significant impacts and recovery may take months. Remediation required	Significant area and recovery may take months. Remediation required
Wildlife	Individual fauna	Groups of fauna or threatened fauna	Large numbers of fauna
Economy	Business level disruption	Business failure	Disruption to a sector
Social	Reduced services	Ongoing reduced services	Reduced quality of life
Infrastructure	Short term failure	Medium term failure	Severe impairment
Public Affairs	Local and regional media coverage	National media coverage	International media coverage

2 Statutory Requirements

2.1 International Conventions

Australia has ratified the following international conventions relating to risk from oil and gas activities:

- International Convention for the Prevention of Pollution from Ships 1973, and modified by the Protocol 1978 (MARPOL 73/78)
- International Convention on Oil Pollution Preparedness, Response and Cooperation 1990 (OPRC 1990).

Both conventions compel the Australian Government (and in turn State Government) to implement legislation that regulates activities in Australian territorial waters. Of relevance to VOGA, is that MARPOL 73/78 states that parties to the convention *"...shall require that operators of offshore units under its jurisdiction have Oil Pollution Plans, which are coordinated with the national system..."*

OPRC 1990, which entered into force on 13 May 1995, provides a global framework for international cooperation and mutual assistance between states and regions when preparing for and responding to major oil pollution. Contracting states are required to establish a national system for responding to oil spills, including a designated national authority, a national operational contact point, and a national contingency plan. This needs to be supported by a minimum level of response equipment, communications plans, regular training and exercises. Ships, offshore units, sea ports and oil-handling facilities are required to carry Oil Pollution Plans which must be coordinated with national systems for responding to oil pollution incidents.

2.2 Commonwealth, State or Territory laws

2.2.1 Commonwealth

2.2.1.1 Offshore Petroleum Incident Coordination Framework

The Australian Government has agreed that in responding to offshore petroleum incidents originating in Australian Government waters, a central incident coordination committee be convened and chaired by the Department of Industry and Science and Resources (DISR). The committee is known as the Offshore Petroleum Incident Coordination Committee (OPICC).

The purpose of OPICC is to effectively coordinate the Australian Government efforts and resources, and communicate to the public and affected stakeholders all matters relevant to a significant offshore petroleum incident that originates in Australian Government waters.

OPICC is not a mechanism to deploy Australian Government resources, exercise incident control or implement operational response arrangements. However, it can provide whole of government strategic collaboration to resolve conflicts and identify gaps in support of marine oil pollution emergency response activities.

2.2.1.2 *Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGSA) and Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023*

The OPGGSA provides the overarching regulatory framework for the Facility and remains the principal legislation relevant to this OSCP. The Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (OPGGS(E)R) are made under the Act and set out the requirements for ensuring that petroleum activities are undertaken in a manner consistent with the principles of ecologically sustainable development, and in accordance with an Environment Plan (EP) that includes appropriate environmental performance outcomes, standards, and measurement criteria.

This OSCP meets the explicit requirements of the OPGGS(E)R 2023, particularly Part 2, Division 2.2 (Contents of an Environment Plan), which includes obligations relating to oil pollution response arrangements, implementation strategy, control measures, capability, monitoring, and spill response preparedness. While the OPGGS(E)R refers to oil pollution response arrangements within the EP rather than a standalone OPEP, Vermilion continues to use the term OSCP for this document, with the OPEP components incorporated within it (Document Two).

NOPSEMA is responsible for regulatory assessment, acceptance, and ongoing compliance oversight of the OPGGSA and associated regulations for the Facility.

2.2.1.3 *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)*

The EPBC Act establishes the national framework for protecting and managing matters of national environmental significance (NES), including threatened species and ecological communities, migratory species, Commonwealth marine areas, and heritage values. Several NES matters occur within the potential impact zone for credible spill scenarios associated with the Facility (refer to the EP for detailed assessment). These sensitivities are prioritised for protection in the event of an oil spill.

Under the standing Notice of Exemption issued by the Minister for the Environment, persons acting in accordance with the National Plan for Maritime Environmental Emergencies are exempt from the requirement to obtain approvals under Part 3 of the EPBC Act for actions taken in response to a pollution incident. Once this OSCP is accepted by NOPSEMA, actions undertaken in accordance with this OSCP fall within the scope of that exemption.

The Department of Climate Change, Energy, the Environment and Water (DCCEEW) is responsible for administering the EPBC Act, including the assessment of any activities requiring approval and the application of exemptions relevant to the Facility and associated operations.

2.2.2 State of Western Australia

Should oil travel inside the 3nm limit (State waters), a range of WA legislation also affects the response operations that would be undertaken under this OSCP by VOGA.

This legislation includes:

- *Pollution of Waters by Oil and Noxious Substances Act 1987*:
  - This Act provides the primary legislative framework for preventing and responding to marine pollution by oil and noxious substances in Western Australian State waters. It gives

effect to MARPOL 73/78 within the State and establishes offences, liabilities, and enforcement powers relating to discharges from ships and other sources.

- For the purposes of this OSCP, the Act provides the statutory authority under which the WA Department of Transport (DoT) may undertake response actions and pursue legal remedies for marine pollution within State waters. This creates an overlapping legal responsibility between DoT and VOGA for oil spill response where a spill from the Wandoo platform has the potential to enter State waters. VOGA and DoT have agreed to manage this shared responsibility through the response arrangements outlined in Section 2.3.2 of this OSCP.
- Where oil has entered, or is likely to enter, State waters, DoT will be notified as soon as practicable.

- *Emergency Management Act 2005* and regulations (WA):
  - Under the Emergency Management Act 2005, the WA Department of Transport is designated as the Hazard Management Agency (HMA) for Marine Oil Pollution in State waters, regardless of the source of the pollution. The Marine Emergency and Environmental Response (MEER) Unit within DoT undertakes prevention, preparedness, response, and recovery functions for marine oil pollution incidents and coordinates the State Response Team, which includes personnel trained in shoreline assessment, clean-up operations, and equipment deployment.
  - The Act establishes the framework for command, control, coordination, and recovery arrangements during significant emergency incidents affecting the community, including marine pollution events.
- *Biodiversity Conservation Act 2016 (WA)* and *Biodiversity Conservation Regulations 2018 (WA)*
  - This legislation provides for the conservation and protection of Western Australia's biodiversity, including flora, fauna, threatened species, threatened ecological communities, and important habitats. It also strengthens protections for marine fauna such as whales and dolphins. The Department of Biodiversity, Conservation and Attractions (DBCA) is the responsible agency for administering this Act.
  - For the purposes of this OSCP, the Act clearly establishes DBCA's legislative mandate and primacy in the management of oiled wildlife. During a spill response, VOGA will support this mandate by inviting DBCA to participate in Incident Control Team (ICT) activities and ensuring that appropriate and proportionate resources are made available to assist DBCA in fulfilling its statutory responsibilities.

2.3 Jurisdictional Authority and Control Agency Responsibilities

2.3.1 Jurisdictional Authority

The jurisdictional authority is the State, Territory or Commonwealth agency with jurisdictional authority for marine pollution in its area of jurisdiction. NOPSEMA is the jurisdictional authority for offshore oil and gas exploration and production activities in Commonwealth waters, while AMSA is the jurisdictional authority for vessel-based activities in Commonwealth waters.

The Department of Mines, Industry Regulation and Safety (DMIRS) is the jurisdictional authority for offshore oil and gas exploration and production activities in State waters, while the DTMI is the jurisdictional authority for vessel-based activities in State waters and is also the HMA for Marine Oil Pollution. In the event of marine pollution in State waters, the HMA (DTMI) is the designated jurisdictional authority, regardless of the source.

2.3.2 Control Agency

The National Plan describes the control agency as the agency or company assigned by legislation, administrative arrangements or within the relevant contingency plan, to control response activities to a maritime environmental emergency. The control agency will have responsibility for appointing the Incident Controller (VOGA uses the term 'Incident Commander').

VOGA is the Control Agency for oil spills wholly confined to Commonwealth waters from production facilities, meaning VOGA is responsible for assuming Incident Control and providing an Incident Controller (Commander). In the event that a spill has any potential to enter State waters; the WA DoT will be notified as soon as reasonably practicable. For spills arising from ships and vessels within Commonwealth waters, VOGA may undertake initial response actions and will hand over Incident Control to AMSA.

In accordance with State Hazard Plan – Maritime Environmental Emergencies (MEE), the Controlling Agency for a Level 1 MEE in State waters resulting from an offshore petroleum activity is VOGA. The Controlling Agency for a Level 2/3 MEE in State waters resulting from an offshore petroleum activity is DTMI.

Cross jurisdictional response activities are those activities that arise as a result of an incident originating in Commonwealth waters and requiring DTMI to exercise its HMA obligations in State waters. A partnership between VOGA and DTMI is required to ensure response activities across the entire incident are carried out.

Where State waters are impacted by a Level 2/3 MEE resulting from an offshore petroleum activity in Commonwealth waters, DTMI will only assume the role of Controlling Agency for that portion of the response activity that occurs within State waters.

Approval for the use of dispersant in State waters during an incident shall be pursuant to the Dispersant Use Consent Framework. Administered by DTMI, the process will include input from the Environmental Scientific Coordinator (ESC) and require written consent from the HMA/SMPC prior to any dispersant being applied to State waters (WA DoT 2024b).

WA DoT (2024b), Dispersant Consent Use Guidance Note, Version 1, 19.06.2024, available: https://www.transport.wa.gov.au/mediaFiles/marine/MAC_P_DispersantUseConsentFramework.pdf

Table 2-1: Control agency by location

Spill response/ impact location	Spill source	Control agency	Relevant OSCP
Commonwealth waters	VOGA facilities	VOGA	Wandoo Field OSCP
	Ships and vessels	VOGA/AMSA	Wandoo Field OSCP/ National Plan
State waters	VOGA facilities	VOGA	Wandoo Field OSCP
		DTMI	WA DTMI OSCP
	Vessels not connected to the facility	DTMI	WA DTMI OSCP

2.3.3 Cross Jurisdictional Arrangements

In all cross jurisdiction MOP emergencies beyond Level 1, DTMI will establish an IMT and VOGA will be required to provide an appropriate number of appropriately qualified personnel for the DTMI IMT. This is an initial 11 personnel in accordance with the DoT Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements (July 2020). Figure 2-1 and Figure 2-2 displays how the VOGA ICT Representatives will be integrated within the DTMI IMT and the cross jurisdictional arrangements across a Commonwealth and State waters event.

VOGA will conduct initial response actions in State waters as necessary in accordance with their OPEP and continue to manage those operations until incident control can be established by DTMI. Upon establishment of incident control by DTMI, VOGA will continue to provide planning and resources in accordance with the OPEP. This will include response assets and contracts specified in their OPEP, such as those pertaining to waste management, transport and personnel as well as response arrangements with the Australian Marine Oil Spill Centre (AMOSC) and other third party responders.

In fulfilling its obligations as Controlling Agency, DTMI will require VOGA to work in partnership with DTMI to ensure an adequate response is provided across the entire incident. DTMI and VOGA will determine the most appropriate response in State waters by working together on the IAP, protection priorities and net environmental benefit assessment of response activities.

VOGA utilises an Initial NEBA Spreadsheet Tool that provides information on sensitivities at risk, and feasibility and impact of response strategies based on the spill category and season. This and The Initial Incident Action Plan prepared by VOGA can be provided to DTMI at the time of initial notification of a spill potentially entering state waters.

To facilitate this overarching coordination between the two Controlling Agencies and their respective IMT's a Joint Strategic Coordination Committee (JSCC) will be established. The JSCC will be jointly chaired by the WA DTMI State Maritime Environmental Emergency Coordinator and a VOGA nominated senior representative, and comprise of individuals deemed necessary by the chairs to ensure an effective coordinated response across both jurisdictions. The control coordination arrangements for a Cross Jurisdiction MEE are outlined in Figures 2-1 and 2-2 below.

Figure 2-1: VOGA Integration into DTMI Incident Management Team

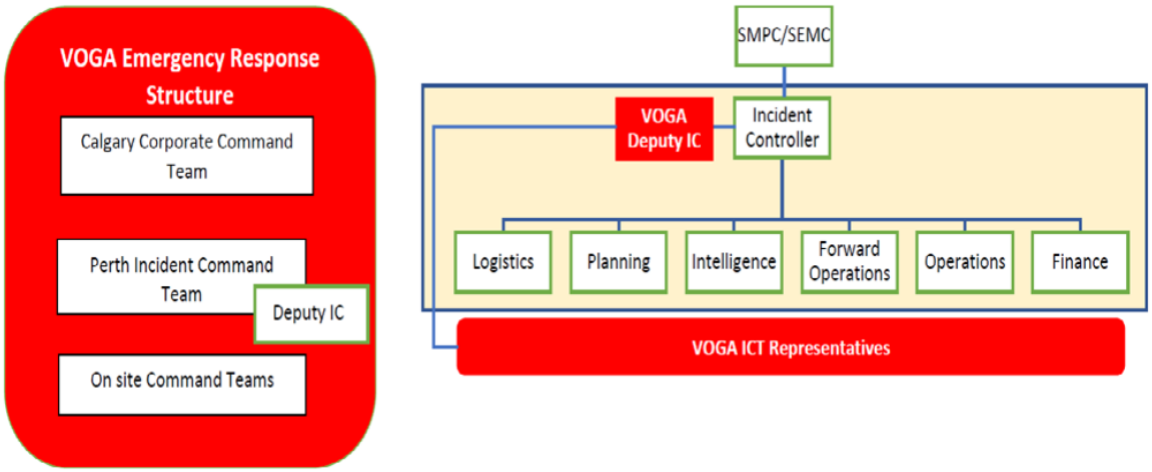
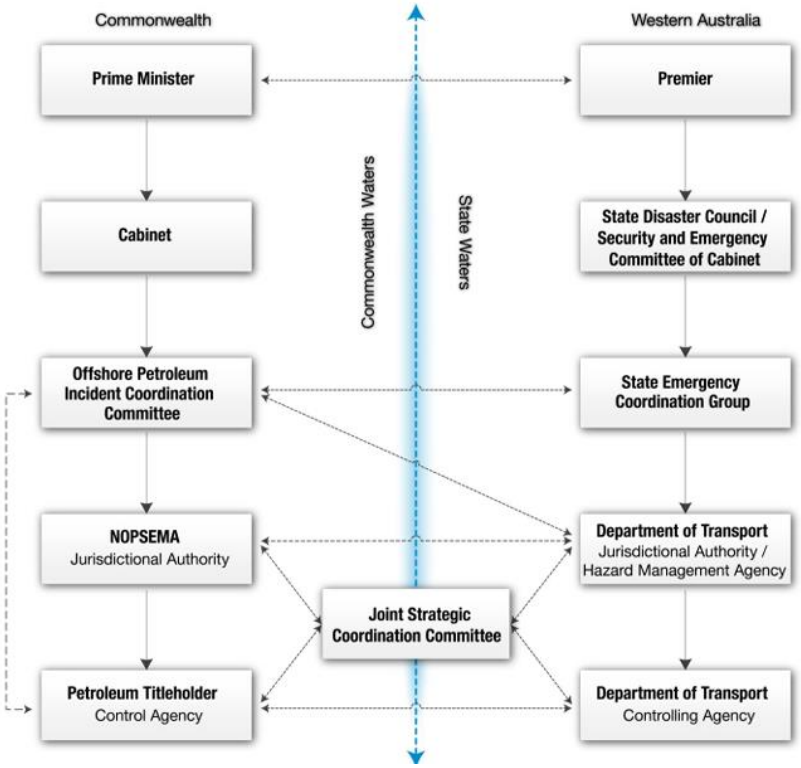


Figure 2-2: Coordination Arrangements for a Cross Jurisdiction MEE (DTMI Offshore Industry Guidance Notice)



2.4 Stakeholder Consultation for Planning

Stakeholder consultation during the preparation of previous revisions of this OSCP was primarily focused on:

- **Legislative roles:** Ensuring that parties with a legislative role in oil spill response agree with the processes and descriptions of activities described herein, and that these response processes and procedures are consistent with the range of Commonwealth and State legislation. In particular, consultation focused on the provision of equipment and resources that can be shared between governments and industry, the 'shared' obligation to respond to oil spills within WA State waters and obligations on the WA State Government and VOGA on wildlife response.
- **Third parties:** Ensuring that other parties with an interest or role in the implementation of the plan have an opportunity to comment and agree to the processes and procedures in the plan. This includes regional oil and gas operators whose operations could be affected; or whose resources may be called upon to assist VOGA implement OSR strategies; and other parties in the Karratha area who could also assist VOGA.
- **Development of call-out contracts for key service providers:** Ensuring that commercial providers for the individual services necessary to implement the spill response strategies had the capacity and capability to do so. A number of Scopes of Work were developed and negotiated with these parties, leading to standby contracts for critical service delivery. This gives assurance that these can be called in within the required response timeframes.

Additional consultation has been undertaken in the preparation of the Wandoo Field and Well Construction EPs and is presented as a summary of responses from key stakeholders and the actions by VOGA. A full copy of VOGA briefing packages, correspondence and full text of the stakeholder replies are held in the VOGA's Document Control System.

During a response to a spill incident, the functions of Stakeholder Liaison Officer and Public Information Officer are responsible for ensuring all relevant stakeholders are informed and involved where appropriate. Section 16 of the OPEP (Document 2) details stakeholder engagement during a response.

NOPSEMA and WA DTMI are key regulatory stakeholders that are kept informed of incidents via the notification processes identified in Part 4. WA DTMI in their role as HMA take on the role of ensuring notification and situation reports are provided to the State Marine Pollution Committee and relevant government agencies. In this way they act as a single point of contact.

3 Approach to Response Planning

3.1 Overview

VOGA's oil spill response planning process is based on impact and consequence scenario planning which involves establishing the context and risk; evaluating, demonstrating and defining response strategies and resources; implementation; and first response, as described in Table 3-1 and illustrated in Figure 3-1.

The process is divided into two phases: planning (described in Table 3-1) and spill response. The spill response is supported by the incident action planning process (Section 6); OPPs 1 and 2 are initial IAPs based on existing impact assessments for the spill and response activities within the relevant EPs.

3.2 The Planning Phase

As outlined in Table 3-1, preparing for spills involves the following steps to achieve the Wandoo Field OSCP outcomes (Section 1.1):

- Step 1: Understanding the hazard profile - Outcome 1 of the Wandoo Field OSCP
- Step 2: Identifying parameters to assess applicable response strategies and scale of the event - Outcome 2 of the Wandoo Field OSCP
- Step 3: Identifying suitable response strategies - Outcome 2 of the Wandoo Field OSCP
- Step 4: Understanding the impacts associated with response strategies - Outcome 2 and 3 of the Wandoo Field OSCP
- Step 5: Ensuring capability and plan supports management of risks to ALARP - Outcome 4 and 5 of the Wandoo Field OSCP
- Step 6: Define the environmental performance standards within the respective EPs.

The outcome of this approach is that:

- Oil spill hazards associated with VOGA's activities are addressed and risks are managed to ALARP
- Response strategies (Table 7-1) and resources are based on the nature and scale of the incident
- Oil Spill Trajectory Modelling (OSTM) outputs for both the loss of well control and loss of the concrete gravity structure were compared to ascertain a worst-case scenario by considering:
  - minimum time to impact defined environmental sensitivities
  - probability of shoreline impact to defined environmental sensitivities
  - maximum quantity of oil impact to defined environmental sensitivities
  - maximum length of oil impact to defined shoreline environmental sensitivities.

- Response resources defined for a loss of diesel from Shaft 2 of Wandoo B are considered to be adequate for covering a diesel spill from a vessel collision. The resources required to support each strategy, and the resource provider.
- Response strategies are risk assessed and management controls outlined in both the Well Construction and Wandoo Field EPs are considered in this OSCP.

Table 3-1: Description of steps in oil spill response assessment (planning process)

Response planning steps
Step 1: Oil spill hazard is identified and context for each spill category and season described. This requires understanding the potential events (scenarios) which requires knowledge of: • API type, composition of reservoir/fluids assay. • Reservoir modelling of oil type or another geotechnical analysis. • Release rate, quantity, duration. • Location of activity and potential spill sources. • Metocean data matching the location and timing of activity. • Location of environmental receptors and method of impact from oil. • Toxicity of oil. • Timing of spill (season). • Thresholds. • Environment that maybe affected (EMBA).
Step 2: Evaluate response parameters, is also about consideration of the hazard, as response preparation requires understanding the potential consequence including: • Probability of oiling defined environmental sensitivities. • Minimum time to impact defined environmental sensitivities. • Quantity of oil to impact defined environmental sensitivities. • Length of shoreline impacted. • Response operating area.
Step 3: Define response strategies for spill scenarios, involves designing the most appropriate response plan, such that the impacts, in the event of a spill, are reduced to ALARP. VOGA uses an assessment process for oil spill planning and response (Figure 3-1), and in doing so consider: • The oil spill hazard. • The context for each spill scenario and season. • Operational constraints. • Assess the impacts of the hazard and the response activities. • Assess whether impacts from the hazard and the response activities are ALARP, by considering all alternatives and their relative benefits and costs. • Where not determined to be ALARP, the response strategies are adjusted as part of an iterative process. • This iterative process considers capability and in doing so looks at the potential benefits and costs of doing more sooner.

Response planning steps
As a part of the planning the response, in **Step 4: Assess impacts of spill scenario,** VOGA also assesses the impacts of the spill response. This not only contributes to making choices about the response strategies, but also informs how the response should be undertaken to ensure that the risks and impacts of the response are managed to ALARP. This step involves: • Environmental risk and impact assessment. • OSTM of surface, entrained and subsurface oil with and without response strategies. • Identification of the controls (including environmental performance outcomes, standards and measurement criteria) to be implemented as a part of the spill.
To ensure that VOGA has a level of preparedness to implement the response strategy **Step 5: Define the response resources** is undertaken next. In this step, VOGA considers: • Operational limitations (equipment functional capacity/coverage, safety of response personnel). • Constraints of equipment effectiveness. • Scale of the spill event. • Skill-sets required for specific roles.
Step 6: Define the performance standards.

3.2.1 Response Thresholds

Response thresholds have been developed for response planning to determine the conditions that response strategies would be effective. These thresholds are provided as a guide for response planning based on case studies that have demonstrated some response strategies (e.g. chemical dispersant application) require certain oil spill thicknesses and conditions to be effective.

The thresholds assist with understanding response strategy capability requirements when used in conjunction with oil spill trajectory modelling results. Modelling informs the predicted spatial extent of the spill at certain response thresholds, which in turn can inform response strategy selection.

VOGA has applied recommended exposure values to response activities relating to floating and shoreline oil exposure as described in the NOPSEMA Information Paper number A1289237 Application of oil spill modelling in Environment Plans (2025) which are described in Table 3-2.

Table 3-2: Response planning thresholds

Hydrocarbon (g/m^2)	Description
≥1	Estimated minimum threshold for commencing some monitoring components (e.g. water quality monitoring) and MES tactics (e.g. aerial surveillance). At this concentration, hydrocarbons may appear as a silver to rainbow sheen under calm conditions (Bonn Agreement, 2004). At this concentration, available response control measures may have limited effectiveness, depending on the environment and hydrocarbon characteristics. Natural degradation may be the response option with the highest net environmental benefit. (NOPSEMA, 2025).
≥10	Estimated minimum threshold for commencing all triggered monitoring components. At this concentration, hydrocarbons may appear as a silver to rainbow sheen under calm conditions (Bonn Agreement, 2004).

Hydrocarbon (g/m^2)	Description
	This approximates the lower limit for harmful exposures to birds and marine mammals (NOPSEMA, 2025) so assists with planning for related scientific monitoring components.
≥50	Estimated minimum floating hydrocarbon threshold for on water response strategies. At this concentration, hydrocarbons transition from appearing as metallic sheen to continuous or discontinuous 'true oil' on the surface of the ocean (Bonn Agreement, 2004). It represents the concentration of floating oil at or above which there is in increased likelihood of consequences on ecological, social, economic and cultural features of the environment. (NOPSEMA, 2025). Surface chemical dispersants are most effective on hydrocarbons that are at a thickness of 50-100 g/m^2 on the sea surface. Testing of ffectiveness of various skimmers at different oil thickness have found that oil recovery rate of skimmers drops significantly when oil thickness is less than 50 g/m^2.
≥100	It represents a lower concentration for identifying ecological features of the environment that may be affected by shoreline oil, and for assessing the estimated minimum shoreline accumulation threshold for shoreline clean-up. This threshold is often used as the minimum thickness for effecrtive shoreline clean-up (Owens and Sergy, 2000). It represents the concentration of shoreline oil that is of priority for operational and scientific monitoring. (NOPSEMA, 2025).

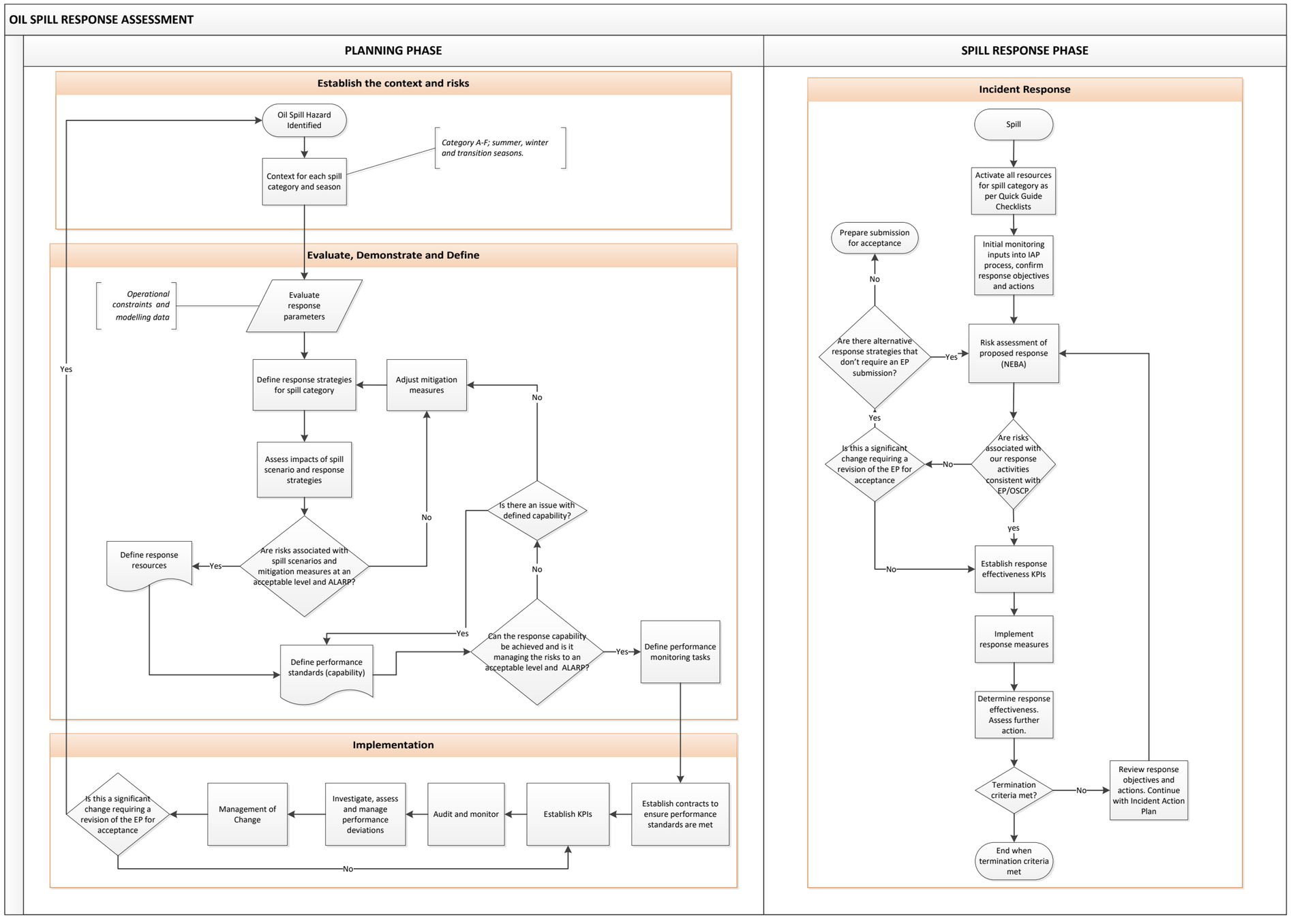
3.3 Spill Response Phase

Initial response actions are described in the OPPs. These actions are based on the strategies, resources and capability identified in the planning process. Resources are activated and the outputs from monitoring, evaluation and surveillance (MES) activities are used to conduct a net environmental benefit analysis (NEBA), to confirm that the risks associated with response activities are consistent within the EPs and the Wandoo Field OSCP. If they are, then response effectiveness Key Performance Indicators (KPIs) are developed and response measures implemented. The incident action planning process provides for the opportunity to determine if response operations are effective and if termination criteria are met.

The incident action planning process used by the ICT allows for the effectiveness of each strategy to be reviewed, adjusted or halted if the objectives of the response are not being met or the environmental impacts were not addressed in the NEBA thus fulfilling Outcome 3 of the OSCP. If the impact of a response strategy is significantly higher than what is considered in the EPs, then this means either impact of the strategy is unacceptable or an EP revision is required for acceptance. An example of where a revision to an EP may be required is where new technology such as that for in-situ burning or bioremediation becomes available to VOGA.

To support this approach and provide a timely response, OPPs detail initial IAP (OPEP; Part 5) enabling response resources to be activated whilst event specific assessments are conducted. Resources are identified and capability to achieve timeframes has been reviewed to ensure first response actions are able to be implemented.

Figure 3-1: Assessment process for oil spill planning and response



4 Establishing the Risk and Context

4.1 Oil Characterisation

4.1.1 Oil Types

Diesel and Wandoo Crude are the two hydrocarbons used in Wandoo production and construction activities. An SDS is available for both products in Appendix A.

4.1.2 Diesel Fuel Oil

MDO is categorised as a group II oil (light-persistent) according to the AMSA (2023) classifications. The classification is based on the specific gravity of hydrocarbons in combination with relevant Boiling Point (BP) ranges. It is important to note that some of the heavier components contained in the MDO (i.e. low volatile and persistent portions) will have a strong tendency to physically entrain into the upper water column in the presence of moderate winds (i.e. >12 knots) and breaking waves but can re-float to the surface if these energies abate. The low viscosity (14 cP) indicates that this oil will spread quickly when released and will form a thin to low thickness film on the sea surface, increasing the rate of evaporation.

Generally, about 4% of the MDO mass should evaporate within the first 12 hours (BP < 180°C); a further 32% should evaporate within the first 24 hours (180°C < BP < 265°C); and an additional 54% should evaporate over several days (265°C < BP < 380°C). Approximately 10% (by mass) of MDO will not evaporate, though will decay slowly over time (RPS, 2024).

Table 4-1 summarises the physical characteristics for MDO.

Table 4-1: Hydrocarbon characteristics for MDO (RPS, 2024)

Hydrocarbon characteristics		**MDO**	
Hydrocarbon type		Marine Diesel Oil (MDO)	
API		27.4	
Density (kg/m3)		890.0 (at 15°C)	
Dynamic viscosity (cP)		14.0 (at 25°C)	
Pour point (°C)		-9.0	
Hydrocarbon property category		Group II	
Hydrocarbon property classification		Light persistent	
Hydrocarbon component		Boiling point (°C)	% of total
Volatiles	Non- persistent	<180	4.0
Semi-volatiles		180–265	32.0
Low volatiles		265–380	54.0
Residual	Persistent	>380	10.0

Diesel is used by support vessels, plant and equipment associated with daily operations. Diesel is expected to undergo rapid evaporative loss and natural breakdown in the high energy environmental conditions experienced around the Permit Area.

4.1.3 Wandoo Crude

Wandoo Crude, having lost the majority of its lighter fractions due to microbial biodegradation in the reservoir, is a 19.8° API crude, and is similar to other medium crude produced on the North West Shelf (NWS). It has a low pour point, virtually no paraffin wax and low asphaltene content. Modelling undertaken by RPS (RPS, 2024) shows that for Wandoo Crude, approximately 1.7% (by mass) of volatile hydrocarbons will evaporate within the first 12 hours. A further 10.2% of the oil is characterised as semi-volatile hydrocarbon compounds and will evaporate within the first 24 hours while an additional 33.1% represent the low volatiles and will typically evaporate over several days. A relatively high proportion (55%) of hydrocarbon compounds are persistent and are unlikely to evaporate but will decay over time.

A summary of reservoir oil specification is contained in Table 4-2 and Table 4-3.

Table 4-2: Physical properties for Wandoo Crude

Properties	Wandoo Crude
Density (kg/m3)	0.937 (at 16°C)
API	19.4
Dynamic viscosity [centipoise (cP)]	161 (at 25°C)
Pour point (°C)	-24
Hydrocarbon property category	Group IV
Hydrocarbon property classification	Persistent

Table 4-3: Boiling point ranges for Wandoo Crude

Characteristic oil type	Volatiles (%)	Semi-volatiles (%)	Low volatiles (%)	Residual (%)
Boiling point (°C)	< 180	180-265	265-380	> 380
	Non persistent			Persistent
Wandoo Crude	1.7	10.2	33.1	55

Weathering data for the two extreme seasonal conditions are provided in Table 4-3. The results in indicated that over half of the crude spilled on the water is likely to evaporate after ten days of weathering in summer conditions, while ten days of winter weathering results in over a third of the oil evaporating.

Table 4-4: Summer and winter weathering trial results, ChemCentre (2015)

Dispersant	Summer Conditions Loss (w/w%)	Winter Conditions Loss (w/w%)
1 days weathered	19%	20%
2 days weathered	29%	23%
3 days weathered	36%	23%
4 days weathered	43%	28%
5 days weathered	48%	29%

Dispersant	Summer Conditions Loss (w/w%)	Winter Conditions Loss (w/w%)
10 days weathered	53%	34%
21 days weathered	55%	38%

Results of detailed testing of the efficacy of dispersants using a Mackay-Nadeau-Steelman apparatus indicate that Wando crude is amendable to being dispersed by five dispersants.

4.2 Credible Spill Scenarios

The spill scenarios and associated volumes identified for the Wandoo Facility activities are drawn from the risks identified and described in the Wandoo Facility EP [WPA-7000-YH-0007] and Well Construction EP [WPA-7000-YH-0001].

For the purposes of oil spill contingency planning, credible scenarios presented in Table 4-4 are based on oil spill hazards in the Wandoo Facility and Well Construction EP.

Table 4-5: Summary of credible spill scenarios

Spill type	Possible cause	Credible upper spill volume	VOGA ERP incident level	National Plan incident level
Diesel	Vessel collision	300 m^3	Level 1	1
Diesel	Loss of containment from Wandoo B Shaft 2	2,200 m^3	Level 2	2
Wandoo Crude	Loss of oil from export system	300 m^3	Level 2	2

4.2.1 Oil Spill Trajectory Modelling

4.2.1.1 Scope

The modelling was completed by RPS. Oil spill characteristics and trajectory modelling in the Wandoo Facility EP and the Well Construction EP provide a detailed summary of the oil spill scenarios modelled, and the stochastic modelling software and processes used.

The modelling indicates the following seasonal variations in predicted movement of an oil slick:

- **Summer conditions** – Prevailing westerly winds in the region and prevailing currents move the majority of oil slicks in an easterly direction towards the Australian mainland
- **Transitional and winter conditions** – Easterly onshore winds direct most oil slicks towards the west and northwest, causing more oil to make contact with the Montebello Islands and Barrow Island regions.

Key conclusions drawn from OSTM are used as the basis for planning response to each spill scenario.

Although OSTM has inherent limitations, this information has been used in the response planning phase and will be used in an actual incident to assist in the SIMA of response strategies as a basis from which to begin the IAP process.

Outputs of the OSTM are provided in both the Wandoo Facility and Well Construction EPs; a summary of key findings over all seasons is presented in Table 4-5.

The modelling reports prepared for this OPEP are:

- RPS (2025) GOC415415 Vermilion Wandoo Renewal Oil Spill Modelling Report Rev B
- RPS (2024) GOC367176 Vermilion Kullingal Oil Spill Modelling Report Rev 2.

For the scenarios outlined in Table 4-4, stochastic modelling was undertaken to:

- identify sensitivities at risk from an oil spill, including sensitivities within the zone of potential contact identified by the modelling
- determine the areas over where OSR strategies may be required or implemented.

Key conclusions drawn from the oil spill modelling study are used as the basis for planning response to the loss of Wandoo Crude from the export system and a diesel spill from the Wanndoo B Shaft 2 (RPS GOC415415 OSM Report). Modelling of a diesel spill from a vessel conducted in the Kullingal report GOC367176. Although OSTM has inherent limitations, this information has been used in the response planning phase and will be used in an actual incident to assist in the NEBA of response strategies as a basis from which to begin the IAP process.

OSTMs are useful for planning response strategies the thickness of floating oil influences the decision to use dispersant and containment and recovery response strategies. For both dispersant application and containment and recovery a thickness of 50- 100 g/m^2 is generally used as a guide for effectiveness. Table 4-7 summarises the maximum distance and direction from the Wandoo export system well location of three threshold levels. The thickest areas of floating Wandoo Crude are predicted to be within 25 km of the well location. This provides an indication as to where dispersant application should be prioritised.

Containment and recovery efforts become inefficient in thinly spread oil, the area closest to the well site and of thickest coverage will be prioritised for at sea containment and recovery. Note that dispersant and containment and recovery strategies are only considered feasible only for Wandoo Crude spills not diesel spills.

Wandoo Crude is predicted to impact shorelines across all seasons with a moderate to low probability and short timeframe (Table 4-8). Winter is the worst season for shoreline accumulation at and above the actionable cleanup threshold of 100 gm/^{2}. There is a 26% probability of impact with a maximum shoreline length of 19 km being impacted at 100 g/m^2 and a minimum timeframe of 3 days and 10 hours. The average volume of oil ashore for this season at 100 g/m^2 is 3.9 m^3 and the worst case single spill is estimated to be 50.2 m^3.

Table 4-6: Summary of key results for floating oil exposure and shoreline oil accumulation Wandoo EP Renewal OSM Report (GOC415415)

Scenario Description	Loss of containment from export system	Loss of containment from Wandoo B shaft	Vessel collision
Spill volume	300 m^3	2,200 m^3	300 m^3
Oil type	Wandoo Crude	Diesel	Diesel
Release depth	0 m (surface)	0 m (surface)	0 m (surface)
Release duration	35 days	6 hours	6 hours
Simulation length	56 days	30 days	30 days
Maximum distances from the release loctio to floating oil exposure thresholds	Floating oil concentrations ≥1 g/m^2 could extend up to 347 km from the release location. The maximum distances reduced to 56 km and 20 km as the threshold increases to ≥10 g/m^2 and ≥50 g/m^2, respectively.	Concentrations exceeding 1 g/m^2 could extend up to 166 km from the release location. The maximum distances reduced to 33 km and 24 km as the threshold increases to 10 g/m^2 and 50 g/m^2, respectively.	Floating oil concentrations ≥1 g/m^2 could extend up to 31 km from the release location. The maximum distances reduced to 18 km and 6 km as the threshold increases to ≥10 g/m^2 and ≥50 g/m^2 respectively.
Highest probablity of floating oil exposure to a receptor at or above 1 g/m^2	Montebello AMP, 5% during transitional conditions	Montebello AMP was the only receptor to be exposed at, or above, 1 g/m^2 during the summer and winter conditions at 1%.	NC.
Quickest time before exposure to a receptor at or above 1 g/m^2	Montebello AMP, 1 day 13 hours during winter conditions	2 days 3 hours, for the spill commencing during winter conditions.	NC.
Probability of oil accumulation on any shoreline at or above 10 g/m^2	66% during winter conditions.	34% during winter conditions.	24% during winter conditions.
Absolute minimum time for oil to accumulate on shoreline cells at or above 10 g/m^2	WA11.West (318) – Barrow Island and Montebello Islands (A), 2 days and 20 hrs during winter conditions.	3 days 22 hours, during winter	WA11.West (318) – Barrow Island and Montebello Islands (A), 91 hours during winter conditions.
Maximum volume of oil ashorefrom a single spill simulation at or above 10 g/m^2	62.8 m^3 during summer conditions.	15 m^3 during winter conditions.	23 m^3 during winter conditions.

Scenario Description	Loss of containment from export system	Loss of containment from Wandoo B shaft	Vessel collision
Highest probablity of oil accumulation for a specific shoreline cell at or above 10 g/m^2	WA11.West (326) - Baresand Point - Entrance Point E, 43% during winter conditions	WA11.West (318) – Barrow Island and Montebello Islands(A), 21% during winter conditions.	WA11.West (318) – Barrow Island and Montebello Islands(A), 15% during winter conditions.
Maximum volume of oil ashore from a single spill simulation for a specific shoreline cell at or above 10g/m^2	47 m^3, WA11.West (318) - Barrow Island and Montebello Islands (A), during winter conditions	15 m^3 WA11.West (318) – Barrow Island and Montebello Islands (A), during winter conditions.	23 m^3 WA11.West (318) – Barrow Island and Montebello Islands (A), during winter conditions.

Table 4-7: Comparison of OSTM results floating oil exposure for summer, transitional and winter seasons (Wandoo EP Renewal OSM Report (GOC415415))

Oil	Amount	Floating oil exposure threshold	Summer max distance (km) and direction from release location	Transitional max distance (km) and direction from release location	Winter max distance (km) and direction from release location
Marine Diesel Oil	2,200 m^3	1 g/m^2	50 km W	42 km W	166k m SW
		10 g/m^2	29 km W	33 km W	30 km S
		50 g/m^2	17 km NE	20 km E	24 km E
Wandoo Crude	300 m^3	1 g/m^2	82 km NE	133 km W	347 km SW
		10 g/m^2	35 km E	56 km NE	33 km NW
		50 g/m^2	16 km E	33 km NW	20 km NE

Table 4-8: Comparison OSTM results shoreline accumulation Wandoo Crude (Wandoo EP Renewal OSM Report (GOC415415))

Shoreline Statistics	Summer			Transitional			Winter		
	Shoreline accumulation thresholds			Shoreline accumulation thresholds			Shoreline accumulation thresholds		
	10 g/m^2	100 g/m^2	1,000 g/m^2	10 g/m^2	100 g/m^2	1,000 g/m^2	10 g/m^2	100 g/m^2	1,000 g/m^2
Probablity of contact to any shoreline (%)	27	13	NC	37	17	NC	66	26	NC
Absolute minimum time to shore (hours)	4 days, 19 hrs	5 days, 19 hrs	NC	4 days, 2 hrs	4 days, 14 hrs	NC	2 days, 20 hrs	3 days, 10 hrs	NC
Maximum accumulated volume (m^3) from a single spill simulation	55.9	37.2	NC	49.7	34.5	NC	62.8	50.2	NC
Average accumulated volume (m^3) across all spill simulations	3.9	1.5	NC	3.7	1.6	NC	7.9	3.9	NC
Maximum length of shoreline (km) from a single spill simulation	125	17	NC	57	14	NC	81	19	NC
Average length of shoreline (km) across all spill simulations	8.9	0.9	NC	8.3	0.9	NC	15.7	2.0	NC

Table 4-9: Comparison of OSTM results shoreline accumulation diesel (Wandoo EP Renewal OSM Report (GOC415415)

Shoreline Statistics	Summer			Transitional			Winter		
	Shoreline accumulation thresholds			Shoreline accumulation thresholds			Shoreline accumulation thresholds		
	10 g/m^2	100 g/m^2	1,000 g/m^2	10 g/m^2	100 g/m^2	1,000 g/m^2	10 g/m^2	100 g/m^2	1,000 g/m^2
Probablity of contact to any shoreline (%)	6	NC	NC	10	1	NC	34	9	NC
Absolute minimum time to shore (hours)	255	NC	NC	128	247	NC	94	118	NC
Maximum accumulated volume (m^3) from a single spill simulation	1.6	NC	NC	6.3	2.3	NC	15	12.9	NC
Average accumulated volume (m^3) across all spill simulations	<1	NC	NC	0.1	<1	NC	1.2	0.7	NC
Maximum length of shoreline (km) from a single spill simulation	7	NC	NC	17	2	NC	18	5	NC
Average length of shoreline (km) across all spill simulations	0.2	NC	NC	0.5	<0.1	NC	2	0.3	NC

4.3 Key Sensitivities

Environmental, sociological and economic sensitivities within the Permit Area WA-14L and the identified Envornment that May Be Affected (EMBA) have been assessed. Key sensitivities within the EMBA are detailed in the activity-specific EPs which describe key marine habitats, associated flora and fauna, social and economic values, and areas of environmental significance as outlined below.

The area of coastline that could be affected contains a wide range of environmentally significant sensitivities, including:

- **Key marine habitats** (corals, seagrasses, macro-algae, subtidal soft sediment, mangroves, intertidal beaches/mudflats)
- **Key marine fauna** (birds, marine mammals, marine reptiles, sharks)
- **Social and economic** (National Heritage and Shipwrecks, fisheries and aquaculture, Commercial shipping, Defence, Other Users, World Heritage Areas, Commonwealth Marine Protected Areas, State Marine Protected Areas).

Determination of environmental sensitivity requires both the identification of resources present and an assessment of the consequence to the resources should they be affected by oil. The 'Hazard Assessment' within the Wandoo Field and Well Construction EPs details the potential impact of hydrocarbon on key environmentally sensitive habitats and associated flora and fauna from various spill scenarios.

PART 2: Incident Management Process

5 Emergency and Crisis Management Response

5.1 Overview

Arrangements for managing emergencies are detailed in the VOGA ERP [VOG-2000-RD-0017]. For consistency and alignment with corporate practice, the management of oil spill emergencies described in this OSCP are based on the framework and arrangements in the ERP.

5.2 Response Structure

VOGA has an emergency management response structure that is based around three levels of organisational control: tactical, operational and strategic. The premise behind these levels of control is that those parties within VOGA with the greatest expertise to manage that aspect of the emergency are empowered to do so, with operational or strategic levels stood up to provide support in terms of planning, resources and the management of extraneous issues that while important, are managed at the lower levels of control.

There are three teams within the emergency management response structure including the:

1. Corporate Command Team (CCT).
2. ICT.
3. On-site ICT.

Figure 5-1 represents the VOGA emergency management response structure and depicts the three levels of the Calgary CCT, the Perth ICT, and the On-site ICT, including the links between teams.

The goal of the three teams within the VOGA emergency management response structure is to implement reasonable and proportionate OSR strategies until such time as the OSR may be terminated.

The teams will do this by implementing a six step incident response cycle as described in Section 6. Prudent over-caution is used by VOGA in responding to oil spills, i.e. CCTs and ICTs will be notified with a view to being stood up for oil spills, then stood down after size and scale have been assessed and verified.

5.3 Command and Control

VOGA's ICT runs an incident control system analogous to the Australasian Inter-Service Incident Management System (AIIMS) to which the National Plan is also aligned.

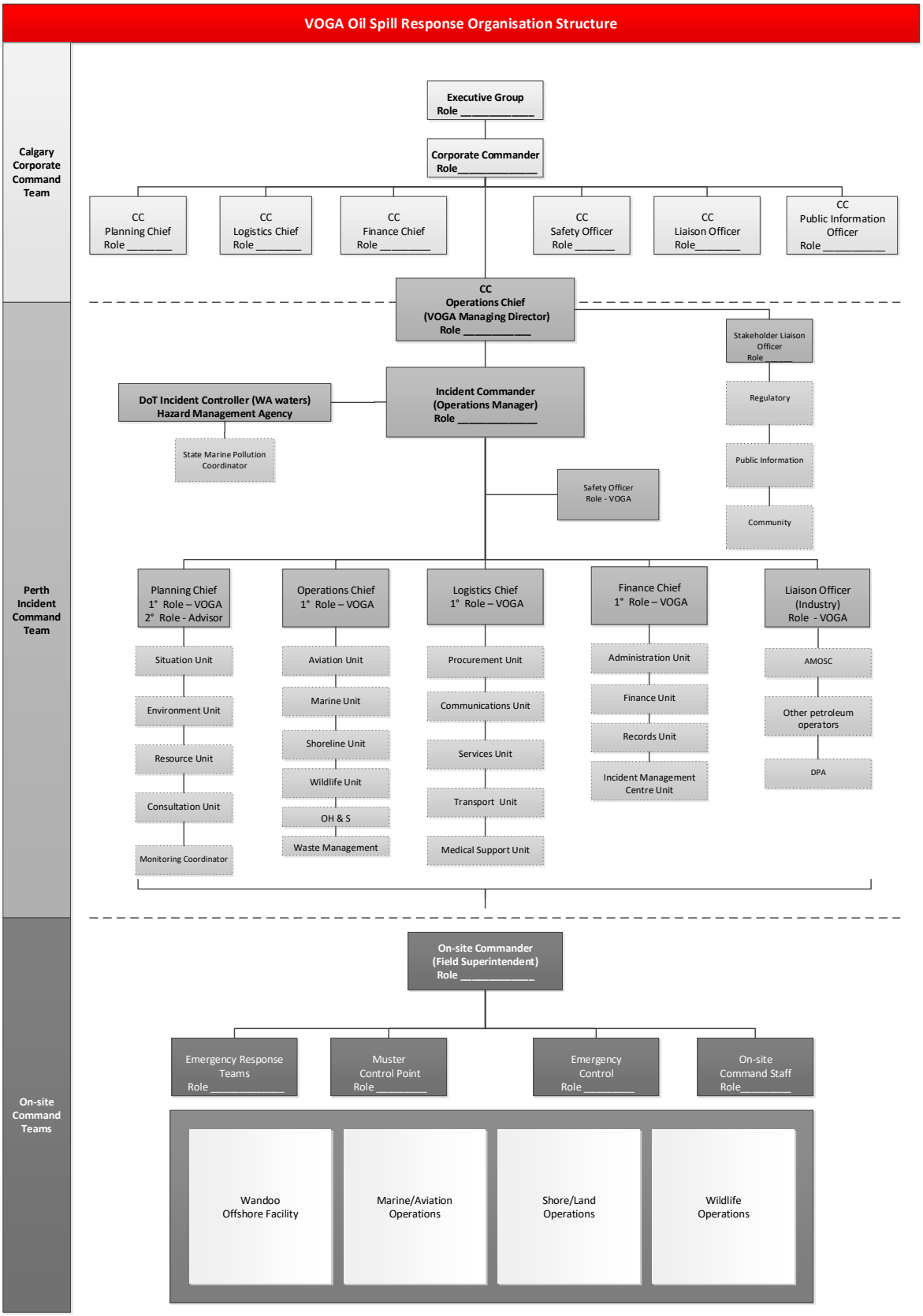
The chain of command for incident response is depicted within the VOGA emergency management response structure, as presented in Figure 5-1. Personnel appointed to these functions are selected from within VOGA or, for protracted incidents that run for weeks or months, using trained National Response Team members, AMOSC and the AMOSC Core Group, international OSR support organisations, and from within the international resources of VOGA. Where required the DoT Incident Controller has input into the team composition and structure.

Table 5-1: Key ICT functions for Oil Spill Response

Role	Functional responsibilities
VOGA Incident Commander/ICT Leader	First point of contact for Person in Charge (PIC) offshore. Assists PIC to manage the response, and calls out the ICT if required. Responsible for ensuring that an effective response is mounted by the On-site Command Team, and the onshore ICT. Approve IAP and where required engage State Marine Pollution Coordinator/ DTMI Incident controller for agreement/endorsement of plan for activities within, or potentially impact, WA waters.
DTMI Incident Controller (Hazard Management Agency) and State Marine Pollution Coordinator	DTMI Incident Controller (Hazard Management Agency) is the State appointed incident controller for oil spill response activities within, or potentially impact, WA waters. The State Marine Pollution Coordinator provides overall strategic management of the response and executive level support and guidance to the DTMI Incident Controller.
Planning Chief • Situation • Resources • Environment	Supervises the VOGA ICT and leads the IAP process. Records and displays data for information, planning and programming, allocation and justification. Documents and maintain records of all Wandoo Offshore Installation and VOGA ICT actions. Manages critical information requirements.
	Interfaces with State Marine Pollution Coordinator or State Environmental and Scientific Coordinator (ESC) for input into IAP for activities impacting state waters.
	The collection, processing and organisation of MES information, e.g. OSTM, weather, sea state.
	Tracking of the deployment of resources.
	Responsible for the collection and collation of environment data/advice.
Logistics Chief • Procurement • Services • Transport • Communications • Medical	Develops logistics plan to support operations and provides overall resource support to emergency incident sites. Establishes and maintains lists of personnel, supplies and materials which might be required to support the emergency/disaster. Responsible for establishing any Simultaneous Operations (SIMOPS) Plan to manage the risk generated by multiple activities.
	Acquisition of personnel and equipment.
	Acquisition of services and facilities, including waste management resources.
	Provision of air, land and sea transport services.
	Communications Sub-Plan and for ensuring the provision of communications services/support.
	Provision of medical services where needed.
Operations Chief • Marine • Aviation • Shoreline • Wildlife • Occupational Health & Safety (OH&S)	Assumes responsibility for executing approved Action Plans. Responsible for all tactical command and coordination of in-country incident response assets in the assistance and support of the On-site Commander. Ensures that operational objectives and assignments identified in Action Plans are carried out effectively. Monitors operations; ensures necessary operational support is provided when and where required; allocates resources.
	Coordination and direction of all activities undertaken by waterborne craft and equipment.
	Coordination and direction of all activities undertaken utilising aircraft, e.g. aerial dispersant spraying, aerial surveillance and transport.

Role	Functional responsibilities
• Waste management	Planning and coordination of shoreline assessment and clean-up activities (in consultation with the DoT, planning, specifically the environmental specialists). Implementation of shoreline clean-up activities.
	Implementation of the WA Oiled Wildlife Plan, i.e. the collection, treatment and rehabilitation of oiled wildlife in consultation with DBCA via the ESC.
	Development and implementation of the OH&S Plan.
	Coordination of the containment, storage, transport and disposal of recovered oil and oily waste. Also instruction in on-site handling, storage and/or separation and treatment.
Finance Chief	Provides monetary, insurance, legal, risk and human resources, related administrative functions to support emergency operations and to preserve vital records documenting work performed and associated costs in the event of disaster or major emergency.
Safety Officer	Assesses unsafe situations and develops measures for assuring personnel safety. Confirms safety regulatory authorities and applicable departments have been notified. Ensures implementation of safety measures and monitoring and recording of personnel exposures to hazardous products. Supports accident investigations, recommends corrective action, and prepares accident report.
Corporate Command Team (CCT)	Focus of the CCT is on ensuring ICT are responding in accordance with corporate requirements, liability/insurance, business continuity, media/investor relations, and financial management/support of response.
Corporate Command Operations Chief	Provides the interface between the ICT and CCT. Provides updates to the CCT regarding IAPs and communicates any needs for support if required. Responsible for ensuring VOGA's corporate objectives are communicated to the ICT and are also reflected in the IAP.
Stakeholder Liaison Officer	Responsible for managing regulatory engagement and coordinating any regulatory approvals required to implement response strategies. Coordinates engagement of stakeholders who are impacted from the spill or response activities. Coordinates investigation of reportable events. Acts as the functional interface between these various parties. Implements VOGA Communications Plan, providing media information support and serving as the dissemination point for all VOGA media releases.
Liaison Officer (Industry)	Identifies the assisting and cooperating companies and agencies, including communications link and location; provides list to the CCT. Functions as "point of contact" for assisting and cooperating agency representatives. Responsible for ensuring that parties who have agreed to undertake specific functions under this OSCP are undertaking the functions consistent with the OSR strategies, performance standards and objectives of the VOGA Wandoo Field OSCP.

Figure 5-1: VOGA Crisis and Emergency Management Structure



5.4 Response Facilities

VOGA's ICT utilise VOGA's Perth office as the primary Incident Command Centre (ICC) for OSR monitoring or incident management activities.

This facility contains information communication technology infrastructure to communicate effectively with the range of parties required in a significant response, private and nearby break out areas, along with sufficient access controls and logistical support for the ICT to operate over a number of weeks or months. In the event a unified command ICT is established with the DTMI, a co-located ICC will be established at mutually agreed location.

VOGA also has access to an alternate ICC should a business continuity event, civil unrest, security or capacity issue impede VOGA's capability to fully exercise incident control from the primary facility.

For spills requiring significant field logistical support, a forward operating command area will be located as close as possible to the spill site, and depending on spill size, a forward operating post may be established. The most likely location will be at the TOLL supply base near the Port of Dampier.

An airbase (with manager) will be established at the airport by AMOSC to manage the aerial operations, specifically application of dispersant. Aircraft deployed for aerial surveillance will be managed by the contract holder.

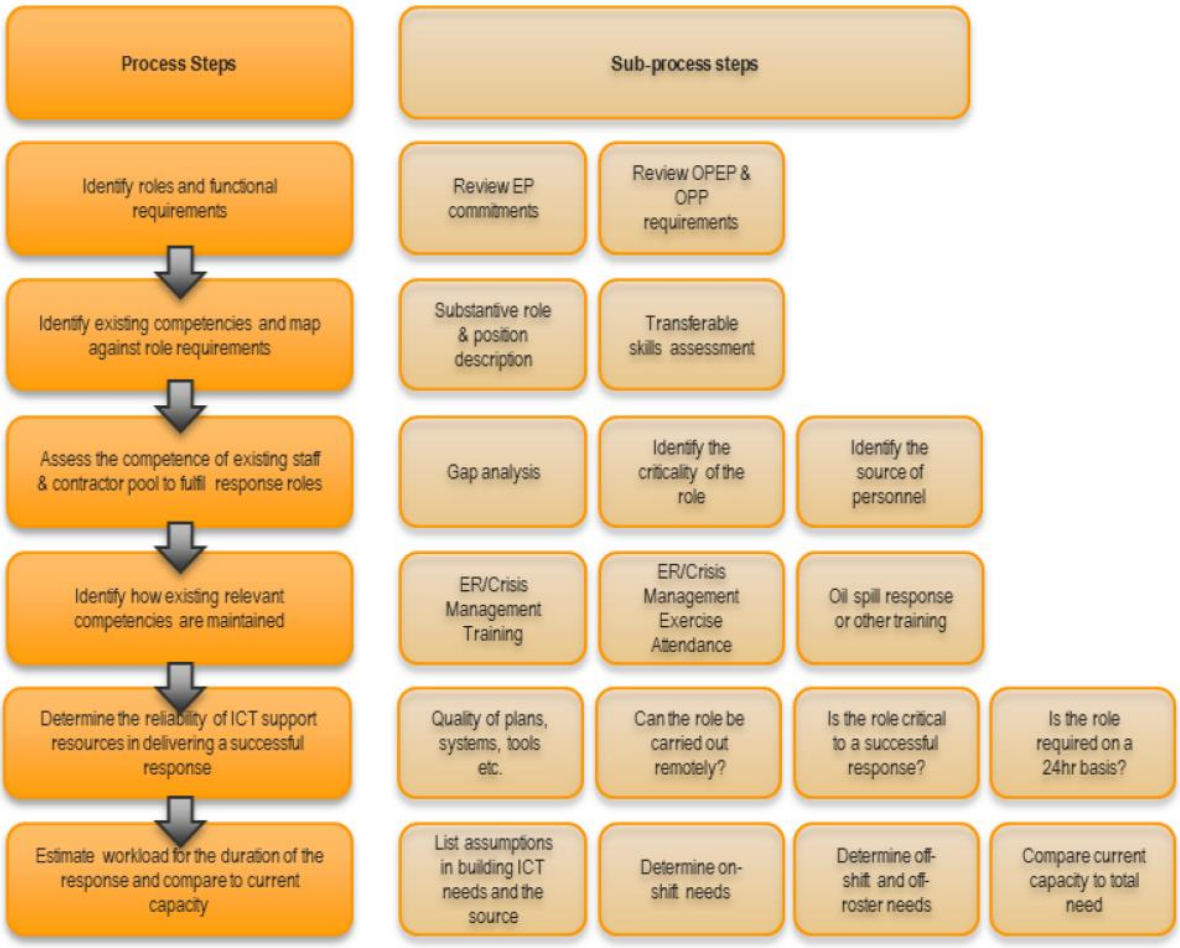
5.5 ICT Response Resources

Vermilion engaged a third-party expert to research and provide an appropriate method that could be used for VOGA to determine the level of ICT personnel required to undertake an effective response to VOGA's identified oil spill events. In Australia, the National Plan relies on fewer numbers of highly competent and broadly qualified individuals who can operate in a cooperative national system for its response operations. Based on this research, VOGA has decided that, to be consistent with the National system for oil spill response in Australia, a methodology based primarily on ensuring competent personnel are positioned in the critical roles is the most appropriate for its activities.

Whilst a secondary consideration, it is also important that we have a method of determining the quantity of personnel required for our largest incident and that we have the arrangements in place to meet this need, catering for rosters in longer responses, potential 24 hour ICT operations, personnel absences, and contingency capability.

The method in Figure 5-2 has been developed for VOGA to assess, and periodically review its ICT capability both in terms of competence and quantity. The method can also be used by the ICT in a response to validate plans and/or build new plans depending on the specific spill circumstances. It has been designed to determine an ICT capability for the largest demand of each response strategy collectively.

Figure 5-2: Process for determining the competence and quantity of ICT personnel

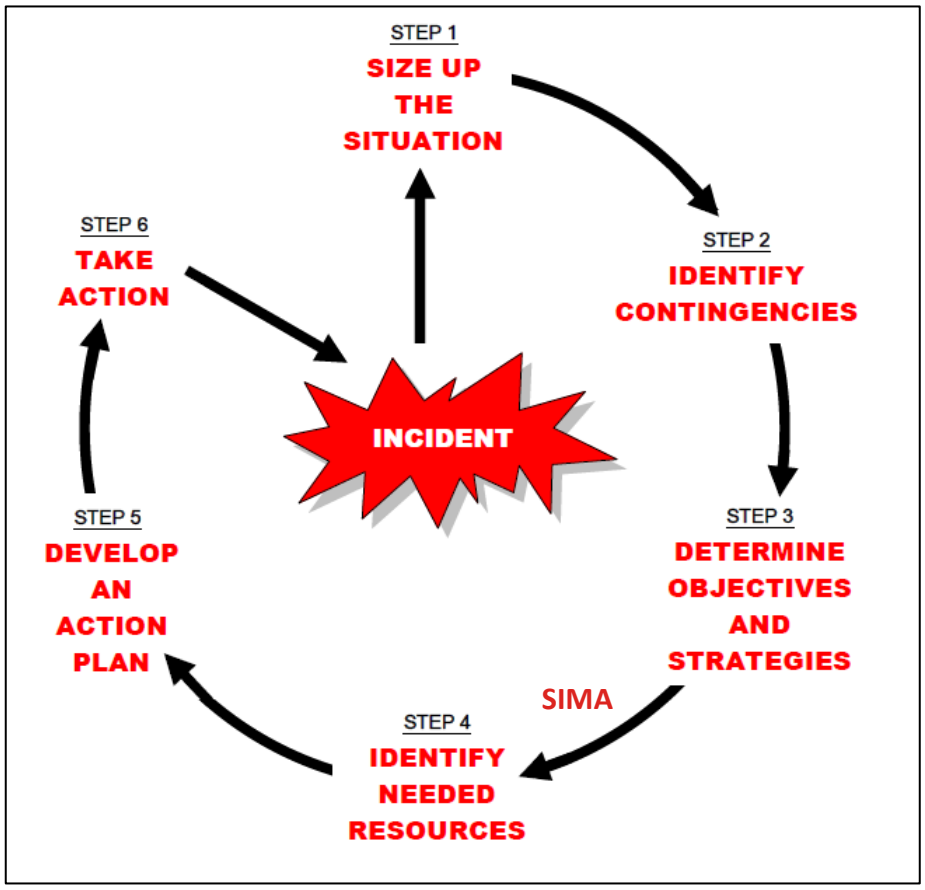


6 Incident Response Cycle

6.1 Overview

The successful management of an incident relies on the completion of a number of coordinated activities. The VOGA Emergency Response framework for incident management is based on conducting operations within a six step incident response cycle (Figure 6-1). Initial objectives (tasks to be done), IAP and priorities will be determined through the incident response cycle.

Figure 6-1: VOGA ERP six step incident response cycle



6.2 Size-up the Situation

The first step of the process is about gathering intelligence and gaining an appreciation of the situation. Using this information, outcomes are predicted and plans put in place to respond to the event. Information collected during this stage includes:

- Up-to-date situational awareness, some of which is collected through the tasks associated with monitoring and evaluation and includes:
  - the oil type, volume, location

- where it is going (modelling and weather conditions)
- when will it get there (modelling and weather conditions)
- what environmental sensitivities are at risk (priorities for protection)
- what is happening to it (weathering etc.)
- what is the worst-case credible scenario

- The adjustments required to the current incident objectives and/or response strategies
- NEBA for proposed response strategies.

6.3 Identify Contingencies

Predictions of what the situation will be at stages during the incident, and at the final stage, will influence the activities of Operations and Logistics. It is critical that the Planning Chief can explain the basis of the predictions, the probabilities of the outcomes, and the consequences of events unfolding in a different manner.

The Logistics Chief must interpret the predictions and determine the likely future demands on the Logistics Team. This will take place in the ICT meetings, but details are likely to be resolved only through interaction between individuals in the Planning and Logistics teams.

The Incident Commander will use predictions to set priorities, perhaps between competing operational areas, and will advise senior personnel on appropriate control actions.

6.4 Determine Objectives and Strategies

Objectives are statements of the desired outcome or goal for the incident. VOGA's objectives for initial spill response activities as described in the two OPPs are to:

- Ascertain extent of spill
- Prevent impact to sensitive resources.

A strategy defines what is going to be done – a broad plan, developed in support of the incident objectives, that is used to combat the incident. Strategies follow on from the objectives and are achieved through successful implementation of tactical plans. For ongoing incidents, strategies are regularly reviewed and new ones developed when necessary, particularly if the control objective is amended.

Strategies for spill scenarios in this OSCP have been identified and risk assessed according to net environmental benefit; and prepared for in terms of resources required to implement the strategy. The potential effectiveness and impacts of response options are compared, enabling a qualitative determination of the most appropriate response strategy. This process should guide the decision on which strategy is most appropriate to the particular spill each time the plan is reviewed.

6.5 Net Environmental Benefit Analysis (NEBA)

Net Environmental Benefit Analysis (NEBA) is a tool that has been developed to help facilitate the selection of the most appropriate response options to effectively combat an oil spill. VOGA has adopted the use of this tool in a strategic sense in this OSCP to select response options and will use the tool in an operational sense in the response planning cycle during by the Planning Chief or Environment Unit Team Leader within the Planning Team.

NEBA takes into account the advantages, limitations and added risks associated with individual OSR techniques and strategies and can be used to include a broader perspective than environmental considerations by incorporating ecological, socio-economic and cultural aspects so that it aligns with the process known as Spill Impact Mitigation Assessment (SIMA) which is utilised by the WA DTMI.

It is a process that provides a means to balancing the tradeoffs and selecting the best response option(s) by working through these four stages:

- Compile and evaluate the data for relevant oil spill scenarios including fate and trajectory modelling, identification of resources at risk and determination of feasible response options.
- Predict outcomes/impacts for the 'no intervention' (or natural attenuation) option as well as the effectiveness (i.e. relative mitigation potential) of the feasibile response options for each scenario.
- Balance trade offs by weighing and comparing the range of benefits and drawbacks associated with each feasible response option, including no intervention, for each scenario.
- Select the best response option(s) to form the strategy for each scenario based on the combination of techniques that will minimise the overall ecological, socio-economic and cultural impacts and promote rapid recovery.

Information requirements for the NEBA process include:

- A copy of the OPP for the spill scenario, see OPEP Sections 11 and 12
- Current situation report (SITREP form) that includes details about the spill, weather, currents and tides, action taken to date, forecast situation
- OSTM outputs from the OSCP; and/or forecast OSTM outputs utilising real-time spill and metocean conditions
- Preferred response options from Section 7 of the Planning Document
- Priority protection areas/resources identified in the OPP
- Sensitive receptors at risk from oiling
- Outputs from monitoring, evaluation and surveillance (MES) operations (e.g. aerial surveillance).

Once oil type, quantity, real-time weather information, and a trajectory pathway are known, the sensitivities within the EMBA need to be identified. The Planning Chief will review the protection

priority ranking that has been provided in the OPPs and consider outputs from OSTM analysis, including:

- The probability of impact – will the response strategy reduce the probability of impact of to the sensitive receptor?
- Minimum time to impact (days) – will the response strategy increase the number of days before impact to the sensitive receptor?
- Severity of impact (quantity of oil) – will the response strategy reduce the average and/or total amount of oil to impact the sensitive receptor?
- Impacts associated with the proposed response strategy – will the response operation have more of a negative impact than untreated oil?
- What controls will be put in place to mitigate impacts associated with the proposed response strategy?
- The recovery time of the receptor after exposure to hydrocarbons – is recovery time likely to be short or long term?

A decision must be made as to which sensitive receptors have the highest protection and/or clean-up priority and which response strategy/strategies will minimise the overall ecological, socio-economic and cultural impacts and promote rapid recovery. The VOGA NEBA guide Appendix B provides guidance as to the prioritisation of receptors. If there are conflicting outcomes for a particular response option then the receptor with the higher priority becomes the preferred response option.

In the initial phase of a spill VOGA has prepared an assessment tool to complement OPP1 and OPP2 and assist in identifying sensitive receptors, assessing environmental benefits and impact of response strategies in line with the EP.

VOGA's spill response planning process (Figure 3-1) then requires that the response strategy decision needs to be reviewed to ensure that the risks and impacts associated with the response options are consistent with those identified in the EPs. If the risks and impacts are not consistent with those identified in the EPs then the following will occur (as per Figure 3-1):

- Response strategy controls are identified and assessed
- An alternative response strategy is assessed, or
- An application for approval to implement the response strategy will be made.

During the final stages of an oil spill response, clean-up activities will take into account five broad questions as suggested in IPIECA (2015):

- Is the remaining oil a potential source of harm to environmentally sensitive receptors?
- Would further cleaning do more harm than good?
- Does the oil interfere with the aesthetic appeal or recreational use of the shoreline?
- Does the residual level of contamination adversely affect economic resources or disrupt economic activities?
- Does the effort involved in further cleaning outweigh environmental or economic benefits that could be achieved?

The NEBA will be completed on the following timeline:

- Within 24 hours of the spill as part of the OPP
- Every 24 hours as part of the IAP cycle
- As required if the situation changes beyond what is planned for and response strategies require evaluation
- Until termination criteria are met for response strategies and ultimately the incident.

6.6 Identify Needed Resources

Resources required to implement response strategies have been identified in OPP1, OPP2 and the Logistics Management Plan [VOG-7000-RH-0008]. Contracts have been established to support the activation/deployment of these resources within the timeframes identified. The Logistics Chief maintains a record of contracts in place to provide spill response resources and will activate these as required. The contracts agreement and rates that provide minimum resources are reviewed annually to ensure currency.

Current resource allocations and availability is provided through liaison with the Logistics Chief and includes information such as:

- service providers currently engaged by VOGA being redirected to oil spill response activities
- activation of specific oil spill response/emergency response contracts
- identification of resources of opportunity.

The ability to meet the resource demand during a spill has been assessed in the Oil Spill Response Capability Review [VOG-7000-RH-0009].

6.7 Develop an IAP

A tactical plan describes how a job will be done – the deployment of resources at an incident to execute all or part of a strategy. Tactics are implemented by team leaders who are responsible for the deployment of resources at an incident or in an incident division or sector. Tactics specify jobs that must be completed within stated parameters (time, size, equipment to be used, standards etc.) in order for the strategy to be carried through.

Tactical plans will include the controls that should be used to ensure the impacts associated with response activities are reduced to ALARP.

Once tactics are in place, the actual work can be allocated to those who will perform it. This is called ‘tasking’. Tasks are the smallest components of the IAP and are generated by team leaders for specific jobs that are required. The achievement of any objective is through the completion of many individual tasks.

6.7.1 Briefings

Briefings are used to communicate the IAP to responders and ICT support personnel. A briefing (verbal and written) should take the form of Situation, Mission, Execution, Administration and Logistics, Command, Control and Communication, and Safety (SMEACS):

- **S**ituation – what has happened, response effort so far
- **M**ission – the overall aim of the response
- **E**xecution – who, how and what will be done in the response
- **A**dministration and logistics – arrangements to support the ICT and responders
- **C**ommand, Control and Communication – who to report to, who has responsibility for the incident, and how responders and the ICT communicate
- **S**afety – hazards and controls.

6.8 Take Action

The operational phase involves implementing the strategies and executing the tasks identified in the IAP. Throughout this phase, situational awareness should be regularly updated and include a briefing of the IAP.

The Planning Chief goes through a cycle of preparing for meetings, conducting meetings, preparation and modification of the IAP, and addressing issues emanating from the meetings. Information provided to the Logistics Team is to support that team in their work and the development of their components of the IAP.

This cycle may repeat a number of times during the shift. Towards the end of the shift, however, the process changes in that the focus of the IAP becomes one for the incoming shift rather than for the existing incident staff. The planning cycle repeats with extra components such as briefings and handovers. At the end of the shift the incoming Planning Chief repeats the process.

To assist in the maintenance of situational awareness, the Operations Chief should also be collating information from the response teams to allow the assessment of the effectiveness of the response strategies. This feedback assists in determining effectiveness of response strategies.

Logistics ensures the implementation of response strategies by operations can be achieved through the provision of personnel and equipment.

6.9 Review Phase

Incident parameters evolve and as such, action plans must be revised on a regular basis (at least once per operational period) to maintain consistent, up-to-date guidance across the system. The purpose of the review phase is to ensure that:

- Incident objectives are reviewed to address change in circumstances
- Response strategies are achieving the incident objective
- Performance measures identified are being met

- Resources are effectively allocated.

The review phase involves assessing the effectiveness of the strategies identified in the IAP to assess whether there are any improvements required to the incident strategies. This is done by:

- Considering the information provided via feedback from the Operations Team on the situational awareness
- Reviewing the environmental priorities
- Assessing whether the incident objectives are being met, and if changes are required to address potential changes in the above items.

The Planning Team must also be able to analyse the performance of the response effort as a whole. This should be done during the incident to ensure that the objectives, strategies, tactics are working, and to find out the causes where they are not. To achieve this, each response strategy must have a section on measuring effectiveness.

Particular effort should be made to debrief personnel as they come off shift. Mechanisms to capture information from the field must be put in place prior to the shift change, and personnel made aware of the expectation put on them. Debriefs should not be overly formal and should not delay for avoidably long periods those going off duty to rest.

Information gathered at debriefs is recorded and distributed to those who may be affected by it. The Planning Chief is responsible for coordinating this work and providing the assessment and proposed changes to the Incident Commander.

6.10 Adjust Phase

The adjustment phase involves determining the new or revised incident objectives and strategies for the next IAP and assessing if progress towards termination criteria is being made. The Incident Commander's decision making is based on understanding:

- Situational awareness and the potential worst-case credible scenario
- The available response strategies, their benefits and operating limitations
- The environmental priorities utilising
- NEBA to guide the decision-making process (as advised by the Planning Chief in the ICT).

There will be occasions where the resources available to the Incident Commander and the ICT as a whole are not sufficient to carry out all preferred response options. It is the responsibility of the Incident Commander to make the decision about which strategies and tactics receive the resources; they need to prioritise the response to ensure the maximum benefit of the response effort. Managing competing demands for resources and also protection priorities is a key part of the role of Incident Commander, and to do this effectively they require a high level of situational awareness which is obtained from the activities within the Planning Team. The Liaison Officer (Regulatory) needs to be engaged on the proposed changes to ensure the appropriate regulatory approvals are obtained as necessary prior to implementation.

7 Response Strategies

7.1 Overview

Response strategies which may be appropriate for each spill category have been identified using the systematic approach to planning and the anticipated net environmental benefit of each. These response options are described in Sections 7.2 to 7.8 and are summarised in Table 7-1. An outcome of this process is the creation of OPPs to assist the ICT and on-site responders in the initial response to an oil spill as a precursor to a formal IAP.

The ongoing response in an incident (IAP) will use the latest available spill information and the following to decide on the most appropriate ongoing response strategies:

- Potential impact of spill and the response strategy
- Operational constraints of the day – primarily safety, sea state and weather, but can also include logistical factors
- First response activities undertaken to combat the incident such as those undertaken in the OPPs (Part 5).

It is important to note that the description of these strategies and application to each scenario does not mean that they will definitely be implemented during a response. They are not certain to occur except for monitoring and evaluation, which applies to all spill incidents.

Table 7-1 Summary of likely response options and environmental impact considerations for each spill category

Response consideration	Marine Diesel – Vessel Collision	Marine Diesel – Wandoo B Shaft 2	Wandoo Crude - Export System
Upper credible scenario	Instantaneious surface release over 6 hours of 300 m^3	Instantaneous surface release over 12 hours of 2,200 m^3	instantaneous surface release over 1 hour of 300 m^3
Predicted outcomes based on Vermilion Wandoo EP Renewal OSM Report (2025) GOC415415 RevB	Floating oil concentrations ≥1 g/m^2 could extend up to 31 km from the release location. The maximum distances reduced to 18 km and 6 km as the threshold increases to ≥10 g/m^2 and ≥50 g/m^2 respectively.	Is expected to evaporate rapidly with a moderate probability of shoreline impact at or above 10g/m^2, of 34% during winter. The earliest shoreline impact is at 3 days and 22 hours and the greatest volume ashore is predicted to be 15 m^3.	Modelling suggests 66% contact to shorelines in Winter at 10g/m^2 threshold 27% in Summer and 37% in Transitional season. The earliest shoreline impact is at 2 days, 20 hours and greatest volume ashore is predicted to be 62.8m^3.
Source Control			
Identified as suitable?	Yes	No	No
NEBA considerations	Source control activities include, shutting off pumps and transferring fuel to another fuel tank. Could be effective in minimising the amount of hydrocarbons lost to the environment and would reduce the area of potential exposure.	There are no meaningful source control options for this scenario that could be applied within the 12 hr release period.	There are no meaningful source control options for this scenario that could be applied within the 1 hr release period.
Monitoring, evaluation and surveillance (MES)			
Identified as suitable?	Yes		Yes
NEBA considerations	All spills will have monitoring, evaluation and surviellance tasks activated. Monitoring and surveillance tasks are used to evaluate the natural degradation and dispersion of the released hydrocarbon, and to identify and report on any potential impacts to flora and fauna that may occur while the spill disperses. This strategy has several tactics (e.g. tracking buoys, aerial surveillance, satellite surveillance) and is scalable according to the nature and scale of a spill.		All spills will have monitoring, evaluation and surveillance tasks activated. Monitoring and surveillance tasks are used to evaluate the natural degradation and dispersion of the released hydrocarbon, and to identify and report on any potential impacts to flora and fauna that may occur while the spill disperses. This strategy has several tactics (e.g. tracking

Response consideration	Marine Diesel – Vessel Collision	Marine Diesel – Wandoo B Shaft 2	Wandoo Crude - Export System
	There are clear benefits in maintaining situational awareness throughout the duration of a spill event and little or no environmental impact associated with its implementation. MES is used to assist in escalating or de-escalating response strategies as required. These tactics and actions are separate to the Operational Monitoring plans described in the OSM-BIP.		buoys, aerial surveillance, satellite surveillance) and is scalable according to the nature and scale of a spill. There are clear benefits in maintaining situational awareness throughout the duration of a spill event and little or no environmental impact associated with its implementation. MES is used to assist in escalating or de-escalating response strategies as required. These tactics and actions are separate to the Operational Monitoring plans described in the OSM-BIP.
Chemical dispersion			
Idenfied as suitable?	No		Yes
NEBA considerations	Marine diesel is not a persistent hydrocarbon; it has a high natural dispersion and evaporation rate due to the high percentage of volatile components within the oil. A small increase in sea state (wave and wind action) can assist natural biodegradation through entraining diesel in the water column. Shoreline impact is not anticipated.		Dispersants will be assessed as a response option to increase the rate of biodegradation and minimise and the impacts of oil on the environmental sensitivities in the EMBA. Dispersant use could potentially result in an increase in environmental benefit for mangroves, mudflats, marshland, sandy beaches and rocky shores; as well as turtle nesting sites, migratory birds, seabirds and shorebirds. A dispersant test spray run will be undertaken prior to moving to full dispersant application operations to verify its effectiveness. OSTM outputs suggest that floating oil exposure at or greater than 50g/m^2 of Wandoo crude will spread approximately 33kmNW from the facility. Dispersant efficacy trials have been conducted on fresh and weathered Wandoo crude oil. These trials demonstrate high levels of efficacy resulting in dispersion rates over 80% for fresh and weathered oil. Dispersant response planning in this OPEP uses the assuption that at least 50% of spilled

Response consideration	Marine Diesel – Vessel Collision	Marine Diesel – Wandoo B Shaft 2	Wandoo Crude - Export System
			Wandoo crude will be dispersed through effective application of chemical dispersant. This could potentially reduce floating oil conentrations and volume of oil ashore. From a social, cultural and economic impact point of view, chemical dispersant application can be seen as a negative response action and clear communications around the benefits and environmental safeguards in place need to be underatken.
Mechanical dispersion			
Identified as suitable?	No		Yes
NEBA considerations	Diesel spreads and evaporates rapidly. Mechanical dispersion may inhibit the rate of evaporation and could cause the oil to emulsify.		Mechanical dispersion will be assessed as a response option to enhance dispersion and dilution of oil into the water column which then leads to biodegradation of the oil. Mechanical dispersion can result in an increase in environmental benefit for all ecological sensitivities and for mangroves, marshlands, mudflats, sandy beaches, rocky shores and open waters. Consideration of spreading oil from the spill site to clean areas on the hulls of vessels used to undertake mechanical dispersion activities needs to be evaluated before this strategy is approved in the IAP.
Containment and recovery			
Identified as suitable?	No		Yes
NEBA considerations	An instantaneous spill of diesel will spread and evaporate rapidly due to the high proportion of volatile components within the oil and will not be of a sufficient thickness to provide for effective containment and recovery operations.		Containment and recovery can be used to recover oil to prevent it impacting on environmental, social and cultural sensitivities.

Response consideration	Marine Diesel – Vessel Collision	Marine Diesel – Wandoo B Shaft 2	Wandoo Crude - Export System
			Containment and recovery may be effective on Wandoo Crude as it is a persistent crude oil with a high specific gravity and viscosity. Depending on metocean conditions, containment and recovery is expected to have an efficacy rate of 5-10% because of the limitations of this activity in open ocean conditions. Metocean condtions and oil thickness are the two main limitations for this strategy. Efficacy can be improved nearshore and in sheltered embayments. Consideration on waste oily water collection, storage and disposal must be considered and planned for before implemetnting this strategy. Containment and recovery from a social impact point of view can provide a means to demonstrate a proactive response to protect significant cultural or social assets.
Protection and deflection			
Identified as suitable?	No	Yes	Yes
NEBA considerations	An instantaneous spill of diesel will spread and evaporate rapidly due to the high proportion of volatile components within the oil. In this scenario the slick is not expected to come into contact with shorelines.	Although diesel spreads and evaporates rapidly there is the potential in this scenario for shoreline accumulation of oil at or above 10g/m^2. Protection and deflection may result in an environmental benefit for turtle nesting sites, migratory birds, shorebirds, mangroves, marshland, mudflats, sandy beaches and rocky shores. Consideration of benthic habitat needs to be made before positioning of anchors for booms as well as the impact corralled oil may have on shorelines.	Where the EMBA indicates impact to shoreline sensitivities, protection and deflection will be assessed as a response strategy. OSTM for this scenario shows that there is a probability sensitive marine resources will be impacted by oil at a thickness greater than 10g/m^2, hence protection and deflection may result in an environmental benefit for turtle nesting sites, migratory birds, shorebirds, mangroves, marshland, mudflats, sandy beaches and rocky shores. Consideration of benthic habitat needs to be made before positioning of anchors for booms as well as the impact corralled oil may have on shorelines.

Response consideration	Marine Diesel – Vessel Collision	Marine Diesel – Wandoo B Shaft 2	Wandoo Crude - Export System
		Cultural sensitivities will need to be identified and considered before positioning booms adjacent to or along shorelines. Proection and deflection through booming can be seen as a proactive protection measure.	Cultural sensitivities will need to be identified and considered before positioning booms adjacent to or along shorelines. Proection and deflection through booming can be seen as a proactive protection measure.
Shoreline cleanup			
Identified as suitable?	No	Yes	Yes
NEBA considerations	An instantaneous spill of diesel will spread and evaporate rapidly due to the high proportion of volatile components within the oil. In this scenario the slick is not expected to come into contact with shorelines.	Shoreline clean-up activities will be assessed as a response where impact is predicted to occur in areas of highest sensitivity. OSTM for this scenario suggests the maximum volume of oil ashore from a single spill simulation is 15m^3 at a probability of 21%. Shoreline clean-up activities have the potential to cause more harm than good and as such require careful planning and execution. An evaluation of the extent and potential impact of the oil weathering naturally over time versus the impact of the oil on habitats and fauna is required before deciding on the best shoreline cleanup option. An increase in environmental benefit can generally be achieved when clean-up activities are undertaken on sandy beaches and areas where there are high protection priorities such as turtle nesting sites, migratory birds and shorebirds.	Shoreline clean-up activities will be assessed as a response where impact is predicted to occur in areas of highest sensitivity. OSTM for this scenario suggests a minimum time to shore of approximately 2 days and 20 hours at an accumulation threshold of 10g/m^2. Shoreline clean-up activities have the potential to cause more harm than good and as such require careful planning and execution. An evaluation of the extent and potential impact of the oil weathering naturally over time versus the impact of the oil on habitats and fauna is required before deciding on the best shoreline cleanup option. An increase in environmental benefit can generally be achieved when clean-up activities are undertaken on sandy beaches and areas where there are high protection priorities such as turtle nesting sites, migratory birds and shorebirds. Waste generation, storage and transport for disposal for each shoreline cleanup option needs to be considered and planned for. Shoreline cleanup can have a positive impact on oiled wildlife management and needs to be implemented in

Response consideration	Marine Diesel – Vessel Collision	Marine Diesel – Wandoo B Shaft 2	Wandoo Crude - Export System
		Waste generation, storage and transport for disposal for each shoreline cleanup option needs to be considered and planned for. Shoreline cleanup can have a positive impact on oiled wildlife management and needs to be implemented in parallel with oiled widlife and operational and scientific monitoring activities. Social, cultural and economic interests need to be considered and included in shoreline cleanup plans. Shorelines response on Barrow Island will require consultation and cooperation with Chevron to identify access points, protection priorities, waste removal and logistics for moving people and equipment.	parallel with oiled widlife and operational and scientific monitoring activities. Social, cultural and economic interests need to be considered and included in shoreline cleanup plans. Shorelines response on Barrow Island will require consultation and cooperation with Chevron to identify access points, protection priorities, waste removal and logistics for moving people and equipment.
Oiled wildlife response			
Identified as suitable?	Yes		Yes
NEBA considerations	Surveillance for oiled wildlife will be conducted as per the VOGA Operational and Scientific Monitoring Bridging Implementation Plan. Oiled wildlife response (OWR) will be undertaken for all categories if required. Socially oiled wildlife response is a significant activity and requires consistent regular communication to avoid spontaneous volunteerism and manage any impacted widlife and habitats appropriately. Consideration of State and Commonwealth jurisdictions will be required to ensure all requirements are met (ie. State and Commonwealth marine parks). Oiled wildlife response on Barrow Island will require consultation and cooperation with Chevron to identify access points, protection priorities, waste removal and logistics for moving people and equipment.		

Response consideration	Marine Diesel – Vessel Collision	Marine Diesel – Wandoo B Shaft 2	Wandoo Crude - Export System
In-situ burning			
Identified as suitable?	No		No
NEBA considerations	Diesel evaporates rapidly and is not suitable for in-situ burning.		Wandoo Crude is not amenable to in-situ burning (flash point of 144^{o}C), and the required equipment, technology, approved accelerant, and training is not readily available in Australia.

7.2 Source Control

Where practical and safe to do so, the emergency response plans to isolate and control the source of spills are implemented as a parallel activity alongside response activities. The aim of source control is to control or stop the flow of oil so that the amount of oil escaping in the environment is minimised. Control of the spill source is considered to be a primary spill response and only undertaken when safe to do so.

7.3 Monitoring, Evaluation and Surveillance (MES)

7.3.1 Description of MES Response Strategy

MES is a response strategy that can take on two functions:

- To monitor natural recovery (no intervention with physical or chemical response strategies).
- Maintaining situational awareness and an assessment of response effectiveness.

Specific items to be monitored are trajectory of spill, oil characteristics, extent of slick, resources that may be impacted, and effectiveness of other response strategies.

Operational monitoring (OM) to evaluate hydrocarbon weathering and behaviour and impact on water quality, sediment, fauna, habitats and shorelines are contained in the OSM-BIP [VOG-1100-RG-0002]. Opportunities may arise to co-mobilise resources for the purposes of both MES and OM and this will be assessed in the IAP.

The ongoing monitoring and evaluation of the oil spill is a key strategy that allows managers of the response to maintain situational awareness, an up-to-date understanding of the success of other response options, and to monitor the natural weathering of the oil. It is by ongoing monitoring and evaluation of the situation that the response may be tailored day-to-day, adjusting and pre-empting the consequences of the oil spill and mitigating the worst of these consequences.

MES is undertaken in order to obtain information which will assist in the planning and execution of oil spill response strategies. The nature of the monitoring program implemented will depend on the needs of the incident, and may involve:

- Aerial surveillance
- Remote (satellite) sensing
- Satellite tracking buoy deployment
- Drone imagery
- Vessel based observations
- Oil spill trajectory modelling

7.3.2 Spill Scenarios for Which MES May Be Implemented

All spills will be have some MES activities conducted to assess the natural biodegradation of the hydrocarbons, effectiveness of resposne strategies, and ensure situational awareness of the spill is maintained by VOGA emergency response teams.

7.3.3 Operational Constraints for MES

Operational constraints for monitoring and evaluation include, but are not limited to:

- Remote location of exploration well activities and potentially affected surrounding areas;
- Ability for aircraft to undertaken aerial surveillance (limitations relating to suitable aircraft being available, night-time operations, distance from mainland)
- Availability of trained aerial observers and suitable aircraft
- Availability of drones, flight restrictions for drones, and availablity of drone pilots
- Timeframe for satellites to be within range of spill location
- Timeframe to mobilise personnel for surveillance activities
- Communication of data collected back to the ICT and clarity around units in which information is recorded (e.g. internet and sharepoint capabilities; nm/km; datum in which coordinates have been recorded etc.)
- Verification of information being collected.

7.4 Chemical Dispersant

7.4.1 Description of Chemical Dispersant Application

The purpose of dispersant use is to decrease the amount of oil that may strand on shorelines or reduce its presence on the sea surface to prevent wildlife and habitat impacts. Oil that is dispersed into the water column reduces the volume of oil on the ocean surface and reduces the potential for impact on emergent receptors. This is achieved by breaking the oil down into small droplets, which are rapidly dispersed into the water column and away from the ocean surface. Through dispersant use, the process of natural dispersion and biodegradation is accelerated as more oil droplets are formed, increasing the surface area of the oil which increases the reaction rate of the biodegradation.

As some of the oil will not be able to be effectively sprayed using aerial operations, VOGA will also evaluate the feasibility and suitability of implementing marine dispersant application operations. These operations will be directed (as part of the IAP) to operate in areas likely to result in the greatest effectiveness of the dispersant; and in such a manner as to allow for other oil spill marine operations.

Dispersant application will only be carried out while the spill response impact assessment, NEBA, demonstrates that the application is providing a net environmental benefit and that the application will minimise the overall ecological, socio-economic and cultural impacts and promote rapid recovery. This will be determined through the assessment of dispersant efficacy testing results, daily NEBA, metocean forecast modelling and operational monitoring outcomes.

7.4.2 Dispersant Application

7.4.2.1 Dispersant Application Zones

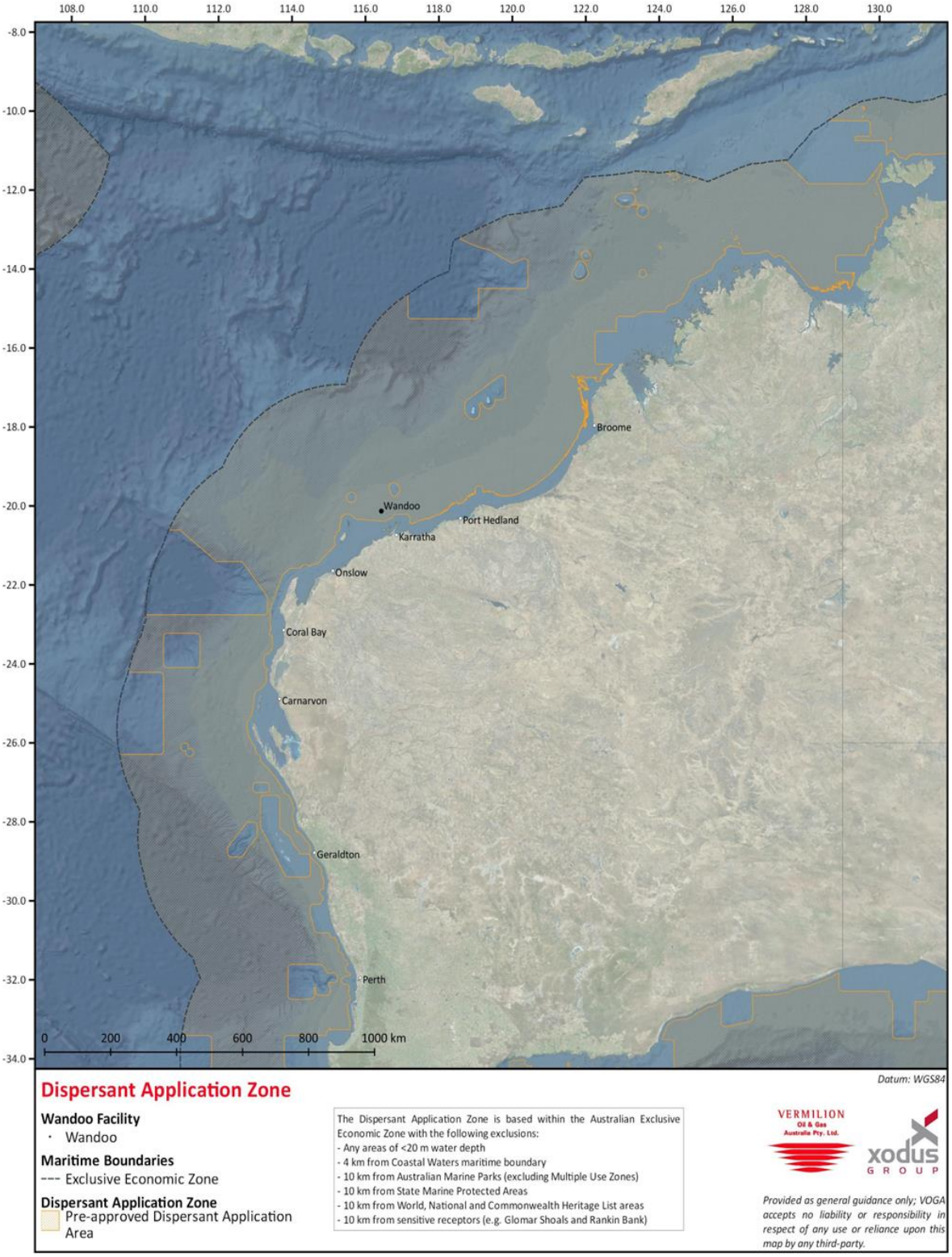
Dispersant application may occur within the Australian Exclusive Economic Zone shown in Figure 7-1 and with the following exclusions:

- Waters shallower than 20 m
- 4 km from Coastal Waters maritime boundary
- 10 km from Australian Marine Parks (excluding multiple use zones)
- 10 km from State Marine Protected Areas
- 10 km from World National and Commonwealth Heritage List areas
- 10 km from sensitive receptors (e.g. Glomar Shoals and Rankin Bank).

Initial application of dispersant will be focused on the area surrounding source of the spill to target the thickest parts of the Wandoo crude oil and maximise the potential benefits of dispersant application. OSTM outputs suggest that Wandoo crude at a threshold of at or over 50 g/m^2 will spread approximately 24 km from the facility. Dispersant application is generally considered to be effective when applied to oil slicks with a surface thickness greater than 100 g/m^2 meaning that dispersant operations are likely to be within 20 km of the spill location.

The decision to continue dispersant application will be based on the trajectory of the oil, thickness of the floating oil, the NEBA and location within the dispersant application zone.

Figure 7-1 Dispersant Application Zone



7.4.2.2 *Decision Making Process*

During a spill response the decision to apply dispersant to oil in the 'go' or 'intermediate' zones will be made via the IAP process. The IAP is supported by a NEBA utilising real-time operational information, such as metocean conditions, spill location and dispersant application, combined with trajectory modelling. This decision will be based on the potential impact of dispersant application, considering quantity, exposure and sensitivity, against potential reduction in the environmental impact. This will be done by assessing the effectiveness of dispersant including the following parameters:

- **Effectiveness Monitoring**: For this operational activity, the effectiveness of the dispersant will be continuously monitored during application, using the Joint Industry Operational Monitoring Plan (OM4a): Surface Chemical Dispersant Fate and Effectiveness Assessment (Refer to OSM-BIP). This assessment is largely based on the Special Monitoring of Applied Response Technologies (SMART) protocol (NOAA, 2006). The SMART protocol assists in characterising the nature and extent of surface dispersed oil, aids in the validation and accuracy of plume trajectory models and allows for rapid quantification of data to enable the IMT to make decisions about continuation of dispersant application. The IMT will assess the effectiveness of continued dispersant use against an operational NEBA assessment.
- **Sensitive receptors**: the following will be considered when undertaking the decision making process:
  - Minimum time to oil contact on sensitive receptors: If dispersant application can increase the contact time this would potentially allow for protection or shoreline strategies to be implemented to further reduce the impact;
  - Average and maximum volume of oil on sensitive receptors: If dispersant application reduces the scale of impact, this not only reduces the immediate impact but may also reduce the size of response activities within that area – potentially resulting in reduced disturbance of environmental sensitivities in shoreline or shallow water.
  - Average and maximum length of shoreline contacted by oil: If dispersant application reduces the scale of impact, this not only reduces the immediate impact but may also reduce the size of response activities within that area – potentially resulting in reduced disturbance of environmental sensitivities in shoreline or shallow water.
  - Probability of oil contact on sensitive receptors: A reduction in the probability of oil contact to sensitive receptors reduces the potential risk level of the event.
  - Change in proportion of surface and entrained oil: The application of dispersant may result in an increase in the extent of potential zones of entrained hydrocarbons. This is compared to the potential reduction in volume of oil to shoreline and maximum length of shoreline contacted by the oil, to see if there is a net benefit to the application of dispersant.
- **NEBA**: This will assist in assessing the exchange of one impact for another. This process will be continually re-evaluated and updated during an incident and will balance the trade-offs between benefits and impacts. Chemical dispersants will only be applied if there is net benefit to the priority sensitive receptors from its application.
- **Forecast modelling**: This will be completed every day during the oil spill incident to ascertain if the movement of oil as a result of current, weather and sea conditions will result in a net benefit to priority sensitive receptors. If the modelling indicates that the application of

dispersant under current environmental conditions will lead to increased deposition of hydrocarbons on priority sensitive receptors, dispersant will not be applied.

- **Marine water quality monitoring**: As part of operational monitoring activities (refer to the OSM-BIP), water quality monitoring will be conducted in conjunction with dispersant operations and samples will be analysed for dispersant and hydrocarbons (dissolved and entrained). Real-time results from these operational monitoring studies will inform the NEBA.
- **Response performance objectives**: These will be evaluated for compliance of measurement criteria. Any non-compliance will be identified as part of the IAP process and could result in the termination of chemical dispersant application.

7.4.2.3 *Quantity of Dispersant*

Typical dispersant dosage is often between 1:10 and 1:50 (dispersant:oil, by volume), with 1:20 (50 litres per hectare) commonly used as a planning figure for many products and conditions. (ITOPF Technical Information Paper 4 (TIP 4) Use of Dispersants to Treat Oil Spills).

Assuming close to 50% of a Wandoo crude spill of 300 ^{m3} remains floating on the surface after natural weathering through photooxidation, entrainment, dissolution and evaporation there is potentially 150 m^3 of oil available to treat. At a dispersant to oil ratio of 1:20 the maximum volume of dispersant required for this volume of oil is 7.5 m^3 as per Figure 7-2. In reality this volume may be less because the spread of the oil to thresholds less than 50 g/m^2 and dispersant efficacy declining beyond this thickness.

$$dispersant\ volume = \frac{150m^3}{20} = 7.5\ m^3$$

Figure 7-2: Calculation of dispersant volume

VOGA has assumed that FWADC is capable of delivering 1.8 m^3 of dispersant per sortie (although some aircraft may be capable of more) (Table 7-2). One FWADC aircraft completing 4 sorties could achieve a delivery volume of 7.5 m^3. An area up to 30 km from the surface release point will be prioritised for dispersant application activities and application areas outside of this will be determined based on the trajectory and surface thickness of the oil.

Table 7-2: Potential area covered and volume of dispersant that could be applied per day via aerial dispersion

# aircraft	Potential area (ha) that could be covered at a rate of 50L per hectare				Potential volume that could be applied (m^3)			
	# sorties				# sorties			
	1	5	10	20	1	5	10	20
1	36	180	360	720	1.8	9	18	36
2	72	360	720	1,440	3.6	18	36	72
3	108	540	1,080	2,160	5.4	27	54	108
4	144	720	1,440	2,880	7.2	36	72	144

Calculating the volume of dispersant required for each spill scenario

The significant variation in oil thickness within a slick means that, in practice it is impossible to evaluate the optimum dosage precisely. ITOPF (2011) recommends that the practical and most efficient solution is to target the thickest parts of the oil. Therefore, to accommodate for the uncertainty in the total area to be treated with dispersant (i.e. due to wind rows, dispersant evaporation, and variability in slick thickness), 50% of the spill area has been used as the target area to calculate dispersant required, from which real time planning will be then be done.

Marine vessel application rates

The ICT Planning Chief will work with the Logistics Chief to ensure that the optimum combination of aerial and vessel based dispersant application is used to achieve efficient dispersant stockpile use.

Calculating the volume of oil to be treated for marine vessel operations is the same as for aerial dispersion. However a DOR of 50:1 is used for vessel dispersant planning as the dispersant droplets don't need to be as a higher concentration as aerial application. In addition, dispersant applied using the Afedo spray system is diluted before application, thus reducing the volume of dispersant required.

VOGA determined that a vessel travelling at 4 knots for 10 hours a day continuous spraying, can cover approximately 75 hectares.

7.4.3 Operational Constraints for Dispersant Application

Constraints may include:

- Metocean conditions
- Availability of suitable vessels, aircraft and personnel for dispersant activities
- Mobilisation times
- Thickness of the slick
- Weather conditions and available daylight.

Seasonal environmental conditions and sensitivities will dictate spray runs and areas. An analysis to determine these specific sectors will be undertaken at the time by the Planning Team and implemented by the Aviation and Marine Units.

7.5 Mechanical Dispersion

7.5.1 Description of Mechanical Dispersion Operations

Mechanical dispersion is the use of fire monitors, engine wash, or other means to mechanically/physically disperse oils into the water column, thereby increasing the speed with which weathering and biodegradation occurs. This strategy is a secondary strategy that may be considered for Wandoo crude spills that result from activities within the Wandoo Field.

Mechanical dispersion has the benefits of:

- Assisting natural dispersion and biodegradation of oil
- Requiring less response personnel as it doesn't require booms or skimmers like in the containment and recovery strategy
- Eliminating waste storage and disposal issue
- Being able to treat areas that aerial and vessel dispersant operations may not be able to access or are lower priority areas for chemical dispersant application.

7.5.2 Spill Scenarios for Which Mechanical Dispersion May Be Implemented

Mechanical dispersion operations may be activated for Wandoo crude spills but not diesel spills, if the information collected through MES suggests:

- The slick is moving toward a sensitive receptor
- The weathered oil is amenable to mechanical dispersion
- A safe operating environment for responders.

7.5.3 Operational Constraints for Mechanical Dispersion

A sea state that is not suitable for containment and recovery operations assists the mechanical dispersion response strategy. Vessels deployed to undertake this operation must be capable of working in the sea-state conditions that are current and forecast.

Mechanical dispersion will not be undertaken in areas of less than 20 m depth water.

Vessels tasked with mechanical dispersion will need to be cognisant of possible oiling and transfer of oil on the hull into State and port waters.

7.6 Containment and Recovery

7.6.1 Description of Containment and Recovery

Booms and skimming equipment can be used to create physical barriers on the sea surface to contain and recover the oil spill where information and predictive spill fate modelling indicate a likely threat to environmental, social, cultural and economic sensitivities. This strategy is can be used in the offshore environment in close proximity to the hydrocarbon source where the floating oil is at its thickest. Once contained, an attempt to recover the hydrocarbons from the surface waters can be undertaken.

Containment and recovery, subject to amenable weather conditions and equipment limitations, will be one of the strategies in an oil spill, to corral and physically remove spilt oil from the sea surface, using different types of vessels and booming configurations.

Priority of the implementation of tasks to support this strategy will be focused on containing and recovering oil that has not been successfully chemically dispersed, and to remove as much oil as feasible from the marine environment to prevent it from potentially impacting the shorelines of

the Dampier Archipelago , Barrow Island, Montebello Islands as well as the mainland of the WA coastline.

The aim of this strategy will be to have on-water 'containment and recovery' strike teams. This will require local and AMOSC resources, and will be directed (as part of the IAP) to operate in areas where oiling of environmental sensitivities will result in most harm to those sensitivities. This analysis will be undertaken at the time by the Planning Chief and implemented by the Marine Unit within Operations.

If this option is considered suitable through MES and NEBA, significant logistical support will be required that will include suitable vessels, experienced crew, booms and skimmers, pumps, on-board storage for recovered oil and aircraft to direct the vessel to the areas with the thickest surface oils.

7.6.1.1 The Boom Encounter Rate

The BER is a planning tool to assess the effectiveness of booming strategies. It provides planners with an indication of the amount of oil that could potentially be contained in booming activities, which leads to an understanding of recovery and waste requirements.

The BER can be calculated from the AMSA contingency planning guidelines (AMSA, 2015):

- The length of boom employed (referred to as LB) and the consequent "swathe" of the boom array, i.e. the opening of boom array. For planning purposes the swathe is 30% of the total boom length being deployed
- The speed (velocity, V) at which the boom array can be effectively operated. For planning purposes this is assumed to be 1 knot (1,852 m/hr)
- The average thickness (T) of the oil
- The "percentage cover" of the oil or chemical on the sea surface. For planning purposes this is considered to be 100% during the initial stages of the response operation.

The BER is therefore calculated as follows: BER = (LB x 0.3) x V x T.

The AMSA guideline recommends that oil thickness be determined through modelling, Table 7-3 provides indicative slick thickness and estimate BER and assumes a standard boom length of 300m. This indicates that the BER appears to reduce by an order of magnitude over 24 hours, and so is likely to be 10% as effective on day two of a response as day one. At-sea containment and recovery of oil may not be efficient or effective depending on the sea state and how far the slick has spread. These activities will depend on the conditions of the day.

Table 7-3: Indicative BER (planning targets) (Table 14 of AMSA OSCP guidelines)

	Time (hr)	**1**	**2**	**3**	**4**	**6**	**12**	**24**
Group II Oil	Thickness (mm)	0.217	0.128	0.094	0.076	0.056	0.034	0.020
	BER (m^3/hr)	36.2	21.3	15.7	12.7	9.3	5.7	3.3
Group II or III Oil	Thickness (mm)	0.474	0.283	0.207	0.167	0.123	0.074	0.044
	BER (m^3/hr)	79.0	47.2	34.5	27.8	20.5	12.3	7.3

The BER information in Table 7-3 is based on the spreading coefficient and assumes no wind or current; once these are factored into the calculation, the BER will change and it also assumes the

spill is instantaneous (i.e. not loss of well control). They are used as a basis from which to begin planning, continuous flow of oil to the surface from loss of well control may present a situation where the BER is greater than what is planned for.

Wandoo Crude althoughdescribed a Group IV oil because of the residual component at a boiling point of >380°C. Wandoo Crude for response planning purposes can be considered a Group III oil because it floats, the pour point is not less than -30°C, and the viscosity is less than 1500 cP (pers comm 6 September 2013, Paul Irving, Scientific Officer, AMSA). Therefore for the purposes of estimating the BER a thickness of 0.044mm is used.

The following assumptions were used:

- Large weir skimmers such as the GT185 and the Walosep weir skimmer have recovery capacities up to about 65 t/hr (~65 m^3/hr)
- Assuming an operational rate of recovery of one-third of that capacity (due to sea-state and oil type), then skimming could potentially yield approximately 20 m^3/hr
- Using operational rate of recovery over 4 hours of operation per day a potential volume of 80 m^3/day could be recovered
- At sea recovery is heavily dependent on the viscosity of the oil, wind speed and wave height
- If three marine vessel teams could be deployed with the large weir skimmers and boom to contain and recover oil from the thickest part of the leading edge of the slick and if they recovered 20 m^3/hr over 4 hours each then a total of 240 m^3/day could be recovered by skimmers (20 m^3 x 4 hours x 3 teams). However this would be limited on the amount of oil that could actually be corralled by the booms (as calculated above in the BER assumptions)
- The percentage of oil (from the oil and water mix) that is able to be recovered by large weir skimmers ranges from 50-90%
- Assume in these scenarios that the skimmers achieve an efficiency of 50% then for every 10 m^3 of liquid recovered, 5 m^3 would be oil.

7.6.2 Spill Scenarios for Which Containment and Recovery May Be Implemented

Containment and recovery can be used to recover oil to prevent it impacting on environmental, social,cultural and economic sensitivities and will be used if metocean conditions are suitable and if oil if of suitable thickness. Containment and recovery operations are likely to be activated if the information collected through monitoring and evaluation suggests:

- The slick is moving toward a sensitive receptor
- Sea state and weather conditions allow effective boom and skimmer deployment
- The weathered oil is able to be recovered with skimmers
- A safe operating environment for responders.

7.6.3 Operational Constraints for Containment and Recovery

Containment of fresh, volatile oil should not be attempted due to its low flash point. No attempt should be made until the safety of the area has been established. Containment of lighter oils such as marine diesels is often not viable because it evaporates and dissipates quickly.

The limiting factor for the effectiveness of at-sea containment and recovery is the BER and the efficiency of skimmers – all of which are heavily dependent on sea-state and weather conditions.

The efficiency of skimmers offshore and in near-shore environments are limited primarily by the encounter rate (amount of oil that can be corralled and skimmed); sea state; viscosity of the oil and weather conditions. Minimum thickness of oil considered viable to contain and recovery is 50g-100g/m^2. The BER, skimmer recovery rate and percentage of oil recovered have all been considered in planning for this strategy.

Booms fail (release oil) due to entrainment, drainage failure, splash over, critical accumulation, submergence, planning or equipment failure (breakage) (Fingas, 2013). The OSRL field guide for containment and recovery describes deployment techniques and strategies to minimise boom failure. Thickness of the slick is one of the main limiting factors for containment and recovery operations. In addition to the oil properties, sea-state and wind conditions directly affect how effective containment and recovery techniques will be. Suitable metocean conditions are detailed in OPP2.

7.7 Protection and Deflection

7.7.1 Description of Protection and Deflection Operations

Protection and deflection, subject to amenable weather and sea conditions as well as equipment operational limits, is the use of physical barriers to separate oil from environmental sensitivities, or to deflect to other areas where it may be naturally collected, or deflect it to other areas where the oil will do less harm. Near-shore resources can be protected by the impact of oil through the use of booming configurations that either redirect oil or prevent impact by exclusion. Oil may be directed onto a shoreline to be recovered and in that case a shoreline clean-up operation is undertaken.

Booms can be used to create physical barriers on the water surface to protect sensitive receptors. This strategy involves a combination of near-shore booming using vessel-based operations ('near-shore operations') while the spill remains on a predicted shoreline impact trajectory, and the placement of shoreline boom around areas to:

- Protect sensitive shorelines
- Deflect the oil back to ocean or to easier locations for shoreline clean-up
- Reduce the volume of oil impacting sensitive shoreline habitats to ALARP
- Align the response strategy with NEBA.

The EMBA for a Wandoo Crude spill includes a number of coastal and island shorelines, with a probability of 66% contact at the Montebello Islands and Barrow Island at a threshold of at or above 10 g/m^2; and 34% for a diesel spill from Wandoo B Shaft 2. There are a number of priority sensitivities on these islands that could benefit from the use of protection and deflection strategies, including mangrove areas, turtle nesting beaches and significant bird habitats (seasonal dependant).

7.7.2 Spill Scenarios for Which Protection and Deflection May be Implemented

Protection and deflection operations are likely to be activated if the information collected through MES suggests:

- Sensitive receptors are predicted to be impacted by oil
- The slick is greater than 10 g/m^2 thick
- Sea state and weather permit boom deployment
- A safe operating environment for responders.

7.7.3 Operational Constraints for Protection and Deflection

Booms require suitable sea state and weather as per the containment and recovery strategy. Metocean limitations for boom deployment are generally:

- Maximum sea state (Beaufort Scale) of 3-4
- Maximum current (knots) of 1-2
- Maximum wind speed (knots) of 14-22.

7.8 Shoreline Clean-up

7.8.1 Description of Shoreline Clean-up

Shoreline clean-up involves removing or monitoring oil with the objectives to:

- Minimise exposure hazards to human health
- Speed recovery of impacted areas if possible
- Reduce the threat of additional or prolonged natural resource impacts.

Generally oil that is stain, film or sheen is less than 1 mm thick and is extremely difficult to remove from substrate and is usually left to recover naturally with wave action, or if it is a man-made structure that is oiled, response options such as pressure cleaning may be utilised. A NEBA will need to be carried out before shoreline clean-up operations commence, to ensure that attempts to remove weathered oil do not result in more of a negative impact than leaving the oil there.

Shoreline clean-up will implement a three-stage methodology using strategies identified in Table 7-4:

- Emergency phase – collection of oil floating close to the shore and pooled bulk oil removal.
- Project phase – removal of stranded oil and oiled shoreline material that cannot be cleaned in-situ.
- Polishing phase – final clean-up of light oil contamination and removal of oil stains, where the incident NEBA demonstrates this is necessary.

Personnel requirements for these response strategies will vary. Worst case estimates for manual clean-up have been provided in OPP2 based on OSTM outputs for the maximum volume of oil ashore from a single spill simulation at or above 10 g/m^2 which is 62.8 m^3 of Wandoo Crude.

Table 7-4: Shoreline clean-up methods

Method	Description
Natural recovery	Natural recovery allows the shoreline to recover without intervention; this minimises environmental impact caused by clean-up activities by allowing nature to degrade and remove oil from the shoreline.
Physical cleaning – removal/disposal	
Manual clean-up	Manual clean-up and recovery using shovels, rakes, hand scrapers and sieves. This is the preferred option for cleaning inaccessible shorelines of those where mechanical clean-up is undesirable.
Mechanical clean-up	Mechanical clean-up is undertaken using bobcats, front-end loaders, graders, scrapers, beach sieving machines and beach cleaning machines. These can be used to rework beach sediment or to push such sediment into the shoreline for cleaning by the waves.
Vacuum systems	Vacuum systems may be portable hand-operated systems or vacuum trucks. Vacuum systems tend to pick up large volumes of water with the oil and so it is preferable to use them on oil pooled on the sediment surface or to remove oil from containers or dams in which the water has been decanted. One method to minimise the amount of water removed from the beach is to use light, portable vacuum systems to deposit oil-water into temporary storage containers on the beach, allow settling time and to decant the water. Large units can then be used to collect the oil from these containers and transport oil to storage sites. Vacuum systems can also be used in association with deflection booms to recover oil from the sea surface. It is advisable in this case to fit the hose with a broad Manta Ray head.
Use of sorbents	Two types of sorbent materials can be used: (1) loose, powdered or granular sorbents, or (2) solid, pads, rolls or sheets. Each of these may be either of synthetic or natural fibre. As a general rule loose sorbent materials are not used because they are difficult to recover. However, there are occasions when this is not considered to be a problem, such as in high-energy areas where oily sorbent materials can be expected to be washed off of surfaces and dissipated to sea. Of course, oil too is likely to be washed off such shorelines, to dissipate. Solid sorbents may be used in the form of sorbent booms to recover light oil films or as pads or rolls to absorb free oil from the surface of sediments in cases where vacuum systems cannot gain access or where oil is too fluid for manual recovery.
Physical cleaning – washing	
Low pressure flushing	Low pressure flushing can be used, with care, to remove surface oils from most beach type surfaces. The water can be applied at ambient temperature or heated depending on the oil's viscosity and/or degree of weathering and on ecological constraints. It is important that re-floated oil is collected in booms or other containment devices and recovered using skimmers or sorbents.
High pressure flushing	High-pressure washing is to be used only on solid manmade surfaces such as wharves, jetties, etc. This method tends to emulsify oil and consequently the use of sorbents to collect re-floated oil is not recommended. Oil, which is removed from surfaces, can be collected within light inshore booms or onshore using Shore Guardian or a similar boom. Oil can be recovered using vacuum systems or skimmers.
Steam cleaning	Steam cleaning uses a moderate jet of steam that will remove oil from almost any surface. In addition to the physical forces of the steam jet, it raises the temperature of the adhered oil, thereby lowering its viscosity and allowing it to flow off a surface. This is not recommended for surfaces that support living plants or animals.
Sand blasting	Sand is applied to the structure at high velocity using sand blasting equipment. The oil is removed from the substrate by the abrasive action of the sand. It is used to remove

Method	Description
	thin accumulations of weathered oil residues from rock surfaces, man-made structures, or other impermeable surfaces with relatively few or no living organisms attached where the other techniques are not applicable or feasible.
Physical cleaning – in situ	
Surf washing/ sediment reworking	Sediments are relocated to the surf zone to permit the natural cleansing action of waves to remove oil which has penetrated into beach sediments (mostly fine gravel and cobble) and which is not removed by normal wave action from the surface. The sediments are returned to the upper portions of the beach within a relatively short period through natural wave and tidal action.
Treatment	
Bioremediation	Bioremediation is the term to describe a range of processes that can be used to accelerate the natural biodegradation of oil into simple compounds such as carbon dioxide, water and biomass. Bio-stimulation is the application of nutrients and bio-augmentation or seeding is the addition of microbes specially selected to degrade the oil.

Shoreline waste generation can be reduced by identifying shorelines likely to be impacted and pre-cleaning the shore of debris and vegetation before oil strands, thus reducing the total amount of oily waste to dispose of. Shoreline waste generation can range from three to over 10 times the amount of oil stranded. In-situ clean-up techniques are ideal for minimising the generation of waste and are particularly suited to remote area response where the logistical requirement associated with waste management and transfer can be a limiting factor.

The Guidelines and Strategies for Oil Spill Waste Management in Arctic Regions (Polaris, 2009) stated that "the key factor in waste generation is neither the amount of oil spilled nor the amount of shoreline that is oiled. The volume of waste generated during a response operation is a function of the nature of the spill (type and volume of oil, natural weathering processes) and location and length of oiled shoreline, combined with the decisions made by spill managers who select the treatment and clean-up methods and the level of effort (treatment end points)."

This information, although from a different geographical region, is considered relevant to shoreline response teams working in remote locations in northwest WA because of the same logistical constraints posed by working in remote locations. Consideration will be made in the VOGA IAP process to ensure that response techniques and waste management are aligned so that the overall generation of waste is minimised.

Shoreline clean-up operations are likely to be activated if the information collected through MES suggests:

- Shorelines are predicted to be impacted by oil at a thickness greater than 100 g/m^2
- Wildlife and/or wildlife habitats are at risk of oiling greater than 10 g/m^2
- A safe operating environment for responders.

Modelling outputs for the loss of Wandoo crude from the export system show that shoreline impacts are forecast for Barrow and Montebello Islands within 2 days and 20 hours at a threshold at or greater than 10 g/m^2. SCAT and MES will be used to determine if there are sections of the shoreline oil at thresholds at or greater than 100 g/m^2 and appropriate clean-up strategies for these locations will be decided on in the IAP process.

This timeframe for shoreline oiling is significant for the mobilisation and implementation of operational and scientific monitoring plans particularly shoreline assessment as well as protection and deflection and shoreline clean up activities.

7.8.2 Spill Scenarios for Which Shoreline Clean-up May Be Implemented

Shoreline clean-up operations are likely to be activated if the information collected through MES suggests:

- Shorelines are predicted to be impacted by oil at a thickness greater than 100 g/m^2
- A safe operating environment for responders.

7.8.3 Determining Worst Case Shoreline Clean-up Scenarios

VOGA has utilised OSTM data (RPS, 2024) to identify the worst case shoreline clean-up scenarios and capability required.

The stochastic modelling results were assessed for all three seasons and the “worst case” derministic runs were identified and are presented based on on the followin g criteria:

- Largest volume of oil ashore
- Longest length of shoreline contacted above 100 g/m^2 (actionable shoreline oil)
- Minimum time before shoreline contact above 10 g/m^2
- Largest swept area of oil on the sea surface above 10 g/m^2 (actional sea surface oil)
- Maximum number of receptors within shoreline contact above 10 g/m^2 in 7 days (unmitigated case).

The shoreline oiling analysis of OSTM results encompass all segments that are contacted by oil. Ongoing identification of shoreline segments using real time data will inform ongoing shoreline clean-up response efforts during a response to an incident.

Not all shorelines presented in the OSTM output will be contacted by oil at the same time. The stochastic model ran 100 simulations for each scenario using the same spill information (release location, spill volume, duration and oil type) but varied the start time. Once the simulations were complete, the results were overlaid. This approach ensures that the predicted transport and weathering of an oil slick is subjected to a range of current and wind conditions. The stochastic model output does not represent the extent of any one spill trajectory (which would be significantly smaller) but rather provides a summary of all trajectories run for each scenario.

7.8.3.1 Shoreline Accumulation and Protection Priorities

Coastline sections for the OSTM assessments were defined by dividing the coastline into polygons aligned with the shoreline cells from the Western Australia Marine Oil Pollution Risk Assessment (WAMOPRA) Protection Priorities (https://www.transport.wa.gov.au/imarine/preparedness-response-resources.asp).

OSTM shoreline contact data was sorted and arranged according to the parameters:

- Minimum time to contact

- Probability of shoreline contact
- Maximum volume of oil ashore.

The highest overall probability of crude oil accumulation at or above the 10 g/m² threshold was forecast for WA11.West (326) – Bares and Point to Entrance Point E E (Serrurier Island, Bessieres Island and Round Island), with a 43% likelihood during winter conditions. Under transitional conditions, the highest probability was 22% at WA11.West (318) – Barrow Island and Montebello Islands (A) (Montebello Island). During summer, the highest probability decreased to 7% and was observed at both WA11.West (318) – Barrow Island and Montebello Islands (A) (Montebello Island), and WA12 (312) – Yan Well Coast to Condini Landing (C) (Bedout Island).

Across all seasons, WA11.West (318) – Barrow Island and Montebello Islands (A) (Montebello Island) recorded the fastest oil accumulation on any shoreline, taking 4 days 19 hours in summer, 4 days 2 hours in transitional conditions, and 2 days 20 hours in winter.

This same shoreline also registered the highest volume of oil ashore: 47 m³ in winter, 40 m³ during transitional conditions, and 32 m³ in summer.

The following shoreline segments from the WAMPRA are considered to be protection priorities and used as a basis for worse case shoreline cleanup planning:

- WA11.West (326) – Bares and Point to Entrance Point E - (Serrurier Island, Bessieres Island and Round Island)
- WA11.West (318) – Barrow Island and Montebello Islands (A) (Montebello Island)
- WA12 (312) – Yan Well Coast to Condini Landing (C) (Bedout Island)

Table 7-5: Comparison OSTM results shoreline accumulation Wandoo Crude (Wandoo EP Renewal OSM Report (GOC415415))

Shoreline Statistics	Summer			Transitional			Winter		
	Shoreline accumulation thresholds			Shoreline accumulation thresholds			Shoreline accumulation thresholds		
	10g /m^2	100 g/m^2	1,000 g/m^2	10 g/m^2	100 g/m^2	1,000 g/m^2	10 g/m^2	100 g/m^2	1,000 g/m^2
Probablity of contact to any shoreline (%)	27	13	NC	37	17	NC	66	26	NC
Absolute minimum time to shore (hours)	4 days, 19 hrs	5 days, 19 hrs	NC	4 days, 2 hrs	4 days, 14 hrs	NC	2 days, 20 hrs	3 days, 10 hrs	NC
Maximum accumulated volume (m^3) from a single spill simulation	55.9	37.2	NC	49.7	34.5	NC	62.8	50.2	NC
Average accumulated volume (m^3) across all spill simulations	3.9	1.5	NC	3.7	1.6	NC	7.9	3.9	NC
Maximum length of shoreline (km) from a single spill simulation	125	17	NC	57	14	NC	81	19	NC
Average length of shoreline (km) across all spill simulations	8.9	0.9	NC	8.3	0.9	NC	15.7	2.0	NC

Table 7-6: Comparison of OSTM results shoreline accumulation diesel from Wandoo Shaft 2 scenario (Wandoo EP Renewal OSM Report (GOC415415)

Shoreline Statistics	Summer			Transitional			Winter		
	Shoreline accumulation thresholds			Shoreline accumulation thresholds			Shoreline accumulation thresholds		
	10 g/m^2	100 g/m^2	1,000 g/m^2	10 g/m^2	100 g/m^2	1,000 g/m^2	10 g/m^2	100 g/m^2	1,000 g/m^2
Probablity of contact to any shoreline (%)	6	NC	NC	10	1	NC	34	9	NC
Absolute minimum time to shore (hours)	255	NC	NC	128	247	NC	94	118	NC
Maximum accumulated volume (m^3) from a single spill simulation	1.6	NC	NC	6.3	2.3	NC	15	12.9	NC
Average accumulated volume (m^3) across all spill simulations	<1	NC	NC	0.1	<1	NC	1.2	0.7	NC
Maximum length of shoreline (km) from a single spill simulation	7	NC	NC	17	2	NC	18	5	NC
Average length of shoreline (km) across all spill simulations	0.2	NC	NC	0.5	<0.1	NC	2	0.3	NC

Table 7-7: Comparison of OSTM results shoreline accumulation diesel from vessel collision scenario (Vermilion Kullingal OSM Report GOC367176)

Shoreline Statistics	Summer			Transitional			Winter		
	Shoreline accumulation thresholds			Shoreline accumulation thresholds			Shoreline accumulation thresholds		
	10 g/m^2	100 g/m^2	1,000 g/m^2	10 g/m^2	100 g/m^2	1,000 g/m^2	10 g/m^2	100 g/m^2	1,000 g/m^2
Probablity of contact to any shoreline (%)	2	NC	NC	9	1	NC	24	6	NC
Absolute minimum time to shore (hours)	152	NC	NC	136	366	NC	91	110	NC
Maximum accumulated volume (m^3) from a single spill simulation	1.2	NC	NC	5.3	1.6	NC	23.2	20.3	NC
Average accumulated volume (m^3) across all spill simulations	<1	NC	NC	<1	<1	NC	1.0	<1	NC
Maximum length of shoreline (km) from a single spill simulation	5	NC	NC	19	1	NC	14	6	NC
Average length of shoreline (km) across all spill simulations	0.08	NC	NC	0.51	0.01	NC	1.55	0.23	NC

7.8.4 Shoreline Clean-up Personnel and Equipment

7.8.4.1 Shoreline Clean-up Personnel Capability and Productivity

When determining shoreline team numbers, VOGA will take into account guidance from shipping and oil and gas industry references including IPIECA (2015) and ITOPF (2011):

“The potential performance of the workforce is difficult to judge until work has commenced and has been underway for some time. For this reason, deciding on how many workers are required on a shoreline is best achieved by establishing a small-scale operation on a representative section of the shoreline and then replicating this approach with the appropriate level of manpower in other areas of the shoreline, once working practices have been optimised. The number of people required will be determined by the demands of the clean-up technique employed and the amount of material that can be reasonably handled within a day” (ITOPF, 2011).

“In general it is more efficient to start with a smaller number of teams, properly set up worksite with logistics support in place, and monitor the progress of the deployed teams. A reassessment of what further work is required can then be made and a decision taken on whether changes in the number of personnel are merited, either up or down” (IPIECA, 2015).

VOGA plans to deploy shoreline clean-up teams made up of ten workers supervised by 1 team leader. This provides a span of control of 10:1 as per IPIECA (2015) guidance:

“As shoreline operations progress and the tasks become more routine, the number of workers each team leader can manage effectively may increase to a worker: team leader ratio higher than the initial planning levels of 10:1” (IPIECA, 2015).

VOGA’s capability for shoreline clean-up activities provides for a scaled response from short term immediate actions through to longer term broader planning (Table 7-8). By day three 30 workers, day four an additional 50 workers and by day twenty, up to 1,000 workers for shoreline clean-up activities will be prepared for deployment as required along with requisite team leaders. This enables capability for worst case short term and long term planning.

Not all sections of the coastline will be accessible or amenable to manual shoreline clean-up activities, for example clean-up teams won’t be able to access mudflats or mangroves. A reassessment of the number of personnel required and productivity of clean-up teams will be made once shoreline clean-up activities have taken place and real-time data regarding shoreline oiling has been obtained by SCAT teams.

Shoreline clean-up personnel capability required and estimated time to complete bulk removal of oily waste is presented in Table 7-8.

Table 7-8: Shoreline clean-up potential waste and personnel requirements

Scenario	Potential waste generated in bulk oil removal [1]	Number of people required for bulk oil removal [2]	Estimated time to complete bulk removal of oily waste [3]
Maximum accumulated volume (m^3) from a single spill simulation >10 g/m^2. Minimum time to shore for first contact 3 days.	62.8 m^3 Bulking factor of 10 Potential bulk oil waste removal 628 m^3	60 workers = 6 teams plus 6 team leaders Total 66 people	6 days

1. Bulking factor of 10 is used to estimate waste volumes within the bulk oil removal stage (emergency and project phases) of shoreline clean-up activities.
2. Ten people per team, each estimated to collect 1m^3 of oily waste per day. Team leaders are not factored into the productivity estimates.
3. Based on 10m^3 collected per team per day.

Bulk oil removal refers to oil collected during the emergency phase (collection of oil floating close to the shore and pooled bulk oil removal) and the project phase (removal of stranded oil and oiled shoreline material that cannot be cleaned in-situ). During clean-up, a mix of oil and oily waste is collected. For planning purposes, potential waste generation is based on a bulking factor of 10 as per IPIECA (2015).

VOGA is using the guidance provided by IPIECA (2015) that one person can collect 1 m^3 of oily waste per day. Based on this guidance, one team of 10 workers can collect 10 m^3 of oily waste per day. Waste volumes would be altered if mechanical removal or in-situ cleaning activities such as surf washing or flushing were applied.

Time to complete bulk oil removal (emergency and project phase) is based on the ability of each team collecting 10 m^3 of oily waste per day. The estimated time to complete bulk oil removal is described as:

$$\#\ days = \frac{volume\ (m3)}{\text{productivity (m3)}}$$ where $productivity = \#\ teams\ x\ 10m3.$

The polishing phase of shoreline clean-up will be under the guidance of a SIMA and SCAT survey recommendations. VOGA recognised that although effective manual clean-up activities are generally limited to oil with a minimum thickness of 100g/m^2 there may be instances depending on the location and vulnerability of sensitivities within that location which necessitate additional cleaning activities be undertaken. An example of this is if a turtle nesting beach has been contacted by oil during turtle nesting season. Additional clean-up activities in the form of a polishing phase may be recommended through the SIMA process to minimise oil contact with nesting turtles or hatchlings. Alternatively, high value recreational or commercial areas may need additional cleaning through high pressure cleaning of seawalls or jetty structures so that amenity can be restored.

VOGA's SIMA of polishing phase clean-up activities will take into account five broad questions as suggested in IPIECA (2015):

- Is the remaining oil a potential source of harm to environmentally sensitive receptors?
- Would further cleaning do more harm than good?
- Does the oil interfere with the aesthetic appeal or recreational use of the shoreline?

- Does the residual level of contamination adversely affect economic resources or disrupt economic activities?
- Does the effort involved in further cleaning outweigh environmental or economic benefits that could be achieved?

Resources to support the polishing phase would be sourced through the same arrangements in place for the emergency and project phase of shoreline clean-up.

7.8.4.2 *Shoreline Clean-up Team Leaders*

Trained team leaders will lead the clean-up teams to ensure activities are carried out according to instructions provided by the ICT and aligned with the Performance Standards described in the Wandoo Facility EP. Shoreline clean-up team leaders will have completed shoreline clean-up training and will be responsible for supervising the activities within their team. Within Australia, these team leaders can be sourced from the AMOSC core group, AMOSC mutual aid, AMSA National Response Team, or the WA DTMI State Response Team. Internationally, team leaders can be sourced from OSRL and Owens Response Group.

For the worst case shoreline clean-up scenarios based on the priority coastline sections three team leaders will be required by day 3; and for Commonwealth Marine Reserves or WA Marine Parks, five team leaders are required by day 4. Utilising international resources is feasible when scaling up the shoreline team requirements.

7.8.4.3 *Key Arrangements in Place*

VOGA is planning to initially equip and maintain 66 people over the first 10 days (based on shoreline contact at day 3). Appendix 2 of the Oil Spill Response Capability Review [VOG-7000-RH-0009] details the shoreline clean-up kits and personnel protective equipment (PPE) available for immediate use in Dampier. Additional kits and PPE can be sourced through Perth based suppliers.

VOGA have contracts in place for supply base and logistical services in the event of an oil spill. These arrangements include the provision of transport and drivers, supply base areas and equipment, waste disposal equipment and laydown areas, mechanical equipment, and emergency accommodation camps. Where camping on islands is not possible, vessels may be used to accommodate teams working offshore. Accommodation can be sourced onshore through camp providers that supply accommodation and catering; and transport of personnel to offshore and onshore locations can be provided by local bus and vessel operators as listed in the VOGA Emergency Response Logistics Plan.

VOGA, in consultation with DTMI as HMA for MOP, has access to local emergency management personnel through the City of Karratha Local Emergency Management Committee and the wider Pilbara District Emergency Management Committee who can undertake or facilitate support roles as per the WA emergency management arrangements.

Shoreline clean-up workers can be sourced from labour hire providers identified in the VOGA Emergency Response Logistics Plan. Access and operations on islands will be guided by the findings of the SCAT survey in regards to suitable landing locations within the vicinity of the operations area to be set up. Chevron as operator on Barrow Island will be consulted and invited to assist as per AMOSC Core Group arrangements to facilitate access and clean up on Barrow

Island. These locations can be pre-empted in the Tactical Response Plans for shoreline clean-up and activated if required.

Hire or event management providers will be used to provide amenities such as toilets, shade, tables and chairs. This equipment can be transported via shallow draft vessels and barges operated by AMS and other vessel providers. Clean-up equipment such as sorbents, near shore booms and skimmers can also be sourced from the AMOSC, AMSA and AMS stockpiles and transported by vessel.

VOGA has arrangements in place for temporary waste storage including skips, IBCs and containers as well as long term waste disposal solutions. These will be deployed via barges to islands and via truck on the mainland for remote waste collection.

Mechanical equipment, such as all-terrain vehicles, four wheel drives and buses, may be hired or purchased through local providers or transported from Perth. Earthmoving equipment maybe suitable for specific shoreline types, such as front end loaders, graders, bobcats and skid steers. This equipment can be hired locally through local providers or ex Perth. Use of this equipment is subject to a SIMA.

7.8.5 Operational Constraints for Shoreline Clean-up

The major constraint for shoreline clean-up is the thickness of the oil on the shore. Oil needs to be at least 100 g/m^2 thick to enable effective manual clean-up. The National Plan Environment and Scientific Working Group developed Foreshore Assessment and Termination Guidelines (2007) that suggest shoreline oiling of a thickness of <0.01 cm (100 g/m^2) which can be seen as a stain, should be left to self-clean through wave action only.

Other constraints include:

- amenability of shoreline habitats to manual clean-up activities
- access to remote islands and mainland beaches
- biosecurity issues associated with moving people and equipment between remote islands and the mainland
- access to sites (habitat, terrain, distance from the mainland, landing/mooring sites for vessels)
- transport of equipment to remote sites
- weather and sea state
- hazardous wildlife.

7.9 Oiled Wildlife Response

7.9.1 Description of Oiled Wildlife Response

VOGA Oiled Wildlife Response (OWR) efforts are guided by the WA Oiled Wildlife Response Manual 2023 (WAOWRM) and the WA Oiled Wildlife Response Plan 2023 (WAOWRP) developed and maintained by DBCA.

Oiled Wildlife Response (OWR) encompasses the combination of activities that minimise the impacts of an oil spill on wildlife by a) prevention of oiling and b) mitigation of effects when oiling has taken place. The success of an OWR goes beyond the count of rehabilitated and released animals, and includes consideration of factors such as:

- the ability to protect animals from oiling
- the capacity to minimise suffering of wildlife and optimise welfare
- the ability to mobilise a response quickly and to perform basic activities promptly
- the effectiveness of integration of OWR into the overall response
- the ability to harness local resources, capacity and communities into ongoing response efforts
- the ability to respond while preserving the safety of responders
- the capacity to transport affected animals to resource hubs for more effective treatment and provide the best achievable care
- the ability to derive learning from response events which drives improved future responses and improved understanding of the impact of oil on wildlife.

VOGAs role in OSR will be to facilitate response actions that will provide coordinated, immediate and effective protection, rescue and rehabilitation of wildlife during marine pollution incidents.

VOGAs primary objectives in relation to oiled wildlife are to:

- maximise the best achievable and practicable protection measures to wildlife and their habitats during marine pollution incidents
- minimise the risk of impacts to oiled wildlife and wildlife threatened by oil
- minimise injuries to wildlife threatened or impacted by other operational activities associated with the response (e.g. containment and clean-up, dispersant application, aviation etc.)
- provide achievable care for wildlife in line with best practices
- return as many rescued wildlife back to the wild
- document any impacts observed from the marine pollution incident or associated operational activities
- prevent injuries to responders and the general public from wildlife associated with the incident and OWR actions search and rescue of oiled wildlife.

7.9.2 Spill Scenarios for Which Oiled Wildlife Response May Be Implemented

OWR may be implemented for any spill event and is dependent on the surveillance conducted as part of MES and Operational Monitoring. If wildlife are present within the spill area or have the potential to be oiled as a result of oil stranding on shorelines, then OWR will be activated.

7.9.3 Operational Constraints for Oiled Wildlife Response

Operational constraints that may arise during OWR include:

- access to remote islands and mainland beaches
- biosecurity issues associated with moving people and equipment between remote islands and the mainland
- access to sites (habitat, terrain, distance from the mainland, landing/mooring sites for vessels)
- weather and sea state
- available daylight
- hazardous wildlife.

7.9.4 Response Structure

7.9.4.1 Oiled Wildlife Response in Commonwealth Waters

For oil spills emanating from offshore oil and gas operations within Commonwealth waters, the designated control agency is VOGA and NOPSEMA is the jurisdictional authority. In the event that wildlife is affected, the jurisdictional authority for wildlife is DBCA, whilst DTMI is the designated control agency.

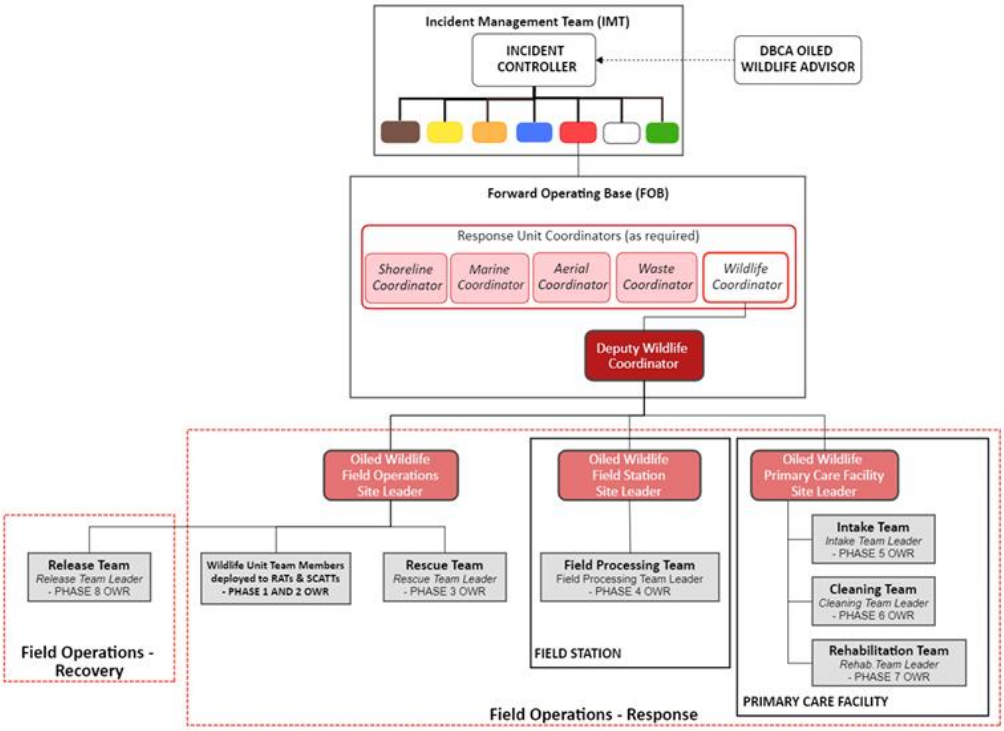
7.9.4.2 Oiled Wildlife Response in WA State Waters

DBCA is the jurisdictional authority responsible for ensuring a minimum standard of treatment, protection and destruction of oil-affected wildlife. In this instance, DBCA, the DTMI and VOGA will work together to coordinate the OWR.

In any event where DBCA is not leading the response, an Oiled Wildlife Advisor (OWA) from DBCA will be placed in the VOGA ICT to ensure standards are being adhered to and licenses for pre-emptive capture and deterrence activities can be granted and administered promptly, when deemed necessary.

Figure 7-3 presents the WAOWRP (2023) expanded structure for an OWR. An industry Oiled Wildlife Adviser and Wildlife Division Coordinator is appointed in consultation with DBCA.

Figure 7-3: Notional OWR structure for a spill with high wildlife impact (WAOWRP 2023)



7.9.5 Approach to Response Planning

OWR planning was conducted according to the response planning process outlined in Section 3. This process aligns with the concepts presented in the IPIECA Good Practice Guide 516 Wildlife Response Preparedness (IPIECA, 2104).

Analysis of OSTM data and shoreline cells identified in the WAOPMRA according to the following parameters were analysed to determine the priority receptors for OWR:

- Probability of oiling at a threshold of 10g/m^2
- Minimum time to contact at a threshold of 10g/m^2
- Maximum length of shoreline impacted (km).

By applying these response planning parameters to the OSTM analysis, VOGA has an understanding of the scale and extent of the operational area including a timeframe for scaling up oiled wildlife capabilities. First strike priority areas, subsequent operational areas and the timeframe in which to deliver oiled wildlife capabilities required to these areas has been identified from this sensitivity analysis. OWR planning has been framed around the first strike priority shoreline segments identified for WAOMPMRA cells:

- WA11. West (318) Barrow Island and Montebello Islands (A)
- WA11.West(326) Baresand Point – Entrance Point E
- Montebello AMP.

The Dampier Archipelago and Legendre Island to Searipple Passage and Delambre Island will also be considered for first strike priority preventative measures depending on MES outputs.

7.9.6 Response Actions

VOGA will coordinate the initiation of OWR activities and assist ongoing OWR operations through facilitating access to assets such as aircraft and marine vessels, staging areas, transport, waste management and personnel as identified in the OSR Capability Review [VOG-7000-RH-0009]. Once activated, the WAOWRM has eight stages, which require alignment to the IAP process for the incident. OWR activities will follow the procedures and guidelines set out in the WAOWRP for the eight phases of response and utilise the templates and forms specifically designed to support these procedures.

All response strategies will be developed by the Wildlife Planning Officer in collaboration with the Wildlife Operations Officer with advice from the Wildlife Division Coordinator and the industry Oiled Wildlife Advisor. These form the basis of the IAP oiled wildlife sub-plan which includes:

- Wildlife priorities for protection
- Exposure modification measures
- Recovery and treatment of oiled wildlife
- Resourcing of equipment
- Personnel requirements.

The IC approves the oiled wildlife sub-plan as part of the IAP process managed by the Planning Chief. The WAOWRM contains standardised operating procedures, protocols and processes for the wildlife response to a marine oil pollution (MOP) event in WA. All oiled wildlife management activities must follow this manual and the accomanying WA OWRP.

7.10 In-situ Burning

VOGA does not consider in-situ burning as a suitable response option because the flash point of Wandoo Crude (144^{o}C) means that the oil is not amenable to being ignited in-situ.

PART 3: Performance Management

8 Assurance and Capability Management

8.1 Overview

VOGA manages oil pollution response capability and assurance requirements through:

- Training and competency of key response personnel and contractors
- Assessing capability against response requirements
- Assurance tasks such as exercises and third party inspections.

8.2 Training and Competency

Element 5 of VOGA's Health, Safety and Environment Management System (HSE MS) is Training and Competency and within that element, the Personnel Selection, Placement and Competency Assurance Manual [VOG-1000-MN-0004] outlines how VOGA manage the training of personnel. Onsite Emergency Response personnel are trained in emergency control and leadership to ensure they are suitability prepared for decision-making in an emergency situation.

Training requirements are identified for Onsite Command and Incident Command teams to ensure rotate testing of scenarios and equipment. Records are is kept to track the and completed training of personnel. Each member of VOGA's ICT will have completed incident management training as outlined in Table 8-1, giving them basic competencies and therefore requisite skills to undertake their required incident response roles. At a minimum, this means a course in ICT management for ICT members, with planning, operations, logistics, finance chief roles, and Incident Commanders having completed a training course in ICT command and control.

Table 8-1: VOGA ICT OSR training

	Incident Commander	Planning Chief	Operations Chief	Logistics Chief	Finance Chief	ICT support roles	WNB Field Superintendent
Introduction to oil spills – familiarisation session	✓	✓	✓	✓	✓	✓	✓
Manage Emergency Incidents (PMAOHS511A)	-	-	-	-	-	-	✓
PMAOMIR320 or IMO Level 2 in OSR	-	✓	✓	✓	✓	✓	-
IMO Level 3 in OSR or PMAOMIR418	✓	-	-	-	-	-	-

The Planning Chief is supported by an Environmental unit, with the minimum competency requirement for the Environment Unit Team Leader role being a tertiary qualification in marine or environmental science (or equivalent) and a mimimum 3 years in an environmental role in the oil and gas and/or marine industry.

Specialised skill-sets such as those required for monitoring (e.g. fluorometry, shoreline surveys), aerial observation, OWR and specialised equipment operations will be sourced from the resources available within the AMOSC Core Group, AMSA National Response Team and ESC Network, the DoT State Response Team or the OSM servcies delivered through the OSRL OSM Supplementary Service Agreement.

8.3 Capability

8.3.1 Determining Requirements

VOGA's capability for oil spill response are the arrangements, contracts, MOUs, directories and agreements in place with service providers who may be involved in response efforts for an oil spill incident, assessed against worst case scenario and documented under the Oil Spill Response Capability Review [VOG-7000-RH-0009].

Determining capability for oil spill response requires an understanding of the strategies to be implemented and the associated resources. Resources required to support the implementation of each response strategy are identified in the OPEP. VOGA has chosen to identify capability required for the export system scenario in the Wandoo Facilty EP with the assumption that a capability required the Wandoo B shaft 2 spill scenarios should be sufficient in terms of resource preparedness for the vessel collision scenario in the Well Construction EP.

8.3.2 Assessment of Capability

Capability assessment is a step in the response planning process described in Figure 3-1. Once a capability is defined, arrangements are then tested to ensure it can be achieved and that risks are being managed to ALARP. If testing suggests the capability cannot be achieved then an assessment of the response strategy and specified capability is undertaken. The following questions are considered to determine capability requirements to support management of risk to ALARP:

- Are there additional tasks that can be undertaken for this strategy?
- When and where the resource would be required, based on the results of consequence modelling (e.g. time to impact, thresholds and probability)?
- How long would the resources be required for use?
- Where and what are the size of stockpiles available to VOGA?
- What are the mobilisation times for equipment from these stockpiles and contractor resources?
- What are the logistical requirements for safe deployment of materials and equipment?
- Is there any benefit of either increasing resource and/or reducing mobilisation times?
- What are the costs of either increasing resource and/or reducing mobilisation times?
- Is there any benefit in increasing the amount of resources?
- Is there a better way to undertake activities associated with this strategy?

8.3.3 Worst Case Requirements

The spill scenario from the export system assumes 300m^3 Wandoo crude at the surface over 1 hour. OSTM outputs suggests a probability of 66% contact to shorelines in Winter at 10g/m^2 threshold; 27% in Summer; and 37% in Transitional season. The earliest shoreline impact is predicated at 2 days, 20 hours (68 hrs) and greatest volume ashore is predicted to be 62.8m^3 . This scenario is considered worst case because:

- Wandoo is a persistent crude
- the extent of floating oil is larger than the diesel scenario
- volume of oil ashore is greater than the diesel scenario
- suitable response strategies identified require a greater capability than the diesel spill scenario.

8.3.4 Maintaining Capability for the Duration of a Response

Capability for resources are maintained for the duration of a response through the IAP process. The IAP process provides the ICT with the ability to forecast resource requirements based on real time incident data. Capability assurance will be monitored and adjusted if required to suit to the particular situation with resources for response operations beyond day 20 being identified and provided for. The Resources Unit within the Planning Section of the ICT monitors response capability by:

- Completing a daily stocktake of resources available, en-route, deployed and no longer serviceable
- Requesting capability statements from service providers in an incident
- Comparing resource requirements of the strategies to be undertaken in the IAP with resources available.

If the capability cannot be achieved then response strategies will be reviewed as part of the IAP process to identify alternative response strategies that reduce risks to ALARP.

Resource requirements for response operations beyond 20 days are most likely to be those required to support Scientific Monitoring not actual resposne strategies. Requirements can be difficult to quantify however the scale of resources required for the worst case scenario can be estimated by using the OSTM outputs as a guide to the geographic extent to which a response may evolve. Additional staging areas may need to be established to accommodate the geographical range of operations such as for OWR activities or shoreline clean-up. This will require access to wharf space, lay down areas for equipment, decontamination areas, waste storage and logistical support for additional personnel.

8.3.5 Monitoring of Capability

Capability can be demonstrated by the creation and testing of mechanisms to access and activate resources during a spill response. These include the testing of contracts, agreements, MOUs, and directories to demonstrate VOGA’s capability to implement the response strategies.

Audits and monitoring are a key aspect of this OSCP. Table 8-3 provides VOGA with the opportunity to ensure that the capability put in place in place during the planning phase is maintained over the duration of activities within the Wandoo Field and are heightened during times of higher risk activities, for example well construction.

8.4 Assurance Activities

8.4.1 Overview

The two key performance and assurance activities are:

- Exercises
- Inspections and audits.

These activities can either be conducted internally or by a third party, including another titleholder, equipment/resource provider or oil spill response agency.

Exercises enable the IAP processes, team interfaces and equipment deployment to be tested to enable continuous improvement of response planning or third party expertise. Exercises can either be desktop, simulated events or full scale equipment deployment.

Inspections and audits are conducted to test and provide assurance to assumptions and commitments made within this plan and capability assessment.

8.4.2 Exercises

The VOGA ERP [VOG-2000-RD-0017] ensures that strategies are in place in to manage emergencies. The VOGA Emergency Response Schedule [VOG-1100-YH-0001] addresses the scope and requirements for conducting exercises for the onsite and incident command teams.

Exercises are part of the training standards identified in the VOGA Emergency Response Schedule include:

- Onsite command exercises (Level 1) – An exercise that involves the onsite command team scenario of any severity (may be conducted as a desktop exercise).
- ICT exercises (Level 2) – Exercise of any severity, must involve exercising the ICT with an IAP being generated (may be conducted as a desktop exercise) and may involve one or more organisations or external agencies.
- Crisis Management (Level 3) – An exercise of any severity that involves Corporate Command Team who's focus is on business continuity and media/investor relations. For these exercises an corporate communications and business continuity plans may be prepared.

VOGA uses exercises to demonstrate the ability to fulfil its roles and responsibilities in terms of emergency response to all incidents including oil spill incidents. The overall aim of exercises is to drive continual improvement through:

- Providing situational experience for ICT personnel and enabling them to be aware of their assigned roles and responsibilities during a response

- Assessing the effectiveness, achievability and timeliness of incident action planning for the duration of expected response
- Testing interfaces between teams and deployment of equipment and resources.

The VOGA Emergency Response Schedule [VOG-1100-YH-0001] provides details regarding the reporting of recommendations arising out of exercises including changes of procedure, corrective actions and new guidelines. Table 8-2 presents the exercise schedule.

Table 8-2: Testing schedule

Objectives that VOGA will test	Evidence and supporting documentation required	Well Construction activities	Wandoo Field activities	Within three months after a significant change to spill profile	Joint industry, OSRA, or OSRO exercises
		Within three months before activity starts	Annually		
Aim 1: Provide situational experience for command team personnel and enabling them to be aware of their assigned roles and responsibilities during a response					
To provide an oil spill event to test the onsite or incident command team roles specifically listed in Table 8-1.	VOGA ICT exercise scenario description and attendance list.	✓	✓	-	-
	VOGA onsite command team scenario description and exercise report.	-	✓	-	-
Aim 2: Assess the effectiveness, achievability and timeliness of incident action planning for the duration of expected response					
Test the incident response cycle.	VOGA ICT exercise scenario description, IAP and decision/event log and post scenario lessons learned.	✓	✓	✓	-
	VOGA onsite command team scenario description and exercise report.	-	✓	-	-
Aim 3: Testing interfaces and deployment of equipment and resources					
To test the VOGA on-site equipment capability.	Maintenance records for simulated deployment of satellite tracking buoy.	-	✓	-	-
To assess that the ICT are aware of notification protocols in place to contact other agencies, regulatory authorities and OSRAs and OSROs.	VOGA ICT exercise scenario description, IAPs, decision/event log and stakeholder/notification contact list.	✓	✓	✓	-

Objectives that VOGA will test	Evidence and supporting documentation required	Well Construction activities	Wandoo Field activities	Within three months after a significant change to spill profile	Joint industry, OSRA, or OSRO exercises
		Within three months before activity starts	Annually		
Test the mobilisation ability and logistic assumptions around equipment and personnel movement, timings and capability.	ICT member/s observers role or participates in mobilisation exercise with OSRA or OSRO with lessons learned documented.	-	-	-	✓
	Updates to Oil Spill Response Capability Review as per Table 9-1, based on lessons learned provided to or sourced by VOGA.	✓	✓	✓	-
To participate in equipment deployment exercises (AMOSC, AMSA, DoT, contractors, other industry operators) as observers or ICT members.	ICT member/s observers role or participates in joint industry exercise: Shore-based equipment field deployment exercise.	-	-	-	✓

8.4.3 Inspections and Audits

8.4.3.1 Overview

VOGA's auditing schedule includes all elements of VOGA's HSE MS, including environment performance. The auditing schedule includes three types of auditing processes:

1. Internal inspections of VOGA's response capabilities and commitments.
2. External inspections of VOGA's response capabilities and commitments.
3. Inspections of third party providers.

8.4.3.2 Inspections of VOGA Commitments

HSE MS compliance audits are conducted regularly to review management standards relating to Management, Leadership and Policy, Risk Assessments and Case to Operate, Management of Change, Training and Competency, Emergency Preparedness (including Oil Spill Contingency), Management and Response, and Incident Management.

VOGA's auditing schedule includes all elements of VOGA's HSE MS, including environment performance. The auditing schedule includes three types of auditing processes:

- internal audits are conducted by relevant VOGA stakeholders such as the Managing Director, Operations Manager and/or HSES Advisor and are focused on VOGA systems, processes and resources.
- external audits are conducted by a third party provider and are considered a "deep dive" auditing process that reviews the system design completeness and adequacy, implementation adequacy and effectiveness.
- contractor audits are focused on the activities managed by the contracting party.

8.4.3.3 Inspections of Third Party Providers

The inspection of third party providers is focused on confirming that systems and processes are in place to meet response expectations within some or all of the following areas:

- Equipment: maintenance management, logistics, training, readiness for activation/deployment.
- People: training and competency management, quantity and availability.
- Activation process: notification processes, activation and mobilisation of people and equipment, exercises and testing.
- Documentation: contracts, agreements, specialist services, authorisation lists, capturing of learning and input into training materials.
- Management and organisation: organisational management of change process, lessons learnt, contracts and liability.

The frequency of the inspection is dependent on VOGA's activity, requirements of mutual aid partners and size/capability of the organisation and is provided in Table 8-3. Actions for third parties are provided in a report and progressed followed at a liaison meeting or the next inspection.

Table 8-3: Inspection frequency and scope

Item	Third Party oil spill response providers		
	OWR Agency	Local/Regional Oil Spill Equipment Provider	Global dispersant
Frequency	3-yearly	2-yearly	3-yearly
Equipment: Maintenance management, logistics, training, readiness for activation/deployment.	Included	Included	Included
People: training and competency management, quantity and availability.	Included	Included	-
Activation Process: Notification processes, activation and mobilisation of people and equipment, exercises and testing.	Included	Included	Included
Documentation: Contracts, agreements, specialist services, authorisation lists, capturing of learning and input into training materials.	Included	-	Included
Management and organisation: Organisational management of change process, lessons learnt, contracts and liability.	-	-	-

8.5 Action Management

Recommendations arising out of OSCP reviews, capability reviews, inspections, audits are reviewed and divided into the following categories:

- Those that need to be addressed immediately
- Those that can be actioned and addressed in the cycle of document review and amendment
- Those that are not considered appropriate to be incorporated or not relevant to the Wandoo Field OSCP and are not actioned.

Where recommendations are to address an increase spill response risk exposure identifies interim measures to manage the risk to ALARP whilst any agreed action is being completed.

9 Continuous Improvement

The OSCP may require reviews:

- Following a significant change to a spill risk profile
- Following significant changes to OSR capability or performance standards
- Post-significant event (i.e. incident, change to risk profile, change to activities, change to preparedness/capability both within VOGA and external service providers).

Reviews will take into account any issues arising from events or exercises, any changes in legislation, and also incorporate findings and recommendations from industry incidents locally and globally (if and when information is made public).

Recommendations arising out of OSCP reviews, capability reviews, inspections, audits are reviewed, assessed and considered for implementation if it is consistent with the ALARP principles outlined in the VOGA EPs. A schedule of reviews is provided in Table 9-1.

Table 9-1: Review schedule

Objective	Activity type	Well construction activities		Wandoo Field activities			Annually
		Within 3 months before activity starts	During activity	After significant changes to OSR capability	After a significant change to spill profile	Post-significant event	
To ensure that all contacts in the OSCP are regularly checked and updated	Contacts list check	✓	-	✓	-	-	✓
To ensure that all service providers retain capability	Review OSR Capability Review [VOG-7000-RH-0009]	✓	-	✓	-	✓	✓
	Contractor readiness reports	-	✓	-	-	-	-
To ensure that response strategies are consistent with oil spill mitigation requirements	OSCP review	-	-	✓	✓	✓	-

VERMILION
Oil & Gas
Australia Pty. Ltd.

VERMILION OIL & GAS AUSTRALIA

WANDOO FIELD OIL SPILL CONTINGENCY PLAN
DOCUMENT 2: OIL POLLUTION EMERGENCY PLAN
WAN-2000-RD-0001.02

Revision	Date	Originator	Checker	Approver
20	25/02/2026	Mandy Walker	Namek Jivan	Barry Goodin
		Oil Spill Response Coordinator	HSE Manager	Engineering Manager

Revision History

Revision	Date	Description
7	29.08.14	NOPSEMA comments
8	16.10.14	NOPSEMA comments
9	07.10.16	Issued for Use
10	06.02.17	NOPSEMA comments
11	18.04.17	NOPSEMA comments
12	21.07.17	Issued for Use
13	16.11.18	Routine review
14	03.01.20	Issued for NOPSEMA Acceptance
15	14.08.20	NOPSEMA comments addressed
16	04.12.20	ICT resource plan
17	17.02.21	Revised ICT resource and dispersant plan
18	21.04.21	Revised vessel dispersant capability
19	22.11.24	Revised based on OSCP update and the Joint Industry Operational and Scientific Monitoring Framework and associated OSM Bridging Implementation Plan
20	25.02.26	Revised spill scenarios for Wandoo Facility and Well Construction Activities

Distribution List

Copy no.	Position	Hard copy	E copy
1	Master copy – VOGA Document Control	X	X
2	VOGA Managing Director		X
4	VOGA HSES Manager		X
5	Wandoo Field Superintendent	X	X
6	VOGA Incident Commander	X	X
7	ICT Planning Chief	X	X
8	ICT Logistics Chief	X	X
9	ICT Finance Chief		X
10	ICT Operations Chief		X
11	ICT Safety Officer		X
12	ICT Stakeholder Liaison Officer		X
13	ICT Public Information Officer		X
14	Vermilion Corporate Command Operations Team		X
15	VOGA Well Construction QHSE Advisor		X
16	VOGA Environmental Advisor		X
17	MODU Offshore Installation Manager	X	X

Table of Contents

DOCUMENT 2: OIL POLLUTION EMERGENCY PLAN

DOCUMENT 2: OIL POLLUTION EMERGENCY PLAN

PART 4: ACTIVATION OF OIL POLLUTION EMERGENCY PLAN

PART 5: OIL POLLUTION PLANS

1 Oil Pollution Plans 6
1.1 Purpose 6
1.2 Activation 6
1.3 OPP 1 – Diesel 7
1.4 OPP 2 – Wandoo Crude 7
1.5 Oil Pollution Plan Toolbox 7

2 OPP1 – Diesel 8
2.1 Instructions 8
2.2 Initial Incident Action Plan 8
2.2.1 MES Strategy 12
2.2.2 Protection and Deflection Strategy 18
2.2.3 Shoreline Clean-up Response Strategy 22
2.2.4 Oiled Wildlife First Response 27

3 OPP2 – Wandoo Crude 29
3.1 Instructions 29
3.2 Initial Incident Action Plan 29
3.2.1 MES Strategy 37
3.2.2 Chemical Dispersant Application 43
3.2.3 Mechanical Dispersion Strategy 52
3.2.4 Containment and Recovery Strategy 54
3.2.5 Protection and Deflection Strategy 60
3.2.6 Shoreline Clean-up Strategy 64
3.2.7 Oiled Wildlife Response 69

4 Termination and Recovery 71
4.1 Response Strategies Termination Criteria 71
4.1.1 Shoreline Termination Criteria 73
4.2 Stakeholder Engagement in Termination 74
4.3 Post-response Recovery 75

5 ICT Arrangements 76
5.1 ICT Personnel 76
5.2 Response Facilities 77
5.3 ICT Resources and Activation plan 79

PART 6: SUPPORT PLANS

6 Waste Management 87
6.1 Waste Management Strategy 87
6.2 Waste Management Activation 87
6.3 Waste Management Basis 88
6.4 Regulatory Approvals 88
6.5 Waste Practices 89
6.6 Key Waste Streams 91
6.6.1 Non-oiled Waste 91
6.6.2 Offshore Oily Waters 91
6.6.3 Onshore Oily Waters 91
6.6.4 Solid Wastes 92
6.6.5 Oily Organics 92
6.6.6 Remote Location/Islands 92
6.6.7 Oil Spill Equipment Clean-up 93
6.7 Waste Assessment 93

7 Stakeholder Engagement 94
7.1 Stakeholders 94
7.2 Stakeholder Engagement Strategy 94
7.2.1 Overview 94
7.2.2 Pre-activity 95
7.2.3 Activity 95
7.2.4 Post-Spill/Pre-Exposure 95
7.2.5 Post-Spill/Post-Exposure 95
7.2.6 Termination of Oil Spill Response 96
7.2.7 Roles and Responsibilities 96
7.2.8 Documentation and Record Keeping 97

8 Operational and Scientific Monitoring 98

9 Health and Safety 100

10 Logistics Management 101

11 Tactical Response Plans 103

12 References 105

Abbreviations and Acronyms

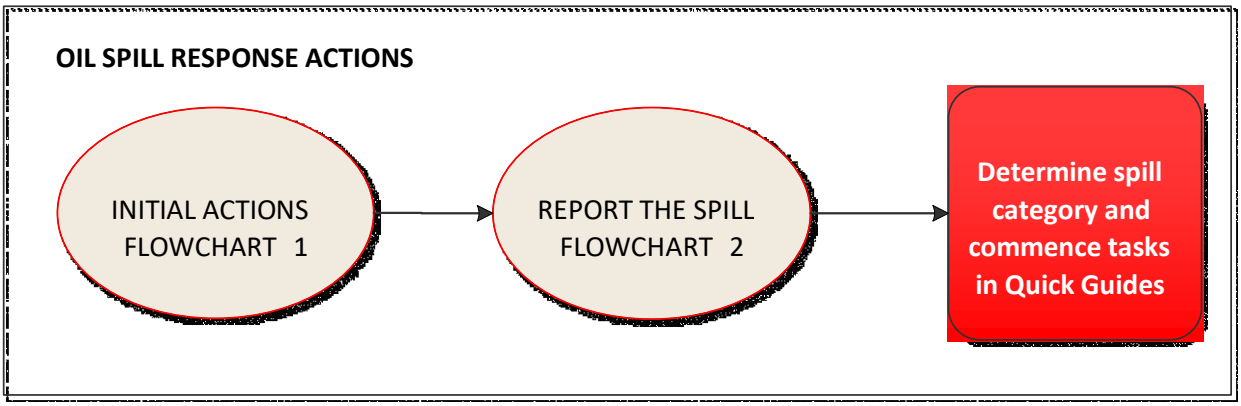
AIIMS	Australasian Inter-Service Incident Management System
ALARP	As Low As Reasonably Practicable
AMOSC	Australian Marine Oil Spill Centre
AMOS Plan	Australian Marine Oil Spill Plan
AMSA	Australian Maritime Safety Authority
APASA	Asia Pacific Applied Science Associates Pty Ltd
BAOAC	Bonn Agreement Oil Appearance Code
BER	Boom Encounter Rate
CALM Buoy	Catenary Anchor Leg Mooring Buoy
CCT	Corporate Command Team
CGS	Concrete Gravity Substructure
DEE	Department of Environment and Energy
DFAT	Department of Foreign Affairs and Trade
DMPE	Department of Mines, Petroleum and Exploration
DPIRD	Department of Primary Industries and Regional Development
DTMI	Department of Transport and Major Infrastructure
DBCA	Department of Biodiversity Conservation and Attractions
EMBA	Environment that May be Affected
EP	Environment Plan
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
ERP	Emergency Response Plan
ESC	Environmental and Scientific Coordinator
FWADC	Fixed Wing Aerial Dispersant Capability
GIS	Geographic Information System
HMA	Hazard Management Agency
hr	hour
HSES	Health, Safety, Environment and Security
HSE MS	Health, Safety and Environment Management System
IAP	Incident Action Plan
IBC	Intermediate Bulk Container
IC	Incident Commander
ICC	Incident Command Centre
ICT	Incident Command Team
IMO	International Maritime Organisation
JIP	Joint Industry Practice
kg	kilograms
km	kilometres
KPI	Key Performance Indicator

L	litres
m	metre
MEER Unit	Maritime Environmental Emergency Response Unit (within WA DTMI)
MODU	Mobile Offshore Drilling Unit
MOU	Memorandum of Understanding
National Plan	National Plan for Maritime Environmental Emergencies
NEBA	Net Environmental Benefit Analysis
NES	National Environmental Significance
nm	nautical mile
NOPSEMA	National Offshore Petroleum, Safety & Environmental Management Authority
NRT	National Response Team
OH&S	Occupational Health and Safety
OMP	Operational Monitoring Plan
OPGGSA	*Offshore Petroleum and Greenhouse Gas Storage Act 2006*
OPGGS(E)R	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009
OPP	Oil Pollution Plan
OPRC	Oil Pollution Preparedness, Response and Cooperation
OPRC	International Convention on Oil Pollution Preparedness, Response and Cooperation 1990
OSCA	Oil Spill Control Agents (Register)
OSCP	Oil Spill Contingency Plan
OSM-BIP	Operational and Scientific Monitoring Bridging Implementation Plan
OSR	Oil Spill Response
OSRA	Oil Spill Response Atlas or Agency
OSRL	Oil Spill Response Limited
OSRO	Oil Spill Response Organisation
OSTM	Oil Spill Trajectory Modelling
OWR	Oiled Wildlife Response
PIC	Person in Charge
POLREP	Pollution Report (Form)
PPE	Personal Protective Equipment
ppm	parts per million
P(SL)A	*Petroleum (Submerged Lands) Act 1982*
Ref	Reference
ROV	Remotely Operated Vehicle
SCAT	Shoreline Clean-up Assessment Technique
SDS	Safety Data Sheet
SIMOPS	Simultaneous Operations
SITREP	Situation Report (Form)
SMEACS	Situation, Mission, Execution, Administration and Logistics, Command, Control and Communication, Safety

SMOPC	State Marine Oil Pollution Committee
SMP	Scientific Monitoring Plan
SOPEP	Shipboard Oil Pollution Emergency Plan
T	tonnes
VOGA	Vermillion Oil & Gas Australia Pty Ltd
WA	Western Australia
WAOWRM	Western Australia Oiled Wildlife Response Manual
WAOWRP	Western Australia Oiled Wildlife Response Plan

PART 4: Activation of Oil Pollution Emergency Plan

WHAT TO DO IF AN OIL SPILL OCCURS



OIL SPILL RESPONSE PRIORITIES -

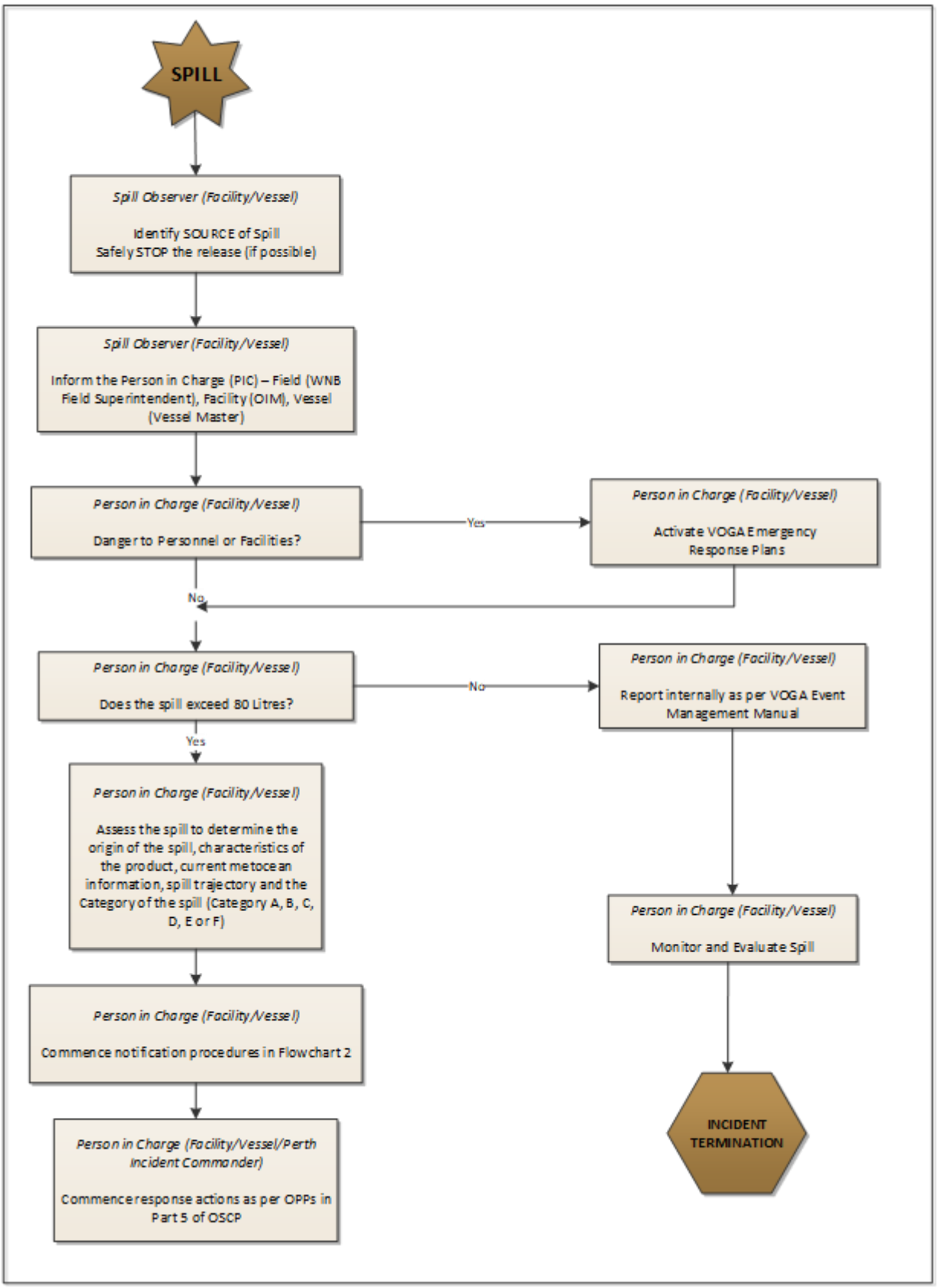
Consistent with the NatPlan , the priorities for VOGA in responding to an oil spill will be :

1. Human health and safety
2. Habitat and cultural resources
3. Rare and /or endangered flora and fauna
4. Commercial resources
5. Amenities

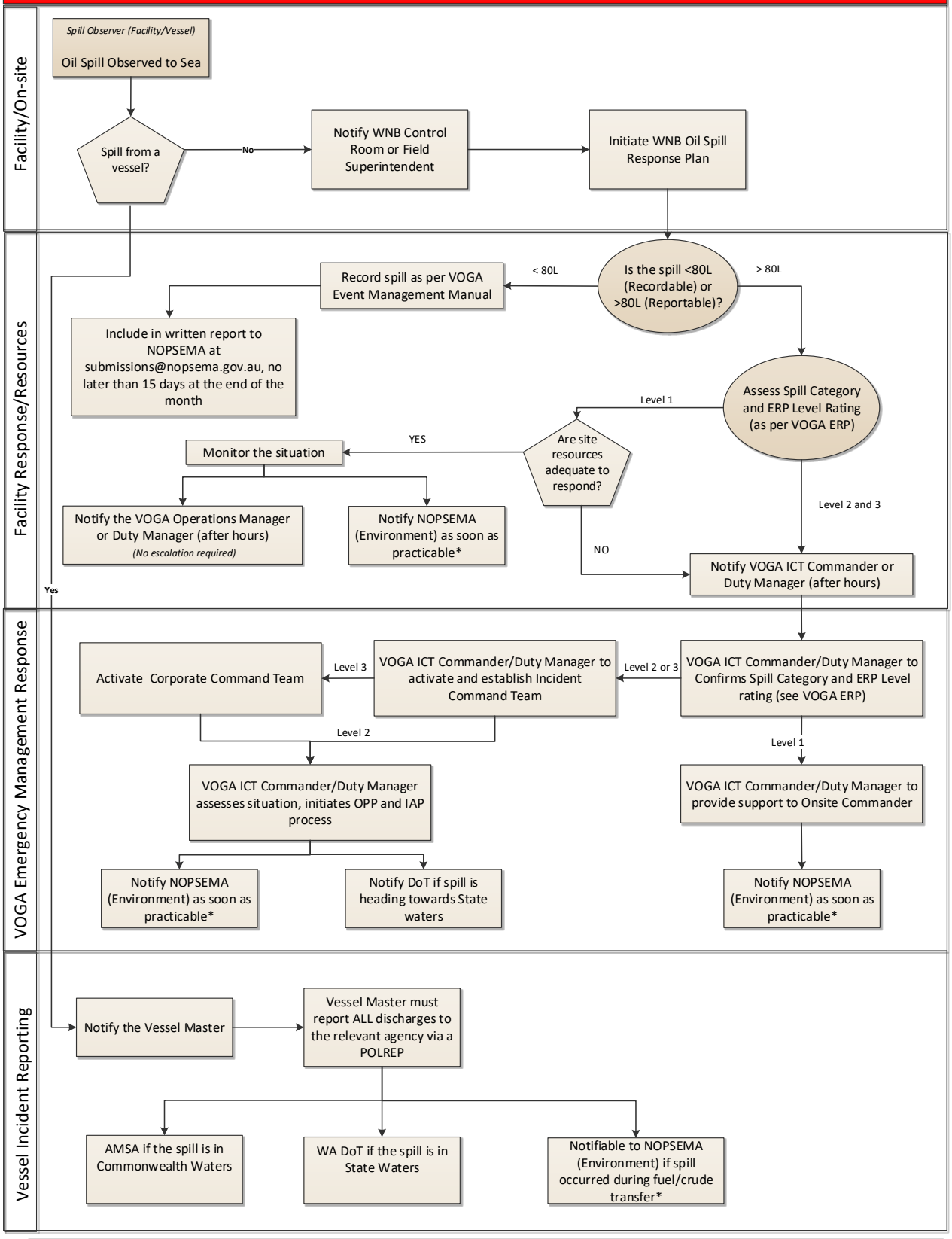
SPILL CATEGORIES AND CORRESPONDING OPP QUICK GUIDE

Spill type	Oil Pollution Plan Number	Possible cause	Credible upper spill volume	VOGA ERP incident level	National Plan incident level
Diesel	1	Vessel collision	300m^3	Level 1	1
Diesel	1	Loss of containment from Wandoo B Shaft 2	2,200m^3	Level 2	2
Wandoo Crude	2	Loss of oil from export system	300m^3	Level 2	2

FLOWCHART 1: OIL SPILL RESPONSE INITIAL ACTIONS AND ASSESSMENT



FLOWCHART 2: OIL SPILL RESPONSE REPORTING



* WNB Field Superintendent responsible for NOPSEMA Environment notifications for all petroleum activities within Permit Area WA-14L.
MODU Operator is responsible for all safety notifications to NOPSEMA for incidents resulting from activities under the control of the MODU operator.

PART 5: Oil Pollution Plans

1 Oil Pollution Plans

1.1 Purpose

Two Oil Pollution Plans (OPPs) have been prepared to assist VOGA to initiate an oil spill response through an initial IAP.

The OPPs provides support to enable first response actions to be undertaken and the resources for ongoing response to be initiated. Subsequent planning for extended response operations will need to be made as part of the continuous IAP process.

The intention is to support mobilisation of state, national and international resources required to implement response strategies in the initial phase of an event whilst the complexity and scale of the incident is determined. If the response has a surplus of resources for the required activities then the resources can be scaled back accordingly.

OPPs contain:

- objectives, strategies, tactics and tasks for first response activities
- guidance material on how to complete the tasks
- resource list to allow a scaling up and down of response operations as an appreciation of the situation is gained.

The OPPs are supported by an environmental impact assessment of the spill and response, and a Net Environmental Benefit Analysis (NEBA) process. A strategic NEBA has been generated utilising the impact assessment information within the EP (including OSTM data and identified environmental sensitivities) and provides recommendations on response strategies based on spill size, type and time of year.

An operational period of 20 days was established as the basis of the oil pollution plans as the modelling provides some certainty as to the likely fate of oil in the scenarios modelled; any further beyond this time is not useful because of the statistical uncertainty encountered.

1.2 Activation

The activation of the OPPs is outlined in Flowchart 1.

Specific response strategies will be activated through the OPPs and suitability confirmed by a NEBA spreadsheet tool that sits within the VOGA's oil spill response tools.

Activation of resources to support response activities is detailed in the VOGA Emergency Response Logistics Management Plan [VOG-7000-RH-0008] and is supported by a contracts database managed by the Logistics Chief which details suppliers, VOGA agreement numbers, contact details and services provided.

1.3 OPP 1 – Diesel

Two diesel spill scenarios are described in this OPEP a loss of 2,200 m^3 from Wandoo B shaft 2 over 12 hours (Wandoo Facility EP) and loss of 300 m^3 of diesel from a vessel collision (Well Construction EP). The loss of 2,200 m^3 from Wandoo B Shaft 2 has been used as a basis for planning in OPP1 because this scenario would provide sufficient capability for response to a 300m^3 spill from a vessel collision.

Trajectory modelling undertaken for the Wandoo B Shaft 2 scenario indicates floating oil exposure of 1 g/m^2 up to 166 km from the release location. Maximum distances for 10 g/m^2 and 50 g/m^2 were 33 km and 24 km respectively. There is a 21% probably of oil accumulation on any shoreline above 10 g/m^2 during winter conditions, at a maximum volume of 15 m^3.

Trajectory modelling for the vessel collsion scenario indicates floating oil concentrations ≥1 g/m^2 could extend up to 31 km from the release location. The maximum distances reduced to 18 km and 6 km as the threshold increases to ≥10 g/m^2 and ≥50 g/m^2 respectively.

Diesel spills are expected to remain largely offshore and weather overtime. Contingency plans for wildlife and shoreline impacts are included in OPP1.

1.4 OPP 2 – Wandoo Crude

Loss of containment of 300 m^3 of Wandoo Crude from export lines is the basis for OPP2. Trajectory modelling indicates that shoreline accumulation above 10 g/m^2 could occur on Barrow and Montebello Islands in just under 3 days during winter conditions. These shoreline cells are a priority protection area with an estimated maximum volume of 47 m^3 expected at this shoreline cell.

1.5 Oil Pollution Plan Toolbox

A number of decision support tools, response tools and handbooks are available for the ICT members and responders in the field. The purpose of the toolbox is to provide a centralised location for the ICT and responders' resources that may assist them in undertaking their specific functions within the response. Having resources prepared before a response, provides the opportunity for familiarisation during exercises, and assists members of the response when using the OPPs in a response.

Resources included in the toolbox include:

- List of tactical response plans available for high priority shorelines and relevant titleholder details to enable prompt requests for access
- OSR handbooks, technical guides templates and forms
- NEBA spreadsheet
- Websites with links to OSR organisations, research bodies and government departments
- Contractor and service provider details
- Training material.

2 OPP1 – Diesel

2.1 Instructions

- Complete the initial actions and notifications in Part 4 for activating the OSCP
- Work through the initial incident action plan Table 2-1 using the guidance and resources described in Table 2-3 to Table 2-9
- Check off tasks that have been undertaken using Table 2-2
- Generate a NEBA utilising the VOGA oil response tools (Appendix B)
- Complete the mobilisation and activation checklist within the Operational and Scientific Monitoring BIP (Appendix C)
- Transition into incident IAP process.

2.2 Initial Incident Action Plan

Table 2-1: OPP1 initial incident action plan

OBJECTIVE/S:	Ascertain extent of spill
	Prevent impact to sensitive resources
PREDICTED OUTCOMES AND PROTECTION PRIORITIES	**OIL SPILL RESPONSE STRATEGIES** (Means of accomplishing objectives)
A 300 m^3 spill from a vessel collision is expected to evaporate rapidly with a low probably of shoreline accumulation. A 2,200m^3 spill from Shaft 2 is expected to evaporate rapidly with a moderate probability of shoreline impact at or above 10 g/m^2, of 34% during winter. The earliest shoreline impact is at 3 days and 22 hours and the greatest volume ashore is predicted to be 15 m^3. Protection Priorities: • Montebello AMP • WA11.West(318) – Barrow Island and Montebello Islands (Montebello Islands) • WA11.West (326) Baresand Point to Entrance Point E - (Serrurier Island, Bessieres Island and Round Island)	1. Monitoring, evaluation and surveillance (MES)
	2. Protection and deflection
	3. Shoreline clean-up
	4. Wildlife response

STRATEGIES	TACTICS (What is planned to be done)	TASKS (See Table 2-4 to Table 2-9 for guidance on how to complete tasks)
Monitoring, evaluation and surveillance (MES)	Visual observation from vessel or facility	Provide an initial situational awareness to the PIC
		Ongoing situational awareness
	Deploy satellite tracking buoy	Deploy unit – PIC
		Access real-time data
		Interpret data
	Oil spill trajectory modelling	Activate RPS contract
	Aerial observation	Activate assets to fly as soon as possible in daylight hours only
		Analysis of aerial observation
		Deploy drone from Wandoo B if a drone, pilot and airspace is available
	Situational awareness	Collection and analysis of real time data – weather, tides, oil characteristics, presence of wildlife.
Protection and deflection	Boom deployment and configuration to protect shorelines/deflect oil – unlikely to be required for lower volume spills	Use OSTM and SCAT to identify protection priorities and expected timeframe oil contact.
		Secure near shore work vesssels
		Activate vessels, booms and operators.
		Monitor effectivenss of booming strategy.
Shoreline clean-up	SCAT surveys – unlikely to be required for lower volume spills	Activate WA trained SCAT personnel to identify shorelines requiring pre-cleaning or actual removal of oil from shore.
Oiled wildlife response	Wildlife first strike response and reconnaissance.	Aerial reconnaissance
	Mobilisation of wildlife response management resources	Marine reconnaissance
Operational and Scientific Monitoring (OSM)	Operational Monitoring	Review initation criteria for Operational Monitoring Plans (refer to Section 9 of the Joint Industry OSM Framework) and activate OSM Services Provider via instructions in Part B of the OSM-BIP.

Table 2-2: Task checklist diesel spill first 24 hours

Task checklist initial incident action plan (First 24-48 Hours)			
	Timeframe	**Who**	**Completed**
Tasking checklist facility/on site			
Start and maintain personal log.	Immediately on spill detection	PIC Wandoo B	
Undertake visual observation from platform and/or vessels of opportunity immediately.	Immediately on spill detection	Observer on site	
Activate and deploy satellite tracking buoy.	Within two hours of spill detection	PIC Wandoo B	
Deploy drone from Wandoo B if there is one available, a pilot available, and safe airspace top operate.	Opportunistic surveillance	PIC Wandoo B	
Verify that relevant notifications have been made (i.e. NOPSEMA).	Within two hours of spill detection	PIC Wandoo B	
Tasking checklist VOGA Emergency Management Response – Perth ICT (Timeframe is based on notification of spill)			
Visual observation from aircraft (in daylight hours only) has been arranged.	Within three hours	Logistics Chief Perth ICT	
Convene planning meeting to confirm and document: • Incident response aim • Priorities and objectives • Strategies • Priority resources required to be requested.	Within three hours	Planning Chief Perth ICT	
Commission RPS to undertake real-time modelling to determine trajectory and fate of oil.	Within three hours	Planning Chief Perth ICT	
Obtain available data: • Weather • Tides/currents • Topography and shoreline • Environmental sensitivity data • Spill trajectory (observed or by modelling) • Oil data (character and behaviour) • Community issues • Action taken to date.	Within three hours	Planning Chief Perth ICT	
Activate Joint Industry Operational and Scientific Monitoring Service Providers using instructions in Section 13 of the Operational and Scientific Monitoring Bridging Implementation Plan (Appendix C).	Within four hours	Environment Unit lead in consultation with Planning Chief Perth ICT	
Complete Preliminary NEBA to identify indicative response options and protection priorities (based on Strategic NEBA in OSCP).	Within six hours	Planning Chief Perth ICT	
Activate priority resources (labour, equipment, transport and other support) based on outcomes of planning meeting and the agreed IAP.	Within six hours	Logistics Chief in consultation with Planning Officer Perth ICT	

Task checklist initial incident action plan (First 24-48 Hours)			
	Timeframe	**Who**	**Completed**
Monitor the response by scheduling and undertaking regular briefings/debriefings of ICT using SMEACS format.	Every six hours or as necessary	Incident Commander in conjunction with Planning Chief ICT	
Issue regular Situation Reports (SITREPS).	Prior to each ICT meeting.	Planning Chief Perth ICT	
Identify relevant Tactical Response Plans for protection priorities (based on strategic NEBA)	Within 48 hours	Environment Unit leader and Planning Chief Perth ICT	
Activate Oiled Wildlife Response Emergency Response Plan and Procedures (WAOWRP)	Within 48 hours	Planning Chief	
Monitor OH&S performance	Ongoing	Safety Officer	
Use information from MES and Operational Monitoring to transition to formal IAP cycle	Within 48 hours	Incident Commander Perth ICT	

2.2.1 MES Strategy

Table 2-3: Monitoring, evaluation and surveillance

Task	Guidance
Visual observation from vessel or facility	
Provide an initial situational awareness to the PIC	To initiate this strategy, the PIC of a vessel or the Wandoo facility where the spill has occurred will (if safe to do so) organise for an observer to monitor the spill and communicate information regarding the appearance of the oil, area covered and if the spill has ceased. This process is depicted in Flowchart 1. Observer on scene to record and report to PIC on facility (who then provides information to Planning Chief) the following. Estimate the percentage cover by colour: silver; rainbow; black/dark brown; or brown/orange. • Is there wildlife in or near the spill? • Are there other vessels or activities occurring within or near the spill? • Is it possible to confirm if the spill is continuous?
Ongoing situational awareness	As directed by Planning Chief, provide updates on what the spill looks like, area covered, presence of wildlife or other activities.
Deploy satellite tracking buoy	
Deploy unit – PIC	It is important to deploy a satellite tracking buoy from the facility as soon as possible after the spill has occurred, so that real-time data can be collected to verify pre-spill trajectory modelling and also be inputted into real-time modelling. The PIC on Wandoo B (or delegate) deploys tracking buoy by removing from storage on Wandoo B, turning it on and releasing as close to the spill as possible. Planning Chief to check that this has been done. Additional units deployed every three days.
Access real-time data	Planning Chief accesses data from the Fastwave dashboard url: https://dashboard.fastview.com.au/ user: vermilion1 pass: cali6AF7662FK Instructions on how to use the portal are in the ICT Toolbox
Interpret data	Planning Chief uses real-time data and knowledge of sensitivities to estimate spill trajectory and resources that could be impacted.

Task	Guidance
	Real-time data is also provided to RPS to validate OSTM data.

Task	Guidance
Oil spill trajectory modelling	
Activate RPS contract	OSTM is an essential tool used by the Environment Unit in the Planning Team to determine resources at risk and protection priorities. Planning Chief in liaison with Logistics Chief activates the RPS contract for real time trajectory modelling: (1) Complete the modelling request form (editable .pdf request form provided). Please complete as much detail as possible to allow for generation of modelling results and outputs. (2) Call the RPS Duty Officers on +61 408 477 196 to advise the RPS Duty Officers that they are now activated and a trajectory modelling request will be sent to them via email. Please note that the call to the RPS Duty Officers must be made as the email account is not monitored 24/7. (3) Send completed request form to RPS Duty Officers via email at RPSresponse@rpsgroup.com (4) Follow up the email with a phone call to the RPS Duty Officers to confirm email receipt and contents of the email (i.e. the modelling request form) are correct. (5) The RPS Duty Officers will undertake the modelling as per the modelling request form provided. Should any of the incident details change, as further information becomes available, please call the RPS Duty Officers to inform them of the change. Follow this call up with an email confirming the change in details for the modelling. (6) Model outputs will be forwarded from the RPS Duty Officers to the requesting client officer as quickly as possible. The results will be transmitted by email to the requesting client officer and copied to the designated parties as identified by the client officer. The results may be passed on via a number of means including email attachment and/or FTP site. Access details to the FTP site is via the ICT Toolbox. (7) Once the modelling results have been received from RPS, call or email the RPS Duty Officer to inform them that the results have been received. (8) If extra advice is sought in regards to interpreting the trajectory modelling output, please follow up with a call to the RPS Duty Officers for further clarification. RPS will require details collected through the situational awareness task such as real time weather, sea state, and oil type spilled.
Aerial observation	
Activate assets to fly as soon as possible in daylight hours only	Upon notification of a spill the Planning Chief requests the Logistics Chief to activate aviation contracts. Fixed wing aircraft (preferably over wing configuration) or helicopters to provide personnel with the means to observe and record details of oil on water. Request flight as soon as possible. Pilots or observers be provided with information on the anticipated location of the slick (e.g. from OSTM output).

Task	Guidance
	If possible use aircraft already in the area to provide situational awareness. Flight time to the Wandoo B is 20 minutes (48nm) based on S76 helicopter (@140 knots).
Secure observers	Activate AMOSC to undertake aerial surveillance activities. If trained observers are not available within the timeframe for initial reconnaissance flight, use untrained aerial observers for initial situational awareness. Secure trained aerial observers to quantify amount of oil on water and geographical spread from the resource list in the VOGA Emergency Response Logistics Management Plan (VOG-7000-RH-0008).
Data to be collected – conduct flight as soon as possible in daylight hours only	Aerial observation template forms are to be provided to observers, along with a digital camera for video and photos. Observer is to obtain location details (coordinates) from pilot and note these for images and extent of slick. Information is to be provided back to the Planning Chief as soon as possible after the flight has landed. This could be done initially via verbal briefing from the observer and followed up by email or fax of completed observation template.
Ongoing surveillance	Logistics Chief secures appropriate aircraft to undertake aerial observation activities twice a day – morning and afternoon until advised otherwise by Planning Chief. The information collected during aerial observations must be relayed back to the ICT for analysis by the Situation and Environment Units.
Drone photos and videos	This is an opportunistic task. Determine if there is a drone and drone pilot available on Wandoo B and if there is safe airspact to conduct a flight. Fly transects from the platform along the slick, directly overhead to assist in determining spill volume and direction.

Task	Guidance
Situational awareness	
Collect real-time and predicted data to enter on status boards in ICT Ongoing update	Status boards in ICT require the following information (sourced and entered by situation unit leader): • Real-time and predicted weather and sea-state conditions – source from Bureau of Meteorology (BoM) • Real-time and predicted tidal and current movements – source from BoM, websites • Oil characteristics – properties of the oil spilled and predicted behaviour after weathering • Predicted trajectory of oil based on modelling conducted for planning and verified by real-time modelling • Resources at risk of being oiled sourced from OSCP.
Incident action planning	At the completion of the MES tasks, the Planning Chief will review information gathered provide a recommendation to the Incident Commander for MES tasks.
Operational and Scientific Monitoring	
OSM	Refer to OSM-BIP and inititation criteria for Operational Monitoring Plans
Effectiveness guidance for response strategy	Information available is: • Of sufficient quality • Consistent in reporting • Regular • Required to inform other response strategies.

Table 2-4: OPP 1 MES minimum resources required

Means/task	Outcomes	Minimum resources required for first 48 hours	Timeframe (from notification of spill)	5 days	10 days	20 days
Visual observation – from platform	Identify extent and direction of oil, visual characteristics. Ground truth OSTM.	1 x Observer.	Immediately on detection of spill			
Visual observation – from vessels of opportunity	Identify extent and direction of oil, visual characteristics. Ground truth OSTM.	1 x Vessel. 1 x Observer.	Mobilise if vessels of opportunity are already in the field.			
Visual observation – from aircraft	Identify extent and direction of oil, visual characteristics. Ground truth OSTM.	2 x Observer. 1 x Aircraft. 1 x Aerial support base.	Daylight only, two hours	2 x Observers. 1 x Aircraft. 1 x Aerial support bases.	2 x Observers. 1 x Aircraft. 1 x Aerial support bases.	
Determination of surface and dispersed oil trajectory and fate	Identify the likely trajectory and fate of the spill and dispersed oil, timeframes for the oil (surface or dispersed) to interact with environmental sensitivities.	1 x Incident Command Team member with oil spill assessment training. Contract with technical provider.	Requested within three hours	1 x Incident Command Team member with oil spill assessment training. Contract with technical provider.		
Satellite tracking buoys	Identification of the leading edge/rear edge of the spill.	1 x satellite tracking buoy Data site 'back end' to Geographic	Deployed within 3 hours.	2 x satellite tracking buoys Data site 'back end' to GIS system.		

Means/task	Outcomes	Minimum resources required for first 48 hours	Timeframe (from notification of spill)	5 days	10 days	20 days
		Information System (GIS). Current contract with satellite provider.		Current contract with satellite provider.		

LEGEND:	Resource required	Resource possibly required	Resource unlikely to be required

2.2.2 Protection and Deflection Strategy

Table 2-5: Protection and deflection

Task	Guidance
Analysis of trajectory modelling and NEBA	Planning Chief and Environment Unit Leader analyse trajectory models (pre-event modelling and real-time modelling) to predict which shorelines may be impacted by oil, time to impact, probability and quantity of oil to shore. Priority resource protection areas are compared with the shorelines that are predicted to be oiled and operational/tactical plans are activated. Outputs from MES will confirm protection priorities that require action to prevent oiling. Priority of the implementation of tasks to support this strategy will be focused on protecting the highest shoreline and near-shore environmental sensitivities. Oil at sea may come ashore and strand. Using deterministic modelling during a spill, combined with situational awareness gained through ongoing MES, VOGA will implement this strategy in these areas to protect sensitive shorelines and where the hydrocarbon slick is of a sufficent thickness to be effective (ie ≥50g/m^2).
Analysis of aerial observation and current situational awareness	Planning Chief and Environment Unit Leader to use aerial surveillance data, information gathered by the Situation Unit and the protection priorities identified in pre-spill planning as a starting point for deployment of protection and deflection operations.
Understanding of real time currents and tides	Booming configuration will depend on the tidal movements and speed of currents in the location in which booms are to be deployed. Booms will fail when the forces of water movement push oil over or under the boom, or when there is failure of anchoring systems. This can be in currents of as little as 1 knot, however there are ways in which booms can be set up (e.g. chevron booming, staggered booming) so that oil is directed with the current onto another boom or into a collection area.

Task	Guidance
NEBA	Priority of the implementation protection and deflection is to oiling of shorelines with the highest environmental sensitivities (location and season) and where the hydrocarbon slick is of a sufficent thickness to be effective (ie ≥50g/m^2). Planning Chief and Environment Unit leader in consultation with DTMI to determine where the optimum mitigation outcomeswill be achieved through protection and deflection activities. Shoreline protection priorities are mangrove environments and identified turtle nesting beaches during nesting and hatching season. Where trajectory modelling indicates likely multiple stranding of oil, and a NEBA indicates no likely worse outcome, shores may be left to allow oil to collect utilising areas of natural containment. Identification and request of relevant Tactical Response Plans from other titleholders for priority shorelines
Determine and source resources required and booming configuration	Planning Chief to liaise with Operations Chief to determine type of booms (including ancillaries such as anchors and power packs for land sea booms) required and a booming configuration that can effectively and efficiently direct oil away from a sensitive receptor, or prevent contact by oil. Refer to OSRL handbook for Shoreline Operations for recommended booming configurations. Use of available Tactical Response Plans as guidance. Logistics Chief to source booms and skimmers (if being used to recover oil) from AMOSC stockpiles and the AMSA National Plan stockpiles. Logistics Chief to secure vessels (including crew) and equipment operators (AMOSC core group or AMSA NRT) to deploy booms and vessels to assist in shallow areas. Booms can be deployed in various configurations to either exclude oil from a sensitivity or deflect the oil away from it. Trained operators will be required for this task and are available from the AMOSC Core Group, AMSA NRT or the DoT State Response Team. Protection and deflection strike teams will establish exact equipment and resource requirements for specific shoreline protection and deflection according to the specific incident. Daily inspection and maintenance of deployed booms to be undertaken by response personnel.
Induction	Operations Chief to ensure that teams are informed of how to minimise damage to flora and avoid encounters with fauna. Induction and training of onshore teams accessing to uninhabited islands to include that spill response teams should avoid disruption of environment and take practical tactical precautions to avoid contact with flora and fauna. The number of staff and teams required will vary according to the sensitivities being protected.
Marine vessel transport of people and equipment	Logistics Chief to secure marine vessel(s) capable of carrying crew and spill equipment to remote islands.
Aerial surveillance and/or transport	Logistics Chief to secure aircraft to enable ongoing aerial surveillance of shorelines and/or transport of people and equipment.
Consider constraints	Diesel slicks are unlikely to be of a sufficient thickness to effectively divert or direct onto shorelines using booming strategies.

Task	Guidance
	The major environmental constraint for protection and deflection, especially in areas of northwest WA is the tidal range of and current speed that may be experienced. It may not physically be possible to deploy protection and deflection booming systems if the tide and current are not favourable. Other constraints include: • access to remote islands and mainland beaches; • biosecurity issues associated with moving people and equipment between remote islands and the mainland; • access to sites (habitat, terrain, distance from the mainland, landing/mooring sites for vessels); • transport of equipment to remote sites; • weather and sea-state; and • hazardous wildlife.
Incident action planning	The Planning Chief will review the operations based on a briefing from the Operations Chief and provide a recommendation to the Incident Commander for future protection and deflection operations.
Effectiveness guidance for response strategy	• Visual observation to determine whether a booming operation is 'protecting' and/or 'deflecting' the impact of hydrocarbon towards sensitivity • Boom type, deployment angle, anchoring, quantity and variation in materials can all be altered to increase effectiveness.

Table 2-6: Protection and deflection minimum resource requirements

Means/task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Landside (based on one team, resources will need to be scaled up for additional teams)						
Marine vessels	Marine vessel(s) capable of carrying crew and spill equipment to remote islands. Capable of logistics support/accommodation for 10 POB, crew, accessing remote islands.	1 x Aluminium catamaran or flat bottom boat.	48 hours on site	2 x Aluminium catamarans and/or flat bottom boats.	2 x Aluminium catamarans and/or flat bottom boats.	

Means/task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Crew	Crew capable of securing booms.	1 x Trained operator/Team Leader. 4 x Labourers.	48 hours on site	2 x Trained operators/ Team Leaders. 8 x Labourers.	2 x Trained operators/ Team Leaders. 8 x Labourers.	
Booming systems	A system that can effectively and efficiently direct or prevent the movement of oil.	Various lengths of land/sea boom, shoreline protection booms, sorbent booms.	48 hours on site	Various lengths of land/sea boom, shoreline protection booms, sorbent booms.	Various lengths of land/sea boom, shoreline protection booms, sorbent booms.	
Marine side (based on one team, resources will need to be scaled up for additional teams)						
Vessel	Vessel capable of assisting land-side crews to secure booms in waterways and in the shallow seas.	1 x Shallow draft work boat. Operational crew for same.	48 hours on site	2 x Shallow draft work boat. Operational crew for same.	2 x Shallow draft work boats. Operational crew for same.	
Crew	Crew capable of securing booms.	1 x Trained Operator/Team Leader. 2 x Labourers on-board.	48 hours on site	2 x Trained Operators/ Team Leaders. 4 x Labourers on-board.	2 x Trained Operators/ Team Leaders. 4 x Labourers on-board.	
Booming systems	A system that can effectively and efficiently direct or prevent the movement of oil.	Various lengths of land/sea boom, shoreline protection booms, sorbent booms. Crew to operate the system.	48 hours on site	Various lengths of land/sea boom, shoreline protection booms, sorbent booms. Crew to operate the system	Various lengths of land/sea boom, shoreline protection booms, sorbent booms. Crew to operate the system	

LEGEND:	Resources required	Resources possibly required	Resources unlikely to be required

2.2.3 Shoreline Clean-up Response Strategy

Table 2-7: Shoreline clean-up

Task	Guidance
Shoreline clean-up, subject to amenable weather conditions and access, is the use of a variety of clean-up methods on shorelines to remove stranded hydrocarbons, and to minimise the potential ongoing environmental damage caused by those hydrocarbons. *Depending on OSM-BIP activations SCAT maybe undertaken by Monitoring Service Providers as OM6 SCAT. If not, the following guidance is provided for local teams.*	
Analysis of trajectory modelling	Planning Chief and Environment Unit Leader analyse trajectory models (pre-event modelling and real-time modelling) to predict which shorelines may be impacted by oil, time to impact, probability and quantity of oil to shore. Priority coastline sections are compared with the shorelines that are predicted to be oiled and available tactical plans are activated.
Analysis of aerial observation and current situational awareness	Planning Chief and Environment Unit Leader to use aerial surveillance data, information gathered by the Situation Unit and the protection priorities identified in pre-spill planning as a starting point for shoreline surveys and clean-up activities.
NEBA and SCAT surveys	Priority of the implementation of tasks to support this strategy will be focused on cleaning oil from shorelines with the highest environmental sensitivities. WAMOPRA shoreline cell WA11.West (318) – Barrow Island and Montebello Islands has been identified in OSTM as the highest priority for first response. Planning Chief and Environment Unit leader to determine where the optimal mitigation outcomes will be achieved through shoreline clean-up activities. This analysis will require information gathered by shoreline assessment field teams, and consulting with WA DoT representatives to confirm protection priorities. SIMA Shorelines will be assessed for the extent of the oiling, with this information reported back to the VOGA ICT to determine which shoreline(s) is/are the priority for clean-up. This determination will be made based on the preparatory NEBA, and the NEBA that will be undertaken at the time by the Planning Unit within the ICT. Shoreline clean-up will follow a three-stage methodology (refer to ITOPF Technical Information Paper No. 7): 1. Emergency phase – collection of oil floating close to the shore and pooled bulk oil removal. 2. Project phase – removal of stranded oil and oiled shoreline material that cannot be cleaned in-situ. 3. Polishing phase – final clean-up of light oil contamination and removal of oil stains, where the incident SIMA demonstrates this is necessary. Actual clean-up tasks for each of the three stages will be selected based on an assessment of suitability for the clean-up task for the oil character and shoreline type. Where trajectory modelling indicates likely multiple strandings of oil, and a NEBA indicates no likely worse outcome, shores may be left to recover without intervention.

Task	Guidance
	In undertaking this three-step process, VOGA contractors, employees and support agencies will work to effectively and efficiently clean shorelines where possible. A number of technical guidance notes exist for shoreline assessment and clean-up operations. These include the Environment Canada SCAT Guidelines (2007), the POSOW Shoreline Clean-up Guidelines, the UK SCAT Manual (2004), and the WA DTMI Oiled Shoreline Field Book. DTMI SCAT documentation and forms can be used to complete SCAT surveys.
Deploy shoreline clean-up teams	Deploy 6 shoreline clean up teams by Day 4 to priority coastline sections verified by the OMP6 SCAT survey, NEBA and OSTM analyses. One trained shoreline team leader and ten shoreline clean up workers per team.
Logistics	Logistics Chief activate resources in Logistics Management Plan [VOG-7000-RH-0008]. Finance Chief to ensure that personnel records are completed.
Induction and training	Operations Chief to ensure that shoreline teams are informed of how to minimise damage to flora and avoid encounters with fauna. Induction and training of onshore teams accessing to uninhabited islands to include that spill response teams should avoid disruption of environment and take practical tactical precautions to avoid contact with flora and fauna. The number of staff and teams required will vary according to the sensitivities being protected. Operations Chief to also ensure the waste management plan prepared by Planning and Logistics is implemented on site.
Marine vessel transport of people and equipment	Logistics Chief to secure marine vessel(s) capable of carrying crew and spill equipment to remote islands.
Aerial surveillance and/or transport	Logistics Chief to secure aircraft to enable ongoing aerial surveillance of shorelines and/or transport of people and equipment.
Equipment	Cleaning equipment, decontamination set. The type and amount of equipment required for shoreline clean-up will depend on the technique used) and operational constraints such as access to the shoreline and weather conditions. Equipment held in the State stockpiles (DoT) is suitable for shoreline clean-up activities as well as the equipment held in AMOSC and AMSA stockpiles. Additional resources can be accessed from OSRL.
Ongoing clean-up operations	Planning Chief and Operations Chief decide in each IAP cycle which shorelines are to be cleaned and the clean-up method to be used. The decision to use particular clean-up methods will be based on the information provided by the SCAT teams and operational teams working the shorelines. Shoreline clean-up, subject to amenable weather conditions and access, is the use of a variety of clean-up methods on shorelines to remove stranded hydrocarbons, and to minimise the potential ongoing environmental damage caused by those hydrocarbons. Priority of the implementation of tasks to support this strategy will be focused on cleaning oil from shorelines with the highest environmental sensitivities.

Task	Guidance
	Shoreline clean-up teams will be directed (as part of the IAP) to mount operations in areas where the optimum mitigation outcomes will be achieved. This analysis will be undertaken at the time by the Planning Team, using shoreline assessment field teams, and consulting with WA DoT representatives to confirm protection priorities. The WA DoT will be consulted in the SIMA process and response strategy selection for OSR that impacts State waters. Sorbents will not be used for shoreline clean-up on high energy shorelines. Mechanical removal and high pressure flushing will not be undertaken in mangrove areas. Water from high pressure flushing will not be directed in between rocks and onto sediment.
Waste collection and transport	Where shoreline clean-up is occurring, VOGA will implement the establishment of hot, warm and cold zones, to minimise secondary contamination. Local sites will be used for the temporary storage of soiled material, liquid waste and solid waste/oil mixes, to enable appropriate final waste solution to be effectively implemented. Shoreline waste generation can be reduced by identifying shorelines likely to be impacted and pre-cleaning the shore of debris and vegetation before oil strands, thus reducing the total amount of oily waste to dispose of. Shoreline waste generation can range from three to over 10 times the amount of oil stranded. Sorbent materials will be stored in a contained storage area prior to transport and disposal to prevent any further contamination of habitats.
Incident action planning	At the completion of shoreline clean-up operations, the Planning Chief will review the operations based on a briefing from the Operations Chief and provide a recommendation to the Incident Commander for future shoreline clean-up activities.
Effectiveness guidance for response strategy	• OM6 – Shoreline assessment. • OM3 – Sediment quality assessment • Shoreline surveys undertaken. • Information collected in surveys used to inform clean-up activities. • Shoreline clean-up activities don't do further damage than oil alone. • Waste stored and removed offsite. • Shoreline clean-up endpoints agreed to and closed out by stakeholder representatives.

Means/ task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Induction	Shoreline teams are informed of how to minimise damage to flora and avoid encounters with fauna.	1 x Trainer.	72 hours on site	1 x Trainer. 4 shoreline clean-up teams on site (44 people – 1 trained team leader, 10 workers per team).		
Manual shoreline clean-up activities	Floating oil close to shore collected and pooled bulk oil removed. Stranded oil removed. Cleanup of light oil contamination (polishing phase). Physical removal of oil likely to be feasible at concentrations greater than 100g/m^2 which the OSTM indicates has a probability of 3% occuring.	2 team leaders and 20 clean-up workers (44 people) sourced and mobilised to forward operating base.	4 shoreline clean-up teams (40 workers and 2 team leaders) mobilised and on site for induction within 72 hours	4 shoreline clean-up teams (40 workers and 2 team leaders) mobilised and on site	4 shoreline clean-up teams (40 workers and 2 team leaders) mobilised and on site	
Logistics	Crews are safe, fed, in contact with other	Mobilisation of PPE, food, water, shelter,	72 hours on site.	Mobilisation of PPE, food, water, shelter,	Mobilisation of PPE, food, water, shelter,	

Means/ task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
	parts of the response and watered.	communications network.		communications network.	communications network.	
Marine vessels	Marine vessel(s) capable of carrying crew and spill equipment to remote islands.	2 x Marine vessels.	72 hours on site	2 x Marine vessels	2 x Marine vessels	
Equipment	Cleaning equipment and decontamination set selected according to suitablity for clean-up task and shoreline type.	4 x shoreline clean-up kits made up of shovels, plastic bags, rakes, buckets, wheelbarrows. Decon kit.	72 hours on site	4 x shoreline clean-up kits made up of shovels, plastic bags, rakes, buckets, wheelbarrows. Decon kit.	4 x shoreline clean-up kits made up of shovels, plastic bags, rakes, buckets, wheelbarrows. Decon kit.	
Waste collection, storage and transport	Short term waste collection.	Temporary waste storage capability activated.	72hrs onsite	Waste storage	Waste storage	

LEGEND:	Resources required	Resources possibly required	Resources unlikely to be required

2.2.4 Oiled Wildlife First Response

Table 2-8: Oiled Wildlife response

Task	Guidance
Activate WAOWRP	Call the DBCA State Duty Officer on telephone **(08) 9219 9108.** The DBCA State Duty Officer will notify an OWA. Appoint a Wildlife Division Coordinator. First strike response activities may be undertaken within the Environment Unit of the Planning section until a Wildlife Division Coordinator is actually in the ICC.
Rapidly assess the situation	Review OSTM – both the model used in response planning and the real time when available. SITREP – reports of wildlife both oiled and active within the response area.
Provide advice to the IMT in relation to the wildlife assets at risk	Wildlife Division Coordinator to undertake. Use WAOWRP to identify wildlife assets at risk, cross reference with wildlife information contained in NEBA..
Liaise with Oiled Wildlife Advisor	Wildlife Division Coordinator to liaise with OWA.
Activate first strike response kits	Wildlife Division Coordinator and OWA discuss get approval from IC. First strike kits are portable and contain equipment to allow stabilisation of wildlife before triage and possible treatment at an oiled wildlife facility.
Reconnaissance	Reconnaissance across priority shorelines with specific locations determined by OSTM and the NEBA at the time of the spill. Resources are required to identify and record location of oiled wildlife as well as determining the presence of wildlife in areas predicted to be impacted by oil. Real time wildlife reconnaissance is necessary to ground truth information due to seasonal and inter-annual variation in abundance and distribution of wildlife. Depending on OSM-BIP activations this task could be undertaken by teams implementing OM5 – Marine Fauna Surveillance.
Develop wildlife sub-plan for the IAP based on WAOWRP procedures.	Transition to response cycle and procedures in WAOWRP for OWR activities based on the spill scenario.

Table 2-9: OWR minimum resources

Means/task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Wildlife first strike response	WAOWRP is activated.	N/A – activation task only	Within 24 hours	N/A – activation task only	N/A – activation task only	N/A – activation task only
	OWA and Wildlife Division Coordinator are activated and assigned to the ICT.	1 x OWA. 1 x OWR Division Coordinator.	Once WAOWRP is activated.	N/A – activation task only	N/A – activation task only	N/A – activation task only
Mobilisation of resources	First strike response kits are mobilised to staging areas	Vehicles/small trucks to deliver 6 x first strike response kits to operational sectors. Vessels/aircraft to take kits to islands. 1 x OWA. 1 x OWR Division Coordinator.	Within 48 hours.	1 x OWA. 1 x OWR Division Coordinator.	1 x OWA. 1 x OWR Division Coordinator.	1 x OWA. 1 x OWR Division Coordinator.
	Two OWR containers are mobilised to an OWR facility location in Dampier.	2 x OWR containers from Dampier (AMSA) and Fremantle (AMOSC).	Within 48 hours.	2 x OWR containers deployed to Dampier OWR facility.	N/A – containers deployed	N/A – containers deployed
Wildlife reconnaissance	Situational awareness regarding wildlife that has been oiled and wildlife present within the path of the spill trajectory is gained.	1 x aerial observation over extent of spill combined with MES tasks. 1 x aerial observation over extent of predicted trajectory requires 1 x aircraft.	Concurrently with MES and SCAT tasks. Wildlife specific reconnaissance within 48 hours.	Aerial based survey: 1 x aerial observation over extent of predicted trajectory requires 1 x aircraft Boat based survey: 1 x small vessel (<12m length) 1 x boat driver; 2 x crew Shoreline survey: 2 x Quad motorbike or 4WD vehicle; 4 x survey crew.		
IAP wildlife sub-plan development	Future OWR activities arrangement developed based on the spill scenario.	1 x OWR Advisor; 1 x OWR Planning officer; 1 x OWR Division Coordinator.	Within 48 hours.	To be determined according to WAOWRP procedures.		

3 OPP2 – Wandoo Crude

3.1 Instructions

- Complete the initial actions and notifications in Part 4 for activating the OSCP
- Work through the initial incident actin plan Table 3-1 using the guidance and resources described in Table 3-2 to Table 3-18
- Check off tasks that have been undertaken using Table 3-2
- Generate a NEBA utilising the VOGA oil response tools (Appendix B)
- Complete the mobilisation and activation checklist within the VOGA Operational and Scientific Monitoring BIP (Appendix C)
- Transition into incident IAP process.

3.2 Initial Incident Action Plan

Table 3-1: OPP2 initial incident action plan

INCIDENT OBJECTIVE/S:	Ascertain extent of spill
	Prevent impact to sensitive resources
PREDICTED OUTCOMES AND PROTECTION PRIORITIES	**OIL SPILL RESPONSE STRATEGIES** (Means of accomplishing objectives)
Modelling suggests 66% contact to shorelines in Winter at 10 g/m^2 threshold 27% in Summer and 37% in Transitional season. The earliest shoreline impact is at 2 days, 20 hours and greatest volume ashore is predicted to be 62.8 m^3 Montebello AMP WA11.West (318) Barrow Island and Montebello Islands (A) (Montebello Islands) WA11.West (326) Baresand Point to Entrance Point E - (Serrurier Island, Bessieres Island and Round Island)	1. Monitoring, evaluation and surveillance
	2. Chemical dispersion
	3. Mechanical dispersion
	4. Containment and recovery
	5. Protection and deflection
	6. Shoreline clean-up.
	7. Wildlife Response

STRATEGIES	**TACTICS** (What is planned to be done?)	**TASKS** (See Table 3-3 to Table 3-18 for guidance on how to complete tasks)
Monitoring, Evaluation and Surveillance	Visual observation from vessel or facility	Provide initial situational awareness to the PIC
		Ongoing situational awareness
	Deploy satellite tracking buoy	Deploy unit – PIC
		Access real-time data
		Interpret data

STRATEGIES	TACTICS (What is planned to be done?)	TASKS (See Table 3-3 to Table 3-18 for guidance on how to complete tasks)
	Oil spill trajectory modelling	Activate RPS modelling contract
	Aerial observation	Activate assets to fly as soon as possible in daylight hours only
		Analysis of aerial observation
		Deploy drone from Wandoo B if there is a drone, pilot and airspace available.
	Situational awareness	Collect real-time and predicted data to enter on status boards in ICT
		Obtain satellite imagery
		Preliminary NEBA and incident action planning for guidance on response strategies and protection prioririte s.
		Effectiveness guidance for response strategy
		Analysis of trajectory modelling
		Analysis of aerial observation and current situational awareness
		Consider constraints
		Decide on which shorelines will be prioritised for SCAT surveys
		Analysis of resources and logistics required
Chemical dispersion	Aerial dispersant operations	Activate FWADC through AMOSC within six hours of the spill
		Mobilise dispersant to Karratha Airport within six hours of the spill
		Set up operating post at Karratha Airport
		Monitoring dispersant effectiveness of test spray runs using visual observation (refer to OM4)
		Arrange for a spotter plane to accompany air tractor
		Arrange for trained AAC to be available for test spray run
		Pre-flight briefing
		Test spray run by air tractor
		Monitoring dispersant effectiveness of test spray runs using visual observation via OSM as per below.
		Planning Chief to undertake a NEBA of chemical dispersion operations – operational activities
		Secure trained personnel to run dispersant operation
		Pre-flight briefing
		Ongoing dispersant operations
		Volume of dispersant and number of aircraft required

STRATEGIES	TACTICS (What is planned to be done?)	TASKS (See Table 3-3 to Table 3-18 for guidance on how to complete tasks)
		Monitoring dispersant effectiveness – ongoing operations (via OSM as per below)
		Debriefing
		Stockpile management
		Incident action planning
		Effectiveness guidance for response strategy
	Marine dispersant operations	Identify marine operating base
		Source vessel
		Dispersant stocks
		Dispersant spray system
		Arrange for a spotter plane to accompany marine vessel
		Planning Chief to undertake a NEBA of chemical dispersion operations – test run activities
		Test run by marine vessel
		Monitoring dispersant effectiveness (via OSM as per below)
		Planning Chief to undertake a NEBA of chemical dispersion operations – operational activities
		Ongoing dispersant operations
		Debriefing
		Stockpile management
		Incident action planning
		Effectiveness guidance for response strategy
Mechanical dispersion	Mechanical dispersion operations	Planning Chief to undertake a NEBA of mechanical dispersion operations
		Secure offshore work vessel
		Secure spotter aircraft
		Deploy vessels
		Incident action planning
		Effectiveness guidance for response strategy
Containment and recovery	Offshore and near shore containment and recovery	Planning Chief to undertake a NEBA of containment and recovery operations
		Do weather conditions and sea state permit safe and effective deployment of booms and skimmers?
		Does containment and recovery appear feasible?
		If the decision is made in the ICT to proceed with containment and recovery (based on Planning Chief's recommendation) the following tasks are to be completed.
		Mobilise vessels suitable for either offshore or near shore operations
		Mobilise booms and skimmers

STRATEGIES	TACTICS (What is planned to be done?)	TASKS (See Table 3-3 to Table 3-18 for guidance on how to complete tasks)
		Mobilise trained equipment operators
		Spotter plane to direct operations
		Establish a forward operating base for temporary storage of equipment and waste
		Deploy booms, skimmers and temporary waste storage
		Develop waste storage and transport plan
		Incident action planning
		Effectiveness guidance for response strategy
Protection and deflection	Near shore protection and deflection operations	Analysis of trajectory modelling and baseline monitoring data
		Analysis of aerial observation and current situational awareness
		Understanding of real time currents and tides
		Planning Chief undertakes a NEBA for protection and deflection operations
		Determine and source resources required and booming configuration (identify and access relevant Tactical Response Plans for guidance)
		Induction
		Marine vessel transport of people and equipment
		Aerial surveillance and/or transport
		Consider constraints
		Incident action planning
		Effectiveness guidance for response strategy
Shoreline clean up	Shoreline clean-up operations	Analysis of trajectory modelling
		Analysis of aerial observation and current situational awareness
		Planning Chief undertakes a NEBA for shoreline clean-up operations
		Consider constraints
		Decide on which shorelines will be cleaned and monitored based on SCAT
		Analysis of resources required
		Logistics
		Induction
		Marine vessel transport of people and equipment
		Aerial surveillance and/or transport
		Equipment
		Ongoing shoreline assessment (via OSM as per below)
		Ongoing clean-up operations

STRATEGIES	TACTICS (What is planned to be done?)	TASKS (See Table 3-3 to Table 3-18 for guidance on how to complete tasks)
		Waste collection and transport
		Incident action planning
		Effectiveness guidance for response strategy
Oiled Wildlife Response	Wildlife first strike response	Activate WAOWRP
		Rapidly assess the situation
		Provide advice to the ICT in relation to the wildlife assets at risk
		Liaise with Oiled Wildlife Advisor
		Activate first strike response kits
	Mobilisation of wildlife resources	Personnel
		Equipment
Operational and Scientific Monitoring (OSM)	Operational Monitoring	Review initation criteria for Operational Monitoring Plans (refer to Section 9 of the Joint Industry OSM Framework) and activate OSM Services Provider via instructions in Part B of the OSM-BIP.

Table 3-2: Task checklist for OPP2 Wandoo Crude

OPP2 –Task checklist initial incident action plan (first 24-48 hours)			
	Timeframe	**Who**	**Completed**
Tasking checklist facility/on site			
Start and maintain personal log.	Immediately on spill detection	PIC Wandoo B	
Undertake visual observation from off-take vessel, platform and/or vessels of opportunity immediately.	Immediately on spill detection	Observer on site	
Activate and deploy satellite tracking buoy.	Within two hours of spill detection	PIC Wandoo B	
Deploy drone from Wandoo B if there is one available, a pilot available, and safe airspace top operate.	Opportunistic surveillance	PIC Wandoo B	
Verify that relevant notifications have been made (i.e. NOPSEMA, DoT if the potential for a State response).	Within two hours of spill detection	PIC Wandoo B	
Tasking checklist VOGA Emergency Management Response – Perth ICT (Timeframe is on notification of spill)			
Visual observation from aircraft (in daylight hours only) has been arranged.	Within three hours	Logistics Chief Perth ICT	

OPP2 –Task checklist initial incident action plan (first 24-48 hours)			
	Timeframe	**Who**	**Completed**
Convene planning meeting to confirm and document: • Incident response aim • Priorities and objectives • Strategies • Priority resources required to be requested	Within three hours	Planning Chief Perth ICT	
Commission RPS to undertake real-time modelling to determine trajectory and fate of oil.	Within three hours	Planning Chief Perth ICT	
Obtain available data re: • Weather • Tides/currents • Topography and shoreline • Environmental sensitivity data • Spill trajectory (observed or by modelling) • Oil data (character and behaviour) • Community issues • Action taken to date.	Within three hours	Planning Chief Perth ICT	
Activate Joint Industry Operational and Scientific Monitoring Services Supplementary Agreement by using instructions in Section 13 of the Operational and Scientific Monitoring Bridging Implementation Plan	Within four hours	Environment Unit leader and Planning Chief Perth ICT	
Complete Preliminary NEBA to identify indicative response options and protection priorities (based on Strategic NEBA in OSCP).	Within six hours	Environment Unit leader and Planning Chief Perth ICT	
Activate vessel based dispersant operations to conduct test spray run and ongoing dispersant operations	Within 12 hours	IC in consultation with Planning Chief Perth ICT	
Activate FWADC via AMOSC to conduct test spray run.	Within 12 hours	IC in consultation with Planning Chief Perth ICT	
Mobilise dispersant.	Within 12 hours	Logistics Chief in consultation with Planning Chief Perth ICT	
Undertake operational NEBA to determine if dispersant strategy will be implemented.	Within two hours of completion of test run	Environment Unit leader and Planning Chief Perth ICT	
Activate priority resources (labour, equipment, transport and other support) based on outcomes of planning meeting and the initial IAP.	Within 12 hours	Logistics Chief in consultation with Planning Chief Perth ICT	

OPP2 –Task checklist initial incident action plan (first 24-48 hours)			
	Timeframe	**Who**	**Completed**
Identify relevant Tactical Response Plans for protection priorities and request from DTMI and Titleholder (based on Preliminary NEBA)	Within 12 hours	Environment Unit leader and Planning Chief Perth ICT	
Activate Oiled Wildlife Response WAOWRP and the VOGA Oiled Wildlife Commander (Wildlife Division Coordinator [WDC])	Within 12 hours	Planning Chief	
Monitor the response by scheduling and undertaking regular briefings/debriefings of ICT using the SMEACS format.	Every six hours or as necessary	IC in conjunction with Planning Chief ICT	
Issue regular SITREPS (include DTMI if spill has the potential to enter State waters)	Every six hours or as necessary	Planning Chief Perth ICT	
Monitor OH&S performance through Section 9 of Part 6.	Ongoing	Safety Officer	
Activate OWR first strike response kits to be delivered to the most appropriate staging areas locations will be confirmed based on OSTM at the time of the spill and the initial NEBA.	Within 24 hours	Logistics Chief	
Mobilise 2 x OWR containers to be delivered to Dampier	Within 48 hours	Logistics Chief	
Mobilise OWR personnel	Within 48 hours	WDC through Logistics Chief	
Transition to IAP cycle as per Section 6.	Within 48 hours	IC Perth ICT	

3.2.1 MES Strategy

Table 3-3: Monitoring, evaluation and surveillance

Task	Guidance
Visual observation from vessel or facility	
Provide an initial situational awareness to the PIC	To initiate this strategy, the PIC of a vessel or the Wandoo facility where the spill has occurred will (if safe to do so) organise for an observer to monitor the spill and communicate information regarding the appearance of the oil, area covered and if the spill has ceased. This process is depicted in Flowchart 1. Observer on scene to record and report to PIC on facility (who then provides information to Planning Chief) the following. Estimate the percentage cover by colour: silver; rainbow; black/dark brown; or brown/orange. • Is there wildlife in or near the spill? • Are there other vessels or activities occurring within or near the spill? • Is it possible to confirm if the spill is continuous?
Ongoing situational awareness	As directed by Planning Chief, provide updates on what the spill looks like, area covered, presence of wildlife or other activities.
Deploy satellite tracking buoy	
Deploy unit – PIC	It is important to deploy a satellite tracking buoy from the Facility as soon as possible after the spill has occurred, so that real-time data can be collected to verify pre-spill trajectory modelling and also be inputted into real-time modelling. PIC on Wandoo B (or delegate) deploys tracking buoy by removing from storage on Wandoo B, turning it on and releasing as close to the spill as possible.Planning Chief to check that this has been done. Additional units deployed every three days.
Access real-time data	Planning Chief accesses data from the Fastwave dashboard url: https://dashboard.fastview.com.au/ user: vermilion1 pass: cali6AF7662FK Instructions on how to use the portal are in the ICT Toolbox

Task	Guidance
Interpret data	Planning Chief uses real-time data and knowledge of sensitivities to estimate spill trajectory and resources that could be impacted. Real time data is also provided to RPS to validate OSTM.
Oil spill trajectory modelling	
Activate RPS contract	OSTM is an essential tool used by the Environment Unit in the Planning Team to determine resources at risk and protection priorities. Planning Chief in liaison with Logistics Chief activates the RPS contract for real time trajectory modelling: (1) Complete the modelling request form (editable .pdf request form provided). Please complete as much detail as possible to allow for generation of modelling results and outputs. (2) Call the RPS Duty Officers on +61 408 477 196 to advise the RPS Duty Officers that they are now activated and a trajectory modelling request will be sent to them via email. Please note that the call to the RPS Duty Officers must be made as the email account is not monitored 24/7. (3) Send completed request form to RPS Duty Officers via email at RPSresponse@rpsgroup.com (4) Follow up the email with a phone call to the RPS Duty Officers to confirm email receipt and contents of the email (i.e. the modelling request form) are correct. (5) The RPS Duty Officers will undertake the modelling as per the modelling request form provided. Should any of the incident details change, as further information becomes available, please call the RPS Duty Officers to inform them of the change. Follow this call up with an email confirming the change in details for the modelling. (6) Model outputs will be forwarded from the RPS Duty Officers to the requesting client officer as quickly as possible. The results will be transmitted by email to the requesting client officer and copied to the designated parties as identified by the client officer. The results may be passed on via a number of means including email attachment and/or FTP site. Access to the FTP site is via the ICT toolbox. (7) Once the modelling results have been received from RPS, call or email the RPS Duty Officer to inform them that the results have been received. (8) If extra advice is sought in regards to interpreting the trajectory modelling output, please follow up with a call to the RPS Duty Officers for further clarification. RPS will require details collected through the situational awareness task such as real time weather, sea state, and oil type spilled.

Task	Guidance
Aerial observation	
Activate assets to fly as soon as possible in daylight hours only	Upon notification of a spill the Planning Chief requests the Logistics Chief to activate aviation contracts . Fixed wing aircraft (preferably over wing configuration) or helicopters to provide personnel with the means to observe and record details of oil on water. Request flight as soon as possible. Pilots or observers be provided with information on the anticipated location of the slick (e.g. from OSTM output). If possible use aircraft already in the area to provide situational awareness. Flight time to the Wandoo B platform is 20 minutes (48nm) based on S76 helicopter (@140 knots).
Secure observers	Activate AMOSC to undertake aerial surveillance activities. If trained observers are not available within the timeframe for initial reconnaissance flight, use untrained aerial observers for initial situational awareness. Secure trained aerial observers to quantify amount of oil on water and geographical spread from the resource list in the VOGA Emergency Response Logistics Management Plan (VOG-7000-RH-0008).
Data to be collected – conduct flight as soon as possible in daylight hours only	Aerial observation template forms are to be provided to observers along with a digital camera for video and photos. Observer is to obtain location details (coordinates) from pilot and note these for images and extent of slick. Information is to be provided back to the Planning Chief as soon as possible after the flight has landed. This could be done initially via verbal briefing from the observer and followed up by email or fax of completed observation template.
Ongoing surveillance	Logistics Chief secure appropriate aircraft to undertaken aerial observation activities twice a day – morning and afternoon until advised otherwise by Planning Chief. The information collected during aerial observations must be relayed back to the ICT for analysis by the Situation and Environment Units.
Drone photos and videos	This is an opportunistic task. Determine if there is a drone and drone pilot available on Wandoo B and if there is safe airspact to conduct a flight. Fly transects from the platform along the slick, directly overhead to assist in determining spill volume and direction.

Task	Guidance
Situational awareness	
Collect real-time and predicted data to enter on status boards in ICT. Ongoing updates	Status boards in ICT require the following information (sourced and entered by situation unit leader): • Real-time and predicted weather and sea-state conditions – source from BoM; • Real-time and predicted tidal and current movements – source from BoM, websites; • Oil characteristics – properties of the oil spilled and predicted behaviour after weathering; • Predicted trajectory of oil based on modelling conducted for planning and verified by real time modelling; • Resources at risk of being oiled sourced from OSCP.
Obtain satellite imagery	Satellite imagery may be useful to assist in ascertaining the extent of the spill. If sourced this imagery will be used within the Planning Section to assist in determining resources at risk and protection priorities. High fidelity photographs using different spectrums to identify the trajectory of the oil, ground truth the OSTM, sourced from Landgate or via OSRL. Time to acquire images depends on availability of satellites over the spill site. Landgate to be activated by the VOGA User Representative Contacts (URCs) only.
Operational and Scientific Monitoring	
OSM	Refer to OSM-BIP and inititation criteria for Operational Monitoring Plans
Effectiveness guidance for response strategy	Information is available for the ICT: • of sufficient quality; • consistent in reporting; • regular; and • required to inform other response strategies.

Table 3-4: MES minimum resource requirements

Means/task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Visual observation from platform	Identify extent and direction of oil, visual characteristics. Ground truth OSTM.	1 x Observer.	Immediate.	1 x Observer.		
Visual observation from vessels	Identify extent and direction of oil, visual characteristics. Ground truth OSTM.	1 x Vessel. 2 x Observers.	Mobilise immediately	1 x Vessel. 2 x Observers.	1 x Vessel. 1 x Observer.	
Visual observation from aircraft	Identify extent and direction of oil, visual characteristics. Ground truth OSTM.	2 x Observers. 1 x Aircraft. 1 x Aerial support base.	Daylight only, two hours.	2 x Observers. 1 x Aircraft. 1 x Aerial support base.	2 x Observers. 1 x Aircraft. 1 x Aerial support base.	2 x Observers. 1 x Aircraft. 1 x Aerial support base.
Determination of surface and dispersed oil trajectory and fate	Identify the likely trajectory and fate of the spill and dispersed oil, timeframes for the oil (surface or dispersed) to interact with environmental sensitivities.	1 x Incident Command Team member with oil spill assessment training. Contract with technical provider.	Requested within three hours	1 x Incident Command Team member with oil spill assessment training. Contract with technical provider.		
Satellite imagery	High fidelity photographs using different spectrums to identify the trajectory of the oil, ground truth the OSTM.	Contract with technical provider or access to AMSA technical provider.	Requested within three hours	Contract with technical provider or access to AMSA technical provider.		

Means/task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Satellite tracking buoys	Identification of the leading edge/rear edge of the spill.	1 x satellite tracking buoy . Data site 'back end' to GIS system. Current contract with satellite provider.	Deployed within three hours.	2 x satellite tracking buoys. Data site 'back end' to GIS system. Current contract with satellite provider.		
Shoreline assessment (SCAT Teams)	Shorelines are assessed as to their level of hydrocarbon stranding, and priority for clean-up.	1 x Wildlife expert. 1 x Marine environmental specialist. 1 x Oil spill response.	72 hours on site	6 teams made up of: Wildlife experts. Marine environment specialists. Oil spill response specialists	6 teams made up of: Wildlife experts. Marine environment specialists. Oil spill response specialists	6 teams made up of: Wildlife experts. Marine environment specialists. Oil spill response. speciialsits

LEGEND:	Resources required	Resources possibly required	Resources unlikely to be required

3.2.2 Chemical Dispersant Application

3.2.2.1 Aerial Dispersant Operations

Table 3-5: Aerial dispersant application

Task	Guidance
Activate aircraft within 6 hours of the spill	Planning Chief to advise Logistics Chief to advise AMOSC to activate FWADC by calling AMSA RCC on **1800 641 792**. Request two air tractors Mobilise to Karratha Airport. Complete the AMSA/AMOSC Joint Standard Operating Procedure document – the FWADC aircraft won't be tasked for operations until this document is completed.
Mobilise dispersant to Karratha Airport within 6 hours of the spill	Planning Chief to confirm with Logistics Chief the volume of dispersant to be mobilised to Karratha Airport. Mobilise 10m^3 from available stockpiles. Mobilise a dispersant transfer pump to be able to transfer dispersant from IBCs to aircraft.
Set up operating post at Karratha Airport	Logistics Chief to liaise with Karratha Airport to set up a staging area for dispersant stockpile and transferring dispersant to aircraft. Managed by the Aerotech Liaison Officer (provided by AMOSC).
Complete NEBA to justify test run	Planning Chief completes NEBA pro-forma with what is known about the spill at the time to record justification for testing dispersant. See Appendix B.
Arrange for a spotter plane to accompany air tractor	Logistics Chief to secure a helicopter to or alternative aircraft to provide aerial dispersant spotter duties. Aircraft will be required to fly above the air tractor and advise pilot when to turn spray on and off. Requires communication plan between the two aircraft. Depending on the scale of the application area, additional spotter aircraft may be required to direct air tractors operating in separate areas. If one area of the slick is being treated by the four air tractors, then one spotter helicopter or plane will be used to direct spraying activities.
Arrange for trained AAC to be available for test spray run	AAC to communicate with pilot of air tractor to direct spray operations over the oil slick and to complete the Aerial Dispersant Monitoring Log (OSRL Handbook). Will need AACs for each area of operation if more than one spotter plane is being used.

Task	Guidance
Pre-flight briefing	Flight planning forms and manifests to be lodged prior to sorties departure. Communications will be agreed upon during the pre-operational briefings taking into account all aircraft utilised onsite at time for operations. This is most likely to comprise: • two aircraft VHF channels air to air with local Airfield CTAF also used/monitored; and • aircraft also have to have Marine Radios which can also be utilised.
Test spray run by air tractor	Loading and fuelling of the aircraft will be under the supervision of the Loading Supervisor, and to the satisfaction of the pilot. Dispersant application rate is to be set at 50L per hectare with a swath width of 22m [dependent on Aircraft]. The spray area will be determined by the movement of oil and as directed by the AAC. When tasked, the spotter platform with the AAC will proceed to the target area and identify the target site. It will then call in and direct the dispersant attack. Dispersant will be applied within the dispersant application zone. Seasonal environmental conditions and sensitivities will dictate spray runs and areas. An analysis to determine these specific sectors will be undertaken at the time by the Planning Chief and implemented by the Aviation and Marine Units in Operations. Test application runs of approximately 100m in length will be made and several passes may be required to determine dispersant effectiveness. The AAC will direct the air tractor to make another pass if required. The AAC will observe the effectiveness of the dispersant on the oil slick and will report if dispersant is having a mixing effect on the oil and complete the Dispersant Monitoring Application Log (OSRL Handbook). Photographs will be taken by the AAC to provide to the Planning Chief and Environment Unit. The pilot of the air tractor will complete a Dispersant Application Log and provide this to the Operations Chief upon completion of the mission. The Operations Chief provides this detail to the Planning Chief. VFR shall be observed at all times, along with standard radio protocols and monitoring. Pilots will maintain separation.
Monitoring dispersant effectiveness (OM4a: Surface dispersant effectiveness monitoring)	Refer to the OSM-BIP. The Joint Industry Operational Monitoring Plan (OM4a): Surface Chemical Dispersant Fate and Effectiveness Assessment will be used to guide surface dispersant effectiveness monitoring.
Complete NEBA to justify ongoing dispersant use	Planning Chief completes NEBA pro-forma with what is known about the spill at the time to record justification for ongoing dispersant use based on the results of the test runs.

Task	Guidance
Secure trained personnel to run dispersant operation	Dispersant application equipment and trained personnel are available from the AMOSC stockpile and Core Group; the AMSA National Plan stockpiles and NRT and the OSRL stockpiles and responders. Resourcing requirements for this strategy are outlined in VOGA Emergency Response Logistics Management Plan [VOG-7000-RH-0008] .
Pre-flight briefing	Flight planning forms and manifests to be lodged prior to sorties departure. Communications will be agreed upon during the pre-operational briefings taking into account all aircraft utilised onsite at time for operations. This is most likely to comprise: • two aircraft VHF channels air to air with local Airfield CTAF also used/monitored; and • aircraft also have to have Marine Radios which can also be utilised. As the owner of the FWADC, overall control will be via AMSA. Similarly, OSRL will be in overall control of their aircraft. Daily operations will be directed by the Operations Chief in consultation with AMSA, OSRL (if involved) and AMOSC. The Incident Commander remains in control of all incident response activities. Communications will be in accordance with the agreed communications plan. A JHA will be completed prior to each activity and will be signed by all personnel involved. All aircraft and aircrew involved with the operation are to be certified fit to conduct the task in accordance with CASA regulations. The Aerotech Liaison Officer is to confirm the serviceability and sign off aircraft sea survival equipment. This will be audited by AMSA before the first flight. Individuals will supply their own PPE relevant to the task. Fuel and dispersant handling PPE requirements will be specified in relevant SDS'. As a minimum, all other activities PPE requirement will be full cover, steel caps, high visibility and sun protection. Additional controls will be implemented as necessary. In case of an emergency on the airstrip or field, the muster area will be at the standard Karratha Airport muster location(s).
Ongoing dispersant operations	Aerial dispersant operations will be directed, as part of the IAP, to operate in situations where the greatest effectiveness of the dispersant is likely to result; and operations can be conducted in such a manner as to allow for other oil spill marine operations. Loading and fuelling of the aircraft will be under the supervision of the Loading Supervisor, and to the satisfaction of the pilot. Dispersant application rate is to be set at 50L per hectare with a swath width of 22m unless otherwise determined by test spray runs. The spray area will be determined by the movement of oil and as directed by the AAC in [insert spotter platform call sign]. When tasked, the spotter platform [insert helicopter or plane call sign, most likely to be CHC] will proceed to the target area and identify the target site. It will then call in [insert aircraft call sign(s) or aircraft type/Operator] and direct the dispersant attack. After spray is exhausted or endurance of aircraft is reached [insert Aircraft call sign(s)] will return for resupply.

Task	Guidance
	The AAC will complete the Aerial Dispersant Monitoring Log and provide this information to the Operations Chief who then provides this to the Planning Chief to incorporate into the IAP process. The pilot of the air tractor will complete an Aerial Dispersant Application Log and provide this to the Operations Chief, who then passes this information onto the Planning Chief. Final number of spray runs shall be determined by consultation between VOGA, AMOSC and Aerotech. VFR shall be observed at all times, along with standard radio protocols and monitoring. Pilots will maintain separation. Personnel lists will be finalised at the time of the spill. All personnel will be logged on and off site, and all personnel in aircraft will be noted before departure. Typical functions required in FWADC operations are: • Air base manager; • Dispersant loading supervisor and crew; • Pilots; and • Aerial spotter to direct application of dispersant. During the operational phase, only personnel with an operational need will be allowed on the airfield unless authorised by Aerotech Liaison Officer.
Volume of dispersant and number of aircraft required	The volume of dispersant required for an operation depends on the application rate which is the ratio of dispersant to oil required for effective dispersion (which is dependent on average slick thickness) and the size of the target area to be sprayed. A trial application of 1:20 is used as a starting point in which to determine the most appropriate application rate. In recognising that oil spreads at variable rates and thickness is not consistent across the slick, ITOPF (2013) suggest that the most practical and efficient solution is to target the thickest parts of the slick. For planning purposes, application target volumes have been conservatively estimated based on oil spill modelling results and ITOPF Technical Information Paper 4. The number of days for the operation is based on the length of time that the oil remains dispersable.
Debriefing	A debrief of the operation is to be conducted with the Operations Chief to confirm appropriate actions were undertaken and to identify issues/concerns/improvements to operations. This will occur on a daily basis. Findings from the debrief and completed Aerial Dispersant Application Logs must be reported back to the Planning Chief so that situational awareness can be maintained for incident action planning. On completion of air operations respective maintenance procedures are to be conducted by individual organisations if necessary. Any serviceability issues are to be reported to the Area Staging Manager at Karratha Airport.

Task	Guidance
Stockpile management	At the end of each day the Planning Chief (via the Resources Unit in the Planning section) compiles the records of dispersant use and determines the amount of dispersant on hand and what is required for the next mission. Delivery of extra stocks is organised by the Logistics Chief. WA stockpiles will be accessed first while the need for interstate and international stockpiles is evaluated in the IAP process. All dispersants have been shown to be effective on Wandoo Crude. Stockpiles will need to be accessed for dispersant operations longer than five days or with more than one air tractor or if the OSRL aircraft is mobilised. Application rates may be varied if considered appropriate to ensure longevity of dispersant stockpiles.
Incident action planning	At the completion of the aerial missions, the Planning Chief will review the aerial dispersant operations and provide a recommendation to the Incident Commander for future aerial dispersant operations.
Effectiveness guidance for response strategy	Visual observation of the colour of the dispersed oil plume is a reliable indicator of effective dispersant application via aerial and vessel observers (using guidance in OM4a: Surface Chemical Disperant Fate and Effectiveness Assessment). Planning Chief will use outputs from operational monitoring to consider if dispersant operations affect the following: • Time to shoreline impact is increased • Average and maximum volume of oil ashore is reduced • Average and maximum length of shoreline contacted is reduced • Probability of oil contact to shorelines is reduced • The impacts and accumulation of entrained oil is compared to the reduction and impacts of surface oil
Environmental Performance Standards	[OPEP-EPS-1.1] Conduct surface dispersant efficacy monitoring in accordance with the Vermilion Operational and Scientific Monitoring – Bridging Implementation Plan [VOG-1100-RG-0002] and OM4a: Surface Dispersant Effectiveness Monitoring (APPEA, 2021).

Table 3-6: Chemical dispersant minimum resource requirements aerial operations

Means/task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Air base support	Aircraft refuelling and dispersant loading facilities. Briefing facility for aviation operations teams.	Commercial air base close to Wandoo Platform, preferably Karratha Airport. Logistical support to sustain/ maintain aerial operations.	24 hours.	Commercial air base close to Wandoo Platform, preferably Karratha Airport. Logistical support to sustain/ maintain aerial operations.		
Dispersant stocks	Dispersant available at the air base for loading into the aircraft when needed over the period of the spill.	$10m^3$ within 36hrs	$10m^3$ within 36hrs	Up to $10m^3$ per day delivered by air tractor and/or OSRL aircraft.		
Spotter aircraft	For each sortie, a helicopter or fixed wing aircraft is able to accurately direct the air tractor pilot when apply dispersant.	2 x Trained spotters. 2 x Aerial platforms.	36 hours	2 x Trained spotters. 2 x Aerial platforms.		
Aerial application means	Dispersant rapidly applied to the thickest part of the slick at the rate of 1:20 (dispersant oil ratio).	2 x Air tractors ($3m^3$ capacity) – 2 sorties each within 36 hrs. Pilots for the same.	2 x Air tractors ($3m^3$ capacity) – 2 sorties each within 36 hrs. Pilots for the same	2 x Air tractors . Pilots for the same.		
Safety aircraft/ rescue vessels	For each sortie, a helicopter is available to be used for search and rescue.	Helicopter. Responding vessels.	36 hours	Helicopter. Responding vessels.		

3.2.2.2 *Marine Dispersant Operations*

Table 3-7: Marine dispersant application

Task	Guidance
Marine delivery of dispersant will take place if aerial application is not possible or if there are parts of the slick that are better targeted by a vessel. The objective of the marine dispersant operations will be to disperse oil that has formed windrows and through trajectory modelling may imminently impact environmental sensitivities. The output will be to have vessels continuously 'chasing' and spraying dispersant onto the oil. The Planning and Operations Chiefs will decide according to the situational awareness gained if marine based dispersant use is activated.	
Identify marine operating base	Logistics Chief to identify marine operating base that can accommodate vessel and crews is close to the response site – most likely to be Toll (Refer to ER Logistics Management Plan for contractor details)
Source vessel	Logistics Chief to source offshore vessel that either has dispersant spray equipment already fitted; or a vessel that is able to secure an afedo dispersant spray system to the vessel. (Refer to ER Logistics Management Plan for contractor details)
Dispersant stocks	Planning Chief to confirm with Logistics Chief the volume of dispersant to be mobilised to marine operating base. Move dispersant and mobilise a dispersant transfer pump to be able to transfer dispersant from IBCs to vessel storage. Consult the OSR Capability Review [VOG-7000-RH-0009] for additional dispersant calculation and stockpile information.
Dispersant spray system	Logistics Chief to source an afedo dispersant spray system (Refer to ER Logistics Management Plan for contractor details)
Arrange for a spotter plane to accompany marine vessel	Logistics Chief to secure a helicopter to or alternative aircraft to provide aerial dispersant spotter duties. Aircraft will be required to fly above the marine vessel and to advise pilot when to turn spray on and off. Requires communication plan between the aircraft and vessel.
Complete NEBA to justify test run	Planning Chief completes NEBA pro-forma with what is known about the spill at the time to record justification for testing dispersant. NEBA template available in Appendix B.

Task	Guidance
Test run by marine vessel	Dispersant will be applied within the dispersant application zone. Seasonal environmental conditions and sensitivities will dictate application of dispersant from marine vessels. An analysis to determine these specific sectors will be undertaken at the time by the Planning Chief and implemented by the Aviation and Marine Units in Operations. Test application runs of approximately 100m in length will be made and several passes may be required to determine dispersant effectiveness. Vessel personnel will observe the effectiveness of the dispersant on the oil slick and will report if dispersant is having a mixing effect on the oil and complete the Dispersant Monitoring Application Log (OSRL Handbook). Photographs will be taken by vessel personnel to provide to the Planning Chief and Environment Unit. The master of the marine vessel will complete a Dispersant Application Log and provide this to the Operations Chief upon completion of the mission. The Operations Chief provides this detail to the Planning Chief.
Monitoring dispersant effectiveness (OM4a: Surface dispersant effectiveness monitoring)	Refer to the OSM-BIP. The Joint Industry Operational Monitoring Plan (OM4a): Surface Chemical Dispersant Fate and Effectiveness Assessment will be used to guide surface dispersant effectiveness monitoring.
Operational NEBA	To determine if ongoing dispersant application should continue.
Ongoing dispersant operations	Marine dispersant operations will be directed, as part of the IAP, to operate in situations where the greatest effectiveness of the dispersant is likely to result; and operations can be conducted in such a manner as to allow for other oil spill marine operations.
Debriefing	A debrief of the operation is to be conducted with the Operations Chief to confirm appropriate actions were undertaken and to identify issues/concerns/improvements to operations. This will occur on a daily basis. Findings from the debrief and completed Dispersant Application Logs must be reported back to the Planning Chief so that situational awareness can be maintained for incident action planning. On completion of air and marine operations respective maintenance procedures are to be conducted by individual organisations if necessary.
Stockpile management	At the end of each day the Planning Chief (via the Resources Unit in the Planning section) compiles the records of dispersant use and determines the amount of dispersant on hand and what is required for the next mission. Delivery of extra stocks is organised by the Logistics Chief.
Incident action planning	At the completion of the dispersant operations, the Planning Chief will review the operations based on a briefing from the Operations Chief and provide a recommendation to the Incident Commander for future dispersant operations.

Task	Guidance
Effectiveness guidance for response strategy	Visual observation of the colour of the dispersed oil plume is a reliable indicator of effective dispersant application via aerial and vessel observers (using guidance in OM4a: Surface Chemical Dispersant Fate and Effectiveness Assessment). Planning Chief will use outputs from operational monitoring to consider if dispersant operations affect the following: • Time to shoreline impact is increased • Average and maximum volume of oil ashore is reduced • Average and maximum length of shoreline contacted is reduced • Probability of oil contact to shorelines is reduced. • The impacts and accumulation of entrained oil is compared to the reduction and impacts of surface oil

Table 3-8: Chemical dispersant minimum resource requirements marine operations

Means/ task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Marine operating base	Marine operating base that can accommodate vessel and crews is close to the response site.	Wharf space. Loading areas. Forward operating area.	36 hours.	Wharf space. Loading areas. Forward operating area.		
Dispersant stocks	Dispersant available at the marine base for loading when needed	2 m^3	2 m^3 available in 36 hours	2 m^3		
Marine delivery	Logistics to locate dispersant vessel and the dispersant spray system to mount a response for up to five days at sea.	2 x Work vessels suitable for the NWS. Crew and master for same.	1 x work vessel deployed to spill site 36 hours 2 x within 48 hrs	Available vessels suitable for the NWS. Crew and master for the same.		
Dispersant spray system	A system that can effectively and efficiently apply dispersant from IBCs on deck.	1 x Afedo spray set and ancillaries. 2 PAX to operate the same	1 x Afedo set within 36 hours on site.	1 x Afedo spray sets & ancillaries per vessel. 2 PAX to		

Means/ task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
				operate the same		
Spotter aircraft	A helicopter or fixed wing is able to accurately direct the vessel operator where the oil is.	2 x Trained spotters. 1 x Aerial platforms. Pilot for same.	1 x within 36 hours on site.	2 x Trained spotters. 2 x Aerial platforms. Pilots for same.		

LEGEND: Resources required | Resources possibly required | Resources unlikely to be required

3.2.3 Mechanical Dispersion Strategy

Table 3-9: Mechanical dispersion operations

Task	Guidance
The Planning Chief will recommend this strategy be implemented based on information collected through monitoring and evaluation. If chemical dispersant is working mechanical dispersion may not be required.	
Conduct NEBA	The Environment Unit within the Planning Team of the ICT will use the outputs from monitoring and evaluation to determine if a protection priority is likely to be impacted by oil. Mechanical dispersion activities may be directed to areas of oil that could potentially impact a receptor which is unable to be treated by other response strategies. Mechanical dispersion activities will only be conducted in water deeper than 20m.
Secure offshore work vessel	Logistics Chief to secure vessels through current contracts or vessels of opportunity to: • prop wash the spilled products (if permitted by vessel master and owner); and • agitate using the fire monitor or alternative spray system. Enhancement of weathering process such as natural dispersion and dilution of oil into the water column.

Task	Guidance
Secure spotter aircraft	Logistics Chief to secure helicopter or fixed wing aircraft to direct vessels into areas of the slick that require manual dispersion. Spotter aircraft pilot to be able to communicate with marine vessel. Operations Chief to brief pilot on what parts of the slick should be targeted.
Deploy vessels	Vessels will be deployed from Dampier. Masters of vessels being used for this operation will have communication with aerial surveillance so that the leading edge of a slick can be targeted.
Develop waste management plan	Planning Chief to develop waste management plan that prevents translocation of oil from hot zones to warm and cold zones. The Planning Team will be cognisant of the potential for transferring oily waste when the vessel returns to Dampier, and will ensure that provisions have been made in the waste management plan to manage the risk of secondary contamination. It is possible that the resources for this response strategy may be combined with that of monitoring and evaluation or transportation for shoreline clean-up so that maximum resource efficiencies can be achieved.
Incident action planning	At the completion of mechanical dispersion operations, the Planning Chief will review the operations based on a briefing from the Operations Chief and provide a recommendation to the Incident Commander for future mechanical dispersion activities.
Effectiveness guidance for response strategy	Visual observation to determine whether oil is dispersing into the water column from the vessel and aerial observations: • Oil is mixing within the water column. • Surface oil is reduced.

Table 3-10: Mechanical dispersion minimum resource requirements

Means/task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Vessel	Prop wash the spilled hydrocarbons. Enhancement of weathering process such as natural dispersion and dilution of oil into the water column.	Opportunistic offshore support vessel.	N/A	Opportunistic offshore support vessel/s.		
Fire hose	Agitate using the fire monitor or alternative spray system. Enhancement of weathering process such as natural dispersion and dilution of oil into the water column.	Working fire monitor/spray system. Crew to operate.	N/A.	Working fire monitor/spray system. Crew to operate.		

LEGEND:	Resources required	Resources possibly required	Resources unlikely to be required

3.2.4 Containment and Recovery Strategy

Table 3-11: Containment and recovery operations

<table>
<tr><th>Task</th><th>Guidance</th></tr>
<tr><td>Planning Chief to undertake a NEBA of containment and recovery operations and consider the following:</td><td>• Is the slick is moving toward a sensitive receptor - consider time to impact, volume and probability?
• Is the sea-state and weather conditions amenable for effective boom and skimmer deployment?
• Is the weathered oil able to be recovered with skimmers?
• Is there a safe operating environment for responders?</td></tr>
<tr><td>Do weather conditions and sea state permit safe and effective deployment of booms and skimmers?</td><td>Metocean conditions required for safe and effective boom and skimmer deployment:
<table><tr><th>Equipment</th><th>Maximum sea state (Beaufort scale)</th><th>Maximum current (knots)</th><th>Winds (knots)</th></tr><tr><td>Booms</td><td>3-4</td><td>1</td><td>14-22</td></tr><tr><td>Weir skimmer</td><td>1</td><td>1</td><td>7</td></tr><tr><td>Disc skimmer</td><td>2-3</td><td>1</td><td>11-14</td></tr><tr><td>Vacuum skimmer</td><td>1</td><td>1</td><td>7</td></tr></table></td></tr>
<tr><td>Does containment and recovery appear feasible?</td><td>BER is a limiting factor of effective containment and recovery operations. An estimation of the resources required and potential volume of oil able to be recovered for Category A and C spills is provided in the OSR Capability Review [VOG-7000-RH-0009].
Considerations to take into account:
• Is the oil thick enough for effective recovery?
• Will containment and recovery treat a notable portion of the spill volume?</td></tr>
<tr><td colspan="2">If the decision is made in the ICT to proceed with containment and recovery (based on Planning Chief's recommendation) the following tasks are to be completed.</td></tr>
<tr><td>Mobilise vessels suitable for either offshore or near shore operations.</td><td>Work vessels that can carry and deploy offshore booms and skimmers are required for this strategy along with a mechanism for storing and transporting waste.
Logistics Chief to secure two offshore work vessels or a vessel from AMSNOR based in Dampier. Ideally vessels would have the ability to carry, deploy and retrieve booms and skimmers up to the size of ro-boom and the GT-185 weir skimmers (i.e. GT-185 and Desmi 250), as well as temporary waste storage.</td></tr>
</table>

Task	Guidance
	Deployment of ro-boom, large skimmers and at-sea waste storage equipment requires vessels that can maintain the correct configuration of the towed booms at very low speeds through the water. The OSRL Containment and Recovery Field Guide provides some guidance on the ideal vessel specifications required for this type of operation. The operational time of the vessels on the water conducting this response activity will be dictated by the available waste collection capacity; once waste tanks are full the vessels will demobilise from the oil site to unload collected waste. To maintain longer operational periods, the Planning Chief may consider an application to AMSA (Commonwealth waters) or DTMI (State waters) to decant oily water from waste collection tanks back into the oil plume collected behind the boom. The total amount of oily waste water returned to shore may be reduced by at-sea decanting (allowing oil to settle on the surface of the waste storage container and decanting water from the bottom). The IPIECA Oil Spill JIP report 'The Use of Decanting during Offshore Oil Spill Recovery Operations', provides some guidance on this practice.
Mobilise booms and skimmers	Logistics Chief to mobilise booms, skimmers and temporary waste storage equipment from AMSNOR, the AMOSC stockpiles in Broome and Exmouth, as well as the AMSA National Plan stockpiles in Dampier and Fremantle. Ongoing response efforts may require the mobilisation of equipment from interstate stockpiles. Specifications regarding the type of booms, skimmers and waste storage required are described in the OSR Capability Review [VOG-7000-RH-0009].
Mobilise trained equipment operators	Logistics Chief to source people with experience and training operating equipment from marine vessels from: • AMSNOR • AMOSC core group members • AMSA NRT • WA DTMI State Response Team. Logistics Chief to ensure that personnel forms and information is completed and forwarded to the Finance Chief for cost tracking. This equipment will only be deployed and retrieved by trained personnel such as those available through AMSNOR, the AMOSC Core Group, AMSA NRT, DTMI State Response Team or OSRL. Standard Operating Procedures are available in the AMSA OSR OH&S Manual.
Spotter plane to direct operations	Logistics Chief to activate a helicopter or fixed wing aircraft to direct vessels to thickest part of slick to contain and recover oil. Aircraft will need ability to communicate with marine vessels and a communication plan as well as observation logs to report back to the Operations Chief.
Establish a forward operating base for temporary storage of equipment and waste	Logistics Chief to activate a Forward Operating Post at Toll in Dampier where VOGA has personnel who can manage the receipt and deployment of equipment. It is in this yard where equipment can be stored and readied for deployment. Toll will manage the transport of equipment that VOGA requires in Dampier.

Task	Guidance
Secure trained personnel	This equipment will only be deployed and retrieved by trained personnel such as those available through AMSNOR, the AMOSC Core Group, AMSA NRT DTMI State Response Team or OSRL. Standard Operating Procedures are available in the AMSA OSR OH&S Manual.
Deploy booms, skimmers and temporary waste storage	Deployment of ro-boom, large skimmers and at-sea waste storage equipment requires vessels that can maintain the correct configuration of the towed booms at very low speeds through the water. The OSRL Containment and Recovery Field Guide provides some guidance on the ideal vessel specifications required for this type of operation.
Develop waste storage and transport plan	Logistics Chief in consultation with Planning Chief activates temporary waste storage capacity held by Toll (IBCs through ToxFree) and activate towable storage barges such as lancer barges held by AMSA in Dampier and Fremantle. Consideration will be made in the waste management plan for how to best manage contaminated equipment when it returns from operations to Dampier. A hot, warm and cold zone will be established in the laydown area along with a decontamination station and plan to manage the risk of secondary contamination. The operational time of the vessels on the water conducting this response activity will be dictated by the available waste collection capacity; once waste tanks are full the vessels will demobilise from the oil site to unload collected waste. To maintain longer operational periods, an application will be made by the ICT to AMSA (Commonwealth waters) or DTMI (State waters) to decant oily water from waste collection tanks back into the oil plume collected behind the boom. The total amount of oily waste water returned to shore may be reduced by at-sea decanting (allowing oil to settle on the surface of the waste storage container and decanting water from the bottom). The IPIECA Oil Spill JIP report 'The Use of Decanting during Offshore Oil Spill Recovery Operations' provides some guidance on this practice.
Incident action planning	At the completion of the containment and recovery operations, the Planning Chief will review the operations based on a briefing from the Operations Chief and provide a recommendation to the Incident Commander for future containment and recovery operations.
Effectiveness guidance for response strategy	Visual observation to determine whether booming operations are effective, more specifically is there no evidence of undercutting (losing hydrocarbon beneath the skirt of the boom), splash over (hydrocarbon splashing over the top of the boom due to wave energy) and entrainment issues (recovery is too slow resulting in too much hydrocarbon collecting in the apex of the boom). Boom type, towing speed, weather, containment configuration and currents can all affect the effectiveness of the above. Visual observation to determine whether recovery operations are effective, more specifically is hydrocarbon being recovered. Is the type of recovery system appropriate for the hydrocarbon product and its fate? What is the ratio of hydrocarbon to water? Are the temporary storage operations sufficient to maintain recovery? Recovery system type, recovery methodology (skimming while vessels are moving) and timing can be altered to increase effectiveness.

Task	Guidance
	The Planning Chief will consider: • The potential to contain oil contained booms. • The potential for oil recovery – weir skimmers recovering > 10% oil; oleophilic skimmers recovering > 50% oil. • Availability of waste storage of required capacity.

Table 3-12: Containment and recovery minimum resource requirements

Means/task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Two vessel booming tasking (U sweep or V sweep) and/or NOFI current buster						
Marine operating base	Marine operating base that can accommodate vessel and crews is close to the response site.	Wharf space. Loading areas. Forward operating area.	48 hours.	Wharf space. Loading areas. Forward operating area.		
Booming systems	A system that can effectively and efficiently corral oil offshore.	3 x 400m ro-booms (or similar). NOFI current buster	48 hours to marine operating base	3 x 400m ro-booms (or similar). NOFI current buster		
Recovery systems	High-capacity skimmers that can recover both fresh and weathered crudes.	3 x Active weir skimmer recovery systems or similar.	48 hours to marine operating base	3 x Active weir skimmer recovery systems or similar.		
Waste storage	50m^3 of on-board or towable storage	Varying capacities of IBCs, totalling 50m^3, or other suitable combined storage, e.g. towable storage barges.	48 hours to marine operating base	Varying capacities of IBCs, totalling 50m^3, or other suitable combined storage, e.g. towable storage barges.		

Means/task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Spotter aircraft	A fixed wing or helo is able to accurately direct the vessel operator where the oil is.	1 x Trained spotter. 1 x Aerial platform. Pilot for the same.	48 hours	1 x Trained spotter. 1 x Aerial platform. Pilot for the same.		
Marine delivery	Vessels that can store up to 50m^3 of oil/water waste, skimmer system and 4 tonnes bollard pull. Vessel to lead the boom operation, 4 tonne bollard pull.	3 x Work vessels suitable for the NWS. Crew (7 for boom deployment and recovery, oil storage and transfer management) and master for the same.	48 hours on site	Available vessels suitable for the NWS. Crew (7 for boom deployment and recovery, oil storage and transfer management) and master for the same.		
Single vessel side sweep operation and/or NOFI current buster						
Marine operating base	Marine operating base that can accommodate vessel and crews is close to the response site.	Wharf space. Loading areas. Forward operating area.	48 hours.	Wharf space. Loading areas. Forward operating area.		
Booming systems	A system that can effectively and efficiently corral oil offshore.	Side sweep boom such as Troilboom solid buoyancy sweeping boom with outrigger and collection point. NOFI current buster 5 x Crew to operate the system.	48 hours to marine operating base	Side sweep boom such as Troilboom solid buoyancy sweeping boom with outrigger and collection point. NOFI current buster 5 x Crew to operate the system.		

Means/task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Recovery systems	High-capacity skimmers that can recover both fresh and weathered crudes.	1 x Active weir skimmer recovery system or similar, e.g. GT1852 x Crew to operate the system.	48 hours to marine operating base	1 x Active weir skimmer recovery system or similar, e.g. GT1852 x Crew to operate the system.		
Waste collection, storage and transport	50m^3 of on-board or towable storage	50m^3 IBCs, or on-board storage tanks, or towable storage barges.	48 hours to marine operating base	50m^3 IBCs, or on-board storage tanks, or towable storage barges.		
Spotter aircraft	A fixed wing or helo is able to accurately direct the vessel operator where the oil is.	1 x Trained spotter. 1 x Aerial platform. Pilots for the same.	48 hours on site	1 x Trained spotter. 1 x Aerial platform. Pilots for the same.		
Marine delivery	Vessel that can carry 50m^3 of oil/water waste, skimmer system, and effectively 4 tonnes bollard pull.	1 x Large work vessel and one tender or smaller work vessel to assist with recovery operations. Crew and master for same.	48 hours on site	1 x Large work vessel and one tender or smaller work vessel to assist with recovery operations. Crew and master for same.		

LEGEND:	Resources required	Resources possibly required	Resources unlikely to be required

3.2.5 Protection and Deflection Strategy

Table 3-13: Protection and deflection operations

Task	Guidance
Analysis of trajectory modelling and NEBA	Planning Chief and Environment Unit Leader analyse trajectory models (pre-event modelling and real-time modelling) to predict which shorelines may be impacted by oil, time to impact, probability and quantity of oil to shore. Priority resource protection areas are compared with the shorelines that are predicted to be oiled and operational/tactical plans are activated. Outputs from MES will confirm protection priorities that require action to prevent oiling. Priority of the implementation of tasks to support this strategy will be focused on protecting the highest shoreline and near-shore environmental sensitivities. Oil at sea may come ashore and strand. Using deterministic modelling during a spill, combined with situational awareness gained through ongoing MES, VOGA will implement this strategy in these areas to protect sensitive shorelines.
Analysis of aerial observation and current situational awareness	Planning Chief and Environment Unit Leader to use aerial surveillance data, information gathered by the Situation Unit and the protection priorities identified in pre-spill planning as a starting point for deployment of protection and deflection operations.
Understanding of real time currents and tides	Booming configuration will depend on the tidal movements and speed of currents in the location in which booms are to be deployed. Booms will fail when the forces of water movement push oil over or under the boom, or when there is failure of anchoring systems. This can be in currents of as little as 1 knot, however there are ways in which booms can be set up (e.g. chevron booming, staggered booming) so that oil is directed with the current onto another boom or into a collection area.
NEBA	Priority of the implementation protection and deflection is to oiling of shorelines with the highest environmental sensitivities (location and season). Planning Chief and Environment Unit leader in consultation with DTMI to determine where the optimum mitigation outcomes will be achieved through protection and deflection activities. Shoreline protection priorities are mangrove environments and identified turtle nesting beaches during nesting and hatching season. Where trajectory modelling indicates likely multiple stranding of oil, and a NEBA indicates no likely worse outcome, shores may be left to allow oil to collect utilising areas of natural containment. Identification and request of relevant Tactical Response Plans from other titleholders for priority shorelines

Task	Guidance
Determine and source resources required and booming configuration	Planning Chief to liaise with Operations Chief to determine type of booms (including ancillaries such as anchors and power packs for land sea booms) required and a booming configuration that can effectively and efficiently direct oil away from a resource, or prevent contact by oil. Refer to OSRL handbook for Shoreline Operations for recommended booming configurations. Use of available Tactical Response Plans as guidance. Logistics Chief to source booms and skimmers (if being used to recover oil) from AMOSC stockpiles and the AMSA National Plan stockpiles. Logistics Chief to secure vessels (including crew) and equipment operators (AMOSC core group or AMSA NRT) to deploy booms and vessels to assist in shallow areas. Booms can be deployed in various configurations to either exclude oil from a sensitivity or deflect the oil away from it. Trained operators will be required for this task and are available from the AMOSC Core Group, AMSA NRT or the DoT State Response Team. Protection and deflection strike teams will establish exact equipment and resource requirements for specific shoreline protection and deflection according to the specific incident. Daily inspection and maintenance of deployed booms to be undertaken by response personnel.
Induction	Operations Chief to ensure that teams are informed of how to minimise damage to flora and avoid encounters with fauna. Induction and training of onshore teams accessing to uninhabited islands to include that spill response teams should avoid disruption of environment and take practical tactical precautions to avoid contact with flora and fauna. The number of staff and teams required will vary according to the sensitivities being protected.
Marine vessel transport of people and equipment	Logistics Chief to secure marine vessel(s) capable of carrying crew and spill equipment to remote islands.
Aerial surveillance and/or transport	Logistics Chief to secure aircraft to enable ongoing aerial surveillance of shorelines and/or transport of people and equipment.
Consider constraints	The major constraint for protection and deflection, especially in areas of northwest WA is the tidal range of and current speed that may be experienced. It may not physically be possible to deploy protection and deflection booming systems if the tide and current are not favourable. Other constraints include: • access to remote islands and mainland beaches • biosecurity issues associated with moving people and equipment between remote islands and the mainland • access to sites (habitat, terrain, distance from the mainland, landing/mooring sites for vessels) • transport of equipment to remote sites • weather and sea-state

Task	Guidance
	• hazardous wildlife.
Incident action planning	At the completion of the containment and recovery operations, the Planning Chief will review the operations based on a briefing from the Operations Chief and provide a recommendation to the Incident Commander for future protection and deflection operations.
Effectiveness guidance for response strategy	• Visual observation to determine whether a booming operation is 'protecting' and/or 'deflecting' the impact of hydrocarbon towards sensitivity • Boom type, deployment angle, anchoring, quantity and variation in materials can all be altered to increase effectiveness.

Table 3-14: Protection and deflection minimum resource requirements

Means/task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Landside (based on one team, resources will need to be scaled up for additional teams)						
Marine vessels	Marine vessel(s) capable of carrying crew and spill equipment to remote islands. Capable of logistics support/accommodation for 10 POB, crew, accessing remote islands.	Aluminium catamarans and/or flat bottom boats.	48 hours on site	4 x Aluminium catamarans and/or flat bottom boats.	4 x Aluminium catamarans and/or flat bottom boats.	
Crew	Crew capable of securing booms.	1 x Trained operator/Team Leader. 4 x Labourers.	48 hours on site	4 x Trained operators/ Team Leaders. 16 x Labourers.	4 x Trained operators/ Team Leaders. 16 x Labourers.	
Booming systems	A system that can effectively and efficiently direct or prevent the movement of oil.	Various lengths of land/sea boom, shoreline protection booms, sorbent booms.	48 hours on site	Various lengths of land/sea boom, shoreline protection booms, sorbent booms.	Various lengths of land/sea boom, shoreline protection booms, sorbent booms.	
Marine support						

Means/task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Vessel	Vessel capable of assisting land-side crews to secure booms in waterways and in the shallow seas.	1 x Shallow draft work boat. Operational crew for same.	48 hours on site	4 x Shallow draft work boat. Operational crew for same.	4 x Shallow draft work boats. Operational crew for same.	
Crew	Crew capable of securing booms.	1 x Trained Operator/Team Leader. 2 x Labourers on-board.	48 hours on site	2 x Trained Operators/ Team Leaders. 4 x Labourers on-board.	2 x Trained Operators/ Team Leaders. 4 x Labourers on-board.	
Booming systems	A system that can effectively and efficiently direct or prevent the movement of oil.	Various lengths of land/sea boom, shoreline protection booms, sorbent booms. Crew to operate the system.	48 hours on site	Various lengths of land/sea boom, shoreline protection booms, sorbent booms. Crew to operate the system	Various lengths of land/sea boom, shoreline protection booms, sorbent booms. Crew to operate the system	

LEGEND:	Resources required	Resources possibly required	Resources unlikely to be required

3.2.6 Shoreline Clean-up Strategy

Table 3-15: Shoreline clean-up operations

Task	Guidance
Shoreline clean-up, subject to amenable weather conditions and access, is the use of a variety of clean-up methods on shorelines to remove stranded hydrocarbons, and to minimise the potential ongoing environmental damage caused by those hydrocarbons. *Generally manual removal of oil from shorelines is not feasible at concentrations less than 100g/m^2 and intervention is likely to result in a negative net environmental benefit.*	
Analysis of trajectory modelling	Planning Chief and Environment Unit Leader analyse trajectory models (pre-event modelling and real-time modelling) to predict which shorelines may be impacted by oil, time to impact, probability and quantity of oil to shore. Priority coastline sections are compared with the shorelines that are predicted to be oiled and available tactical plans are activated.
Analysis of aerial observation and current situational awareness	Planning Chief and Environment Unit Leader to use aerial surveillance data, information gathered by the Situation Unit and the protection priorities identified in pre-spill planning as a starting point for shoreline surveys and clean-up activities.
NEBA	Priority of the implementation of tasks to support this strategy will be focused on cleaning oil from shorelines with the highest environmental sensitivities. Planning Chief and Environment Unit leader to determine where the optimal mitigation outcomes will be achieved through shoreline clean-up activities. This analysis will require information gathered by shoreline assessment field teams, and consulting with WA DTMI representatives to confirm protection priorities. Shorelines will be assessed for the extent of the oiling, with this information reported back to the VOGA ICT to determine which shoreline(s) is/are the priority for clean-up. This determination will be made based on the strategic NEBA, and the NEBA that will be undertaken at the time by the Planning Unit within the ICT. Shoreline clean-up will follow a three-stage methodology (refer to ITOPF Technical Information Paper No. 7): 1. Emergency phase – collection of oil floating close to the shore and pooled bulk oil removal. 2. Project phase – removal of stranded oil and oiled shoreline material that cannot be cleaned in-situ. 3. Polishing phase – final clean-up of light oil contamination and removal of oil stains, where the incident SIMA demonstrates this is necessary. Actual clean-up tasks for each of the three stages will be selected based on an assessment of suitability for the clean-up task for the oil character and shoreline type. Where trajectory modelling indicates likely multiple strandings of oil, and a NEBA indicates no likely worse outcome, shores may be left to recover without intervention.

Task	Guidance
	In undertaking this three-step process, VOGA contractors, employees and support agencies will work to effectively and efficiently clean shorelines where possible. A number of technical guidance notes exist for shoreline assessment and clean-up operations. These include the Environment Canada SCAT Guidelines (2007), the UK SCAT Manual (2004), and the WA DTMI Oiled Shoreline Field Book.
Deploy shoreline clean-up teams	Deploy 6 shoreline clean up teams by Day 4 to priority coastline sections verified by the OM6 SCAT survey, SIMA and OSTM analyses. One trained shoreline team leader and ten shoreline clean up workers per team.
Logistics	Logistics Chief activate resources in Logistics Management Plan [VOG-7000-RH-0008]. Finance Chief to ensure that personnel records are completed.
Induction and training	Operations Chief to ensure that shoreline teams are informed of how to minimise damage to flora and avoid encounters with fauna. Induction and training of onshore teams accessing to uninhabited islands to include that spill response teams should avoid disruption of environment and take practical tactical precautions to avoid contact with flora and fauna. The number of staff and teams required will vary according to the sensitivities being protected. Operations Chief to also ensure the waste management plan prepared by Planning and Logistics is implemented on site.
Marine vessel transport of people and equipment	Logistics Chief to secure marine vessel(s) capable of carrying crew and spill equipment to remote islands.
Aerial surveillance and/or transport	Logistics Chief to secure aircraft to enable ongoing aerial surveillance of shorelines and/or transport of people and equipment.
Equipment	Cleaning equipment, decontamination set. The type and amount of equipment required for shoreline clean-up will depend on the technique used) and operational constraints such as access to the shoreline and weather conditions. Equipment held in the State stockpiles (DTMI) is suitable for shoreline clean-up activities as well as the equipment held in AMOSC and AMSA stockpiles. Additional resources can be accessed from OSRL.
Ongoing clean-up operations	Planning Chief and Operations Chief decide in each IAP cycle which shorelines are to be cleaned and the clean-up method to be used. The decision to use particular clean-up methods will be based on the information provided by the SCAT teams and operational teams working the shorelines. Shoreline clean-up, subject to amenable weather conditions and access, is the use of a variety of clean-up methods on shorelines to remove stranded hydrocarbons, and to minimise the potential ongoing environmental damage caused by those hydrocarbons. Priority of the implementation of tasks to support this strategy will be focused on cleaning oil from shorelines with the highest environmental sensitivities. Shoreline clean-up teams will be directed (as part of the IAP) to mount operations in areas where the optimum mitigation outcomes will be achieved. This analysis will be undertaken at the time by the Planning Team, using shoreline assessment field

Task	Guidance
	teams, and consulting with WA DTMI representatives to confirm protection priorities. The WA DTMI will be consulted in the NEBA process and response strategy selection for OSR that impacts State waters. Sorbents will not be used for shoreline clean-up on high energy shorelines. Mechanical removal and high pressure flushing will not be undertaken in mangrove areas. Water from high pressure flushing will not be directed in between rocks and onto sediment.
Waste collection and transport	Where shoreline clean-up is occurring, VOGA will implement the establishment of hot, warm and cold zones, to minimise secondary contamination. Local sites will be used for the temporary storage of soiled material, liquid waste and solid waste/oil mixes, to enable appropriate final waste solution to be effectively implemented. Shoreline waste generation can be reduced by identifying shorelines likely to be impacted and pre-cleaning the shore of debris and vegetation before oil strands, thus reducing the total amount of oily waste to dispose of. Shoreline waste generation can range from three to over 10 times the amount of oil stranded. Sorbent materials will be stored in a contained storage area prior to transport and disposal to prevent any further contamination of habitats.
Incident action planning	At the completion of shoreline clean-up operations, the Planning Chief will review the operations based on a briefing from the Operations Chief and provide a recommendation to the Incident Commander for future shoreline clean-up activities.
Effectiveness guidance for response strategy	• OM6 – Shoreline assessment. • OM3 – Sediment quality assessment • Shoreline surveys undertaken. • Information collected in surveys used to inform clean-up activities. • Shoreline clean-up activities don't do further damage than oil alone. • Waste stored and removed offsite. • Shoreline clean-up endpoints agreed to and closed out by stakeholder representatives.
Environmental Performance Standards	[OPEP-EPS-2.1] Methods and techniques employed for shoreline clean-up operations will be based on the information provided by the SCAT teams and in consultation with DTMI representatives. [OPEP-EPS-2.2] All shoreline clean-up sites will be zoned and marked before clean-up operations commence to minimise secondary contamination and minimise the mixing of clean and oiled sediment and shoreline substrates. [OPEP-EPS-2.3] Shoreline clean-up sites will be appropriately mapped with clear restricted zones for sensitive habitat areas and no access zones for vehicle and personnel movement. Zoning will consider sensitive vegetation, bird nesting/ roosting areas and turtle nesting habitat.

Table 3-16: Shoreline clean-up minimum resource requirements

Means/ task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Induction	Shoreline teams are informed of how to minimise damage to flora and avoid encounters with fauna.	1 x Trainer.	72 hours on site	1 x Trainer.		
Manual shoreline clean-up activities	Floating oil close to shore collected and pooled bulk oil removed. Stranded oil removed. Cleanup of light oil contamination (polishing phase).	6 team leaders and 60 clean-up workers (66 people) sourced and mobilised to forward operating base.	3 shoreline clean-up teams (30 workers and 3 team leaders) mobilised and on site for induction within 72 hours	6 shoreline clean-up teams on site (66 people – 1 trained team leader, 10 workers per team).		6 shoreline clean-up teams on site (66 people – 1 trained team leader, 10 workers per team).
Logistics	Crews are safe, fed, in contact with other parts of the response and watered.	Mobilisation of PPE, food, water, shelter, communications network.	72 hours on site.	PPE, food, water, shelter, communications network. Amenities for 88 pax.		PPE, food, water, shelter, communications network. Amenities for 1,100 pax.
Marine vessels	Marine vessel(s) capable of carrying crew and spill equipment to remote islands.	Marine vessels.	72 hours on site	6 x Marine vessels to support transport of personnel, equipment and ammenities. 3 x marine vessels capable of accomodating shoreline. clean-up teams working at priority island locations.		6 x Marine vessels to support transport of personnel, equipment and ammenities. 3 x marine vessels capable of accomodating shoreline. clean-up teams working at priority island locations.
Equipment	Cleaning equipment and decontamination set selected according to	20 x shoreline clean-up kits made up of shovels, plastic bags, rakes, buckets, wheelbarrows.	72 hours on site	40 x shoreline clean-up kits made up of shovels, plastic bags (20kg		40 x shoreline clean-up kits made up of shovels, plastic bags (20kg capacity), rakes,

Means/ task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
	suitablity for clean-up task and shoreline type.	Decon kit.		capacity), rakes, buckets, wheelbarrows and PPE. 2 x decontamination stations (1 per operational zone) 3 x skid steers. 6 x 4WD vehicles (1 per team leader).		buckets, wheelbarrows and PPE. 2 x decontamination stations (1 per operational zone) 3 x skid steers. 6 x 4WD vehicles (1 per team leader).
Booming systems	A system that can effectively and efficiently direct or prevent the movement of oil.	Various lengths of land/sea boom, shoreline protection booms, sorbent booms. Crew to operate the system.	48 hours on site.	Various lengths of land/sea boom, shoreline protection booms, sorbent booms. Crew to operate the system.		Various lengths of land/sea boom, shoreline protection booms, sorbent booms. Crew to operate the system.
Waste collection, storage and transport	Short and long term waste collection.	Temporary waste storage capability activated.	48 hours to marine operating base	Temporary waste storage on site and longer term waste storage options.		Temporary waste storage on site and longer term waste storage options.

LEGEND:	Resources required	Resources possibly required	Resources unlikely to be required

3.2.7 Oiled Wildlife Response

Table 3-17: Oiled Wildlife Response

Task	Guidance
Activate WAOWRP	Call the DBCA State Duty Officer on telephone **(08) 9219 9108.** The DBCA State Duty Officer will notify an OWA. Appoint a Wildlife Division Coordinator. First strike response activities may be undertaken within the Environment Unit of the Planning section until a Wildlife Division Coordinator is actually in the ICC.
Rapidly assess the situation	Review OSTM – both the model used in response planning and the real time when available. SITREP – reports of wildlife both oiled and active within the response area.
Provide advice to the IMT in relation to the wildlife assets at risk	Wildlife Division Coordinator to undertake. Use WAOWRP to identify wildlife assets at risk, cross reference with wildlife information contained in NEBA..
Liaise with Oiled Wildlife Advisor	Wildlife Division Coordinator to liaise with OWA.
Activate first strike response kits	Wildlife Division Coordinator and OWA discuss get approval from IC. First strike kits are portable and contain equipment to allow stabilisation of wildlife before triage and possible treatment at an oiled wildlife facility.
Reconnaissance	Reconnaissance across priority shorelines with specific locations determined by OSTM and the NEBA at the time of the spill. Resources are required to identify and record location of oiled wildlife as well as determining the presence of wildlife in areas predicted to be impacted by oil. Real time wildlife reconnaissance is necessary to ground truth information due to seasonal and inter-annual variation in abundance and distribution of wildlife. Depending on OSM-BIP activations this task could be undertaken by teams implementing OM5 – Marine Fauna Surveillance.
Develop wildlife sub-plan for the IAP based on WAOWRP procedures.	Transition to response cycle and procedures in WAOWRP for OWR activities based on the spill scenario.
Environmental Performance Standards	[OPEP-EPS-3.1] In liaison with DBCA, initiate a wildlife first strike response within a minimum of 24 hours (if required) of a confirmed or imminent wildlife contact as reported by OM5: Rapid Marine Fauna Assessment.

Table 3-18: OWR minimum resources

Means/task	Outcomes	Minimum resources required for first 48 hours	Timeframe (on spill notification)	5 days	10 days	20 days
Wildlife first strike response	WAOWRP is activated.	N/A – activation task only	Within 24 hours	N/A – activation task only	N/A – activation task only	N/A – activation task only
	OWA and Wildlife Division Coordinator are activated and assigned to the ICT.	1 x OWA. 1 x OWR Division Coordinator.	Once WAOWRP is activated.	N/A – activation task only	N/A – activation task only	N/A – activation task only
Mobilisation of resources	First strike response kits are mobilised to staging areas	Vehicles/small trucks to deliver 6 x first strike response kits to operational sectors. Vessels/aircraft to take kits to islands. 1 x OWA. 1 x OWR Division Coordinator.	Within 48 hours.	1 x OWA. 1 x OWR Division Coordinator.	1 x OWA. 1 x OWR Division Coordinator.	1 x OWA. 1 x OWR Division Coordinator.
	Two OWR containers are mobilised to an OWR facility location in Dampier.	2 x OWR containers from Dampier (AMSA) and Fremantle (AMOSC).	Within 48 hours.	2 x OWR containers	N/A – containers deployed	N/A – containers deployed
Wildlife reconnaissance	Situational awareness regarding wildlife that has been oiled and wildlife present within the path of the spill trajectory is gained.	1 x aerial observation over extent of predicted trajectory requires 1 x aircraft.	Concurrently with MES and SCAT tasks. Wildlife specific reconnaissance within 48 hours.	Aerial based survey: 1 x aerial observation over extent of predicted trajectory requires 1 x aircraft Boat based survey: 1 x small vessel (<12m length) 1 x boat driver; 2 x crew Shoreline survey: 2 x Quad motorbike or 4WD vehicle; 4 x survey crew.		
IAP wildlife sub-plan development	Future OWR activities arrangement developed based on the spill scenario.	1 x OWR Advisor; 1 x OWR Planning officer; 1 x OWR Division Coordinator.	Within 48 hours.	To be determined according to WAOWRP procedures.		

LEGEND:	Resources required	Resources possibly required	Resources unlikely to be required

4 Termination and Recovery

4.1 Response Strategies Termination Criteria

Consistent with the National Plan, VOGA's priority in a response to an oil spill incident is human health and safety, meaning that response activities will cease if operations cannot be carried out in a manner that do not present unmanageable risks to human safety.

Termination criteria will aid the decision to terminate OSR activities for each strategy. Note that these termination criteria only apply if the strategy is able to be operationally implemented (e.g. the weather conditions allow marine/aerial operations to take place).

Response strategies are monitored throughout implementation and the following considerations are taken into account (in addition to safety issues) when determining if a response strategy is lowering impacts to ALARP:

- measures are no longer effective
- further clean-up is likely to cause greater environmental damage (NEBA)
- the level of response is out of proportion to the amount of oil on the water
- when the costs of the response are exceeding the likely benefits, i.e. the point of diminishing returns is reached in terms of monetary costs.

As per the spill response planning process outlined in Figure 3-1, the operational NEBA provides guidance to the identification of termination criteria, by assessing if the:

- response strategy reduces the probability of impact of to the sensitive receptors
- response strategy increases the number of days before impact to the sensitive receptors
- response strategy reduces the average and/or total amount of oil to impact the sensitive receptors
- response operation has more of a negative impact than untreated oil
- controls that are put in place to mitigate impacts associated with the proposed response strategy.

If termination criteria are met then the response strategy ceases. Table 4-1 presents termination criteria that can be used in the spill response planning process (IAP process). Shoreline clean-up termination criteria are explained in more detail separately because of the complexity that maybe present in a shoreline response (Table 4-2).

Table 4-1: Termination criteria

OSR strategy	Termination criteria for each OSR strategy
Monitoring, evaluation and surveillance	The spill is no longer visible to human observers. Specifically, a 'silvery/grey' sheen, as defined by the Bonn Agreement Oil Appearance Code (BAOAC), is no longer observable. Modelling will continue until response modelling predicts oil concentrations in the environment due to the spill are below contact threshold concentrations of 10g/m^2 surface oil, 100ppb entrained oil and 50ppb dissolved aromatic hydrocarbons. When MES undertaken to evaluate effectiveness of response strategies is no longer required.
Chemical dispersion	Chemical dispersant activities will cease if the NEBA output demonstrates that the response strategy: • does not reduce the probability of oil impacting sensitive receptors • does not increase the number of days to impact sensitive receptors • does not decrease the volume of oil to impact sensitive receptors • has more of a negative impact on sensitive receptors than the untreated oil (e.g. impact of entrained oil) or • hazard controls put in place are not achievable.
Containment and recover	Weir skimmers are recovering <10% hydrocarbon by volume, oleophilic skimmers are recovering <50% hydrocarbon by volume, entrapment in booms is no longer effective, or the observed trajectory of the oil indicates that it is heading away from sensitive receptors.
Mechanical dispersion	Oil is not observed to be effectively dispersed into the water column. The spill is no longer visible to human observers. Specifically, a 'silvery/grey' sheen, as defined by the BAOAC, is no longer observable.
Protect and deflect	Booms are unable to be deployed because of safety concerns or sea state and weather prevents effective deployment of equipment. The spill is no longer visible to human observers. Specifically, a 'silvery/grey' sheen, as defined by the BAOAC, is no longer observable.
Shoreline clean-up	Termination criteria for shoreline clean-up activities is site dependant and will be based on scientific advice that suggests further clean-up activities are unlikely to materially decrease lasting hydrocarbon impacts on environmental sensitivities. Termination points are likely to be selected based on the general clean-up objectives, which are to: • minimise exposure hazards for human health; • speed recovery of impacted areas if possible; and • reduce the threat of additional or prolonged natural resource impacts. Table 4-2 provides some examples of how shoreline clean-up termination points can be described. WA shorelines are within the jurisdiction of the WA State Government, the decision to cease shoreline clean-up will be made with advice from the WA DTMI to take into account the State ESC position. Shoreline clean-up activities will cease if a safe working environment is not present for responders.
Oiled Wildlife	Termination criteria for oiled wildlfie response is dependent on the incident and will be based on the termination criteria descirbed in the WAOWRP.

4.1.1 Shoreline Termination Criteria

Due to the site and spill specific nature of shoreline clean-up, termination points are developed for the specific incident, however there are some guiding principles that VOGA will consider when working with the State ESC and stakeholders to identify termination points.

Termination points, also known as end points for shoreline clean-up are likely to be selected based on the general clean-up objectives, which are to:

- Minimise exposure hazards for human health
- Speed recovery of impacted areas if possible
- Reduce the threat of additional or prolonged natural resource impacts.

These objectives lead to developing clean-up strategies and end points that do not cause more harm to the environment than good (Oil Spill Response, 2011).

Ideally, clean-up efforts will return the resource to its baseline condition without suffering further impact or affecting other resources. Aggressive and inappropriate clean-up techniques can make matters worse. Less intrusive methods or natural recovery are often preferable. The best clean-up strategy is often not the one that removes the most oil; rather, it is the strategy that removes oil that poses a greater risk of injury than would result from clean-up, and allows remaining oil to be removed by natural processes.

The Environment Unit within the Planning Section will provide the following in regards to shoreline clean-up:

- Guide the Operations Section in conducting specific clean-up methods to minimise adverse environmental impact (best management practices)
- Provide the Operations Section with environmental and safety constraints on conducting clean-up activities in specific habitats
- Develop spill-specific clean-up objectives, guidelines and termination points. This will require input from the State ESC because the DTMI is the Controlling Agency and Jurisdictional Authority for OSR in State waters. Examples for shoreline clean-up that may be used as the basis for developing the spill-specific clean-up termination points with the State ESC are described in Table 4-2
- Identify time-critical and degree-of-use issues to be combined with clean-up priorities and end points
- Identify sensitive resources that may be adversely affected by the proposed treatment methods (e.g. rich intertidal biota on rocky shores where low pressure ambient water flushing will be used).

Table 4-2: Shoreline clean-up termination points

No oil observed: not detectable by sight, smell, feel	• This end point is often used for sand beaches where oil removal can be effective without delaying resource recovery. • Visual inspections are preferred over chemical analysis of samples because of: difficulty of sampling areas with high variability; time and costs to complete sampling and analysis; and lack of guidelines on what levels are safe.
Visible oil but no more than background	• This termination point is often applied where there is a significant background rate of tar ball deposition on the shoreline.
No longer generates sheens that will affect sensitive areas, wildlife, or human health	• This termination point is used where sheening persists after clean-up efforts become ineffective, or on sensitive habitats where further clean-up efforts will cause more harm than natural removal. Residual sheening should persist over a relatively short time period. • Sheen is an oil film ranging from barely visible to dull colours. Sorbents effectiveness is usually limited in recovery of sheens. Consider the amount and duration of sheening, and the distance to sensitive resources, to determine if sheening poses a significant threat. • Consider the degree of exposure: high wave/tidal exposure speeds removal and breaks up sheens; sheltered areas will sheen longer and sheens will be more persistent. • Consider the degree and timing of use: sheening may be tolerated in areas or during periods of low use; even minor sheens may not be tolerated in areas of high use, such as swimming beaches.
No longer rubs off on contact	• This termination point is usually defined as oil removal to a stain or coat, or weathering to the point that it is no longer sticky. It is applied to hard substrates (rocky shores, seawalls, riprap, and gravel) and vegetation (marshes, mangroves). • The objective is to prevent oiling of fur, feathers, and feet of wildlife, and oiling of people and property during contact with oiled surfaces. • Consider the degree and timing of use: high-use areas often require higher cleanliness, whereas natural removal is allowed in low-use areas where further clean-up efforts will be disruptive.
Oil removal to allow recovery/re-colonisation without causing more harm than natural removal of oil residues	• This termination point is used where further oil removal will result in excessive habitat disruption (e.g. trampling of soft sediments and plant roots, mixing oil deeper, extensive sediment removal, vegetation cutting) or high biota mortality (e.g. from high-pressure, hot-water washing of intertidal communities). • It is also used for areas with difficult access, which limits the type of clean-up that can be conducted along that shoreline segment. • Consider the potential for erosion from excessive sediment removal, particularly where erosion/deposition patterns of the beach cycle will rework and clean sediments within an acceptable timeframe.

4.2 Stakeholder Engagement in Termination

Community and stakeholder understandings and expectations will play a role in both the decision to terminate a response and the acceptability of the decision. Consultation with these groups will be undertaken by VOGA prior to any termination decisions being implemented.

4.3 Post-response Recovery

Following termination of the incident response, VOGA will undertake an investigation to identify any ongoing impacts to the environment or communities, and provide a coordinated plan for addressing these impacts.A debriefing and post-incident analysis will be undertaken with responders and stakeholders, to identify any improvements to this plan as appropriate.

5 ICT Arrangements

5.1 ICT Personnel

Arrangements and plan for full scale activation of ICT resources is provided in Table 5-1. Activation plan is based on OPP2 requirements. During the early stages of a spill response the plan should be validated to ensure appropriate ICT support is provided to in-field operations. For activation of OPP1, Planning Chief is responsible for reviewing and adjusting the activation plan in Table 5-1.

Key assumptions of the activation plan are:

- The ICT will run for 14-16 hours a day for up to 10 days before transitioning to a sustainable model as defined by the planning team.
- Vermilion's international associated companies providing ICT staffing remotely overnight.
- The ICT team size should be fit-for-purpose considering:
  - that the span of control should not exceed more than 7 direct reports within the ICT itself.
  - that the workload can be spread across other individuals on an as needs basis because the training standards in critical roles are the same.
  - the Incident Commander and Section Chief roles are identified as critical to a successful response and must be filled within 12 hours of activation.
  - the Incident Commander has current competence training in PMAOMIR418 and oil spill response to undertake their role.
  - the Planning/Logistics/Operations Sections Chiefs has current competence training in PMAOMIR322 and oil spill response to undertake their role.
- A time-on/time-off roster should be established no earlier than day 7 for continuity of response and no later than day 10 to manage fatigue. Table 5-1 assumes roster change occurs on day 5.
- The response is expected to reach a 'steady state' by day 20 meaning that detailed plans for day 20 to spill termination should be in place by day 20.

The competence and quantity of staff required to successfully respond to an oil spill event is leveraged off the detailed planning in OPP 2, the initial IAP in place for these events. Further, the VOGA response systems, other response plans (e.g., the Logistics Plan and the OSM-BIP) are in place to assist all ICT personnel, particularly in the early stages of a response.

VOGA has the capability to staff an ICT with appropriately trained and competent personnel, to meet the basic resource requirements of an ICT within an hour or full activation within 48 hours as per Table 5-1. VOGA maintains trained onshore personnel for ICT roles with each core role being assigned between 2 and 5 personnel who can fill the role or support it in an extended ICT. Personnel from the Wandoo facilities (off rostered, and then onsite personnel if conditions enable this) would be available to provide personnel to the IMT within between 48 and 96 hours.

ICT roles can be staffed from any of the following sources:

- VOGA local staff and contractors. Personnel who are required to be available within 12 hours are 'on roster'
- Vermilion International staff (some roles can be filled remotely)
- Consultants (usually with Master Service Arrangements in place)
- Semi-skilled contractors (temporary contract hires)
- AMOSC Staff: Under the AMOSC Service Agreement, AMOSC can provide Industry Liaison Officers
- AMOSC Staff and Core Group: Under the AMOSC Service Agreement and Response Plan, Vermilion is able to scope specific response activities to AMOSC and as such AMOSC are able provide resources as outlined in Table 5-1 through their response structure; this includes WA DTMI.

Table 5-2 provides a minimum resource and competency requirements by source to enable the resource plan in Table 5-1 to be achieved. VOGA manages our business and capability arrangements to ensure we have sufficient contingency, through training majority of office staff and managing leave; ensuring we have sufficient capacity to maintain access to VOGA numbers as outlined Table 5-2. Should situations arise where Table 5-2 cannot be achieved a 'recordable' incident will be raised and will trigger review of operational activities to manage changes in risk profile.

In addition, under the National Plan, a National Response Team (NRT), comprising experienced personnel from operator to senior response manager level from Commonwealth/State/NT agencies, industry and other organisations, has been developed. The services of the NRT will be obtained through the Environment Protection Group (EPG) and AMSA for the release of designated personnel for oil spill response activities. Personnel resources from these sources have not been included in the estimates of personnel available because they are likely to be deployed by AMSA/WA DTMI to support the government response.

Further highly trained staff from OSRL and the Global Response Network can be called upon to staff ICT roles either remotely or later in the response. Personnel resources from these sources have not been included in the estimates of personnel available to ensure surge capability is available.

VOGA has prepared an induction package to enable third party ICT members to gain adequate knowledge of the specific VOGA oil spill arrangements.

5.2 Response Facilities

VOGA's ICT utilise VOGA's Perth office as the primary Incident Command Centre (ICC) for OSR monitoring or incident management activities.

This facility contains information communication technology infrastructure to communicate effectively with the range of parties required in a significant response, private and nearby break out areas, along with sufficient access controls and logistical support for the ICT to operate over a number of weeks or months. In the event a unified command ICT is established with the DTMI, a co-located ICC will be established at mutually agreed location.

VOGA also has access to an alternate ICC should a business continuity event, civil unrest, security or capacity issue impede VOGA's capability to fully exercise incident control from the primary facility.

For spills requiring significant field logistical support, a forward operating command area will be located as close as possible to the spill site, the City of Karratha Local Emergency Management Committee will be engaged to assist in locating a suitable site.

In addition, depending on spill size a forward operating post may be established. The most likely location will be at the supply base near the Port of Dampier. VOGA have arrangements in place with TOLL to provide forward base and logistical services in Dampier in the event of an oil spill.

5.3 ICT Resources and Activation Plan

Table 5-1 ICT Resources and activation plan

ICT Team	Role	Task/Function	Competence		Response Arrangement		Total ICT Resource Need Over Time				
							Day 1	Day 2	Day 5	Day 10	Day 20
			Skill and Attribute Assessment	Additional Training or Experience or Qualification Required	Source	Immediate Need/Timeliness of Arrangement	Required/ Need (FTE)	Required/ Need (FTE)	Required/ Need (FTE)	Required/ Need (FTE)	Required/ Need (FTE)
CCT	CC Operations Chief	Provides the interface between the ICT and CCT. Provides updates to the CCT regarding IAPs and communicates any needs for support if required. Responsible for ensuring VOGA's corporate objectives are communicated to the ICT and are also reflected in the IAP.	Experience to attain role is sufficient to perform role	Nil	VOGA Local	Within 12 hours	1	1	1	2	2
IC	Incident Commander	Maintain control responsibilities for the incident response Provide professional oil spill response command to the IMT Approve IAP and where required engage State Maritime Environmental Emergency Coordinator/ DoT Incident controller for agreement/endorsement of plan for activities within, or potentially impact, WA waters.	Oil spill competence gap between day-to-day role and response role	PMAOMIR418 + OSR Training or IMO Level 3	VOGA Local	Within 1 hour of activation	1	1	1	2	2
IC	Safety Officer	Assesses unsafe situations and develops measures for assuring personnel safety. Confirms safety regulatory authorities and applicable departments have been notified. Ensures implementation of safety measures and monitoring and recording of personnel exposures to hazardous products. Supports accident investigations, recommends corrective action, and prepares accident report.	Oil spill competence gap between day-to-day role and response role	PMAOMIR322 + OSR Training	VOGA Local	Within 24 hours	1	1	2	2	2
IC	Stakeholder Liaison Officer	Coordinates investigation of reportable events. Responsible for managing regulatory engagement and coordinating any regulatory approvals required to implement response strategies. Coordinates engagement of stakeholders who are impacted from the spill or response activities. Acts as the functional interface between these various parties. Implements VOGA Communications Plan, providing media information support and serving as the dissemination point for all VOGA media releases.	Oil spill competence gap between day-to-day role and response role	PMAOMIR322 + OSR Training	VOGA Local	Within 24 hours	1	1	1	2	2
IC	Public Information Officer	Represent VOGA and provide timely information of the incident and the incident response to government stakeholders	Full competence overlaps between day-to-day role and response role	Nil	Contractor	Within 24 hours	1	1	2	2	2

ICT Team	Role	Task/Function	Competence		Response Arrangement		Total ICT Resource Need Over Time				
							Day 1	Day 2	Day 5	Day 10	Day 20
			Skill and Attribute Assessment	Additional Training or Experience or Qualification Required	Source	Immediate Need/Timeliness of Arrangement	Required/ Need (FTE)	Required/ Need (FTE)	Required/ Need (FTE)	Required/ Need (FTE)	Required/ Need (FTE)
IC	Liaison Officer (Industry)	Identifies the assisting and cooperating companies and agencies, including communications link and location; provides list to the CCT. Functions as "point of contact" for assisting and cooperating agency representatives. Responsible for ensuring that parties who have agreed to undertake specific functions under the OPEP are undertaking the functions consistent with the OSR strategies, performance standards and objectives of the VOGA Wandoo Field OSCP.	Full competence overlaps between day-to-day role and response role	PMAOMIR322 + OSR Training	AMOSC Staff	Within 24 hours	1	1	1	2	2
IC	Administration Unit	Record response data in the Incident Log	Full competence overlaps between day-to-day role and response role	Nil	VOGA Local, Contractors	Within 24 hours	1	2	4	4	4
IC	Administration Unit	Record response data in the Incident Log	Full competence overlaps between day-to-day role and response role	Nil	Labour Hire	Day 5	0	0	10	10	10
Planning	Planning Chief	Supervises the VOGA ICT and leads the IAP process. Records and displays data for information, planning and programming, allocation and justification. Documents and maintain records of all Wandoo Offshore Installation and VOGA ICT actions. Manages critical information requirements. Coordinate and document the response Incident Action Plan (IAP) including Interfaces with State Maritime Environmental Emergency Coordinator or State Environmental and Scientific Coordinator (ESC) for input into IAP for activities impacting state waters.	Oil spill competence gap between day-to-day role and response role	PMAOMIR322 + OSR Training	VOGA Local	Within 1 hour of activation	1	1	1	2	2
Planning	Consultation Unit	Control the release of the IAP to appropriate stakeholders	Full competence overlaps between day-to-day role and response role	Nil	Contractor	Within 48 hours	0	1	1	2	2
Planning	Situation Unit (Day)	Collect information from the field on the incident response status and other in-field observations Develop maps of oil spill source area, oil spill response areas, and maps of location of response assets for inclusion in IAPs and for communication with response stakeholders (Common Operating Pictures)	Oil spill competence gap between day-to-day role and response role.	PMAOMIR322 + OSR Training	VOGA Local	Within 12 hours	1	2	2	2	2

ICT Team	Role	Task/Function	Competence		Response Arrangement		Total ICT Resource Need Over Time				
							Day 1	Day 2	Day 5	Day 10	Day 20
			Skill and Attribute Assessment	Additional Training or Experience or Qualification Required	Source	Immediate Need/Timeliness of Arrangement	Required/ Need (FTE)	Required/ Need (FTE)	Required/ Need (FTE)	Required/ Need (FTE)	Required/ Need (FTE)
Planning	Situation Unit (Night)	Collect information from the field on the incident response status and other in-field observations Develop maps of oil spill source area, oil spill response areas, and maps of location of response assets for inclusion in IAPs and for communication with response stakeholders (Common Operating Pictures)	Oil spill competence gap between day-to-day role and response role.	PMAOMIR322 + OSR Training or IMO 2	OSRL or AMOSC	Within 24 hours	0	1	1	2	2
Planning	Environment Unit (Lead)	Manage scientific monitoring activities and any required oiled wildlife response. Conducts nett environmental benefit/impact assessments Responsible for the collection and collation of environment data/advice, e.g. obtains environmental data from OSRA and scientific monitoring (DTMI, ESC and local sources) with support from Environment Unit Lead (EUL) role. Deploy and control scientific monitoring activities	EUL – potential gap	EUL - bachelor's degree in environmental management/ science; > 5 yrs. experience in environmental management; PMAOMIR322 or IMO 2; Unit - Nil (as per contract)	EUL – VOGA local or consultant	EUL - within 24 hours	1	1	1	2	2
Planning	Environment Unit	Manage scientific monitoring activities and any required oiled wildlife response. Conducts nett environmental benefit/impact assessments Responsible for the collection and collation of environment data/advice, e.g. obtains environmental data from OSRA and scientific monitoring (DTMI, ESC and local sources) with support from Environment Unit Lead (EUL) role. Deploy and control scientific monitoring activities	Contracted in expertise	Bachelor's degree in environmental management/ science; > 5 yrs. experience in environmental management	Contractor/Consultants	Within 48 hours	0	3	5	5	5
Planning	Monitoring Coordination Team	Final approval of monitoring scopes of work Coordinates the oil spill standby and response services Determine when initiation and termination criteria are met;	Contracted in expertise	Nil - as per contract	Consultants	Within 48 hours	0	2	4	4	4
Logistics	Logistics Chief	Activate and deploy PT assets and resources to the response Activate PT supply contracts for the response Liaison with combat agencies; industry, including adjacent operators and contractors. Responsible for establishing any Simultaneous Operations (SIMOPS) Plan to manage the risk generated by multiple activities. Develops logistics plan to support operations and provides overall resource support to emergency incident sites.	Oil spill competence gap between day-to-day role and response role.	PMAOMIR322 + OSR Training	VOGA Local	Within 1 hour of activation	1	1	1	2	2

ICT Team	Role	Task/Function	Competence		Response Arrangement		Total ICT Resource Need Over Time				
							Day 1	Day 2	Day 5	Day 10	Day 20
			Skill and Attribute Assessment	Additional Training or Experience or Qualification Required	Source	Immediate Need/Timeliness of Arrangement	Required/ Need (FTE)	Required/ Need (FTE)	Required/ Need (FTE)	Required/ Need (FTE)	Required/ Need (FTE)
Logistics	Communications Unit	Provide input into the acquisition, installation and maintenance of communications equipment. Assist the Planning Section to produce the Communications Plan for the effective use of incident communications equipment and facilities; installation and testing of communications equipment; supervision of the Incident Communications Centre; distribution of communications equipment to incident personnel; and the maintenance of communications equipment.	Full competence overlaps between day-to-day role and response role	Nil	Contractor	Within 48 hours	0	1	1	2	2
Logistics	Procurement Unit	The Procurement Unit acquires and distributes equipment and materials for infrastructure support. Ensures supplies are appropriately stored and maintained. Obtain extra resources (people, vehicles, equipment etc.) as required. Includes supporting the incident with the provision of food and drinks to personnel involved in the incident across the ICC and all on-ground sites across different meal times and duty shifts (considering specific dietary requirements).	Full competence overlaps between day-to-day role and response role	Nil	VOGA International	Within 48 hours	0	1	2	2	2
Logistics	Services Unit	Obtains and manages the necessary facilities and accommodation to support operations and incident control and maintains them in working order. Responsible for the setup, maintenance and demobilisation of incident facilities, e.g. Base, ICC and staging areas, as well as security services required to support incident operations. Provides sleeping and sanitation facilities for incident personnel and manages Base operations. Each facility is assigned a manager who reports to the facilities unit leader and is responsible for managing the operation of the facility.	Full competence overlaps between day-to-day role and response role	Nil	VOGA International	Within 48 hours	0	1	2	2	2
Logistics	Transport Unit	Responsible for providing transport for personnel, equipment, supplies and food, together with fuelling, mechanical maintenance and security of all equipment and vehicles at the incident. Develop and implement a Traffic Management Plan for in and around the incident.	Full competence overlaps between day-to-day role and response role	Nil	VOGA International	Within 48 hours	0	1	2	2	2
Logistics	Resource Unit	This function gathers, maintains and presents information on incident resources and contributes to the plans for demobilisation. The Resource Unit is responsible for maintaining the status of all assigned tactical resources and personnel at an incident.	Full competence overlaps between day-to-day role and response role	Nil	VOGA International	Within 48 hours	0	1	2	2	2
Operations	Operations Chief	Implement appropriate oil spill response strategies Provide communication link in the IMT Incident Command Centre (ICC) with the field response Control the field-based response activities in collaboration with WA DoT as required.	Oil spill competence gap between day-to-day role and response role	PMAOMIR322 + OSR Training	VOGA Local	Within 3 hours of activation	1	1	1	2	2

ICT Team	Role	Task/Function	Competence		Response Arrangement		Total ICT Resource Need Over Time				
							Day 1	Day 2	Day 5	Day 10	Day 20
			Skill and Attribute Assessment	Additional Training or Experience or Qualification Required	Source	Immediate Need/Timeliness of Arrangement	Required/ Need (FTE)	Required/ Need (FTE)	Required/ Need (FTE)	Required/ Need (FTE)	Required/ Need (FTE)
Operations	Marine Unit	Provide IMT management of marine activities	Full competence overlaps between day-to-day role and response role	Nil	AMOSC Core Group	Within 48 hours	0	2	4	8	8
Operations	Shoreline Unit	Provide IMT management of shoreline activities	Full competence overlaps between day-to-day role and response role	Nil	AMOSC Core Group	Within 48 hours	0	1	1	2	2
Operations	Aviation Unit	Provide IMT management of aviation activities	Full competence overlaps between day-to-day role and response role	Nil	AMOSC Core Group	Within 48 hours	1	2	2	4	4
Operations	Waste Management Unit	Work with State Control Agency to support oil spill waste management (DTMI & DER)	Full competence overlaps between day-to-day role and response role	Nil	AMOSC Core Group	Within 48 hours	0	0	2	2	2
Operations	Wildlife Unit	Work with State Control Agency to support oil wildlife response (DBCA)	Full competence overlaps between day-to-day role and response role	Nil	AMOSC Staff	Within 48 hours	0	1	2	2	2
Finance	Finance Chief	Provides monetary, insurance, legal, risk and human resources, related administrative functions to support emergency operations and to preserve vital records documenting work performed and associated costs in the event of disaster or major emergency.	Full competence overlaps between day-to-day role and response role	Nil	VOGA Local/International	Within 24 hours	1	1	2	2	2
Finance	Finance Unit	Monitor and record the ongoing costs of the response and access PT funds to pay for the response	Full competence overlaps between day-to-day role and response role	Nil	VOGA International	Within 24 hours	1	1	1	2	2
WA DTMI Support	As directed by DTMI	Mandated resources to support the response activities in State waters		PMAOMIR322 + OSR Training	VOGA Local	Within 24 hours	0	3	3	3	3
WA DTMI Support	As directed by DTMI	Mandated resources to support the response activities in State waters	AMOSC Core Group IMT capable persons have IMO 2 competence	Nil	AMOSC Core Group	Within 48 hours	0	4	8	8	8

Table 5-2 Minimum ICT Resource and OSR training needs over time (by source)

Source and Role	OSR Training: Arrangements During Response																			
	No specific training					Core Group Course					PMAOMIR322 + OSR Training (or IMO 2)					PMAOMIR418 + OSR (or IMO 3)				
	Day 1	Day 2	Day 5	Day 10	Day 20	Day 1	Day 2	Day 5	Day 10	Day 20	Day 1	Day 2	Day 5	Day 10	Day 20	Day 1	Day 2	Day 5	Day 10	Day 20
AMOSC Core Group (total)						**0**	**4**	**8**	**8**	**8**	**1**	**3**	**7**	**14**	**14**					
As directed by DTMI						0	4	8	8	8	-	-	-	-	-					
Aviation Unit						-	-	-	-	-	1	2	2	4	4					
Marine Unit						-	-	-	-	-	0	0	4	8	8					
Shoreline Unit						-	-	-	-	-	0	1	1	2	2					
AMOSC Staff (total)	**1**	**2**	**3**	**4**	**4**						**1**	**1**	**2**	**2**	**2**					
Liaison Officer (Industry)	1	1	1	2	2						1	1	2	2	2					
Wildlife Unit	0	1	2	2	2															
Consultants (total)	**0**	**5**	**9**	**9**	**9**															
Environment Unit	0	3	5	5	5															
Monitoring Coordination Team	0	2	4	4	4															
Contractor (total)	**0**	**3**	**7**	**8**	**8**															
Communications Unit	0	1	2	2	2															
Consultation Unit	0	1	1	2	2															
Public Information Officer	0	1	2	2	2															
Waste Management Unit	0	0	2	2	2															
Labour Hire (total)	**0**	**0**	**10**	**10**	**10**															
Administration Unit	0	0	10	10	10															
VOGA Local (total)											**7**	**11**	**11**	**17**	**17**	**1**	**1**	**1**	**2**	**2**
As directed by DTMI											0	3	3	3	3	-	-	-	-	-
Environment Unit Lead											1	1	1	2	2	-	-	-	-	-
Incident Commander											-	-	-	-	-	1	1	1	2	2
Logistics Chief											1	1	1	2	2	-	-	-	-	-
Operations Chief											1	1	1	2	2	-	-	-	-	-
Planning Chief											1	1	1	2	2	-	-	-	-	-
Safety Officer											1	1	1	2	2	-	-	-	-	-
Stakeholder Liaison Officer											1	1	1	2	2	-	-	-	-	-
Situation Unit (Day)											1	2	2	2	2	-	-	-	-	-
VOGA Local, Contractors (total)	**1**	**7**	**13**	**14**	**14**															
Administration Unit	1	2	4	4	4															
Communications Unit	0	1	1	2	2															
Procurement Unit	0	1	2	2	2															
Resource Unit	0	1	2	2	2															
Services Unit	0	1	2	2	2															
Transport Unit	0	1	2	2	2															

Source and Role	OSR Training: Arrangements During Response																			
	No specific training					Core Group Course					PMAOMIR322 + OSR Training (or IMO 2)					PMAOMIR418 + OSR (or IMO 3)				
	Day 1	Day 2	Day 5	Day 10	Day 20	Day 1	Day 2	Day 5	Day 10	Day 20	Day 1	Day 2	Day 5	Day 10	Day 20	Day 1	Day 2	Day 5	Day 10	Day 20
VOGA Local, VOGA International (total)	**2**	**2**	**2**	**4**	**4**															
Finance Chief	1	1	1	2	2															
Finance Unit	1	1	1	2	2															
OSRL or AMOSC- Situation Unit (Night)	-	-	-	-	-	-	-	-	-	-	**0**	**2**	**2**	**2**	**2**	-	-	-	-	-
Grand Total	**4**	**19**	**44**	**49**	**49**	**0**	**4**	**8**	**8**	**8**	**9**	**15**	**21**	**35**	**33**	**1**	**1**	**1**	**2**	**2**

PART 6: Support Plans

6 Waste Management

6.1 Waste Management Strategy

The purpose of the strategy is to ensure during an oil spill response, VOGA:

- Engage government agencies to obtain the appropriate waste management approvals necessary for the collection and transportation of waste.
- Cater for credible recovered waste during a response.
- Activate the key logistic contractors for the storage, transportation and disposal of collected waste.
- Ensure the collect segregation practices of waste are undertaken.
- Terminate the waste management program on completion of the response.

VOGA waste management guidance for Logistics personnel is contained in VOGA's Emergency Response Logistics Management Plan [VOG-7000-RH-0008].

6.2 Waste Management Activation

Activation of the waste management plan assignments is an action step in the IAP and is the responsibility of the ICT Planning Chief for identification and ICT Logistic Chief for resource assessment and ICT Operations Chief for implementation.

Not all oil spill events will trigger a waste management activation. Once oily waste is planned to be contained or collected then the waste management plan would be activated.

Key aspects to be acted one are:

- Assessment and decision making - determine the likely volume and types of waste likely to be collected
- Regulatory approvals - apply for DWER licence to operate temporary waste storage facility
- Refer to MEER WA Incident Management Plan: Marine Oil Pollution for guidance on waste management approval processes and management
- Collection/recovery/transportation/storage (intermediate and final) - activation of the Logistic Plan for activation of containment and transportation methods
- Final disposal - monitor the final disposal methods
- Termination.

6.3 Waste Management Basis

To develop a feasible waste management strategy for implementation during a response, VOGA has considered:

- VOGA waste contractor's capability – assessed within the OSR Capability Review [VOG-7000-RH-0009]
- Decanting waste water at sea JIP
- OSTM outputs for shoreline oiling greater than 100 g/m^2
- Environmental risks and the controls associated with waste management
- Upper credible recovery rate for spill strategies (refer to Section 7.5)
- ITOPF technical papers to guide likely waste to hydrocarbon quantities ('bulking rates') associated with these strategies (refer to ITOPF Technical Information Paper 7 and 9)
- AMSA management and disposal of oily waste guidance note number 2017-06-NP-GUI15.

6.4 Regulatory Approvals

The waste management plan will require the support of logistics to source storage and transport options and to obtain the necessary approvals required for contaminated waste transportation and disposal.

As the temporary waste storage and treatment facilities will trigger the Category 61 thresholds within the *Environment Protection Act 1986*, a licence to operate will be required from the DWER for any storage or treatment of wastes. As Works Approvals and licences can only be prescribed to specific premises, and suitable premises may not be determined until a spill has eventuated, obtaining these formal approvals is not possible in advance.

Specific regulatory approvals required or potentially required are listed in Table 6-1.

Table 6-1: Regulatory approvals for waste management activities

Approval required	Authority	Process
S75 Emergency approval for temporary waste storage	DWER	1. Identification of suitable land for operations. 2. Preparation of indicative site plan and operational flowchart. 3. VOGA to request emergency approval for waste storage of DWER CEO. 4. Approval granted for 14 days. 5. Further approval requested for extra 14 days if required.
Approval of temporary lay-down area	DWER	1. Design of temporary lay-down area prepared for consultation with DWER, DTMI and DBCA. 2. VOGA apply for temporary license at time of incident. 3. Required works commence. 4. Application received, and advertised in prescribed manner. 5. DWER issue operating license for lay-down area.

During offshore recovery operations, it may be beneficial as a waste reduction strategy, to discharge low concentrations of oily water recovered back into the boomed area to reduce the bulking factor volume of oily water recovered.

Offshore discharges of oil in WA State waters also fall under WA *Pollution of Waters by Oil and Noxious Substances Act 1987*. If discharge of oily water becomes necessary, approval from:

- AMSA (Commonwealth waters), or
- DTMI (State waters) must be obtained through submission of the MARPOL Exception Form for discharges of oily water.

6.5 Waste Practices

Waste will generally be associated from two clean-up locations:

- At sea response operations
- Shorelines.

Table 6-2 presents a summary of the type of waste generated from these two activaties.

Table 6-2: Summary of waste generated

Clean Up Location	Type of Waste Generated
At sea response operations	• Non contaminated organic materials (pre-impact) • Recovered oil • Contaminated water/oil in water • Contaminated containment and recovery equipment • Containment/storage equipment • Vessel hull • Contaminated PPE, sorbent • Organic and Non-organic flotsam and jetsam • Animal carcasses
Shorelines	• Recovered oil • Water in oil • Contaminated substrata- sand, pebbles, rocks • Organic and non-organic Flotsam and jetsam • Contaminated organic material seaweed etc. • Animal carcasses • Contaminated recovery and storage equipment • Containment - 20kg bags, drums, plastic sheeting etc. • PPE • Responders waste for habitation

Shoreline clean-up and containment and recovery are likely to develop significant volumes of waste. However, particularly for shoreline clean-up, the amount generated will be significantly less given prudent work practices to minimise the amount of hard waste generated, and the

likely impact being only a portion of the slick stranding, rather than the mass of volume assumed in shoreline clean-up waste calculations.

VOGA will leverage the waste hierarchy principles of waste reduction, reuse, recycling and disposal to minimise the amount of ultimate waste produced, thus reducing environmental and economic costs.

To reduce and manage the waste volumes during an incident, VOGA will follow, where appropriate and feasible, the work practices contained in Table 6-3.

Table 6-3: Waste minimisation work practices

Oil spill strategy	Waste minimisation work practice
Minimisation	Responder Induction to raise awareness of minimising collection or low/ partial contaminated materials minimising collection or low/partial contaminated materials. At sea operations – Decant waste water at sea as per the OSR JIP-17 and the AMSA Management and Disposal of Oil Spill Debris. • http://oilspillresponseproject.org/sites/default/files/uploads/JIP-17-Decanting.pdf • https://www.amsa.gov.au/sites/default/files/2017-06-np-gui015-management-disposal-oil-spill-debris.pdf Offshore and onshore – where practical access pre-impact and remove all flatsom and jetsam, miscellaneous material from water and between low-high water mark. Sort and classify waste into appropriate waste streams ASAP at source. Ensure a control on operations to comply with minimisation strategy. Consideration or washable PPE in lieu of disposals where appropriate. Early establishment of Hot and Cold areas to avoid cross contamination. Temporary storage areas are adequately contained- plastic sheeting /bunds to avoid secondary contamination.
Segregation	Responders Induction on need for waste segregation on work sites to manage waste collection and temporary storage. Segregation to consider the final treatment and disposal options. Sorting waste at source. Use of multiple containers to aid segregation of waste aligned with disposal/treatment practices.
At sea containment and recovery	Waste reduction – oil/water decanted back into the pocket of the boom to be re-skimmed and concentrated on-board. Oil-in-water concentration increases from 10% to at least 50%, thus reducing the bulking factor. Waste reduction – skimmers will be changed out to maximise the amount oil vs. water captured during the process (i.e. brush/disk skimmers over weir skimmers). The use of brush/disk skimmers can provide 90% oil concentration. Waste storage on-vessel – vessels will use a combination of IBCs and tanks to store larger volumes of oil/water. Temporary waste storage at marine terminal – robust logistics chain to enable efficient vessel/terminal unloading of product with 24/7 operations moving

Oil spill strategy	Waste minimisation work practice
	waste to final waste solution. This practice can help even out surges in generation/collection of waste. Final waste movement – 24/7 operations from temporary storage waste to final waste solution.
Shoreline clean-up	Pre-clean shorelines (where appropriate) of debris before oil strands to reduce solid waste. Waste reduction – manual over mechanical recovery. By applying this practice the bulking factor can be halved. Waste reduction – single bulk clean-up of shorelines rather than multiple clean-ups. By applying this practice the bulking factor can be halved, however this practice can only be applied where SIMA process supports this. Waste storage on-site – utilising areas of natural containment. This practice can help even out surges in generation/collection of waste. Waste storage on-site – allowing product to be temporary stored in bunds and bins. Final waste movement – 24/7 operations from temporary storage waste to final waste solution.

6.6 Key Waste Streams

VOGA's Emergency Response Logistics Management Plan [VOG-7000-RH-0008] appendices present a detailed list of waste streams and likely containment requirements for a typical remote shoreline impact and a vessel offshore booming and recovery operation.

6.6.1 Non-oiled Waste

Prior to impact, recovery of flotsam and jetsam that may be impacted by a spill will greatly reduce the type and volume of oiled waste generated. Pre-impact removal of organic and non-organic waste will be undertaken where time and logistic support is available.

6.6.2 Offshore Oily Waters

Assuming favourable conditions, vessels operating offshore will collect floating oil via trawling booms and skimmers.

Offshore discharges of oily water are specified through MARPOL regulations, which are in turn regulated by AMSA for Commonwealth waters, and the DTMI within State waters.

In the event that approval for discharge of the water phase is not obtained through AMSA and/or the DTMI, the complete collected fluids will remain in the collection tanks and all will be treated as a collected waste. In this event, the duration of containment and recovery operations will be reduced due to restricted available ullage.

6.6.3 Onshore Oily Waters

It is intended that shoreline storage of liquids will be of short duration, with third party contractors removing waste as soon as is practicable. All temporary storage of liquids will be performed within bunded areas and as per regulatory requirements.

6.6.4 Solid Wastes

While oil-contaminated sand, rocks and debris from mechanical and manual clean-up operations will have considerable oil-contents (2-10%), recovery of these oils and cleaning of absorbed debris is difficult. At present, there are no readily available treatment options for these materials to reduce waste volumes from the operations, and disposal via landfill or incineration are the only options available.

Oily sands will be collected along the affected coastlines, skip bins will be distributed by telehandlers and readily accessible by clean-up crews. Wastes will then be either collected by operating mobile plant such as excavators, or through manual waste removal (bagged waste), and deposited into these bins.

In areas that are inaccessible by vehicles, barges may be used for the initial transfer operations, and transported to the marine operational base for pick-up.

Oil-contaminated sands and soils recovered during the operations will be deemed requiring Class III or Class IV landfills for disposal. In the event that oils are collected in such a form as to be too contaminated for landfill disposal, yet not liquid enough to be incorporated into the waste oil stream, then these solids will be segregated and despatched for incineration.

6.6.5 Oily Organics

In conjunction with oil-contaminated sand, rocks and debris from mechanical and manual clean-up operations, it is anticipated that approximately 5% of the total solids stream will be organic in nature, consisting predominantly of seaweed, seagrasses and animal carcasses. In line with the waste hierarchy, it is desired to segregate these wastes and dispose to a composting facility to be turned into compost suitable for reuse.

Animal carcasses may be collected in plastic bags and stored in refrigerated containers were appropriate for later pathology testing or as directed by DBCA. Authorised third parties will transport the waste to a commercial composter.

6.6.6 Remote Location/Islands

Methods used for cleaning up shorelines on Islands or remote areas of coastline will be similar to those for mainland shorelines. However, unlike on the mainland, the options of large mechanical waste collectors (bulldozers), easily accessible accommodation and immediate waste transfer via trucks is not available. These logistical challenges are overcome through the use of vessels capable of shoreline landings, smaller machinery and helicopters to deliver equipment and personnel and remove collected waste.

Access and all clean-up activities will be conducted via vessels or helicopters and require the establishment of hot/cold/warn areas to mitigate contamination waste collection will generally be undertaken manually with waste collected in 20 kg bags to mitigate manual handling risks. As the response develops, tactical plans will establish if small mechanical equipment can be delivered to remote locations.

6.6.7 Oil Spill Equipment Clean-up

During and after response activities, all oil contaminated PPE and disposable equipment/ items will be placed in separate plastic bags and transported in skips to a waste facility for final disposal. Re-useable equipment will be placed in skips and transported to the boom maintenance area for cleaning.

6.7 Waste Assessment

An assessment of waste estimates for containment and recovery and shoreline clean-up assumptions have guided VOGA to establish upper maximum waste volumes which have been planned for within this OSCP. Total volume of oil ashore from a single worst case spill trajectory is basis from which oil estimates are calculated using a bulking factor of 10.

The best configuration of waste storage options will be chosen at the time of a spill to ensure the most appropriate size storage is allocated to land based and offshore waste collection.

Waste recovery from open water and onshore will take a few days to ramp up, which will provide time for shore-handling capacity to build sustainable storage and transport capacity.

Sufficient capacity at recovery sites both offshore and onshore to contain above quantities on a daily turnaround basis is required. Transfer points from offshore to onshore require capacity to offload liquid to tankers or vacuum trucks for transport to processing or temporary storage, or swap out of IBCs where these are being used will also be required.

7 Stakeholder Engagement

7.1 Stakeholders

Stakeholder engagement is an important part of emergency management response, whether assisting with coordination of control and mitigation measures, liaison with regulatory bodies or responding to potential impacts on surrounding communities and businesses.

This section outlines the strategy to engage stakeholders during an OSR. The process for engaging relevant stakeholders pre-environmental plan approval or pre-campaign is addressed in the EP.

The stakeholders covered under this section of the plan include:

- Key stakeholders for regulatory approval purposes
- Influencers
- Interested parties (including communities, indigenous land owners and businesses) who are or may potentially be impacted by the oil spill or the associated response activities.

Key response/resource agencies are engaged through other sections of the ICT.

7.2 Stakeholder Engagement Strategy

7.2.1 Overview

In the very unlikely event of a significant event occurring, VOGA's primary responsibility is to the health and safety of all personnel impacted by the spill or the spill response. The stakeholder engagement process will at all times reflect and support this responsibility.

The purpose of the strategy is to ensure during an OSR, VOGA:

- Engage government agencies to obtain the appropriate approvals and address regulatory requirements during an OSR
- Manage/mitigate the impact to surrounding communities, commercial operations including fishing and other petroleum operators
- Keep stakeholders informed as required.

The strategy to engage the stakeholders during an OSR is provided in the following section. The engagement can be broken down into five distinct phases:

1. Pre-activity.
2. Activity.
3. Post-spill/pre-exposure.
4. Post-spill/post-exposure.
5. Termination.

The nature and frequency of further and ongoing stakeholder engagement will depend on the scale, duration, impact and other specifics of each incident.

7.2.2 Pre-activity

During this stage of the project, the objective is to ensure that:

- Stakeholders have been defined, classified and consulted as appropriate
- Regulatory requirements are being met
- The socio-economic activities that may be impacted by a potential spill or the response are identified
- Stakeholder contacts list has been checked and updated if required
- Capability to provide response has been confirmed and outlined in a plan to implement the strategy available.

7.2.3 Activity

During this stage of the project, the focus is to maintain contact details and ensure information on the project and associated EP is accessible. A dedicated email address will be available at all times to interested parties wishing to contact the company.

7.2.4 Post-Spill/Pre-Exposure

The purpose during this stage is to manage the potential impact that spill and response activities may have on stakeholders. This process is initiated as soon as a spill has occurred and the ICT is activated. During this stage, VOGA manages/mitigates the impact to stakeholders by:

- Continually identifying specific stakeholders who may potentially be impacted by the spill and response strategy
- Where possible contacting relevant interested parties prior to impact and keeping these stakeholders regularly informed and engaged
- Provide regulatory notifications and updates
- Providing relevant safety information on the event and potential hazards and precautions associated with the spill and response activities
- Confirming the process to engage with stakeholders regarding potential socio-economic impacts the spill and associated response may have and recording stakeholder input and responses
- Provide information to media and engage influencers as required.

7.2.5 Post-Spill/Post-Exposure

The purpose of this stage is to manage the direct impact that the spill and response activities have on stakeholders. During this stage, VOGA manages and attempts to limit the impact to stakeholders by:

- Continuing to identify specific stakeholders who are being impacted by the spill and response strategy

- Providing relevant safety information on the event and potential hazards and precautions associated with the spill and response activities
- Engaging with relevant interested parties and keeping them regularly informed
- Implementing a process to monitor, report and record socio-economic impacts (positive and negative) as a direct result of a spill and spill response
- Where possible implementing measures to manage or limit the direct socio-economic impact of the spill and spill response, e.g. counselling, establishing community and recreational centres, providing financial support
- Providing regulatory notifications and updates
- Providing information to media and engage influencers as required.

The OSM BIP includes an appropriate tool for reporting and communicating the state of the environment to relevant stakeholders via environmental report cards. Environmental report cards are designed to provide a readily interpretable summary of the state of a range of environmental variables. They summarise environmental and biodiversity monitoring information, allowing trends in condition (states of the environment) to be easily identified. They inform incident response decisions based on changes to trend and condition and provide a clear consensus for management decisions.

Environmental report cards provide several positive reporting outcomes:

- Provide a template or structure for summarising and communicating trends in biodiversity and environmental values
- Communicate trends in values to managers and regulators in a simple, easy to interpret format
- Indicate the effectiveness of incident responses
- Allow a consensus interpretation of the data
- Provide an indication of the quality or reliability of the data.

7.2.6 Termination of Oil Spill Response

Community and stakeholder understandings and expectations will play a role in both the decision to terminate a response and the acceptability of that decision. Consultation with these groups would be undertaken by VOGA prior to any termination decisions being implemented.

It should be noted that although the OSR may be terminated, there will be a continued and ongoing consultation with stakeholders impacted by the oil spill until a resolution is achieved.

7.2.7 Roles and Responsibilities

The initial high-level division of engagement responsibilities can be summarised as follows:

- Stakeholder Liaison Officer – regulators, VOGA employees and VOGA contractors (not spill responders), VOGA Head Office
- Logistics Officer – combat agencies; industry, including adjacent operators and contractors (spill responders).

- Public Information Officer:
  - Community Liaison – local communities and interested parties, business, NGOs
  - Media Liaison – local, national and international media.
  - Public Information Controller – manage and coordinate all external communications.

The above three positions are located with the ICT and are involved in the regular debriefs and issuing of the IAP. These positions all report to the Corporate Command Operations Chief either directly or through the Stakeholder Liaison Officer.

7.2.8 Documentation and Record Keeping

All external communications occurring through the ICT, including with government, industry and community stakeholders, are documented in the ICT spill log or each officer's personal log. The Public Information Officer also records and manages all media inquiries and responses.

VOGA maintains comprehensive information on all identified stakeholders, including telephone, email and personnel details, and has access to an external email communications system in the event of impact to its own system.

8 Operational and Scientific Monitoring

OSM is a key component of the environmental management document framework for offshore petroleum activities, which includes activity EPs and OPEPs. Operational monitoring is instrumental in providing situational awareness of a hydrocarbon spill, enabling the ICT to mount a timely and effective spill response and continually monitor the effectiveness of the response. Scientific monitoring is also the principal tool for determining the extent, severity and persistence of environmental impacts from a hydrocarbon spill and for informing resultant remediation activities.

Vermilion has developed the Operational and Scientific Monitoring Bridging Implementation Plan (OSM-BIP) (7715-650-ERP-0002) which describes a program of monitoring oil pollution that will be adopted in the event of a hydrocarbon spill incident (Level 2–3) to marine waters. It aligns with the Joint Industry Operational and Scientific Monitoring Framework (APPEA, 2021) and describes how this Framework applies to Vermilion's activities and spill risks for the Wandoo Facility Environment Plan [WPA-7000-YH-0007] (**Error! Reference source not found.**) and the Well Construction Environment Plan [WPA-7000-YH-0001].

The OSM-BIP is structured so that it can provide a flexible framework that can be adapted to individual spill incidents. A series of Operational Monitoring Plans (OMPs) and Scientific Monitoring Plans (SMPs) form part of the Joint Industry Framework and provide detail on monitoring design, standard operating procedures, data management and reporting. Details on personnel, resources, logistics and mobilisation times are outlined in the OSM-BIP. Table 8-1 lists the plans that are relevant to Vermilion's Wandoo Facility and Well Construction activities. Vermilion confirms that it has reviewed the aims and objectives of these relevant OMPs and SMPs, and determined that they are appropriate to meet the monitoring requirements of this activity, addressing potential impacts, risks and response activities.

There are two types of monitoring that would occur following a Level 2–3 spill event:

- Operational Monitoring (OM) – which is undertaken during the course of the spill and includes any physical, chemical and biological assessments which may guide operational decisions such as selecting the appropriate response and mitigation methods and / or to determine when to terminate a response activity. This monitoring is additional to the activities (visual surveillance, tracking buoys, oil spill trajectory modelling and satellite tracking) performed as part of the Monitor and Evaluate Strategy. The design of operational monitoring requires judgements to be made about scope, methods, data inputs and outputs that are specific to the individual spill incident, balancing the operational needs of the response with the logistical and time constraints of gathering and processing information. There is a need for information to be collected and processed rapidly to suit response needs, with a lower level of sampling and accuracy needed than for scientific purposes. For details on initiation and termination criteria for OMs refer to the OSM-BIP.
- Scientific Monitoring (SM) – which can extend well beyond the termination of response operations. Scientific monitoring has objectives relating to attributing cause-effect interactions of the spill or associated response with changes to the surrounding environment. The SMs will be conducted on a wider study area, extending beyond the

spill footprint, will be more systematic and quantitative and aim to account for natural or sampling variation. For further details on the SMs refer to the OSM-BIP.

Vermilion will review the initiation criteria for OMPs and SMPs (Provided in Section 9 of the Joint Industry Operational and Scientific Monitoring Framework (APPEA, 2021)) during the preparation of the initial IAPs, and subsequent IAPs. If any initiation criteria are met, then that relevant OMP and/or SMP will be activated via the relevant Monitoring Service Provider.

Table 8-1: Joint Industry OSM Plans relevant to Wandoo Facility and Well Construction

Operational Monitoring	**Relevant for Wandoo Facility and Well Construction EP spill scenarios**
OM1: Hydrocarbon Characterisation	✓
OM2: Hydrocarbon in water assessment	✓
OM3: Hydrocarbon in sediment assessment	✓
OM4a: Surface dispersant effectiveness monitoring	✓
OM4b: Subsea dispersant injection effectiveness monitoring	✗
OM5: Rapid Marine Fauna Surveillance	✓
OM6: Shoreline Clean-up Assessment	✓
Scientific Monitoring	
SM1: Water Quality Impact Assessment	✓
SM2: Sediment Quality Impact Assessment	✓
SM3: Intertidal and Coastal Habitat Assessment	✓
SM4: Seabirds and Shorebirds Assessment	✓
SM5: Marine Mega-fauna Assessment	✓
SM6: Benthic Habitat Assessment	✓
SM7: Marine fish and elasmobranch assemblages assessment	✓
SM8: Fisheries Impact Assessment	✓
SM9: Heritage Features Assessment	✓
SM10: Social Impact Assessment	✓

9 Health and Safety

VOGA is committed to the health and safety of all personnel involved in OSR. VOGA's company policies and procedures in regards to safe working practices will be maintained during all OSRs.

Key resources providing OSR support are provided with OH&S information (including SDSs) as part of the briefing pack.

AMSA has a specific health and safety guideline for marine oil spill operations which includes a risk assessment for OSR operations as well as Standard Operating Procedures for National Plan equipment. This information will be considered in the development of task-specific instructions.

All operational activities will include a process such as a JHA to identify hazards, the risk rating associated with hazards and mitigation measures to ensure a safe work environment.

10 Logistics Management

The VOGA Emergency Response Logistics Management Plan [VOG-7000-RH-0008] contains outputs from the identification of resources required and the scope of works/services required to deliver those resources. It is maintained as live document based on the resources identified and the Contractor Scope of Works in the OSR Capability Review [VOG-7000-RH-0009].

On activation of the ICT for OSR, incident specific logistic plans will be developed to support effective logistics management and deployment. Depending on the size of logistics activities, SIMOPS plans may be developed to manage the hazards associated with multiple logistics interfaces within a confined area. The Logistics Officer is responsible for creating the logistics and SIMOPS plans.

Figure 10-1: Structure of VOGA logistics planning

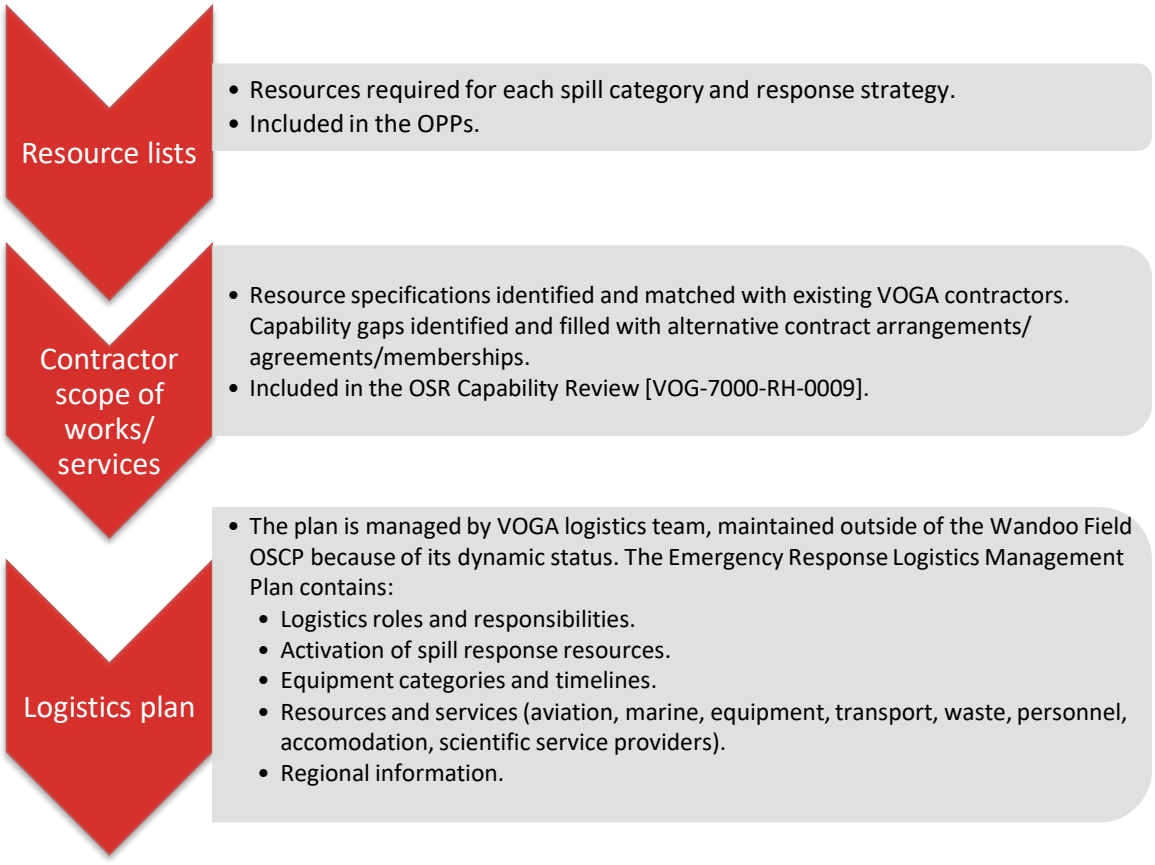


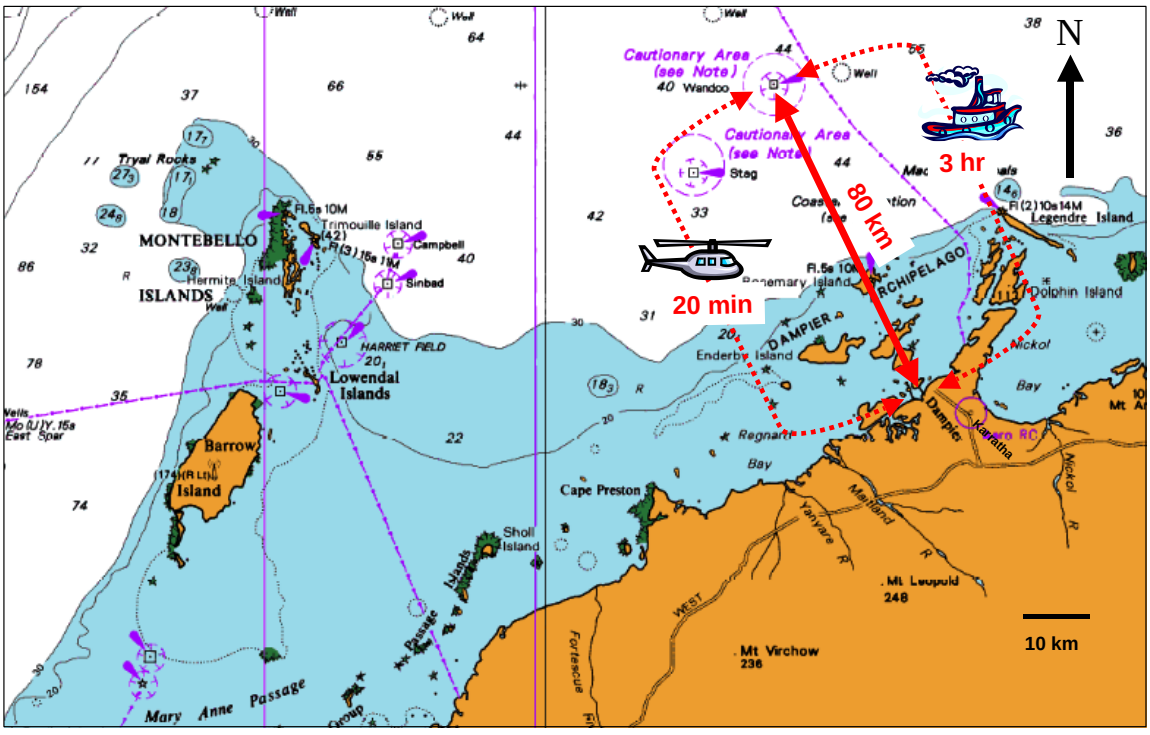
Table 10-1 provides approximate travel times by air and sea as well as distance in nautical miles between the Wandoo facilities and neighbouring locations. This information can be used to inform the aerial surveillance and aerial dispersant operations of travel times, distances and be used to estimate endurance out on site. Figure 10-2 depicts these travel times and distance on an image of a navigation chart.

Table 10-1: Travelling time between Wandoo facilities and neighbouring locations

Location	Approximate flying time to	Approximate sailing time	Distance (nm)
Wandoo Tanker/CALM Buoy	5 minutes	10 minutes	1.5
Karratha	20 minutes	n/a	48
Dampier	n/a	3.5 hours	35
North Rankin A	15 minutes	3.5 hours	38
Barrow Island	35 minutes	6.5 hours	65
Port Hedland	1 hour 15 minutes	12.5 hours	125
Onslow	1 hour 10 minutes	11.5 hours	115
Perth	2 hours 20 minutes	n/a	n/a

Flying time based on S76 helicopter (@ 140 knots)

Figure 10-2: Distance and travel time to Wandoo facilities from Dampier



11 Tactical Response Plans

Oil spill Tactical Response Plans (TRPs) identify site-specific response actions for locations predicted to be contacted by oil in a spill event. Development of these plans reduces the response time and improves the effectiveness of a response.

TRPs include photographs, maps, environmental sensitivity information, and detailed response information of use to responders such as booming locations.

The tactical planning process identifies how an oil spill incident action plan will be implemented at a specific location. In contrast to the broader OSCP documents, TRPs provide a response perspective with specific short-term actions and details that allow responders to best access, assess, and quickly respond to spills.

VOGA has access to shoreline tactical plans for priority shorelines, either previously obtained or available on request from the relevant titleholders. Priority was identified based primarily on locations with shoreline contact within 7 days and sensitivity rated very high or high, as per marine oil pollution risk assessment and protection priorities for Pilbra region released by WA DTMI (reference DOT307215, date Oct 2017), with consideration of extent and likelihood of shoreline contact.

A gap analysis of available information from titleholders and agencies against priority areas has been undertaken with assistance from DTMI and potential cooperative arrangements investigated (refer to Table 11-1). Each listed titleholder has indicated agreement to provision of the relevant TRPs upon request by VOGA at the time of an incident.

Table 11-1 TRP availability

Priority Location	Titleholder/Organisation with TRP
Dampier Archipelago	Pilbara Port Authority (PPA), Woodside, Santos, VOGA (Delambre Island)
Montebello Islands	Woodside, Santos
Barrow Island	Chevron
Legendre Island	Woodside, Santos, PPA
Lowendal Island Group	Woodside
Murion Islands	Woodside
Serrurier Island Group	Chevron
North West Cape	Woodside, Santos

12 References

AMSA (2013). Technical Guidelines for the Preparation of Marine Pollution Contingency Plans for Marine and Coastal Facilities. http://www.amsa.gov.au/forms-and-publications/Publications/AMSA413_Contingency_Planning_Guidelines.pdf

AMSA National Plan for Maritime Environmental Emergencies (National Plan).

Australian Emergency Management Institute (2012). Managing Exercises Handbook 3. Commonwealth Attorney General's Department.

Australian Fire and Emergency Service Authorities Council Limited (2013). AIIMS version 4. AFAC East Melbourne, Australia.

Australian Marine Oil Spill Plan (AMOS Plan), Australian Marine Oil Spill Centre.

Department of Conservation and Land Management (CALM). (1990). Dampier Archipelago Nature Reserves Management Plan 1990-2000, Management Plan No 18, Accessed 1 August 2012, www.dec.wa.gov.au/pdf/nature/management/dampier_archipelago.pdf.

Department of Environment and Conservation (DEC). (2007). Management Plan for the Montebello/Barrow Islands Marine Conservation Reserves 2007-2017, Management Plan No 55, Accessed 23 July 2012, https://www.dec.wa.gov.au/content/view/6973/2516/.

Department of Transport (DoT). Oil Spill Contingency Plan. Department of Transport, State Government of Western Australia.

Ecotox (2012). Ecotox Services of Australia, Toxicity Assessment of a Crude Oil from the Wandoo Platform 2012, Test Report, July 2012.

Emergency Management Act (2005) and regulations. State Government of Western Australia.

Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act). Commonwealth of Australia.

EPA (2011). EPA's Toxicity Testing of Dispersants, United States Environmental Protection Agency, USA, Viewed Online (29th November 2012) <http://www.epa.gov/bpspill/dispersants-testing.html#phase2>.

European Maritime Safety Agency (2010). *Manual on the Applicability of Oil Spill Dispersants*. Report accessed from http://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&ved=0CCoQFjAA&url=http%3A%2F%2Fwww.emsa.europa.eu%2Fopr-documents%2Fdownload%2F1166%2F719%2F23.html&ei=xEAxU-TwIImqhAfeg4DACQ&usg=AFQjCNHuQMYjjAgMek-3m1Izn8RCG5D_Ug&bvm=bv.63587204,d.ZG4

ExxonMobil (2008). Oil Spill Dispersant Guidelines. Report accessed from http://www.crrc.unh.edu/sites/crrc.unh.edu/files/exxonmobil_dispersant_guidelines_2008.pdf

Fingas, M.F. (2000). *A Review of Literature Related to Oil Spill Dispersants Especially Relevant to Alaska.* Report prepared for the Prince William Sound Regional Citizens' Advisory Council. Prince William Sound Regional Citizens' Advisory Council, Anchorage, Alaska

Fingas, M.F. (2008). *A Review of Literature Related to Oil Spill Dispersants Especially Relevant to Alaska 2002-2008*. Prepared for Prince William Sound Regional Citizens Advisory Council Anchorage Alaska, Environment Canada.

Fingas, M.F. (2013). The Basics of Oil Spill Clean-up. CRC Press. Florida, United States of America.

IPIECA. (2015). A Guide to Oiled Shoreline Clean-up Techniques: Good practice guidelines for incident management and emergency response personnel.

International Convention for the Prevention of Pollution from Ships, 1973, International Maritime Organisation.

International Convention on Oil Pollution Preparedness Response and Cooperation 1990 (OPRC 1990). International Maritime Organisation.

International Tanker Owners Pollution Fund (ITOPF). (2013). Containment and Recovery http://www.itopf.com/spill-response/clean-up-and-response/containment-and-recovery/ accessed 28th February 2014.

Intertek Geotech (2012). An Assessment of Dispersion Efficacy on a Crude Oil: Professional Opinion. Prepared for Vermillion Oil and Gas Australia Pty Ltd.

NAS (2005). Understanding Oil Spill Dispersants: Efficacy and Effects. National Research Council of the National Academies, Washington DC.

Offshore Petroleum and Greenhouse Gas Storage Act 2006 and regulations (OPGGSA). Commonwealth of Australia.

Oil Spill Response (2011). Shoreline Operations Field Guide: A guide to operational and monitoring requirements for shoreline clean-up operations. Series number 8, December 2011.

Polaris Applied Science Inc. (2009). Guidelines and strategies for oil spill waste management in Arctic regions. Report prepared for Joint Secretariat Inuvialuit Renewable Resources Committees.

Pollution of Waters by Oil and Noxious Substances Act 1987 (POWBONS). State Government of Western Australia.

Port of Dampier Oil Spill Contingency Plan, Port of Dampier Corporation.

APASA (2012). Environmental Sensitivities Summary Wandoo B Production Facility, Unpublished report for Vermilion Oil & Gas Australia.

Source Control Contingency Plan (WNB-3000-PD-0007), Vermillion Oil & Gas Australia.

The Arctic SCAT Manual: A Field Guide to the Documentation of Oiled Shorelines in Arctic Environments. Environment Canada, Edmonton, AB, Canada. By Jon Moore Coastal Assessment, Liaison & Monitoring for UK Maritime & Coastguard Agency April 2007.

The UK SCAT Manual: Shoreline Clean-up Assessment Technique: A Field Guide to the Documentation of Oiled Shorelines in the UK. Adapted and reproduced from Owens, E.H. and Sergy, G.A. 2004.

VOGA's Personnel Selection, Placement and Competency Assurance Manual (VOG-1000-MN-0004).

Wandoo Facility ERP (VOG-2000-RD-0017), Vermillion Oil & Gas Australia.

Wandoo Field EP (WPA-7000-YH-0007), Vermillion Oil & Gas Australia.

Wandoo Well Construction EP (WPA-7000-YH-0001), Vermillion Oil & Gas Australia.

Western Australian Marine Oil Pollution Emergency Management Plan (WestPlan-MOP). Department of Transport, State Government of Western Australia.

APPENDICES

Appendix A: Safety Data Sheets

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **WANDOO CRUDE OIL**

Synonyms AMPOLEX WANDOO CRUDE OIL (FORMERLY) ● VERMILION WANDOO CRUDE OIL

1.2 Uses and uses advised against

Uses CRUDE OIL

1.3 Details of the supplier of the product

Supplier name **VERMILION OIL & GAS AUSTRALIA PTY LTD**

Address Level 5, 30 The Esplenade, Perth, WA, 6000, AUSTRALIA

Telephone (08) 9215 0300

1.4 Emergency telephone numbers

Emergency (08) 9215 0300

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Not classified as a Physical Hazard

Health Hazards

Germ Cell Mutagenicity: Category 1B
Carcinogenicity: Category 1B

Environmental Hazards

Not classified as an Environmental Hazard

2.2 GHS Label elements

Signal word **DANGER**

Pictograms

Hazard statements

H340 May cause genetic defects.
H350 May cause cancer.

Prevention statements

P202 Do not handle until all safety precautions have been read and understood.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

Response statements

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Storage statements

P405 Store locked up.

Disposal statements

P501 Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
MINERAL OIL (UNTREATED AND MILDLY TREATED)	-	-	>60%
NAPHTHENIC HYDROCARBON(S)	-	-	<1%
OLEFINIC HYDROCARBONS	-	-	<10%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. To protect rescuer, use a Type A (Organic vapour) respirator or an Air-line respirator (in poorly ventilated areas). Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

Ingestion For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

First aid facilities Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Dry agent, carbon dioxide or foam. Prevent contamination of drains and waterways.

5.2 Special hazards arising from the substance or mixture

Combustible. May evolve carbon oxides and hydrocarbons when heated to decomposition. Eliminate all ignition sources including cigarettes, open flames, spark producing switches/tools, pilot lights, heaters, naked lights, mobile phones, etc when handling. Earth containers when dispensing fluids.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Ventilate area where possible.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills. Large storage areas should have appropriate fire protection systems.

7.3 Specific end uses

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Mineral Oil Mist	SWA [AUS]	--	5	--	--

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Flammable/explosive vapours may accumulate in poorly ventilated areas. Vapours are heavier than air and may travel some distance to an ignition source and flash back. Maintain vapour levels below the recommended exposure standard.

PPE

Eye / Face	Wear splash-proof goggles.
Hands	Wear PVC or rubber gloves. When using large quantities or where heavy contamination is likely, wear Viton® or nitrile gloves.
Body	When using large quantities or where heavy contamination is likely, wear coveralls.
Respiratory	Where an inhalation risk exists, wear a Type A (Organic vapour) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	DARK OILY VISCOUS LIQUID
Odour	MINERAL OIL ODOUR
Flammability	CLASS C2 COMBUSTIBLE
Flash point	144°C
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE

9.1 Information on basic physical and chemical properties

pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Solubility (water)	INSOLUBLE
Vapour pressure	25 kPa @ 37.8°C
Upper explosion limit	NOT AVAILABLE
Lower explosion limit	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

Density	0.9368 kg/L @ 15°C
Pour point	-30°C

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Hazardous polymerisation is not expected to occur.

10.4 Conditions to avoid

Avoid shock, friction, heavy impact, heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), alkalis (e.g. sodium hydroxide), heat and ignition sources.

10.6 Hazardous decomposition products

May evolve carbon oxides and hydrocarbons when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	May be harmful if swallowed, in contact with skin, and/or if inhaled. The toxicity profile is dictated by the levels of polycyclic aromatic hydrocarbons (PAHs).
Skin	Contact may result in drying and defatting of the skin, rash and dermatitis.
Eye	Contact may result in irritation, lacrimation and redness.
Sensitisation	Not classified as causing skin or respiratory sensitisation.
Mutagenicity	May cause genetic defects.
Carcinogenicity	Over exposure to crude petroleum products has been associated with higher rates of cancer as they contain polycyclic aromatic hydrocarbons (PAHs).
Reproductive	Certain petroleum streams have been shown to be developmentally toxic by the dermal route of exposure. Effects include increased incidence of resorptions and decrease in foetal body weight. Whilst the developmental toxicity of several refinery streams may be correlated with polycyclic aromatic hydrocarbon (PAH) concentrations, other compositional characteristics may also influence toxicity.
STOT - single exposure	Over exposure may result in irritation of the nose and throat, coughing, dizziness, drowsiness and headache.
STOT - repeated exposure	Not classified as causing organ damage from repeated exposure.
Aspiration	Aspiration or inhalation may cause chemical pneumonitis and pulmonary oedema.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No information provided.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal For small amounts, absorb with sand, vermiculite or similar and dispose of to an approved landfill site. Contact the manufacturer/supplier for additional information if disposing of large quantities (if required). Prevent contamination of drains and waterways as aquatic life may be threatened and environmental damage may result.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None allocated.	None allocated.	None allocated.
14.2 Proper Shipping Name	None allocated.	None allocated.	None allocated.
14.3 Transport hazard class	None allocated.	None allocated.	None allocated.
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards

No information provided.

14.6 Special precautions for user

Hazchem code None allocated.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, or are exempt.

16. OTHER INFORMATION

Additional information

MINERAL OILS - NON REFINED: Animal experiments and human experience have shown cancer risks when handling mineral oils. Such cases are reported to have occurred in conditions where poor occupational hygiene practices resulted in prolonged skin contact. CLEANING MINERAL OIL CONTAMINATED CLOTHING: Cleaners are advised that when cleaning oil contaminated clothing it is essential that freshly distilled solvent is used for each batch, including final rinse, as even filtered solvent will leave oil residues.

EXPOSURE STANDARDS - TIME WEIGHTED AVERAGES: Exposure standards are established on the premise of an 8 hour work period of normal intensity, under normal climatic conditions and where a 16 hour break between shifts exists to enable the body to eliminate absorbed contaminants. In the following circumstances, exposure standards must be reduced: Strenuous work conditions; hot, humid climates; high altitude conditions; extended shifts (which increase the exposure period and shorten the period of recuperation).

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: form of product; frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

Risk Management Technologies
5 Ventnor Ave, West Perth
Western Australia 6005
Phone: +61 8 9322 1711
Fax: +61 8 9322 1794
Email: info@rmt.com.au
Web: www.rmtglobal.com

[End of SDS]

Diesel 10

Automotive Diesel Fuel

Description

Diesel 10 is a special purpose light distillate fuel for use in high speed diesel engines (i.e. those operating at greater than 800 rpm), in services involving frequent and relatively wide variations in loads and speeds. It is used in private automotive vehicles, commercial fleet uses (on and off road), marine and industrial applications.

Performance Features

Diesel 10 is formulated to deliver adequate lubricity, to help protect fuel pumps and injectors from excessive wear. The cloud point is controlled on a regional and seasonal basis for the purposes of delivering operability across Australia.

Shell Diesel 10 is an Ultra Low Sulphur Diesel fuel. The sulphur content is controlled to less than 10 mg/kg

Shell Dieseline 10 specification meets and exceeds the US ASTM D975 and is equivalent to the European EN590 diesel specifications.

Applications

Diesel 10 is an Ultra Low Sulphur Diesel fuel designed for modern high-speed compression ignition engines. The diesel meets all the requirements of the Australian Fuel Quality Standards Act 2000 (Cth) and has a maximum sulphur content of 10 ppm.

This fuel is suitable for use in modern engines that are fitted with Euro 5/6 or V/VI emission control systems..

Health, Safety and Environment

Guidance on health and safety is available on the appropriate Safety Data Sheet which can be obtained from the Viva Energy Technical Help Desk or from www.Vivaenergy.com.au

Storage

Drums of fuel should be stored in an upright position under cover protected from rain an diret sunlight or with drum top covers to prevent ingress of water. Ensure buildings are well ventilated.

Product in an unopened drum should be acceptable for use in a 12 month period. Product stored for longer than 12 months or in containers that have been openned should be check to verify freedom from water, contamination or degradation.

Specifications / Approvals / Recommendations

Viva Energy Diesel 10 is manufactured to meet the specifications of:

Australian Fuel Quality Standards Act 2000
Fuel Standard (Diesel) Determination 2019
AS 3570 -1998 for Cold Flow Properties

Diesel 10

Automotive Diesel Fuel

Typical Characteristics			
Properties	**Units**	**Methods**	**DL 10Typical**
Density @ 15°C	kg/m^3	ASTM D1298 / D4052	840 (820-850 max)
Viscosity @ 40°C	mm^2/s	ASTM D445	2.0-4.5
Flash Point	°C	ASTM D93	70 (61.5 min)
Sulphur	mg/kg	ASTM D2622/D5453	10 max
Cetane Index	-	ASTM D4737	49 (46 min)
Distillation - 95%	°C		360 max
Water	mg/kg	ASTM D6304	70 (200 max)
Ash	% mass	ASTM D482	0.02 (0.1 max)
Sediment	% mass	ASTM D473	0.002 (0.01 max)
Filterability Test	-	IP 387	1.01 (2.0 max)
Strong Acid Number	mg KOH/gm	ASTM D664/D974	Nil
Total Acid Number	mg KOH/gm	ASTM D664/D974	<0.1 (2.5 max)
Copper Corrosion	-	ASTM D130	1a
Lubricity (HFRR test)	µm	IP 450	400 (460 max)
Conductivity	pS/m	ASTM D2624	100 (50 min)
FAME Content	%v/v	EN14078 or declaration	0 (5.0 max)

Technical Help Desk	
Phone	**1300 134 205**
Email	**technicalhelpdesk@vivaenergy.com.au**

Appendix B: Net Environmental Benefit Analysis (NEBA)

1 The NEBA Process

The Net Environmental Benefit Analysis (NEBA) process provides a means to determine the environmental gain/reduction from implementing each response strategy by considering the potential impacts on each identified protection priority, and will enable informed decisions to be made.

1.1 Responsibility to Complete the NEBA

A NEBA is most likely to be undertaken by the Environment Unit team leader with assistance from the Planning Chief. Advice from the Operations Chief regarding the execution of response strategies (i.e. limitations, constraints, advantages of strategy); and the Resource Unit team leader or Logistics Chief regarding resource availability will also be sought.

1.2 Information Requirements for the NEBA Process

- A copy of the OPP for the spill scenario
- Current situation report (SITREP from) that includes details about the spill, weather, currents and tides, action taken to date, forecast situation
- Oil spill trajectory model outputs from the OSCP
- Forecast oil spill trajectory model outputs based on real time spill and metocean conditions
- Preferred response options from the OSCP
- Priority protection areas/resources from the OPP
- Sensitive resources at risk from oiling
- Dispersant efficacy laboratory data
- Outputs from monitoring, evaluation and surveillance (MES) operations (e.g. aerial surveillance)
- Knowledge of response strategy impacts, advantages, constraints and limitations as outlined in the EPs.

1.3 How Data is used in the NEBA Process

Once oil type, quantity, real-time weather information and a trajectory pathway are known, the sensitivities within the ZPI need to be identified. Review the protection priority ranking that has been provided in the OPPs and consider:

- Outputs from OSTM analysis:

- the probability of impact – will the response strategy reduce the probability of impact sensitive receptor?
- minimum time to impact (days) – will the response strategy increase the number of days before impact sensitive receptor?
- severity of impact (quantity of oil) – will the response strategy reduce the average and/or total amount of oil to impact sensitive receptor?

- Impacts associated with the proposed response strategy – will the response operation have more of a negative impact than untreated oil?
- The recovery time of the sensitive receptor after exposure to hydrocarbons – is recovery time likely to be short or long term?

1.4 Recommended Response Strategies and Controls

Response strategy recommendations are made at the conclusion of the NEBA process and controls identified to minimise the impacts associated with response operations. Development of response strategy controls is the last step of the NEBA process to ensure that the operation does not have an more of a negative impact than the spill alone. Controls are defined according to:

- Risk, impacts and benefits associated with each strategy and whether it is consistent with the EP
- Environmental sensitivities and their priority (environmental significance, severity of impact and recovery time) as per Table 1 and Table 2
- Seasonal and migratory patterns as per Table 2
- Fish and coral spawning times whale aggregation periods
- State (WA) jurisdictional requirements and approvals.

Controls are used to mitigate the risks associated with response strategies and are defined for hazards in the EPs.

Consideration of the environmental benefit for each strategy has also been considered when preparing the Oil Pollution Plans in the OPEP and are represented in Table 2. This information is used in the NEBA when assessing proposed response strategies and attention should be paid to the notes that accompany the headings in this table.

For each sensitive receptor, independently assess each response strategy for suitability by determining whether its use will result in an increase or decrease in environmental benefit. If there are conflicting outcomes for a particular response option then the sensitive receptor with the higher priority becomes the preferred response option.

A check of the decision then needs to be made to ensure that the risks and impacts associated with the response options are consistent with those identified in the EPs. If the risks and impacts are not consistent with those identified in the EPs then the following will occur:

- Response strategy controls are identified and assessed

- An alternative response strategy is assessed, or
- An application for approval to implement the response strategy will be made.

This process is consistent with the spill response phase of Figure 3-1 of the Wandoo Field OSCP.

1.5 Protection Priorities

A decision must be made as to which sensitive receptors have the highest protection and/or clean-up priority and which response strategy/strategies will result in an overall net environmental benefit. Priority shorelines and habitats are mangroves, turtle nesting beaches during nesting and hatching season and significant bird breeding/nesting sites. Table 1 is a graphic representation of protection priorities for habitats or shoreline considering the recovery time and potential impact from oil.

Table 1: Protection priority matrix (obtained from AMOSC training material)

		RECOVERY TIME RAPID ⟷ SLOW			
		<1 year	2-5 years	5-10 years	>10 years
Potential Impact Rank	Slight	Low	Low	Low	Medium
	Minor	Low	Medium	Medium	High
	Major	Low	Medium	High	High
	Severe	Medium	High	High	High

1.6 NEBA Frequency

The NEBA will be completed on the following timeline:

- Within 24 hours of the spill as part of the OPEP
- Every 24 hours as part of the Incident Action Plan cycle
- As required if the situation changes beyond what is planned for and response strategies require evaluation
- Until termination criteria are met for response strategies and ultimately the incident.

1.7 Decision Making Toolbox

1.7.1 Overview

A number of tools exist that can aid the Environment Unit leader and Planning Chief in completing a NEBA for an oil spill response. Specific sections within the OSCP and associated EPs are identified in the following two sections.

1.7.2 References in the OSCP and EP that can Assist in Completing the NEBA Template

The following sections of the OSCP may assist the Environment Unit leader and Planning Chief to complete the NEBA template:

- Key sensitivities and potential impacts
- Response strategies
- Termination criteria
- Oil Pollution Plans
- OSTM outputs.

The following sections of the EPs can assist the Planning Chief to complete the NEBA template:

- Description of the environment and sensitivity maps
- Impact assessment of oil spill scenarios and response strategies.

Table 2 NEBA Matrix

Sensitivity	Protection Priority[1] **(based on likelihood of impact, severity of impact and recovery time)**	Seasonal presence in Zone of Potential Impact												Response Strategy **(↑ Increase in environmental benefit; ↓ Decrease in environmental benefit; X not applicable)**					
		J	F	M	A	M	J	J	A	S	O	N	D	Monitor and evaluate[2]	Chemical dispersant [3]	Mechanical dispersion[4]	Contain and recover[5]	Protect and deflect[6]	Shoreline clean-up[7]
Ecological																			
Whales (resting/calving)	High (T,M)							✓	✓	✓	✓			↑	↓	↑	↑	X	X
Dugongs (foraging)	High (M)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↓	↑	↑	X	X
Dolphins	High (M)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↓	↑	↑	X	X
Sharks	High (T,M)			✓	✓	✓	✓							↑	↓	↑	↑	X	X
Turtle nesting	High (T,M)	✓	✓	✓						✓	✓	✓	✓	↑	↑	↑	↑	↑	↑
Migratory birds	High (T,M)	✓	✓	✓	✓					✓	✓	✓	✓	↑	↑	↑	↑	↑	↑
Sea birds	Medium	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↑	↑	↑	X	X
Shore birds	Medium	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↑	↑	↑	↑	↑
Coral spawning	Medium	✓	✓	✓	✓					✓	✓	✓	✓	↑	↓	↑	↑	X	X
Habitat/Ecosystem																			
Mangroves	High	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↑	↑	↑	↑	↓
Intertidal rocky reef	Medium	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↓	↓	↑	X	X
Coral reef	Medium	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↓	↓	↑	X	X
Seagrasses	Medium	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↓	↓	↑	X	X
Marshland	Medium	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↑	↑	↑	↑	↓
Mudflats	Medium	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↑	↑	↑	↑	↓
Subtidal rocky reef	Low	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↓	↓	↑	X	X
Sandy beaches	Low	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↑	↑	↑	↑	↑
Rocky shore	Low	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↑	↑	↑	↑	X
Open waters	Low	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↓	↑	↑	X	X

Sensitivity	Protection Priority[1] **(based on likelihood of impact, severity of impact and recovery time)**	Seasonal presence in Zone of Potential Impact												Response Strategy **(↑ Increase in environmental benefit; ↓ Decrease in environmental benefit; X not applicable)**					
		J	F	M	A	M	J	J	A	S	O	N	D	Monitor and evaluate[2]	Chemical dispersant [3]	Mechanical dispersion[4]	Contain and recover[5]	Protect and deflect[6]	Shoreline clean-up[7]
Socioeconomic																			
Protected shipwrecks	Low	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↓	↓	↑	↑	X
Fisheries	Low	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↓	↓	↑	↑	X
Petroleum activity	Low	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	↑	↑	↑	↑	↑	X

1 Protection priority: This ranking is based on a combination of factors including the likelihood of impact (time of year), severity of impact (type of exposure to the sensitivity, where the sensitivity is listed as Threatened (T) or Migratory (M) under the EPBC Act) and recovery time after exposure to hydrocarbons. Table 6 1 can be used to assess the risk of sensitivity).

2 Monitor and evaluate: This strategy is important for gathering and maintaining situational awareness throughout a response and will always have a positive benefit.

3 Chemical dispersant: Each sensitivity in the above table must be assessed independently and each strategy must also be assessed independently. Where chemical dispersant has been given a ↓, this indicates that when used alone chemical dispersant will reduce the overall environmental benefit.

The purpose of applying chemical dispersant is to break up the surface oil into small droplets of oil and to suspend the oil through the water column to accelerate the breakdown process through biodegradation. Effective dispersant application is capable of reducing the amount of oil that could potentially reach the shoreline as a surface slick.

For some species/habitats the use of chemical dispersants has been shown to reduce the severity of hydrocarbon impact. Dispersing oil into the water column reduces the quantity of oil on the surface, subsequently reducing the amount of oil that can strand and smother any resource in which it comes into contact with, i.e. mangrove pneumatophores (rhizomes that grow upwards vertically out of the mud – used for respiration and salt balance). Mangroves support a vast ecosystem of organisms below the water surface, as do seagrass beds. Dispersed oil in the water column is likely to have an adverse impact compared with oil remaining on the sea surface.

4 Mechanical dispersion: This strategy will have a positive benefit where it is beneficial to assist with the natural dispersion process, encouraging an oil slick to evaporate and mix becoming suspended within the water column where it can be more easily biodegraded. Mechanical dispersion will be more effective on smaller spills where the expected fate of the hydrocarbon is to evaporate and disperse within 24-72 hours or where it is used to assist with chemical dispersion when sea conditions are calm.

5 Containment and recovery: The containment of an oil slick with boom and recovery using mechanical devices minimises the severity of impact to sensitivities by reducing the quantity of product that could come in to contact with sensitivity. Where it is operationally feasible to use this equipment the result will have a positive environmental benefit.

6 Protection and deflection: The deployment of protection and deflection boom can assist with minimising the potential impact and/or deflecting an oil slick away from a known sensitivity towards an area where collection can be more effective. This strategy is dependent on the right environmental conditions and habitat type, however it has the capacity to have a very positive environmental benefit.

7 Shoreline clean-up: Where shoreline clean-up has been given a ↓, this indicates that the use of equipment, machinery and personnel in that environment is likely to have negative effect, potentially causing more damage and reducing the recovery and environmental benefit to that sensitivity.

NOTE: A NEBA is a decision-making process and will ultimately result in a trade-off of priorities and response strategies. It is possible for a response strategy to be used for one sensitivity – even if it has been identified that this response option may not benefit one or several other sensitivities. The final outcome of the response however should result in an overall net environment benefit.

1.8 NEBA Template

NET ENVIRONMENTAL BENEFIT ANALYSIS FOR ASSESSING OIL SPILL RESPONSE STRATEGIES	
Response strategy being assessed (one NEBA for each strategy):	
Operational period for which response strategy is being considered:	
Date and time response required: (specify to whom and their role)	
Names of persons contributing to the NEBA (environment unit):	

Factors for consideration when completing this NEBA:

Spill dependant factors – quantity spilled, aerial coverage, oil thickness and character, oil viscosity

Site dependant factors – water depth, wind speed, wave height, current speed

Equipment/operator dependent factors – mobilization time, typical oil treatment rate, availability of operators, logistical limitations, safety limitations.

Ecological resources at risk – sensitive and vulnerable resources at risk of oiling, expected and potential damage to resources, recovery potential of the resources, importance of resources, likelihood and extent to which oil will be persistent.

Spill specific information:

1. What is the oil type and how much has been spilled? Is it a continuous spill?

2. What are the conditions on site?

Weather – current temperature, wind speed, forecast weather conditions

Currents and tides – real time and forecast

3. How is the oil expected to weather?

Consider rate of spreading, evaporation, emulsification, natural dispersion, dilution etc.

4. What response measures have been used and how effective have they been?

Use visual observation of dispersant effectiveness guideline (OSRL handbook); and observations from aerial and vessel based observations.

5. Where is the oil expected to go?

Consider oil spill trajectory models, 3D modelling of sub surface oiling concentrations and changes in characteristics of oil over time. Use the outputs from trajectory models to inform this step (both pre-incident models and real time models).

6. What is the expected time to impact of sensitive receptors?

Use the outputs from trajectory models to inform this step (both pre-incident models and real time models).

7. How much oil is expected to strand on sensitive receptors?

Use the outputs from trajectory models to inform this step (both pre-incident models and real time models).

8. What is the probability (likelihood) of oil impacting sensitive receptors?

Use the outputs from trajectory models to inform this step (both pre-incident models and real time models).

Effectiveness of response strategies:

9. How effective is the response strategy likely to be?

Use pre incident modelling, laboratory efficacy testing and in-situ dispersant testing (if available) to inform this step.

Consider the likelihood of an effective at-sea recovery operation removing the bulk of the oil including equipment and personnel required. Will the Boom Encounter Rate will be sufficient to warrant the effort to respond with this method? Use BER calculations in OSCP.

Consider the effectiveness of booming operations for protection and deflection.

Consider effectiveness and appropriateness of shoreline clean-up methods.

10. What is the window of opportunity?

As oil weathers it becomes less amenable to chemical dispersants, are the required personnel available eg. aerial surveillance to support aerial spraying?

How fast is the oil spreading will it be of a sufficient thickness for effective containment and recovery?

Understanding the impacts associated with response strategies:

11. Is the environmental impact of the response strategy likely to be less than the impact of untreated oil?

How vulnerable and acutely sensitive to oil are the surface, sub-surface and coastal resources?

Consider seasonality, oil spill trajectory model and water depth. Acute sensitivity is resource specific and a function of their tolerance to the chemical toxicity and physical smothering of the oil.

12. What potential impacts could oil and/or the response strategy have on wildlife?

Consider seasonality of wildlife patterns, depth of water, distance from coastline. Refer to Table 3 NEBA matrix for seasonality information.

13. How persistent will the oil be?

Consider the wave exposure of the shoreline and the oil type. Dispersed oil is usually rapidly diluted and biodegraded, unless it becomes entrained in deep muddy seabed sediments where it could remain indefinitely.

14. How important is the resource?

Consider importance to community, adjacent ecosystems (productivity), biodiversity, rarity and commercial importance.

15. Can the response strategy be applied safely and effectively?

Consider standard operating procedures and risk assessment prepared by AMSA

16. Have necessary approvals been obtained?

Dispersant application (NOPSEMA accepted OSCP; State ESC approval)

17. What are the potential impacts of the response strategy ?

Refer to Hazard Assessment tables in EPs

18. What controls could mitigate these risks?

Refer to Hazard Assessment tables in EPs

What is the conclusion of the analysis?

Is the response strategy appropriate from the environment group's point of view?

What are the Environment Group's recommendations and advice for this response strategy in terms of response controls?

E.g. what should responders do to prevent unwanted impacts?

Position	**Agree with recommendation**	**Disagree with recommendation**
Environment Unit leader sign off:		
Planning Chief sign off:		
Incident Commander sign off:		

Appendix C: VOGA Operational and Scientific Monitoring Bridging Implementation Plan [VOG-1100-RG-0002]

VERMILION
Oil & Gas
Australia Pty. Ltd.

VERMILION OIL & GAS AUSTRALIA

OPERATIONAL AND SCIENTIFIC MONITORING – BRIDGING IMPLEMENTATION PLAN

VOG-1100-RG-0002

(formerly titled Wandoo Field Operational and Scientific Monitoring Plan [WAN-2000-RD-0001.03])

Revision	Date	Originator	Checker	Approver
1	25/02/2026	Mandy Walker	Namek Jivan	Barry Goodin
		Oil Spill Response Coordinator	HSE Manager	Engineering Manager

Revision History

Revision	Date	Description	Originator	Checker	Approver
0	28/02/2025	Issued for Use	MW	SS	NB
1	25/02/2026	Updates for Well Construction and Wandoo Field Environment Plans	MW	NJ	BG

Distribution List

No.	Location	Title (if applicable)
1	VOGA Perth Office Document Control	
2	VOGA Intranet	
3	Wandoo B Platform – HSE MS Library	

Table of Contents

Overview **5**

Part A Preparedness **6**

Section 1 Introduction **7**
1.1 Background 7
1.2 Scope 8

Section 2 OSM Planning Area and Monitoring Priorities **9**
2.1 OSM Planning Area 9
2.2 Monitoring priorities 10
2.2.1 Assess Spill Exposure Risk using Trajectory Modelling 10
2.2.2 Evaluate Availability of Adequate Baseline Data 11
2.2.3 Consideration of Key Ecological Features, Biologically Important Areas and Transient Receptors 11
2.2.4 Initial Monitoring Priorities 12

Section 3 Baseline Information **16**
3.1 Data.gov.au 16
3.2 Australian Ocean Data Network 16
3.3 Western Australian Oil Spill Response Atlas 16
3.4 The Atlas of Living Australia 16
3.5 Index of Marine Surveys Assessment 16
3.6 Other Sources 17

Section 4 Baseline Data Review **18**

Section 5 OSM Organisational Structure **24**

Section 6 OSM Roles and Responsibilities **26**

Section 7 Mobilisation and Timing of OMP and SMP Implementation **27**

Section 8 Resourcing Requirements **33**
8.1 Monitoring Units 33
8.2 Worst-case OSM Resourcing Requirements 34
8.3 Co-Mobilisation of Monitoring Teams 35

Section 9 Capability Demonstration **52**
9.1 Personnel Competencies 52
9.2 Equipment 53
9.3 Exercises 53

Section 10 Capability Assessment **55**

Section 11 Review of Plan **59**

Part B Implementation **60**

Section 12 Mobilisation and Activation 61

Section 13 Monitoring Priorities 63

Section 14 Protected Matters Requirements 65

Section 15 Finalising Monitoring Design 66

Section 16 Mobilisation 67

Section 17 Permits and Access Requirements 69

Section 18 Use of Data in Response Decision-Making 71
18.1 Operational Monitoring to Inform Response Activities 71
18.2 Impacts from Response Activities 75
18.3 Operational Monitoring of Effectiveness of Control Measures and to Ensure EPS are Met 75

Section 19 Data Management 77

Section 20 Quality Assurance and Quality Control 78

Section 21 Communication Protocols 79
21.1 OSM Service Provider 79
21.2 External Stakeholders 80

Section 22 Stand Down Process 81

Section 23 References 82

Appendices 83
Appendix A: Demonstration of Meeting OSM Framework Regulatory Requirements 83
Appendix B: Sensitive Receptors and their Relevant OMPs and SMPs 88
Appendix C: Background Information for Key Sensitivities 92
References 101
Appendix E: OSM Services Provider Call Out Order Form 136

Overview

This Operational and Scientific Monitoring-Bridging Implementation Plan (OSM-BIP) is presented in two parts:

- Part A: *Preparedness* outlines the relationship between Vermilion Oil and Gas Australia (Vermilion) environmental management document framework and the Joint Industry Operational and Scientific Monitoring (OSM) Framework (APPEA, 2021).
- Part B: *Implementation* provides operationally focussed guidance for Vermilion personnel and OSM Service Providers and/or sub-contracted Monitoring Service Providers to coordinate the implementation of monitoring plans.

Part A Preparedness

Preparedness outlines the relationship between Vermilion Oil and Gas Australia (Vermilion) environmental management document framework and the Joint Industry OSM Framework (APPEA, 2021).

Section 1 Introduction

1.1 Background

OSM is a key component of the environmental management document framework supporting offshore petroleum activities, alongside Environment Plans (EP) and Oil Pollution Emergency Plans (OPEP). Vermilion has elected to use the Joint Industry OSM Framework and supporting operational monitoring plans (OMPs) and scientific monitoring plans (SMPs) as the foundation of its OSM approach. The Joint Industry OSM Framework is available on the Australian Energy Producers (AEP) Environment Publications Webpage.

The framework contains two primary monitoring components; operational monitoring (OM) and scientific monitoring (SM). OM aims to provide situational awareness of a hydrocarbon spill, enabling Incident Management Teams (ICT) to arrange timely and effective spill response and continually monitor the effectiveness of the response. SM is implemented to determine the extent, severity and persistence of environmental impacts from a hydrocarbon spill as well as inform potential remediation activities.

As outlined in NOPSEMA's Regulatory Advice Statement (RAS) (NOPSEMA, 2021) regarding APPEAs Joint Industry OSM Framework, each Titleholder is required to develop a Bridging Implementation Plan (this document) that explains how the Framework aligns with their activities, oil spill risks and internal management systems. Appendix A provides guidance on the RAS requirements and reference to the relevant section of this document (or the broader suite of environmental management framework documents) which addresses each requirement.

Table 1-1 describes key documents that form Vermilion's environmental management framework. Note that this is not an exhaustive list and additional documents are listed in the activity specific Vermilion OPEPs.

Mobilisation of OSM should follow the process listed in Section 12.

Table 1-1: Key documents in Vermilion's environmental management framework

VOGA documents	Description
Wandoo Facility Environment Plan [WPA-7000-YH-0007] and the Well Construction Environment Plan [WPA-7000-YH-0001]	Each EP describes the activity, location, the environment, the risks to the environment as a result of the activity and the associated management controls. Of particular relevance to this BIP, it identifies sensitive receptors, credible spill scenarios, potential impacts from hydrocarbon spills and the environment that may be affected (EMBA).
Wandoo Field Oil Spill Contingency Plan (OSCP) [WAN-2000-RD-0001.01]	Provides the planning and preparedness elements of oil spill response for Vermilion's Wandoo Field and Well Construction activities. It includes detail on the Vermilion incident management process, approach to response planning, an overview of response strategies and performance management aspects.
Wandoo Field Oil Pollution Emergency Plan (OPEP) [WAN-2000-RD-0001.02]	Provides notification and activation requirements, detailed implementation guidance for individual response strategies and spill response support plans.
Vermilion Oil and Gas Australia Oil Spill Response Capability	The purpose of this document is to understand the required and current capability for VOGA's oil spill response preparedness. Capability is used in the context of this document as the arrangements, contracts, Memoranda of Understanding (MoU), directories and

VOGA documents	Description
Review [VOG-7000-RH-0009]	agreements in place with service providers and personnel who may be involved in response efforts for an oil spill incident.
Vermilion Oil and Gas Australia Emergency Response Logistics Management Plan [VOG-7000-RH-0008]	This document contains details of contractors and service providers engaged to undertake oil spill response activities and supporting services such as transport and accommodation.
Vermilion Oil and Gas Australia Wandoo Emergency Response Plan (ERP) [VOG-2000-RD-0017]	Outlines the emergency response procedures for Vermilion operations, including marine maintenance, and drilling and completions activities conducted in the Wandoo Field. It provides guidance on the initial response process, responder checklists, reference guides and Incident Command Team forms.
Vermilion Oil and Gas Australia Emergency Contact List [VOG-2000-RD-0050]	Contains all relevant contact and communications information to enable effective communication amongst the response personnel and external stakeholders, including relevant OSM contacts.

1.2 Scope

This Operational and Scientific Monitoring – Bridging Implementation Plan (OSM-BIP) addresses the requirements of the Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations 2023 (OPGGS(E) Regulations) for Vermilion activities within the Wandoo Facility Environment Plan [WPA-7000-YH-0007] and the Well Construction Environment Plan [WPA-7000-YH-0001]. This BIP supersedes Vermilion's Wandoo Field Operational and Scientific Monitoring Plan [WAN-2000-RD-0001.03].

A Field Change Management: Management of Change (MoC) Screening Checklist (No. 6642) has been compiled to document Vermilion's transition to, and adoption of, the Joint Industry OSM Framework via this OSM-BIP. This MoC also describes the process for replacing accepted SM and OM components within existing Vermilion OPEPs. It is accompanied by technical note Joint Industry OSM Gap Analysis [VOG-1000-RH-0037], that contains a comparison of the OMPs and SMPs in the previous Operational and Scientific Monitoring Plan [WAN-2000-RD-0001.03] and the Joint Industry OSM Framework to ensure that performance and capability is not diminished by adoption of the framework.

This OSM-BIP addresses the Vermilion Wandoo Facility Environment Plan [WPA-7000-YH-0007] and the Well Construction Environment Plan [WPA-7000-YH-0001] only. OSM requirements for new or revised Vermilion activities will be managed via a separate activity-specific OSM-BIP, or Vermilion will demonstrate via the EP that the activities OSM monitoring priorities and capability can be met by this OSM-BIP.

Vermilion will implement OSM, as applicable, for oil spills across both State and Commonwealth waters. In the event that control of scientific monitoring in State waters is taken over by the Western Australian Department of Transport and Major Infrastructure (DTMI) under advice from the State Environmental Scientific Coordinator (ESC), Vermilion will follow the direction of DTMI as Control Agency and provide all necessary resources (monitoring personnel, equipment and planning) to assist as a supporting agency.

Section 2 OSM Planning Area and Monitoring Priorities

2.1 OSM Planning Area

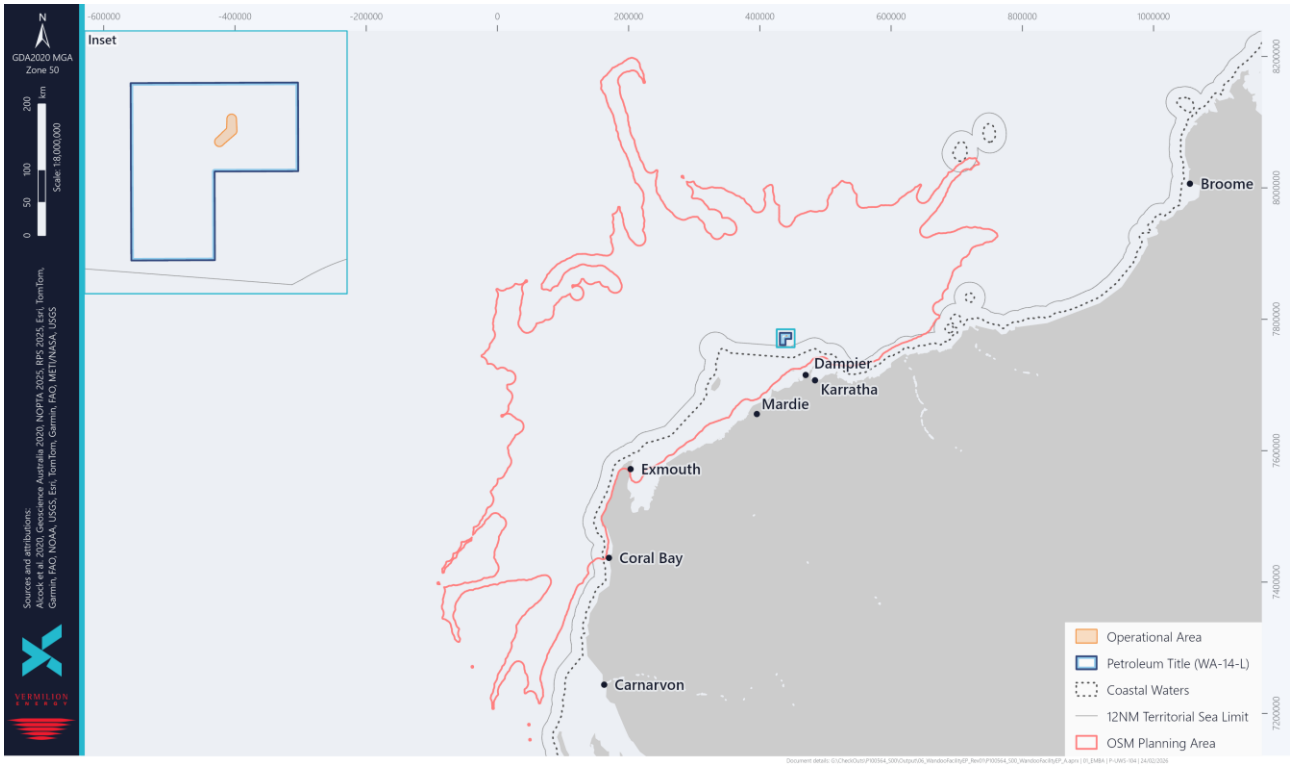
This OSM-BIP provides monitoring guidance and arrangements for Vermilion's activities referred to in Table 2-1. An OSM Planning Area has been prepared to represent these activities and the resultant geographical extent of this OSM-BIP (Figure 2-1). The OSM Planning Area is aligned to the Environment that May be Affected (referred to in the EPs) and corresponds to the low exposure values using stochastic modelling results applying the following thresholds:

- 1 g/m^2 floating oil thickness, which is considered to be below levels which would cause environmental harm and is more indicative of the areas perceived to be affected due to its visibility on the sea surface
- 10 g/m^2 for accumulated (shoreline) oil, which represents the area visibly contacted by the spill
- 10 ppb for dissolved hydrocarbons corresponds generally with potential for exceedance of water quality triggers
- 100 ppb entrained hydrocarbons represents the low exposure zone and corresponds generally with potential for exceedance of water quality triggers.

The OSM Planning Area is based on the above low thresholds as outlined in the NOPSEMA Information Paper: Application of oil spill modelling in Environment Plans (NOPSEMA, 2025). The OSM Planning Area (all based on the low thresholds) can be considered as the absolute outer limit of OSM efforts for all of Vermilion's activities listed in Table 2-1.

For a description of the environment within each EMBA/OSM Planning Area, refer to the activity-specific EPs listed in Table 2-1. The EPs include the following pertinent information: protected matters and any associated recovery plans/conservation advice, key ecological features (KEFs), protected areas, significant socio-economic industries, and culturally significant places.

Figure 2-1: OSM Planning Area



2.2 Monitoring priorities

Sensitive receptors were identified through analysis of hydrocarbon spill modelling results against the location of key sensitive receptors with high conservation value; including habitat (e.g. State/Commonwealth protected areas), species (e.g. protected species), International Union of Conservation of Nature (IUCN) marine protected area categories, and important socio-economic/heritage values.

Monitoring prioritisation during a spill should focus on sensitive receptors with the highest risk of adverse consequences. For planning purposes, monitoring priorities have been drawn from the key receptor locations and sensitivities identified in the OSCP (Section 7.8.3.1).

2.2.1 Assess Spill Exposure Risk using Trajectory Modelling

Oil spill modelling provides useful tool for assessing monitoring priorities, as it predicts the probability and minimum time at which individual receptors may be contacted. Receptors predicted to be contacted sooner and with higher probability are prioritised for monitoring, as there is little opportunity for pre-contact data collection. By contrast, receptors predicted to have longer contact times may allow for the collection of reactive baseline data prior to impact.

Vermilion has assessed oil spill modelling results for its Wandoo activities to identify these priority receptors.

Table 2-1 presents the receptors predicted to be contacted at the low thresholds for entrained (≥10 ppb), dissolved (≥10 ppb), floating (≥1 g/m^2), and shoreline contact (≥10 g/m^2) within 14 days at a probability >5%. Appendix B lists these receptors and identifies their relevant OMPs and SMPs. Supplementary information on receptor presence, distribution, seasonality, and where relevant, reproductive state is provided in Appendix C.

The inclusion of entrained hydrocarbons at concentrations greater than 10 ppb is used to denote exposure but does not necessarily imply toxicity. For entrained whole-oil droplets, the toxic fraction is small, as many hydrocarbon constituents remain sequestered and not bioavailable (French-McCay 2024). During the initial monitoring response, emphasis will be placed on receptors contacted by floating, shoreline, and dissolved hydrocarbon phases. If a receptor is only contacted by low concentrations of entrained hydrocarbons and not by any other hydrocarbon phase, it will be considered a lower priority during the initial monitoring response.

2.2.2 Evaluate Availability of Adequate Baseline Data

The availability of baseline data further influences monitoring priorities. Section 4 outlines Vermilion's baseline review and evaluation process, and Table 4-3 summarises the baseline data assessment for the sensitive receptors identified in Figure 2-1 and Table 2-1.

Where short contact times prevent post-spill pre-impact monitoring, prior knowledge of data gaps helps guide the rapid finalisation of each SMP design and the need to include alternative approaches (e.g. the Gradient Approach versus Before-After Control-Impact (BACI) design). During a spill, it may be necessary to identify additional unaffected control sites for comparative monitoring where possible. As such, control sites have been factored into capability planning in Section 8.

2.2.3 Consideration of Key Ecological Features, Biologically Important Areas and Transient Receptors

In addition to these locations, there are receptors that are transient (i.e. cetaceans, seabirds, whale sharks) and others that are broadscale, such as managed fisheries with large spatial extents, Key Ecological Features (KEFs) and Biologically Important Areas (BIAs).

A number of broadscale ecological features are located within the OSM Planning Area and have been considered in monitoring prioritisation and OSM capability planning. Section 3.6.9 of the Wandoo Well Construction EP [WPA-7000-YH-0001] and Section 4.6.9 of the Wandoo Facility EP [WPA-7000-YH-0007] describe all KEFs within the OSM Planning Area.

A number of KEFs are within 100 km of Vermilion's Operational Areas, so are at a higher risk of contact with hydrocarbons, including:

- Ancient coastline at 125 m depth contour (60 km NW)
- Glomar Shoals (45 km NE).

These KEFs include subsea receptors (benthic and pelagic habitats; demersal fish communities; marine fauna aggregations) that may be at higher risk from subsea releases. Whilst the scenarios include no subsea releases (refer Table 2-1), OSM planning and resourcing still includes relevant monitoring requirements, such as water quality, sediment quality, benthic habitats and fish if the spill is predicted to pass over the features (refer Appendix B and Section 8.1).

The OSM Planning Area also overlaps a number of BIAs and protected species potentially occurring in the area, as described in Section 3.4.3 of the Wandoo Well Construction EP [WPA-7000-YH-0001] and Section 4.4.3 of the Wandoo Facility EP [WPA-7000-YH-0007]. A number of the BIAs and protected species are located within the monitoring priorities listed in Table 2-1 and Table 4-3, such as marine turtles within the Montebello AMP, so would automatically be included in the relevant SMPs for that monitoring priority location (Refer to Table 8-1). Where BIAs and protected species are situated away from the monitoring priorities listed in, they will be captured in the Offshore Environs monitoring unit described in Table 8-1.

2.2.4 Initial Monitoring Priorities

Monitoring priorities are subsequently identified as those receptors with high conservation value predicted to be contacted within 14.0 days at a probability >5% at the low exposure values. Higher priority is also given to receptors where baseline data is either not available or not sufficient (as depicted in Table 4-3 and outlined in Section 4).

Another important consideration for monitoring prioritisation is a receptor's vulnerability to different forms and levels of hydrocarbon exposure, as well as its inherent sensitivity. For example, coral is highly sensitive to hydrocarbons, but its vulnerability depends on the form of exposure. If the hydrocarbon is floating on the sea surface during calm conditions, it may pass over the coral without causing interaction. However, if the hydrocarbon is dissolved in the water column with sufficient exposure duration, the coral may become directly vulnerable to its toxic effects.

It should be noted that the monitoring priorities provided in Table 8-1 and Table 4-3 are listed for planning purposes only. Vermilion will work with its monitoring providers and key stakeholders in the initial stages of the spill regarding priority receptors and to assist in the finalisation of the monitoring design. This process is outlined in Section 13.

Table 2-1: Worst-case spill scenarios used to determine the planning area for operational and scientific monitoring

Environment Plan/OPEP	Hydrocarbon Type	Scenario	Release Duration	Volume (m^3)	Receptors predicted by stochastic modelling to be contacted ≥5 % probability within 14 days				
					Receptor	Floating	Shoreline	Entrained	Dissolved
Wandoo Facility Environment Plan [WPA-7000-YH-0007] and Wandoo Field Oil Spill Contingency Plan [WAN-2000-RD-0001]	Marine Diesel Oil (MDO)	Spill from Shaft 2	12 hours	2,200	Montebello AMP*	X	NA	Y	Y
					Montebello Islands MP	X	X	Y	X
					WA11.West (318) - Barrow Island and Montebello Islands (A) (Montebello Islands)	X	Y	X	X
					Gascoyne AMP*	X	NA	Y	X
					Muiron Islands MMA	X	X	Y	X
					WA11.West (329) - Locker Point - Baresand Point (Muiron Islands)	X	X	Y	X
					Ningaloo MP*	X	NA	Y	X
					Barrow Island MP	X	X	Y	X
					Lowendal Islands NR	X	X	Y	X
					Dailey Shoal*	X	NA	Y	X
					Glomar Shoal*	X	NA	Y	X
					Montebello Shoals*	X	NA	Y	X
					Ningaloo Reef*	X	NA	Y	X
					North West Reef*	X	NA	Y	X
					Otway Reef*	X	NA	Y	X
					Outrim Patches*	X	NA	Y	X
					Penguin Bank*	X	NA	Y	X
					Poivre Reef*	X	NA	Y	X

Environment Plan/OPEP	Hydrocarbon Type	Scenario	Release Duration	Volume (m^3)	Receptors predicted by stochastic modelling to be contacted ≥5 % probability within 14 days				
					Receptor	Floating	Shoreline	Entrained	Dissolved
					Rankin Bank*	X	NA	Y	X
					Ripple Shoals*	X	NA	Y	X
					Rosily Shoals*	X	NA	Y	X
					Tryal Rocks*	X	NA	Y	X
	Wandoo Crude	Loss of crude from export system	1 hour	300	Gascoyne AMP*	X	NA	Y	X
					Montebello AMP*	X	NA	Y	X
					WA11.West (318 & 319) - Barrow Island and Montebello Islands (A) (Montebello Islands)	X	Y	X	X
					Muiron Islands MMA	X	X	Y	X
					WA11.West (321) - Barrow Island and Montebello Islands (D) (Barrow Island)	X	Y	X	X
					Barrow Island MP	X	X	Y	X
					WA11.West (329) - Locker Point - Baresand Point (Muiron Islands)	X	Y	X	X
					WA11.West (328) - Hope Point - Locker Point (F) (Fly Island)	X	Y	X	X
					WA11.West (324) - Yardie Landing - Weld Island coast S (B) (Airlie Island)	X	X	Y	X
					Montebello Islands MP	X	X	Y	X
					Ningaloo MP*	X	NA	Y	X
					Montebello Shoals*	X	NA	Y	X

Environment Plan/OPEP	Hydrocarbon Type	Scenario	Release Duration	Volume (m^3)	Receptors predicted by stochastic modelling to be contacted ≥5 % probability within 14 days				
					Receptor	Floating	Shoreline	Entrained	Dissolved
					Outtrim Patches*	X	NA	Y	X
					Penguin Bank*	X	NA	Y	X
					Tryal Rocks*	X	NA	Y	X
Wandoo Well Construction Environment Plan [WPA-7000-YH-0001] and Wandoo Field Oil Spill Contingency Plan [WAN-2000-RD-0001]	MDO	Vessel collision	6 hours	300	WA11.West (318) - Barrow Island and Montebello Islands (A) (Montebello Islands)	X	Y	X	X
					Montebello AMP*	X	NA	Y	Y
					Gascoyne AMP*	X	NA	Y	X
					Montebello MP	X	X	Y	X
					Ningaloo MP*	X	X	Y	X
					Barrow Island MP	X	X	Y	X
					Lowendal Islands NR	X	X	Y	X
					Dailey Shoal*	X	X	Y	X
					Montebello Shoals*	X	X	Y	X
					Outtrim Patches*	X	X	Y	X
					Penguin Bank*	X	X	Y	X
					Poivre Reef*	X	X	Y	X
					Tryal Rocks*	X	X	Y	X

Legend	
NA	Not applicable
X	Not contacted by this hydrocarbon phase
*	Submerged receptor that has no features above the sea surface. Modelling indicates floating contact with these receptors when the hydrocarbons pass over the receptor on the sea surface.
	Receptor only contacted by entrained hydrocarbons

Section 3 Baseline Information

Vermilion has access to a number of different baseline data sources that are relevant to the high-value receptors in the EMBA. These include the Vermilion protected matters data (including habitat/fauna information) and the following external data sources:

3.1 Data.gov.au

Data.gov.au is the central source of Australian open government data published by federal, state and local government agencies. In addition, it includes publicly-funded research data and datasets from private institutions that are in the public interest.

3.2 Australian Ocean Data Network

The Australian Ocean Data Network (AODN) is the primary access point for search, discovery, access and download of data collected by the Australian marine community. Data is presented as a regional view of all the data available from the AODN. Primary datasets are contributed to by Commonwealth Government agencies, State Government agencies, Universities, the Integrated Marine Observing System (IMOS – an Australian Government Research Infrastructure project), and the Western Australian Marine Science Institution (WAMSI).

3.3 Western Australian Oil Spill Response Atlas

The Western Australian Oil Spill Response Atlas (OSRA) is a spatial database of environmental, logistical and oil spill response data. Using a geographical information system (GIS) platform, OSRA displays datasets collated from a range of custodians allowing decision makers to visualise environmental sensitivities and response considerations in a selected location. Oil spill trajectory modelling (OSTM) can be overlaid to assist in determining protection priorities, establishing suitable response strategies and identifying available resources for both contingency and incident planning. OSRA is managed by the Oil Spill Response Coordination unit within the DTMI Marine Safety and is part funded through the National Plan for Maritime Environmental Emergencies and the Australian Maritime Safety Authority (AMSA). Vermilion ICT members can log in to the OSRA here.

3.4 The Atlas of Living Australia

The Atlas of Living Australia (ALA) is a collaborative, online, open resource that contains information on all the known species in Australia aggregated from a wide range of data providers. It provides a searchable database when considering species within the EMBA. The ALA receives support from the Australian Government through the National Collaborative Research Infrastructure Strategy and is hosted by the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

3.5 Index of Marine Surveys Assessment

The Index of Marine Surveys for Assessments (IMSA) is an online portal to information about marine-based environmental surveys in Western Australia. IMSA is a project of the WA Department of Water and Environmental Regulation (DWER) for the systematic capture and sharing of marine data created as part of an environmental impact assessment.

3.6 Other Sources

Other sources include:

- The Protected Matters Search Tool Department of Climate Change, Energy, the Environment and Water (DCCEEW)
- the WA Department of Biodiversity and Attractions (DBCA) Biodiversity and Conservation Science Annual Reports
- Australian Institute for Marine Science (AIMS) Research Data Platform
- WA State of Fisheries Report
- eAtlas.org.au
- North West Atlas
- Western Australian Marine Science Institution
- Geosciences Australia data and publications
- Australian Marine Parks Science Atlas
- Birdlife Data Zone.

Reports and peer reviewed journal articles were also accessed via research and journal databases such as PubMed and Google Scholar, as well as unpublished monitoring reports. A list of baseline data sources is provided in Appendix D.

Section 4 Baseline Data Review

Baseline monitoring provides information on the condition of ecological receptors prior to, or spatially independent (e.g. if used as an unaffected control site) of, a spill event and is used for comparison with post-impact scientific monitoring, where required. This is particularly important for scientific monitoring where the ability to detect changes between pre-impact and post-impact conditions and evaluate and quantify environmental impact from the spill (compared to natural variation and/or impacts unrelated to the spill) is necessary. Knowing the extent, quality and suitability of existing baseline data is important in helping to prioritise the scientific monitoring response, as priority should be given to those locations and sensitive receptors where there is no or insufficient baseline.

Understanding the presence or absence, suitability and quality of baseline data for locations and associated receptors predicted to be contacted within 14 days is an important preparatory measure for prioritising monitoring. During a spill event, prioritisation of capability may be given to those receptors with insufficient baseline data, where it is possible to collect baseline data post-spill pre-impact. Further, where post-spill pre-impact monitoring is not feasible due to short contact times, understanding which receptors have insufficient baseline data will help quickly guide the finalisation of each SMP design and the need to include alternative designs (e.g. the Gradient Approach versus Before-After Control-Impact (BACI) design).

Vermilion is part of a Joint Industry Collaborative Group who are working together to determine the extent, quality and suitability of existing baseline data for the marine environments in the North West Shelf, Browse and Timor Sea Regions of Australia. The Marine Environment Baseline Database includes available data for all receptors relevant to the Joint Industry OSM Framework (apart from Fisheries and Heritage and Social Impacts) and has assessed the spatial and temporal relevance of this data and comparison of methods and parameters to those outlined in the Joint Industry SMPs.

Using the Marine Environment Baseline Database, Vermilion has reviewed the baseline data for all of the receptors listed in Table 2-1 to determine which receptors and key features have insufficient or no baseline data available and should be given a higher monitoring priority. Appendix D provides a high-level summary of some of the data sources included in the Marine Environment Baseline Database.

An overview of the process used to assess baseline data is provided in the steps below:

1. **Identification of receptors requiring a baseline review:** Receptors predicted to be contacted within 14 days, at a probability greater than 5%, are identified and aligned with OMPs and SMPs.

2. **Collection of baseline data:** Environmental baseline monitoring data relevant to the receptors is located (as per sources outlined in Section 3) and included (if it is not already included) in the Marine Environment Baseline Database. Appendix D: OSM baseline data sources provides a high-level summary of selected data sources included in the Marine Environment Baseline Database.

3. **Assessment of baseline data:** The relevance of each data source is assessed:

    a. For each data source obtained, a meta-analysis is performed to determine if the parameters and methods align with the key parameters and methods outlined in the Joint Industry SMPs (Table 4-1), the spatial extent of the data, the sampling effort/duration, and the temporal relevance is also noted. Table 4-2 outlines the overall assessment criteria used for each data source.

4. **Assessment of baseline data:** Regular evaluation of the adequacy (in terms of the likely ability to detect changes between pre-impact and post-impact conditions) of the collective baseline data for each receptor is undertaken. This evaluation takes into consideration the following:

Background historical information on the presence, distribution, seasonality, and if applicable, the reproductive state of the receptor (as outlined in

   a. Appendix C: Background Information for Key Sensitivities C) is compared with the data available from monitoring within the last 5 years. Depending on the receptor and associated Joint Industry SMP, the following is considered:
      - Does the data collectively cover the required spatial extent of the receptor within a location (taking into consideration any background historical information on the distribution of the receptor)?
      - Does the data collectively cover all the species/biological communities required for the relevant Joint Industry SMP and that may be present at the receptor/location?

5. **Assessment outcome:** Each location and associated receptor is then categorised as follows, and summarised in Table 4-3**:**

   a. Comprehensive baseline data or ongoing monitoring collected within the last 5 years. Data align with Joint Industry SMP parameters and methods, cover required species/communities and span the necessary spatial extent, or

   b. Historical data (>5 years old) that remain of value, or some current but not extensive baseline data, or

   c. No baseline data available, or existing data are inadequate in quality, scope, or relevance.

Once SMP monitoring reports are drafted (post-spill) they will be peer reviewed by an expert panel as per Section 10.10 of the Joint Industry OSM Framework.

Table 4-1: Key parameters and key methodology from the Joint Industry SMPs

SMP	Key parameter	Key methodology
SM1 Water quality impact assessment	At least one key parameter: • Total recoverable hydrocarbons (TRH) • Total petroleum hydrocarbons (TPH) • Benzene, toluene, ethylbenzene and xylenes and naphthalene (BTEXN) or • Polycyclic aromatic hydrocarbons (PAH).	In situ UV fluorometer and/or samples analysed at National Association of Testing Authorities (NATA) accredited lab using NATA accredited method.
SM2 Sediment quality impact assessment	At least one key parameter: TRH, TPH, BTEXN, PAH, heavy metals.	Sediment collected by corer/grab and samples analysed at NATA accredited lab using NATA accredited method.

SMP	Key parameter	Key methodology
SM3 Intertidal and coastal habitat assessment	At least one key parameter: presence, diversity, distribution.	Any of the following, as appropriate to the parameters: • Ground and vessel-based intertidal surveys (e.g. quadrats, transects, including video and still photography) • Remote sensing • Infauna sampling.
SM4 Seabirds and shorebirds	At least one key parameter: species present, abundance/counts, behaviour (resting, roosting, foraging, nesting).	Ground surveys and standardised methodology for counting birds.
SM5 Marine megafauna - reptile	At least one key parameter: species identification, abundance/counts, key behaviour (foraging, mating, nesting, internesting).	As appropriate to the species and behaviour/life stage: • Nesting turtles: ground surveys • In water turtles: vessel and aerial surveys • Sea snakes: manta board and snorkel surveys Estuarine crocodiles: vessel-based spotlight surveys at night.
SM5 Marine megafauna- whale sharks, dugong and cetaceans	At least one key parameter: species identification, abundance/counts, key behaviour.	Aerial or vessel surveys, acoustic monitoring.
SM6 Benthic habitat assessment	At least one key parameter: presence, diversity, distribution.	Any of the following, as appropriate to the parameters: • Transects • Towed camera • Drop camera • Remotely Operated Vehicle (ROV) camera • Diver-based camera surveys • Remote sensing (coral & seagrass broad scale survey) • Sediment grab for infauna.
SM7 Marine fish and elasmobranch assemblages assessment	At least one key parameter: species identification, abundance, habitat type.	Any of the following, as appropriate to the parameters: • Baited remote underwater video stations (BRUVS) • Stereo Baited Remote Underwater Video Stations (SBRUVS) • ROV • Towed video survey.
SM8 Fisheries impact assessment	At least one key parameter: Abundance, catch-rate, stock structure, size structure.	Catch and effort for stock assessment.

Table 4-2: Assessment criteria for baseline data review

Year of most recent data capture	Duration of monitoring program	Frequency of data capture	Similarity of methods to Joint Industry SMP	Similarity of parameters to Joint Industry SMP
High = less than 5 years old	High = >4 years	High = 4+ sampling trips per year	High	High
Medium = between 5-10 years old	Medium = 2–4 years	Medium = 2–3 sampling trips per year	-	-
Low = greater than 10 years old	Low = <2 years	Low = one-off sampling trip	Low	Low

Table 4-3: Baseline data assessment versus SMPs for receptors predicted at being contacted >5% probability and <14 days

Receptor	SMP									
	Water quality impact assessment	Sediment quality impact assessment	Intertidal and coastal habitat assessment	Seabirds and shorebirds	Marine megafauna assessment – reptiles	Marine megafauna assessment – whale sharks, dugong and cetaceans	Benthic habitat assessment	Marine fish and elasmobranch assemblages assessment	Fisheries impact assessment^	Heritage and social impact assessment+
Montebello AMP*										
Gascoyne AMP*										
Barrow Island	Barrow Island Port	Barrow Island Port		Double Island	Flatback turtle					
					Green and hawksbill turtles					
					Sea snakes					
Ningaloo (State MP)					Turtles	Whale sharks				
					Sea snakes					
Lowendal Islands (Nature Reserve)			Mangroves at Varanus Isl.	Seabirds	Turtles at Varanus Isl.					
				Shorebirds	Sea snakes Turtles elsewhere					
Muiron Islands					Turtles					
					Sea snakes					
Montebello Islands				Wedge-tailed shearwater						

Receptor	SMP									
	Water quality impact assessment	**Sediment quality impact assessment**	**Intertidal and coastal habitat assessment**	**Seabirds and shorebirds**	**Marine megafauna assessment – reptiles**	**Marine megafauna assessment – whale sharks, dugong and cetaceans**	**Benthic habitat assessment**	**Marine fish and elasmobranch assemblages assessment**	**Fisheries impact assessment^**	**Heritage and social impact assessment+**
				at Ah Chong Is						
Rankin Bank* and Glomar Shoals*			NA	NA						
Reefs Shoals and Banks (RSB)*			NA							

Key	
	Comprehensive baseline data or ongoing monitoring collected within the last 5 years. Data align with Joint Industry SMP parameters and methods, cover required species/communities and span the necessary spatial extent.
	Historical data (>5 years old) that remain of value, or some current but not extensive baseline data.
	No baseline data available, or existing data are inadequate in quality, scope, or relevance.
	N/A: Not applicable
^	Locations to be determined in consultation with key stakeholders to reflect current fishing zones/effort
+	Locations to be determined in consultation with key stakeholders

Section 5 OSM Organisational Structure

Vermilion's Incident Command Team (ICT) runs an incident control system analogous to the Australasian Inter-Service Incident Management System (AIIMS) to which the National Plan is also aligned, as described in the activity EPs and/or OPEPs. The ICT will be responsible for coordinating OSM activities, which will be implemented by the Planning Section within the ICT, with support from each ICT Section, in particular the Operations Section.

The Vermilion ICT structure is shown in Figure 5-1. The ICT Incident Commander is ultimately accountable for managing the response operation, which includes this plan. Depending on the scale of the event, individual people may perform multiple roles; similarly, multiple people may share the same role. Figure 5-2 illustrates the structure of the OSM Management Team during the response phase.

In the event that a spill crosses into state waters where the DTMI is the Control Agency, the ICT will be managed through coordinated command and Vermilion will continue monitoring activities in State waters, with oversight from the DTMI.

Figure 5-1: Vermilion ICT structure

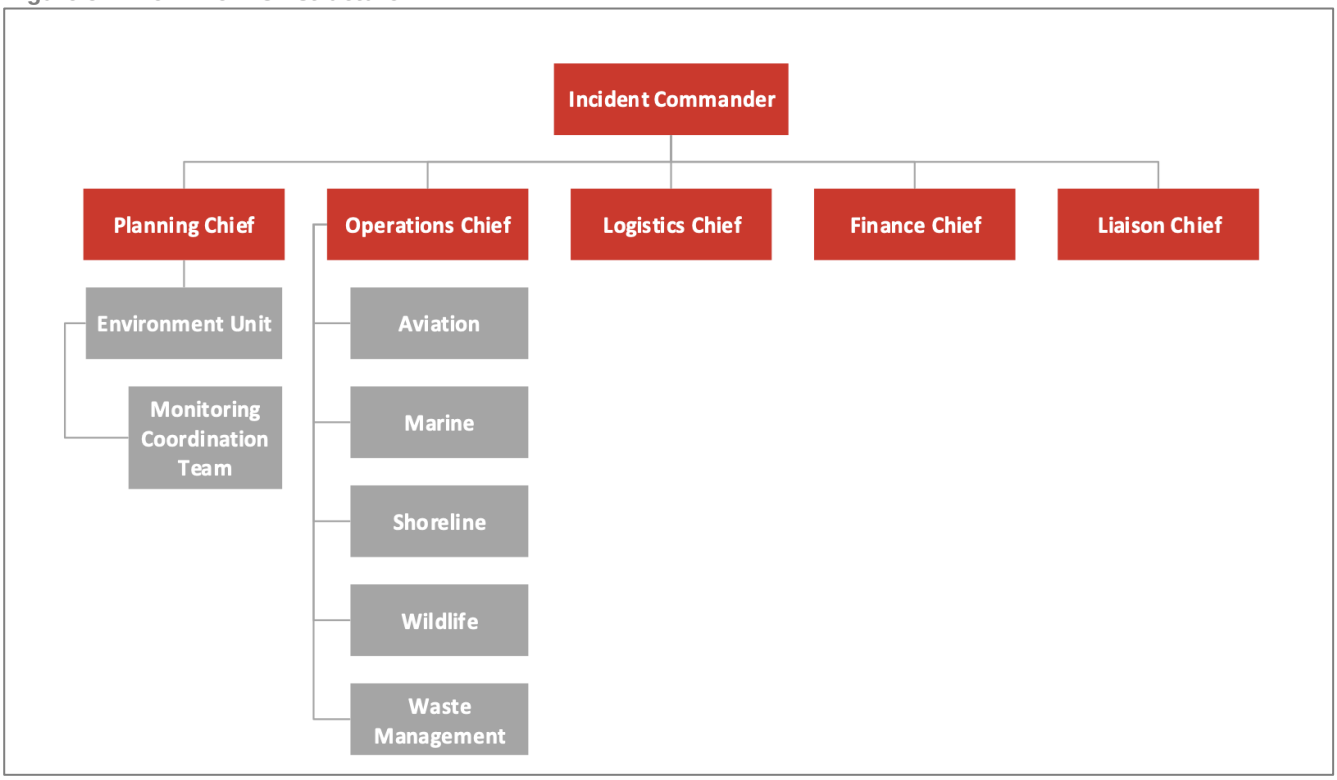
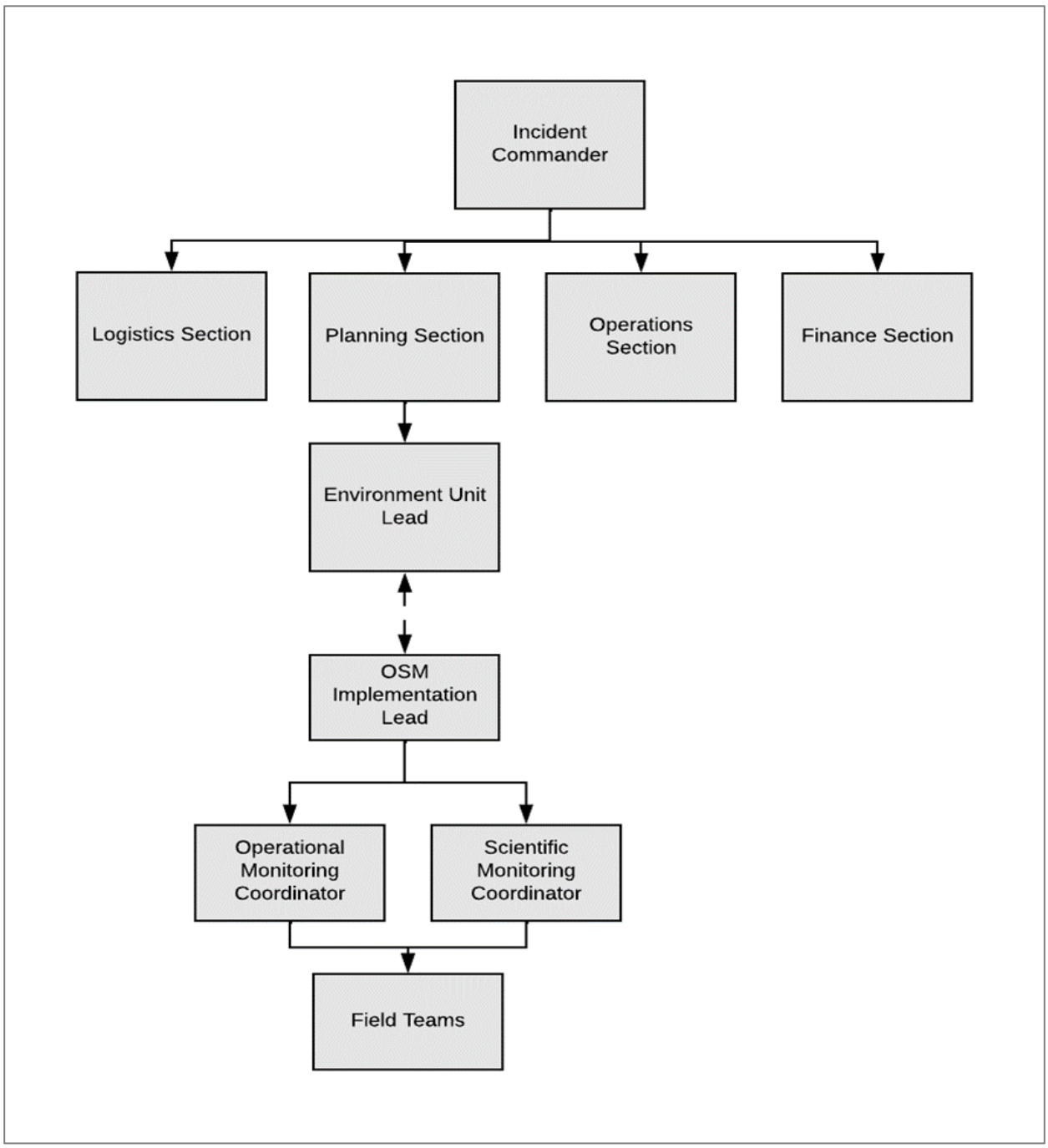


Figure 5-2: Vermilion ICT structure with OSM team



Section 6 OSM Roles and Responsibilities

OSM roles and responsibilities are listed in Section 10.13.2 of the Joint Industry OSM Framework, which will be adopted by Vermilion and its OSM Services Provider. Table 6-1 outlines the OSM roles held by Vermilion and the OSM Service Provider.

During the post-response phase the Environment Unit Lead and/or the OSM Service Provider OSM Implementation Lead will continue to be responsible for the coordination and delivery of monitoring plans.

Table 6-1: Roles and responsibilities for OSM

Role	Held by
Environment Unit Lead	Vermilion (ICT)
OSM Implementation Lead	OSM Service Provider
Operational Monitoring Coordinator and/or Scientific Monitoring Coordinator	OSM Service Provider
OM and/or SM Group Supervisors and Managers	Vermilion / OSM Service Provider
OSM Field Teams	OSM Service Provider

Section 7 Mobilisation and Timing of OMP and SMP Implementation

Table 7-1 provides an indicative implementation schedule for OMPs and SMPs in the OSM Planning Area and adjacent waters. 'Implementation' of an OMP/SMP is defined as being ready, at the point of staging or departure, to mobilise for monitoring. If the monitoring plan is desktop-based, implementation is defined as commencing the work (e.g. computer model inputs).

Through Vermilion's membership in the OSRL OSM Supplementary Agreement, OSM services are available for preparedness, activation, and monitoring (Section 9). This agreement ensures operational monitoring personnel can deploy within 72 hours of notification, and scientific monitoring personnel within 5-7 days, which is reflective of the implementation schedule provided in Table 7-1.

The Vermilion Spill Response Capability Review [VOG-7000-RH-0009] details the response capability statements for all response strategies. The Wandoo Field Oil Pollution Emergency Plan (OPEP) [WAN-2000-RD-0001.02] specifies implementation times for response strategies, including components of OSM capability, including initial aerial surveillance within 48 hours of IMT activation (Table 3-2 of the OPEP) and SCAT within 72 hours (on site) (Table 3-4 of the OPEP), which will assist in the IMT in initial decision making for relevant response operations.

Due to short contact times, there may be instances where post-spill pre-impact monitoring is not feasible. For these receptors, and where baseline data does not exist, or may not be recent and applicable, the application of a BACI design may not be possible. The finalisation of each SMP design will consider this and may need to include alternative designs (e.g. data from an expected BACI design may need to be analysed as a Gradient Approach).

Table 7-1: Indicative OMP and SMP implementation schedule for OSM activities if initiation criteria are met

Proximity to spill source	Monitoring type	0–48 hours from OSM activation	Within 72 hours of OSM activation	~5-7 days from OSM activation	1-2 weeks from OSM activation	Ongoing
Spill site and surrounding waters	OM	Activation of OM Team Leads. Finalise OMPs. Aerial surveillance – which will also document fauna observations. Commence activation and mobilisation of OM personnel.	• OM1: Hydrocarbon Characterisation, where resources are available (e.g. Supply Vessel with onboard sampling equipment). • OM2: Hydrocarbons in Water Assessment • OM3: Hydrocarbons in Sediment Assessment • OM4a: Surface Chemical Dispersant Effectiveness (commencing with Tier 1 SMART Protocol) • OM5: Rapid Marine Fauna Surveillance • Continue to finalise OMPs. • Continue to activate and mobilise OM personnel.	Continued (as per on-going arrangements).	Continued (as per on-going arrangements).	As results from implemented OMPs are available, data are provided to relevant personnel in ICT (e.g. Planning) and used in the Incident Action Planning process for the next operational period. OMP is redesigned or reallocated according to the specifics of the actual spill.
	SM	Commence activation and mobilisation process. Activation of SMP Team Leads.	• Continue to activate and mobilise personnel. • Work on finalising SMPs.	• SM1: Water quality impact assessment • SM2: Sediment quality impact assessment • SM6: Benthic Habitat Assessment	Continued.	Continue SMP monitoring until termination criteria are met.

Proximity to spill source	Monitoring type	0–48 hours from OSM activation	Within 72 hours of OSM activation	~5-7 days from OSM activation	1-2 weeks from OSM activation	Ongoing
				• SM7: Marine fish and elasmobranch assemblages assessment.		
Sensitive receptors (including shorelines, reefs, banks and shoals) predicted to be contacted within 7 days	OM	Activation of OMP Team Leads. Finalise OMPs. Aerial surveillance – which will also document fauna observations. Commence activation and mobilisation of OM personnel.	• OM1: Hydrocarbon Characterisation • OM2: Hydrocarbons in Water Assessment • OM3: Hydrocarbons in Sediment Assessment • OM5: Rapid Marine Fauna Surveillance • OM6: Shoreline clean-up assessment • Continue to finalise OPs. • Continue to activate and mobilise OM personnel.	Continued (as per on-going arrangements).	Continued (as per on-going arrangements).	As results from implemented OMPs are available, data are provided to relevant personnel in ICT (i.e. Planning) and used in the Incident Action Planning process for the next operational period. OMP is redesigned or reallocated according to the specifics of the actual spill until termination criteria are met.
	SM	Activation of SMP Team Leads and finalisation of SMPs.	Continue to activate and mobilise personnel. Work on finalising SMPs.	• SM1: Water Quality Impact Assessment • SM2: Sediment Quality Impact Assessment • SM6: Benthic Habitat Assessment • SM3: Intertidal and Coastal Habitat Assessment	Continued.	Continue SMP implementation until termination criteria are met.

Proximity to spill source	Monitoring type	0–48 hours from OSM activation	Within 72 hours of OSM activation	~5-7 days from OSM activation	1-2 weeks from OSM activation	Ongoing
				• SM4: Seabirds and Shorebirds • SM5: Marine Mega-fauna Assessment-Reptiles • SM5: Marine Mega-fauna Assessment-Cetaceans, Whale Sharks, Dugong • SM7: Marine Fish and Elasmobranch Assemblages assessment • SM8: Commercial and recreational fisheries impact assessment • SM9: Heritage Assessment • SM10: Social Impact Assessment.		
Sensitive receptors (including shorelines, reefs, banks and shoals) predicted to be contacted week 1-2	OM	-	-	• Additional Activation of OM Team Leads. • Commence activation and mobilisation of additional OM personnel.	• Continue to finalise OMPs. • Continue to activate and mobilise OM personnel. • OMP: Hydrocarbon properties and weathering behaviour at sea. • OM2: Hydrocarbons in Water Assessment	As results from implemented OMPs are available, data are provided to relevant personnel in ICT (i.e. Planning) and used in the Incident Action Planning process for the next operational period. OMP is

Proximity to spill source	Monitoring type	0–48 hours from OSM activation	Within 72 hours of OSM activation	~5-7 days from OSM activation	1-2 weeks from OSM activation	Ongoing
					• OM3: Hydrocarbons in Sediment Assessment • OM5: Rapid Marine Fauna Surveillance • OM6: Shoreline clean-up assessment.	redesigned or reallocated according to the specifics of the actual spill until termination criteria are met.
	SM	-	-	• Additional Activation of SM Team Leads. • Commence activation and mobilisation of additional SM personnel.	• SM1: Water quality impact assessment • SM2: Sediment quality impact assessment • SM5: Marine Mega-fauna assessment - reptiles • SM7: Marine fish and elasmobranch assemblages assessment • SM3: Intertidal and coastal habitat assessment • SM4: Seabirds and shorebirds • SM6: Benthic habitat assessment • SM8: Commercial and recreational fisheries impact assessment • SM9: Heritage Assessment	Continue SMP monitoring until termination criteria are met.

Proximity to spill source	Monitoring type	0–48 hours from OSM activation	Within 72 hours of OSM activation	~5-7 days from OSM activation	1-2 weeks from OSM activation	Ongoing
					• SM10: Social Impact Assessment.	

Section 8 Resourcing Requirements

To guide resourcing requirements, the spill scenarios most likely to require the greatest initial and on-going capability were selected from those informing the OSM Planning Area. Selection was based on stochastic modelling results, focussing on the scenarios with the greatest predicted number of receptors contacted at the low thresholds (Section 2.1) within 7 days; followed by the greatest number of receptors contacted within 7-14 days; and at the highest contact probabilities. If a receptor is only contacted by low concentrations of entrained hydrocarbons and not by any other hydrocarbon phase, it will be considered a lower priority during the initial monitoring response as outlined in Section 2.2.

Other factors influencing the selection of the scenario with the highest resource requirements were location of the spill, proximity to receptors, and hydrocarbon properties. The 300 m^3 release of Wandoo Crude from the export system over 1 hour and the 2,200 m^3 MDO release from Wandoo B Shaft 2 were determined to be Vermilion's worst-case spill scenarios requiring the greatest OSM resources (Section 8.2).

8.1 Monitoring Units

Using stochastic modelling results, Vermilion has grouped its monitoring priorities into monitoring 'units' (Table 8-1). These units incorporate all of the possible receptors that may be contacted by the scenarios shown in Table 2-1. These unit groupings are based on consultation with experienced monitoring personnel and planners, who often group these receptors together for time-bound monitoring projects. The grouping of units is based on factors such as access and distance to ports, SIMOPS of multiple vessels and teams working in a close area, travel time between individual locations/receptors and time taken to collect samples for each SMP.

The monitoring units presented in Table 8-1 also include KEFs, BIAs and transient species. Additional information on the seasonality of the receptors can be found in Appendix C and in Section 3 of the relevant EP. Each monitoring unit will require 1-2 teams during the initial response (1-2 weeks). The number of teams allocated to each unit will depend on the extent of the spill, the outcome of the monitoring prioritisation finalised at the time of the spill (Section 13), the Operational Net Environmental Benefit Analysis and SIMOPs.

It should be noted that not all monitoring units will be contacted by a single spill and that the list below has been generated from stochastic modelling results from all receptors identified in Table 2-1.

Table 8-1: Monitoring units relevant to stochastic modelling results

Monitoring Unit	Receptors within Monitoring Unit
Barrow	Barrow Island (including Boodie and Middle Islands) Barrow Islands MMA and Barrow Island MP (State)* Lowendal Islands Lowendal Islands NR Poivre Reef* Seabird and shorebird BIAs Marine turtle BIAs Humpback whale (migration) BIA Pygmy blue whale (distribution) BIA Whale shark (foraging) BIA
Southern Pilbara	Southern Pilbara – Islands and Shoreline

Monitoring Unit	Receptors within Monitoring Unit
	(including Serrurier Island, Bessieres Island, Round Island) Muiron Islands Muiron Islands MP* Brewis Reef* Fairway Reef* Outtrim Patches* Rosily Shoals* Marine turtle BIAs Pygmy blue whale (distribution) BIA Humpback whale (migration) BIA Seabird and shorebird BIAs Dugong (breeding) BIA
Montebello	Montebello Islands Montebello AMP* Montebello Islands MP* Tryal Rocks* Montebello Shoals* Seabird and shorebird BIAs Marine turtle BIAs Humpback whale (migration) BIA Pygmy blue whale (distribution) BIA
Offshore Environs	Rankin Bank* Glomar Shoals* Ancient Coastline at 125 m depth contour KEF* Continental Slope Demersal Fish Communities KEF* Humpback whale (migration) BIA Pygmy blue whale (distribution) BIA Whale shark (foraging) BIA Marine turtle BIAs Seabird and shorebird BIAs
Control sites	Control sites

8.2 Worst-case OSM Resourcing Requirements

OSM resourcing requirements were determined using stochastic modelling. Deterministic modelling was not undertaken, as the existing response capability arrangements (refer Section 9 and Section 10) provide sufficient capacity to meet or exceed the resourcing requirements for all receptors forecast to be contacted by floating, shoreline and/or dissolved hydrocarbons (at >5% probability) by stochastic modelling within the initial two weeks of the worst-case OSM spill scenarios. It should be noted since stochastic results have been used, not all Units will be contacted by a single spill, therefore the resource estimates provided are conservative.

Based on the stochastic modelling results for Scenario 1 (2,200 m^3 MDO spill at Wandoo B shaft 2) (Table 8-2), it is anticipated that teams would be required for up to 5 monitoring units (Montebello Unit, Southern Pilbara Unit and Offshore Environs Unit) with a Unit also dedicated to Control Sites and in some cases, the spill site within the first 14 days of a spill (Table 8-6 and Table 8-7).

Similarly, the stochastic modelling results for scenario 2 (300 m³ Wandoo Crude spill from the Export System) (Table 8-3) indicate that teams would be required for 5 monitoring units (Montebello Unit, Southern Pilbara Unit and Barrow Unit) with a Unit also dedicated to Control Sites and in some cases, the spill site within the first 14 days of a spill (Table 8-6 and Table 8-7).

Scenario 3 (300 m^3 MDO spill from the vessel collision) stochastic modelling results (Table 8-4) predict that teams would be required for one monitoring unit (Montebello Unit) with a Unit also dedicated to Control Sites and in some cases, the spill site within the first 14 days of a spill (Table 8-6 and Table 8-7).

The resources required to assist the ICT in the coordination and management of OSM are outlined in Table 8-5. Whilst the resources required to commence operational and scientific monitoring components during weeks 1–2 are presented in Table 8-6 and Table 8-7 respectively.

Table 8-6 and Table 8-7 are based on the requirement for baseline review provided in Section 2.2, the implementation schedule outlined in Table 7-1, and the stochastic modelling results (Table 8-2, Table 8-3 and Table 8-4).

If additional resources are required to be scaled in to support the monitoring effort, this will be identified as soon as practicable following the spill and mobilised via the OSM Services Provider contract, which includes provision of scale-up resources.

8.3 Co-mobilisation of Monitoring Teams

Where monitoring programs share compatible objectives, spatial footprints, sampling methods or logistical dependencies, co-mobilisation of OMP and/or SMP teams may be undertaken to maximise efficiency and minimise vessel movements, provided that safety, data integrity and analytical objectives are not compromised. Table 8-6 and Table 8-7 outline when co-mobilisation of OMP and/or SMP teams may be undertaken. Co-mobilisation is particularly applicable where monitoring programs:

- target the same or adjacent environmental compartments (e.g. water column and sediment);
- use comparable sampling and analytical techniques (e.g. grab or water sampling, fluorometry, or visual transects);
- operate within the same geographic area or under the same environmental conditions (e.g. similar tidal or meteorological windows); and
- are required within a comparable timeframe following the spill (e.g. within 0–14 days post-activation).

Compatibility of OMPs and SMPs arises because many operational and scientific monitoring elements are designed to be complementary rather than sequential. For example, data collected under OM1 - OM3 (hydrocarbon characterisation, water and sediment assessments) provide the initial exposure information required to inform SMPs such as SM1 and SM2 (water and sediment impact assessments). These programs use consistent sample media, laboratory protocols and QA/QC chains, enabling co-deployment without compromising scientific rigour. Similarly, concurrent vessel-based aerial or visual surveys for OM5 (Rapid Marine Fauna Surveillance) can support the early stages of SM4 and SM5 (Seabird, Shorebird and Marine Megafauna Assessments) through shared platforms and observation windows.

This approach reduces duplication of mobilisation logistics, minimises transit times between sites and sample transport while maintaining representative spatial and temporal coverage. It also supports ALARP principles by limiting the number of concurrent field assets, thereby reducing SIMOPs, vessel congestion, and overall operational risk. Where subsequent SMP phases require extended sampling or increased replication, these will be implemented independently once initial monitoring is underway.

Co-mobilisation decisions will be confirmed post-spill through the Incident Action Planning process, in consultation with the OSM Services Provider, monitoring specialists and relevant stakeholders, taking into account safety, receptor access, timing and data-quality considerations.

Table 8-2: Scenario 1 - stochastic modelling results at >5% probability – 2,200 m³ spill of MDO over 12 hours (RPS, 2025)

Receptor	Total probability (%) shoreline oil accumulation ≥10 g/m²	Minimum arrival time shoreline oil accumulation ≥10 g/m² (days:hours)	Total contact probability (%) floating oil ≥1 g/m²	Minimum arrival time floating oil ≥1 g/m² (days:hours)	Probability (%) of dissolved hydrocarbon exposure at ≥ 10 ppb	Minimum arrival time dissolved exposure at ≥ 10 ppb (days:hours)	Probability (%) entrained oil at ≥ 10 ppb	Minimum arrival time entrained ≥10 ppb (days:hours)
Montebello AMP*	NA	NA	NC	NC	8.991	1 days, 0 hours	51.948	20 hours
Montebello Islands MP	NC	NC	NC	NC	NC	NC	36.63	2 days, 12 hours
Gascoyne AMP*	NA	NA	NC	NC	NC	NC	23.643	9 days, 21 hours
Muiron Islands MMA	NC	NC	NC	NC	NC	NC	25.308	8 days, 10 hours
Ningaloo MP*	NA	NA	NC	NC	NC	NC	25.308	9 days, 7 hours
Barrow Island MP	NC	NC	NC	NC	NC	NC	22.311	3 days, 19 hours
Lowendal Islands NR	NC	NC	NC	NC	NC	NC	8.658	5 days, 12 hours
WA10 (122) - Vlamingh Head - North West Cape	NC	NC	NC	NC	NC	NC	16.317	9 days, 19 hours
WA10 (123) - Low Point - Vlamingh Head (A)	NC	NC	NC	NC	NC	NC	19.98	9 days, 23 hours
WA10 (124) - Low Point - Vlamingh Head (B)	0.3	15 days, 22 hours	NC	NC	NC	NC	15.651	12 days, 9 hours
WA11.West (318) - Barrow Island and Montebello Islands (A) (Montebello Islands)	8.991	3 days, 22 hours	NC	NC	2.3	3 days, 23 hours	26.64	3 days, 3 hours

Receptor	Total probability (%) shoreline oil accumulation ≥10 g/m²	Minimum arrival time shoreline oil accumulation ≥10 g/m² (days:hours)	Total contact probability (%) floating oil ≥1 g/m²	Minimum arrival time floating oil ≥1 g/m² (days:hours)	Probability (%) of dissolved hydrocarbon exposure at ≥ 10 ppb	Minimum arrival time dissolved exposure at ≥ 10 ppb (days:hours)	Probability (%) entrained oil at ≥ 10 ppb	Minimum arrival time entrained ≥10 ppb (days:hours)
WA11.West (319) - Barrow Island and Montebello Islands (B) (Montebello Islands)	1.65	5 days, 23 hours	NC	NC	NC	NC	11.322	3 days, 19 hours
WA11.West (320) - Barrow Island and Montebello Islands (C) (Barrow Island)	NC	NC	NC	NC	NC	NC	7.992	5 days, 1 hours
WA11.West (321) - Barrow Island and Montebello Islands (D) (Barrow Island)	0.3	8 days, 18 hours	NC	NC	NC	NC	18.981	4 days, 22 hours
WA11.West (324) - Yardie Landing - Weld Island coast S (B) (Airlie Island)	NC	NC	NC	NC	NC	NC	23.31	5 days, 18 hours
WA11.West (325) - Coolgra Point W - Yardie Landing (C) (Thevenard Island)	NC	NC	NC	NC	NC	NC	17.316	6 days, 17 hours
WA11.West (326) - Baresand Point - Entrance Point E (Serrurier Island, Bessieres Island, Round Island)	1.3	10 days, 13 hours	NC	NC	NC	NC	26.307	6 days, 6 hours
WA11.West (327) - Hope Point - Locker Point (E) (Observation Island)	NC	NC	NC	NC	NC	NC	12.321	8 days, 20 hours
WA11.West (329) - Locker Point - Baresand Point (Muiron Islands)	5.661	10 days, 8 hours	NC	NC	NC	NC	26.307	8 days, 4 hours

Receptor	Total probability (%) shoreline oil accumulation ≥10 g/m²	Minimum arrival time shoreline oil accumulation ≥10 g/m² (days:hours)	Total contact probability (%) floating oil ≥1 g/m²	Minimum arrival time floating oil ≥1 g/m² (days:hours)	Probability (%) of dissolved hydrocarbon exposure at ≥ 10 ppb	Minimum arrival time dissolved exposure at ≥ 10 ppb (days:hours)	Probability (%) entrained oil at ≥ 10 ppb	Minimum arrival time entrained ≥10 ppb (days:hours)
Glomar Shoal*	NA	NA	NC	NC	NC	NC	15.984	4 days, 8 hours
Montebello Shoals*	NA	NA	NC	NC	NC	NC	23.31	3 days, 9 hours
Ningaloo Reef*	NA	NA	NC	NC	NC	NC	9.99	11 days, 8 hours
North West Reef*	NA	NA	NC	NC	NC	NC	8.325	10 days, 7 hours
Otway Reef*	NA	NA	NC	NC	NC	NC	6.66	8 days, 22 hours
Outtrim Patches*	NA	NA	NC	NC	NC	NC	22.311	8 days, 16 hours
Penguin Bank*	NA	NA	NC	NC	NC	NC	20.646	5 days, 20 hours
Poivre Reef*	NA	NA	NC	NC	NC	NC	10.656	5 days, 18 hours
Rankin Bank*	NA	NA	NC	NC	NC	NC	13.653	11 days, 3 hours
Ripple Shoals*	NA	NA	NC	NC	NC	NC	2.664	12 days, 2 hours
Rosily Shoals*	NA	NA	NC	NC	NC	NC	17.316	6 days, 11 hours
Tryal Rocks*	NA	NA	NC	NC	NC	NC	43.956	2 days, 3 hours

Receptor	Total probability (%) shoreline oil accumulation ≥10 g/m²	Minimum arrival time shoreline oil accumulation ≥10 g/m² (days:hours)	Total contact probability (%) floating oil ≥1 g/m²	Minimum arrival time floating oil ≥1 g/m² (days:hours)	Probability (%) of dissolved hydrocarbon exposure at ≥ 10 ppb	Minimum arrival time dissolved exposure at ≥ 10 ppb (days:hours)	Probability (%) entrained oil at ≥ 10 ppb	Minimum arrival time entrained ≥10 ppb (days:hours)
Dailey Shoal*	NA	NA	NC	NC	NC	NC	16.65	8 days, 18 hours
Hood Reef*	NA	NA	NC	NC	NC	NC	8.325	8 days, 20 hours

Table 8-3: Scenario 2 - stochastic modelling results at >5% probability – 300 m³ spill of Wandoo Crude over 1 hour (RPS, 2025)

Receptor	Total probability (%) shoreline oil accumulation ≥10 g/m²	Minimum arrival time shoreline oil accumulation ≥10 g/m² (days:hours)	Total contact probability (%) floating oil ≥1 g/m²	Minimum arrival time floating oil ≥1 g/m² (days:hours)	Probability (%) of dissolved hydrocarbon exposure at ≥ 10 ppb	Minimum arrival time dissolved exposure at ≥ 10 ppb (days:hours)	Probability (%) entrained oil at ≥ 10 ppb	Minimum arrival time entrained ≥ 10 ppb (days:hours)
Gascoyne AMP*	NA	NA	0.3	8 days, 5 hours	NC	NC	6.993	7 days, 22 hours
Montebello AMP*	NA	NA	2.3	1 day, 13 hours	NC	NC	43.623	18 hours
Muiron Islands MMA	NC	NC	NC	NC	NC	NC	6.993	6 days, 17 hours
Barrow Island MP	NC	NC	NC	NC	NC	NC	8.325	3 days, 21 hours
WA11.West (318) - Barrow Island and Montebello Islands (A) (Montebello Islands)	21.645	2 days, 20 hours	NC	NC	NC	NC	11.988	3 days, 14 hours
WA11.West (319) - Barrow Island and	8.3	4 days, 16 hours	NC	NC	NC	NC	2.6	4 days, 2 hours

Receptor	Total probability (%) shoreline oil accumulation ≥10 g/m²	Minimum arrival time shoreline oil accumulation ≥10 g/m² (days:hours)	Total contact probability (%) floating oil ≥1 g/m²	Minimum arrival time floating oil ≥1 g/m² (days:hours)	Probability (%) of dissolved hydrocarbon exposure at ≥ 10 ppb	Minimum arrival time dissolved exposure at ≥ 10 ppb (days:hours)	Probability (%) entrained oil at ≥ 10 ppb	Minimum arrival time entrained ≥ 10 ppb (days:hours)
Montebello Islands (B) (Montebello Islands)								
WA11.West (321) - Barrow Island and Montebello Islands (D) (Barrow Island)	7.326	8 days, 9 hours	NC	NC	NC	NC	7.992	4 days, 18 hours
WA11.West (324) - Yardie Landing - Weld Island coast S (B) (Airlie Island)	3.6	11 days, 9 hours	NC	NC	NC	NC	7.659	5 days, 17 hours
WA11.West (326) - Baresand Point - Entrance Point E (Serrurier Island, Bessieres Island, Round Island)	21.312	6 days, 5 hours	NC	NC	NC	NC	7.992	6 days, 22 hours
WA11.West (328) - Hope Point - Locker Point (F) (Fly Island)	0.9	17 days, 16 hours	NC	NC	NC	NC	NC	NC
WA11.West (329) - Locker Point - Baresand Point (Muiron Islands)	15.318	9 days, 2 hours	NC	NC	NC	NC	7.992	6 days, 13 hours
Montebello Islands MP	NC	NC	NC	NC	NC	NC	20.979	2 days, 4 hours
Ningaloo MP*	NA	NA	0.3	7 days, 14 hours	NC	NC	7.326	7 days, 0 hours
Montebello Shoals*	NA	NA	NC	NC	NC	NC	9.324	3 days, 15 hours

Receptor	Total probability (%) shoreline oil accumulation ≥10 g/m²	Minimum arrival time shoreline oil accumulation ≥10 g/m² (days:hours)	Total contact probability (%) floating oil ≥1 g/m²	Minimum arrival time floating oil ≥1 g/m² (days:hours)	Probability (%) of dissolved hydrocarbon exposure at ≥ 10 ppb	Minimum arrival time dissolved exposure at ≥ 10 ppb (days:hours)	Probability (%) entrained oil at ≥ 10 ppb	Minimum arrival time entrained ≥ 10 ppb (days:hours)
Outtrim Patches*	NA	NA	NC	NC	NC	NC	5.328	9 days, 13 hours
Penguin Bank*	NA	NA	NC	NC	NC	NC	5.994	6 days, 1 hours
Tryal Rocks*	NA	NA	0.3	2 days, 5 hours	NC	NC	26.307	1 days, 19 hours

Table 8-4: Scenario 3 - stochastic modelling results at >5% probability – 300 m³ spill of MDO over 6 hours (RPS, 2024)

Receptor	Total probability (%) shoreline oil accumulation ≥10 g/m²	Minimum arrival time shoreline oil accumulation ≥10 g/m² (days:hours)	Total contact probability (%) floating oil ≥1 g/m²	Minimum arrival time floating oil ≥1 g/m² (days:hours)	Probability (%) of dissolved hydrocarbon exposure at ≥ 10 ppb	Minimum arrival time dissolved exposure at ≥ 10 ppb (days:hours)	Probability (%) entrained oil at ≥ 10 ppb	Minimum arrival time entrained ≥ 10 ppb (days:hours)
WA11.West (318) - Barrow Island and Montebello Islands (A) (Montebello Islands)	15	3 days, 19 hours	NC	NC	NC	NC	NC	NC
Montebello AMP*	NA	NA	NC	NC	7	1 day, 3 hours	54	22 hours
Gascoyne AMP*	NA	NA	NC	NC	NC	NC	13	9 days, 12 hours
Montebello MP	NA	NA	NC	NC	1	3 days, 7 hours	37	2 days, 9 hours
Ningaloo MP*	NA	NA	NC	NC	NC	NC	13	9 days, 10 hours
Barrow Island MP	NC	NC	NC	NC	NC	NC	13	3 days, 14 hours

Receptor	Total probability (%) shoreline oil accumulation ≥10 g/m²	Minimum arrival time shoreline oil accumulation ≥10 g/m² (days:hours)	Total contact probability (%) floating oil ≥1 g/m²	Minimum arrival time floating oil ≥1 g/m² (days:hours)	Probability (%) of dissolved hydrocarbon exposure at ≥ 10 ppb	Minimum arrival time dissolved exposure at ≥ 10 ppb (days:hours)	Probability (%) entrained oil at ≥ 10 ppb	Minimum arrival time entrained ≥ 10 ppb (days:hours)
Lowendal Islands NR	NC	NC	NC	NC	NC	NC	7	6 days, 17 hours
Dailey Shoal*	NA	NA	NC	NC	NC	NC	5	8 days, 18 hours
Montebello Shoals*	NA	NA	NC	NC	NC	NC	22	3 days, 9 hours
Outtrim Patches*	NA	NA	NC	NC	NC	NC	10	8 days, 17 hours
Penguin Bank*	NA	NA	NC	NC	NC	NC	6	6 days, 12 hours
Poivre Reef*	NA	NA	NC	NC	NC	NC	7	5 days, 19 hours
Tryal Rocks*	NA	NA	NC	NC	NC	NC	23	2 days, 3 hours

Table 8-5: Resources required for key OSM coordination roles

Role	Resources required	Arrangement
OSM Implementation Lead (OSM Monitoring Provider/s)	1 x OSM Implementation Lead	Oil Spill Response Limited (OSRL) OSM Supplementary Service Agreement
Operational Monitoring Coordinator and Scientific Monitoring Coordinator (OSM Service Provider/s)	1 x Operational Monitoring Coordinator 1 x Scientific Monitoring Coordinator	
OSM Field Operations Manager (OSM Service Provider/s)	1 x OSM Field Operations Manager	

Table 8-6: Resources required for implementing operational monitoring plans

OMP	Week 1 (total)#	Week 2 (total)#	Arrangement
OM1: Hydrocarbon characterisation*^	**Scenario 1 (2,200 m^3 MDO)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Offshore Environs Unit **Total 3 teams**	**Scenario 1 (2,200 m^3 MDO)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Southern Pilbara Unit 1 team Offshore Environs Unit **Total 4 teams**	OSRL OSM Supplementary Service Agreement Marine contractors Laboratory arrangement
	Scenario 2 (300 m^3 Wandoo Crude) 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Southern Pilbara Unit **Total 3 teams**	**Scenario 2 (300 m^3 Wandoo Crude)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Barrow Unit 1 team Southern Pilbara Unit **Total 4 teams**	
	Scenario 3 (300 m^3 MDO) 1 team (spill site and surrounds) 1 team Montebello Unit **Total 2 teams**	**Scenario 3 (300 m^3 MDO)** 1 team (spill site and surrounds) 1 team Montebello Unit **Total 2 teams**	
OMP2: Water quality assessment*	Refer to OMP: Hydrocarbon properties and weathering behaviour at sea resourcing (all sites)		OSRL OSM Supplementary Service Agreement Marine contractors

OMP	Week 1 (total)#	Week 2 (total)#	Arrangement
OMP3: Sediment quality assessment*	Refer to OMP: Hydrocarbon properties and weathering behaviour at sea resourcing (all sites)		OSRL OSM Supplementary Service Agreement Marine contractors
OM4a: Surface dispersant effectiveness monitoring	**Scenario 2 (300 m^3 Wandoo Crude)** 1 team for visual observations, which may be performed by trained aerial observers used during monitor and evaluate if trained in observation and verification of chemical dispersant effectiveness For water quality observations, refer to OMP: Water quality assessment		OSRL OSM Supplementary Service Agreement AMOSC MSA Marine contractors
OM5: Rapid Marine Fauna Surveillance^	**All scenarios** 1 team to conduct initial aerial surveys for all sites (2 observers per aircraft) Note: Fauna related SMPs are likely to be initiated simultaneously or following aerial assessment with vessel and ground based fauna surveys carried out as part of the relevant fauna SMP.		OSRL OSM Supplementary Service Agreement Marine contractors Aviation contractors
OMP6: Shoreline clean-up assessment	Detail on resources required for SCAT are presented in Table 3-4 of the OPEP and Vermilion Oil and Gas Australia Oil Spill Response Capability Review [VOG-7000-RH-0009].		AMOSC Master Services Agreement (MSA) and/or OSRL OSM Supplementary Service Agreement Marine contractors State/Territory Response Teams and AMSA National Response Team

** Initial co-mobilisation between OMP: Hydrocarbon properties and weathering behaviour at sea, OMP: Surface chemical dispersant effectiveness and fate, OMP: Water quality assessment and OMP: Sediment quality assessment*

 # Specific monitoring units are mentioned for planning and guidance purposes based on a worst case planning approach. In the event of an actual spill, other locations and/or receptors may be contacted and the ability to access these locations (i.e. with consideration of safety and simultaneous operations (SIMOPS)) would be assessed. This would be identified and managed as part of implementation as per the guidance in Section 13.

^ These resources may not be required if relevant scientific monitoring components' initiation criteria have been triggered

Table 8-7: Resources required for implementing scientific monitoring plans

SMP	Week 1 (total)[#]	Week 2 (total)[#+]	Arrangement
SM1: Water quality impact assessment*^	**Scenario 1 (2,200 m³ MDO)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Offshore Environs Unit 1 team Control Sites **Total 4 teams**	**Scenario 1 (2,200 m³ MDO)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Southern Pilbara Unit 1 team Offshore Environs Unit 1 team Control Sites **Total 5 teams**	OSRL OSM Supplementary Service Agreement Marine contractors Laboratory arrangement
	Scenario 2 (300 m³ Wandoo Crude) 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Southern Pilbara Unit 1 team Control Sites **Total 4 teams**	**Scenario 2 (300 m³ Wandoo Crude)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Barrow Unit 1 team Southern Pilbara Unit 1 team Control Sites **Total 5 teams**	
	Scenario 3 (300 m³ MDO) 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Control Sites **Total 3 teams**	**Scenario 3 (300 m³ MDO)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Control Sites **Total 3 teams**	
SM2: Sediment quality impact assessment*	Refer to SMP: Water quality impact assessment (all sites)		OSRL OSM Supplementary Service Agreement Marine contractors Laboratory arrangement
SM:3 Intertidal and coastal habitat assessment	**Scenario 1 (2,200 m³ MDO)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Control Sites **Total 3 teams**	**Scenario 1 (2,200 m³ MDO)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Southern Pilbara Unit 1 team Control Sites	OSRL OSM Supplementary Service Agreement Marine contractors Laboratory arrangement

SMP	Week 1 (total)[#]	Week 2 (total)[#+]	Arrangement
		Total 4 teams	
	Scenario 2 (300 m^3 Wandoo Crude) 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Southern Pilbara Unit 1 team Control Sites **Total 4 teams**	**Scenario 2 (300 m^3 Wandoo Crude)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Barrow Unit 1 team Southern Pilbara Unit 1 team Control Sites **Total 5 teams**	
	Scenario 3 (300 m^3 MDO) 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Control Sites **Total 3 teams**	**Scenario 3 (300 m^3 MDO)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Control Sites **Total 3 teams**	
SM4: Seabirds and shorebirds^	**Scenario 1 (2,200 m^3 MDO)** 1 team to conduct initial aerial surveys for Montebello Unit **Total 1 aerial team** 1 team to conduct vessel-based surveys for Montebello Unit 1 team control site(s) (surveys would include all fauna [birds, reptiles, cetaceans, dugong and whale shark]) **Total 2 vessel-based teams** 1 team to conduct ground-based surveys for Montebello Unit 1 team control site(s)	**Scenario 1 (2,200 m^3 MDO)** 1 team to conduct initial aerial surveys for Montebello Unit and Southern Pilbara Unit **Total 1 aerial team** 1 team to conduct vessel-based surveys for Montebello Unit 1 team Southern Pilbara Unit 1 team control site(s) (surveys would include all fauna [birds, reptiles, cetaceans, dugong and whale shark]) **Total 3 vessel-based teams** 1 team to conduct ground-based surveys for Montebello Unit	OSRL OSM Supplementary Service Agreement Marine contractors Aviation contractors Laboratory arrangement

SMP	Week 1 (total)[#]	Week 2 (total)[#+]	Arrangement
	(1 experienced ornithologists per team) **Total 2 ground-based teams**	1 team Southern Pilbara Unit 1 team control site(s) (1 experienced ornithologists per team) **Total 3 ground-based teams**	
	Scenario 2 (300 m^3 Wandoo Crude) 1 team to conduct initial aerial surveys for Montebello Unit and Southern Pilbara Units **Total 1 aerial team** 1 team to conduct vessel-based surveys for Montebello Unit 1 team control site(s) (surveys would include all fauna [birds, reptiles, cetaceans, dugong and whale shark]) **Total 2 vessel-based teams** 1 team to conduct ground-based surveys for Montebello Unit 1 team control site(s) (1 experienced ornithologists per team) **Total 2 ground-based teams**	**Scenario 2 (300 m^3 Wandoo Crude)** 1 team to conduct initial aerial surveys for Montebello Unit and Southern Pilbara Unit 1 team to conduct aerial surveys for Southern Pilbara and Barrow Units **Total 2 aerial teams** 1 team to conduct vessel-based surveys for Montebello Unit 1 team Southern Pilbara 1 team Barrow Unit 1 team control site(s) (surveys would include all fauna [birds, reptiles, cetaceans, dugong and whale shark]) **Total 4 vessel-based teams** 1 team to conduct ground-based surveys for Montebello Unit 1 team Southern Pilbara Unit 1 team Barrow Unit 1 team control site(s) (1 experienced ornithologists per team) **Total 4 ground-based teams**	

SMP	Week 1 (total)[#]	Week 2 (total)[#+]	Arrangement
	Scenario 3 (300 m^3 MDO) 1 team to conduct initial aerial surveys for Montebello Unit **Total 1 aerial team** 1 team to conduct vessel-based surveys for Montebello Unit 1 team control site(s) (surveys would include all fauna [birds, reptiles, cetaceans, dugong and whale shark]) **Total 2 vessel-based teams** 1 team to conduct ground-based surveys for Montebello Unit 1 team control site(s) (1 experienced ornithologists per team) **Total 2 ground-based teams**	**Scenario 3 (300 m^3 MDO)** 1 team to conduct initial aerial surveys for Montebello Unit **Total 1 aerial team** 1 team to conduct vessel-based surveys for Montebello Unit 1 team control site(s) (surveys would include all fauna [birds, reptiles, cetaceans, dugong and whale shark]) **Total 2 vessel-based teams** 1 team to conduct ground-based surveys for Montebello Unit 1 team control site(s) (1 experienced ornithologists per team) **Total 2 ground-based teams**	
SM5: Marine megafauna assessment (whale shark, dugong and cetaceans)^	Aerial surveys refer to SMP: Seabirds and shorebirds Vessel surveys refer to SMP: Seabird and shorebirds		OSRL OSM Supplementary Service Agreement Marine contractors Aviation contractors Laboratory arrangement
SM5: Marine mega-fauna assessment (reptiles)^	Aerial surveys refer to SMP: Seabirds and shorebirds Vessel surveys refer to SMP: Seabird and shorebirds Ground based survey refer to SMP: Seabird and shorebirds (including 1 member experienced with ground turtle surveys)		OSRL OSM Supplementary Service Agreement Marine contractors Aviation contractors Laboratory arrangement

SMP	Week 1 (total)[#]	Week 2 (total)[#+]	Arrangement
SM6: Benthic habitat assessment	**Scenario 1 (2,200 m³ MDO)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Offshore Environs Unit 1 team Control Sites **Total 4 teams**	**Scenario 1 (2,200 m³ MDO)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Southern Pilbara Unit 1 team Offshore Environs Unit 1 team Control Sites **Total 5 teams**	OSRL OSM Supplementary Service Agreement Marine contractors Laboratory arrangement
	Scenario 2 (300 m³ Wandoo Crude) 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Southern Pilbara Unit 1 team Control Sites **Total 4 teams**	**Scenario 2 (300 m³ Wandoo Crude)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Barrow Unit 1 team Southern Pilbara Unit 1 team Control Sites **Total 5 teams**	
	Scenario 3 (300 m³ MDO) 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Control Sites **Total 3 teams**	**Scenario 3 (300 m³ MDO)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Control Sites **Total 3 teams**	
SM7: Marine fish and elasmobranch assemblages assessment	**Scenario 1 (2,200 m³ MDO)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Offshore Environs Unit 1 team Control Sites **Total 4 teams**	**Scenario 1 (2,200 m³ MDO)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Southern Pilbara Unit 1 team Offshore Environs Unit 1 team Control Sites **Total 5 teams**	OSRL OSM Supplementary Service Agreement Marine contractors Laboratory arrangement
	Scenario 2 (300 m³ Wandoo Crude) 1 team (spill site and surrounds) 1 team Montebello Unit	**Scenario 2 (300 m³ Wandoo Crude)** 1 team (spill site and surrounds) 1 team Montebello Unit	

SMP	Week 1 (total)[#]	Week 2 (total)[#+]	Arrangement
	1 team Southern Pilbara Unit 1 team Control Sites **Total 4 teams**	1 team Barrow Unit 1 team Southern Pilbara Unit 1 team Control Sites **Total 5 teams**	
	Scenario 3 (300 m^3 MDO) 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Control Sites **Total 3 teams**	**Scenario 3 (300 m^3 MDO)** 1 team (spill site and surrounds) 1 team Montebello Unit 1 team Control Sites **Total 3 teams**	
SM8: Fisheries impact assessment	**Any scenario** Total 2 teams to cover all relevant Commonwealth and State fisheries.	**Any scenario** Total 2 teams to cover all relevant Commonwealth and State fisheries.	OSRL OSM Supplementary Service Agreement Marine contractors Laboratory arrangement
SM9: Heritage features assessment	**Any scenario** 1 team	**Any scenario** 1 team	OSRL OSM Supplementary Service Agreement Marine contractors Laboratory arrangement
SM10: Social impact assessment	**Any scenario** 1 team	**Any scenario** 1 team	OSRL OSM Supplementary Service Agreement

** Initial co-mobilisation between SM1: Water quality impact assessment and SM2: Sediment quality impact assessment.*

^ This SMP may replace the relevant OMP if the OMPs termination criteria are triggered.

 # Specific units are mentioned for planning and guidance purposes based on a worst case planning approach. In the event of an actual spill, other locations and/or receptors may be contacted. This would be identified and managed as part of implementation as per the guidance in Section 13.

+ Depending on the circumstances of the spill, additional resources will be scaled in to cater for monitoring needs beyond week 2.

Section 9 Capability Demonstration

Vermilion is a Member of the OSRL OSM Supplementary Service Agreement (SA), which provides shared OSM Annual Services and Response Services to members who have subscribed to this supplementary service. This OSM Supplementary SA includes access to the OSRL (referred to in this document as OSM Service Provider) sub-contracted Monitoring Service Providers within Australia (who will report through the OSM Service Provider) to deliver monitoring capability. The OSM Supplementary SA includes provision of scale-up capability in the event of response activation, allowing for scalability and adaptability of OSM resourcing.

The OSM Service Provider, via the SA is contracted to provide Members with a monthly Capability Register which details personnel requirements for contracted OMPs/SMPs, numbers of available personnel and competencies for Service Provider and sub-contracted personnel. Personnel listed on the monthly update are accessible following a Member's initial activation of OSM Services.

Details of OSM services available through the OSM Supplementary SA are provided in Table 9-1 below.

Table 9-1: OSM service provider preparedness and activation/monitoring services

OSM Services Provided During Preparedness and Activation/Monitoring Phases
Preparedness[1]
24/7 Duty Manager accessed through 24 hour Hotline
Provision of suitably trained operational monitoring personnel
Monthly reports on personnel and equipment availability
Access to OSM Service Provider's subcontracted Monitoring Service Providers
Access to OSM Service Provider's network of laboratories and equipment providers
Activation/Monitoring[2]
Provision of an OSM Services Lead and OSM Implementation Lead to the Vermilion ICT within 12 hours of notification
Provision of an initial monitoring team within 72 hours of notification, ready to deploy from a nominated port(s) or staging location (e.g. Forward Operating Base [FOB])
Assisting Vermilion in the finalisation of monitoring plans
Provision of scientific monitoring personnel within 5-7 days of notification
Access to OSM Service Provider laboratories and equipment

9.1 Personnel Competencies

The OSRL OSM Supplementary SA specifies the training and competency requirements for key OSM personnel consistent with the specified training and competencies stated in Table 11-1 of the Joint Industry OSM Framework. In addition, competencies of SMP Field Teams are consistent with Appendix D of the Joint Industry OSM Framework.

[1] Defined as Annual OSM Services in OSM Supplementary Service Agreement

[2] Defined as Response Services in OSM Supplementary Service Agreement

The OSM Supplementary SA commits to nominated monitoring personnel providing copies of their CVs/Resumes, along with certificates or evidence meeting the competency requirements. This information is stored in the OSRL Operational and Scientific Monitoring Document Management System for capability tracking and assurance purposes. The Monthly Capability Register is updated so that it reflects changes to personnel availability or gaps in competency and training. The role of the OSM Implementation Lead aligns with the responsibilities listed in the Joint Industry OSM Framework.

In addition, and where practicable, Vermilion will engage additional subject matter experts in the initial stages of the monitoring program to assist in activation and mobilisation of monitoring teams and support the OSM Service Provider in the preparation of monitoring designs.

9.2 Equipment

Equipment requirements for each OMP and SMP are listed by each OMPs and SMPs within the OSM Framework (APPEA, 2021). In accordance with the OSRL OSM Supplementary SA, the OSM Services Provider will provide specialised field monitoring equipment to implement individual OMPs and SMPs. Vermilion will remain responsible for support and field logistics, including monitoring platforms (e.g. vessels, vehicles and aircraft), flights, accommodation, and transportation/couriers for samples to be sent back to laboratories.

Availability of key equipment is listed in the OSM Service Provider's Equipment Register, available via the OSM Service Providers MSP Capability Register. A generalised breakdown of Vermilion's equipment and the source is listed in provided in Table 9-2.

Table 9-2: Vermilion OSM equipment

Equipment type	Source
Vermilion acquired equipment	
Desktop equipment (e.g. Oil Spill Response Atlas)	Coordinated through ICT
Logistical equipment (e.g. in-field accommodation, vessels, aircraft)	Refer to list of external support agencies and contracts held by Vermilion as listed in the VOGA Emergency Response Logistics Management Plan [VOG-7000-RH-0008].
Dispersant shake test kits (initial shake jar test only)	2 x test kits in Fremantle; 2 x test kits in Karratha. Available through the National Plan.

9.3 Exercises

The OSM Service Provider, via the OSM Supplementary SA, is contracted to maintain an OSM Services Annual Assurance Program. As part of this program, the OSM Service Provider conducts numerous exercises, which are outlined in Table 9-3. The purpose of this testing is to confirm that response arrangements and planned capability is in place, available when needed, and function as intended.

Following the Notification and Tabletop exercises listed in Table 9-3, the OSM Service Provider will prepare exercise reports and track any action items to completion. The reports will be available to all Members.

In addition, Vermilion will conduct an annual notification test of the OSM Service Provider, outlined in the Vermilion Emergency Response Schedule [VOG-1100-YH-0001].

Table 9-3: Exercise types

Exercise Type	Responsibility	Description	Frequency
Assurance Program Workshop	OSRL, Industry Member Technical Advisory Group (IMTAG) and Monitoring Service Providers	The outputs from the annual OSM Services and Assurance Program Workshop will form the basis of the OSM Annual Services and Assurance Program for the coming Contract Year.	Annually
Notification exercise	Vermilion with OSRL	Test procedures to notify and activate the OSM Services, including subcontracted Monitoring Service Providers.	Annually
Tabletop exercise	IMTAG and OSRL to agree a lead Titleholder for each Calendar Year	A discussion-based exercise that involves no physical deployment of personnel or equipment. The exercise will simulate all actions to validate the enactment of plans, procedures, protocols, roles and tasks during a simulated incident.	Annually
Desktop review	Monitoring Service Providers & OSRL	A desktop review of capability for any OMP and/or SMP not tested during the annual table-top exercise. The review can also be based on the outcomes/findings of the OMPs and/or SMPs that were tested.	Annually

Section 10 Capability Assessment

Table 10-1 provides a comparison of Vermilion's worst-case OSM resource requirements (as outlined in Table 8-6 and Table 8-7) with the OSRL OSM Supplementary Service Agreement capability to implement each OMP and SMP. Where there are synergies between OMPs and SMPs, the same personnel may implement multiple OMPs/SMPs simultaneously, as identified in Table 10-1. For example, personnel assigned to the OM1: Hydrocarbon Characterisation can also carry out the OM2: Hydrocarbon in Water Asessment or OM3: Hydrocarbon in Sediment concurrently. During the capability assessment, available personnel were allocated to one monitoring team only to ensure capability is met despite synergies between OMP and SMP personnel.

This information has been transcribed across to the VOGA Oil Spill Response Capability Review [VOG-7000-RH-0009].

Table 10-1: OSM capability

Component	Maximum No. personnel required (Weeks 1–2) ^	Personnel available via OSM Service Provider#	Personnel available via OSROs	Vermilion	Total personnel available
OSM Personnel embedded in IMT	1 OSM Implementation Lead 1 OM Coordinator 1 SM Coordinator 1 OSM Field Operations Manager	1 OSM Implementation Lead 1 OM Coordinator 1 SM Coordinator 1 OSM Field Operations Manager	-	1 OSM Implementation Lead (initial)	1 OSM Implementation Lead 1 OM Coordinator 1 SM Coordinator 1 OSM Field Operations Manager
OMPs					
OM1: Hydrocarbon characterisation*	4 teams	6 teams	-	Initial sampling kits (Toll Dampier Supply Base) and procedures for untrained personnel to obtain samples	6 teams
OM2: Hydrocarbon in water assessment*	Refer to OM1: Hydrocarbon characterisation				
OM3: Hydrocarbon in sediment assessment*	Refer to OM1: Hydrocarbon characterisation				
OM4a: Surface dispersant effectiveness monitoring	Visual observations: 1 team Water quality assessment – refer to OM2: Hydrocarbon in water assessment*	1 visual observation team Refer to OM2: Hydrocarbon in water assessment*	4 AMOSC Staff 2 AMOSC Core Group trained personnel	-	Visual observations: 1 team (OSM Services Provider) 4 AMOSC Staff 2 AMOSC Core Group trained personnel
OM5: Rapid Marine Fauna Surveillance	1 aerial team	2 teams	N/A	N/A	2 teams
OM6: Shoreline clean-up assessment	6 teams (Refer to Table 3-4 of the OPEP)	18 OSRL personnel	60 + AMOSC Core Group	-	60 + AMOSC Core Group 12 AMOSC staff

Component	Maximum No. personnel required (Weeks 1–2) ^	Personnel available via OSM Service Provider#	Personnel available via OSROs	Vermilion	Total personnel available
			12 AMOSC staff trained in SCAT		18 OSRL
SMPs					
SM1: Water quality impact assessment+	5 teams	6 teams	-	-	6 teams
SM2: Sediment quality impact assessment	Refer to SMP: Water quality impact assessment* (all sites)				
SM3: Intertidal and coastal habitat assessment	5 teams	6 teams	-	-	6 teams
SM4: Seabirds and shorebirds+	2 aerial teams 4 vessel teams (surveys would include all fauna [birds, reptiles, cetaceans, dugong and whale shark]) 4 ground-based teams	2 aerial teams 5 vessel teams 5 ground based teams (plus 1 team member per team experienced with ground turtle surveys – see Marine mega-fauna assessment [reptiles])	-	-	2 aerial teams 5 vessel teams 5 ground based teams (plus 1 team member per team experienced with ground turtle surveys – see Marine mega-fauna assessment [reptiles])
SM5: Marine mega-fauna assessment (whale shark, dugong and cetaceans) +	Refer to SMP: seabirds and shorebirds				
SM5: Marine mega-fauna assessment (reptiles) +	Aerial and vessel - Refer to SMP: seabirds and shorebirds Ground surveys - Refer to SMP: seabirds and shorebirds (plus 1 team member per team experienced with ground turtle surveys)				
SM6: Benthic habitat assessment	5 teams	6 teams	-	-	7 teams

Component	Maximum No. personnel required (Weeks 1–2) ^	Personnel available via OSM Service Provider#	Personnel available via OSROs	Vermilion	Total personnel available
SM7: Marine fish and elasmobranch assemblages assessment	5 teams	6 teams	-	-	7 teams
SM8: Fisheries impact assessment	2 teams	2 teams	-	-	2 teams
SM9: Heritage features assessment	1 team	1 team	-	-	1 team
SM10: Social impact assessment	1 team	1 team	-	-	1 team

** Initial co-mobilisation between OM1: Hydrocarbon characterisation, OM4a: Surface dispersant effectiveness monitoring, OM2: Hydrocarbon in water assessment and OM3: Hydrocarbon in sediment assessment*

 # During capability assessment, available personnel were allocated to one monitoring team only

+ Can initially be performed by the same team as the relevant OMP. This SMP may replace the relevant OMP, if the relevant OMP's termination criteria are triggered.

^ If additional resources are required for week 3 onwards then this will be identified early in the monitoring process and Vermilion will activate additional contracted resources through its OSM Services Provider to increase capacity

Section 11 Review of Plan

As part of Vermilion's annual oil spill capability review, this document will be reviewed and revised as required, in accordance with Section 8.3.1 *Determining requirements* of the Wandoo Field Oil Spill Contingency Plan – Planning and Preparedness [WAN-2000-RD-0001.01]. This could include changes required in response to one or more of the following:

- When major changes have occurred which affect Operational and/or Scientific Monitoring coordination or capabilities (e.g. change of services provider)
- Changes to the activity that affect Operational and/or Scientific Monitoring coordination or capabilities (e.g. a significant increase in spill risk)
- Changes to legislative context related to Operational and/or Scientific Monitoring (e.g. *Environment Protection and Biodiversity Conservation Act 1999* [EPBC Act] protected maters requirements)
- Following routine testing of the OSM if improvements or corrections are identified, or
- After a Level 2/3 spill incident.

The extent of changes made to this OSM BIP and resultant requirements for regulatory resubmission will be informed by the relevant Commonwealth regulations, i.e. OPGGS (E) Regulations.

Part B Implementation

Control Agencies and Jurisdictional Authorities

Vermilion's EPs provide detailed information on Control Agency responsibilities and should be referred to when planning operational and scientific monitoring activities, particularly in WA State Waters and along WA shorelines. Where the DTMI is the Control Agency, OM6: Shoreline Clean-up Assessment will be implemented under their direction, with resources provided by Vermilion.

In addition, Part 4 of the Wandoo Field OSCP Document 2 Oil Pollution Emergency Plan [WAN-2000-RD-0001.02] titled activation of oil pollution emergency plan: activation and notification flowcharts, provide regulatory and stakeholder notification and reporting requirements. Whilst all notification and reporting will be performed by Vermilion's ICT personnel, monitoring personnel should be aware of these requirements and confirm all relevant notifications and reporting have been completed prior to undertaking monitoring activities.

Section 12 Mobilisation and Activation

The Vermilion ICT Environment Unit Lead is responsible for initiating the activation of OSM components, subject to authorisation from the Incident Commander. Table 12-1 outlines the OSM Supplementary SA activation process to be followed by Vermilion and the OSM service providers.

Table 12-1: OSM mobilisation and activation process

Responsibility	Task	Timeframe	Complete
Environment Unit Lead (Vermilion)	Review initiation criteria of OMPs and SMPs (provided in Table 9-1 (OMPs) and Table 9-2 (SMPs) of the Joint Industry Operational and Scientific Monitoring Framework) during the preparation of the initial Incident Action Plan (IAPs) and subsequent IAPs; and if any criteria are met, activate relevant OMPs and SMPs	Within 4 hours of spill notification	☐
	Obtain authorisation from Incident Commander to activate OSM Service Provider	Within 4 hours of spill notification	☐
	Contact OSM Service Provider and verbally notify their Duty Manager of the incident, requesting provision of OSM Implementation Lead (if required by Vermilion) to the ICT. Complete Call Off Order Form (Appendix E) and submit to OSM Services Provider[3] to confirm activation of OSM Services	Within 4 hours of spill notification	☐
	Provide monitor and evaluate data (e.g. aerial surveillance, fate and weathering modelling, tracking buoy data, current IAPs) to OSM Services Provider	Within 1 hour of data being received by ICT	☐
	Liaise with Vermilion's Logistics Section Chief to identify potential staging and departure location/s for monitoring activities. Provide this information to OSM Services Provider	Within 4–6 hours of spill notification	☐
	Record tasks in Personal Log	At time of completion of task	☐
	The Environment Unit Lead and Planning Chief will determine whether SCAT capability will be sourced locally or activated through the OSRL OSM Service (OM6: Shoreline Cleanup Assessment), noting that local assets can generally be mobilised more quickly; available SCAT resources and capability are outlined in Table 10-1. [4]	Within 1 hour of ICT determining that SCAT is required	☐
Logistics Section Chief (Vermilion)	Commence arrangements for vessels, accommodation and transport to mobilise monitoring teams	Within 24 hours of spill notification	☐
OSM Service Provider	Duty Manager to activate relevant Monitoring Service Providers	Within 30 minutes of Call Off Order	☐

[3] A copy of the Call Off Order Form is provided in Appendix E; however, the OSRL Duty Manager will send an updated version upon verbal notification.

[4] SCAT teams, led by trained AMOSC Core Group leaders, assess shoreline oiling and provide response strategy recommendations to the Planning Chief, who briefs the Operations Chief on required data collection within the Shoreline Operations Unit, after which operational clean-up teams implement the SCAT recommendations.

Responsibility	Task	Timeframe	Complete
		Form being received by OSM Services Provider	
	OSM personnel (OSM Implementation Lead and OM/SM Coordinators) requested by Titleholder (via Call Off Order Form) to be sent to Titleholder's ICT	Within 12 hours of notification being made to OSM Services Provider	☐
	Liaise directly with the Environment Unit Lead to confirm which OMPs and SMPs are to be fully activated	Within 4 hours of monitor and evaluate data being received from ICT	☐
	Confirm availability of initial personnel and equipment resources	Within 5 hours of monitor and evaluate data being received from ICT	☐

Section 13 Monitoring Priorities

As described in Section 2 and Section 4 of this Plan, the available stochastic spill modelling has been analysed to understand the likely monitoring priorities. Table 4-3 provides a summary of available baseline data for receptors, to assist in identifying where post-spill, pre-impact monitoring should be prioritised.

The monitoring priorities provided in Section 2**Error! Reference source not found.** and Table 4-3 are to be u sed for guidance when confirming monitoring priorities in consultation with key stakeholders and sub-contracted Monitoring Service Providers (including subject matter experts, where available) in the event of a spill. Table 13-1 provides a checklist to assist in the confirmation of monitoring priorities for individual spills.

Table 13-1: Checklist for determining monitoring priorities

Responsibility	Task	Timeframe	Complete
Vermilion Environment Unit Lead	Evaluate monitoring priorities in consultation with key stakeholders, including the appointed State / Territory Environmental Scientific Coordinator	Within 12 hours of monitor and evaluate data being received from ICT	☐
Vermilion Environment Unit Lead with input from OSM Services Provider	Confirm monitoring receptors/locations for activated OMPs and SMPs based on: • Current monitor and evaluate data (i.e. situational awareness data, including predicted time to receptor impact, aerial/vessel surveillance observations, tracking buoy data, satellite data); • Nature of hydrocarbon spill (i.e. subsea blow out, surface release, hydrocarbon characteristics, volume, expected duration of release); • Analysis of the Joint Industry Marine Environment Baseline Database for relevant receptors; • Seasonality and presence of receptors impacted or at risk of being impacted; • Current information on transient and broadscale receptors (surface and subsea); • Current operational considerations (e.g. weather, logistics); and • Monitoring priorities identified Section 2 and Table 4-3.	Within 12 hours of monitor and evaluate data being received from ICT	☐
	Using the results of the baseline data analysis in Table 4-3 and the information above, determine priority receptors for post-spill, pre-impact monitoring	Within 12 hours of monitor and evaluate data being received from ICT	☐
	Confirm the need for any additional reactive baseline monitoring data for SMPs and determine suitable receptors, noting that suitable control or reference sites may be outside of the OSM Planning Area	Within 12 hours of monitor and evaluate data being received from ICT	☐

Responsibility	Task	Timeframe	Complete
	Continually re-evaluate monitoring priorities in consultation with Environment Unit Lead and relevant key stakeholders throughout spill response	Ongoing	☐

Section 14 Protected Matters Requirements

Table 14-1 provides a checklist to ensure monitoring personnel consider protected matters requirements in the finalisation of OMPs and SMPs.

Vermilion's activity-specific EPs outline the management plans, recovery plans and conservation advice statements relevant for the protected matters within the OSM Planning Area that are likely to be relevant to the final design of the OMPs and SMPs. The EPs and

Appendix C: Background Information for Key Sensitivities also include relevant locations where these receptors are known to occur in order to expedite consideration of relevant information into finalised monitoring designs.

Table 14-1: Checklist for inclusion of protected matters into monitoring designs

Responsibility	Task	Complete
Vermilion Environment Unit Lead with input from OSM Services Provider	Review Monitoring, Evaluation and Surveillance data and available OMP data to determine likely presence and encounter of protected species in predicted trajectory of the spill	☐
	Review the relevant recovery plan/conservation advice/management plan in the activity-specific EP and online protected matters search tool and determine if there have been any updates to the relevant conservation threats/actions. Integrate relevant considerations into the final monitoring design for affected OMPs and SMPs	☐
	Review restrictions on marine mammal buffer distances in SM5: Marine mega-fauna and ensure this is included in all relevant response and monitoring IAPs (e.g. Shoreline Protection Plan, Shoreline Clean-up Plan, OSM Plan), so that response and monitoring field teams maintain required buffer distances from fauna during operations	☐

Section 15 Finalising Monitoring Design

The methods presented in the Joint Industry OMPs and SMPs are designed to allow the OSM Service Provider and their sub-contracted Monitoring Service Providers the flexibility to modify the standard operating procedures, so that the latest research, technologies, equipment, sampling methods and variables may be used. Monitoring designs may also be varied in-situ, according to the factors presented in Section 10.6 (e.g. weather, logistical restraints) of the Joint Industry OSM Framework.

Vermilion's checklist for finalising monitoring designs post-spill is provided in Table 15-1. The Environment Unit Lead and OSM Implementation Lead provided by a Monitoring Service Provider, will be responsible for approving the finalised monitoring design used in the OMPs and SMPs.

Table 15-1: Checklist for finalising monitoring design

Responsibility	Task	Timeframe	Complete
Vermilion Environment Unit Lead and OSM Implementation Lead with input from OSM Services Provider	Confirm survey objectives, sampling technique, for each initiated OMP and SMP	Within 48 hours of initial monitoring priorities being confirmed by ICT	☐
	Determine suitable sampling frequency	Within 48 hours of initial monitoring priorities being confirmed by ICT	☐
	Finalise standard operating procedures	Within 48 hours of initial monitoring priorities being confirmed by ICT	☐
	Review Table 10-4 of the Joint Industry OSM Framework to ensure potential impacts from response activities are considered and incorporated into relevant OMP/SMP designs	Prior to the finalisation of monitoring designs	☐
	Liaise with the Vermilion Environment Unit Lead to review the Environmental Performance Standards listed in the activity-specific OPEP and integrate checks into the monitoring design that will help determine if relevant Environmental Performance Standards are being met	Prior to the finalisation of monitoring designs	☐
	Scientific monitoring: • Establish benchmarks and guidelines to be used • Confirm indicator species • Confirm parameters and metrics	Within 96 hours of initial monitoring priorities being confirmed by ICT	☐

Section 16 Mobilisation

When the monitoring design has been finalised for each OMP and SMP, the OSM Service Provider shall work in conjunction with Vermilion to develop and execute a monitoring mobilisation plan, which will be incorporated into the Incident Action Planning process.

The OSM Service Provider will be required to coordinate the availability of personnel and equipment for all monitoring programs. Vermilion will be responsible for flights, accommodation, and provisions for field personnel. Vermilion will also be required to procure all vessels, aerial platforms, and vehicles for OMP and SMP implementation.

A checklist for mobilising monitoring teams is provided in Table 16-1.

Table 16-1: Checklist for mobilisation of monitoring teams

Responsibility	Task	Complete
OSM Services Provider with input from Vermilion Environment Unit Lead	Confirm availability of all monitoring personnel (noting required competencies in Section 9.1 and individual OMPs/SMPs)	☐
	Allocate number of teams, personnel, equipment and supporting resource requirements	☐
	Undertake HAZIDs as required and consolidate/review field documentation including safety plans, emergency response plans, and daily field reports	☐
	Develop site-specific health and safety plans which is compliant with health safety and environment systems (including call in timing and procedures)	☐
	Conduct pre-mobilisation meeting with monitoring team/s on survey objectives, logistics, safety issues, reporting requirements and data management collection requirements	☐
	Determine data management delivery needs of the ICT and process requirements, including data transfer approach and frequency/timing	☐
	Confirm data formats and metadata requirements with personnel receiving data	☐
	Logistics	
	Confirm Vermilion Logistics Section have arranged flights, accommodation, and car hire	☐
	Develop field survey schedules, detailing staff rotation	☐
	Equipment	
	Confirm Vermilion Logistics Section have arranged survey platforms (vessel, vehicle, aircraft) as required to survey or access survey sites and ensure they are equipped with appropriate fridge and freezer space for transportation of samples (and carcasses if collecting)	☐
	Confirm Vermilion Logistics Section have arranged vessels with correct fit-out specifications (e.g. winches, Geographic Positioning System [GPS], satellite, deck crane, sufficient deck space, water supplies (fresh and/or salt), accommodation)	☐
	Confirm consumables (including personal protective equipment) have been purchased and will be delivered to required location	☐
	Liaise with NATA-accredited laboratories to confirm availability, limits of detection, sampling holding times, transportation, obtain sample analysis quotes and arrange provision of appropriate sample containers, Chain of Custody (CoC)	☐

Responsibility	Task	Complete
	forms and suitable storage options for all samples. Make arrangements for couriers (if necessary)	
	Confirm specialist equipment requirements and availability (including redundancy)	☐
	Check GPS units and digital cameras are working and that sufficient spare batteries and memory cards are available	☐
	Confirm sufficient equipment to allow integration of survey software and navigational systems (e.g. GPS, additional equipment and adaptors), and additional GPS units prepared	☐
	Confirm GPS survey positions (where available) have been Quality Assurance and Quality Control (QA/QC) checked and pre-loaded into navigation software/positioning system	☐
	Check field laptops, ensuring they have batteries (including spares), power cable, and are functional	☐
	Check if a first aid kit or specialist personal protective equipment (PPE) is required	☐
	Confirm arrangements for freight to mobilisation port is in place	☐

Section 17 Permits and Access Requirements

Permit and access requirements apply to Marine Parks, Marine Protected Areas, restricted heritage areas, operational areas of industrial sites, defence locations, fauna and managed fisheries. Table 17-1 lists relevant protected areas within the OSM Planning Area and the jurisdictional authority to be contacted to obtain the necessary permit or access permission. For a list of all relevant receptors and fisheries refer to the activity-specific EPs.

The OSM Service Provider will work alongside Vermilion to request access and submit permit applications to all relevant Jurisdictional Authorities in order to conduct monitoring for OMPs and SMPs.

Table 17-1: Permits required in the OSM Planning Area

Receptor	Jurisdictional Authority	Relevant information on permits
Permits for monitoring fauna	DCCEEW DBCA	Any interactions involving nationally listed threatened fauna may require approval from DCCEEW - https://www.dcceew.gov.au/environment/biodiversity/threatened/permits WA- appropriate permits can be found at: https://www.dbca.wa.gov.au/licences-and-permits/fauna
State Marine Protected Area	DBCA	No specific permitting requirements exist for monitoring in WA marine protected areas, but additional information is available at: https://www.dbca.wa.gov.au/management/marine-planning
Ramsar wetland	DCCEEW	Additional information on Ramsar wetlands and how they are protected as a matter of national environmental significance under the EPBC Act is available at: https://www.dcceew.gov.au/environment/epbc/our-role/what-is-protected
Australian (Commonwealth) Marine Parks	Director of National Parks Parks Australia	Permit and licence application information for Marine Protected Areas (including monitoring) can be found at: https://onlineservices.environment.gov.au/parks/australian-marine-parks Additional information on permitting requirements in Australian Marine Parks can be obtained through Parks Australia via email marineparks@environment.gov.au or phone 1800 069 352 Information on permits to access biological resources in Commonwealth areas can be found at: https://www.dcceew.gov.au/science-research/australias-biological-resources/access-biological-resources-commonwealth
State Managed Fisheries	Department of Primary Industries and Regional Development (DPIRD)	No specific permitting requirements exist for WA Fisheries, but additional information is available at – https://www.fish.wa.gov.au/Fishing-and-Aquaculture/Pages/default.aspx
Commonwealth Managed Fisheries	Australian Fishing Management Authority	Commonwealth Managed Fisheries (scientific permit for research/monitoring in an Australian Fishing Zone) https://www.afma.gov.au/fisheries-services/fishing-rights-permits
Indigenous Cultural Heritage	Department of Planning, Lands and	Entry access permits to Aboriginal Lands in WA: https://www.wa.gov.au/service/aboriginal-affairs/aboriginal-heritage-conservation/apply-permit-access-or-travel-through-aboriginal-land

Receptor	Jurisdictional Authority	Relevant information on permits
	Heritage (DPLH)	Aboriginal heritage sites in WA: https://www.wa.gov.au/service/aboriginal-affairs/aboriginal-cultural-heritage/search-aboriginal-sites-or-heritage-places and https://www.dplh.wa.gov.au/information-and-services/aboriginal-heritage
Defence/restricted military area	Department of Defence	Unexploded Ordnances (mapping information): https://www.defence.gov.au/UXO/default.asp Maritime military firing practice and exercise areas: https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.hydro.gov.au/n2m/2010/annual/n2m/9.pdf&ved=2ahUKEwi08LDJ_c-PAxWiamwGHUmjCiQQFnoECB0QAQ&usg=AOvVaw0A_L5br6pqJx_IZgW7N15M
Industry (e.g. operational zone of offshore oil or gas platform)	Operating company	Safety zones (up to 500 m from outer edge of well or equipment) – https://www.nopsema.gov.au/safety/safety-zones/
Shipwrecks	DCCEEW	Refer to the Underwater Cultural Heritage Act 2018 (Commonwealth): https://www.dcceew.gov.au/parks-heritage/heritage/underwater-heritage/underwater-cultural-heritage-act

Section 18 Use of Data in Response Decision-Making

18.1 Operational Monitoring to Inform Response Activities

The OSM Services Provider is responsible for the collection of data by field teams, which shall be QA/QC checked by the Field Team Lead in accordance with the requirements listed in the finalised OMPs and SMPs (where applicable). Table 18-1 provides a checklist to assist in utilising OM data to inform decision making.

The Field Team Lead will be responsible for communicating data back to the OSM Implementation Lead via field reporting forms, debriefs and reports. Laboratory analysis reports should also be directed to the OSM Implementation Lead.

The OSM Implementation Lead, provided by the Monitoring Service Provider, is responsible for the interpretation and analysis of data. OMP data should be analysed rapidly so that it may be used to inform response planning and decisions in the current and/or next operating period. SMP data is designed to be more scientifically robust and long-term in nature and is not relied upon by the ICT for decision-making. Therefore, SMP data will be analysed more thoroughly by the OSM Implementation Lead.

Once OM data is analysed and checked by the Field Team Lead, it will be provided to the OSM Implementation Lead, who will then distribute the data from each monitoring component to the relevant ICT Section. Table 18-2 provides guidance on the type of data generated from each OMP, which ICT Section requires the data and how the data may be used during a response. All SMP data received during a response will be received by the Planning Section via the Monitoring Branch.

Analysed data will then be incorporated into the Common Operating Picture (managed by the Situation Unit Lead) and used by the Environment Unit Lead during development of the operational NEBA, which would be included in the IAP for the current or next operating period.

As ultimately responsible for the IAPs, the Vermilion Planning Section Chief will be required to utilise the OMP data to aid in decision making and determine if the response strategies can be commenced, continued, escalated, terminated, or if controls need to be put in place to manage impacts of the response activities. These decisions will be communicated to the broader ICT during regular situation debriefs.

Table 18-1: Checklist for utilising OMP data to inform ICT decision-making

Responsibility	Task	Timeframe	Complete
OSM Services Provider – Field Team Lead	Data collected whilst implementing OMPs and SMPs is QA/QC checked that it aligns with the requirements listed in the finalised OMPs and SMPs (where applicable)	Ongoing	☐
	Communicate data back the Vermilion ICT via field reporting forms, debriefs and reports	Ongoing	☐
OSM Implementation Lead (Monitoring Service Provider)	Ensure OM data (including verbal reports) is provided to the Vermilion ICT as soon as possible to ensure data collected during an operational period can be used within the same, or next operational period to aid decision making	As soon as possible after data collected	☐
	Interpret and analyse OM data	Ongoing	
	Distribute the data from each monitoring component to the relevant ICT Section	Ongoing	☐

Responsibility	Task	Timeframe	Complete
OSM Service Provider	Oversee the collection of data by sub-contracted Monitoring Service Provider field teams, including QA/QC assessment in accordance with the requirements listed in the finalised OMPs and SMPs (where applicable).	Ongoing	☐
	Provide OMP data to the ICT Situation Unit Lead	Daily and ongoing	☐
Vermilion Operations Section (Shoreline Unit)	Reports from OM6: Shoreline Clean-up Assessment will be provided to the ICT daily, detailing the assessed areas to maximise effective utilisation of resources	Daily reporting	☐
Vermilion Planning Chief/Situation Unit Lead	Incorporate OMP data into Common Operating Picture	Daily and ongoing	☐
Vermilion Environment Unit Lead	Incorporate OMP data into operational NEBA and IAP for the next operating period	Each operational period	☐

Table 18-2: Data generated from each OMP and how this may be used by ICT in decision-making

OMP	Data generated[5]	ICT Section requiring data	How data may be used by ICT
OM1: Hydrocarbon characterisation	Hydrocarbon physical characteristics (e.g. viscosity, asphaltene content, fingerprinting, weathering ratios of hydrocarbon chains)	Planning Section to aid in response option selection / modification	Changes to the hydrocarbon properties will affect the window of opportunity for particular responses and the associated logistical requirements of these responses, such as use of chemical dispersants, recovery and pumping equipment suitability, hydrocarbon storage and hydrocarbon disposal requirements
OM2: Hydrocarbon in water assessment	Distribution of oil in water column and change in hydrocarbon concentrations (e.g. total recoverable hydrocarbons, BETEXN, PAH), physio-chemical parameters and dispersant detection	Situation Unit Lead to validate surveillance and modelling data; Planning Section for use in IAP	• Confirm spatial extent of spill within the water column and verify spill modelling and surveillance data; extent of spill can in turn influence location of other OMP and SMP monitoring components and sites. Data can also influence ongoing use of dispersant through ongoing operational NEBA.
OM3: Hydrocarbon in sediment assessment	Distribution of oil in sediment and change in hydrocarbon concentrations (e.g. Total recoverable hydrocarbons, BETEXN, PAH)	Situation Unit Lead to validate surveillance and modelling data; Planning Section for use in IAP	• Confirm spatial extent of spill; extent of spill can in turn influence location of other OMP and SMP monitoring components and sites
OM4a: Surface chemical dispersant effectiveness and fate	Visual observations of dispersant efficacy; Fluorometric readings in water column (see also water quality assessment);	Environment Unit for use in operational NEBA; Planning Section to aid in IAP development; Operations Section to confirm dispersant effectiveness for decision-making purposes in current operations period.	• Determine the effectiveness of dispersant in removing oil from sea surface and how dispersed oil is being distributed through the water column. This information can be used in NEBA to help decide if dispersants are being effective at minimising oil reaching sensitive receptors (NEBA to evaluate any trade-offs between receptors)
OM5: Rapid Marine Fauna Surveillance	Rapid assessment of presence and distribution of marine fauna; evaluate impact of spill and response activities on fauna	Planning Section for use in IAP; Oiled Wildlife Unit/Division to help in developing Wildlife Response Sub-plan	• Understanding of species, populations and geographical locations at greatest risk from spill impacts. ICT can use this information to help qualify locations with highest level of protection priority (e.g. dugong nursery area is at risk of high contact therefore

[5] Summary only. For additional detail, please refer to individual OMPs. Also note data outputs will be reliant on finalised monitoring design.

OMP	Data generated[5]	ICT Section requiring data	How data may be used by ICT
			dispersant use closest to spill source may be a preferred option); understanding the impacts of spill response activities can help ICT to modify or terminate activities if they are assessed as creating more harm than the oil alone (e.g. large shoreline clean-up teams and staging areas may disturb shorebird nesting resulting in adults abandoning chicks)
OM6: Shoreline clean-up assessment	Assessment of shoreline character; assessment of shoreline oiling; recommendations for response activities; post-treatment surveys	Planning Section to aid in IAP development and response option selection / modification	• Confirmation of shoreline character, habitats and fauna present which may influence selection of response tactics (e.g. no mechanical recovery if turtles are known to be nesting); • Oil deposition and/or removal rate for a shoreline sector will help determine effectiveness of relevant tactics (e.g. shoreline protection and/or clean-up operations); • Assessment teams provide ground truthing of sites that are not possible via satellite imagery, therefore the ICT can rely on the recommendations of Assessment Teams (e.g. flagging access issues, suitable tactics, likely resourcing needs).

18.2 Impacts from Response Activities

Table 10-4 of the Joint Industry OSM Framework (APPEA, 2021) outlines the potential impacts from response activities and the relevant OMP/SMP for monitoring impacts. For example, if shoreline clean-up was being considered as a response option, then possible impacts resulting from that activity could include physical presence, ground disturbance, water/sediment quality decline and lighting/noise impacts to fauna.

When finalising monitoring designs, the OSM Implementation Lead, provided by the Monitoring Service Provider, shall review Table 10-4 of the Joint Industry OSM Framework and the relevant activity EP to ensure potential impacts from response activities are considered and incorporated into relevant OMP/SMP designs.

18.3 Operational Monitoring of Effectiveness of Control Measures and to Ensure EPS are Met

As stated in Table 15-1, when finalising monitoring designs, the OSM Implementation Lead and Vermilion Environment Unit Lead shall review the Environmental Performance Standards (EPSs) listed in the activity-specific OPEP and integrate checks into the monitoring design that will help determine if relevant EPSs are being met.

Table 18-3 provides relevant EPSs listed in Vermilion's activity-specific OPEPs and how operational monitoring may be able to confirm it is being met.

Table 18-3: Relevant OPEP Environmental Performance Standards related to operational monitoring

Environmental Performance Standard	Confirmation that EPS is being met
(OPEP-EPS-1.1) - Conduct surface dispersant efficacy monitoring in accordance with the Vermilion Operational and Scientific Monitoring – Bridging Implementation Plan [VOG-1100-RG-0002] and OM4a: Surface Dispersant Effectiveness Monitoring (APPEA, 2021)	OM4a: Surface dispersant effectiveness monitoring will involve monitoring and assessing the effectiveness of surface dispersant application to help inform the ICT
(OPEP-EPS-2.1)- Methods and techniques employed for shoreline clean-up operations will be based on the information provided by the SCAT teams and in consultation with DTMI representatives	Results of OM6: Shoreline Clean-up Assessment will continuously be used to inform Shoreline Clean-up operations
[OPEP-EPS-2.2] All shoreline clean-up sites will be zoned and marked before clean-up operations commence to minimise secondary contamination and minimise the mixing of clean and oiled sediment and shoreline substrates. [OPEP-EPS-2.3] Shoreline clean-up sites will be appropriately mapped with clear restricted zones for sensitive habitat areas and no access zones for vehicle and personnel movement. Zoning will consider sensitive vegetation, bird nesting/ roosting areas and turtle nesting habitat.	Implementation of OM6: Shoreline Clean-up Assessment will involve assessment teams mapping zones in sensitive habitat areas
(OPEP-EPS-3.1) - In liaison with DBCA, initiate a wildlife first strike response within a minimum of 24 hours (if required) of a confirmed or imminent wildlife contact as reported by OM5: Rapid Marine Fauna Assessment	Implementation of OM5: Rapid Marine Fauna Assessment will involve a rapid assessment of fauna including species, populations, habitats and geographical locations at greatest risk from potential spill impacts. This information will help inform the ICT of locations requiring wildlife response activities.

Section 19 Data Management

Minimum standards for data management are provided in Section 10.11 of the Joint Industry OSM Framework (APPEA, 2021) and will be adopted by Vermilion and the OSM Service Provider.

Section 20 Quality Assurance and Quality Control

Refer to Section 10.11 of the Joint Industry OSM Framework (APPEA, 2021) for QA/QC minimum standards which will be adopted by Vermilion and the OSM Service Provider.

Section 21 Communication Protocols

21.1 OSM Service Provider

Communication protocols between Vermilion and its OSM Service Provider with respect to delivery of the OMPs and SMPs (during both preparedness and implementation) are intentionally defined to ensure clear and consistent information is provided in both directions.

The following communication protocols must be observed:

- Communication between Vermilion and its OSM Service Provider during the preparedness phase (pre-spill) will be between the nominated Industry Member Technical Advisory Group representative and the OSM Service Provider.
- Communication between Vermilion and its OSM Service Provider during activation will be between the Environment Unit Lead and the OSM Service Provider representative.
- During implementation (post deployment), primary communication occurs via two pathways:
    - Environment Unit Lead and the OSM Service Provider Duty Manager for contractual, management, scientific and general direction matters; and
    - Vermilion Division Commander / On-Scene Commander and the OSM Field Team Leaders for on-site matters.
- All key OSM decisions should be logged in an ICS 214 Log Form maintained by the OSM Implementation Lead. All key OSM tasks, actions and requirements should be documented in an IAP during the response phase of the spill.
- The Vermilion Environment Unit Lead will keep the Operations Section Chief, Logistics Section Chief and Planning Section Chief briefed of the OSM status as required.
- All correspondence (copies of emails and records of phone calls) between Vermilion and the OSM Services Provider during a response should be recorded and kept on file.
- All communication received by OSM Service Provider not in line with these protocols should be reported to the Environment Unit Lead who will seek guidance on the accuracy of the information received.
- Unless related to safety (e.g. evacuation), any direction or instruction received by the OSM Service Provider outside of these protocols should be confirmed via the Vermilion Environment Unit Lead or On-Scene Commander prior to implementation.

During the post-response phase all communications shall be between the Vermilion Environment Advisor and the OSM Service Provider.

21.2 External Stakeholders

Results of OMPs and SMPs will be discussed with relevant stakeholders through Vermilions ICT Public Information Officer. Information will be shared with regulatory agencies/authorities as required and inputs received from stakeholders will be evaluated and where practicable, will be used to refine the ongoing spill response and/or ongoing operational and/or scientific monitoring.

Stakeholder communications post-response will be managed by the Vermilion Stakeholder Liaison team.

Section 22 Stand Down Process

Monitoring for each component will continue until termination criteria for individual components are reached. Typically, OMPs will terminate when agreement has been reached with the Jurisdictional Authorities relevant to the spill to terminate the response or a relevant SMP has been activated. SMPs will continue after the spill response has been terminated and until such time as their termination criteria are also reached. A list of criteria is provided in the OSM Framework.

After OMPs are terminated, the OMP monitoring teams will be advised to stand down. Following this stage, Vermilion is responsible for coordinating a lessons-learnt meeting between the OSM Service Provider, sub-contracted Monitoring Service Providers and other relevant stakeholders.

It is the responsibility of Vermilion to ensure that lessons learnt are communicated to the relevant stakeholder groups. The lessons discussed should include both positive actions to be reinforced and lessons for actions that could be improved in future standby or response campaigns. Table 22-1 provides a checklist to assist in terminating the OMPs and SMPs and the monitoring effort.

Table 22-1: Checklist for terminating monitoring components

Responsibility	Task	Complete
Vermilion Environment Unit Lead / Environment Advisor with input from OSM Services Provider	Review termination criteria of OMPs and SMPs (provided in Table 9-1 (OMPs) and Table 9-2 (SMPs) of the Joint Industry Operational and Scientific Monitoring Framework) to ensure OMPs and SMPs are terminated in accordance with these criteria	☐
	Ensure all SMP monitoring reports are peer reviewed by an expert panel (refer to Section 10.10 of the Joint Industry OSM Framework)	☐
	Conduct lessons-learnt meeting	☐

Section 23 References

APPEA (2021) Joint Industry Operational and Scientific Monitoring Plan Framework. Rev D. Report prepared by BlueSands Environmental for APPEA Marine and Environmental Science Working Group.

French-McCay D (2024) Considerations for Development of Entrained Oil Thresholds for Oil Spill Risk Assessments. RPS Ocean Science. Australian Energy Producers.

Kirby MF, Brant J, Moore J, Lincoln S (eds) (2018) PREMIAM – Pollution Response in Emergencies – Marine Impact Assessment and Monitoring: Post-incident monitoring guidelines. Second Edition. Science Series Technical Report. Cefas, Lowestoft.

NOPSEMA (2021) Regulatory Advice Statement on APPEA's Joint Industry Operational and Scientific Monitoring Framework.

NOPSEMA (2024) Operational and Scientific Monitoring Programs N-04750-IP1349, A343826.

NOPSEMA (2025) Information Paper: Application of oil spill modelling in Environment Plans, December 2025. N-04750-IP2376, A1289237.

Appendices

Appendix A: Demonstration of Meeting OSM Framework Regulatory Requirements

RAS Requirement	Relevant Section of Documentation that Addresses the Requirement
Conducted an appropriate risk assessment of worst-case oil pollution scenario(s) supported by spill modelling.	Vermilion has assessed its worst-case oil pollution scenarios, including spill volumes, hydrocarbon types, and potential release locations, within its EP, OPEP and OSM-BIP. As part of this process Vermilion has reviewed stochastic spill modelling outputs for each scenario to evaluate spill risks relevant to OSM planning (Section 2 and Section 8). A full assessment of worst-case oil pollution scenarios is incorporated in the activity Environment Plan.
Evaluated and adopted all reasonably practicable measures to reduce oil pollution risks by preventing incidents and preparing for a timely and effective response to pollution events.	The control measures for reducing oil pollution risks are included in the activity EP in the unplanned activities risk assessment section. Information pertaining to response preparedness is provided in OSCP and OPEP.
Identified monitoring arrangements and resource requirements based on the worst-case oil pollution scenario(s).	Section 8 outlines the process for determining the greatest OSM resource requirements based on the worst-case scenarios for Vermilion's activities. Monitoring arrangements, including contracted and internal capability are presented in Section 9 and Section 10.
Presented monitoring arrangements and capability that are scalable and adaptable and will provide timely information.	Section 9 outlines Vermilion's monitoring arrangements via OSRL's OSM Supplementary Service Agreement, including scalable resourcing, if it is required.
Identified suitably qualified personnel who will be in decision making roles and implementing the monitoring and who are prepared for their responsibilities in advance of the incident occurring.	Section 6 outlines personnel who will fill key OSM decision making roles. Roles filled by the OSM Services Provider are managed via the OSRL OSM Supplementary Services Agreement which specifies responsibilities for OSM response.
Established operational monitoring requirements based on the response needs and capacity reasoning applied to demonstrate ALARP for the response control measures detailed in the OPEP	Vermilion has assessed its OSM control measures and required capability in preparing this OSM-BIP. In addition, Vermilion has undertaken an ALARP assessment in the Environmental Impact of Oil Spill Response (Section 5.15) of the activity EP to determine if any improvements could be made to the existing suite of control measures.

RAS Requirement	Relevant Section of Documentation that Addresses the Requirement
Demonstrated all feasible preparatory actions to improve reliability, effectiveness and timeliness of response arrangements and capability (including operational monitoring), have been implemented where costs are not grossly disproportionate to the environmental benefit gained	The Environmental Impact of Oil Spill Response (Section 5.15) of the activity EP demonstrates a detailed control measure options analysis was undertaken and all feasible control measures for OSM have been implemented.
Set environmental performance standards that reflect the level of performance required of the response control measures (including monitoring) to achieve the defined environmental performance outcomes.	The EP (Section 5.15.5) details all OSM control measures and performance standards, many of which relate directly to the RAS Requirements. Section 18.3 outlines tasks for the OSM Implementation Lead and Environment Unit Leader to ensure environmental performance standards are met via operational monitoring activities.
The EP clearly commits to initiate all OMPs as listed in Table 5-1 as per initiation criteria listed in Table 9-1.	Table 12-1 outlines the guidance to be followed during mobilisation. In addition, the EP (Section 5.15.5) commits to activating OMPs in line with the initiation criteria set out in the Framework.
The EP clearly commits to initiate all SMPs as listed in Table 6-1 as per initiation criteria listed in Table 9-2.	Table 12-1outlines the guidance to be followed during mobilisation. In addition, the EP (Section 5.15.5) commits to activating SMPs in line with the initiation criteria set out in the Framework.
The EP clearly commits to the Termination Criteria listed in Table 9-1 for operational monitoring and Table 9-2 for scientific monitoring.	Table 22-1 outlines the guidance to be followed during termination of OSM. In addition, the EP (Section 5.15.5) commits to terminating SMPs in line with the termination criteria set out in the Framework.
The EP clearly commits to the quality assurance and quality control items listed in Section 10.11 of the framework.	Section 20 commits that Vermilion and the OSM Services Provider will use Section 10.11 of the Joint Industry OSM Framework for QA/QC minimum standards.
The EP includes a clear commitment to use the same description of the roles and responsibilities for key emergency response personnel presented in the framework in Table 10-6.	Section 6 commits that Vermilion and the OSM Services Provider will use the key roles and responsibilities provided in Section 10.13.2 of the Framework.
The EP clearly commits to emergency response personnel having the competencies outlined in Table 11-1. However, Titleholders need to ensure that regardless of the university qualifications that personnel may have, ultimately the monitoring undertaken must be of suitable experimental design, and with personnel who are trained and competent in experimental design and in situ monitoring implementation, irrespective of their qualifications, this may not be achieved.	Personnel competencies in Section 9.1 commits that Vermilion and the OSM Services Provider will use the competencies outlined in Table 11-1 of the Framework.
The EP clearly commits to the minimum standards identified in Appendix A, with the addition of replacing language in the form of “should” and “where possible” with “will”. EP’s that commit to the standards identified in this appendix without replacing	The EP (Section 5.15.5) commits that Vermilion will comply with the minimum standards listed in Appendix A of the Joint Industry OSM Framework. In addition, the minimum standards have been reviewed and integrated into this OSM-BIP.

RAS Requirement	Relevant Section of Documentation that Addresses the Requirement
the text described above with more definitive language will likely to be subject to a more comprehensive assessment of the arrangements in accordance with the risk factors particular to the EP and receive requests for clarification from NOPSEMA during the assessment process.	
The EP clearly commits to meet the competencies identified for teams in Appendix D Table D1.	Personnel competencies in Section 9.1 commits that Vermilion and the OSM Services Provider will use the competencies for SMP Field Teams as outlined in Appendix D of the Framework.
The EP clearly commits to an annual review and reviews where all the suggested triggers apply as advised in the template.	Section 11 and the EP (Section 5.15.5) commit to conducting an annual review of the OSM-BIP, providing the criteria for the review.
The EP uses the process described in Sections 2 and 13 of the template to identify the environment that may be affected and the protection and monitoring priorities, including the application of oil concentration thresholds consistent with the exposure values for oil spill modelling presented in NOPSEMA's oil spill modelling bulletin, and fully justifies the outcome.	Section 2 demonstrates that Vermilion has applied the NOPSEMA oil spill modelling low thresholds (NOPSEMA Information Paper: Application of oil spill modelling in Environment Plans [NOPSEMA, 2025]) for determining the Scientific Monitoring Planning Area (Step 1 of the BIP Template). Section 2.2 also outlines Vermilion's process for identifying monitoring priorities, as required by Section 2 of the BIP Template (step 3). This process incorporates the key elements listed in the BIP Template, including analysis of spill modelling results with receptors of high conservation value (especially receptors predicted to be contacted at higher probabilities and a rapid timeframe) and availability of baseline data. As noted in Section 2 of the BIP template, the monitoring priorities listed are for planning purposes only and Vermilion and its OSM Services Provider will follow the process outlined in Section 13 when confirming monitoring priorities in the event of a spill.
The EP adheres to the process described in Sections 3 and 4 of the template to undertake baseline data analysis and fully justifies the outcome.	Section 3 and Section 4 follow the guidance provided in the BIP Template, with the addition of more information to support continuous improvement in this area. Noting this, Vermilion is part of a Joint Industry Collaborative Group who are working together to determine the extent, quality and suitability of existing baseline data for the marine environments in the North West Shelf, Browse and Timor Sea Regions of Australia. The Marine Environment Baseline Database includes available data for all receptors relevant to the Joint Industry OSM Framework and has assessed the spatial and temporal relevance of this data and comparison of methods and parameters to those outlined in the Joint Industry SMPs, as recommended in Section 7 and Appendix A of the Framework and Section 4 of the BIP Template.

RAS Requirement	Relevant Section of Documentation that Addresses the Requirement
The EP makes clear, unambiguous commitment that scientific monitoring reports "will be" peer reviewed by an expert panel (Section 4, p10).	The EP (Section 5.15.5) commits that draft OSM data reports will be peer reviewed by an expert panel for data integrity. This is also stated in Section 20.
The EP includes clear, unambiguous activation, mobilisation, and implementation timeframes, which are relevant to the predicted time to contact of the pollution with sensitive receptors, baseline data available, sensitivities affected, practicability of implementation and/or other factors. Indicative mobilisation timeframes for OSM activities presented as worked examples in the template, for example, activation timeframes in Table 7-1 and Section 12 and implementation timeframes in Sections 13 and 15, should be revised to reflect each activity's oil pollution scenario(s) and specific response requirements.	Section 12 provides the mobilisation and activation process and timeframes for the OSRL OSM Supplementary Services Agreement. Section 7 provides timeframes for mobilisation and activation that are relevant to Vermilion's activities, including predicted time to contact to sensitive receptors (from spill modelling), availability of baseline data and practicability of implementation (i.e. remote environments, timeframes for mobilising specialised equipment and personnel).
Monitoring implementation timeframes consider any time requirements to finalise SMPs prior to implementation being required or take actions to reduce timeframes during the pre-spill (preparedness) phase.	The timeframes for finalising SMPs have been accounted for in the timeframes provided in Part B of the OSM-BIP, in particular, Section 15.
The EP includes OMPs that are sufficiently developed and/or finalised to ensure that they are ready to implement in the identified timeframes for operational monitoring to provide information to support initial and ongoing response decision-making.	The Joint Industry Framework includes well developed OMPs that have been socialised with the OSM Services Provider and will be finalised in the event of a spill. The timeframe for finalising the OMPs is factored into the implementation timeframes provided in Section 7.
The EP identifies that operational monitoring detailed in the OMPs will be initiated, monitoring teams deployed, and information provided to the incident management team (IMT) in timeframes that match those identified and applied to the oil pollution emergency response planning in the development of the OPEP.	As described in Section 7, the OPEP (Table 3-2 and 3-4) describes additional monitoring activities that will support the implementation of response strategies. This includes SCAT teams to support shoreline protection and clean-up; aerial surveillance to support oiled wildlife activities and marine fauna monitoring.
The EP identifies monitoring resources in the BIP that match the monitoring and response needs in terms of numbers of personnel, teams, equipment, sites etc. Tables 8-2, 8-3 and 10-1 in the template provide a suitable method of presenting the number of personnel and teams required to resource a monitoring program, however, the content of these tables will be assessed by NOPSEMA in the context of the oil pollution scenario(s), response needs analysis and capacity reasoning presented in the EP.	Section 8 outlines the spill scenarios expected to place the highest demand on Vermilion's initial and on-going monitoring capability. These scenarios form the basis of the OSM capability assessment. As per Section 8 of the BIP Template, Vermilion has determined its resourcing requirements by considering spill modelling outputs, implementation timeframes and monitoring priorities. Additionally, the use of 'Monitoring Units' has been incorporated, as described in Section 8.1 Monitoring Units, and also to demonstrate how BIAs, KEFs and broadscale features are integrated into the capability assessment.
The EP adheres to the exercise and testing process described in Section 9.3. Additionally, the BIP should identify the specific objectives of the testing of monitoring arrangements, ensure the frequency of the schedule of testing is consistent with the regulatory requirements and provide information on any aspects of the testing of	Section 9.3 is consistent with the BIP Template, outlining the types of exercises that shall be conducted by the OSM Services Provider, as per the OSRL OSM Supplementary Services Agreement; and also by Vermilion.

RAS Requirement	Relevant Section of Documentation that Addresses the Requirement
monitoring that differ to the OPEP testing arrangements described elsewhere in the EP.	
The EP confirms that the aims and objectives of the OMPs and SMPs are appropriate for a Titleholder's monitoring requirements and address the potential impacts and risks and response activities.	The OPEP (Section 8) confirms which OMPs and SMPs are relevant to the activity and that the aims and objectives of these monitoring plans are appropriate to the needs of the spill, its risks and response activities.
The EP uses the method provided in the template for Titleholders to ensure special requirements for Matters Protected Under Part 3 of the EPBC Act are met through the proposed monitoring (Section 14). However, the method indicates that this would be done prior to finalisation of OMPs and SMPs, which may not be completed in a Titleholder's EP. Titleholders should ensure that relevant requirements are at least identified in the EP. This process would also be repeated during finalisation of OMPs and SMPs in the event of an oil pollution emergency to ensure any changes to requirements since submission of the EP or the latest review are included.	Vermilion summarises special requirements for Matters Protected Under Part 3 of the EPBC Act in Section 3 of the activity EPs. The process for ensuring all relevant Protected Matters are integrated into the final monitoring design is outlined in Section 14.
The EP sets environmental performance outcomes, standards and measurement criteria that relate to the environmental impacts and risks and required level of performance of the proposed monitoring arrangements (preparedness and implementation) defined in the BIP.	The EP (Section 5.15.5) outlines a number of environmental performance outcomes, standards and measurement criteria committing Vermilion to OSM preparedness and implementation performance relevant to this OSM-BIP.

Appendix B: Sensitive Receptors and their Relevant OMPs and SMPs

Receptor	OMP: Hydrocarbon Properties and Weathering Behaviour at Sea	OMP: Water Quality Assessment	OMP: Sediment Quality Assessment	OMP: Shoreline Clean-up Assessment	OMP: Marine Fauna Assessment	SMP: Water quality impact assessment	SMP: Sediment quality impact assessment	SMP: Intertidal and coastal habitat assessment	SMP: Seabirds and shorebirds	SMP: Marine megafauna assessment- reptiles	SMP: Marine megafauna assessment- whale sharks, dugong and cetacean	SMP: Benthic habitat assessment	SMP: Marine fish and elasmobranch assemblages assessment	SMP: Fisheries impact assessment	SMP: Heritage and social impact assessment
AMPs															
Gascoyne AMP	✓	✓	✓	-	✓	✓	✓	-	⊙	⊙	⊙	✓	✓	✓	✓
Montebello AMP	✓	✓	✓	-	✓	✓	✓	-	⊙	⊙	⊙	✓	✓	✓	✓
Shorelines															
WA10 (122) - Vlamingh Head - North West Cape	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WA10 (123) - Low Point - Vlamingh Head (A)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WA10 (124) - Low Point - Vlamingh Head (B)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WA11.West (318) - Barrow Island and Montebello Islands (A) (Montebello Islands)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WA11.West (319) - Barrow Island and Montebello Islands (B) (Montebello Islands)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WA11.West (320) - Barrow Island and Montebello Islands (C) (Barrow Island)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WA11.West (321) - Barrow Island and Montebello Islands (D) (Barrow Island)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WA11.West (324) - Yardie Landing - Weld Island coast S (B) (Airlie Island)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WA11.West (325) - Coolgra Point W - Yardie Landing (C) (Thevenard Island)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WA11.West (326) - Baresand Point - Entrance Point E (Serrurier Island, Bessieres Island, Round Island)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Receptor	OMP: Hydrocarbon Properties and Weathering Behaviour at Sea	OMP: Water Quality Assessment	OMP: Sediment Quality Assessment	OMP: Shoreline Clean-up Assessment	OMP: Marine Fauna Assessment	SMP: Water quality impact assessment	SMP: Sediment quality impact assessment	SMP: Intertidal and coastal habitat assessment	SMP: Seabirds and shorebirds	SMP: Marine megafauna assessment- reptiles	SMP: Marine megafauna assessment- whale sharks, dugong and cetacean	SMP: Benthic habitat assessment	SMP: Marine fish and elasmobranch assemblages assessment	SMP: Fisheries impact assessment	SMP: Heritage and social impact assessment
WA11.West (327) - Hope Point - Locker Point (E) (Observation Island)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WA11.West (329) - Locker Point - Baresand Point (Muiron Islands)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Marine Parks (MP) and Nature Reserves (NR)															
Barrow Islands MMA and Barrow Island MP (State)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lowendal Islands NR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Montebello Islands MP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Muiron Islands MP & MMA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ningaloo MP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reefs, Shoals and Banks															
All	✓	✓	✓	-	✓	✓	✓	-	⊙	⊙	⊙	✓	✓	✓	-
KEFs															
Ancient Coastline at 125 m depth contour	-	✓	✓	-	✓	✓	✓	-	⊙	⊙	⊙	✓	-	-	-
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	-	✓	✓	-	✓	✓	✓	-	✓	⊙	✓	✓	✓	-	-
Continental Slope Demersal Fish Communities	-	✓	✓	-	✓	✓	✓	-	⊙	⊙	⊙	✓	✓	-	-
Commonwealth waters adjacent to Ningaloo Reef	-	✓	✓	-	✓	✓	✓	-	✓	⊙	✓	✓	✓	-	-
Exmouth Plateau	-	✓	✓	-	✓	✓	✓	-	⊙	⊙	⊙	✓	⊙	-	-

Receptor	OMP: Hydrocarbon Properties and Weathering Behaviour at Sea	OMP: Water Quality Assessment	OMP: Sediment Quality Assessment	OMP: Shoreline Clean-up Assessment	OMP: Marine Fauna Assessment	SMP: Water quality impact assessment	SMP: Sediment quality impact assessment	SMP: Intertidal and coastal habitat assessment	SMP: Seabirds and shorebirds	SMP: Marine megafauna assessment- reptiles	SMP: Marine megafauna assessment- whale sharks, dugong and cetacean	SMP: Benthic habitat assessment	SMP: Marine fish and elasmobranch assemblages assessment	SMP: Fisheries impact assessment	SMP: Heritage and social impact assessment
Glomar Shoals	-	✓	✓	-	✓	✓	✓	-	⊙	⊙	⊙	✓	✓	-	-
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	-	✓	✓	-	✓	✓	✓	-	⊙	⊙	⊙	✓	✓	-	-
BIAs															
Whale shark BIA	-	✓	-	-	✓	✓	-	-	-	-	✓	-	-	-	✓
Pygmy blue whale BIA	-	✓	-	-	✓	✓	-	-	-	-	✓	-	-	-	-
Dugong BIA	-	✓	-	-	✓	✓	-	-	-	-	✓	✓	-	-	-
Humpback whale BIA	-	✓	-	-	✓	✓	-	-	-	-	✓	-	-	-	-
Southern right whale BIA	-	✓	-	-	✓	✓	-	-	-	-	✓	-	-	-	-
Flatback turtle BIAs	-	✓	-	✓	✓	✓	✓	-	-	✓	-	✓	-	-	-
Green turtle BIAs	-	✓	-	✓	✓	✓	✓	-	-	✓	-	✓	-	-	-
Hawksbill turtle BIAs	-	✓	-	✓	✓	✓	✓	-	-	✓	-	✓	-	-	-
Loggerhead turtle BIAs	-	✓	-	✓	✓	✓	✓	-	-	✓	-	✓	-	-	-
Fairy tern BIA	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-
Lesser crested tern BIA	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-
Lesser Frigatebird BIA	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-
Roseate tern BIA	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-
Wedge-tailed shearwater BIA	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-
Brown Booby BIA	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-
White-tailed tropicbird BIA	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-
Little Tern BIA	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-
Key															
✓	It is highly likely that the initiation criteria would be met for the relevant OMP/SMP														

Receptor	OMP: Hydrocarbon Properties and Weathering Behaviour at Sea	OMP: Water Quality Assessment	OMP: Sediment Quality Assessment	OMP: Shoreline Clean-up Assessment	OMP: Marine Fauna Assessment	SMP: Water quality impact assessment	SMP: Sediment quality impact assessment	SMP: Intertidal and coastal habitat assessment	SMP: Seabirds and shorebirds	SMP: Marine megafauna assessment- reptiles	SMP: Marine megafauna assessment- whale sharks, dugong and cetacean	SMP: Benthic habitat assessment	SMP: Marine fish and elasmobranch assemblages assessment	SMP: Fisheries impact assessment	SMP: Heritage and social impact assessment
⊙	It is possible that the initiation criteria may or may not be met for the relevant OMP/SMP														
-	Not applicable														

Appendix C: Background Information for Key Sensitivities

Table C-1: Background information for key sensitivities predicted to be contacted within 14 days, at a probability >5%

Receptor	Receptor	Background	Key locations	Seasonality
Barrow Island	Birds	Important feeding and resting area for migratory shorebirds. Under the Ramsar Convention, an area is recognised as an internationally significant littoral avifauna site if it supports >1% of a species' population. Barrow Island meets this Ramsar criterion for six trans-equatorial migratory species: grey-tailed tattler (*Tringa brevipes*), ruddy turnstone (*Arenaria interpres*), red-necked stint (*Caladrius ruficollis*), sanderling (*Calidris alba*), greater sand plover (*Charadrius leschenaultia*) and lesser sand plover (*Charadrius mongolus*). It is also significant for two non-migratory birds: fairy tern (*Sterna nereis*) and the northern race of the sooty oystercatcher (*Haematopus fuliginosus opthalmicus*) (DEC 2006). Nesting area for seabirds.	The highest abundances of shorebirds are associated with the extensive tidal mudflats of the south-eastern and southern coasts, such as Bandicoot Bay.	Migratory shorebird abundances increase on the island as the birds arrive from the north during September to December. The abundances of some migratory shorebirds continue to increase in January and February, suggesting local movements of birds from the mainland to Barrow Island. Abundances decrease as the migratory species leave the region to return north at the end of summer.
	Turtles	Green (*Chelonia mydas*), flatback (*Natator depressus*), hawksbill (*Eretmochelys imbricata*), loggerhead (*Caretta caretta*) and leatherback (*Dermochelys coriacea*) turtles (DEC 2006).	Flatbacks nest on sandy beaches on the mid-eastern coast (DEC 2006). Green turtles predominantly use exposed sandy beaches on the west coast (DEC 2006). Substantial mating populations of green turtles are found in the waters of north-western Barrow Island (DEC 2006). Green turtle can be found year-round feeding on algae-covered rocky intertidal and subtidal platforms off the west coast (DEC 2006). Feeding grounds for hawksbill turtles have been identified to the south of the Barrow Shoals (DEC 2006).	Flatback: breeding/nesting season October – January. Hatching season: February – March. Green turtle: mating aggregations may commence from October with peak nesting from December to January, however, nesting does occur year-round (Moro and MacAulay 2010). Hawksbill: The peak season for nesting is between October and November, with less frequent nesting during December and January round (Moro and MacAulay 2010).

Receptor	Receptor	Background	Key locations	Seasonality
	Cetaceans	Whale species that may occasionally visit include the humpback whale (*Megaptera novaeangliae*), short-finned pilot whale (*Globicephala macrorhynchus*), false killer whale (*Pseudorca crassidens*), killer whale (*Orcinus orca*), minke whale (*Balaenoptera acutorostrata*), Bryde's whale (*Balaenoptera edeni*), sei whale (*Balaenoptera borealis*), pygmy blue whale (*Balaenoptera musculus brevicauda*), fin whale (*Balaenoptera physalus*), melon-headed whale (*Peponocephala electra*), sperm whale (*Physeter macrocephalus*) and the blue whale (*Balaenoptera musculus musculus*). Of these, only the humpback whale is a regular visitor to the area (DEC 2006). Bottlenose dolphins (*Tursiops truncatus*) and humpback dolphins (*Sousa sahulensis*) have resident populations within the shallow waters of the inner Rowley Shelf, including the Barrow Island area (DEC 2006). Spinner dolphins (*Stenella longirostris*), common dolphins (*Delphinius delphis*), and striped dolphins (*Stenella caeruleoalba*) are abundant in the waters around Barrow Island (DEC 2006).	Spinner dolphins, common dolphins, and striped dolphins are generally oceanic species and are likely to be most abundant on the west coast of the island (DEC 2006).	-
	Dugong	Dugong (*Dugong dugon*) significant sightings (Bancroft et al. 2000)	-	-
	Mangroves	Restricted areas of stunted *Avicennia marina* occurring in narrow fringing strips in embayments (DEC 2006).	Mattress Point, south of the Chevron camp, near the airstrip, at Stokes Point and near Pelican Island on the western side of Bandicoot Bay (DEC 2006).	-
Lowendal Islands	Birds	Nesting area for seabirds.	Abutilon, Beacon, Bridled, Parakeelya, and Varanus islands	Seabird nesting all year, peak Oct – Jan. Pied cormorant (*Phalacrocorax varius*) nests in winter (Nicholson 2002).

Receptor	Receptor	Background	Key locations	Seasonality
				Wedge-tailed shearwater (*Ardenna pacifica*) and Bridled tern (*Onychoprion anaethetus*) nest in Summer (Nicholson 2002). Silver gull (*Larus novaehollandiae*) nests in summer and Autumn (Nicholson 2002). Crested tern (*Thalasseus bergii*), Lesser crested tern (*Thalasseus bengalensis*) and Roseate tern (*Sterna dougallii*) nest in Autumn (Nicholson 2002).
	Turtles	Green (*Chelonia mydas*), flatback (*Natator depressus*), hawksbill (*Eretmochelys imbricata*), loggerhead (*Caretta caretta*) and leatherback (*Dermochelys coriacea*) turtles (DEC 2006).	All beaches on Beacon, Bridled, Varanus, Abutilon, Parakeelya Islands Significant hawksbill nesting on Varanus Island (DSEWPC 2012a). Hawksbill foraging around the Lowendal Island group (DSEWPC 2012a).	Hawksbill nesting in spring and early summer (peak October) with a 20 km internesting buffer. Flatback nesting peak late December – early January with a 20 km internesting buffer (DSEWPC 2012a).
	Cetaceans	Whale species that may occasionally visit include the humpback whale (*Megaptera novaeangliae*), short-finned pilot whale (*Globicephala macrorhynchus*), false killer whale (*Pseudorca crassidens*), killer whale (*Orcinus orca*), minke whale (*Balaenoptera acutorostrata*), Bryde's whale (Balaenoptera edeni), sei whale (*Balaenoptera borealis*), pygmy blue whale (*Balaenoptera musculus brevicauda*), fin whale (*Balaenoptera physalus*), melon-headed whale (*Peponocephala electra*), sperm whale (*Physeter macrocephalus*) and the blue whale (*Balaenoptera musculus musculus*). Of these, only the humpback whale is a regular visitor to the area (DEC 2006).	-	-
	Dugong	The seagrass beds around the Lowendal Islands are thought to provide a valuable food source for dugong (*Dugong dugon*)	-	-

Receptor	Receptor	Background	Key locations	Seasonality
		(DEC 2006).		
	Mangroves	Mangroves occupy less than 0.1% of the coastline (DEC 2006).	-	-
Montebello Islands	Birds	Twenty-six species of seabirds and waders, including migratory waders, are known in the Montebello Islands Marine Area. Migratory and threatened seabirds – Significant nesting, foraging and resting areas (Burbidge et al. 2000). At least 61 islands in the Montebello group are used by nesting seabirds (DEC 2006). Waterbirds- Historically moderately common: pied cormorant (*Phalacrocarax varius*), Australian pelican (*Pelecanus conspicillatus*), Historically common: eastern reef egret (*Egretta sacra*), osprey (*Pandion haliaetus*) Shorebirds- Historically moderately common: whimbrel (*Numenius phaeopus*), greenshank (*Tringa nebularia*), common sandpiper (*Actitis hypoleucos*), ruddy turnstone (*Arenaria interpres*), red-necked stint (*Calidris ruficollis*) Historically common: bar-tailed godwit (*Limosa lappanica*), grey-tailed tattler (*Heteroscelus brevipes*), beach stone-curlew (*Esacus neglectus*), pied oystercatcher (*Haematopus ostralegus*), sooty oystercatcher (*Haematos fuliginosus*) Burbidge et al. 2000).	Wedge-tailed shearwater (*Puffinus pacificus*) significant breeding historically reported on Ah Chong, Gossypium, Brooke, Flag, Gardenia and South East Islands. Silver gull (*Larus novaehollandiae*) breeding historically reported on Brooke and South East. Caspian tern (*Sterna caspia*) common breeding resident historically on Ah Chong, Alpha, Bluebell, Dandelion, Flag, Foxglove, Islet to south of Hermite, Ivy, Kunzea, Marri Islands, Primrose, Renewal and Trimouille. Roseate tern (*Sterna dougallii*) significant historical breeding historically reported on Dahlia, Dandelion, Pimelia, Myoporum, Gannet, Fig Islands and Bloodwood. Fairy tern (*Sterna nereis*) historical breeding on Fairy Tern Island and Hibbertia. Crested tern (*Sterna bergii*) significant historical breeding on Daisy, Epsilon and Flag Burbidge et al. 2000)..	Wedge-tailed shearwater and bridled tern nest in summer (Nicholson 2002). Silver gull nest in summer and Autumn (Nicholson 2002). Caspian tern nest in autumn and winter (Nicholson 2002). Crested tern, lesser crested tern, roseate tern and sooty tern nest in Autumn (Nicholson 2002). Fairy tern nest in winter and spring (Nicholson 2002).
	Turtle	Loggerhead (*Caretta caretta*) and green (*Chelonia mydas*) (*significant rookeries*); hawksbill (*Eretmochelys imbracata*), flatback (*Natator depressus*) turtles (Burbidge et al. 2000) Flatback are common in the waters surrounding the Montebello Islands (Burbidge et al. 2000) and nesting occurs for the following species (Commonwealth of Australia 2017):	Hawksbill- Ah Chong Island, South East Island, Trimouille and elsewhere.	Green turtle- major nesting Nov – Mar (peak: Dec-May) on locations with sandy beaches (recovery plan) Flatback- minor nesting occurs Oct-Mar (peak: Nov-Jan)

Receptor	Receptor	Background	Key locations	Seasonality
		• Green turtle • Flatback • Hawksbill		Hawksbill- major nesting occurs all year (peak Oct-Jan)
	Cetaceans	Whale species that may occasionally visit include the humpback whale (*Megaptera novaeangliae*), short-finned pilot whale (*Globicephala macrorhynchus*), false killer whale (*Pseudorca crassidens*), killer whale (*Orcinus orca*), minke whale (*Balaenoptera acutorostrata*), Bryde's whale (*Balaenoptera edeni*), sei whale (*Balaenoptera borealis*), pygmy blue whale (*Balaenoptera musculus brevicauda*), fin whale (*Balaenoptera physalus*), melon-headed whale (*Peponocephala electra*), sperm whale (*Physeter macrocephalus*) and the blue whale (*Balaenoptera musculus musculus*). (DEC 2006). Pygmy blue whale (*Balaenoptera musculus brevicauda*) and humpback whale (*Megaptera novaeangliae*) migration area Humpback dolphins (*Sousa sahulensis*) thought to be present year-round in the area (Raudino et al. 2018)	An area of sheltered water to the west of Trimouille Island is used as a resting area for female humpback whales and their young calves during their southerly migration (DEC 2006).	-
	Dugong	Dugong (*Dugong dugon*) significant sightings (Bancroft et al. 2000)	-	-
Muiron Islands	Birds	Nesting area for seabirds Wedge-tailed shearwater (*Ardenna pacifica*) nesting colony, birds forage at sea in large aggregations. Crested tern (*Thalasseus bergii*) nesting colony (Department of Parks and Wildlife 2014) Identified as an internationally important shorebird area (Weller et al. 2020).	-	Wedge-tailed shearwater are believed to stay in the area year-round, but undertake significant flights away from the islands around May. Returning around June, they nest in burrows on both islands spending several months preparing and re-excavating the burrows. At about 1 m long and not very deep, the burrows are subject to collapse by foot traffic. A single egg is laid around October and the chicks hatch in January (DPaW 2015).

Receptor	Receptor	Background	Key locations	Seasonality
	Turtle	Major loggerhead turtle (*Caretta caretta*) nesting site, significant green turtle (*Chelonia mydas*) nesting site, low density hawksbill turtle (*Eretmochelys imbricata*) nesting site, occasional flatback turtle (*Natator depressus*) presence	-	Loggerhead turtle peak nesting: November to January (Waayers 2010). Green turtle peak nesting December to January (Waayers 2010).
Ningaloo Coast World Heritage Area	Mangroves	Mangroves are not extensive.	On the east side of the Cape Range peninsula, a fringing mangal of Avicennia marina occurs to the south of Cape Murat, between Bundegi Reef and Exmouth. On the west side of the Peninsula, mangals occur at Mangrove Bay (*A. marina, Rhizophora stylosa and Bruguiera exaristata*), Low Point (*Avicennia marina*) and Yardie Creek (*A. marina and R. stylosa*)	-
	Manta rays	-	-	Ningaloo Reef is considered an important area for Manta Rays in autumn and winter (Preen et al. 1997).
	Whale sharks	Whale Sharks aggregate in the waters of the Ningaloo Marine Park, frequently close to the Ningaloo Reef front. The aggregations coincides with the period when the Leeuwin Current is strongest. (Sleeman et al. 2010). The whale sharks that visit Ningaloo are mostly immature males (Sequerira et al. 2016).	-	Peak visibility April to July (noting that whale sharks may be present throughout the year)
	Turtle	Four species of turtle nest in Ningaloo: Green turtle (*Chelonia mydas*), Flatback turtle (*Natator depressus*), Hawksbill turtle (*Eretmochelys imbricata*), Loggerhead turtle (*Caretta caretta*)	The most concentrated area of green turtle nesting is along the northern beaches and Muiron Islands, while loggerhead nesting is concentrated along beaches further south (Bungelup, Jane's Bay, Gnaraloo) and	Main nesting: Hawksbill July-Mar Green Sept-Mar Flatback Sept-Mar Loggerhead Sept-Mar

Receptor	Receptor	Background	Key locations	Seasonality
			on South Muiron Island (Whiting 2016)	
	Marine mammals	Two species of dolphins are resident at Ningaloo, the Indo-Pacific bottlenose dolphin (*Tursiops aduncus*) and the Australian humpback dolphin (*Sousa sahulensis*) (Allen et al. 2012, Jefferson and Rosenbaum 2014). Humpback whales (*Megaptera novaeangliae*) and pygmy blue whales (*Balaenoptera musculus brevicauda*) migrate past Ningaloo each year on their way to breeding grounds further north, and back again (Jenner et al. 2001; Double et al. 2014). (Note: an increasing number of humpback calves are being born at or near Ningaloo each year (Irvine et al. 2018). The waters off Ningaloo are a possible foraging BIA for pygmy blue whales (Thums et al. 2022). Killer whales (*Orcinus orca*) prey on humpback whale calves and are regularly present during the southern migration of humpback whales each year (Pitman et al. 2014).	Indo-Pacific bottlenose dolphins have been found to be primarily associated with the 20 m contour and the Muiron Islands (Hanf 2015). A relatively dense population of have been observed around the North West Cape, suggesting that this region is of high importance to this species (Haughey et al. 2020) Humpback dolphins tend to be associated with intertidal and shallow coastal waters, as well as offshore islands (Hanf 2015). Dugong mostly inhabit the shallow 90-5 m) waters fringing the coast and offshore islands, occurring in close conjunction with the seagrass and algae beds on which they feed.	Humpback whales: June through to the end of October Pygmy blue whales: April to June
	Birds	Identified as an internationally important shorebird area (Weller et al. 2020). Approximately 30 bird species listed under (JAMBA), China–Australia Migratory Bird Agreement (CAMBA) and/or Republic of Korea- Australia Migratory Bird Agreement (ROKAMBA) have been recorded in the Cape Range National Park (DEC 2010). Habitats including the shallow sandy intertidal beaches and rocky shorelines of the Ningaloo coast are important for seabirds and waders to breed, rest and feed (Shire of Exmouth et al. 1999).	Significant seabird rookeries include Cape Farquhar, Pelican Point, Point Maud and Winderabandi Point (Shore of Exmouth et al. 1999).	Juvenile shorebirds can be found year-round. Adults shorebirds usually between August and April.

Receptor	Receptor	Background	Key locations	Seasonality
Southern Islands Coast (Southern Pilbara shoreline, Onslow area coastline)	Sediment	The Department of Environment and Conservation (DEC) investigated background contaminants in Sediments of the Pilbara in 2005 (DEC 2006). Sediment samples were collected from coastal waters at Port Hedland, Dampier Archipelago, Onslow, Ashburton River Mouth and Exmouth Gulf. Samples were analysed for TBT, PAHs, TPH, BTEXN, organochlorin pesticides, PCBs, total metals and metalloids. Background sediment quality was found to be high. Total arsenic were found in high concentrations in one site off Onslow (considered natural and likely to be related to geology of the region.	-	-
	Mangroves	Mangroves in the area form small but sometimes complex communities in embayments and on the sheltered shores of many offshore islands.	Juvenile green turtles are known to forage on mangroves and have been recorded in both Urala Creek North and Urala Creek South (AECOM 2022).	-
	Turtle	Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia 2017) has listed critical nesting habitat in this area for Green turtle (*Chelonia mydas*), Flatback turtle (*Natator depressus*), Hawksbill turtle (*Eretmochelys imbricata*) and Loggerhead turtle (*Caretta caretta*). Flatback BIA for nesting and internesting (DCCEEW 2023). Internesting BIA for green and loggerhead turtle (DCCEEW 2023).	Thevenard Island is an important nesting area (Commonwealth of Australia 2017).	Nesting and hatching takes place between October and April. Flatback turtle nesting in the Ashburton area occurs between October and February, with peak nesting activity in December (Imbricata 2013).
	Marine mammals	Key species (O2 Marine 2021) : humpback whale (*Megaptera novaeangliae*), dugong (*Dugong dugon*), Australian humpback dolphin (*Sousa sahulensis*), Indo-Pacific bottlenose dolphin (*Tursiops aduncus*). Dugongs are resident in coastal waters of the Pilbara coast and are sighted year-round, having a strong association with seagrass habitat. BIAs (DCCEEW 2023):	-	-

Receptor	Receptor	Background	Key locations	Seasonality
		Humpback whale: migration and resting. Pygmy blue whale: distribution.		
	Birds	Key species (O2 Marine 2021): Australian fairy tern (*Sternula nereis*), bar-tailed godwit- critically endangered (*Limosa lapponica menzbieri*), curlew sandpiper – critically endangered (*Calidris ferruginea*), eastern curlew- critically endangered (*Numenius madagascariensis*) Breeding and foraging BIA of Wedge-tailed shearwater (DCCEEW 2023).	-	Juvenile shorebirds can be found year-round. Adults shorebirds usually between August and April.

References

360 Environmental (2017). Learmonth Habitat Surveys. Report prepared for Subsea 7. 31pp

AECOM (2022) Marine Fauna Impact Assessment Ashburton Salt Project. Doc No. 60597242_3

Allen, S.J., Cagnazzi, D.D., Hodgson, A.J., Loneragan, N.R. and Bejder, L. 2012. Tropical inshore dolphins of north-western Australia: Unknown populations in a rapidly changing region. Pacific Conservation Biology 18, 56–63.

Australian Marine Parks (date unknown). Roebuck Marine Park. Australian Marine Parks. https://parksaustralia.gov.au/marine/parks/north-west/roebuck/

Bancroft K.P., Davidson J.A., and Looker O. (2000). Marine wildlife distribution in the proposed Montebello/Barrow Islands and Dampier Archipelago/Cape Preston marine conservation reserves. Report: MRI/PI/MBI&DAR-44/2000. August 2000. (Marine Conservation Branch, Department of Conservation and Land Management, 47 Henry St., Fremantle, Western Australia, 6160). Unpublished report.

BMT (2020). Learmonth Benthic Habitat Survey. Report to MBS Environmental for Subsea 7 Learmonth Pipeline Fabrication Facility. 8pp.

Burbidge A, Blyth JD, Fuller, PJ, Kendrick, PG, Stanley, FJ, Smith, LA. (2000). The terrestrial vertebrate fauna of the Montebello Islands, Western Australia. CALM Science 3(2): 95-107.

Commonwealth of Australia (2016) Wetlands and migratory shorebirds fact sheet. https://www.dcceew.gov.au/sites/default/files/documents/factsheet-wetlands-migratory-shorebirds.pdf

Commonwealth of Australia (2017) Recovery Plan for Marine Turtles in Australia 2017-2027

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2023). National Conservation Values Atlas. Accessed January 5 2024.

Department of Environment and Conservation (DEC) (2006) Background quality of the marine sediments of the Pilbara coast. DEC, Marine Technical Report Series, No. MTR 1.

Department of Environment and Conservation (DEC) (2006). Management Plan for the Montebello/Barrow Islands Marine Conservation Reserves, 2007–2017. Management Plan No. 55. Department of Conservation and Environment, Perth, Western Australia.

Department of Environment and Conservation (DEC) (2010). Cape Range National Park Management Plan No 65 2010. No. 65. Department of Environment and Conservation, Western Australia. Available at: www.dpaw.wa.gov.au/images/documents/parks/ management-plans/decarchive/cape-range-2010-print- and-web.pdf

Department of Parks and Wildlife (DPaW) (2015) Ningaloo Coast Spring News. Available at: https://library.dbca.wa.gov.au/static/Journals/080954/080954-2015.09.pdf

Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) (2012a) Marine bioregional plan for the North-west Marine Region.

Department of the Environment and Energy (DoEE). (2017). Recovery Plan for Marine Turtles in Australia 2017- 2027. Commonwealth of Australia 2017.

Double, M.C., Andrews-Goff, V., Jenner, K.C.S., Jenner, M.N., Laverick, S.M., Branch, T.A. and Gales, N.J. 2014. Migratory movements of pygmy blue whales (Balaenoptera musculus brevicauda) between Australia and Indonesia as revealed by satellite telemetry. PLOS ONE 9.

Fossette S, Loewenthal G, Peel LR, Vitenbergs A, Hamel MA, Douglas C, Tucker AD, Mayer F, Whiting SD (2021) Using Aerial Photogrammetry to Assess Stock-Wide Marine Turtle Nesting Distribution, Abundance and Cumulative Exposure to Industrial Activity. Remote Sens, 13, 1116.

Hanf, D. (2015). Species distribution modelling of western Pilbara inshore dolphins. Masters Thesis. Murdoch University. 130pp.

Haughey, R., Hunt, T., Hanf, D., Rankin, R. W., and Parra, G. J. (2020). Photographic capture-recapture analysis reveals a large population of Indo-Pacific bottlenose dolphins (Tursiops aduncus) with low site fidelity off the North West Cape, Western Australia. Frontiers in Marine Science 6. https://doi.org/10.3389/fmars.2019.00781.

Imbricata (2013). Wheatstone Project Technical Baseline Report: Marine Turtle Baseline Studies and Lighting Assessment in the Ashburton Area, Western Australia (2013). Unpublished report prepared for Chevron Australia.

Irvine, L.G., Thums, M., Hanson, C.E., McMahon, C.R. and Hindell, M.A. 2018. Evidence for a widely expanded humpback whale calving range along the Western Australian coast. Marine Mammal Science 34,294–310.

Jefferson, T.A. and Rosenbaum, H.C. 2014. Taxonomic revision of the humpback dolphins (Sousa spp.), and description of a new species from Australia. Marine Mammal Science 30, 1494–1541.

Lavers JL, Humphreys-Williams E, Crameri NJ, Bond AL (2020) Trace ekement concentrations feathers from three seabird species breeding in the Timor Sea. Marine Pollution Bulletin 151. 110876

Moro D and MacAuley (2010). A guide to the reptiles of Barrow Island. Chevron Australia. ISBN: 9780987112026.

Nicholson LW (2002). Breeding strategies and community structure in an assemblage of tropical seabirds on the Lowendal Islands, Western Australia. Unpublished PhD Thesis, Murdoch University, Perth, Western Australia.

O2 Marine (2021). Marine fauna desktop study: Desktop study for Mineral Resources: https://www.epa.wa.gov.au/sites/default/files/Referral_Documentation/CMS18094%20-%20Appendix%20K%20-%20Marine~%20Project%20-%20Onslow%20Iron%20Pty%20Ltd.PDF

Pendoley Environmental. (2019). Perdaman Urea project: Marine Fauna Desktop Assessment. Prepared for Cardni Inc.

Pitman, R., Totterdell, J., Fearnbach, H., Ballance, L., Durban, J.W. and Kemps, H. 2014. Whale killers: Prevalence and ecological implications of killer whale predation on humpback whale calves off Western Australia. Marine Mammal Science 31, 629–657.

Raudino, H.C., Hunt, T.N. and Waples, K.A. Records of Australian humpback dolphins (Sousa sahulensis) from an offshore island group in Western Australia. Mar Biodivers Rec 11, 14 (2018). https://doi.org/10.1186/s41200-018-0147-0

Roger DI, Scroggie MP, Hassell CJ (2020) Review of long-term shorebird monitoring in north Western Australia. Arthur Rylah Institute for Environmental Research. Technical Report Series No. 313. Prepared for DBCA

Shire of Exmouth, Department of Conservation and Land Management, and National Parks and Nature Conservation Authority (1999). Jurabi and Bundegi Coastal Parks and Muiron Islands Management Plan 1999-2009. Perth W.A.

Sleeman, J.C., Meekan, M.G., Fitzpatrick, B.J., Steinberg, C.R., Ancel, R. and Bradshaw, C.J.A. 2010. Oceanographic and atmospheric phenomena influence the abundance of whale sharks at Ningaloo Reef, Western Australia. Journal of Experimental Marine Biology and Ecology 382, 77–81.

Sutton A.L. and Shaw J.L. (2021) Cumulative Pressures on the Distinctive Values of Exmouth Gulf. First draft report to the Department of Water and Environmental Regulation by the Western Australian Marine Science Institution, Perth, Western Australia. 272 pages.

Thums, M., C. Ferreira, L., Jenner, C., Jenner, M., Harris, D., Davenport, A., Andrews-Goff, V., Double, M., Möller, L., Attard, C. R., Bilgmann, K., G. Thomson, P., and McCauley, R. (2022). Pygmy blue whale movement, distribution and important areas in the Eastern Indian Ocean. Global Ecology and Conservation, 35, e02054. https://doi.org/10.1016/j.gecco.2022.e02054

Waayers D (2010). A holistic approach to planning for wildlife tourism: a case study of marine turtle tourism and conservation in the Ningaloo Region, Western Australia. Unpublished PhD Thesis, Murdoch University, Perth, Western Australia.

Weller, D., Kidd, L., Lee, C., Klose, S., Jaensch, R. and Driessen, J. (2020). Directory of important habitat for migratory shorebirds in Australia. Prepared for Australian Government Department of Agriculture, Water and the Environment by BirdLife Australia, Melbourne.

Whiting, S., Tucker, T., Pendoley, K., Mitchell, N., Bentley, B., Berry, O., FitzSimmons, N. (2018). Final Report of Project 1.2.2 prepared for the Kimberley Marine Research Program, Western Australian Marine Science Institution, Perth, Western Australia, 146 pp.

Appendix D: OSM baseline data sources

Table D-1: Baseline data sources

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
Water quality	Chevron (2019) Wheatstone Effluent Quality Validation Report, Rev 0- 20200909 (ABU200900381)	Chevron	Onslow area
	Chevron (2022) MEQMP Compliance report and data (ABU221200858)	Chevron	Barrow Island
	Chevron (2022) Wheatstone Platform Environmental Monitoring Program – draft report. 60672341 Wheatstone 5 Yearly Monitoring Technical Report- Rev A	Chevron	Wheatstone Platform
	Chevron (2018) Wheatstone Platform Waste Water Discharges Model Verification Report (ABU190601699)	Chevron	Wheatstone Platform
	Chevron (2022) Gorgon Backfill Fields Benthic Survey 2022 (ABU230100068)	Chevron	Gorgon Backfill Fields
	Pilbara Ports Authority (2019) Marine Environmental Quality Program	Pilbara Ports Authority	Dampier Dampier Archipelago Port Hedland
	O2 Marine (2020) Mardie Project- Marine Water Quality. Prepared for Mardie Minerals Pty Ltd. Report Number R190056	O2 Marine	Mardie
	Port of Broome- Ongoing Marine Monitoring Program. By O2 Marine for Kimberley Ports Authority	Kimberley Ports Authority	Broome Kimberley
	Proposed Browse to North West Shelf Project, Appendix D.1: Browse to NWS Project Trunkline Route Surveys (2019) Environmental Survey Report. Neptune Document J11200-1-RR-006	Advisian/Neptune	Kimberley Marine Park Continental Slope Demersal Fish KEF Agro-Rowley Terrace Marine Park

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Ancient Coastline at 125 m Depth Contour KEF
Sediment quality	Chevron (2019) Wheatstone LNG Project Mangrove Monitoring Program 2019 (ABU200800053)	Chevron	Onslow
	Chevron (2022) MEQMP 2022 Compliance report and data (ABU221200858)	Chevron	Barrow Island
	Chevron (2022) Wheatstone Platform Environmental Monitoring Program – DRAFT REPORT 60672341, Wheatstone Platform 5 Yearly Monitoring Technical Report-Rev A	Chevron	Wheatstone Platform
	Chevron (2022) Gorgon Backfill Fields Benthic Survey 2022 (ABU230100068)	Chevron	Gorgon Backfill Fields
	Pilbara Ports Authority (2019) Marine Environmental Quality Program	Pilbara Ports Authority	Dampier Dampier Archipelago Port Hedland
	O2 Marine (2019). Mardie project- Sediment Sampling and Analysis Plan Results. Prepared for Mardie Minerals Pty Ltd. Report Number R190033	O2 Marine	Mardie
	O2 Marine and Teal Solutions (2019). Port Hedland Spoilbank Marina Sediment Sampling and Analysis Plan Implementation Report. Prepared for the Department of Transport. Report Number R190209	O2 Marine	Port Hedland
	Jones R, Wakeford M, Currey-Randall L, Miller K, Tonin H (2021) Drill cuttings and drilling fluids (muds) transport, fate and effects near a coral reef mesophotic zone. Marine Pollution Bulletin 172, 112717	AIMS	Glomar Shoal Rankin Bank
	O2 Marine (2021) Ashburton Infrastructure Project Sediment Sampling and Analysis Plan, Fremantle, WA. Prepared for Mineral Resource Limited	O2 Marine	Ashburton Onslow area
	Advisian (2019) Scarborough Sediment Sampling and Analysis Plan Implementation Report. Prepared for Woodside	Woodside	Dampier
	Woodside (ongoing unpublished data) Chemical and Ecological Monitoring of Mermaid Sound	Woodside	Burrup Peninsula Dampier
	Port of Broome- Ongoing Marine Monitoring Program. By O2 Marine for Kimberley Ports Authority	Kimberley Ports Authority	**Broome** **Kimberley**

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Proposed Browse to North West Shelf Project, Appendix D.1: Browse to NWS Project Trunkline Route Surveys (2019) Environmental Survey Report. Neptune Document J11200-1-RR-006	Advisian/Neptune	Kimberley Marine Park Continental Slope Demersal Fish KEF Agro-Rowley Terrace Marine Park Ancient Coastline at 125 m Depth Contour KEF
Intertidal and coastal habitats	Chevron (2019) Wheatstone LNG Project Mangrove Monitoring Program 2019 (ABU200800053)	Chevron	Onslow
	DBCA (long-term monitoring) Ningaloo Reef Program	DBCA	Ningaloo
	360 Environmental (2017) Learmonth Habitat Surveys. Prepared for Subsea 7	Subsea 7	Exmouth Gulf
	Woodside (ongoing unpublished data) Chemical and Ecological Monitoring of Mermaid Sound	Woodside	Burrup Peninsula Dampier
	AECOM (2022) Assessment of Benthic Communities and Habitats Ashburton Salt Project. Prepared for K + S Australian Pty Ltd. Doc No. 60692048_4.	K + S Australian Pty Ltd	Ashburton Onslow area
	Reef R and Lovelock C (2019). Characteristics of landward expansion of mangrove forests with sea level rise. Geophysical Research Abstracts 21(1), 1.	Monash University	Exmouth Gulf
	DBCA (2019) Ecological monitoring in the Shark Bay marine reserves, DBCA, Perth.	DBCA	Shark Bay
	Sutton AL and Shaw LL (2020) A snapshot of Marine Research in Shark Bay (Gathaagudu): Literature Review and Metadata Collection (1949-2020). West Australian Marine Science Institution, 180.	WAMSI	Shark Bay
	Sutton AL and Shaw JL (2021) Cumulative Pressures on the Distinctive Values of Exmouth Gulf. First draft report to the Department of Water and Environmental Regulation by the Western Australian Marine Science Institution, Perth, Western Australia. 272 pages.	WAMSI	Exmouth Gulf

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	DBCA (2023) DBCA Annual Report 2022–23, Department of Biodiversity, Conservation and Attractions, Perth. Primary productivity and energy transfer between marine ecosystems (SP 2020-002)	DBCA	Dampier Archipelago
	Lincoln G, Mathews D, Oades D with the Balanggarra, Bardi Jawi, Dambimangari, Karajarri, Mayala, Nyangumarta, Nyul Nyul, Wunambal Gaambera and Yawuru ISWAG members (2021) The Kimberley Indigenous Turtle and Dugong Initiative 2021-2031. Prepared by Mosaic Environmental for the Kimberley Indigenous Saltwater Advisory Group (ISWAG) Broome 2021	Coordinated by the Kimberley Indigenous Saltwater Advisory Group, implemented by Kimberley Saltwater Communities, supported by Western Science Partners	Kimberley
	Astron Environmental Services (2021) Varanus and Bridled Islands Mangrove Monitoring – Annual Report 2020, unpublished report to Santos WA Energy Limited	Santos	Varanus Island Bridled Island
	Ground-truthing satellite imagery that is utilised to monitor mangrove extent/density at Montebello Islands	DBCA	Montebello Islands
	Port of Broome- Ongoing Marine Monitoring Program. By O2 Marine for Kimberley Ports Authority	Kimberley Ports Authority	Broome Kimberley
	WAMSI- Mardie Off Set Plan	WAMSI	Pilbara Coast Gnoorea Yammadery Onslow Giralia Bay
Benthic habitat	Chevron (2019) Jansz-Io Subsea Compression Benthic Video Footage Review (G7-NT-REPX0000239)	Chevron	Jansz-Io Field
	Chevron (2022) WHS Platform Environmental Monitoring Program – DRAFT REPORT 60672341, Wheatstone Platform 5 Yearly Monitoring Technical Report-Rev A	Chevron	Wheatstone Platform

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Chevron (2022) Gorgon Backfill Fields Benthic Survey (ABU230100068)	Chevron	Gorgon Backfill Fields
	Chevron (2023) Thevenard Island Retirement Project Heavy Lift Vessel Anchor Spread Benthic Habitat Mapping-Survey Report	Chevron	Thevenard Island
	DBCA (long-term monitoring) Ningaloo Reef Program	DBCA	Ningaloo
	Wahab MA, Radford B, Cappo M, Colquhoun J, Stowar M, Depczynski M, Miller K, Heyward A (2018) Biodiversity and spatial patterns of benthic habitat and associated demersal fish communities at two tropical submerged reef ecosystems. Coral Reefs, 37, 327-343, 10.1007/s00338-017-1655-9	AIMS	Glomar Shoal Rankin Bank
	O2 Marine (2019). Mardie project- Sediment Sampling and Analysis Plan Results. Prepared for Mardie Minerals Pty Ltd. Report Number R190033	O_2 Marine	Mardie
	O2 Marine (2019). Mardie Project – Subtidal Benthic Communities and Habitat Baseline Assessment. Prepared for Mardie Minerals Pty Ltd. Report Number R190045.	O_2 Marine	Mardie
	Jones R, Wakeford M, Currey-Randall L, Miller K, Tonin H (2021) Drill cuttings and drilling fluids (muds) transport, fate and effects near a coral reef mesophotic zone. Marine Pollution Bulletin 172, 112717	AIMS	Glomar Shoal Rankin Bank
	O2 Marine (2021) Benthic Communities and Habitat Ashburton Infrastructure Project, Fremantle, WA. Prepared for Mineral Resources Limited	O_2 Marine	Ashburton Onslow area
	O2 Marine (2021). Onslow Seawater Desalination Plant. Benthic Communities and Habitat. Report No. R200065. Prepared for the Water Corporation.	O_2 Marine	Onslow area
	360 Environmental (2017) Learmonth Habitat Surveys. Prepared for Subsea 7	Subsea 7	Exmouth Gulf
	Advisian (2019) Dampier Archipelago Commonwealth Waters Marine Benthic Habitat Survey. Prepared for Woodside Energy Ltd	Woodside	Dampier Archipelago
	MScience (2019) Scarborough Trunkline Marine Environmental Studies- Pre-dredging Coral Habitat Assessment. Report to Advisian	Advisian	Dampier Archipelago Dampier Angle Island Burrup Peninsula Conzinc Island Gidley Island

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Intercourse Island Malus Island Middle Island
	Woodside (ongoing unpublished data) Chemical and Ecological Monitoring of Mermaid Sound	Woodside	Burrup Peninsula Dampier
	AECOM (2022) Assessment of Benthic Communities and Habitats Ashburton Salt Project. Prepared for K + S Australian Pty Ltd. Doc No. 60692048_4.	K + S Australian Pty Ltd	Ashburton Onslow area
	O2 Marine and Teal Solutions (2019) Port Hedland Spoilbank Marina Sediment Sampling and Analysis Plan Implementation Report. Prepared for the Department of Transport. Report Number R190209	O_2 Marine	Port Hedland
	BMT (2020) Technical Note. Learmonth Benthic Habitat Survey. Prepared for MBS Environmental	BMT	Exmouth Gulf
	Advisian (2019) Scarborough Offshore Benthic Marine Habitat Assessment. Prepared for Woodside	Woodside	Scarborough permit area WA-1-R
	Advisian (2019) Montebello Marine Park Benthic Habitat Survey ROV Analysis of the Scarborough Pipeline Route. Prepared for Woodside	Woodside	Montebello Australian Marine Park
	Moustaka M, Mohring M, Holmes T, Evans R , Thomson D, Nutt C, Stoddart J, Wilson S (2019) Cross-shelf Heterogeneity of Coral Assemblages in Northwest Australia, Diversity, vol. 11, 15pp.	DBCA Marine Science	Dampier Archipelago Regnard Island Eaglehawk Island Dockrell Reef Enderby Island Goodwyn Island Malus Island Conzinc Island Gidley Island Hammersley Shoal Legendre Island

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Delambre Island
	Thompson DP, Babcock RC, Evans RD, Feng M, Moustaka M, Orr M, Slawinski D, Wilson S, Hoey A (2021) Coral larval recruitment in north-western Australia predicted by regional and local conditions. Marine Environmental Research 168: 105318	CSIRO	Dampier Archipelago Regnard Island Eaglehawk Island Dockrell Reef Enderby Island Goodwyn Island Malus Island Conzinc Island Gidley Island Hammersley Shoal Legendre Island Delambre Island
	Adam A., Thomas L, Underwood J, Gilmour J, Richards Z (2022) Population connectivity and genetic offset in the spawning coral *Acropora digitifera* in Western Australia. Molecular Ecology.	Curtin University	Ashmore Reef Lalang-garram Marine Park Reefs Beagle Reef Adele Island Clerke Reef Mermaid Reef Imperieuse Reef Ningaloo Station Gnaraloo Quobba
	Doropoulos C, Gomez-Lemos LA, Salee K, McLaughlin MJ, Tebben J, Van Koningsveld M, Feng M, Babock R (2021). Limitations to coral recovery along an environmental stress gradient. Ecological Applications. 2022;32:e2558.	CSIRO	Exmouth Gulf Exmouth

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Ningaloo Coral Bay
	Edgeloe JM, Severn-Ellis AA, Bayer PE, Mehravi S, Breed MF, Krauss SL, Batley J, Kendrick GA, Sinclair EA. 2022. Extensive polyploid clonality was a successful strategy for seagrass to expand into a newly submerged environment. Proc. R. Soc. B20220538.https://doi.org/10.1098/rspb.2022.0538	UWA	Shark Bay
	McLean D and Birt M. (2021) Enhanced ROV survey of tropical fish and benthic communities associated with shallow oil and gas platforms. Research Square	AIMS	Varanus Island
	Sutton AL and Shaw LL (2020) A snapshot of Marine Research in Shark Bay (Gathaagudu): Literature Review and Metadata Collection (1949-2020). West Australian Marine Science Institution, 180.	WAMSI	Shark Bay
	Sutton AL and Shaw JL (2021) Cumulative Pressures on the Distinctive Values of Exmouth Gulf. First draft report to the Department of Water and Environmental Regulation by the Western Australian Marine Science Institution, Perth, Western Australia. 272 pages.	WAMSI	Exmouth Gulf
	DBCA (2023), Biodiversity and Conservation Science Annual Report 2022–23, DBCA, Perth. Primary productivity and energy transfer between marine ecosystems (SP 2020-002)	DBCA	Dampier Archipelago
	DBCA (2023), Biodiversity and Conservation Science Annual Report 2022–23, DBCA, Perth. Understanding the key ecosystem services provided by the seagrass meadows of Western Australia (SP 2018-136)	DBCA	Shark Bay
	National Reef Monitoring Network	The IMOS National Reef Monitoring Network sub-Facility	Houtman Abrolhos Islands Ningaloo Coast World Heritage Area Exmouth Gulf Dampier Archipelago Island Group Barrow Island Montebello Islands Group Ashmore Reef Cartier Island

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Darwin Harbour Arafura Arnhem Marmion Rottnest Island Geographe Bay
	Ningaloo Outlook	CSIRO	Ningaloo Coast World Heritage Area
	Gilmour JP, Cook KL, Ryan NM, Puotinen ML, Green, RH, Shedrawi G, Hobbs J-P A, Thompson, DP, Badcock, R, Buckee J, Foster T, Richards ZT, Wilson SK, Barnes PB, Coutts TB, Radford BT, Piggott CH, Depczynski M, Evans SN, Schoepf V, Evans RD, Halford AR, Nutt CD, Bancroft KP, Heyward AJ, Oades D (2019) The state of Western Australia's coral reefs. Coral Reefs https://doi.org/10.1007/s00338-019-01795-8	AIMS	Western Australia Cocos Keeling Islands Ashmore Reef Scott Reef Rowley Shoals Montebello Islands Group Barrow Island Ningaloo Reef Shark Bay
	Lincoln G, Mathews D, Oades D with the Balanggarra, Bardi Jawi, Dambimangari, Karajarri, Mayala, Nyangumarta, Nyul Nyul, Wunambal Gaambera and Yawuru ISWAG members (2021) The Kimberley Indigenous Turtle and Dugong Initiative 2021-2031. Prepared by Mosaic Environmental for the Kimberley Indigenous Saltwater Advisory Group (ISWAG) Broome 2021	Coordinated by the Kimberley Indigenous Saltwater Advisory Group, implemented by Kimberley Saltwater Communities, supported by	Kimberley

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
		Western Science Partners	
	Heyward A, Miller K, Fromont J, Keesing J, Parnum I (EDS.) (2018). Kimberley Benthic Biodiversity Synthesis Report of Project 1.1.1 prepared for the Kimberley Marine Research Program, Western Australian Marine Science Institution, Perth, Western Australia, 57pp.	WAMSI AIMS	Kimberley Camden Sound Bonaparte Archipelago Eclipse Archipelago Lalang-garram Marine Park Reefs
	Port of Broome- Ongoing Marine Monitoring Program. By O2 Marine for Kimberley Ports Authority	Kimberley Ports Authority	Broome Kimberley
	Biota Environmental Sciences (2019) Asian Renewable Energy Hub Environmental Review Document, Assessment Number 2140, Appendix 2 Benthic Communities and Habitat Survey. Prepared by BMT	BMT for Asian Renewable Hub (NW Interconnected Power)	Eighty Mile Beach
	Proposed Browse to North West Shelf Project, Appendix D.1: Browse to NWS Project Trunkline Route Surveys (2019) Environmental Survey Report. Neptune Document J11200-1-RR-006	Advisian/Neptune	Kimberley Marine Park Continental Slope Demersal Fish KEF Agro-Rowley Terrace Marine Park Ancient Coastline at 125 m Depth Contour KEF
	O2 Marine (2020). Kimberley Marine Offloading Facility – Benthic Infauna Survey. O2 Marine Report Number T200073. Perth, Western Australia	O2 Marine	Broome

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Roebuck Bay
Marine fish and elasmobranchs	Chevron (2019) Jansz-Io Subsea Compression Benthic Video Footage Review (G7-NT-REPX0000239)	Chevron	Jansz-Io field
	Chevron (2021) Wheatstone Sawfish Progress Report	Chevron	Onslow area
	Chevron (2022) Gorgon Backfill Fields Benthic Survey 2022 (ABU230100068)	Chevron	Gorgon Backfill Fields
	DBCA (long-term monitoring) Ningaloo Reef Program	DBCA	Ningaloo
	Wahab MAA, Radford B, Cappo M, Colquhoun J, Stowar M, Depczynski M, Miller K, Heyward A (2018) Biodiversity and spatial patterns of benthic habitat and associated demersal fish communities at two tropical submerged reef ecosystems Coral Reefs, 37, 327-343, 10.1007/s00338-017-1655-9	AIMS	Glomar Shoal Rankin Bank
	Jones R, Wakeford M, Currey-Randall L, Miller K, Tonin H (2021) Drill cuttings and drilling fluids (muds) transport, fate and effects near a coral reef mesophotic zone. Marine Pollution Bulletin 172, 112717	AIMS	Glomar Shoal Rankin Bank
	Morgan D, Lear K, Norman B (2020) Sawfish surveys Urala Creek, Exmouth Gulf, February 2019. Report to AECOM. Centre for Sustainable Aquatic Ecosystems, Harry Butler Institute, Murdoch University, Perth, Western Australia	Murdoch University	Ashburton Exmouth Gulf
	Schramm KD, Marnane MJ, Elsdon TS, Jones CM, Saunders BJ, Newman SJ, Harvey ES (2021) Fish associations with shallow water subsea pipelines compared to surrounding reef and soft sediment habitats. Sci Rep 11, 6238 . https://doi.org/10.1038/s41598-021-85396-y	Curtin University	Thevenard Island
	Galaiduk R, Radford B, Case M, Bond T, Taylor M, Cooper T, Smith L and McLean D (2022) Regional patterns in demersal fish assemblages among subsea pipelines and natural habitats across north-west Australia. Front. Mar. Sci. 9:979987. doi: 10.3389/fmars.2022.979987	AIMS	Rankin Bank Glomar Shoal Thevenard Island
	Currey-Randall LM, Galaiduk R, Stowar M, Vaughan BI, Miller KJ (2021) Mesophotic fish communities of the ancient coastline in Western Australia. PLoS ONE 16(4): e0250427. https://doi. org/10.1371/journal.pone.0250427	AIMS	Locations associated with the ancient coastline KEF at depths greater than 125 m

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	McLean D and Birt M. (2021) Enhanced ROV survey of tropical fish and benthic communities associated with shallow oil and gas platforms. Research Square	AIMS	Varanus Island
	McLean DL, Vaughan BI, Malseed BE, Taylor MD (2020) Fish-habitat associations on a subsea pipeline within an Australian Marine Park, Marine Environmental Research 123, 104813	AIMS	Montebello Australian Marine Park
	Sutton AL and Shaw LL (2020) A snapshot of Marine Research in Shark Bay (Gathaagudu): Literature Review and Metadata Collection (1949-2020). West Australian Marine Science Institution, 180.	WAMSI	Shark Bay
	Sutton AL and Shaw JL (2021) Cumulative Pressures on the Distinctive Values of Exmouth Gulf. First draft report to the Department of Water and Environmental Regulation by the Western Australian Marine Science Institution, Perth, Western Australia. 272 pages.	WAMSI	Exmouth Gulf
	DBCA (2023), Biodiversity and Conservation Science Annual Report 2022–23, Department of Biodiversity, Conservation and Attractions, Perth. Benefits of marine parks for marine fishes in a changing climate (SP 2021-040)	DBCA	WA State Marine Parks
	DBCA (2023), Biodiversity and Conservation Science Annual Report 2022–23, Department of Biodiversity, Conservation and Attractions, Perth. Do marine reserves adequately represent high diversity cryptobenthic fish assemblages in a changing climate? (SP 2019-031)	DBCA	Ningaloo
	National Reef Monitoring Network	The IMOS National Reef Monitoring Network sub-Facility	Houtman Abrolhos Islands Ningaloo Coast World Heritage Area Exmouth Gulf Dampier Archipelago Island Group Barrow Island Montebello Islands Group Ashmore Reef Cartier Island Darwin Harbour

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Arafura Arnhem Marmion Rottnest Island Geographe Bay
	Lear KO, Ebner BC, Fazeldean T, Bateman RL, Morgan DL (2024) Effects of coastal development on sawfish movements and the need for marine animal crossing solutions. Conservation Biology, e14263. https://doi.org/10.1111/cobi.14263	Murdoch University	Onslow area
	Feutry P, Laird A, Davies CL, Devloo-Delva F, Fry G, Johnson G, Gunasekara RM, Marthick J, Kyne PM (2021) Population structure of Narrow Sawfish *Anoxypristis cuspidata* across northern Australia. Report to the National Environmental Science Program Marine Biodiversity Hub. CSIRO, Charles Darwin University, and NPF Industry Pty Ltd.	CSIRO	Kimberley Northern Territory coastline
	Heupel M, Simpfendorfer C, Chin A, Appleyard S, Barton D, Green M, Johnson G, McAuley R and White W (2020) Examination of connectivity of hammerhead sharks in northern Australia. Report to the National Environmental Science Program, Marine Biodiversity Hub. Australian Institute of Marine Science.	AIMS	Exmouth Gulf Broome
	Morgan DL, Lear KO, Dobinson E, Gleiss AC, Fazeldean T, Pillans RD, Beatty SJ and Whitty JM (2021) Seasonal use of a macrotidal estuary by the endangered dwarf sawfish, *Pristis clavata*. Aquatic Conservation Marine and Freshwater Ecosystems 31(8):2164–2177. doi: 10.1002/aqc.3578	CSIRO	Kimberley Fitzroy River King Sound
	Port of Broome- Ongoing Marine Monitoring Program. By O2 Marine for Kimberley Ports Authority	Kimberley Ports Authority	Broome Kimberley
	West K, Travers MJ, Stat M, Harvey ES, Richards ZT, DiBattista JD, Newman SJ, Harry A, Skepper CL, Heydenrych M, Bunce M (2021) Large-scale eDNA metabarcoding survey reveals marine biogeographic break and transitions over tropical north-western Australia. Divers Distrib. 27: 1942–1957. https://doi.org/10.1111/ddi.13228	Trace and Environmental DNA (TrDNA) Laboratory, Curtin University	Kimberley
Fisheries	Sutton AL and Shaw JL (2021) Cumulative Pressures on the Distinctive Values of Exmouth Gulf. First draft report to the Department of Water and Environmental Regulation by the Western Australian Marine Science Institution, Perth, Western Australia. 272 pages.	WAMSI	Exmouth Gulf
	DBCA (2023), Biodiversity and Conservation Science Annual Report 2022–23, Department of Biodiversity, Conservation and Attractions, Perth. Benefits of marine parks for marine fishes in a changing climate (SP 2021-040)	DBCA	WA State Marine Parks

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	DBCA (2023), Biodiversity and Conservation Science Annual Report 2022–23, Department of Biodiversity, Conservation and Attractions, Perth. Do marine reserves adequately represent high diversity cryptobenthic fish assemblages in a changing climate? (SP 2019-031)	DBCA	Ningaloo
	National Reef Monitoring Network	The IMOS National Reef Monitoring Network sub-Facility	Houtman Abrolhos Islands Ningaloo Coast World Heritage Area Exmouth Gulf Dampier Archipelago Island Group Barrow Island Montebello Islands Group Ashmore Reef Cartier Island Darwin Harbour Arafura Arnhem Marmion Rottnest Island Geographe Bay
	State of the Fisheries Report (Western Australia)	DPIRD	WA's major commercial and recreational fisheries
	DPIRD (2020). Western Australian Marine Stewardship Council Report Series No. 16: Ecological Risk Assessment of the Shark Bay Invertebrate Fisheries. DPIRD, Western Australia.	DPIRD	Shark Bay

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Bartes S and Braccini JM (2021) Potential expansion in the spatial distribution of subtropical and temperate west Australian sharks. Journal of Fish Biology. doi:10.1111/jfb.14822	DPIRD	Fisheries included: Bigeye sixgill (*Hexanchus nakamurai*) Tiger shark (*Galeocerdo cuvier*) Spinner shark (*Carcarhinus brevipinna*) Scalloped hammerhead (*Sphyrna lewini*) Broadnose sevengill sharks (*Notorhyncus cepedianus*) Southern sawsharks (*Pristiophorus nudipinnis*)
	Langlois TJ, Wakefield CB, Harvey ES, Boddington DK and Newman SJ (2021). Does the benthic biota or fish assemblage within a large targeted fisheries closure differ to surrounding areas after 12 years of protection in tropical north-western Australia? Marine Environmental Research 170: 105403.	DPIRD	Fishery: Pilbara demersal scalefish fisheries
	Yeoh D, Johnston D and Harris D (2021) Squid and cuttlefish resources of Western Australia. Fisheries Research Report No. 314 Department of Primary Industries and Regional Development, Western Australia. 101pp	DPIRD	Squid and cuttlefish
	DPIRD (2020) Western Australian Marine Stewardship Council Report Series No. 17: Ecological Risk Assessment of the Exmouth Gulf Prawn Managed Fishery. DPIRD, Western Australia.	DPIRD	Exmouth Gulf
	Ryan KL, Lai EKM, Smallwood CB (2022) Boat-based recreational fishing in Western Australia 2020/21. Fisheries Research Report No. 327 Department of Primary Industries and Regional Development, Western Australia. 221pp.	DPIRD	

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Sutton AL and Shaw LL (2020) A snapshot of Marine Research in Shark Bay (Gathaagudu): Literature Review and Metadata Collection (1949-2020). West Australian Marine Science Institution, 180.	WAMSI	Shark Bay
	Meteyard, B (2024) Northern Prawn Fishery Data Summary 2023. NPF Industry Pty Ltd, Australia	Northern Prawn Fishery PTY Ltd	Kimberley Northern Territory
	Lynch TP, Smallwood CB, Ochwada-Doyle FA, Lyle J, Williams J, Ryan KL, Devine C, Gibson B, Jordan A (2020) A cross continental scale comparison of Australian offshore recreational fisheries research and its applications to Marine Park and fisheries management. – ICES Journal of Marine Science, 77 (3): 1190–1205.	CSIRO	Australia wide
Reptiles	Chevron (2022) Gorgon Gas Development – Marine Turtle Monitoring Program 2021/22: Barrow Island and Mundabullangana ABU220800133	Chevron	Barrow Island Mundabullangana
	Wilson P, Thums M, Pattiaratchi C, Whiting S, Pendoley K, Ferreira L, Meekan M (2019) High predation of marine turtle hatchlings near a coastal jetty. Biological Conservation, 236	UWA/DBCA	Thevenard Island
	Rob D, Barnes P, Whiting S, Fossette S, Tucker T and Mongan T (2019) Turtle activity and nesting on the Muiron Islands and Ningaloo Coast: Final Report 2018, Ningaloo Turtle Program. Report prepared for Woodside Energy Limited. Department of Biodiversity, Conservation and Attractions, Exmouth, pp.51.	DBCA	Cape Range National Park North West Cape Muiron Islands North Muiron Island South Muiron Island Sunday Island Bungelup
	Tucker T, Whiting S, Fossette S, Rob D, Barnes P (2020). Inter-nesting and migrations by marine turtles of the Muiron Islands and Ningaloo Coast. Final Report. Prepared for Woodside Energy Limited. Department of Biodiversity, Conservation and Attractions, Perth. pp. 1-93	DBCA	Muiron Islands North Muiron Island South Muiron Island North West Cape

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Cape Range National Park Bungelup
	Ferreira LC, Thums M, Fossette S, Wilson P, Shimada T, Tucker A, Pendoley K, Waayers D. Guinea ML, Loewenthal G, King J, Speirs M, Rob D, Whiting SD (2020) Multiple satellite tracking datasets inform green turtle conservation at a regional scale. Diversity and Distribution 27: 249-266	AIMS	Rosemary Island Legendre Island Middle Passage Island Barrow Island Muiron Islands Ningaloo Coast World Heritage Area Montebello Islands Group Lacepede Islands Maret Island Scott Reef
	Fossette S, Loewenthal G, Peel LR, Vitenbergs A, Hamel MA, Douglas C, Tucker AD, Mayer F, Whiting SD (2021) Using Aerial Photogrammetry to Assess Stock-Wide Marine Turtle Nesting Distribution, Abundance and Cumulative Exposure to Industrial Activity. Remote Sens, 13, 1116.	DBCA	Y Island Locker Island Onslow Area Mainland Coast Ashburton Island Thevenard Island Barrow Island Long Island Dampier Mainland Coast Rosemary Island West Mid Intercourse Island

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			East Lewis Island Legendre Island Hauy Island Delambre Island Karratha Downes Island Bedout Island Port Hedland Mainland Coast Mundabullangana Cape Lambert Exmouth Gulf
	Pendoley Environmental (2018). Marine turtle survey of Mardie Salt Project Area – December 2017. January 2018. Prepared for Phoenix Environmental	Pendoley Environmental	Mardie
	Pendoley Environmental (2019). Mardie Salt Project: Marine turtle monitoring program 2018/2019. April 2019. Prepared for BCI Minerals Ltd.	Pendoley Environmental	Mardie Angle Island Long Island Middle Island Round Island Sholl Island
	Ningaloo Turtle Program	DBCA	North West Cape Cape Range National Park Bungelup
	Rosemary Island Turtle Monitoring Program	DBCA	Rosemary Island
	West Pilbara Turtle Program	DBCA	Karratha Cleaverville Wickham

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	North West Shelf Flatback Turtle Monitoring Program	DBCA	Thevenard Island Delambre Island Karratha Port Hedland Mainland Coast Eighty Mile Beach Echo Beach Cable Beach Cape Domett
	Care for Headland Turtle Program	Care for Hedland	Port Hedland area
	Dirk Hartog Island Loggerhead Monitoring	DBCA	Dirk Hartog Island
	AECOM (2022) Marine Fauna Impact Assessment Ashburton Salt Project. Doc No. 60597242_3	AECOM	Ashburton Locker Island
	Keesing, J.K. (Ed.) (2019). Benthic habitats and biodiversity of the Dampier and Montebello Australian Marine Parks. Report for the Director of National Parks. CSIRO, Australia	CSIRO	Dampier Marine Park Montebello Australian Marine Park
	Gammon M, Whiting S, Fossette S (2023) Vulnerability of sea turtle nesting sites to erosion and inundation: A decision support framework to maximize conservation. Ecosphere, 14(6), e4529. https://doi.org/10.1002/ecs2.4529	UWA/DBCA	Y Island Locker Island Onslow Area Mainland Coast Ashburton Island Thevenard Island Barrow Island Long Island Dampier Mainland Coast

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Rosemary Island West Mid Intercourse Island East Lewis Island Legendre Island Hauy Island Delambre Island Karratha Downes Island Bedout Island Port Hedland Mainland Coast Mundabullangana Cape Lambert
	FitzSimmons N N, Pittard SD, McIntyre N, Jensen MP, Guinea M, Hamann M, Kennett R, et al. (2020). Phylogeography, Genetic Stocks, and Conservation Implications for an Australian Endemic Marine Turtle. Aquatic Conservation 30 (3): 440–60. https://doi.org/10.1002/aqc.3270.	Griffith University/DBCA	Barrow Island Delambre Island Mundabullangana Port Hedland Mainland Coast Eighty Mile Beach Echo Beach Cape Domett
	Thums M, Udyawer V, Galaiduk R, Ferreira L, Streten C, Radford B (2021) Using Marine Turtles to Identify Habitat and Assess Connectivity of the North and North-West Marine Park Networks and Sea Country: Exploration Study of Data and Partnerships. Report prepared for Parks Australia. Australian Institute of Marine Science, Perth. 48pp.	AIMS	Miaboolya Beach Quobba Shark Bay Ningaloo Coast World Heritage Area Muiron Islands

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Barrow Island Great Sandy Island Eighty Mile Beach Scott Reef Kimberley Roebuck Bay Joseph Bonaparte Gulf Lalang-garram Marine Park Reefs Oceanic Shoals Thevenard Island Echo Beach Montebello Islands Group Camden Sound Horizontal Falls
	Sutton AL and Shaw LL (2020) A snapshot of Marine Research in Shark Bay (Gathaagudu): Literature Review and Metadata Collection (1949-2020). West Australian Marine Science Institution, 180.	WAMSI	Shark Bay
	Sutton AL and Shaw JL (2021) Cumulative Pressures on the Distinctive Values of Exmouth Gulf. First draft report to the Department of Water and Environmental Regulation by the Western Australian Marine Science Institution, Perth, Western Australia. 272 pages.	WAMSI	Exmouth Gulf
	Fossette S, Ferreira L C, Whiting SD, King J, Pendoley K, Shimada T, Speirs M, Tucker A D, Wilson P, Thums M (2021) Movements and distribution of hawksbill turtles in the Eastern Indian Ocean. Global Ecology and Conservation, 29, e01713. https://doi.org/10.1016/j.gecco.2021.e01713	DBCA	Beacon Island Delambre Island Rosemary Island Varanus Island Montebello Islands Group

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Pillans RD, Whiting S, Tucker T, Vanderklift MA (2022) Fine-scale movement and habitat use of juvenile, subadult, and adult green turtles (*Chelonia mydas*) in a foraging ground at Ningaloo Reef, Australia. Aquatic Conservation: Marine and Freshwater Ecosystems 32 1323-1340	CSIRO	Ningaloo
	Gammon M, Whiting S, Fossette S (2023) Vulnerability of sea turtle nesting sites to erosion and inundation: a decision support framework to maximize conservation. Ecosphere 14: e4529	UWA/DBCA	Pilbara southern islands Pilbara northern islands Onslow area Thevenard Island Barrow Island Montebello Islands Dampier Archipelago Karratha Mundabullangana Cemetery Beach
	Ferreira LC, Thums M, Whiting S, Meekan M, Andrews-Goff V, Attard CRM, Bilgmann K, Davenport A, Double M, Falchi F, Guinea M, Hickey SM, Jenner C, Jenner M, Loewenthal G, McFarlane G, Möller LM, Norman B, Peel L, Pendoley K, Radford B, Reynolds S, Rossendell J, Tucker A, Waayers D, Whittock P, Wilson P and Fossette S (2023) Exposure of marine megafauna to cumulative anthropogenic threats in north-west Australia. Front. Ecol. Evol. 11:1229803. doi: 10.3389/fevo.2023.1229803	AIMS	Pilbara coast Kimberley Northern Territory coastline
	Ningaloo Outlook	CSIRO	Ningaloo Coast World Heritage Area
	Lambourne RN (2019) Classifying the diving behaviour of flatback turtles (*Natator depressus*) from multi-sensor tags. Honours thesis, Murdoch University	Murdoch University	Thevenard Island
	Udyawer V, D'Anastasi B, McAuley R, Heupel M (2016) Exploring the status of Western Australia's sea snakes. National Environmental Science Programme	AIMS	Shark Bay

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Ningaloo Coast World Heritage Area Port Hedland Rowley Shoals Oceanic Shoals
	Lincoln G, Mathews D, Oades D with the Balanggarra, Bardi Jawi, Dambimangari, Karajarri, Mayala, Nyangumarta, Nyul Nyul, Wunambal Gaambera and Yawuru ISWAG members (2021) The Kimberley Indigenous Turtle and Dugong Initiative 2021-2031. Prepared by Mosaic Environmental for the Kimberley Indigenous Saltwater Advisory Group (ISWAG) Broome 2021	Coordinated by the Kimberley Indigenous Saltwater Advisory Group, implemented by Kimberley Saltwater Communities, supported by Western Science Partners	Kimberley
	Tucker AD, Pendoley KL, Murray K, Loewenthal G, Barber C, Denda J, Lincoln G, Mathews D, Oades D, Whiting SD et al. (2021) Regional Ranking of Marine Turtle Nesting in Remote Western Australia by Integrating Traditional Ecological Knowledge and Remote Sensing. Remote Sensing. 13(22):4696. https://doi.org/10.3390/rs13224696	DBCA WAMSI	Kimberley
	Santos Varanus Island Turtle Monitoring Program	Santos	Varanus Island
	Bayliss P, Raudino H, Hutton M, Murray K, Waples K and Strydom S (2019) Modelling the spatial relationship between dugon (Dugong dugon) and their seagrass habitat in Shark Bay Marine Park before and after the marine heatwave of 2010/11. Department of Agriculture, Water and the Environment Final Report 2.	CSIRO DBCA	Shark Bay Ningaloo Reef Exmouth Gulf
	Hounslow JL, Fossette S, Chong W, Bali R, Tucker AD, Whiting SD and Gleiss AC (2023) Behaviour-specific spatiotemporal patterns of habitat use by sea turtles revealed using biologging and supervised machine learning, Journal of Applied Ecology, 60(9):1828-1840. doi: 10.1111/1365-2664.14438	Murdoch University	Roebuck Bay
	West KM, Heydenrych M, Lines R, Tucker T, Fossette S, Whiting S and Bunce M (2023) Development of a 16S metabarcoding assay for the environmental DNA (eDNA) detection of aquatic reptiles across northern Australia, Marine and Freshwater Research 74(5):432-440. doi: 10.1071/MF20288	Curtin University	Roebuck Bay

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Whiting S, Tucker T, Pendoley K, Mitchell N, Bentley B, Berry O and FitzSimmons N (2018) Final Report of Proposal 1.2.2 prepared for the Kimberley Marine Research Program, Western Australian Marine Science Institution, Perth, Western Australia, 146 pp	DBCA WAMSI	Kimberley
	Thums Michele, Rossendell Jason, Fisher Rebecca, Guinea Michael L. (2020) Nesting ecology of flatback sea turtles *Natator depressus* from Delambre Island, Western Australia. Marine and Freshwater Research 71, 443-451.	AIMS	Delambre Island
	Schneider L, Tucker AD, Vincent K, Fossette S, Young EJ and Whiting SD (2022) First Assessment of Mercury (Hg) Concentrations in Skin and Carapace of Flatback Turtles (*Natator depressus*) (Garman) From Western Australia. Front. Environ. Sci. 10:843855. doi: 10.3389/fenvs.2022.843855	DBCA	Thevenard Island Eighty Mile Beach
Marine megafauna (whale shark, dugong and cetaceans)	Chevron (2019) Soundscape monitoring at JIC site (G1-NT-REPX0000361)	Chevron	Barrow Island
	Chevron (2023) Soundscape Monitoring at the JIC Site 2021-2023	Chevron	Barrow Island
	Raudino HC, Hunt TN, Waples KA (2018) Records of Australian humpback dolphins (*Sousa sahulensis*) from an offshore island group in Western Australia. Marine Biodiversity Records 11:14	DBCA	Montebello Islands
	Raudino HC, Douglas CR, Waples KA (2018) How many dolphins live near a coastal development? Regional Studies in Marine Science 19: 25-32	DBCA	Onslow Area Thevenard Island
	Sprogis K and Parra G (2022) Coastal dolphin and marine megafauna in Exmouth Gulf, Western Australia: informing conservation management actions in an area under increasing human pressure. Wildlife Research, 50(6): 435-450	UWA	Exmouth Gulf
	Wild S, Krutzen M, Rankin M, Hoppitt W, Gerber L, Allen S (2019) Long-term decline in survival and reproduction of dolphins following a marine heatwave. Current Biology 29, R225-R240	University of Leeds	Shark Bay
	Thums M, Ferreira LC, Jenner C, Jenner M, Harris D, Davenport A, Andrews-Goff V, Double M, Moller L, Attard CRM, Bilgmann K, Thomson PG, McCauley R (2022) Pygmy blue whale movement, distribution and important areas in the Eastern Indian Ocean. Global Ecology and Conservation 35 e02054	AIMS	Western Australia
	ECOCEAN Whale Shark Photo-Identification Library	Ecocean	Ningaloo
	AIMS (2021) Individual haplotyping of whale sharks from seawater environmental DNA.	AIMS	Ningaloo
	Lester E, Meekan MG, Barnes P, Raudino H, Rob D, Waples K, Speed CW (2020) Multi-year patterns in scarring, survival and residency of whale sharks in Ningaloo Marine Park, Western Australia. Mar Ecol Prog Ser 634:115-125.	UWA	Ningaloo

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Irvine L and Salgado Kent C (2018) The distribution and relative abundance of marine mega-fauna, with a focus on humpback whales (*Megaptera novaeangliae*), in Exmouth Gulf, Western Australia.	Oceans Blueprint	Exmouth Gulf
	NESP MaC Project 3.10 – A partnership approach to filling key knowledge gaps on dugongs in northern Australia using novel technologies, 2023–2026 (JCU, CDU, DBCA)	AIMS	Exmouth Gulf Ningaloo Shark Bay
	AIMS research on whale sharks	AIMS	Ningaloo
	Sprogis KR, Sutton AL, Jenner MN, McCauley RD, Jenner KCS (2022) Occurrence of cetaceans and seabirds along the Indian Ocean 110 E meridian from temperate to tropical waters. Deep-Sea Research II 205. 105184	Centre for Whale Research/UWA	Indian Ocean 110 E meridian from temperate to tropical waters
	Haughey R, Hunt TN, Hanf D, Passadore C, Baring R and Parra GJ (2021) Distribution and Habitat Preferences of Indo-Pacific Bottlenose Dolphins (*Tursiops aduncus*) Inhabiting Coastal Waters With Mixed Levels of Protection. Front. Mar. Sci. 8:617518. doi: 10.3389/fmars.2021.617518	Flinders University	North West Cape Exmouth Gulf Ningaloo
	Cleguer C, Kelly N, Tyne J, Wieser M, Peel D and Hodgson A (2021) A Novel Method for Using Small Unoccupied Aerial Vehicles to Survey Wildlife Species and Model Their Density Distribution. Front. Mar. Sci. 8:640338. doi: 10.3389/fmars.2021.640338	Murdoch University	Exmouth Gulf
	Sutton AL and Shaw LL (2020) A snapshot of Marine Research in Shark Bay (Gathaagudu): Literature Review and Metadata Collection (1949-2020). West Australian Marine Science Institution, 180.	WAMSI	Shark Bay
	Sutton AL and Shaw JL (2021) Cumulative Pressures on the Distinctive Values of Exmouth Gulf. First draft report to the Department of Water and Environmental Regulation by the Western Australian Marine Science Institution, Perth, Western Australia. 272 pages.	WAMSI	Exmouth Gulf
	Raudino HC, Bouchet PJ, Douglas C, Douglas R, Waples K (2023) Aerial abundance estimates for two sympatric dolphin species at a regional scale using distance sampling and density surface modelling. Front. Ecol. Evol. 10:1086686. doi: 10.3389/fevo.2022.1086686	DBCA	Exmouth Gulf Onslow Area Ashburton Dampier Area Dampier Archipelago Karratha

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Porth Hedland Area Eighty Mile Beach Southern Pilbara Islands Northern Pilbara Islands Great Sandy Island
	D'Cruz A, Salgado Kent C, Waples K, Brown AM, Marley SA, Thiele D, Yawuru PBC and Raudino HC (2022) Ranging Patterns and Site Fidelity of Snubfin Dolphins in Yawuru Nagulagun/Roebuck Bay, Western Australia. Front. Mar. Sci. 8:758435. doi: 10.3389/fmars.2021.758435	Edith Cowan University	Broome Roebuck Bay
	DBCA (2023), Biodiversity and Conservation Science Annual Report 2022–23, Department of Biodiversity, Conservation and Attractions, Perth.	DBCA	Roebuck Bay
	Lester E, Canon T, Arujo G (2023) Whale sharks (*Rhincodon typus*) feed on baitfish with other predators at Ningaloo Reef. Pacific Conservation Biology 29 86-87	DBCA	Coral Bay Ningaloo
	Palmer C, Martien KK, Raudino H, Robertson KM, Withers A, Withers E, Risk R, Cooper D, D'Cruz E, Jungine E, Barrow D, Cuff N, Lane A, Keynes D, Waples K, Malpartida A and Banks S (2023) Evidence of resident coastal population(s) of false killer whales (*Pseudorca crassidens*) in northern Australian waters. Front. Mar. Sci. 9:1067660. doi: 10.3389/fmars.2022.1067660	Charles Darwin University	Exmouth Gulf Pilbara Coast Islands Southern Pilbara Islands and Coast Eighty Mile Beach Broome Lalang-garram Marine Park Reefs Darwin Harbour Tiwi Islands Groote Archipelago

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Ferreira LC, Thums M, Whiting S, Meekan M, Andrews-Goff V, Attard CRM, Bilgmann K, Davenport A, Double M, Falchi F, Guinea M, Hickey SM, Jenner C, Jenner M, Loewenthal G, McFarlane G, Möller LM, Norman B, Peel L, Pendoley K, Radford B, Reynolds S, Rossendell J, Tucker A, Waayers D, Whittock P, Wilson P and Fossette S (2023) Exposure of marine megafauna to cumulative anthropogenic threats in north-west Australia. Front. Ecol. Evol. 11:1229803. doi: 10.3389/fevo.2023.1229803	AIMS	Shark Bay Ningaloo Coast World Heritage Area Kimberley
	Ningaloo Outlook	CSIRO	Ningaloo Coast World Heritage Area
	Bouchet PJ, Thiele D, Marley SA, Waples K, Weisenberger F, Balanggarra Rangers, Bardi Jawi Rangers, Dambimangari Rangers, Nyamba Buru Yawuru Rangers, Nyul Nyul Rangers, Uunguu rangers, Raudino H (2021) Regional Assessment of the Conservation Status of Snubfin Dolphins (*Orcaella heinsohni*) in the Kimberley Region , Western Australia, Frontiers in Marine Science, 7(January), pp. 1–20.	Universtiy of St Andrews DBCA	Kimberley Roebuck Bay Cygnet Bay Prince Regent River Cambridge Gulf
	Brown AM, Bejder L, Pollock KH, Allen SJ (2016) Site-specific assessments of the abundance of three inshore dolphin species to inform conservation and management, Frontiers in Marine Science, 3(FEB), pp. 1–18.	Murdoch University	Kimberley Roebuck Bay Beagle Bay Cygnet Bay Cone Bay Cambridge Gulf Buccaneer Archipelago
	Brown AM, Smith J, Salgado Kent C, Marley S, Allen SJ, Thiele D, Bejder L, Erbe C, Chabanne D (2017) Relative abundance, population genetic structure and acoustic monitoring of Australian snubfin and humpback dolphins in regions within the Kimberley, Report of Project 1.2.4 for the Kimberley Marine Research Program. Western Australian Marine Science Institute, Perth.	Murdoch University	Kimberley Roebuck Bay Cygnet Bay Yampi Sound Prince Regent River Cambridge Gulf

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Buccaneer Archipelago
	Jarolimek CV, King J J, Apte SC., Hall J, Gautam A, Gillmore M, Doyle C (2023) A review of inorganic contaminants in Australian marine mammals, birds and turtles. Environmental Chemistry 20, 147-170. https://doi.org/10.1071/EN23057	CSIRO	Australia wide
	Lincoln G, Mathews D, Oades D with the Balanggarra, Bardi Jawi, Dambimangari, Karajarri, Mayala, Nyangumarta, Nyul Nyul, Wunambal Gaambera and Yawuru ISWAG members (2021) The Kimberley Indigenous Turtle and Dugong Initiative 2021-2031. Prepared by Mosaic Environmental for the Kimberley Indigenous Saltwater Advisory Group (ISWAG) Broome 2021	Coordinated by the Kimberley Indigenous Saltwater Advisory Group, implemented by Kimberley Saltwater Communities, supported by Western Science Partners	Kimberley
	Bayliss P, Hutton M (2017). Integrating Indigenous knowledge and survey techniques to develop a baseline for dugong (*Dugong dugon*) management in the Kimberley: Final Report of project 1.2.5 of the Kimberley Marine Research Program Node of the Western Australian Marine Science Institution, WAMSI, Perth, Western Australia, 98 pp.	CSIRO	Kimberley
	Bayliss P, Raudino H, Hutton M, Murray K, Waples K and Strydom S (2019) Modelling the spatial relationship between dugong (*Dugong dugon*) and their seagrass habitat in Shark Bay Marine Park before and after the marine heatwave of 2010/11. Department of Agriculture, Water and the Environment Final Report 2.	CSIRO DBCA	Shark Bay Ningaloo Reef Exmouth Gulf
	Raudino H, D'Cruz E, Waples K, Menzies J, Murdoch J, Quartermaine T and Mathews D (2020) Dry season dreaming Snubfin census on Yawuru sea country. Landscope 36, 41-44	DBCA	Roebuck Bay
	Thums M, Jenner C, Waples K, Salgado Kent C and Meekan M (2018) Humpback whale use of the Kimberley; understanding and monitoring spatial distribution. Report of Proposal 1.2.1 prepared for the Kimberley Marine Research Program, Western Australian Marine Science Institution, Perth, Western Australia, 78pp. Tourism WA. Shire of Broome visitor factsheet. Three-year average 2015/2016/2017. Produced by Tourism WA – Strategy and Research.	AIMS WAMSI	Kimberley

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
Seabirds and shorebirds	Chevron Env-Gor-Seabird Monitoring Report 2021/22 J01209 (ABU220500068)	Chevron	Ah Chong Island (Montebello group) Double Island North Double Island South Parakeelya Island Barrow Island Group
	Dunlop JN. and Greenwell C (2021) Seasonal movements and metapopulation structure of the Australian fairy tern in Western Australia. Pacific Conservation Biology, 27, 47-60	Conservation Council of Western Australia	Stewart Island Fortescue Island Mardie Island Regnard Island Scholl Island Shark Bay Exmouth Gulf Somerville Island Tent Island Hope Point Houtman Abrolhos Islands Ningaloo Coast
	Weller D, Kidd L, Lee C, Klose S, Jaensch R, Driessen J (2020) Directory of Important Habitat for Migratory Shorebirds in Australia. Prepared for Australian Government Department of Agriculture, Water and the Environment by BirdLife Australia, Melbourne	Birdlife Australia	Barrow Island Carnarvon Coral Bay Exmouth Gulf Houtman Abrolhos Islands Karratha

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Ningaloo Onslow Area Port Hedland Adele Island Lacepede Islands Dampier Peninsula
	Australia's National Shorebird Monitoring Program https://awsg.org.au/about-us/shorebirds-2020/	Birdlife Australia	Dampier Port Hedland Shark Bay Eighty Mile Beach Barrow Island Exmouth Gulf Ningaloo Reef Ningaloo Roebuck Bay
	Birdata: https://birdata.birdlife.org.au/	Birdlife Australia	Western Australia
	eBird: https://ebird.org/hotspots?hs=L5713406&yr=all&m=	eBird	Western Australia
	Astron (2020) Thevenard Island Retirement Project Terrestrial Ecological Monitoring Report June 2020. Prepared for Chevron	Chevron	Thevenard Island
	Biota (2022) Ashburton Salt Project Migratory Shorebird Assessment. Prepared for K + S Salt Australia	for K + S Salt Australia	Ashburton Exmouth Gulf
	Cannell B, Hamilton S, Driessen J (2019) Wedge- tailed shearwater foraging behaviour in the Exmouth region. Report for Woodside Energy Ltd. University of Western Australia and Birdlife Australia.	UWA	Muiron Islands
	Sutton AL and Shaw LL (2020) A snapshot of Marine Research in Shark Bay (Gathaagudu): Literature Review and Metadata Collection (1949-2020). West Australian Marine Science Institution, 180.	WAMSI	Shark Bay
	Sutton AL and Shaw JL (2021) Cumulative Pressures on the Distinctive Values of Exmouth Gulf. First draft report to the Department of Water and Environmental Regulation by the Western Australian Marine Science Institution, Perth, Western Australia. 272 pages.	WAMSI	Exmouth Gulf

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Woodside Case Study: Ningaloo Region Migratory Shorebirds of Exmouth Gulf (Birdlife)	Woodside Birdlife Australia	Exmouth Gulf Giralia Station
	DBCA shorebird surveys of Montebello Islands and Bedout Island in 2017 and 2018 mentioned in: Australian National Report to the 19th JAMBA, 13th CAMBA and 6th ROKAMBA Consultative Meetings, Commonwealth of Australia 2018	DBCA	Bedout Island Montebello Islands
	Roger DI, Scroggie MP, Hassell CJ (2020) Review of long-term shorebird monitoring in north Western Australia. Arthur Rylah Institute for Environmental Research. Technical Report Series No. 313. Prepared for DBCA	Arthur Rylah Institute DBCA	Roebuck Bay Eighty Mile Beach Bush Point
	Pendoley Environmental (2021) Varanus and Airlie Islands Shearwater Monitoring Annual Report 2020	Santos	Lowendal Islands Group Airlie Island Serrurier Island
	Bancroft W and Bamford M (2018) ANSIA Stage 2 Fauna Assessment	MJ and AR Bamford Consulting Ecologists	Pilbara
	Phoenix Environmental Sciences (2023) Long-term migratory shorebird monitoring program for the Optimised Mardie Project. Prepared for Mardie Minerals Pty Ltd	Phoenix Consultants	Mardie
	Lavers JL, Humphreys-Williams E, Crameri NJ, Bond AL (2020) Trace element concentrations feathers from three seabird species breeding in the Timor Sea. Marine Pollution Bulletin 151. 110876	University of Tasmania	Bedout Island
	Biota Environmental Sciences (2019) Asian Renewable Energy Hub Environmental Review Document, Assessment Number 2140, Appendix 8, Asian Renewable Energy Hub Migratory Shorebirds and Waterbirds Survey. Prepared by Biotat Environmental Sciences, Nov 2018	Biota Environmental Sciences for Asian Renewable Hub (NW Interconnected Power)	Eighty Mile Beach
	Chan YC, Chan DTC, Tibbitts TL, Hassell CJ, Piersma T (2023) Site fidelity of migratory shorebirds facing habitat deterioration: insights from satellite tracking and mark-resighting. Mov Ecol 11, 79 https://doi.org/10.1186/s40462-023-00443-9	Department of Coastal Systems, NIOZ Royal	Roebuck Bay Eighty Mile Beach

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
		Netherlands Institute for Sea Research Global Flyway Network Australasian Wader Studies Group	

Appendix E: OSM Services Provider Call Out Order Form

OSRL

Operational and Scientific Monitoring (OSM) Services Call-Off Order Form

Please do not hesitate in contacting the Duty Manager at the earliest opportunity in the event of an incident or potential incident. Please ensure you telephone the Duty Manager before e-mailing or faxing this completed form

Oil Spill Response Limited's safety policy requires us to work closely with the mobilising party to ensure all aspects of safety and security are addressed for our personnel.

To	Duty Manager
OSRL Base	Southampton, UK Loyang, Singapore Fort Lauderdale, USA
Telephone	+65 6266 1566
Emergency Fax	+65 6266 2312
Email	dutymanagers@oilspillresponse.com, osm@oilspillresponse.com

Details of Authorised Contact				
Mobilising Company				
Name of Person Authorising OSRL				
Position of Authorising Representative				
Direct Phone Number	Country Code	+	Number	
Email Address				

Operational Monitoring service to be activated (X)		**Scientific Monitoring service to be activated (X)**	
OM1 Hydrocarbon Properties and Weathering Behaviour at Sea		**SM1** Water Quality Impact Assessment	
OM2 Water Quality Assessment		**SM2** Sediment Quality Impact Assessment	
OM3 Sediment Quality Assessment		**SM3** Intertidal and Coastal Habitat Assessment	
OM4a Surface Chemical Dispersant Effectiveness and Fate Assessment		**SM4** Seabirds and Shorebirds	
OM4b Subsea Dispersant Injection Monitoring		**SM5** Marine Mega-fauna Assessment	
OM5 Marine Fauna Surveillance		**SM6** Benthic Habitat Assessment	
OM6 Shoreline Clean-up Assessment		**SM7** Marine Fish and Elasmobranch Assemblages Assessment	
		SM8 Fisheries Impact Assessment	
		SM9 Heritage Features Assessment	
		SM10 Social Impact Assessment	

Confidential. Not to be reproduced in any form or media without written consent from the management of Oil Spill Response Limited.
Printed versions are uncontrolled and will not be updated.
Document Number: OSRL-OPER-FOR-01122 Revision: 1

Location of Port of Staging/ Departure – Port (X)		Additional Information
Ashburton		
Barrow Island		
Broome		
Cape Preston		
Dampier		
Darwin		
Derby		
Exmouth		
Onslow		
Port Hedland		
Port Walcott		
Varanus Island		
Wyndham		
Yampi Sound		
Others (*To be Agreed)		

Location of Port of Staging/ Departure – Airport (X)		Additional Information
Barrow Island		
Broome		
Cape Preston		
Darwin		
Derby		
Karratha		
Learmonth		
Lombardina		
Onslow		
Pardoo		
Perth		
Port Hedland		
Roebourne		
Wallal Downs		
Others (*To be Agreed)		

Request for OSM position to IMT/EMT (X)		IMT/EMT Address
OSM Implementation Lead		
OSM Field Operations Manager		
SM Coordinator		
OM Coordinator		

Invoice Address if available	
Purchase Order Number	

I, the above-named Authorising Representative for the Mobilising Company, approve activation of Oil Spill Response Limited and its resources for OSM Services under the terms of the SUPPLEMENTARY SERVICE AGREEMENT FOR OPERATIONAL AND SCIENTIFIC MONITORING (OSM) SERVICES Agreement in place between the above stated Company and Oil Spill Response PTY Limited.

Signature:		Date / Time (UTC+8):		

Please telephone the Duty Manager to confirm receipt the completed form after sending this completed form.

Confidential. Not to be reproduced in any form or media without written consent from the management of Oil Spill Response Limited.
Printed versions are uncontrolled and will not be updated.
Document Number: OSRL-OPER-FOR-01122 Revision: 1

Appendix F Stakeholder Consultation

Table of Contents

Appendix F Consultation Summary and Report 3

1.1 Environment that may be affected 3

1.2 Relevancy Assessment 3

1.3 Consultation Activities 38

1.3.1 Consultation Correspondence 39

1.3.2 Advertising of the proposed activity 40

1.3.3 Community Flyer 42

1.3.4 Consultation with First Nations people and organisations 44

1.3.5 Consultation Material 45

1.4 Consultation Report 81

Appendix F Consultation Summary and Report

1.1 Environment that may be affected

The Environment that May Be Affected (EMBA) is the largest spatial extent where unplanned events could have an environmental consequence on the surrounding environment.

VOGA's identification and assessment of relevant persons is based on the Operational Area and the EMBA.

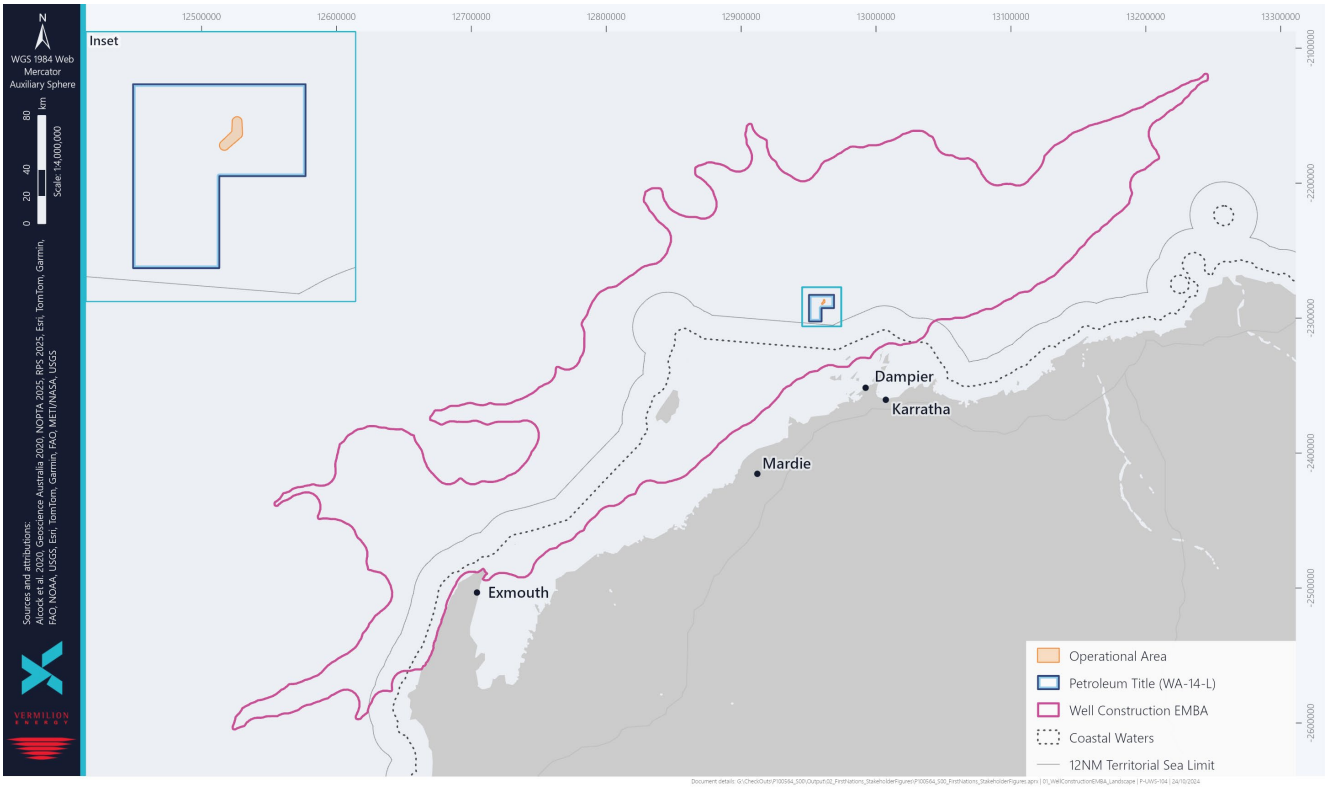


Figure 1-1: VOGA's consultation methodology and process

1.2 Relevancy Assessment

VOGA undertook an assessment of identified relevant persons based on the Operational Area and EMBA. The result of this assessment is outlined in Table 1.

Table 2: Assessment of relevant persons

Person or Organisation	Description	Functions, interests or activities	Assessment of Relevance or Rationale	Relevant Person
Section 25(1)(a) of the OPGGS(E)R: Departments or agencies of the Commonwealth to which the activities to be carried out under the environment plan may be relevant				
Commonwealth Government Departments and Agencies				
Australian Border Force (ABF) (Maritime Border Command)	Responsible for coordinating maritime security	Exercises maritime security functions, has an interest in protecting national borders and preventing illegal activities at sea, and undertakes patrols, inspections, and enforcement operations in offshore waters.	ABF's responsibilities, functions and activities may be relevant to the activity as there are proposed vessel activities.	Yes
Australian Fisheries Management Authority (AFMA)	Government agency responsible for managing and sustaining the use of Commonwealth fisheries to ensure the fishing industry are viable.	Manages and regulates commercial fisheries, is interested in sustainable fisheries and compliance with marine regulations, and conducts licensing, monitoring, and enforcement activities across Australian waters.	AFMA's functions may be relevant to the activity as the Southern Bluefin Tuna Fishery, Western Skipjack Tuna Fishery, and Western Tuna and Billfish Fishery management areas overlap the Operational Area, however no fishing activity is expected.	Yes
Australian Hydrographic Office (AHO)	Responsible for maritime safety and Notices to Mariners, and provides charting service under the terms of SOLAS and the Navigation Act 2012 (Cth).	Produces and maintains nautical charts and hydrographic data, is interested in safe navigation and accurate maritime information, and undertakes	AHO's responsibilities, functions and activities may be relevant to the activity as there are proposed vessel activities.	Yes

		surveys, data collection, and dissemination of navigational products.		
Australian Maritime Safety Authority (AMSA) – maritime safety	Statutory agency for vessel safety and navigation, implementation of marine orders, maritime safety information and shipping data.	Application and implementation of marine orders and provision of maritime safety information.	AMSA – Marine Safety's responsibilities, functions and activities may be relevant to the activity as there are proposed vessel activities.	Yes
Australian Maritime Safety Authority (AMSA) – marine pollution	Statutory agency to combat pollution in the marine environment and maritime aviation search and rescue. The control agency for marine vessel spills.	Protection of the marine environment and maritime aviation search and rescue.	AMSA – Marine Pollution's responsibilities, functions, and activities may be relevant to the activity as the proposed activity has a hydrocarbon spill risk which may require AMSA response in Commonwealth waters.	Yes
Department of Agriculture, Forestry and Fisheries (DAFF) – Biosecurity (marine pests) (vessels, aircraft and personnel)	Responsible for the management of marine pest risks.	DAFF administers, implements and enforces the Biosecurity Act 2015. The Department requests to be consulted where an activity has the potential to transfer marine pests. DAFF also has inspection and reporting requirements to ensure that all conveyances (vessels, installations and aircraft) arriving in Australian territory comply with international health regulations and that any biosecurity risk is managed. The Department requests to be consulted where an	DAFF administers the Biosecurity Act 2015 (Cth) which is designed to contain and/or deal with diseases and pests that may cause harm to human, animal or plant health or the environment in Australia. DAFF is a relevant agency for consultation because the activity involves the movement of vessels into Australian territory and/or between Australian ports and offshore petroleum facilities which concerns DAFF's functions.	Yes

		activity involves the movement of aircraft or vessels between Australia and offshore petroleum activities either inside or outside Australian territory.		
Department of Agriculture, Forestry and Fisheries (DAFF) – Fisheries	Responsible for implementing Commonwealth policies and programs to support agriculture, fishery, food and forestry industries.	Responsible for fisheries strategies, projects and research.	DAFF Fisheries' responsibilities may be relevant to the activity as the Southern Bluefin Tuna Fishery, Western Skipjack Tuna Fishery, and Western Tuna and Billfish Fishery management areas overlap the Operational Area, however no fishing activity is expected.	Yes
Department of Climate Change, Energy, the Environment and Water (DCCEEW) – Underwater Cultural Heritage (UCH)	Responsible for implementing Commonwealth policies and programs to support climate change, sustainable energy use, water resources, the environment and our heritage. Administers the Underwater Cultural Heritage Act 2018 in collaboration with the States, Northern Territory and Norfolk Island, which is responsible for the protection of shipwrecks, sunken aircraft and other types of underwater heritage and their associated artefacts in Commonwealth waters.	Responsible for the regulation of activities to protect underwater cultural heritage, including shipwrecks, aircraft or other underwater cultural heritage.	DCCEEW protects Australia's natural environment and heritage sites, helps Australia respond to climate change and carefully manages water and energy resources. The Underwater Cultural Heritage branch at DCCEEW is responsible for administering the UCH Act. It is a relevant agency where an activity has the potential to directly or indirectly adversely impact protected UCH.	Yes

Department of Defence (DoD)	Responsible for defending Australia and its national interests.	Responsible for the management of Australian defence-based national interests.	DoD's responsibilities may be relevant to the activity because the proposed activity may impact DoD training and operational requirements, in that the EMBA overlaps DoD training areas.	Yes
Department of Industry, Science and Resources (DISR)	Department of the relevant Commonwealth Minister	Responsible for the development and implementation of resource and industry policy. Focus on sustainable development and industry regulation.	Required to be consulted under regulation 25(1)(a) of the Environment Regulations. DISR is a relevant agency for consultation because its responsibilities include offshore oil and gas development, safety, and GHG storage.	Yes
Director of National Parks (DNP)	Responsible for the management of Commonwealth parks and conservation zones.	Responsible for the management of Commonwealth marine parks and protected areas.	DNP's responsibilities may be relevant to the activity as DNP requires an awareness of activities that occur within AMPs, and an understanding of potential impacts and risks to the values of parks (NOPSEMA guidance note: N-04750- GN1785 A620236, June 2020). Titleholders are required to consult DNP on offshore petroleum and greenhouse gas exploration activities if they occur in, or may impact on the values of marine parks, including where potential spill response activities may occur in the event of a spill (i.e. scientific monitoring). The EMBA overlaps AMPs.	Yes
Section 25(1)(a) and (b) of the OPGGS(E)R: Departments or agencies of Western Australia to which the activities to be carried out under the environment plan may be relevant.				
State Government Departments and Agencies				
Department of Planning, Lands and Heritage (DPLH)	Responsible for state-level land use planning and management, and oversight of Aboriginal cultural heritage and built heritage matters.	Department responsible for the management of land use, planning and heritage protection, with a focus on sustainable development and cultural heritage	There is a known maritime cultural heritage overlapping the EMBA, which concerns DPLH's functions, activities and interests.	Yes

		preservation, and the undertaking of approvals, assessments and regulatory oversight.		
Department of Mines, Petroleum and Exploration (DMPE)	Department of relevant State Minister	Department of the Minister responsible for Offshore Petroleum Joint Authority, and is required to be notified of drilling and seismic activities occurring in offshore waters.	Required to be consulted under regulation 25(1)(c) of the Environment Regulations.	Yes
Department of Primary Industries and Regional Development (DPIRD) – Fisheries	Responsible for managing State fisheries	Responsible for the management of fisheries resources and aquaculture, including research, licensing and monitoring activities.	The Mackerel Managed Fishery Area 2, Onslow Prawn Limited Entry Fishery, Pilbara Crab Managed Fishery, Pilbara Line Fishery, Pilbara Fish Trawl Interim Managed Fishery, and Pilbara Trap Managed Fishery are active in the Operational Area. The Mackerel Managed Fishery, Area 2, Onslow Prawn Limited Entry Fishery, Pilbara Crab Managed Fishery, Pilbara Line Fishery, Pilbara Fish Trawl Interim Managed Fishery, and Pilbara Trap Managed Fishery have been active in the EMBA within the last 5 years. DPIRD's functions, interests or activities and responsibilities may be relevant to the activity as the government department responsible for State fisheries.	Yes
Department of Biodiversity, Conservation and Attractions (DBCA)	Responsible for managing WA's parks, forests and reserves to achieve wildlife conservation and provide sustainable recreation and tourism opportunities.	Responsible for the management of conservation areas and marine parks. Undertakes monitoring, planning and enforcement activities.	The DBCA's functions and responsibilities may be relevant to the activity as the EMBA overlaps WA parks, forests or reserves. Activities have the potential to impact marine tourism in the EMBA.	Yes

Department of Transport and Major Infrastructure (DTMI) – marine pollution	Legislated responsibility for oil pollution response in State waters	Management of marine oil pollution in Western Australia, and lead communication and consultation in the event of an oil spill.	The proposed activity has a hydrocarbon spill risk, which may require DoT response in State waters.	Yes
Ningaloo Coast World Heritage Advisory Committee (NCWHAC)	Supports the DBCA to manage the Ningaloo Coast World Heritage Area.	The Committee guides World Heritage management and undertakes advisory, consultative, and stakeholder engagement.	The NCWHAC's functions and activities may be relevant to the activity as the EMBA overlaps the Ningaloo Marine Park.	Yes
Pilbara Development Commission (PDC)	Statutory authority of the WA Government that partners with communities, government, business and industry to identify and support projects.	The Commission is responsible for the promotion of regional economic development and the undertaking of planning coordination and stakeholder engagement.	The PDC's functions or interests may be relevant to the activity as the EMBA overlaps with its area of responsibilities.	Yes
Pilbara Ports Authority (PPA)	Encompasses the Ports of Ashburton, Dampier, Port Hedland and Varanus Island. PPA oversees the Shipping and Pilotage Act 1967 (SPA) ports of Barrow Island, Cape Preston, Onslow and Port Walcott.	Management of port operations in the Pilbara region.	The proposed activity has the potential to impact PPA's activities, as the EMBA overlaps the Pilbara Ports Authority's area of responsibility.	Yes
Section 25(1)(d) of the OPGGS(E)R: Persons or organisations whose functions, interests or activities may be affected by the activities to be carried out under the environment plan				
Commonwealth commercial fishing - representative bodies				

Australian Southern Bluefin Tuna Fishery Association (ASBITA)	Represents the Australian Southern Bluefin Tuna (SBT) industry and interests of the Southern Bluefin Tuna Fishery and the Western Skipjack Tuna Fishery.	Fishing industry association represents their members who may actively fish in or have fish resources (stocks & spawning habitat) within the Operational Area or EMBA. Is interested in sustainable tuna stocks and industry viability.	The Southern Bluefin Tuna Fishery and the Western Skipjack Tuna Fishery have been assessed as not relevant to the proposed activity under this EP. As the representative body for the Southern Bluefin Tuna Fishery and the Western Skipjack Tuna Fishery, the ASBITA has also been assessed as not relevant as their functions are not affected by the activities to be carried out under this EP. VOGA has assessed ASBITA's interests as not affected by the activities to be carried out under this EP as any impacts to SBT are expected to be short-term, localised, and not harmful to fish populations or ecosystem function. VOGA chose to contact ASBITA at its discretion.	No
Commonwealth Fisheries Association (CFA)	Represents the interests of commercial fishers license holders in Commonwealth waters.	Fishing industry association who represents their members who may actively fish within the Operational Are or EMBA. Interested in sustianable fisheries and regulatory compliance.	There are Commonwealth commercial fisheries with management areas overlapping the Operational Area and EMBA, however the fisheries have not been active in the Operational Area or EMBA within the last 5 years and have been assessed as not relevant. As the representative body for commercial fishers and licence holders in Commonwealth waters, CFA has been assessed as not relevant as their functions are not affected by the activities to be carried out under this EP. VOGA has assessed CFA's interests are not affected by the activities to be carried out under this EP as any impacts to fish are expected to be short-term, localised, and not harmful to fish populations or ecosystem function. CFA was recommended for consultation by the Australian Fisheries Management Authority. VOGA chose to contact CFA at its discretion.	No

Pearl Producers Association (PPA)	Represents the Australian South Sea Pearling Industry.	The peak body representing members from WA and the NT pearling industry. Is interested in commercial operations and industry viability.	The Pearl Oyster Managed Fishery has been assessed as not relevant to the proposed activity. As the representative body for the Pearl Oyster Managed Fishery, the PPA has also been assessed as not relevant as their functions, interests or activities are not affected by the activities to be carried out under the environment plan. VOGA chose to contact PPA at its discretion.	No
Tuna Australia	Represents the interests of the Western Tuna and Billfish Fishery.	Fishing industry association represents their members from the Eastern and Western Tuna and Billfish and Western Skipjack fisheries of Australia. Interested in management of fisheries, market access and undertakes industry advocacy and stakeholder consultation.	The Western Tuna and Billfish Fishery has been assessed as not relevant to the proposed activity. As the representative body for the Western Tuna and Billfish Fishery, Tuna Australia has also been assessed as not relevant as their functions, interests or activities are not affected by the activities to be carried out under the environment plan. Tuna Australia was recommended for consultation by the Australian Fisheries Management Authority. VOGA chose to contact Tuna Australia at its discretion. VOGA acknowledges Tuna Australia's Industry Position Statement which states it wishes to be contacted when any proposed activity has the potential to impact vessel navigation, fishing activities, and/or the conservation of fish resources and where potential effects exist to member interests, there is a need for a service agreement. VOGA determines no potential effects to member interests. Specifically, impacts to fish are expected to be short-term, localised, and not harmful to fish populations or ecosystem function.	No

Seafood Industry Australia (SIA)	Represents the interests of Australian seafood industry as a whole.	Industry association represents their members from the wildcatch, aquaculture and post-harvest sectors of the Australian seafood industry. Interested in sustainability and market access and development.	SIA was recommended for consultation by the Australian Fisheries Management Authority. SIA has been assessed as not relevant to the proposed activity as VOGA determines no impact to SIA's functions, interests or activities. VOGA chose to contact SIA at its discretion.	No
Western Rock Lobster Council	Represents the interests of the Western Rock Lobster Managed Fishery	Industry association representing their members from the Western Rock Lobster commercial fishing industry. Interested in sustainabile stocks and fishery management.	The West Coast Rock Lobster Managed Fishery has been assessed as not relevant to the proposed activity. As the representative body for the West Coast Rock Lobster Managed Fishery, the Western Rock Lobster Council has also been assessed as not relevant. VOGA chose to contact the Western Rock Lobster Council at its discretion.	No
Commonwealth commercial fisheries				
Southern Bluefin Tuna Fishery	Commonwealth commercial fishery	The Southern Bluefin Tuna Fishery operates around Australia and extends to the high seas fishing zone, out to 200 nm from the coast. The fishery targets southern bluefin tuna only. SBT is a highly migratory species with a single known spawning ground in the Indian Ocean, between Java and northern Western Australia.	Fishing activity is focused in southern Australian waters with no activity expected in the Operational Area. No impact to the fishery is expected. Although the fishery overlaps the Operational Area and EMBA, the fishery has not been active in the Operational Area or EMBA within the last 5 years and has therefore been assessed as not relevant.	No

Western Skipjack Tuna Fishery	Commonwealth commercial fishery	The Western Skipjack Tuna Fishery extends west from Cape York Peninsula and around Australia to the South Australian/Victorian border, out to the edge of the Australian Fishing Zone.	Little fishing activity has been undertaken in this fishery since 2008. No fishing activity associated with this fishery is expected to occur within the Operational Areas. Although the fishery overlaps the Operational Area and EMBA, the fishery has not been active in the Operational Area or EMBA within the last 5 years and has therefore been assessed as not relevant.	No
Western Tuna and Billfish Fishery	Commonwealth commercial fishery	The Western Tuna and Billfish Fishery management area extends over a large area westward from Cape York Peninsula off Queensland, around the west coast of Western Australia and eastward, across the Great Australian Bight to 141°E at the South Australian/Victorian border. Target species include albacore, bigeye tuna, yellow fin tuna, swordfish and striped marlin.	The fishery has operated at low levels of effort since the early 2000's due to economic conditions. No fishing activity associated with this fishery is expected to occur within the Operational Areas. Although the fishery overlaps the Operational Area and EMBA, the fishery has not been active in the Operational Area or EMBA within the last 5 years and has therefore been assessed as not relevant.	No
State commercial fishing - representative bodies				
Western Australian Fishing Industry Council (WAFIC)	WAFIC represents the interests of the WA commercial fishing, pearling and aquaculture sector.	WAFIC represents their members who may actively fish in the Operational Area. WAFIC is interested in sustainable fisheries, industry development, and regulatory compliance and	There are active State commercial fisheries in the Operational Area. WAFIC's functions may be relevant to the activity as the representative body for State fisheries. VOGA acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing	Yes

		undertakes stakeholder consultation.	Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would be undertaken only in the event of an unplanned emergency scenario. WAFIC issued consultation material on behalf of VOGA to relevant commercial fisheries licence holders having potential for interaction in the Operational Area under a services agreement.	
State commercial fisheries				
Mackerel Managed Fishery - Area 2	State commercial fishery	A commercial fishery targeting Spanish mackerel through near-surface trolling around reefs and shoals in the Pilbara region, operating seasonally from April to September. Interested in sustainable mackerel stocks and seasonal fishing access.	The fishery overlaps the Operational Area and has been active in the Operational Area within the last 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. Under an agreement, WAFIC recommended consultation with this fishery and distributed consultation information on behalf of VOGA.	Yes
Onslow Prawn Limited Entry Fishery	State commercial fishery	A trawl fishery harvesting prawn species along the western part of the North West Shelf, managed under limited entry and seasonal effort controls. Intersted in sustainable prawn stocks and fishing operations.	The fishery overlaps the Operational Area and has been active in the Operational Area within the last 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. Under an agreement, WAFIC recommended consultation with this fishery and distributed consultation information on behalf of VOGA.	Yes
Pilbara Crab Managed Fishery	State commercial fishery	Targets blue swimmer crabs using traps and other gear across coastal embayments between Geographe Bay and Port Hedland, managed to	The fishery overlaps the Operational Area and has been active in the Operational Area within the last 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. Under an agreement,	Yes

		maintain sustainable stocks and is interested in sustainable crab populations and operations.	WAFIC recommended consultation with this fishery and distributed consultation information on behalf of VOGA.	
Pilbara Line Fishery (Condition)	State commercial fishery	Comprises nine licensed vessels permitted to commercially fish under exemption conditions for nominated five-month periods each year, primarily targeting demersal and pelagic species and interested in. Is interested in sustainable catch and vessel operations.	The fishery overlaps the Operational Area and has been active in the Operational Area within the last 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. Under an agreement, WAFIC recommended consultation with this fishery and distributed consultation information on behalf of VOGA.	Yes
Pilbara Fish Trawl (Interim) Managed Fishery	State commercial fishery	A demersal trawl fishery operating off the Pilbara coast, targeting a range of finfish species on the continental shelf under controlled effort and spatial management zones. Is interested in sustainable catch and vessel operations.	The fishery overlaps the Operational Area and has been active in the Operational Area within the last 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. Under an agreement, WAFIC recommended consultation with this fishery and distributed consultation information on behalf of VOGA.	Yes
Pilbara Trap Managed Fishery	State commercial fishery	A commercial fishery using baited traps to harvest demersal scalefish species in offshore Pilbara waters, managed through limited entry, gear restrictions and catch controls. Is interested in sustainable catch and vessel operations.	The fishery overlaps the Operational Area and has been active in the Operational Area within the last 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. Under an agreement, WAFIC recommended consultation with this fishery and distributed consultation information on behalf of VOGA.	Yes

Recreational fishers and marine users and peak representative bodies				
WA Game Fishing Association (WAGFA)	Represents the interests of game fishers in WA.	The peak body representing game fishing clubs across Western Australia, is interested in sustainable game fish populations and recreational fishing access, and undertakes club coordination, tournaments, and stakeholder engagement.	Activities have the potential to impact game fishers' functions, interests or activities due to the location offshore and there has been recorded charter effort in the EMBA in the past 5 years.	Yes
Recfishwest	Represents the interests of recreational fishers in WA.	The state's peak recreational fishing organisation, advocating for sustainable fishing access, habitat protection and community access and participation.	Activities have the potential to impact game fishers' functions, interests or activities due to the location offshore and there has been recorded charter effort in the EMBA in the past 5 years.	Yes
Marine Tourism WA	Represents the interests of marine tourism in WA.	Represents the interests of marine-based tourism operators across Western Australia, including those dependent on coastal and offshore environments. Is interested in the use of coastal and offshore environments.	Activities have the potential to impact game fishers' functions, interests or activities due to the location offshore and there has been recorded charter effort in the EMBA in the past 5 years.	Yes
Ashburton Anglers	Represents the interests of recreational fishers in Ashburton	A regional recreational fishing club representing local fishing interests along the Ashburton coast.Is interested in local fish stocks	Activities have the potential to impact game fishers' functions, interests or activities.	Yes

		and community fishing opportunity.		
Exmouth Game Fishing Club (EGFC)	Represents the interests of recreational fishers in Exmouth	A regional game fishing organisation based in Exmouth, representing local and visiting recreational fishers. Is interested in sportsfishing and regional fishery access.	Activities have the potential to impact game fishers' functions, interests or activities.	Yes
King Bay Game Fishing Club (KBFC)	Represents the interests of recreational fishers in King Bay	A Pilbara-based game fishing club representing recreational fishing interests in the Dampier and King Bay areas. Interested in fishing access.	Activities have the potential to impact game fishers' functions, interests or activities.	Yes
Nickol Bay Sportsfishing Club (NBSC)	Represents the interests of recreational fishers in Nickol Bay	A Pilbara-based recreational fishing club focused on sportfishing interests in the Nickol Bay area. Interested in sportsfishing access.	Activities have the potential to impact game fishers' functions, interests or activities.	Yes
Pilbara / Kimberley Recreational Marine Users	Pilbara & Kimberley-based dive, tourism and charter operators	Represents the interests of recreational marine users across the Pilbara and Kimberley regions in relation to coastal and offshore access. Interested in access to offshore areas.	Activities have the potential to impact Pilbara/Kimberley-based dive, tourism and charter operator's functions, interests or activities due to the location of activities and there has been recorded charter effort in the EMBA in the past 5 years. [redacted], Willie Creek Pearl Farm Pty Ltd, [redacted] Trading As One Tide Charters, Super Yachts Perth Pty Ltd, Silverado Charters Pty Ltd, Alltric Pty Ltd & Bluecity Enterprises Pty Ltd, [redacted], Wongs Way Out Pty Ltd, G. C. Bass Nominees Pty Ltd, [redacted] Trading As Shikari Charters, [redacted], Bloor Street Investments Pty Ltd,	Yes

			Reel Force Charters Pty Ltd, [redacted], Redgate Agricultural Pty Ltd, [redacted], D & N Nominees Pty Ltd, [redacted], Western Wave Marine Pty Ltd, Seafresh Holdings Pty Ltd, Eco-Abrolhos Pty Ltd, [redacted] Trading As North Star Cruises Australia, Riverblitz Pty Ltd, [redacted], Discovery Holiday Parks Pty Limited, Royal Boats Pty Ltd, Third Reef Pty Ltd, Kimberley Marine Pty Ltd, On Strike Charters (WA) Pty Ltd, Coral Princess Cruises (NQ) Pty Ltd, Marine Agents Australia Pty Ltd, No Limitts Pty Ltd, Image Dive Pty Ltd, [redacted], Keshi Mer Pty Ltd, [redacted], Melkit Pty Ltd, [redacted], Maritime Engineering Services Pty Ltd, Kempton Fisheries Pty Ltd, Ms [redacted], Latitude Fisheries Pty Ltd, Sea West WA Pty Ltd, Coastway Investments Pty Ltd, KCC Group Pty Ltd, CM Ventures Pty Ltd, Lombadina Aboriginal Corporation, [redacted] T/As Looksea Tours, [redacted], Australian Port and Marine Services Pty Ltd, [redacted], Hartley Motorcycles Pty Ltd, Meridian Venture Group Pty Ltd, Humbug Fishing Pty Ltd, [redacted], Brefjen Nominees Pty Ltd, Boarbarrell Pty Ltd, Kimberly Pearl Tours Pty Ltd, W.A Maritime Investments Pty Ltd, [redacted], Oceanic	

			Delights Pty Ltd, Crensot Nominees Pty Ltd, [redacted] i, [redacted], Blue Juice Tours Pty Ltd, Makalee Pty Ltd, [redacted], Pearl Expeditions Pty Ltd, Mr [redacted], L & S Family Holdings Pty Ltd, Bondall Pty Ltd, Lake Argyle Cruises Pty Ltd, KW Marine Pty Ltd, Viency Pty Ltd, Pine Dene Nominees Pty Ltd, [redacted], Sealife Charters Pty Ltd, [redacted] & [redacted], Perth Diving Academy Hillarys Pty Ltd, R & J Glass Pty Ltd, Mal Miles Adventures Pty Ltd, Mackerel Islands Pty Ltd, Sharkbay Charters Pty Ltd, [redacted], Austanley Pty Ltd, Diversity Charter Company WA Pty Ltd, [redacted], Biwal Pty Ltd Trading As Wallabi Carting, [redacted], Capricorn Mist Pty Ltd, Oceaneer Marine Brokers Pty Ltd, Split Tide Pty Ltd, Broome Tours Pty Ltd, [redacted], North Star Cruises Australia Pty Ltd, [redacted], Compagnie Du Ponant Pty Ltd, [redacted], and [redacted] & [redacted], Scuba Kev Pty Ltd, Charter Express Pty Ltd, [redacted] and [redacted], El Alauron Pty Ltd, Sea 2 Pty Ltd, Jostan Holdings Pty Ltd, Fortitude Investments Australia Pty Ltd, [redacted] & [redacted], Monkey Mia Yacht Charters Pty Ltd, [redacted] Trading As Esperance Diving And Fishing, [redacted], Avanova Pty Ltd, Hotel And Resort Investments Pty Ltd, [redacted], [redacted], [redacted], Broome Chiropractic Pty Ltd, [redacted], [redacted], [redacted], [redacted], [redacted], T/As Ultimate Adventures, [redacted], D [redacted], Kingfisher Island Resort Pty Ltd, [redacted] RSTG Pty Limited, [redacted] & [redacted], [redacted] Trading As Exmouth Fly Fishing, KM	

			Charters Pty Ltd, Discovery III Pty Ltd, Abbey Bay Pty Ltd, [redacted] Red Dust WA Pty Ltd, Petara Pty Ltd, Rogue Seas Pty Ltd, CM Marine Pty Ltd, Monster Sportfishing Adventures Pty Ltd, Ocean Charters Pty Ltd, Lulamanzi Investments Pty Ltd, Jayson Fishing Company (WA) Pty Ltd, [redacted], [redacted], Reefwalker Pty Ltd, Millennial Charters Pty Ltd, [redacted], Chapel Nominees Pty Ltd, [redacted], [redacted], Fawesome Expeditions Pty Ltd, Aquatic Adventures (WA) Pty Ltd, The Great Escape Charter Company Pty Ltd, AOA International Pty Ltd, [redacted], [redacted], Fire Tiger Pty Ltd, [redacted] T/As Coral Bay Ocean Game Fishing Charters, Punchline Pty Ltd Trading As Karma Charters & Dorre Island Fishing Company, [redacted], Go Beyond Broome Pty Ltd, Kimberley Getaway Cruises Pty Ltd, Hulson Pty Ltd, King Sound Resort Hotel Pty Ltd, [redacted] and [redacted], Kybret Pty Ltd, [redacted], [redacted]	
Gascoyne Recreational Marine Users	Gascoyne-based dive, tourism and charter operators	Represents recreational marine users in the Gascoyne region, including interests related to access and use of nearshore and offshore waters. Interested in access to offshore areas.	Activities have the potential to impact Gascoyne-based dive, tourism and charter operator's functions, interests or activities due to the location of activities and there has been recorded charter effort in the EMBA in the past 5 years. Silverado Charters Pty Ltd, [redacted], Eco-Abrolhos Pty Ltd, [redacted] & [redacted], C Emery Fishing Pty Ltd, [redacted] Trading As North Star Cruises Australia, [redacted] & [redacted] A[redacted], Maritime Engineering Services Pty Ltd, G. C. Bass Nominees Pty Ltd, Brefjen Nominees	Yes

			Pty Ltd, Melkit Pty Ltd, W.A Maritime Investments Pty Ltd, Bill Mills, Blue Juice Tours Pty Ltd, [redacted], L & S Family Holdings Pty Ltd, Bondall Pty Ltd, Kw Marine Pty Ltd, North Star Cruises Australia Pty Ltd, [redacted] And [redacted], Monster Sportfishing Adventures Pty Ltd, Lulamanzi Investments Pty Ltd, Millennial Charters Pty Ltd, Chapel Nominees Pty Ltd, Fawesome Expeditions Pty Ltd, The Great Escape Charter Company Pty Ltd, Aoa International Pty Ltd, [redacted], Reel Force Charters Pty Ltd, D & N Nominees Pty Ltd, [redacted], [redacted], Seafresh Holdings Pty Ltd, On Strike Charters (Wa) Pty Ltd, [redacted], [redacted], Bluecity Enterprises Pty Ltd & Alltric Pty Ltd, Makalee Pty Ltd, [redacted], [redacted], [redacted] s &, Sharkbay Charters Pty Ltd, [redacted], Austanley Pty Ltd, [redacted], [redacted] &, Jostan Holdings Pty Ltd, Monkey Mia Yacht Charters Pty Ltd, Mr [redacted], [redacted], [redacted], [redacted] & [redacted], [redacted] Trading As Exmouth Fly Fishing, Km Charters Pty Ltd, B[redacted], [redacted], [redacted] &, [redacted] y &, [redacted], [redacted], [redacted] &, [redacted] T/As Coral Bay Ocean Game Fishing Charters, [redacted], Fire Tiger Pty Ltd	
Energy industry titleholders and operators				
3D Energi Limited	Titleholder or Operator	The titleholder may have a commercial interest in offshore title(s), either for petroleum or GHG activities,	Titleholder or Operator's permit areas overlaps the EMBA.	Yes

		within proximity to their permits and the EMBA.		
Beagle No. 1 Pty Ltd / Longreach Capital Investment	Titleholder or Operator	The titleholder may have a commercial interest in offshore title(s), either for petroleum or GHG activities, within proximity to their permits and the EMBA.	Titleholder or Operator's permit areas overlaps the EMBA.	Yes
BP Developments Australia	Titleholder or Operator	The titleholder may have a commercial interest in offshore title(s), either for petroleum or GHG activities, within proximity to their permits and the EMBA.	Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Chevron Australia	Titleholder or Operator	The titleholder may have a commercial interest in offshore title(s), either for petroleum or GHG activities, within proximity to their permits and the EMBA.	Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Finder No 16 Pty Ltd	Titleholder or Operator	The titleholder may have a commercial interest in offshore title(s), either for petroleum or GHG activities, within proximity to their permits and the EMBA.	Titleholder or Operator's permit areas overlaps the EMBA.	Yes
INPEX Browse E&P Pty Ltd	Titleholder or Operator	The titleholder may have a commercial interest in offshore title(s), either for petroleum or GHG activities, within proximity to their permits and the EMBA.	Titleholder or Operator's permit areas overlaps the EMBA.	Yes

Jadestone Energy (Australia) Pty Ltd	Titleholder or Operator	The titleholder may have a commercial interest in offshore title(s), either for petroleum or GHG activities, within proximity to their permits and the EMBA.	Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Kato Energy (WA) Pty Ltd	Titleholder or Operator	The titleholder may have a commercial interest in offshore title(s), either for petroleum or GHG activities, within proximity to their permits and the EMBA.	Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Kufpec (Perth) Pty Ltd	Titleholder or Operator	The titleholder may have a commercial interest in offshore title(s), either for petroleum or GHG activities, within proximity to their permits and the EMBA.	Titleholder or Operator's permit areas overlaps the EMBA.	Yes
MEO International Pty Ltd	Titleholder or Operator	The titleholder may have a commercial interest in offshore title(s), either for petroleum or GHG activities, within proximity to their permits and the EMBA.	Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Mobil Australia Resources Company Pty Limited	Titleholder or Operator	The titleholder may have a commercial interest in offshore title(s), either for petroleum or GHG activities, within proximity to their permits and the EMBA.	Titleholder or Operator's permit areas overlaps the EMBA.	Yes

Santos Offshore Pty Ltd	Titleholder or Operator	The titleholder may have a commercial interest in offshore title(s), either for petroleum or GHG activities, within proximity to their permits and the EMBA.	Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Shell Australia Pty Ltd	Titleholder or Operator	The titleholder may have a commercial interest in offshore title(s), either for petroleum or GHG activities, within proximity to their permits and the EMBA.	Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Western Gas (474 P) Pty Ltd	Titleholder or Operator	The titleholder may have a commercial interest in offshore title(s), either for petroleum or GHG activities, within proximity to their permits and the EMBA.	Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Woodside Energy (Australia) Pty Ltd	Titleholder or Operator	The titleholder may have a commercial interest in offshore title(s), either for petroleum or GHG activities, within proximity to their permits and the EMBA.	Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Peak industry representative bodies and associations				
Australian Energy Producers (AEP)	Represents the interests of oil and gas explorers and producers in Australia.	The peak national body representing companies involved in Australia's oil, gas and emerging low-carbon energy industries, providing policy and advocacy	AEP's responsibilities are identified as having an intersect with the EMBA.	Yes

		leadership on energy development and regulation.		
Infrastructure operators				
Vocus Communications	Owner and operator of an offshore fibre network	A telecommunications infrastructure provider operating subsea and terrestrial cable networks that support connectivity to offshore and remote resource operations across northern Australia. Is interested in reliable connectivity and service delivery for its network operations.	Vocus is relevant as its offshore fibre network intersects the EMBA.	Yes
Traditional Custodians and First Nations nominated representative corporations				
Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	Representative Aboriginal Corporation	Represents Thalanyji Traditional Owners, and represent their communal interests including, among other things, management and protection of cultural values.	The Thalanyji native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which BTAC is the Registered Native Title Body Corporate.	Yes
Karajarri Traditional Lands Association Aboriginal Corporation (KTLA)	Representative Aboriginal Corporation	Represents Karajarri Traditional Owners and its members and represent their communal interests including, among other things, management and protection of cultural values. It is interested in the	The Karajarri People (Area A) and Karajarri People (Area B) native title claim, which the Karajarri Traditional Lands Association (Aboriginal Corporation) is the Registered Native Title Body Corporate for does not overlaps the EMBA. The Karajarri and parties to the Karajarri Indigenous Protected Area (IPA), dedicated in 2014, lies south of Broome and includes 130 kilometres of coastline.	No

		protection of cultural heritage and land and sea country and safeguarding cultural and environmental values.	On the basis of this assessment and the engagement undertaken to date, KTLA is not considered to have a direct function, interest or activity that would be affected by the proposed activities. Given our ongoing engagement VOGA has contacted KTLA separately at its discretion to advise its assessment and seek guidance and did not receive a response.	
Kariyarra Aboriginal Corporation (KAC)	Representative Aboriginal Corporation	Represents Kariyarra Traditional Owners and its members and represent their communal interests including, among other things, management and protection of cultural values. It is interested in the protection of cultural heritage and land and sea country and safeguarding cultural and environmental values.	The Kariyarra native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which the Kariyarra Aboriginal Corporation is the Registered Native Title Prescribed Body Corporate.	Yes
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC), Yinggarda Aboriginal Corporation	Representative Aboriginal Corporation	The NTGAC and YAC are the Registered Native Title Body Corporates holding native title on behalf of the Baiyungu, Thalanyji and Yinggarda people. They represent their communal interests including, among other things, management and protection of cultural values.	The Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji Peoples' native title claim overlaps the EMBA. The NTGAC is also party, with the WA State Government, to the Ningaloo Conservation Estate Indigenous Land Use Agreement (ILUA), which overlaps the EMBA. The NTGAC's nominated representative is YMAC and VOGA has consulted with NTGAC via YMAC.	Yes

Ngarluma Aboriginal Corporation (NAC)	Representative Aboriginal Corporation	NAC represents the the Ngarluma Traditional Owners and represent their communal interests including, among other things, management and protection of cultural values.	The Ngarluma People native title claim overlaps the EMBA, which the Ngarluma Aboriginal Corporation is the Registered Native Title Prescribed Body Corporate.	Yes
Wanparta Aboriginal Corporation (WAC)	Representative Aboriginal Corporation	WAC represents the Ngarla Traditional Owners and represent their communal interests including, among other things, management and protection of cultural values. Wanparta also jointly manages the 80 Mile Beach Marine Park.	The Ngarla and Ngarla #2 (Determination Area 2) determined native title claim does not overlap the EMBA. The determined native title claim is coastally adjacent to the EMBA, which the Wanparta Aboriginal Corporation is the Registered Native Title Prescribed Body Corporate.	Yes
Wirrawandi Aboriginal Corporation (WAC)	Representative Aboriginal Corporation	WAC represents the Yaburara and Mardudhunera Traditional Owners and represent their communal interests including, among other things, management and protection of cultural values.	The Yaburara and Mardudhunera People determined native title claim overlaps the EMBA, which the Wirrawandi Aboriginal Corporation is the which the Wirrawandi Aboriginal Corporation is the Registered Native Title Prescribed Body Corporate.	Yes
Yindjibarndi Aboriginal Corporation (YAC)	Representative Aboriginal Corporation	YAC represents the e Yindjibarndi Traditional Owners. YAC advised that it has no interest in offshore oil and that Ngarluma manages all interest. VOGA has identified Ngarluma for consultation on this EP.	The Ngarluma/Yindjibarndi People determined native title claim overlaps the EMBA, which the Yindjibarndi Aboriginal Corporation is the Registered Native Title Prescribed Body Corporate. The YAC's nominated representative is Ngarluma and VOGA has consulted with YAC via Ngarluma.	Yes

Murujuga Aboriginal Corporation (MAC)	Representative Aboriginal Corporation	Murujuga Aboriginal Corporation (MAC) is made up of members from five traditional custodial groups: the Ngarluma, Mardudhunera, Yaburara, Yindjibarndi, and Wong-Goo-Tt-Oo peoples. MAC brings together the five groups and is the approved corporate body for the Burrup and Maitland Industrial Estates Agreement (BMIEA). MAC administers the implementation of contractual obligations under the terms of the BMIEA. MAC owns and co-manages the Murujuga National Park, is responsible for the Dampier Archipelago National Heritage Place and the World Heritage listing of the Murujuga Cultural Landscape. MAC is the cultural authority for Murujuga and is responsible for the management and protection of its cultural values. It is	MAC, while not a PBC, is a representative body responsible for managing cultural heritage, community development, and engagement in the region. MAC holds the freehold title to Murujuga National Park which overlaps the EMBA, potentially affecting its functions and interests.	Yes

		interested in preserving cultural and sacred sites in the region.		
Malgana Aboriginal Corporation (MAC) (Part A)	Representative Aboriginal Corporation		The Malgana Part A native title claim does not overlap the EMBA, for which the Malgana Aboriginal Corporation is the Registered Native Title Body Corporate. On the basis of this assessment and the engagement undertaken to date, MAC (Part A) is not considered to have a direct function, interest or activity that would be affected by the proposed activities. Given our ongoing engagement VOGA has contacted MAC (Part A) separately at its discretion to advise its assessment and seek guidance and did not receive a response.	No
Malgana Aboriginal Corporation RNTBC, Nanda Aboriginal Corporation RNTBC (Part B)	Representative Aboriginal Corporation		The Nanda People Part B, Malgana 2 and Malgana 3 native title claim does not overlap the EMBA, for which the Malgana Aboriginal Corporation and Nanda Aboriginal Corporation are the Registered Native Title Body Corporates. On the basis of this assessment and the engagement undertaken to date, MAC, Nanda (Part B) is not considered to have a direct function, interest or activity that would be affected by the proposed activities. Given our ongoing engagement VOGA has contacted MAC, Nanda (Part B) separately at its discretion to advise its assessment and seek guidance and did not receive a response.	No

Nanda Aboriginal Corporation RNTBC (NAC)	Representative Aboriginal Corporation		The Nanda People and Nanda #2 native title claim does not overlap the EMBA, for which the Nanda Aboriginal Corporation is the Registered Native Title Body Corporate. On the basis of this assessment and the engagement undertaken to date, NAC is not considered to have a direct function, interest or activity that would be affected by the proposed activities. Given our ongoing engagement VOGA has contacted NAC separately at its discretion to advise its assessment and seek guidance and did not receive a response.	No
Nyangumarta Karajarri Aboriginal Corporation RNTBC (NKAC)	Representative Aboriginal Corporation		The Nyangumarta Karajarri People native title claim, which the Nyangumarta Karajarri Aboriginal Corporation RNTBC (NKAC) is the Registered Native Title Body Corporate for, does not overlap the EMBA. On the basis of this assessment and the engagement undertaken to date, NKAC is not considered to have a direct function, interest or activity that would be affected by the proposed activities. Given our ongoing engagement VOGA has contacted NKAC separately at its discretion to advise its assessment and seek guidance and did not receive a response.	No
Nyangumarta Warrarn Aboriginal Corporation RNTBC (NWAC)	Representative Aboriginal Corporation		The Nyangumarta People (Part A) native title claim, which the Nyangumarta Warrarn Aboriginal Corporation RNTBC (NKAC) is the Registered Native Title Body Corporate for, does not overlap the EMBA.	No

			On the basis of this assessment and the engagement undertaken to date, NWAC is not considered to have a direct function, interest or activity that would be affected by the proposed activities. Given our ongoing engagement VOGA has contacted NWAC separately at its discretion to advise its assessment and seek guidance and did not receive a response.	
Yawuru Native Title Holders Aboriginal Corporation RNTBC (Yawuru)	Representative Aboriginal Corporation		The Rubibi Community native title claim does not overlap the EMBA, for which the Yawuru Native Title Holders Aboriginal Corporation RNTBC is the Registered Native Title Body Corporate. On the basis of this assessment and the engagement undertaken to date, Yawuru is not considered to have a direct function, interest or activity that would be affected by the proposed activities. Given our ongoing engagement VOGA has contacted Yawuru separately at its discretion to advise its assessment and seek guidance and did not receive a response.	No
Native Title representative bodies				
Kimberley Land Council (KLC)	Native Title Representative Body	KLC is the Native Title Representative Body for the Kimberley region of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate but exist to assist native title claimants and holders.	KLC is a Native Title Representative Body that provides administrative and legal assistance to native title groups in the Kimberley region. VOGA contacted KLC previously on several occasions to seek guidance with respect to its relevance for consultation but has not received a response. Based on a review of publicly available information regarding KLC's functions, interests and activities, and	No

			having regard to the nature and scope of the proposed activities, KLC's role is understood to be limited to providing representative and support services to native title groups. On the basis of this assessment and the engagement undertaken to date, KLC is not considered to have a direct function, interest or activity that would be affected by the proposed activities. VOGA has contacted KLC at its discretion to advise its assessment and seek guidance and did not receive a response.	
Yamatji Marlpa Aboriginal Corporation (YMAC)	Native Title Representative Body	YMAC is the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate but exist to assist native title claimants and holders.	YMAC provides administrative and legal assistance to NTGAC, a group identified as a relevant person for this EP. VOGA has engaged with YMAC in this capacity. VOGA contacted YMAC previously on several occasions to seek guidance with respect to its relevance for consultation but has not received a response. Based on a review of publicly available information regarding the functions, interests and activities of YMAC, and having regard to the nature and scope of the proposed activities, YMAC's role is understood to be that of a Native Title Representative Body providing administrative and legal assistance to native title groups. On the basis of this assessment and the engagement undertaken to date, YMAC is not considered to have a direct function, interest or activity that would be affected by the proposed activities. VOGA has contacted YMAC separately at its discretion to advise its assessment and seek guidance and did not receive a response.	No

Historical heritage groups or organisations				
Western Australian Museum (WAM)	Manages 200 shipwreck sites of the 1,500 known to be located off the Western Australian coast.	The State's museum authority responsible for managing and conserving Western Australia's cultural, maritime and natural heritage, including marine collections and heritage sites. Is interested in preserving and interpreting cultural, maritime, and natural assets.	There are known shipwrecks overlapping the EMBA which the Western Australian Museum may be responsible for, potentially affecting its functions and interests.	Yes
Local government and recognised local business and community reference/liaison groups or organisations				
City of Karratha	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Baynton, Baynton West, Bulgarra, Cossack, Dampier, Gap Ridge, Karratha, Karratha Industrial Estate, Jingarri, Madigan, Millars Well, Nickol, Pegs Creek, Point Samson, Roebourne, Whim Creek, and Wickham.	The local government authority for the Karratha region, responsible for land use planning, community infrastructure and coastal management.	The City of Karratha's area of responsibility overlaps the EMBA.	Yes
Town of Port Hedland	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Cooke Point, Port Hedland, Pretty Pool, Redbank, South	The local government authority for Port Hedland, with responsibilities for community development, environmental management and local infrastructure.	The Town of Port Hedland's area of responsibility overlaps the EMBA.	Yes

	Hedland, Wedgefield, and Yandeyarra.			
Shire of Ashburton	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Onslow, Pannawonica, Paraburdoo, and Tom Price.	The local government authority for the Ashburton region, encompassing coastal and inland areas that support resource and marine industries.	The Shire of Ashburton's area of responsibility overlaps the EMBA.	Yes
Shire of Exmouth	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Exmouth, Learmonth, and North West Cape.	The local government authority for Exmouth, responsible for local planning and management of areas adjacent to the Ningaloo Coast and Exmouth Gulf.	The Shire of Exmouth's area of responsibility overlaps the EMBA.	Yes
Port Hedland Chamber of Commerce and Industry	Independent not-for-profit organisation responsible for promoting the interests of its members in the business community in the town of Port Hedland and surrounding areas	Represents the interests of businesses operating in the Port Hedland area, including those engaged in port, logistics and resource-related activities.	The Port Hedland Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
Onslow Chamber of Commerce and Industry	Independent not-for-profit organisation responsible for promoting the interests of its members in the business community in the town of Onslow and surrounding areas	Represents local business interests in the Onslow area, including sectors supporting oil, gas and marine operations.	The Onslow Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
Western Australian Local Government Association (WALGA)	Independent non-for-profit organisation responsible for promoting the interests of	The peak body representing local governments across Western Australia, providing	The WALGA's interests have the potential to be impacted by the proposed activities.	Yes

	the WA local government sector.	advocacy and policy input on state and regional matters.		
Karratha and Districts Chamber of Commerce and Industry (KDCCI)	Independent not-for-profit organisation responsible for promoting the interests of its members in the business community in the city of Karratha and surrounding areas	Represents business and industry interests in Karratha and surrounding districts, including those linked to resource and marine sectors.	The Karratha and Districts Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
Regional Development Australia (Pilbara) Karratha WA	Federal Government initiative responsible for supporting local governments and non-for-profits.	A regional development body based in Karratha that promotes economic growth, investment and community development across the Pilbara region.	The Regional Development Australia (Pilbara) Karratha WA's interests have the potential to be impacted by the proposed activities.	Yes
Research institutes				
Curtin University (Centre for Marine Science and Technology)	Marine Research Organisation	The Western Australian University conducts research in marine science, environmental monitoring, and technology development, undertaking field studies, surveys, and collaborative and research initiatives.	There may be research being undertaken by Curtin University that intersects within the EMBA, potentially affecting its interests and activities.	Yes
University of Western Australia (UWA)	Marine Research Organisation	Undertakes marine science and oceanography research, is interested in understanding and protecting coastal and offshore ecosystems, and	There may be research being undertaken by University of Western Australia that intersects within the EMBA, potentially affecting its interests and activities.	Yes

		undertakes research projects and environmental monitoring.		
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Marine Research Organisation	Conducts scientific research on marine ecosystems and biodiversity, and undertakes research and monitoring.	There may be research being undertaken by the Commonwealth Scientific and Industrial Research Organisation that intersects within the EMBA, potentially affecting its interests and activities.	Yes
Western Australian Marine Science Institution (WAMSI)	Marine Research Organisation	Conducts research on marine ecosystems and biodiversity.	There may be research being undertaken by the Western Australian Marine Science Institution that intersects within the EMBA, potentially affecting its interests and activities.	Yes
Australian Institute of Marine Science (AIMS)	Marine Research Organisation	Conducts research on marine ecosystems and biodiversity.	There may be research being undertaken by Australian Institute of Marine Science that intersects within the EMBA, potentially affecting its interests and activities.	Yes
Australian Marine Sciences Association (WA Branch)	Marine Research Organisation	Represents marine scientists in Western Australia and conducts research in the region.	There may be research being undertaken by Australian Marine Sciences Association that intersects within the EMBA, potentially affecting its interests and activities.	Yes
Local environment and conservation groups or organisations				
Project Ningaloo	Non-government organisation	Focused on preserving ecological values and sustainable marine use.	Protect Ningaloo's conservation activities have the potential to intersect with the EMBA as the EMBA overlaps North West Cape and Ningaloo Reef, potentially affecting its interests and activities.	Yes
Australian Conservation Foundation (ACF)	Non-government organisation	National environmental organisation with a focus on biodiversity, ecosystems and environmental outcomes, with a focus on advocacy, research, policy submissions and public education.	Australian Conservation Foundation has a publicly available statement (or purpose), website or social media material that demonstrates that it's functions, interests or activities may be relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation.	Yes

The Conservation Council of WA (CCWA)	Non-government organisation	Environmental advocacy body which undertakes policy advocacy and conservation programs.	The Conservation Council of WA has a publicly available statement (or purpose), website or social media material that demonstrates that it's functions, interests or activities may be relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation.	Yes
Care for Hedland	Non-government organisation	Community based environmental group with a focus on community education, conservation activities and environmental advocacy.	Care for Hedland has a publicly available statement (or purpose), website or social media material that demonstrates that it's functions, interests or activities may be relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation.	Yes
Greenpeace Australia Pacific (GAP)	Non-government organisation	International environmental group focused on climate change and fossil fuel campaigns.	Greenpeace Australia Pacific (GAP) has been assessed as not relevant to the proposed activity. VOGA has assessed that GAP does not have a publicly available statement (or purpose), website or social media material that demonstrates its functions, interests or activities are relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation. VOGA chose to contact GAP at its discretion.	No
Wilderness Society (WS)	Non-government organisation	National environmental NGO campaigning on biodiversity, forest protection, and fossil fuel phase-out.	Wilderness Society (WS) has been assessed as not relevant to the proposed activity. VOGA has assessed that WS does not have a publicly available statement (or purpose), website or social media material that demonstrates its functions, interests or activities are relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation. VOGA chose to contact WS at its discretion.	No

1.3 Consultation Activities

VOGA has been consulting with relevant individuals and other interested parties for this EP from October through to February 2026. This included a planned and considered approach to engaging identified relevant persons and interested parties on VOGA's proposed activities. The company undertook a broad consultation process to raise public awareness, encourage feedback and prompt respectful two-way consultation.

VOGA conveyed its planned activities through a variety of media forums that included advertisements in print media such as national, state and local newspapers, and social media platforms.

Local community centres were also contacted and asked to print and display information flyers within and adjacent to the Operational Area and EMBA to raise awareness.

VOGA's consultation webpage provided fact sheets and other publicly available materials.

Table 2: Summary of Consultation Activities

Consultation Activity	Purpose	Timing
Initial consultation (22 October 2025 – 21 November 2025)		
Consultation materials Email to identified relevant persons with a link to project information on the VOGA website, a map of the title area, and seeking their preferred method of consultation.	Raise awareness of the proposed activities and existing operations and seek input from relevant persons on their preferred method for engaging in consultation.	22 October 2025
Website Website content and resources developed and made available: https://www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities/	Provided: • Information about VOGA's consultation obligations, approach and promoting self-identification. • Information about the proposed activities, including potential impacts and risks. • Information on the consultation process and how to self-identify. • Contact information to enable relevant persons to provide feedback. • Resources such as fact sheets, frequently asked questions and NOPSEMA guidelines.	From 20 October 2025
Consultation period (22 October 2025 – 18 December 2025)		
Consultation materials Consultation communication material included:	Advising identified relevant persons of the proposed activities, the consultation period dates, and providing an opportunity for feedback on the EP.	From 22 October 2025

• An email to identified relevant persons advising of the commencement of consultation. • Letter to identified relevant persons advising of the commencement of consultation. • Community flyers. • Consultation Information Sheets and stakeholder-specific fact sheets for commercial fisheries and First Nations groups. • Additional targeted information about the proposed activities was provided to relevant persons in respect to their functions interests and activities.		
Consultation meetings Where indicated as the preferred consultation method, VOGA hosted in-person and virtual meetings. This included providing a presentation specific to the relevant person or organisation.	Providing information to relevant persons about the proposed activities, the consultation period dates, and providing an opportunity for feedback on the EP.	From 22 October 2025
Print media advertising Print advertisements in the following publications: • The West Australian • Koori Mail • Mid-West Times • North-West Telegraph • Broome Advertiser • Pilbara Times.	Promote awareness of the proposed activities, encourage self-identification and seek feedback from relevant persons. A staggered approach was taken for placing advertisements, ensuring they were displayed throughout the consultation period.	From 28 October 2025 to 19 November 2025.
Social media advertising Geo-targeted social media advertising was deployed, aimed at communities within the EMBA.	Promote awareness of the proposed activities, consultation period and how to provide feedback on the EP.	From 22 October 2025 to 24 November 2025

1.3.1 Consultation Correspondence

VOGA used a variety of methods to correspond and consult with identified relevant persons such as email, letters, phone calls, and face-to-face and virtual meetings. Where appropriate, targeted follow-up correspondence was made to relevant persons who had not responded before the close of the feedback period. Consultation activities undertaken with relevant

persons are summarised in Table 6 and consultation activities undertaken with persons or organisations VOGA assessed as not relevant but chose to consult are summarised in Table 7.

An information sheet was provided to relevant persons contacted by VOGA. The information sheet was available on VOGA's consultation website from 20 October 2025. It included an overview of the proposed activity, maps, key risks and impacts, management measures, and contact details for relevant persons to provide feedback to VOGA (see Record of Consultation, reference 1.1).

Additional targeted information was provided to relevant marine users in a commercial fishing information sheet. This included maps, key information for the commercial fishing sector regarding the EP activities, coordinates for the operational areas, an activity summary, potential impacts, an assessment of commercial fishing VOGA's impact assessment, and contact details for relevant persons to provide feedback to VOGA (see Record of Consultation, reference 1.2).

1.3.2 Advertising of the proposed activity

Traditional media advertising

VOGA advertised the planned activities under the proposed EP in national, regional and local newspapers selected because of their coverage area servicing potentially relevant communities and persons across Western Australia (Figure 1-21). Newspaper advertisements were published (Figure 1-5 to Figure 1-17) for the duration of the consultation period between 22 October 2025 and 21 November 2025 with a closing date of 21 November 2025.

Table 3 lists local newspapers used for advertising. These publications do not require subscriptions and are available directly to households within the publication's coverage area. Koori Mail, an Indigenous-focused publication, published the advertisement nationally. All communities within or adjacent to the EMBA had access to this information.

Table 3: Advertisement summary

Publication date	Advertisement type	Coverage
28 October 2025	Quarter-page print ad in The West Australian	State-wide - Western Australia
5 November 2025	Quarter-page print ad in The Koori Mail	National - focused on First Nations
5 November 2025	Quarter-page print ad in The Mid-West Times	Regional - Coral Bay, Geraldton, Meekatharra, Shark Bay, and Carnarvon
5 November 2025	Quarter-page print ad in The North-West Telegraph	Regional - Marble Bar, Newman, Nullagine, Port Hedland, and Wedgefield
10 November 2025	Quarter-page print ad in The West Australian	State-wide - Western Australia

12 November 2025	Quarter-page print ad in The Mid-West Times	Regional - Coral Bay, Geraldton, Meekatharra, Shark Bay, and Carnarvon
30 October 2025	Quarter-page print ad in The Broome Advertiser	Regional - Broome, Derby, Fitzroy Crossing, Karratha, and Kununurra
19 November 2025	Quarter-page print ad in The Koori Mail	National - focused on First Nations
29 October 2025	Quarter-page print ad in The Pilbara News	Regional - Karratha, Dampier, Wickham, Roebourne, Point Samson, Tom Price, Pannawonica, Paraburdoo and Onslow
12 November 2025	Quarter-page print ad in The North-West Telegraph	Regional - Marble Bar, Newman, Nullagine, Port Hedland, and Wedgefield
13 November 2025	Quarter-page print ad in The Broome Advertiser	Regional - Broome, Derby, Fitzroy Crossing, Karratha, and Kununurra
19 November 2025	Quarter-page print ad in The Pilbara News	Regional - Karratha, Dampier, Wickham, Roebourne, Point Samson, Tom Price, Pannawonica, Paraburdoo and Onslow

Geotargeted social media campaign

Between 22 October 2025 and 24 November 2025, VOGA conducted a geotargeted social media campaign across Facebook (Figure 1-19 and Table 4). The campaign focused on locations within or adjacent to the EMBA. Table 4 lists the localities identified for this campaign. The campaign reached 93,327 users on Facebook generating 4,576 link clicks to the consultation information page of VOGA's website.

The campaign focused on bringing the proposed activity to the attention of persons who may be affected. It directed interested persons or organisations to VOGA's consultation website (Figure 1-18) which displayed further information about the proposed activities and consultation and contact details for VOGA.

Table 4: Localities and geographical reach of targeted social media advertising campaign

Platform	Geotargeted Reach	Campaign Dates	Impact
Facebook	Users located within VOGA's EMBA including: Balla Balla + 40 km, Bernier Island, Broome + 40 km, Cape Range National Park + 40 km, Carnarvon + 40 km, Coburn + 65 km, Coral Bay + 40 km, Dampier Peninsula + 40 km, Denham + 80 km, Dorre Island, Eighty Mile Beach + 40 km, Eurardy + 40 km, Exmouth + 40 km, Geraldton + 40 km, Houtman Abrolhos, Karratha + 62 km, Lagrange + 40 km, Macleod + 50 km, Mardie + 40 km, Minilya + 40 km, Mundabullangana + 40 km, Nerren Nerren + 40 km, Ningaloo, Northampton + 40 km, Onslow + 4km, Pannawonica + 40 km, Pardoo + 40 km, Port Hedland + 58 km, Sherlock + 40 km, Tamala + 40 km, Waterbank + 40 km, Wooramel + 40 km and Zuytdorp + 40 km	22 October – 24 November 2025	Reach[1]: 98,327 Frequency[2]: 6.16 Impressions[3]: 574,581 Clicks: 4,576 CTR%[4]: 0.80

1.3.3 Community Flyer

To complement the print and social media advertising campaigns, VOGA developed a community flyer (Figure 1-20). The company asked community centres in relevant communities to display the flyer, increasing the visibility of information in regional communities adjacent to the EMBA.

Table 5: The community centres contacted to display VOGA community flyer

Town/Region	Community Centre
Karratha	Dampier Community Hub
	Frank Butler Community Centre
	Karratha Library

[1] The number of unique users who see the advertisement

[2] The average number of times a user sees an advertisement

[3] The number of times the advertisement was seen, including multiple views from individual users

[4] Click-through rate measures the number of clicks an advertisement receives divided by the number of times the advertisement is shown.

	Dampier Library
	Wickham Library
	Roebourne Library
	Karratha and Districts Chamber of Commerce and Industry
	Mawarnkarra Health Service – located in Roebourne
	Pilbara Community Legal Service
	Aboriginal Legal Services of Western Australia
	Karratha Business Centre
	Pilbara Development Commission
	Karratha Family Centre
	Pam Buchanan Family Centre
	Karratha Leisureplex
	Roebourne Aquatic Centre
	Wickham Recreation Precinct
Shark Bay	Shark Bay Community Resource Centre
	Shark Bay Library
East Pilbara	Newman Library
	Marble Bar Library
	Nullagine Library
	The Square
	Newman Putukurnu Aboriginal Medical Service
	Newman Newman Recreation Centre
	Tom Price Nintirri Centre
	Tom Price Community Recreation Centre
	Tom Price Civic Centre
Ashburton	Libraries in Onslow, Pannawonica, Paraburdoo and Tom Price

Port Hedland	Port Hedland Community Centre
	Port Hedland Library
	South Hedland Library
	Port Hedland Chamber of Commerce
Carnarvon	Carnarvon Civic Centre
	Carnarvon Medical Service Aboriginal Corporation
	Gwoonwardu Mia Cultural Centre
	Aboriginal Legal Services of Western Australia
	Aboriginal Family Legal Services
	Carnarvon Library
Exmouth	Ningaloo Centre (includes the library)
Onslow	Onslow Chamber of Commerce and Industry

1.3.4 Consultation with First Nations people and organisations

Additional consultation activities were undertaken with relevant Traditional Custodians and First Nations people and organisations. These activities were specifically developed to encourage effective engagement and ensure information was provided in a form that was accessible and appropriate.

Consultation undertaken specifically with First Nations people and organisations for this EP included:

- Direct correspondence and engagement with nominated representative bodies through the contact list on the ORIC website. To encourage respectful, two-way dialogue VOGA requested advice on how they would like to be engaged. This included an early reach out on 25 August 2025, advising of upcoming consultation regarding the Wandoo Offshore Field Well Construction Environment Plan. VOGA advised that consultation with the representative bodies regarding these activities was welcome.

- The reach out resulted in meetings with representatives, requests for resourcing to enable consultation, providing information on the proposed activities, and exchanging written correspondence.

- A Summary Information Sheet was developed to ensure the content was appropriate and accessible for the intended recipients and provided to them (Figure 1-4).

- Consultation meetings were held between First Nations groups, VOGA representatives, and advisers with experience in First Nations community engagement. These meetings were held based on the principles of a co-designed approach and that two-way communication was encouraged to ensure information was shared effectively. This included proposing a mutually agreed agenda, visual aids, emphasis on risks and

impacts, opportunity for feedback and questions, discussion about ongoing relationship development, and meeting all costs such as sitting fees, travel and other support required.

- VOGA researched relevant First Nations groups and representative bodies to better understand their values and interests. This included desktop research and reviewing precedent engagement by other titleholders and resulted in the development of special interest material that could provide relevant information to the group's functions, interests and activities. This collateral was used during meetings.
- Ongoing efforts were made to engage with First Nations groups to develop relationships via different channels and methods such as email, phone calls, text messages, and by seeking alternative appropriate contacts.
- VOGA also ran a geo-targeted social media campaign (Table 4) and print media advertising campaign (Table 3), reaching communities adjacent to the EMBA of the proposed activities. The campaign was wide-reaching and brought the proposed activities to the attention and was developed with accessible language appropriate for Indigenous audiences. The campaigns directed any interested parties to VOGA's consultation website (Figure 1-18) where further information, contact details and resources were made available.

1.3.5 Consultation Material

Included below are copies of the consultation material deployed during consultation activities and VOGA's public awareness campaign.

Figure 1-2: Wandoo Field Well Construction Environment Plan Information Sheet

VERMILION ENERGY

INFORMATION SHEET

Wandoo Field

Well Construction Environment Plan

October 2025

About Vermilion Energy

Vermilion Energy is an international energy producer with a 30-year track record. It has operations in North America, Europe and Australia.

Vermilion Oil and Gas Australia (Vermilion) is a subsidiary of Vermilion Energy and has operated in Australia for 20 years. Our Australian operations focus on producing and developing oil at the Wandoo Field, off the shore of Western Australia.

About Wandoo Field

The Wandoo Field was discovered in 1991 and the extraction of oil started in 1993. Vermilion has been the operator since November 2005 and the sole titleholder since 2007.

The Wandoo Field is located within the Permit Area WA-14-L in Commonwealth waters within the Carnarvon Basin, approximately 80 km northwest of the port of Dampier and 110 km northeast of Barrow Island (see **Figure 1**). The water depth at the field location is in the range from 50–60 m.

Operational Area

The Operational Area for the activities outlined in the Well Construction Environment Plan (EP) is defined as the area within the existing 500 m Petroleum Safety Zone (PSZ) within the Permit Area of WA-14-L, surrounding the Wandoo Production Facilities (see **Table 1**).

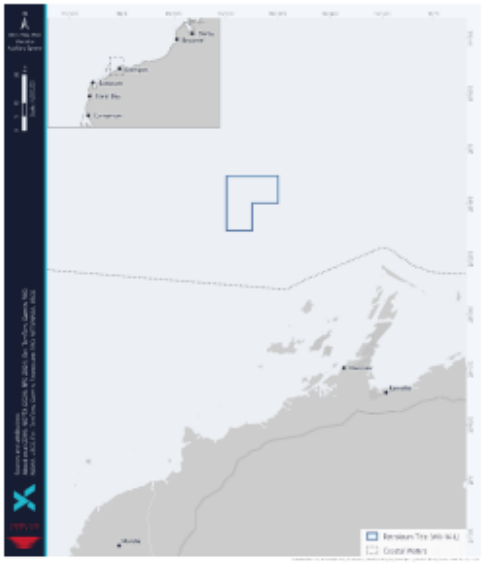


Figure 1. Location of WA-14-L

Activity overview

The Wandoo Field currently operates under approved EPs for production and well construction. The Well Construction EP is updated and reassessed every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Vermilion periodically conducts well construction operations in the Operational Area using a Mobile Offshore Drilling Unit (MODU).

Well construction operations planned over the next five years involve the drilling and completing of new production wells.

The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete.

As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Pictured: Wandoo B (left) and a MODU (right) during well construction activities

Table 1. Coordinates of the Wandoo Production Facilities (GDA2020/MGA2020)

Facility	Latitude	Longitude
Wandoo A	20° 08' 14.61" S	116° 25' 22.43" E
Wandoo B	20° 07' 37.12" S	116° 26' 08.23" E
CALM Buoy	20° 06' 57.43" S	116° 26' 06.51" E

Communications with mariners

A 500 m PSZ applies around the Wandoo Production Facilities. Commercial fishers and other marine users are not permitted to enter the Operational Area.

Environment that may be affected

As part of our environmental assessment and consultation process, Vermilion create an environment that may be affected (EMBA) map to provide geographical context for stakeholders to determine if their functions, interests or activities may be affected by an offshore activity during operations or in an emergency scenario.

Figure 2 shows the EMBA, which is based on a worst-case environmental scenario, which in this case is an unplanned release (oil spill) from a vessel spill.

The EMBA has been defined through combining 100 simulations for each unplanned release scenario under different weather and ocean conditions. This means that in the highly unlikely event an unplanned release does occur, a geographical area much smaller than the EMBA would be affected. The majority of the impacts or risks directly arising from planned activities would occur within close proximity of the operational area.

Vermilion has systematic control measures to prevent and mitigate emergencies and to reduce the impact of planned activities on the environment, including ecological, social and cultural sensitivities.

Tables 2 and **3** summarises the key impacts or risks and proposed control measures to manage these to levels that are as low as reasonably practicable (ALARP) and acceptable.

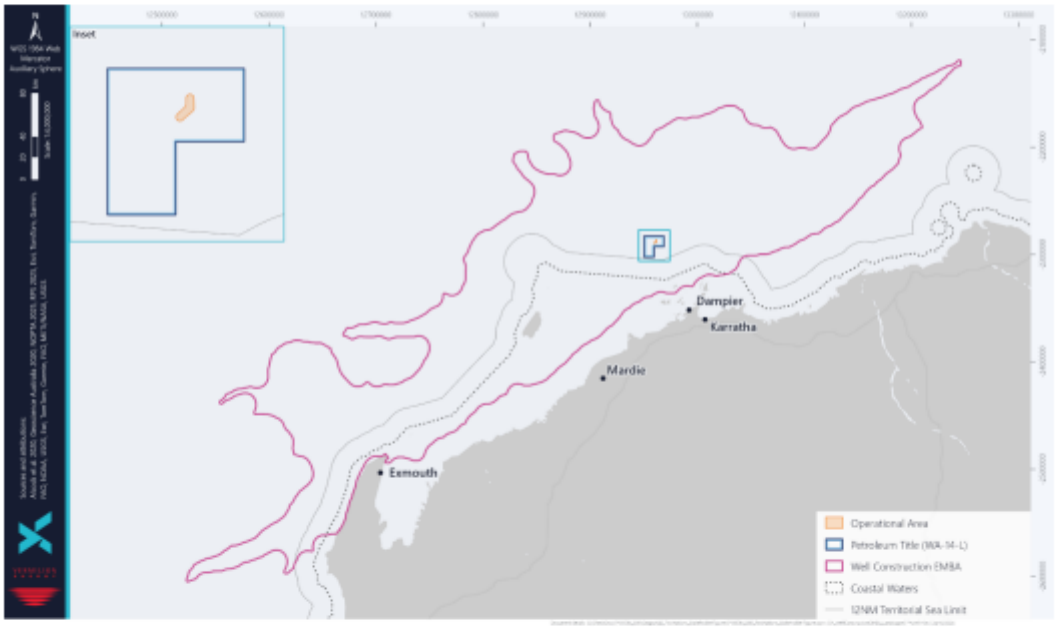


Figure 2. Operational area and environment that may be affected

Assessment

Vermilion has undertaken an assessment of the potential impacts and risks to the environment as well as potential risks to relevant persons arising from the planned activities and unplanned events. This assessment considers the timing, duration and location of the activities. A number of mitigation and management measures will be implemented and are summarised in **Tables 2** and **3**. Further details will be provided in the Well Construction EP.

In preparing the EPs, Vermilion's intent is to minimise environmental, social and cultural risks and impacts associated with the proposed activities, and Vermilion seeks your feedback to inform our decision making.

Mitigation and management measures

Vermilion has undertaken an assessment to identify potential impacts and risks to the environment arising from the activity. A number of mitigation and management measures for the activity are outlined in **Tables 2** and **3.** Further details will be provided in the Well Construction EP.

Table 2. Summary of key risks and/or impacts and preliminary management measures

Potential impact/risk	Source of potential impact/risk	Description of potential impact/risk	Preliminary draft mitigation and/or management measure
Planned activities (routine and non-routine)			
Light emissions	Drilling rig and support vessels	• Navigation and operational lighting from the operational area may result in a localised change in ambient light. • Change in ambient light may result in the temporary attraction or deterrence of light-sensitive species.	• Potential impacts from lighting are assessed as occurring within 20 km of a vessel or facility based on the National Light Pollution Guidelines for Wildlife (Commonwealth of Australia, 2019). • Facility and vessel navigation lights are compliant with the *Navigation Act 2012*.
Acoustic emissions	Drilling rig, support vessels and helicopters	• Offshore activities within the operational area may result in a localised and temporary change to ambient underwater sound.	• Vessels and helicopters comply with relevant parts of Environment Protection and Biodiversity Conservation (EPBC) Regulation (2000) Part 8. • Vessel and machinery are maintained in accordance with Flag State certification requirements. • All engines, compressors and machinery on the facilities are maintained via a maintenance management system.
Atmospheric and greenhouse gas emissions	Drilling rig, support vessels and helicopters	• Combustion of fuel may result in a localised and temporary reduction in air quality. • Greenhouse gas emissions within the operational area may result in contribution to the reduction of the global atmospheric carbon budget.	• Reduced sulphur content fuel will be used. • Flag State Certificate and/or IAPP certifies measures are in place to manage air emissions. • All engines, compressors and machinery on the facilities are maintained via a maintenance management system.
Routine discharges	Drilling rig and support vessels	• Planned discharges from operations (e.g. sewage, food waste) may result in a localised and temporary change in water and/or sediment quality, and subsequent impacts to marine life.	• Emissions and discharges of liquid waste to sea are in accordance with legislative requirements. • Compliance with Vermilion Waste Management Plan.
Discharge of drill cuttings, excess water-based drilling, completion fluids and cement	Drilling rig	• Planned discharges from operations may result in a localised and temporary change in water and/or sediment quality, and subsequent impacts to marine life.	• Drilling, completion fluids and cement components are selected using the Vermilion chemical assessment process. Only chemicals that comply with the chemical selection process will be used. • Solids Control System used to remove fines from drilling fluids in order to keep fluids in specification for reuse, to minimise the volume of fluids being discharged.
Interaction with other marine users	Drilling rig and support vessels	• Potential displacement of commercial fishing	• Consultation is undertaken with all relevant persons.

Potential impact/risk	Source of potential impact/risk	Description of potential impact/risk	Preliminary draft mitigation and/or management measure
		activities and commercial shipping vessels.	• A pre-existing 500 m PSZ is in place around the Wandoo Production Facilities and will remain in place for the duration of operations under the proposed EP. No vessels are to enter this zone.
Disturbance to seabed	Drilling rig	• Localised increase in turbidity. • Potential impacts to benthic habitat and communities.	• Seabed disturbance limited to planned activities and defined locations.

Table 3. Summary of potential risks and management measures associated with unplanned events

Potential risk	Source of potential risk	Description of potential risk	Preliminary draft mitigation and/or management measure
Unplanned events (accidents/incidents)			
Unplanned release from vessel collision	Support vessels	• A release of hydrocarbons (e.g. fuel) may result in marine pollution, change to water quality, smothering of subtidal and intertidal habitats and subsequent impacts to marine life, indirect impacts to fisheries, and reduction in amenity.	• Wandoo facilities are marked on marine charts and any changes to Wandoo facilities notified via Notices to Mariners. • 500 m restriction zone surrounding the facilities. • Vessel operations restricted in adverse weather. • Dynamic positioning requirements. • Navigation aids. • Emergency communications.
Invasive marine pests	Drilling rig and support vessels	• Planned discharge of ballast water or the presence of biofouling on vessels may result in the introduction of an invasive marine pest.	Drilling rig and vessels will comply with: • Australian Ballast Water Management Requirements consistent with the International Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Management Convention). • Annex 1 of the International Convention on the Control of Harmful Anti-Fouling Systems on Ships. • National Biofouling Guidelines for the Petroleum Production and Exploration Industry and IMO Guidelines for the control and management of a ship's biofouling to minimise the transfer of invasive aquatic species.
Vessel collision or disturbance of fauna	Support vessels	• Potential injury of marine fauna.	• Vessels contracted by Vermilion operating in the Operational Areas must have procedures that adhere to Part 8 of EPBC Regulation 2000 to minimise exposure of marine fauna.
Unplanned release during handling/ storage of hazardous materials or wastes	Drilling rig and support vessels	• A release of hazardous material or waste (e.g. fuel, sewage) may result in change to water quality, marine pollution and subsequent impacts to marine fauna, potentially resulting in injury or mortality.	Work procedures for lifts, bulk transfers and cargo loading will require: • The security of loads to be checked prior to commencing lifts • Loads to be covered if there is a risk of losing loose materials • Lifting operations to consider weather and sea state.

Potential risk	Source of potential risk	Description of potential risk	Preliminary draft mitigation and/or management measure
			• Drilling rig and vessels' procedures are compliant with MARPOL Convention Annex V and Marine Order 95.
Hydrocarbon spill response activities	Spill response	• Potential disturbance to benthic habitat, scouring of sediments, and decrease in water quality.	• Vermilion maintains contracts with oil spill response organisations, operational and scientific monitoring providers, and logistics operators for support in the event of a hydrocarbon spill. • Vermilion tests response arrangements annually to ensure preparedness for unplanned hydrocarbon spills. • Where required, implementation of response strategies will be undertaken as per the NOPSEMA-accepted Oil Pollution Emergency Plan (OPEP) and in consultation with or under direction of the Commonwealth or State Control Agency.

Consultation

Consultation provides Vermilion with an opportunity to receive feedback from authorities, persons and organisations whose functions, interests or activities may be affected by proposed petroleum activities. This feedback helps us to refine or change the management measures we are planning to address potential activity impacts and risks. Vermilion's objective for the proposed activities is to ensure the activity is carried out in a manner that is consistent with the principles of Ecologically Sustainable Development (ESD) and reduce environmental impacts and risks to a level that is ALARP and acceptable over the life of the activity.

Consultation also helps us to identify values and sensitivities where information is not publicly available, such as spiritual and cultural connection to land and sea country, as well as first-hand feedback on commercial and recreational fishing, tourism and local community activities and interests.

Feedback

If you consider you may be a relevant person, please contact us as soon as possible if you require any further information or if you think you are not on our consultation list.

We are asking for relevant persons to provide feedback by **21 November 2025.**

Feedback provided by relevant persons will be considered in an addendum to the Wandoo Facility and Well Construction EPs and through the life of the activity. Feedback from relevant persons will be included in the EP submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

Please let us know if you would like your personal/organisational details or any part of your feedback to remain private and we will ensure this remains confidential to NOPSEMA.

Contact us

Website: www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Email: abu.consultation@vermilionenergy.com

Phone: (08) 9217 5858

To visit our website, scan the QR code

Figure 1-3: Commercial fisher information sheet

VERMILION ENERGY

COMMERCIAL FISHER INFORMATION SHEET

Wandoo Field

Well Construction Environment Plan

October 2025

More information is available in the general Well Construction Environment Plan Consultation Information Sheet

Information overview

This Commercial Fisher Information Sheet provides supplementary information to the Vermilion Oil and Gas Australia (Vermilion) general information sheet about the proposed well construction drilling in the Wandoo Field.

This Information Sheet provides supplementary information for the needs of commercial fishers who may be active around the Wandoo Field.

It summarises the ongoing assessment of potential impacts and risks to the commercial fishing industry and provides information for the needs of commercial fishers, who may be active around the operational area, about the proposed activities.

Activity overview

Vermilion periodically conducts well construction operations in the Operational Area using a Mobile Offshore Drilling Unit (MODU).

Well construction operations planned over the next five years involve the drilling and completing of new wells.

The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete.

As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction Environment Plan (EP), well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

About Vermilion Energy

Vermilion Energy is an international energy producer with a 30-year track record. It has operations in North America, Europe and Australia.

Vermilion is a subsidiary of Vermilion Energy and has operated in Australia for 20 years. Our Australian operations focus on producing oil at the Wandoo Field, off the coast of Western Australia.

About Wandoo Field

The Wandoo Field was discovered in 1991 and the extraction of oil started in 1993. Vermilion has been the operator of Wandoo Field since November 2005 and the sole titleholder since 2007.

The Wandoo Facility operates under existing accepted EPs in place for production and well construction.

Pictured: Wandoo B (left) and a MODU (right) during well construction activities

Key information

- **Location:** The Wandoo Field is located in Commonwealth waters within the Carnarvon Basin, approximately 80 km northwest of the port of Dampier and 110 km northeast of Barrow Island (**Figure 1**).
- **Operational area:** Commercial fishers and other marine users are **not** permitted to use the operational area and should take care around operations by adhering to standard navigation rules.
- **Timing and duration:** The first well is proposed to be drilled in 2027, pending regulatory approval and rig availability. The activity duration is expected to be between approximately 30 to 100 days of continuous well operations for each well drilled.
- **Exclusion zone:** A 500 m Petroleum Safety Zone (PSZ) is currently in place around the Wandoo Production Facilities. The MODU will be undertaking the well construction activities within this area.
- **Notifications:** Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
- **Vessels:** One to four support vessels (typically two for drilling rig support) will be involved in the activity.

Wandoo Field location

The Wandoo Field is located in Commonwealth waters within the Carnarvon Basin, approximately 80 km northwest of the port of Dampier and 110 km northeast of Barrow Island (**Figure 1**). The water depth at the field location is in the range from 50–60 m.

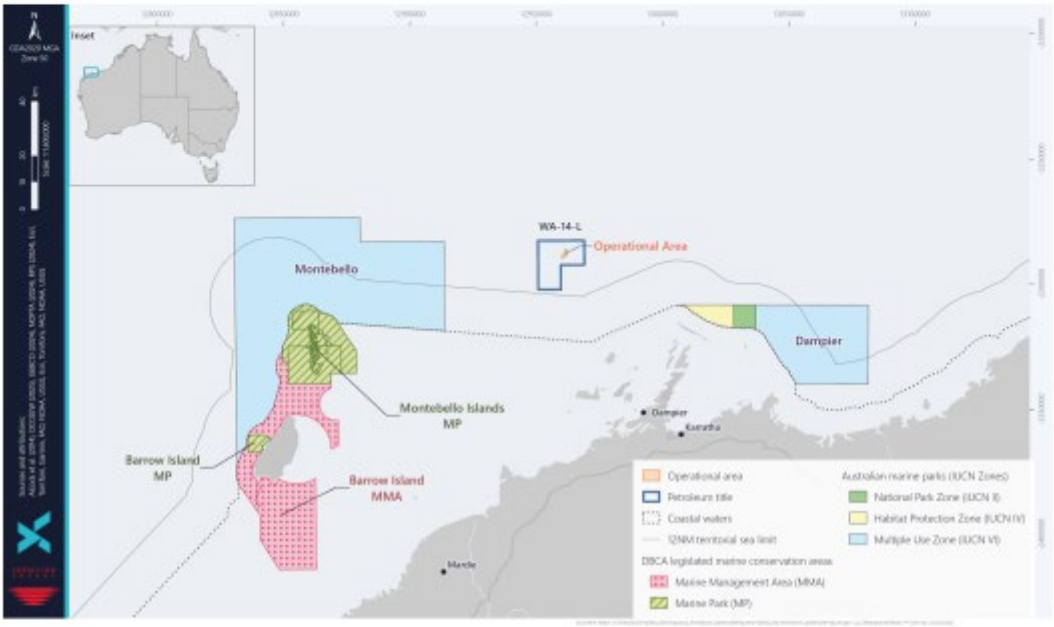


Figure 1. Location of WA-14-L and operational area

Operational area

The operational area for the activities outlined in the Well Construction EP is defined as the area within the existing 500m Petroleum Safety Zone (PSZ), surrounding the Wandoo Production Facilities (**Table 1**).

Table 1. Coordinates of the Wandoo Production Facilities (GDA2020/MGA2020)

Facility	Latitude	Longitude
Wandoo A	20° 08′ 14.61″ S	116° 25′ 22.43″ E
Wandoo B	20° 07′ 37.12″ S	116° 26′ 08.23″ E
CALM Buoy	20° 06′ 57.43″ S	116° 26′ 06.51″ E

Activity summary

Table 2. Activity summary

Production licence area	WA-14-L
Approximate duration and timing of activities	• 30-100 days (per well/campaign). • The first well is proposed to be drilled in 2027, pending regulatory approval and rig availability. • The timing of subsequent activities has not been finalised. The Well Construction EP assumes the activities may be undertaken at any time of year over the five year period following acceptance of the EP.
Approximate water depth	50–60 m
Key activities	The primary purpose of the well construction activities will be to add new production intervals to access undrained well fluids in the Wandoo reservoir. A secondary aim will be to continue the evaluation of the Wandoo Field boundaries to determine the extent of the Wandoo reservoir in the areas of the Wandoo Field which the new trajectories will access. The activities covered in the EP include MODU-based well construction activities: • Mobilisation and position of a MODU within the operational area of the well construction activity • Well interventions and side-tracks • Construction of new wells • Isolation of existing laterals and well bores • Well slot recoveries for drilling of new wells. No vertical seismic profiling (VSP) is planned during well construction activities.
Vessels	• One jack-up MODU (drilling rig). • One to four support vessels (typically two for drilling rig support) will be involved in the activity. • Vessel details are not known at this time.
Remotely operated vehicle (ROV)	A light work-class ROV will be available on location to be used to support drilling rig operations. ROV activities may include survey and monitoring operations.
Helicopters	Helicopters will be used for crew changes, critical equipment supply, surveillance and emergency response uses.
Drilling muds and cuttings	Vermilion drilling operations will use only water-based fluids called 'muds' to lubricate and stabilise the wellbores in each section and remove drilling cuttings. Drill cuttings are rock chips from the sedimentary layers that emerge from the drilling process and range from very fine to pebble sized. Water-based muds are recycled as much as possible during the drilling process. The cuttings will be processed on the drilling rig before they are discharged overboard, where they will settle rapidly on the seafloor around the well site. This is standard industry practice in Australia. Marine mammals and fish may transit through these areas but will usually avoid the temporary disturbance. Any exposure to suspended sediment before it settles on the seabed will be highly localised and temporary due to high dilution and fast dispersal in the water column.
Operational area and exclusion zones	A 500 m Petroleum Safety Zone (PSZ) is currently in place around the Wandoo production facilities. The MODU will be undertaking the well construction activities within the PSZ.
Communication with fishers	Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby. Coordinates will be provided to stakeholders 30 days before the commencement of any activities.

Assessment of commercial fishing, potential effects and impacts

Commonwealth managed fisheries

There are three Commonwealth managed commercial fisheries that have a defined management area overlapping/surrounding the operational area (**Table 3**).

Table 3. Commonwealth managed fisheries

Commonwealth managed fisheries	Summary of fishery in relation to operational area	Assessment of potential impacts
Southern Bluefin Tuna Fishery	The Southern Bluefin Tuna Fishery operates around Australia and extends to the high seas fishing zone (out to 200nm from the coast). The fishery targets southern bluefin tuna only. Fishing activity is focused in southern Australian waters with no activity expected surrounding the operational area.	No impact to the fishery expected.
Western Skipjack Tuna Fishery	The Western Skipjack Tuna Fishery extends west from Cape York Peninsula and around Australia to the South Australian/Victorian border, out to the edge of the Australian Fishing Zone. Little fishing activity has been undertaken in this fishery since 2008. No fishing activity associated with this fishery is expected to occur surrounding the operational area.	No impact to the fishery expected.
Western Tuna and Billfish Fishery	The Western Tuna and Billfish Fishery management area extends over a large area westward from Cape York Peninsula off Queensland, around the west coast of Western Australia and eastward, across the Great Australian Bight to 141°E at the South Australian/Victorian border. The fishery has operated at low levels of effort since the early 2000's. Target species include albacore, bigeye tuna, yellowfin tuna, swordfish and striped marlin. No fishing activity associated with this fishery is expected to occur surrounding the operational area.	No impact to the fishery expected.

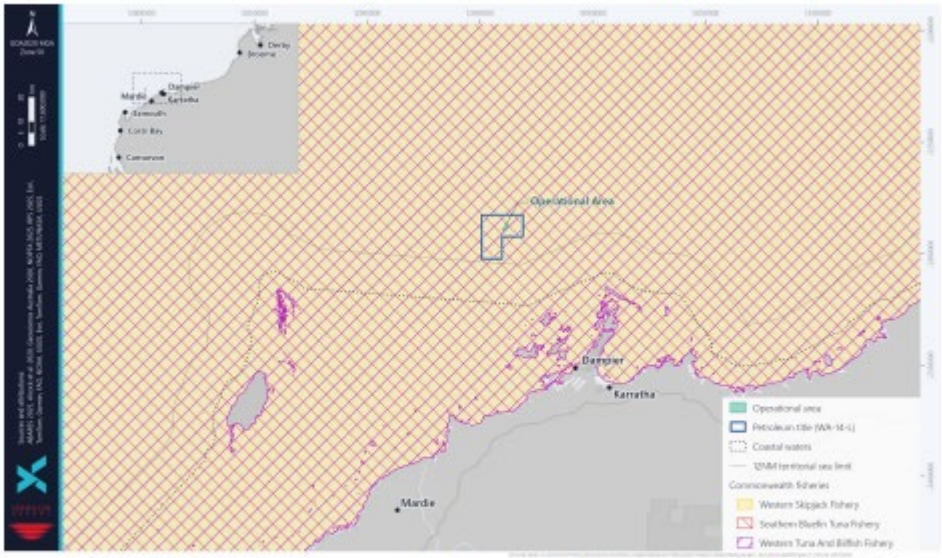


Figure 2. Commonwealth managed fisheries

State managed fisheries

State managed commercial fisheries that have historical fishing activity intersecting the operational area within the last 5 years include:

- Hermit Crab Fishery
- Mackerel Managed Fishery
- Marine Aquarium Managed Fishery
- Nickol Bay Prawn Fishery
- Onslow Prawn Limited Entry Fishery
- Pilbara Crab Managed Fishery
- Pilbara Line Fishery
- Pilbara Fish Trawl Interim Managed Fishery
- Pilbara Trap Managed Fishery
- Specimen Shell Managed Fishery, and
- Western Australian Sea Cucumber Fishery.

Figure 3 depicts the state managed commercial fisheries that had three or more vessels (per year) active around the operational area.

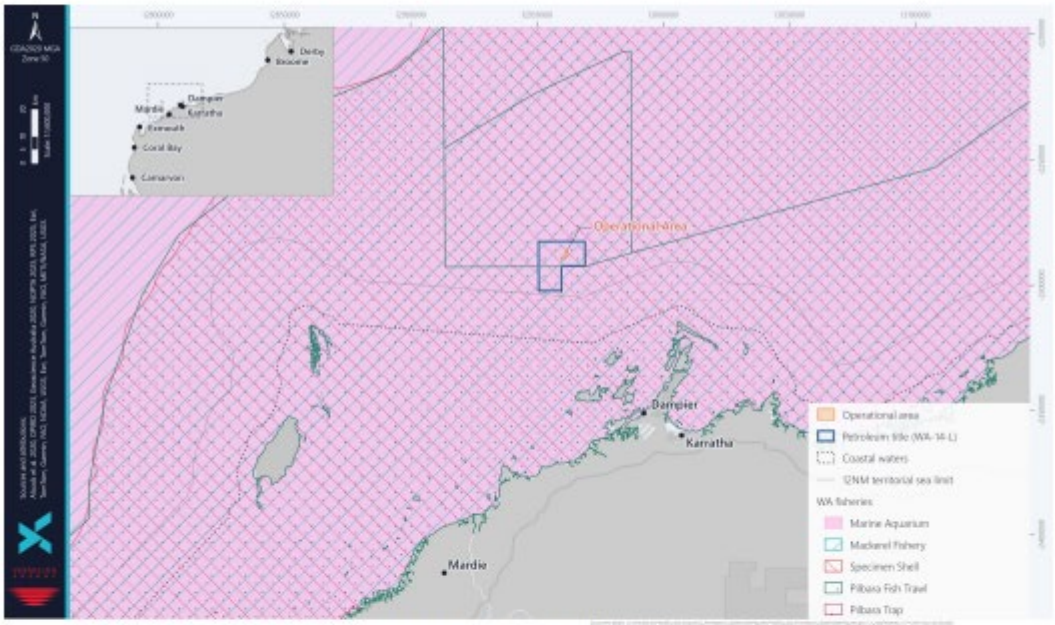


Figure 3. State managed fisheries

Vermilion impact assessment

Vermilion has undertaken an assessment to identify potential impacts and risks to commercial fishers from the activity. A number of mitigation and management measures for the activity are outlined in **Table 4.** Further details will be provided in the Well Construction EP.

Table 4. Potential interactions with commercial fishing

Potential impact	Description of potential impact/risk	Proposed control measures
Interference with commercial fishing activities	Potential displacement of commercial fishing activities.	• Drilling rig and vessel communication equipment will be maintained to allow for communication with commercial fishing vessels. • The Australian Hydrographic Office (AHO) and Australian Maritime Safety Authority (AMSA) will be notified prior to rig move activities so appropriate marine notices can be issued. • The drilling rig will have an exclusion zone of 500 m within the existing PSZ.
Introduction and establishment of invasive marine species	Potential reduction in commercial species abundance due to competition or predation.	The drilling rig and vessels will comply with: • Australian Ballast Water Management Requirements consistent with the International Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Management Convention). • Annex 1 of the International Convention on the Control of Harmful Anti-Fouling Systems on Ships. • National Biofouling Guidelines for the Petroleum Production and Exploration Industry and IMO Guidelines for the control and management of a ship's biofouling to minimise the transfer of invasive aquatic species.
Vessel collision	Decrease in water quality. Potential toxic effects to commercial species.	• The AHO and AMSA will be notified prior to rig move activities so appropriate marine notices can be issued. • The drilling rig and vessels will have navigational lights. • The vessels will have dynamic positioning capability. • The drilling rig and vessels will be equipped and crewed in accordance with the *Navigation Act 2012* and Marine Orders. • Vessels will have a dedicated Ship Oil Pollution Prevention Plan (SOPEP). • An Oil Pollution Emergency Plan (OPEP) will be prepared and implemented as required.

Consultation

Consultation provides Vermilion with an opportunity to receive feedback from authorities, persons and organisations whose functions, interests or activities may be affected by proposed petroleum activities. This feedback helps us to refine or change the management measures we are planning to address potential activity impacts and risks. Vermilion's objective for the proposed activities is to ensure the activity is carried out in a manner that is consistent with the principles of Ecologically Sustainable Development (ESD) and reduce environmental impacts and risks to a level that is As Low As Reasonably Practicable (ALARP) and acceptable over the life of the activity.

Consultation also helps us to identify values and sensitivities where information is not publicly available, such as spiritual and cultural connection to land and sea country, as well as first-hand feedback on commercial and recreational fishing, tourism and local community activities and interests.

Feedback

Vermilion is committed to working together with the commercial fishing industry so that we can all proceed with business in a safe and efficient manner.

If you consider you may be a relevant person, please contact us as soon as possible if you require any further information or if you think you are not on our consultation list.

We are asking for relevant persons to provide feedback by **21 November 2025.**

Feedback provided by relevant persons will be considered in an addendum to the Well Construction EP and through the life of the activity. Feedback from relevant persons will be included in the EP submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

Please let us know if you would like your personal/organisational details or any part of your feedback to remain private and we will ensure this remains confidential to NOPSEMA.

Contact us

Website: www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Email: abu.consultation@vermilionenergy.com

Phone: (08) 9217 5858

To visit our website, scan the QR code

Figure 1-4: Summary Information Sheet

VERMILION ENERGY

SUMMARY INFORMATION SHEET
Wandoo Field
Well Construction Environment Plan
October 2025

More information is available in the general Well Construction Environment Plan Consultation Information Sheet

Introduction

Vermilion Energy is an international energy producer with 30 years of experience. It operates in North America, Europe and Australia. Vermilion Oil and Gas Australia (the Australian branch) has been in Australia for 20 years. Our Australian operations focus on producing oil from the Wandoo Field off the shore of Western Australia.

The Wandoo Field was discovered in 1991 and oil extraction started in 1993. Vermilion has managed the Wandoo Field since November 2005 and has been the sole titleholder since 2007.

The Wandoo Field currently operates under approved Environment Plans (EPs) for production and well construction at the facility. The Well Construction EP is updated and reassessed every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Location

The Wandoo Field is located within the Permit Area WA-14-L in Commonwealth waters within the Carnarvon Basin, approximately 80 km northwest of the port of Dampier and 110 km northeast of Barrow Island (**Figure 1**). The water depth at the field location is in the range from 50–60 m.

The Well Construction EP Consultation Information Sheet lists the geographical coordinates of the Wandoo Production Facilities.

Operational Area

The Operational Area for the activities outlined in the Well Construction EP is defined as the area within the existing 500 m Petroleum Safety Zone (PSZ) within the Permit Area of WA-14-L, surrounding the Wandoo facility infrastructure.

Activity overview

Vermilion periodically conducts well construction operations in the Operational Area using a drilling rig. Well construction operations planned over the next five years involve the drilling and, completing of new wells.

The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete.

As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

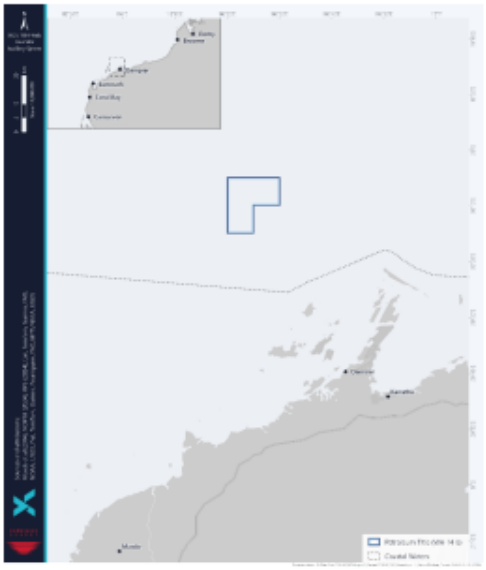


Figure 1. Location of WA-14-L

Pictured: Wandoo B (left) and a MODU (right) during well construction activities

Environmental impacts and management

The well construction activities include planned activities, but may also result in unplanned activities. Both may potentially impact the environment.

A table showing all planned and unplanned activities, potential impacts, and management measures for each is included in the Well Construction EP Consultation Information Sheet. Further details will also be provided in the Well Construction EP.

The objective is to manage the work program to reduce impacts and risks to as low as reasonably practicable.

The total area over which unplanned events could have an environmental impact is shown in **Figure 2**. This is referred to as the environment that may be affected (EMBA).

In the highly unlikely event that an unplanned activity, such as an oil release from a vessel collision the entire EMBA would not be affected. The area of the EMBA that may be affected would only be determined at the time of the event.

Consultation

Consultation provides Vermilion with an opportunity to receive feedback from those whose functions, interests or activities may be affected by proposed activities. This feedback helps us to refine the management measures to address potential activity impacts and risks.

Consultation also helps us to identify values and sensitivities where information is not publicly available.

Feedback

If you consider you may be a relevant person, please get in touch with us as soon as possible if you require any further information or if you think you are not on our consultation list.

Feedback provided by relevant persons will be considered in an addendum to the Well Construction EP and throughout the life of the activities. Feedback from relevant persons will be included in the EP submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

Please let us know if you would like your personal/organisational details or any part of your feedback to remain private and we will ensure this remains confidential to NOPSEMA.

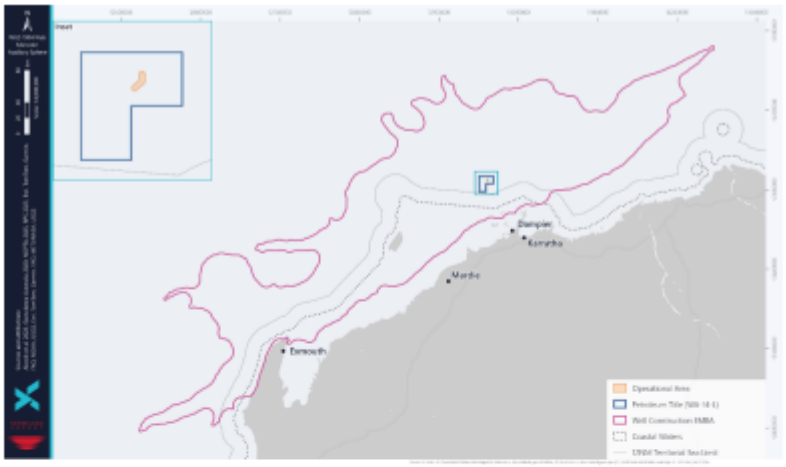


Figure 2. Operational area and environment that may be affected

Contact us

Website: www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Email: abu.consultation@vermilionenergy.com

Phone: (08) 9217 5858

To visit our website, scan the QR code

Figure 1-5: The West Australian – 28 October 2025

18 WESTBUSINESS

The West Australian
Tuesday, October 28, 2025

Microsoft in AI scam case

Tech giant accused of rip-offs

ALEX MITCHELL

Tech giant Microsoft is facing hefty fines for allegedly misleading millions of Australian customers by trying to convince them to pay more than needed for an AI upgrade.

Australia's consumer watchdog has taken the US company to court for allegedly leading customers to believe they must either pay extra subscription fees when its AI assistant Copilot was integrated into their package or cancel altogether.

But subscribers also had the choice of maintaining their previous plan with the AI assistant at the same price, the Australian Competition and Consumer Commission said in the Federal Court case.

About 2.7 million Australians received the emails, which said a Microsoft 365 personal account would auto-renew at $159 for a one-year subscription if the customer did not cancel. "You will be charged the new price unless you cancel or turn off recurring billing," the email read.

ACCC chair Gina Cass-Gottlieb said a consumer would not have been aware that switching to a separate "classic" plan, with the existing product and at the same price, was available.

The watchdog alleged Microsoft deliberately omitted references to the plan to try to increase the number of customers moving to the more expensive plan.

"The Microsoft Office apps included in 365 subscriptions are essential in many people's lives and given there are limited substitutes to the bundled package, cancelling the subscription is a decision many would not make lightly," Ms Cass-Gottlieb said. "We're concerned that Microsoft's communications denied its customers the opportunity to make informed decisions about their subscription options, which included the possibility of retaining all the features of their existing plan without Copilot and at the lower price."

A Microsoft spokesperson said consumer trust and transparency were priorities and it was reviewing the consumer watchdog's claim in detail.

"We remain committed to working constructively with the regulator and ensuring our practices meet all legal and ethical standards," they said.

A second email, which did refer to the classic plan, was sent seven days before the auto-renewal date. Microsoft 365 provides access to the tech giant's Office products like Word, Excel and PowerPoint, along with services such as Outlook and Teams.

The 365 product including Copilot for a personal account went from $109 to $159, while family plans went from $139 to $179.

Wandoo Field
Environment Plans Consultation
SEEKING RELEVANT PERSONS

VERMILION ENERGY

Vermilion is seeking to consult with relevant persons whose functions, interests or activities may be affected by proposed activities in the Wandoo Field.

Vermilion Oil and Gas Australia is a subsidiary of Vermilion Energy and has operated in Australia for over 20 years. Our Australian operations focus on exploring for and developing oil and gas from the Wandoo Field off the shore of Western Australia.

The Wandoo field sits within the Petroleum Safety Zone (PSZ) WA-14-L and currently operates under approved EPs for production and well construction activities at the Wandoo Facility.

Our Activities

The Wandoo Field currently operates under approved EPs within the production licence area WA-14-L for production and well construction at the Wandoo Facility.

Vermilion is planning to submit a five-year revision of the Wandoo Facility EP as Vermilion plans to continue producing hydrocarbons at Wandoo.

The Well Construction EP is updated and resubmitted every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Vermilion is preparing two Environment Plans for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Project Location

Relevant Person Information

Learn more about who is a relevant person to be consulted, the environment that may be affected by the proposed activities, and the proposed control measures on our website.

Your Feedback

If you think you may be a relevant person, please contact us to discuss consultation or provide feedback at the below channels.

We are asking relevant persons to provide feedback by 21 November 2025.

For More Information

Email: abu.consultation@vermilionenergy.com

To visit our website, scan the QR code

www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

STOCKPILE

China has been desperate to Trump-proof its access to fuels, food and metals

The Economist

Seen from the skies, China's Dongjiakou oil storage looks like a tray of god-sized cake tins. As fuel fills up the tanks, their floating roofs rise, turning the containers into panettone-shaped domes.

And lately the bakers have been busy. Some 10 million barrels of crude have been added since mid-January, taking the total to 24 million. The state-owned Qingdao Port Crude Oil Terminal — the largest facility of its kind on the Chinese coast — is two years old. It's already 56 per cent full.

China's craze for crude is part of a grander plan. Since early 2024, when it became clear that Donald Trump might return to the White House, officials have stockpiled fuel, food and metals to limit exposure to sanctions and tariffs. Those measures accelerated, and broadened, after the US President slapped high duties on Chinese goods in the spring. And they are continuing apace as the countries' leaders prepare to meet on October 30.

Some see China's scramble as a symptom of paranoia; perhaps even preparation for an invasion of Taiwan.

Whatever the motive, the campaign is making China harder to bully, giving it an edge in trade talks. Yet the effort also has drawbacks. As the world's largest importer of commodities transforms global markets, it is wasting money, creating dependencies and exposing itself to new risks.

Hard power

China does have reason to fret about its energy supply. Despite booming electric-vehicle sales, it will continue to need 16 million or so oil barrels a day (b/d) for years — three-quarters of which it must import. Its purchases of natural gas have trebled in the past 10 years as urban heating and fertiliser plants demand more. It imports half a billion tonnes a year of coal, which remains the fuel for 60 per cent of its power.

Although the country is one of the world's mineral refining centres, it imports 85 per cent of the iron it bakes into steel; is short of bauxite, the underlying ore for aluminium; and its smelters ship in 88 per cent of their raw copper.

China needs cobalt, nickel and lithium with which to make batteries. And, as incomes have risen and diets have changed, its food imports have soared, too. It buys four-fifths of the 100 to 120 million tonnes of soyabeans it feeds to its 430 million hogs and 70 per cent of the edible oil it blends into processed food. No other country imports so many cows.

Chinese officials, therefore, are discreetly pulling three levers to reduce these vulnerabilities. They are boosting domestic production, building stockpiles and diversifying imports. The domestic-production campaign began in 2019 when Xi Jinping, China's supreme leader, launched a seven-year scheme to develop domestic oil and gas resources.

This scrapped taxes and spurred investment.

Defying predictions of decline, China's oil output has risen from 3.8 million b/d in 2019 to 4.4 million b/d. Its gas production has jumped by half. This year, with oil prices low, Chinese energy firms have trimmed spending abroad. But not at home, where they are doubling down on ambitious projects. Gas production is expected to rise by 3-6 per cent this year and next.

Oil output will remain near record highs. Even coal, a filthy fuel, is back in fashion. In May China's energy-planning body called for a batch of new mines. And in September eight government bodies released a two-year plan calling for exploration to find greater supplies of 10 metals, including copper, lithium and cobalt.

New projects can take years to complete. In parallel, therefore, China is building bigger reserves — its second lever. This is clearest in oil. Since early February China's observable stocks grew by 110 million barrels, to a record 1.2 billion, reckons Kayrros, a data firm — treble the size of America's reserves.

A law passed in January requires all energy firms to hold strategic stocks. China has been a keen buyer from Iran, Russia and Venezuela, all subject to American sanctions; exports from the trio to Qingdao, Shandong's largest port, hit 890,000 b/d in September, a record. Alt
Mr Trump
on countrie
Russia's bi
impact rem
Chinese re
dollar syste
to keep buy
capacity of
58 per cent
will be buil
Should t
today's rat
could have
next year,
days of img
to stash mo
It has jus
metres (bet
than 10 per
demand —
limited spa
In July l
facility, bui
undergrou
million-cub
the same t
super-sized
liquefied n
Within C
country's r
you in jail.
change the
Panmure L

Talent war hotting up for gold trad

Trading houses, hedge funds and banks are on a hiring spree for specialist gold traders as interest in the metal soars, creating a battle for talent that is driving up pay packages in what has historically been a niche market.

Major commodity traders Trafigura and Gunvor have hired teams of precious-metals traders this year, while rivals IXM and Mercuria Energy have also been looking to hire in the sector, according to people familiar with the matter.

Numerous hedge funds, banks and industrial companies such as refiners are also either trying to break into precious metals or expand their teams, according to headhunters and industry exe
While gold is a hig
market, with the equiv
hundreds of billions o
changing hands every
the main hub of Londo
traditionally been do
by a small handful o
such as JPMorgan
HSBC and UBS operat
lean teams of traders.

Figure 1-6: Koori Mail – 5 November 2025

news

Uncomfortable conversations

By MARION WILLIAMS

NSW

TRUTH-TELLING involves starting uncomfortable conversations. It can be confronting. It can be very exhausting. Without truth-telling there cannot be reconciliation.

These were some of the messages from a truth-telling session held at Tathra's Headland Writers Festival on Djirringanj Country last month.

Djirringanj-Ngarigu Elders Ellen Mundy and David Dixon were joined by young leader and local teacher Marcus Mundy to discuss what truth-telling meant to them.

Historian Mark McKenna moderated the session. Tathra Hall was packed.

Aunty Ellen Mundy, Marcus Mundy and Uncle David Dixon speaking at the truth-telling session at the Headland Writers Festival. *Picture: Marion Williams.*

Lived experience

The three agreed racism persists in the Bega Valley. In the 1967 referendum Bega recorded one of Australia's highest rejection votes of 22%.

That compared with the national average of 9%.

"There is still a lot of racism. You can feel it. You still experience it," Aunty Ellen said.

Despite being some 30 years younger than the Elders, Mr Mundy recounted several experiences of racism.

"It makes you feel like crap," he said.

"They just look at your black face and make a judgment."

Uncle David's father died early.

Economically disadvantaged and a fringe-dweller, his mother raised 12 children under very difficult circumstances.

She experienced racism, discrimination and misogyny, but she had a lot of strength.

"Mum became a very large figure in my life," he said. "I modelled my life on her."

Generations

Uncle David is an activist.

He talked about how his people were moved off their traditional lands and put into reserves where colonists controlled them.

"We became cheap labour," he said. "Even in the 1990s we were picking beans. This has gone on for generations in plain sight of the community, working for Edgell and Heinz."

He has worked in dairy farming and the whaling and fishing industries, yet they were stereotyped as lazy people.

"We were the backbone of the local economy, but there was no recognition," Uncle David said.

"It wasn't just gunpowder they used on us, but psychology."

Start locally

Aunty Ellen is shocked that so many people don't know the local people and local history.

It is up to non-Kooris to learn that for themselves.

"The onus isn't on the Aboriginal people. It is like we are going around in circles, with media stereotyping Aboriginal people," she said.

"It doesn't start with politicians. It starts with local people. Truth-telling comes before treaty."

For Mr Mundy truth-telling is about communication between and across cultures. It means starting uncomfortable conversations and getting comfortable having uncomfortable conversations.

"We are working towards reconciliation," he said.

"We can't have reconciliation without truth-telling."

Uncle David said there needed to be a consolidated truth so they can communicate more effectively.

"It is lived truth," Uncle David said. "Truth can be very exhausting, but we continue on because what is the alternative to that?"

Long way to go

Given the racism out there, Aunty Ellen said clearly more education, discussion in communities and truth-telling sessions are needed.

"We should be going forwards, not backwards," she said.

Uncle David agreed.

While assimilation has been going for ages, it is the changes that Aboriginal people want, like treaty, that are so slow coming. For all governments' talk about treaty, the reality is quite different.

"It sends a narrative of doing something positive, but it is doing something actually opposite in the background," Uncle David said. "Just look at the pattern. It has been painfully slow."

From his perspective as a primary school teacher Mr Mundy is optimistic that change will come, but from the people, not government. Kids' minds are very open.

"They don't look at me like an Aboriginal person, but as a teacher," he said.

"All our classrooms have traditional names and every pupil loves that. They think it is very powerful."

Passion for dance

By ALF WILSON

QLD

PROUD Palm Islander Georgia Clay has formed an all-girls dance group called "Indigenous Sistas" which is already being praised by audiences.

Georgia had been a shy, softly spoken teenager and has transformed into a confident cultural leader at Townsville's NRL Cowboys House and is inspiring her peers and strengthening community connections.

From a big Palm Island family, Georgia has embraced every opportunity that's come her way since becoming a boarder at the award-winning Townsville-based House late last year.

Indigenous Sistas started out with a handful of participants and has increased to more than a dozen performers.

"We named the dance group Indigenous Sistas to celebrate our culture and connect us 'as one', I had the idea, and asked Miss Rae (NRL Cowboys House Education Manager) if she could help me get things started and then more girls kept wanting to join," Georgia said.

"There are a lot of girls from different communities from across Australia and through different movements and dance we can come together and share our culture with each other and audiences."

The Indigenous Sistas first performed in front of their NRL Cowboys House peers at the Sorry Day event, then before hundreds of family members and stakeholders at the NAIDOC celebration in September, before being invited to perform at Queensland Country Bank Stadium as part of NRL Indigenous Round.

"I feel very proud and happy that we did that, it felt powerful and I felt like a strong, young Indigenous woman representing her culture," she said.

Georgia Clay.

Georgia came to the House as a Year 10 student in late 2024 and began attending St Margaret Mary's College.

She completed work experience with Chempro Chemists, and by December had secured ongoing casual employment – all while growing into a proud ambassador for her culture.

"When Georgia first arrived, she was very, very quiet to start with but has definitely come out of her shell," said NRL Cowboys House Education Manager Raelene Frantz-Davis.

"At the start of this year, she was keen to start a female dance group to showcase Aboriginal culture, and she had some great ideas."

Raelene said Georgia was amazing at establishing the group and once she had two or three girls on board, next minute, there's 12 and it's growing every time we have a practice session.

"All of the young ladies in the dance group are amazing, but it wouldn't have come together if it wasn't for Georgia's passion and love for her culture," she said.

Wandoo Field
Environment Plans Consultation
SEEKING RELEVANT PERSONS

VERMILION ENERGY

Vermilion is seeking to consult with relevant persons whose functions, interests or activities may be affected by proposed activities in the Wandoo Field.

Vermilion Oil and Gas Australia is a subsidiary of Vermilion Energy and has operated in Australia for over 20 years. Our Australian operations focus on exploring for and developing oil and gas from the Wandoo Field off the shore of Western Australia.

The Wandoo field sits within the Petroleum Safety Zone (PSZ) WA-14-L and currently operates under approved EPs for production and well construction activities at the Wandoo Facility.

Our Activities

The Wandoo Field currently operates under approved EPs within the production licence area WA-14-L for production and well construction at the Wandoo Facility.

Vermilion is planning to submit a five-year revision of the Wandoo Facility EP as Vermilion plans to continue producing hydrocarbons at Wandoo.

The Well Construction EP is updated and reassessed every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Vermilion is preparing two Environment Plans for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Project Location

Relevant Person Information

Learn more about who is a relevant person to be consulted, the environment that may be affected by the proposed activities, and the proposed control measures on our website.

Your Feedback

If you think you may be a relevant person, please contact us to discuss consultation or provide feedback at the below channels.

We are asking relevant persons to provide feedback by 21 November 2025.

For More Information
Email: abu.consultation@vermilionenergy.com
To visit our website, scan the QR code

www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Figure 1-7: Mid-West Times – 5 November 2025

10 NEWS midwesttimes.com.au Times Wednesday, November 5, 2025

Local doctor awarded national recognition

JOSEPHINE HINGST

Groundbreaking work to improve heart failure care in the Mid West has earned Revathy Carnagarin national recognition, with the Australian College of Rural and Remote Medicine presenting her with the 2025 rural health research award.

An ACRRM registrar and clinician-researcher, Dr Carnagarin had built an international career in hypertension and cardiometabolic medicine before turning her focus to rural innovation.

She now leads the Heart Failure Optimisation through Patient and Practitioner Education (HOPE) project across the Mid West GP Network, introducing pharmacist-led medication reconciliation and education to reduce hospital readmission and improve continuity of care.

Dr Carnagarin's academic record includes more than 82 peer-reviewed publications and more than 2200 citations, alongside leadership roles in mentorship and policy advocacy.

Her earlier career featured a PhD in Molecular Endocrinology at Curtin University, a Harvard-funded postdoctoral fellowship and a National Heart Foundation fellowship in cardiometabolic research.

Dr Revathy Carnagarin receives her award from Dr Rod Martin.

ACRRM president Rod Martin said Dr Carnagarin's achievements showcased the power of research grounded in clinical need.

"Revathy is redefining what rural health research can achieve," Dr Martin said.

"Her work is already transforming the way heart failure is managed in rural WA, and her leadership will continue to strengthen rural healthcare systems nationwide."

The Rural Health Research Award recognises innovation and excellence in research that improves healthcare delivery, access and outcomes for rural and remote Australians.

The award was announced at Rural Medicine Australia 2025 in Perth, co-hosted by ACRRM and the Rural Doctors Association of Australia.

Work begins on the $70m Sundrift site

PHOEBE SOLON

Work on 160 new homes for key workers has begun in Exmouth.

An official sod-turning ceremony was held at the site of the $70 million Sundrift residential and commercial development in the Exmouth Marina precinct last month.

Exmouth shire president Matthew Niikkula said the sod-turning represented a key milestone as development continued around the marina.

The project is expected to create 234 jobs over the next five years, both local and indirect, while home-building work is expected to generate an additional 864 jobs.

Fowler Group founder Bob Fowler, one of the project partners, said the sod-turning represented much more than the start of construction.

"This project is about securing a strong future for Exmouth. It creates jobs, attracts investment, and provides long-term housing for the town," he said. "As a business owner in Exmouth, I'm acutely aware of the housing shortage faced by the town.

"Today's sod-turning symbolises progress and delivering on the vision we have shared."

The official sod-turning ceremony.

WESTERN AUSTRALIAN Electoral Commission

Yugunga Nya People's Trust
ELECTION NOTICE

Fiduciary Administration Services Pty Ltd in its capacity as Trustee of the Yugunga Nya People's Trust invites all members of the Yugunga Nya People to a community meeting for the purposes of electing a new Advisory Committee.

To enable all members the opportunity to attend and vote on the election of a new Trust Advisory Committee, the Community Meeting will be convened at two locations:

Perth venue
Location: Liberty at Westralia Square 2, Level 5 /143 St Georges Terrace, Flame Tree Boardroom and the Lounge
Date: Tuesday 2 December 2025
Time: 11am - 2:30 pm
Registration open: 10:30am

Meekatharra venue
Location: Shire of Meekatharra Town Hall, 75 Main Street
Date: Thursday 4 December 2025
Time: 11am - 2:30 pm
Registration open: 10:30am

At the community meeting, members will elect by secret ballot, 8 committee members from those members who have provided a written nomination form to the Western Australian Electoral Commission by 12 noon, Thursday 20 November 2025.

Members must be present at the venues to vote. **No proxy votes allowed.**

Members entitled to vote will be marked off the members list upon allocation of a ballot paper.
Members must not vote for more than two (2) nominees from each Apical.
The four Apicals are Wilba, Ward, Wheelbarrow and Dorizzi.

Voting will close at 2pm on Tuesday 2 December 2025 at the Perth Venue and 2pm on Thursday, 4 December 2025 at the Meekatharra Venue.

Votes taken from both venues will be counted immediately following the close of voting at the Meekatharra venue.

PROSPECTIVE CANDIDATES

Nominations are called from eligible members for the election of:

Member to the Trust Advisory Committee (8)

NOMINATIONS OPEN:

Nominations will be accepted from Thursday 6 November 2025

HOW TO LODGE NOMINATIONS

By Hand: Western Australian Electoral Commission, Level 2, 66 St Georges Terrace, PERTH WA 6000
By Post: GPO Box F316, PERTH WA 6841
By Email: nominationsnp@waec.wa.gov.au

NOMINATIONS CLOSE:

Nomination forms must reach the Returning Officer no later than **12 noon on Thursday, 20 November 2025.**

Garry Hawkes
RETURNING OFFICER

Phone: 13 63 06
Email: nominationsnp@waec.wa.gov.au

Wandoo Field
Environment Plans Consultation
SEEKING RELEVANT PERSONS
VERMILION ENERGY

Vermilion is seeking to consult with relevant persons whose functions, interests or activities may be affected by proposed activities in the Wandoo Field.

Vermilion Oil and Gas Australia is a subsidiary of Vermilion Energy and has operated in Australia for over 20 years. Our Australian operations focus on exploring for and developing oil and gas from the Wandoo Field off the shore of Western Australia.

The Wandoo field sits within the Petroleum Safety Zone (PSZ) WA-14-L and currently operates under approved EPs for production and well construction activities at the Wandoo Facility.

Our Activities

The Wandoo Field currently operates under approved EPs within the production licence area WA-14-L for production and well construction at the Wandoo Facility.

Vermilion is planning to submit a five-year revision of the Wandoo Facility EP as Vermilion plans to continue producing hydrocarbons at Wandoo.

The Well Construction EP is updated and reassessed every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Vermilion is preparing two Environment Plans for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Project Location

Relevant Person Information

Learn more about who is a relevant person to be consulted, the environment that may be affected by the proposed activities, and the proposed control measures on our website.

Your Feedback

If you think you may be a relevant person, please contact us to discuss consultation or provide feedback at the below channels.

We are asking relevant persons to provide feedback by 21 November 2025.

For More Information
Email: ebu.consultation@vermilionenergy.com
To visit our website, scan the QR code

www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Figure 1-8: North-West Telegraph – 5 November 2025

4 NEWS
northwesttelegraph.com.au
NORTH WEST Telegraph
Wednesday, November 5, 2025

A road tragedy remembered

50 years since triple fatality

CAIN ANDREWS

The 50th anniversary of a tragic Pilbara road crash in which three young men died is shining a spotlight on the increasing road toll in WA.

On October 26, 1975, a devastating motor vehicle crash claimed the lives of three Australia Post employees from Port Hedland, sending shockwaves through the Pilbara community.

Michael James Hollins, 24, Daniel Morris Harnett, 21, and Timothy Stephen Kirk, 19, were killed when their Ford Falcon sedan left the North West Coastal Highway near Wedgefield.

The men had spent the day playing social cricket in Whim Creek and were on their way back home when their vehicle left the road, with the car coming to a stop upside down, trapping the men inside.

Another young man, Ian Atkins, 21, survived after being thrown from the car during the crash and was later taken to Port Hedland Hospital.

He attempted to free the other men from the wreck, according to one woman who arrived at the scene shortly after the crash.

"We could hear the moans from inside the car but it was burning and we tried to keep the man back," she told The Sunday Times in November 1975.

Suddenly, fuel spilled during the crash came into contact with an ignition source, and the car burst into flames, according to the woman. "Soon there was a big explosion as the petrol tank blew up and bits went flying everywhere," she said.

Port Hedland postmaster Buzz Beesley expressed Hedland's grief over the loss of the young men at the time.

"They were good lads who had a lot going for them. They were all nice fellows. One of them was due to be married in a month," he said.

Retired fire and emergency management consultant Phill Cribb, who was friends with Mr Harnett, said the crash remained one of the Pilbara's most tragic road accidents.

"While no positive can ever outweigh the human cost, the tragedy underscored the dangers of long-distance driving in remote regions and later contributed to greater awareness of first responder mental health and critical incident support systems in WA," he said.

The anniversary comes as regional WA's road toll continues to climb.

So far this year, 162 people have died on WA roads, compared to 153 total deaths in 2024, with 83 of them in regional WA.

RAC general manager external relations Will Golsby said in September that while some important initiatives had progressed, broader change was needed.

"Funding for the Regional Road Safety Programs, the introduction of P-plate passenger restrictions, and a review of the graduated licensing system are all good recent steps which RAC welcomed, but we need to see more action to address road trauma," he said.

"WA once had one of the best road safety records in the country, however since 2006, and under successive governments, we have consistently had one of the worst."

Last year, the WA Government convened a road safety roundtable in response to the State's worst road toll in a decade.

> They were good lads who had a lot going for them. They were all nice fellows. One of them was due to be married in a month. **Buzz Beesley in 1975**

The crash occurred on North West Coastal Highway, near Wedgefield. Picture: Geoffrey Ellis

Wandoo Field
Environment Plans Consultation
SEEKING RELEVANT PERSONS
VERMILION ENERGY

Vermilion is seeking to consult with relevant persons whose functions, interests or activities may be affected by proposed activities in the Wandoo Field.

Vermilion Oil and Gas Australia is a subsidiary of Vermilion Energy and has operated in Australia for over 20 years. Our Australian operations focus on exploring for and developing oil and gas from the Wandoo Field off the shore of Western Australia.

The Wandoo field sits within the Petroleum Safety Zone (PSZ) WA-14-L and currently operates under approved EPs for production and well construction activities at the Wandoo Facility.

Our Activities

The Wandoo Field currently operates under approved EPs within the production licence area WA-14-L for production and well construction at the Wandoo Facility.

Vermilion is planning to submit a five-year revision of the Wandoo Facility EP as Vermilion plans to continue producing hydrocarbons at Wandoo.

The Well Construction EP is updated and reassessed every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Vermilion is preparing two Environment Plans for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Project Location

Relevant Person Information

Learn more about who is a relevant person to be consulted, the environment that may be affected by the proposed activities, and the proposed control measures on our website.

Your Feedback

If you think you may be a relevant person, please contact us to discuss consultation or provide feedback at the below channels.

We are asking relevant persons to provide feedback by 21 November 2025.

For More Information

Email: abu.consultation@vermilionenergy.com
To visit our website, scan the QR code

www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

MURUJUGA Aboriginal Corporation
Stories from the Stones

MURUJUGA ABORIGINAL CORPORATION
ICN: 4629
Annual General Meeting

Please be advised that an Annual General Meeting for the Members of Murujuga Aboriginal Corporation (MAC) will take place as follows:

Date: Friday 28 November 2025
Time: 10am
Place: Roebourne PCYC (50 Cent Hall), 1 Sholl Street, Roebourne, WA 6718

This Annual General Meeting is for current MAC Members only. Notices including the agenda, proxy forms and other details will be posted and emailed to all Members with current addresses.

Members who cannot attend in person may complete a form to appoint another Member as their proxy to attend and vote for them at the meeting. Submit your proxy form before 10am on Wednesday 26 November via email admin@murujuga.org.au, by post to PO Box 1544, Karratha WA 6714, or in-person at MAC, Lot 501 Griffin Road, Burrup Peninsula, WA 6713.

Figure 1-9: The West Australian – 10 November 2025

MORE NEWS INSIDE
SMSF advisers on notice PAGE 18
Six checks for healthy super PAGE 44

The West Australian
Monday, November 10, 2025
17
Edited by
Mark Mallabone
mark.mallabone@wanews.com.au

DON'T BE FOOLED BY HYPE

'US Champion' warns on rare earths

SPENCER KIMBALL

Pentagon-backed MP Materials has warned investors to approach other rare earths projects with caution, pointing to the industry's difficult economics.

Shares in US and Australian rare earth companies have swung wildly in recent months as investors speculated that the Trump administration and Australia might strike more funding deals to advance projects in both countries.

In a landmark agreement in July, the US Defence Department took an equity stake in MP, set a price floor for the company, and inked an offtake deal with the rare earths miner in an effort to roll back China's dominance of the industry.

But chief executive James Litinsky used an earnings call on Friday Australian time to warn he didn't want "people to get burned" amid the speculation.

He cautioned investors "to just be very clear-eyed about what the actual structural economics are".

"The vast majority of projects being promoted today simply will not work at virtually any price," he said on MP's third-quarter earnings call. MP viewed itself as "America's national champion", Mr Litinsky said, as the group was the only active rare earths miner in the US.

It has offtake agreements with Apple and General Motors in addition to the Pentagon. "We have structural advantage because we're fully vertically integrated," Mr Litinsky said. "We're years and billions ahead of others."

It took years for the best rare earth producers to ramp up and stabilise their output and economics "despite what some promoters might suggest", he said.

He noted that Australia's Lynas took about a decade and MP would reach normalised production in about three years from the start of commissioning.

Mr Litinsky described the rare earths industry as a "structural oligopoly", a system where there are just a few major players. The US Government investing in dozens of sites and businesses wouldn't necessarily set up a supply chain, he said.

The Trump administration should continue to encourage private capital to flow into the industry through loans, grants and other support, Mr Litinsky said. There was room for "a lot of other players and supply" but the market would require "materially higher prices" for the industry's structural challenges to change.

"If X dollars of capital can stimulate two or three X in private capital, they should be doing that as much as possible," he said. Mr Litinsky views MP as a forerunner that will help create the conditions for a broader market that is not dependent on China over time.

"In the very short term the administration has made sure that we have a successful national champion in MP," he said.

TRAINERS VALUED OVER ADVISERS

ROBERT FRANK

US millionaires are increasingly dissatisfied with their wealth managers and accountants, but they prize their personal trainers and therapists, according to a new survey.

Only a third of US millionaires use a wealth adviser for their financial planning and one in five plan to fire their adviser due to high costs and poor service, according to a new survey from Long Angle, the professional network for startup founders and CEOs.

Among those who do use an adviser, 26 per cent are considering switching and 18 per cent could stop using an adviser altogether.

By contrast, millionaires are highly satisfied with their personal trainers, therapists and other professionals who help with their overall wellness and family care, rather than financial issues.

The results highlight the growing importance of so-called "soft services" for the wealthy, as wealth managers, private banks and other firms look to attract and retain more high-net-worth clients.

Once considered superficial next to financial advice and tax planning, services for health and wellness, family and kids, and travel and self-improvement are becoming core competencies in the business of advising and helping wealthy families.

The poll showed personal services, child care and education ranked at the top for satisfaction. Out of a score of 10, millionaires surveyed gave their personal trainers an average score of 9.3.

The survey's satisfaction levels for wealth advisers was 7.2, with most of the respondents saying they don't even use an adviser.

Exxon gas project eyes revival

BLOOMBERG

Exxon Mobil is close to lifting the force majeure in Mozambique that's impeded progress on what will be one of the world's biggest liquefied natural gas projects.

Chief executive Darren Woods said the global energy giant would move ahead "fairly quickly" with a final investment decision on the Rovuma LNG project once the force majeure had ended.

The provision was put in place after Islamic State-linked militants carried out an attack on the nearby town of Palma, in north-east Mozambique in 2021, delaying the project for several years. TotalEnergies, which is working on a similar development nearby, is also lifting its suspension.

Together, the Exxon and TotalEnergies projects promise to transform the economy of one of the world's poorest nations while supplying gas globally for decades to come. Exxon expected to lift the force majeure "in the very near future", Mr Woods said.

"We took the time to focus really on the project development and refine the design and come up with what we thought was the best concept," he said.

Exxon is on the lookout for low-cost resources to replace the 4.7 million barrels of oil equivalent it produces every day as it plans to meet oil and gas demand at least through 2050.

Wandoo Field
Environment Plans Consultation
SEEKING RELEVANT PERSONS
VERMILION ENERGY

Vermilion is seeking to consult with relevant persons whose functions, interests or activities may be affected by proposed activities in the Wandoo Field.

Vermilion Oil and Gas Australia is a subsidiary of Vermilion Energy and has operated in Australia for over 20 years. Our Australian operations focus on exploring for and developing oil and gas from the Wandoo Field off the shore of Western Australia.

The Wandoo field sits within the Petroleum Safety Zone (PSZ) WA-14-L and currently operates under approved EPs for production and well construction activities at the Wandoo Facility.

Our Activities

The Wandoo Field currently operates under approved EPs within the production licence area WA-14-L for production and well construction at the Wandoo Facility.

Vermilion is planning to submit a five-year revision of the Wandoo Facility EP as Vermilion plans to continue producing hydrocarbons at Wandoo.

The Well Construction EP is updated and resubmitted every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Vermilion is preparing two Environment Plans for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Project Location

Relevant Person Information

Learn more about who is a relevant person to be consulted, the environment that may be affected by the proposed activities, and the proposed control measures on our website.

Your Feedback

If you think you may be a relevant person, please contact us to discuss consultation or provide feedback at the below channels.

We are asking relevant persons to provide feedback by 21 November 2025.

For More Information
Email: abu.consultation@vermilionenergy.com
To visit our website, scan the QR code

www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Figure 1-10: Mid-West Times – 12 November 2025

Times
Wednesday, November 12, 2025
midwesttimes.com.au

Foundation finally poured

Health Infrastructure Minister John Carey at the Mullewa hospital site.

STUART QUINN

The long-awaited $19.6 million Mullewa community hospital redevelopment has reached a milestone with pouring of the concrete slabs complete and structural work soon to begin — with an expected end date in 2027.

Health Infrastructure Minister John Carey visited the Mid West site last Wednesday, touring the foundations of the soon-to-be built facility, with local MP Sandra Carr and staff from WA owned builder EMCO.

Following the current works, demolition of the ageing nursing quarters and preparation of that site will begin. The new purpose-built facilities will support a wide range of health services including 24/7 emergency care, ambulance bay, respite and palliative care, outpatient treatment and community health programs.

Mr Carey pointed to further health investments in the Mid West, including $190m for the Geraldton hospital upgrade set to be finished next year and $30m for an oncology unit in Geraldton.

"This tender was awarded in June, and already you can see . . . progress is well under way with the concrete slab poured but in addition, the steel frames coming in the next few weeks," he said.

Mr Carey said the Government understood the "critical importance" of this project to the local community and wider region, and anticipated it would be completed in 2027.

The old Mullewa Hospital entrance. Pictures: Stuart Quinn

"We understand the Geraldton hospital is the major hospital for the region, but that doesn't mean we should overlook smaller hospitals like Mullewa," Mr Carey said. "In effect, this is a supporting hospital, it does have an ED and outpatient services but ultimately it is feeding into the main Geraldton hospital."

This much-needed rebuild has been a long-time coming for Mullewa locals, with a new hospital promised for the town in 2016 under the previous Liberal-Nationals government.

When asked if the budget for this project could continue to escalate, Mr Carey said regional health projects were challenging to deliver and construction costs were rising.

He said while $30m was the advised budget, "we want to ensure we get value for WA taxpayers, but ultimately we do need to deliver this hospital".

Not everyone was so impressed with the visit, with Geraldton MLA Kirrilee Warr calling it an "announcement of an announcement".

She said "the minister must commit to a clear timeline for completion" and questioned the Government over its "failed" promise to deliver a new Royal Flying Doctor Service base in Geraldton.

City of Greater Geraldton mayor Jerry Clune said the project would result in a "big lift" for the community after many years of waiting and lobbying. "(Mullewa hospital) serves not only the township, but a lot of outlying areas of the community," he said.

Mr Clune said extra burden was being placed on local government to support the health sector and meet community needs, even though it was not in their charter.

Don't frack with Labor's base

JOE SPAGNOLO

Members of the Labor Party have sent the Cook Government a clear signal they want a fracking ban extended to all parts of WA.

At a State conference meeting in Fremantle on Saturday, a new clause inserted in the party's conservation, environment and climate-change platform was passed, demanding fracking is banned throughout State.

It's understood the AWU and the Progressive Labor faction did not support the clause.

Premier Roger Cook.

Currently, the fracking ban extends to 98 per cent of WA, with it still allowed in parts of the Kimberley and the Mid West. Although the clause was passed, any changes to WA's fracking laws would need to be passed by the WA Parliament.

In recent times, WA Premier Roger Cook has stood firm on the Government's policies on fracking, saying they are balanced and responsible.

Environs Kimberley executive director Martin Pritchard said on Saturday the Cook Government needed to listen to its members.

"The majority of West Australians don't want to see the Kimberley trashed so polluting, dangerous fracking can proceed and it's powerful to see ALP members elevating fracking into the party platform," he said.

Waddi
WIND FARM

The Waddi Wind Farm would help reduce Western Australia's carbon footprint by generating enough clean energy to power more than 68,000 homes per year.

We are preparing to start construction of the Waddi Wind Farm soon. To find out more and sign up for updates please visit www.waddiwindfarm.com.au

For any questions or feedback please contact the project team via 1800 WE TILT (938 458) or waddiwindfarm@tiltrenewables.com

PROJECT SNAPSHOT
Location: 15km north-west of Dandaragan
Number of turbines: 18
Blade tip height: 220m

Stay informed about construction activities by scanning the QR code

For more information, please visit the project website www.waddiwindfarm.com.au

Wandoo Field
Environment Plans Consultation
SEEKING RELEVANT PERSONS
VERMILION ENERGY

Vermilion is seeking to consult with relevant persons whose functions, interests or activities may be affected by proposed activities in the Wandoo Field.

Vermilion Oil and Gas Australia is a subsidiary of Vermilion Energy and has operated in Australia for over 20 years. Our Australian operations focus on exploring for and developing oil and gas from the Wandoo Field off the shore of Western Australia.

The Wandoo field sits within the Petroleum Safety Zone (PSZ) WA-14-L and currently operates under approved EPs for production and well construction activities at the Wandoo Facility.

Our Activities

The Wandoo Field currently operates under approved EPs within the production licence area WA-14-L for production and well construction at the Wandoo Facility.

Vermilion is planning to submit a five-year revision of the Wandoo Facility EP as Vermilion plans to continue producing hydrocarbons at Wandoo.

The Well Construction EP is updated and reassessed every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Vermilion is preparing two Environment Plans for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Project Location

Relevant Person Information

Learn more about who is a relevant person to be consulted, the environment that may be affected by the proposed activities, and the proposed control measures on our website.

Your Feedback

If you think you may be a relevant person, please contact us to discuss consultation or provide feedback at the below channels.

We are asking relevant persons to provide feedback by 21 November 2025.

For More Information
Email: ebu.consultation@vermilionenergy.com
To visit our website, scan the QR code

www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Figure 1-11: Broome Advertiser – 30 October 2025

Inquiries

27-29 Dampier Terrace, Chinatown, Broome
Postal PO Box 303 Broome WA 6725
Office hours 8am-4pm Monday to Friday
Phone (08) 9191 9767
Email admin.broome@swm.com.au
Website broomead.com.au
Digital edition broomead.com.au/editions
Facebook facebook.com/broomeadvertiser

Advertising

Classified advertising
Phone (08) 9191 9700
Email ads.broome@swm.com.au
Deadline Friday 3pm, week prior to publication
General advertising
Phone (08) 9191 9700
Email ads.broome@swm.com.au
Deadline Wednesday 4pm, week prior to publication
Regional Manager Dee Kinsella deirdre.kinsella@swm.com.au
Advertising Executive Holly Chinn holly.chinn@swm.com.au

Editorial

Phone (08) 9191 9767
Email news@broomead.com.au
Editor Laura Newell

Distribution and subscriptions

Distribution manager Ann Tobias
Phone 1800 811 855
Email logistics@wanews.com.au
Digital subscription
Phone 1800 811 855
Subscribe online: subscriber.thewest.com.au

Circulation

Distributed every Thursday to all households in Broome and Derby. On sale for $1.60 at stockists in Broome, Derby, Fitzroy Crossing, Kununurra, Carnarvon, Karratha, Port Hedland, Perth and surrounding regional communities.

Photos in The Broome Advertiser can be purchased from www.westpix.com.au or by emailing syndication@wanews. com.au with the date of the edition, page number, photo caption and/or names of people.

Responsibility for editorial comment in this edition is taken by Natasha Clark, 27-29 Dampier Terrace, Broome 6725. Printed by Colourpress Pty Ltd, ABN 17 009 172 276, West Australian Newspapers, Herdsman Print Centre, 54 Hasler Road, Osborne Park 6107. Phone 9361 5401.

Published by Regional
A division of West Australian Newspapers Holdings Ltd

Cops ask for CCTV footage

CAIN ANDREWS

Police are asking Broome residents to check their CCTV and doorbell camera footage as they investigate a series of recent trespassing, stealing, and burglary incidents.

According to police, the incidents occurred between 11.30pm on Saturday, October 19, and 2am on Sunday, October 20 in Roebuck Estate and Sunset Park.

They allege a group of five juveniles were seen walking through the streets, entering unlocked vehicles and stealing items, also stealing a Toyota Prado from Goshawk Loop.

Police are asking residents on Planigale Loop, Sandpiper Avenue, Sanderling Drive and Goshawk Loop in Roebuck Estate and Challenor Drive, Paroo Place, Sanctuary Road, Oryx Road and Millington Road in Sunset Park to check CCTV or doorbell cameras from around the time of the incidents, and to forward any footage to them.

Police are also urging residents to make sure their homes, vehicles and valuables are locked up.

Crime Stoppers 1800 333 000 or crimestopperswa.com.au.

POLICING

FROM PAGE 1

"I knew it was happening because they knocked on my door where I was staying, so I understand how that can be pretty disconcerting," Judge Quail said. "I shouted out, and they ran away."

Footage that followed, of an allegedly stolen car being used to chase police, shocked WA. But statistics show that, Statewide, crime rates have fallen.

There were 5956 offenders aged between 10 and 17 in WA in 2023-24, according to the Australian Bureau of Statistics — down 5 per cent on the previous year.

But some Kimberley towns are faring better than others.

"The biggest challenge that we still face, across the board, is disengagement with high schooling," Judge Quail said.

"All the kids we're seeing (in court) finished primary school, and then they completely disengage at high school level. And the Department of Education has not solved this problem."

According to WA Police figures, total offences increased 6 per cent in Kununurra in 2024-25 and were up 25 per cent in Halls Creek.

In Fitzroy Crossing, however, the crime rate fell 22 per cent. The result is no accident says Judge Quail.

"Where you have, in a community, everybody working on the same page to address youth crime, the causes of it, and to provide services which step in to address the fundamental problem, which is failed parenting … you can make a difference almost overnight," he said.

Police being chased in Kununurra. Pic: Camilo Blanco

"But community policing in Halls Creek and in Kununurra does not exist in the way that it does in Fitzroy Crossing.

"And so we are seeing continuing and, in some places, increased youth crime in those towns. And that trend is apparent everywhere we went."

It's why former attorney-general John Quigley is backing the Marra Worra Worra Aboriginal Corporation's bid to expand it's Night Space program from Fitzroy Crossing to Halls Creek. And he's won support from the judicial benches.

"Where you deliver these programs, they work. So I would like to see something like this in every town," Judge Quail said.

"The reality is that in a lot of these communities, there are high levels of family domestic violence and alcohol abuse within the home.

"A lot of the kids are wandering around town trying to escape that.

"They haven't had a feed, and in some places steal cars, break into houses, sometimes to get food, sometimes for the thrill of it.

"Where you can, at night in particular, engage them, give them things to do, give them a feed, give them some positive feedback. That's where the crime rates are going down."

In Parliament, Premier Roger Cook has previously said he is "particularly fond" of the program.

But Marra Worra Worra's application to buy 20 transportable units, used during the recovery from the Kimberley floods in 2023, has stalled since July.

"There's a hostel in Derby and the Aboriginal corporation down there have got school attendance up to 85%. We want to replicate that in Fitzroy," Mr Quigley said.

"We're just saying our prayers that Premier Cook will see the way to sell us 20 units and we will make a huge difference.

"They'll then double-bunk to provide mid-week accommodation for up to 40 Aboriginal students, who can come in from the remote communities around Fitzroy and re-engage with education."

The Department of Housing and Works has 110 temporary units available to be repurposed, but said the process is yet to conclude and couldn't say when a decision will be made.

The State Budget included $8 million for a Night Space in Kununurra, aiming to open mid-next year.

A night patrol operates in

Peter Quinlan, Hylton Quail and John Quigley playing Uno with children in Fitzroy Crossing.

Murder charge over woman's death

JESSICA PAGE

Police have confirmed a woman stabbed to death in Broome was in a relationship with her accused killer, who was due to face court on Sunday.

An aggravated grievous bodily harm charge against a 56-year-old man was upgraded to murder, after the victim died in hospital on Saturday.

Police had been called to a house on Frederick Street on Friday night and found the 58-year-old seriously injured.

It is alleged neighbours heard a fight, minutes before emergency services arrived.

A police statement said officers believed the incident was family violence-related.

Crime statistics show that family-related assaults in WA have surged 47 per cent since 2017-18.

Wandoo Field
Environment Plans Consultation
SEEKING RELEVANT PERSONS
VERMILION ENERGY

Vermilion is seeking to consult with relevant persons whose functions, interests or activities may be affected by proposed activities in the Wandoo Field.

Vermilion Oil and Gas Australia is a subsidiary of Vermilion Energy and has operated in Australia for over 20 years. Our Australian operations focus on exploring for and developing oil and gas from the Wandoo Field off the shore of Western Australia.

The Wandoo field sits within the Petroleum Safety Zone (PSZ) WA-14-L and currently operates under approved EPs for production and well construction activities at the Wandoo Facility.

Our Activities

The Wandoo Field currently operates under approved EPs within the production licence area WA-14-L for production and well construction at the Wandoo Facility.

Vermilion is planning to submit a five-year revision of the Wandoo Facility EP as Vermilion plans to continue producing hydrocarbons at Wandoo.

The Well Construction EP is updated and reassessed every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Vermilion is preparing two Environment Plans for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Project Location

Relevant Person Information

Learn more about who is a relevant person to be consulted, the environment that may be affected by the proposed activities, and the proposed control measures on our website.

Your Feedback

If you think you may be a relevant person, please contact us to discuss consultation or provide feedback at the below channels.

We are asking relevant persons to provide feedback by 21 November 2025.

For More Information
Email: abu.consultation@vermilionenergy.com
To visit our website, scan the QR code

www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Figure 1-13 Koori Mail – 19 November 2025

news

Bail checks left brothers scared of the police

By KEIRA JENKINS

THE family of two Aboriginal children left frightened of police officers after experiencing more than 150 home bail checks in just under two years, have filed a racial discrimination case in the Federal Court.

Two brothers, aged 11 and 13 at the time, were on bail for being passengers in a stolen car when NSW police began to conduct home checks on them, often late at night or in the early hours of the morning.

Their mother, who is using the pseudonym Megan for legal reasons said multiple police officers would come to her home, knock on the doors, shine torches through and bang on the windows during these checks.

It got to the point where it was too much - her children were too tired to go to school, she lost her job and the experience has left her boys scared of the police.

"I'd have to wake (my sons) up to bring them to the door," she said.

"If they were sleeping and too tired to get up I'd have to let anywhere between two to four police officers come inside to see if they were in their bed and had their PJs on."

The family took their complaint to the Australian Human Rights Commission but it could not be settled through conciliation efforts with the police force.

Now the family is taking the matter to the federal court. Megan said she wants police to consider their approach with Aboriginal people, and draw attention to what has happened to her sons.

"Life was happy until police started to come and do that," she said.

"Now my young fellas they've limited even going to mates' places or a family member's place because they're too scared of police."

Megan's children are not alone, Justice and Equity Centre senior solicitor Grace Gooley, who is representing the family said these types of checks are common for young people on bail in NSW.

She raised concerns about how the checks have been conducted by police, saying they were carried out in an "unnecessarily disruptive" way.

Ms Gooley said police had also not been adhering to the process of getting court authorisation before conducting bail checks.

Analysis of NSW Police data, commissioned by the centre in July, revealed Aboriginal children were disproportionately subjected to home visits while on bail.

Aboriginal young people were subjected to 42 per cent more checks on average and were twice as likely to experience 'very frequent' checks – defined as more than 11 visits in 30 days.

"We have heard from many other Aboriginal young people who are experiencing the same level of disruption and harassment," she said.

"This anecdotal evidence is borne out in the data, which shows it's a New South Wales-wide issue and our clients' experience isn't an isolated incidence.

"It's time for NSW Police to look at what's going on and start to change these practices.

– AAP

Manager community strengthening and social planning Wambul Thirimu, and First Nations Lead, Uncle Shane Charles from Brimbank Council accepting the award.

Name awarded

AT the recent Geographic Names Victoria awards, Brimbank City Council was selected for a Geographic Naming Award for excellence in the re-naming of a local park to 'yaluk barring', meaning 'River Trail' in the Wol-wurrung language.

A much-loved green space in Melbourne's far north west, yaluk barring park is rich with cultural significance for the Wurundjeri Wol-wurrung people, with many Aboriginal archaeological places within the park.

The park is 231 hectares and includes grasslands and river valleys, and is where Jackson Creek, Deep Creek and the Maribyrnong River meet.

"This award recognises our commitment and work in honouring the importance of this beautiful park to the Traditional Custodians," Mayor Cr Thuy Dang said.

"I would like to thank the Wurundjeri Elders for their guidance, wisdom and generosity in helping us to rename this place to yaluk barring park.

"When searching for a name, Brimbank Council consulted the community on a preferred new name from a list provided by Wurundjeri, and a majority of 64.4% supported the Wol-wurrung name, 'yaluk barring park'.

"The Wurundjeri Wol-wurrung Cultural Heritage Aboriginal Corporation is pleased with this outcome as it reflects the involvement and collaboration with council on the renaming process.

The renaming of Sydenham Park follows a notice of motion at the July 2022 council meeting to change the park's name to an appropriate Aboriginal name suggested by local people.

Wandoo Field
Environment Plans Consultation
SEEKING RELEVANT PERSONS
VERMILION ENERGY

Vermilion is seeking to consult with relevant persons whose functions, interests or activities may be affected by proposed activities in the Wandoo Field.

Vermilion Oil and Gas Australia is a subsidiary of Vermilion Energy and has operated in Australia for over 20 years. Our Australian operations focus on exploring for and developing oil and gas from the Wandoo Field off the shore of Western Australia.

The Wandoo field sits within the Petroleum Safety Zone (PSZ) WA-14-L and currently operates under approved EPs for production and well construction activities at the Wandoo Facility.

Our Activities

The Wandoo Field currently operates under approved EPs within the production licence area WA-14-L for production and well construction at the Wandoo Facility.

Vermilion is planning to submit a five-year revision of the Wandoo Facility EP as Vermilion plans to continue producing hydrocarbons at Wandoo.

The Well Construction EP is updated and reassessed every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Vermilion is preparing two Environment Plans for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Project Location

Relevant Person Information

Learn more about who is a relevant person to be consulted, the environment that may be affected by the proposed activities, and the proposed control measures on our website.

Your Feedback

If you think you may be a relevant person, please contact us to discuss consultation or provide feedback at the below channels.

We are asking relevant persons to provide feedback by 21 November 2025.

For More Information
Email: abu.consultation@vermilionenergy.com
To visit our website, scan the QR code

www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

COOPER ENERGY
Amplitude energy *

RELEVANT PERSONS CONSULTATION ON ENVIRONMENT PLAN
BMG CLOSURE PHASE 2 - OFFSHORE MARLO, EAST GIPPSLAND

Amplitude Energy* is updating its accepted environment plan for the 2nd and final phase of decommissioning of the legacy Basker Manta Gummy (BMG) oil field in Commonwealth waters ~50kms offshore Marlo, Victoria.

Relevant persons consultation

If your functions, interests or activities may be affected by the proposed activities under this environment plan, then we invite you to consult with us. We consult with relevant persons to understand if you may have information that we might not otherwise be aware of which we can use to improve our environment plan.

For more information about our proposed project, please see our consultation page via the QR code, or at https://amplitudeenergy.com.au/consultation.

The consultation process

For information about our offshore environment plans and the consultation process, including our obligations, please visit: https://amplitudeenergy.com.au/consultation/why-we-consult

Please contact us by 8 December 2025 at stakeholder@amplitudeenergy.com.au or call 61 8 8100 4900 if you would like further information or to be consulted on this EP.

*Amplitude Energy is the name of the parent company of Cooper Energy Limited

Figure 1-14: Pilbara Times – 29 October 2025

Pilbara NEWS
Wednesday, October 29, 2025
pilbaranews.com.au

Access a barrier for tourists

SOPHIE GANNON

Dive tours in Dampier remain a popular option for tourists. Picture: Dampier Archipelago

While more visitors are heading to the Pilbara, Karratha's wallets aren't feeling any heavier; but despite this, tourism experts remain confident in the future growth of the area.

Tourism WA's latest figures show international tourists spent a total of $82 million in the North West in the year to June 2025 which was exactly the same amount as the previous year.

Visitor numbers have risen by around 2000 compared to June 2024 but travellers are staying for shorter periods.

The data also revealed nights spent in the region dropped by 31,000, with the average stay falling from 39.2 nights to just 29. Despite this, tourists are spending slightly more per day, up $15 on average.

New data from tourism provider Big Red Grouprevealed that cost, access challenges and uncertainty on where to go were key reasons Australians weren't exploring more of their country.

Big Red Group president and chief growth officer John Boris said its new research showed there was an increasingly growing divide in domestic travel habits among Australians.

"This has led to perceptions of overtourism among the nation's major cities and coastal drawcards — while award-winning regional destinations are being largely overlooked," he said.

"There is an urgent need to rebalance domestic travel and drive greater dispersal to ensure Australia's smaller towns received their share in the tourism boom.

"Big Red Group's latest research revealed that the biggest roadblock for visiting such destinations was the cost, with 43 per cent of Australians believing regional travel is simply too expensive."

The data revealed 64 per cent of Australians are inspired by ads, social media or friends to explore beyond the usual hotspots.

"However, this isn't enough to get them there," Mr Boris said.

"In addition to cost, close to a quarter (23.8 per cent) believe getting to regional Australia is too difficult and 13.9 per cent don't know where to start.

"What this says to us is that it's more a matter of helping improve access, affordability and awareness of these areas in order to boost tourism numbers — without which Aussies will continue missing out on the beauty of their own backyard."

A Tourism WA spokesperson said the growing tourist numbers from international market were attracted to the North West's "untamed natural beauty, and deep cultural history" with more than 76 per cent of hotel rooms across the North West fully occupied in June 2025.

"It's fantastic to see the local tourism industry again thriving over the traditionally busy winter period," they said. "The North West is sought out by many travellers to WA and remains a key priority in our long-term visitor strategy."

Acknowledging that visitor spend remained "steady" at $82m, the spokesperson described the 2000 increase in visitor numbers as a "great result" for the tourism industry, showing "stable, upward momentum for the region".

"Tourism WA continues to invest in the region and global marketing to sustain current activity levels and build resilience and long-term sustainable growth in the region," the spokesperson said.

"We are delivering targeted marketing and trade engagement across our 13 global markets to drive demand, with a number of co-operative marketing campaigns planned over the coming months that will promote the North West to travellers from markets including New Zealand, China, France, Germany, India, Italy, Malaysia and Switzerland.

"We are working closely with industry, stakeholders, and government to improve accessibility to the region, expand accommodation offerings and support new and enhanced visitor experiences."

The spokesperson said Tourism WA was also promoting areas like Broome to travellers through partnerships with Virgin Australia and Nexus Airlines by offering discounted flights into Broome from Perth, Geraldton, Karratha and Port Hedland.

"Our recent Broome Season Pass campaign was a sell-out success, offering travel discounts to support local tourism operators and drive bookings to Broome in partnership with the Broome Visitor Centre," they said.

City of Karratha's tourism services supervisor Bree Johnson said the statistics weren't necessarily concerning as travel behaviour was shifting.

"People are chasing authentic, nature-based experiences. Karratha is mostly a self-drive market, so international fluctuations don't have a big impact locally," she said.

Ms Johnson believes travellers are more "budget-conscious".

"Rising travel costs mean people are prioritising low-cost or free experiences like exploring natural and cultural sites so they can travel longer — but they'll still invest in unique, one-of-a-kind experiences," she said.

"Bookings are steady. Karratha doesn't have a huge amount of product, so the operators we do have are generally very busy during the season."

Wandoo Field
Environment Plans Consultation
SEEKING RELEVANT PERSONS
VERMILION Oil & Gas

Vermilion is seeking to consult with relevant persons whose functions, interests or activities may be affected by proposed activities in the Wandoo Field.

Vermilion Oil and Gas Australia is a subsidiary of Vermilion Energy and has operated in Australia for over 20 years. Our Australian operations focus on exploring for and developing oil and gas from the Wandoo Field off the shore of Western Australia.

The Wandoo field sits within the Petroleum Safety Zone (PSZ) WA-14-L and currently operates under approved EPs for production and well construction activities at the Wandoo Facility.

Our Activities

The Wandoo Field currently operates under approved EPs within the production licence area WA-14-L for production and well construction at the Wandoo Facility.

Vermilion is planning to submit a five-year revision of the Wandoo Facility EP as Vermilion plans to continue producing hydrocarbons at Wandoo.

The Well Construction EP is updated and reassessed every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Vermilion is preparing two Environment Plans for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Project Location

Relevant Person Information

Learn more about who is a relevant person to be consulted, the environment that may be affected by the proposed activities, and the proposed control measures on our website.

Your Feedback

If you think you may be a relevant person, please contact us to discuss consultation or provide feedback at the below channels.

We are asking relevant persons to provide feedback by 21 November 2025.

For More Information
E-mail: ebu.consultation@vermilionenergy.com
To visit our website, scan the QR code

www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Figure 1-15: North West Telegraph – 12 November 2025

Times
Wednesday, November 12, 2025
midwesttimes.com.au
NEWS 15

Foundation finally poured

Health Infrastructure Minister John Carey at the Mullewa hospital site.

STUART QUINN

The long-awaited $19.6 million Mullewa community hospital redevelopment has reached a milestone with pouring of the concrete slabs complete and structural work soon to begin — with an expected end date in 2027.

Health Infrastructure Minister John Carey visited the Mid West site last Wednesday, touring the foundations of the soon-to-be built facility, with local MP Sandra Carr and staff from WA owned builder EMCO.

Following the current works, demolition of the ageing nursing quarters and preparation of that site will begin. The new purpose-built facilities will support a wide range of health services including 24/7 emergency care, ambulance bay, respite and palliative care, outpatient treatment and community health programs.

Mr Carey pointed to further health investments in the Mid West, including $190m for the Geraldton hospital upgrade set to be finished next year and $90m for an oncology unit in Geraldton.

"This tender was awarded in June, and already you can see ... progress is well under way with the concrete slab poured but in addition, the steel frames coming in the next few weeks," he said.

Mr Carey said the Government understood the "critical importance" of this project to the local community and wider region, and anticipated it would be completed in 2027.

The old Mullewa Hospital entrance. Pictures: Stuart Quinn

"We understand the Geraldton hospital is the major hospital for the region, but that doesn't mean we should overlook smaller hospitals like Mullewa," Mr Carey said. "In effect, this is a supporting hospital, it does have an ED and outpatient services but ultimately it is feeding into the main Geraldton hospital."

This much-needed rebuild has been a long-time coming for Mullewa locals, with a new hospital promised for the town in 2016 under the previous Liberal-Nationals government.

When asked if the budget for this project could continue to escalate, Mr Carey said regional health projects were challenging to deliver and construction costs were rising.

He said while $20m was the advised budget, "we want to ensure we get value for WA taxpayers, but ultimately we do need to deliver this hospital".

Not everyone was so impressed with the visit, with Geraldton MLA Kirrilee Warr calling it an "announcement of an announcement".

She said "the minister must commit to a clear timeline for completion" and questioned the Government over its "failed" promise to deliver a new Royal Flying Doctor Service base in Geraldton.

City of Greater Geraldton mayor Jerry Clune said the project would result in a "big lift" for the community after many years of waiting and lobbying. "(Mullewa hospital) serves not only the township, but a lot of outlying areas of the community," he said.

Mr Clune said extra burden was being placed on local government to support the health sector and meet community needs, even though it was not in their charter.

Don't frack with Labor's base

JOE SPAGNOLO

Members of the Labor Party have sent the Cook Government a clear signal they want a fracking ban extended to all parts of WA.

At a State conference meeting in Fremantle on Saturday, a new clause inserted in the party's conservation, environment and climate-change platform was passed, demanding fracking is banned throughout State.

It's understood the AWU and the Progressive Labor faction did not support the clause.

Premier Roger Cook.

Currently, the fracking ban extends to 98 per cent of WA, with it still allowed in parts of the Kimberley and the Mid West. Although the clause was passed, any changes to WA's fracking laws would need to be passed by the WA Parliament.

In recent times, WA Premier Roger Cook has stood firm on the Government's policies on fracking, saying they are balanced and responsible.

Environs Kimberley executive director Martin Pritchard said on Saturday the Cook Government needed to listen to its members.

"The majority of West Australians don't want to see the Kimberley trashed so polluting, dangerous fracking can proceed and it's powerful to see ALP members elevating fracking into the party platform," he said.

Waddi
WIND FARM
PROJECT SNAPSHOT
Location: 15km north-west of Dandaragan
Number of turbines: 18
Blade tip height: 220m
The Waddi Wind Farm would help reduce Western Australia's carbon footprint by generating enough clean energy to power more than 68,000 homes per year.
We are preparing to start construction of the Waddi Wind Farm soon. To find out more and sign up for updates please visit www.waddiwindfarm.com.au
For any questions or feedback please contact the project team via 1800 WE TILT (938 458) or waddiwindfarm@tiltrenewables.com
Stay informed about construction activities by scanning the QR code

Wandoo Field
Environment Plans Consultation
SEEKING RELEVANT PERSONS
VERMILION ENERGY
Vermilion is seeking to consult with relevant persons whose functions, interests or activities may be affected by proposed activities in the Wandoo Field.
Vermilion Oil and Gas Australia is a subsidiary of Vermilion Energy and has operated in Australia for over 20 years. Our Australian operations focus on exploring for and developing oil and gas from the Wandoo Field off the shore of Western Australia.
The Wandoo field sits within the Petroleum Safety Zone (PSZ) WA-14-L and currently operates under approved EPs for production and well construction activities at the Wandoo Facility.
Our Activities
The Wandoo Field currently operates under approved EPs within the production licence area WA-14-L for production and well construction at the Wandoo Facility.
Vermilion is planning to submit a five-year revision of the Wandoo Facility EP as Vermilion plans to continue producing hydrocarbons at Wandoo.
The Well Construction EP is updated and reassessed every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.
Vermilion is preparing two Environment Plans for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).
Project Location
Relevant Person Information
Learn more about who is a relevant person to be consulted, the environment that may be affected by the proposed activities, and the proposed control measures on our website.
Your Feedback
If you think you may be a relevant person, please contact us to discuss consultation or provide feedback at the below channels.
We are asking relevant persons to provide feedback by 21 November 2025.
For More Information
Email: ebu.consultation@vermilionenergy.com
To visit our website, scan the QR code
www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Figure 1-16: Broome Advertiser – 13 November 2025

4 NEWS broomead.com.au Broome Advertiser Thursday, November 13, 2025

Pastoralists & army unit join forces

CALLY DUPE

WA's northern pastoral industry has formed a powerful new alliance with the Australian Army which both hope will bolster biosecurity and community resilience while unlocking "long-term employment and leadership opportunities".

The Kimberley Pilbara Cattlemen's Association inked a memorandum of understanding with NORFORCE at KPCA's 10-year anniversary conference in Broome late last week, with both lauding the partnership as a "bold step forward".

NORFORCE, which stands for North West Mobile Force, is an Australian Army reserve unit that conducts surveillance and reconnaissance patrols across northern Australia — the biggest operational area of any military force in the world.

KPCA chief executive Bron Christensen said under the MOU, pastoral workers would have the chance to contribute to NORFORCE operations while maintaining their employment in the cattle industry. "This helps them gain year-round stability, transferable skills and broader career horizons," she said.

"This alliance positions KPCA and NORFORCE at the forefront of safeguarding Australia's northern frontier where defence, industry and community unite to build a stronger, more secure future."

The agreement cements a partnership aimed at strengthening regional biosecurity, bolstering community resilience, and creating new employment and leadership pathways across northern Australia.

NORFORCE already has a similar arrangement in place with the Northern Territory Cattlemen's Association.

Commanding Officer NORFORCE Lieutenant Colonel Matthew Cooper was present at the signing of the MOU in Broome, telling ABC Country Hour the organisation was looking to recruit more members who were also working on cattle stations in the Kimberley.

"So in the wet season, when the cattle industry is not as busy, we can be training them up in the Army," he said. "We are looking to recruit . . . the ages of 18-25."

Chair & vice-chair to exit as term ends

Jak Andrews. Picture: Simon Santi

GEORGIA CAMPION

Spots on the board of a key northern pastoralist group are up for grabs after two members reached their maximum terms, with a younger age group eyed to bring fresh ideas to the association.

The announcement was made at the Kimberley Pilbara Cattlemen's Association 2025 Northern Resilience Conference in Broome that chair Jak Andrews and vice-chair Shane Dunn would be stepping down from their respective roles.

The move to step down was a result of reaching the maximum limit of six years on the board as set by the KPCA constitution.

Speaking to ABC Country Hour Mr Andrews, the former operations manager of Yeeda Pastoral Company, said he was amazed by the growth of KPCA since its inception in 2015 — noting the first annual general meeting finished with a couple of drinks after the conference.

"The biggest change has just been the growth," he said.

"We started out, well in my early days I recall we had an AGM (annual general meeting) and then we had a few drinks afterwards and we talked about business — now we've grown to this three-day event.

"We've got a massive conference, a massive program, great line of speakers.

"So it's become an information centre, as well as an AGM, and it allows us an opportunity to bring knowledge and provide knowledge, and give back to our very loyal members."

Mr Andrews first joined the KPCA executive in 2019 after moving to the West Kimberley that same year.

Mr Dunn, general manager of the Indigenous-owned Kimberley Agriculture and Pastoral Company, also joined in 2019.

He said the newly empty spots will allow for a younger age group to be involved in KPCA as the older members begin to leave the association.

Have you been affected by ACBF/Youpla going broke?

The Youpla Support Program has been set up to support mob who were affected by the Aboriginal Community Benefit Fund (ACBF), also known as Youpla Group, going broke.

If you paid ACBF/Youpla for a funeral fund on or after 1 August 2015, you could get a payment through the Youpla Support Program.

If this sounds like you or someone you know, call Services Australia on 1800 136 380 or visit your local Service Centre.

To find out more visit niaa.gov.au/youpla or scan the QR code

Australian Government | Youpla Support Program

Wandoo Field
Environment Plans Consultation
SEEKING RELEVANT PERSONS
VERMILION ENERGY

Vermilion is seeking to consult with relevant persons whose functions, interests or activities may be affected by proposed activities in the Wandoo Field.

Vermilion Oil and Gas Australia is a subsidiary of Vermilion Energy and has operated in Australia for over 20 years. Our Australian operations focus on exploring for and developing oil and gas from the Wandoo Field off the shore of Western Australia.

The Wandoo field sits within the Petroleum Safety Zone (PSZ) WA-14-L and currently operates under approved EPs for production and well construction activities at the Wandoo Facility.

Our Activities

The Wandoo Field currently operates under approved EPs within the production licence area WA-14-L for production and well construction at the Wandoo Facility.

Vermilion is planning to submit a five-year revision of the Wandoo Facility EP as Vermilion plans to continue producing hydrocarbons at Wandoo.

The Well Construction EP is updated and resubmitted every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Vermilion is preparing two Environment Plans for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Project Location

Relevant Person Information

Learn more about who is a relevant person to be consulted, the environment that may be affected by the proposed activities, and the proposed control measures on our website.

Your Feedback

If you think you may be a relevant person, please contact us to discuss consultation or provide feedback at the below channels.

We are asking relevant persons to provide feedback by 21 November 2025.

For More Information

Email: abu.consultation@vermilionenergy.com

To visit our website, scan the QR code.

www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Figure 1-17: Pilbara Times – 19 November 2025

Pilbara NEWS
Wednesday, November 19, 2025
pilbaranews.com.au

For going 'above & beyond'

PHOEBE SOLON

Karratha's Pharmacy 777 received national recognition at the National Rural and Remote Health Awards earlier this month at Canberra's National Press Club.

The awards celebrate health professionals going above and beyond to serve rural and remote communities across Australia.

National Rural Health Commissioner Professor Jenny May AM joined more than 180 guests to honour the winners and celebrate the 30 finalists in 10 award categories.

"It is an honour to be here to recognise the important work being done to build high-quality health access for remote and rural Australians and celebrate the rural, remote and First Nations health professionals and organisations on a national stage," Professor May said.

Pharmacy 777 took home the title of rural/remote health employer of the year, triumphing over a record number of nominees hailing from far and wide across the nation.

The pharmacy was also a finalist in the outstanding contribution to rural/remote health access award, which recognises exceptional dedication to improving health access and ensuring communities receive sustainable, high-quality, culturally safe, and responsive care.

Pharmacy 777 rural pharmacist and owner of the Karratha and Port Hedland pharmacies Laura Stewart, has been with the organisation since its inception.

The Pharmacy 777 team, pictured with sponsor Phil Williams of Regional Australia Bank. Picture: National Rural and Remote Health Awards

She said the national recognition made her feel incredibly proud.

"This national recognition is tribute to our amazing team who work incredibly hard to deliver outstanding health care to our local communities, and we are incredibly honoured and humbled," she said.

Ms Stewart said Pharmacy 777's service model was built around meeting the complex needs of its geographically isolated community, including Aboriginal people, fly-in, fly-out mining workers, and residents affected by economic fluctuation, housing crises, natural disasters, and social isolation.

"We're really focused on our patients and the patient journey, and we've really pushed the envelope in terms of services that pharmacists can provide, particularly for remote and rural communities," she said.

"Pharmacy 777 is extremely passionate about rural and remote health access and providing those extended trading hours in rural communities that don't often experience those."

Among the pharmacy's services are Aboriginal health outreach in partnership with Mawarnkarra Health Service, a pioneering sleep apnoea clinic, telehealth, and daily medication delivery to support a remote mining town.

Cultural safety is embedded in every aspect of the organisation — from trauma-informed consultations and private pharmacy spaces to staff training via the Pharmaceutical Society of Australia's Deadly Pharmacists Project and ASIST suicide intervention.

RDN chair Professor Peter O'Mara, a proud Wiradjuri man and rural doctor, praised the high calibre of nominees, particularly with regard to engagement from Aboriginal and Torres Strait Islander healthcare organisations.

A full list of winners can be found at ruralhealthpro.org/s/awards.

HHBSC HAMPTON HARBOUR
BOAT & SAILING CLUB
DAMPIER, WA

ATTN: HHBSC MEMBERS:
HHBSC Annual General Meeting (AGM)

Monday 8th December 2025

6:30pm

HHBSC Club Wardroom (Upstairs)

All Full Financial Members are welcome to vote for the election of our 2026 Committee.

Nominations & Voting information can be obtained from the office

Wandoo Field
Environment Plans Consultation
SEEKING RELEVANT PERSONS
VERMILION ENERGY

Vermilion is seeking to consult with relevant persons whose functions, interests or activities may be affected by proposed activities in the Wandoo Field.

Vermilion Oil and Gas Australia is a subsidiary of Vermilion Energy and has operated in Australia for over 20 years. Our Australian operations focus on exploring for and developing oil and gas from the Wandoo Field off the shore of Western Australia.

The Wandoo field sits within the Petroleum Safety Zone (PSZ) WA-14-L and currently operates under approved EPs for production and well construction activities at the Wandoo Facility.

Our Activities

The Wandoo Field currently operates under approved EPs within the production licence area WA-14-L for production and well construction at the Wandoo Facility.

Vermilion is planning to submit a five-year revision of the Wandoo Facility EP as Vermilion plans to continue producing hydrocarbons at Wandoo.

The Well Construction EP is updated and reassessed every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Vermilion is preparing two Environment Plans for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Project Location

Relevant Person Information

Learn more about who is a relevant person to be consulted, the environment that may be affected by the proposed activities, and the proposed control measures on our website.

Your Feedback

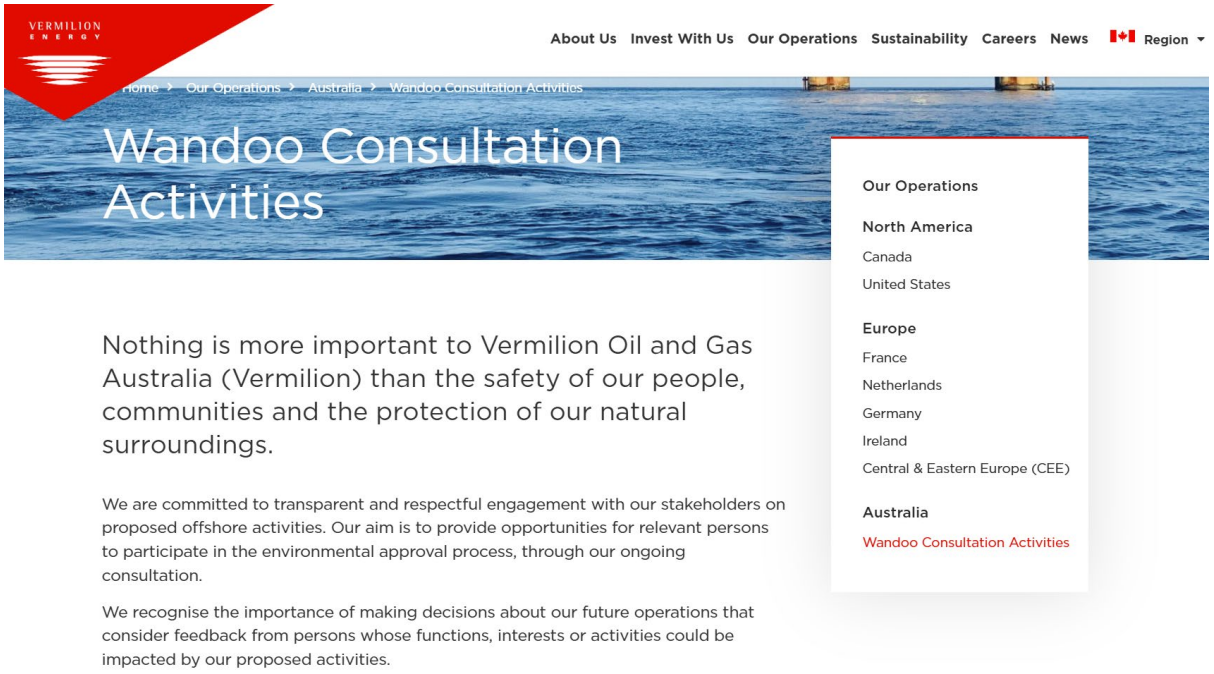
If you think you may be a relevant person, please contact us to discuss consultation or provide feedback at the below channels.

We are asking relevant persons to provide feedback by 21 November 2025.

For More Information
Email: ebu.consultation@vermilionenergy.com
To visit our website, scan the QR code

www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Figure 1-18: Consultation website



Wandoo Environment Plans

Vermilion has operated the Wandoo field since 2005, located approximately 80 km northwest of Karratha, Western Australia, in Commonwealth waters.

We are preparing to undertake additional offshore activities, including a shallow hazard geophysical and geotechnical survey in 2025 and exploration drilling in 2025/2026. Our operational and development drilling Environment Plans will be updated for submission early 2026. Environment Plans for these activities will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance.

Consultation with stakeholders is vital for confirming that our proposed activities will mitigate environmental impacts and risks to acceptable levels. We welcome input from individuals and organisations whose interests may be affected by our initiatives.

- **Upcoming Activities**
- **Current Activities**

Environment Plans and Consultation

In preparing our Environment Plans, we consult with relevant stakeholders to gather insights on the local environment, including specific concerns about the potential impacts of offshore petroleum activities at Wandoo.

This feedback is essential for assessing measures to avoid or reduce impacts on communities, heritage values, and ecological and cultural features of the environment. During consultation, your input will inform the control measures we propose in the Environment Plans to mitigate these impacts and risks.

Are you a Relevant Person?

You may be considered a relevant person if you or your organisation have functions, interests, or activities that could be impacted by our proposed activities in the Wandoo field.

As part of our consultation process, Vermilion is proactively reaching out to relevant stakeholders. If you are a community member, Traditional Owner, or business owner who may be affected by our offshore activities and have not yet been contacted, we encourage you to get in touch with us.

Contact abu.consultation@vermilionenergy.com or (08) 9217-5858 to register your details and receive information about our Environment Plans.

Your Feedback

To provide feedback on our proposed activities, **please contact us** at abu.consultation@vermilionenergy.com or (08) 9217-5858.

We will review all stakeholder responses during our ongoing consultation process and consider their implications for our proposed activities, making revisions to Environment Plans as needed.

Please note that your feedback, along with our response, will be included in the Environment Plans submitted to the NOPSEMA. If your feedback is sensitive, please inform us so we can ensure its confidentiality upon submission.

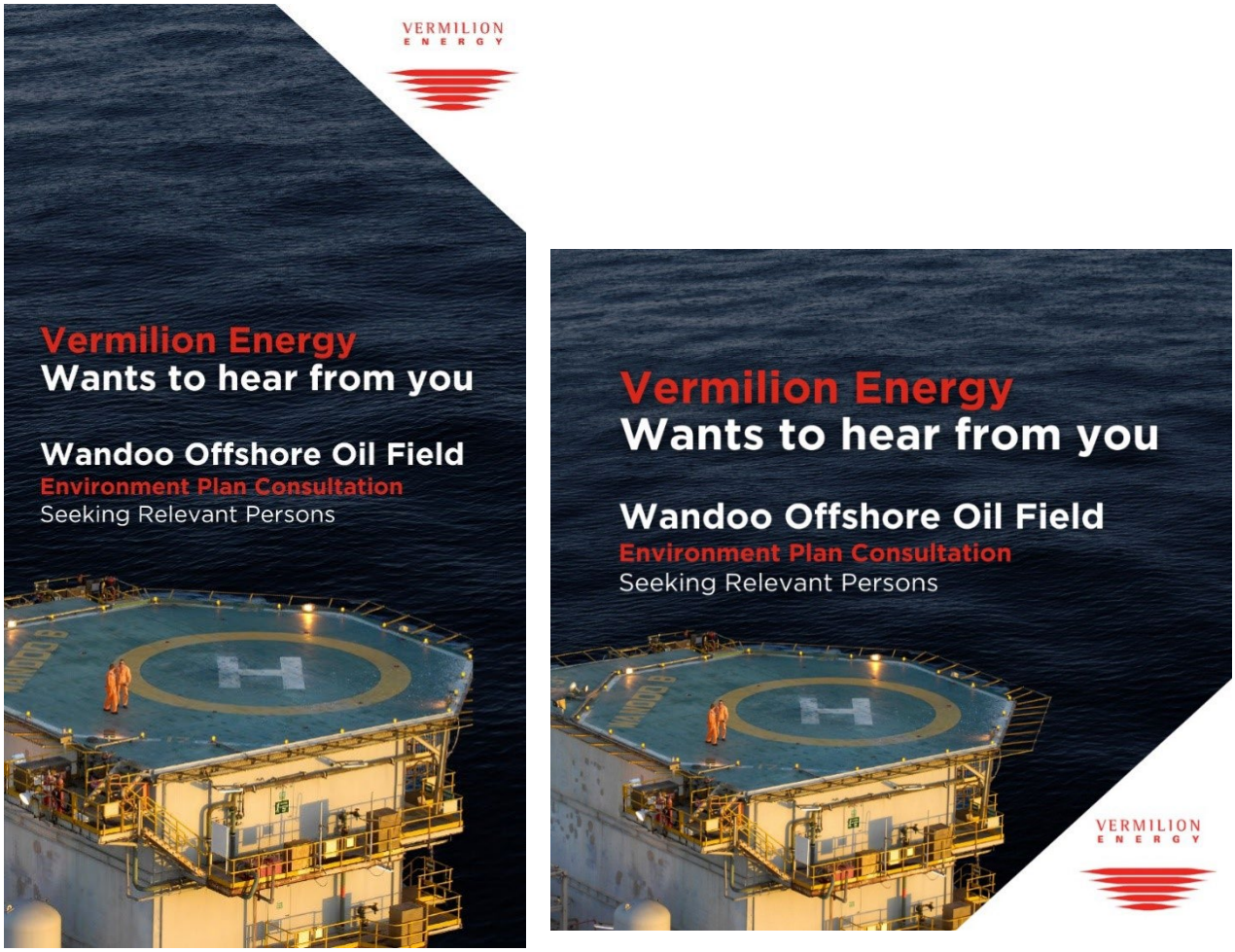
Fundamental objections, threats, social media comments, spam and petitions would not be considered as feedback as they do not meet the intended outcome of consultation.

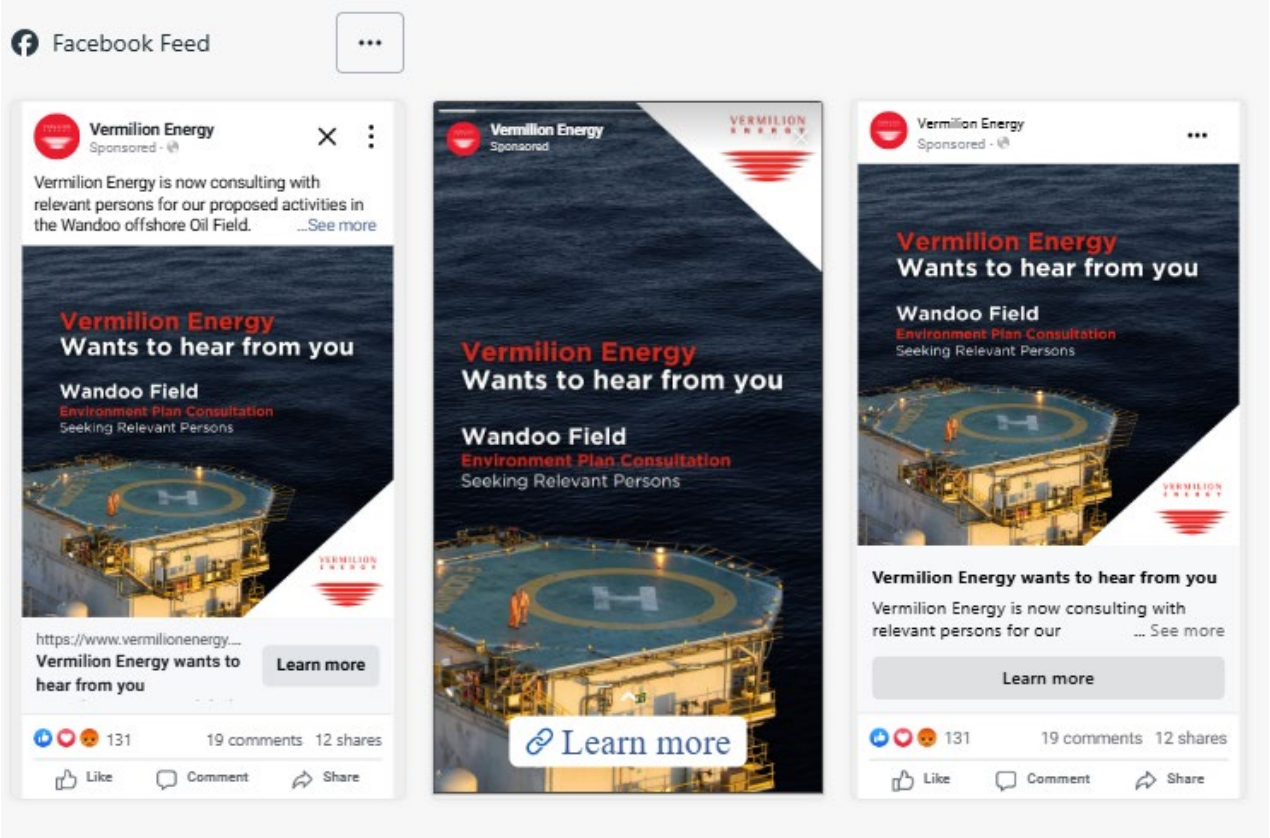
Additional Resources

- Our Wandoo Operations
- Frequently Asked Questions - Wandoo Field Environment Plan Consultation
- NOPSEMA: Environment Plan Content Requirement
- NOPSEMA: Environmental Requirements
- NOPSEMA: Consultation in the Course of Preparing an Environment Plan
- Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations
- NOPSEMA: Environment Plans Assessment Process

Figure 1-19: Social media campaign

Facebook Advertisements




Facebook Feed
Vermilion Energy
Sponsored
Vermilion Energy is now consulting with relevant persons for our proposed activities in the Wandoo offshore Oil Field. ...See more
Vermilion Energy
Wants to hear from you
Wandoo Field
Environment Plan Consultation
Seeking Relevant Persons
https://www.vermilionenergy....
Vermilion Energy wants to hear from you
Learn more
131
19 comments 12 shares
Like
Comment
Share
Vermilion Energy
Sponsored
Vermilion Energy
Wants to hear from you
Wandoo Field
Environment Plan Consultation
Seeking Relevant Persons
Learn more
Vermilion Energy
Sponsored
Vermilion Energy
Wants to hear from you
Wandoo Field
Environment Plan Consultation
Seeking Relevant Persons
Vermilion Energy wants to hear from you
Vermilion Energy is now consulting with relevant persons for our ... See more
Learn more
131
19 comments 12 shares
Like
Comment
Share

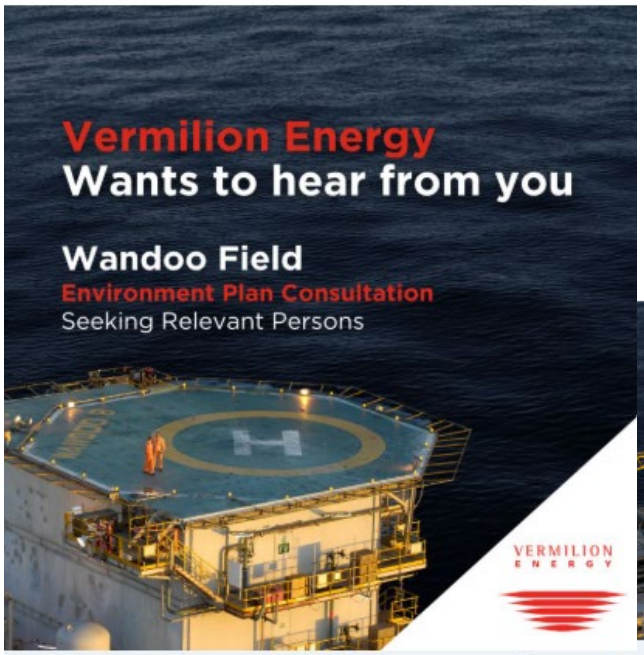
Vermilion Energy
54,686 followers
Promoted

Vermilion Energy is now consulting with relevant persons for our proposed activities in the Wandoo offshore Oil Field.

Wandoo is located in Commonwealth waters within the Carnarvon Basin, approximately 80km northwest of the port of Dampier and 110km northeast of Barrow Island.

Vermilion is seeking to identify and consult with relevant persons whose functions, interests, or activities could be affected by our plans in the Wandoo field.

To learn more, please visit our website. Or,
email: abu.consultation@vermilionenergy.com. Feedback is open until 17 January 2025.



Vermilion Energy wants to hear from you
vermilionenergy.com
Learn more

5

Vermilion Energy
54,686 followers
Promoted

Vermilion Energy is now consulting with relevant persons for our proposed activities in the Wandoo offshore Oil Field.

Wandoo is located in Commonwealth waters within the Carnarvon Basin, approximately 80km northwest of the port of Dampier and 110km northeast of Barrow Island.

Vermilion is seeking to identify and consult with relevant persons whose functions, interests, or activities could be affected by our plans in the Wandoo field.

To learn more, please visit our website. Or,
email: abu.consultation@vermilionenergy.com. Feedback is open until 17 January 2025.

Vermilion Energy wants to hear from you
vermilionenergy.com
Learn more

4

Figure 1-20: Community flyer

VERMILION ENERGY

Wandoo Field
Environment Plans Consultation
SEEKING RELEVANT PERSONS

Vermilion Energy is a long-standing international energy producer operating in North America, Europe, and Australia.

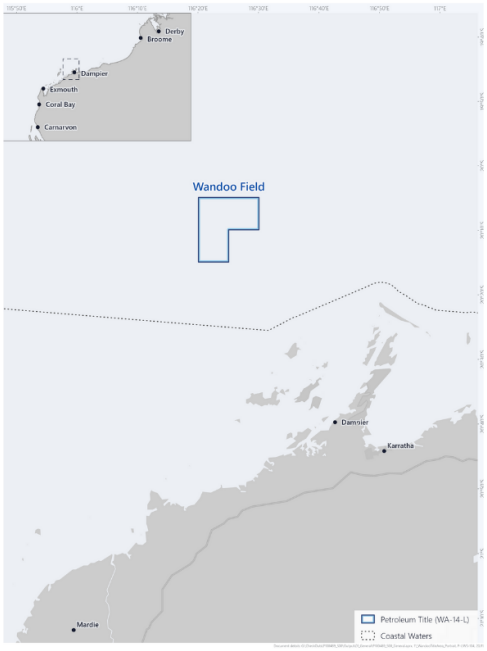
Vermilion Oil and Gas Australia is a subsidiary of Vermilion Energy and has operated in Australia for over 20 years.

Our Australian operations are focused on exploring for and developing oil and gas from the Wandoo Field off the shore of Western Australia.

Wandoo Field

Vermilion currently operates the Wandoo Field within its existing exploration permit WA-14-L.

The Wandoo Field is located in Commonwealth waters within the Carnarvon Basin, approximately 80km northwest of the port of Dampier and 110km northeast of Barrow Island. It operates at a water depth in the range from 50m - 60m.



Seeking Relevant Persons

Vermilion is seeking to identify and consult with relevant persons whose functions, interests or activities may be affected by our proposed activities at the Wandoo Field.

Vermilion wishes to continue developing and producing from the existing exploration permit WA-14-L. The Wandoo Field operates under existing accepted Environmental Plans in place for production and well construction.

Vermilion is planning to submit a five-year revision of the Wandoo Facility EP as Vermilion plans to continue producing hydrocarbons at Wandoo.

The Well Construction EP is updated and reassessed every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Vermilion is preparing two Environment Plans for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

More information is available on our website (below) regarding who is a relevant person to be consulted, the environment that may be affected by the proposed activities, and the proposed control measures.

If you think you may be a relevant person, please contact us to discuss consultation or provide feedback at the below channels.

For More Information

Email: abu.consultation@vermilionenergy.com

To visit our website, scan the QR code

www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Figure 1-21: Newspaper Advertisement

Wandoo Field
Environment Plans Consultation
SEEKING RELEVANT PERSONS

VERMILION ENERGY

Vermilion is seeking to consult with relevant persons whose functions, interests or activities may be affected by proposed activities in the Wandoo Field.

Vermilion Oil and Gas Australia is a subsidiary of Vermilion Energy and has operated in Australia for over 20 years. Our Australian operations focus on exploring for and developing oil and gas from the Wandoo Field off the shore of Western Australia.

The Wandoo Field is located in Commonwealth waters within the Carnarvon Basin, approximately 80km northwest of the port of Dampier and 110km northeast of Barrow Island. It operates at a water depth in the range from 50m - 60m.

Our Activities

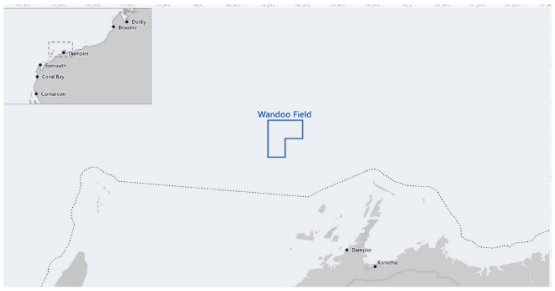
The Wandoo Field currently operates under approved EPs within the production licence area WA-14-L for production and well construction at the Wandoo Facility.

Vermilion is planning to submit a five-year revision of the Wandoo Facility EP as Vermilion plans to continue producing hydrocarbons at Wandoo.

The Well Construction EP is updated and reassessed every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Vermilion is preparing two Environment Plans for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Project Location



Relevant Person Information

Learn more about who is a relevant person to be consulted, the environment that may be affected by the proposed activities, and the proposed control measures on our website.

Your Feedback

If you think you may be a relevant person, please contact us to discuss consultation or provide feedback at the below channels.

We are asking relevant persons to provide feedback by 13 February 2026.

For More Information

Email: abu.consultation@vermilionenergy.com

To visit our website, scan the QR code

www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

1.4 Consultation Report

1.4.1. Summary Consultation Report

Consultation activities undertaken with relevant persons or organisations are summarised in Table 6 and engagement activities undertaken with persons or organisations VOGA assessed as not relevant but chose to contact are summarised in Table 7.

TABLE OF CONTENTS

Table 6: Consultation Report with Relevant Persons or Organisations 8

Commonwealth Government Departments and Agencies 8

Australian Border Force (ABF) (Maritime Border Command) 8

Australian Fisheries Management Authority (AFMA) 10

Australian Hydrographic Office (AHO) 11

Australian Maritime Safety Authority (AMSA) – maritime safety 14

Australian Maritime Safety Authority (AMSA) – marine pollution 17

Department of Agriculture, Forestry and Fisheries (DAFF) – Biosecurity (marine pests) (vessels, aircraft and personnel) 19

Department of Agriculture, Forestry and Fisheries (DAFF) – Fisheries 21

Department of Climate Change, Energy, the Environment and Water (DCCEEW) – Underwater Cultural Heritage (UCH) 23

Department of Defence (DoD) 25

Department of Industry, Science and Resources (DISR) 26

Director of National Parks (DNP) 28

State Government Departments and Agencies 31
Department of Planning, Lands and Heritage (DPLH) 31
Department of Mines, Petroleum and Exploration (DMPE) 33
Department of Primary Industries and Regional Development (DPIRD) – Fisheries 35
Department of Biodiversity, Conservation and Attractions (DBCA) 36
Department of Transport and Major Infrastructure (DTMI) – marine pollution 40
Ningaloo Coast World Heritage Advisory Committee (NCWHAC) 44
Pilbara Development Commission (PDC) 46
Pilbara Ports Authority (PPA) 47
State commercial fisheries 49
Western Australian Fishing Industry Council (WAFIC) 49
State commercial fishing - representative bodies 55
Mackerel Managed Fishery - Area 2 55
Onslow Prawn Limited Entry Fishery 56
Pilbara Crab Managed Fishery 58
Pilbara Line Fishery (Condition) 60
Pilbara Fish Trawl (Interim) Managed Fishery 61
Pilbara Trap Managed Fishery 63
West Coast Rock Lobster Managed Fishery ..... **Error! Bookmark not defined.**
Recreational fishers and marine users and peak representative bodies 65
WA Game Fishing Association (WAGFA) 65

Recfishwest 66
Marine Tourism WA 69
Ashburton Anglers 71
Exmouth Game Fishing Club (EGFC) 72
King Bay Game Fishing Club (KBFC) 74
Nickol Bay Sportsfishing Club (NBSC) 76
Pilbara / Kimberley Recreational Marine Users 78
Gascoyne Recreational Marine Users 79
Energy industry titleholders and operators 80
3D Energi Limited 80
Beagle No. 1 Pty Ltd / Longreach Capital Investment 82
BP Developments Australia 84
Chevron Australia 86
Finder No 16 Pty Ltd 87
INPEX Browse E&P Pty Ltd 89
Jadestone Energy (Australia) Pty Ltd 91
Kato Energy (WA) Pty Ltd 92
Kufpec (Perth) Pty Ltd 94
MEO International Pty Ltd 96
Mobil Australia Resources Company Pty Limited 97
Santos Offshore Pty Ltd 99

Shell Australia Pty Ltd 101
Western Gas (474 P) Pty Ltd 103
Woodside Energy (Australia) Pty Ltd 104
Peak industry representative bodies and associations 106
Australian Energy Producers (AEP) 106
Infrastructure operators 108
Vocus Communications 108
Traditional Custodians and First Nations nominated representative corporations 109
Buurabalayji Thalanyji Aboriginal Corporation (BTAC) 109
Consultation demonstration statement 115
Kariyarra Aboriginal Corporation (KAC) 116
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC), Yinggarda Aboriginal Corporation 122
Ngarluma Aboriginal Corporation (NAC) 124
Wanparta Aboriginal Corporation 129
Wirrawandi Aboriginal Corporation (WAC) 134
Yindjibarndi Aboriginal Corporation (YAC) 137
Murujuga Aboriginal Corporation (MAC) 139
Historical heritage groups or organisations 144
Western Australian Museum (WAM) 144
Local government and recognised local business and community reference/liaison groups or organisations 145
City of Karratha 145

Town of Port Hedland 147
Shire of Ashburton 148
Shire of Exmouth 150
Port Hedland Chamber of Commerce and Industry 152
Onslow Chamber of Commerce and Industry 153
Western Australian Local Government Association (WALGA) 155
Karratha and Districts Chamber of Commerce and Industry (KDCCI) 157
Regional Development Australia (Pilbara) Karratha WA 158
Research institutes 160
Curtin University (Centre for Marine Science and Technology) 160
University of Western Australia (UWA) 162
Commonwealth Scientific and Industrial Research Organisation (CSIRO) 164
Western Australian Marine Science Institution (WAMSI) 165
Australian Institute of Marine Science (AIMS) 167
Australian Marine Sciences Association (WA Branch) 169
Local environment and conservation groups or organisations 170
Protect Ningaloo 170
The Conservation Council of WA (CCWA) 172
Care for Hedland 174
Western Australian Marine Conservation Society (AMCS) 175
Table 7: Consultation Report with Non-Relevant Persons or Organisations 177

Commonwealth commercial fishing - representative bodies 177
Australian Southern Bluefin Tuna Fishery Association (ASBITA) 177
Commonwealth Fisheries Association (CFA) 179
Pearl Producers Association (PPA) 180
Tuna Australia (TA) 181
Seafood Industry Australia (SIA) 185
Western Rock Lobster Council 187
Commonwealth commercial fisheries 188
Southern Bluefin Tuna Fishery 188
Traditional Custodians and First Nations nominated representative corporations 189
Karajarri Traditional Lands Association (Aboriginal Corporation) RNTBC (KTLA) 189
Malgana Aboriginal Corporation (MAC) 191
Nanda Aboriginal Corporation RNTBC (NAC) 192
Nyangumarta Karajarri Aboriginal Corporation RNTBC (NKAC) 193
Nyangumarta Warrarn Aboriginal Corporation RNTBC (NWAC) 194
Yawuru Native Title Holders Aboriginal Corporation RNTBC (Yawuru) 195
Native Title representative bodies 196
Kimberley Land Council (KLC) 196
Yamatji Marlpa Aboriginal Corporation (YMAC) 198
Local environment and conservation groups or organisations 199
Australian Conservation Foundation (ACF) 199

Greenpeace Australia Pacific (GAP).....200
Wilderness Society (WS).....202

Table 6: Consultation Report with Relevant Persons or Organisations

Section 25(1)(a) of the OPGGS(E)R: Departments or agencies of the Commonwealth to which the activities to be carried out under the environment plan may be relevant			
Commonwealth Government Departments and Agencies			
Australian Border Force (ABF) (Maritime Border Command)			
Consultation overview and summary of response on this EP			

• On 22 October 2025, VOGA advised the ABF by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.14).
  ○ The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
  ○ The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
• On 13 November 2025, VOGA emailed ABF following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.1).
  ○ The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
• On 16 December 2025 VOGA emailed ABF and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.1)
  ○ The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
  ○ Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
  ○ VOGA asked ABF to review previous information and provide any feedback by 24 December 2025.			

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**

No response was received on this EP despite a follow-up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process where appropriate (Section 8.5 of the EP).	VOGA accepts that ABF has no comment at this time.	VOGA considers the measures and controls in the EP address ABF's functions, interests or activities

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with ABF for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to ABF on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- In accordance with NOPSEMA's guideline for engaging with Commonwealth government departments or agencies, VOGA consulted with ABF via email.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding ABF of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising ABF that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Australian Fisheries Management Authority (AFMA)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the AFMA by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.15).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 26 October 2025, AFMA emailed VOGA and advised that it had no direct comments on the proposed EP but would like to be included in future consultation and shared its recently updated contact details (SI Report, reference 1.2.1).
    - The email also confirmed that the Commonwealth fisheries stakeholders identified as relevant are accurate and encouraged continued direct engagement with the fisheries stakeholders.
- On 16 December 2025, VOGA emailed AFMA and thanked them for confirming that it had no direct comment on the proposed EP, noting that AFMA would like to be included in future consultation (SI Report, reference 1.2.2).
    - The email also confirmed that VOGA would continue direct engagement with the fisheries stakeholders identified.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
AFMA requested that VOGA consult with relevant fishing stakeholders, including CFA, SIA and Tuna Australia.	VOGA addressed AFMA's request to consult with CFA, SIA, and Tuna Australia and advised that it had continued to consult with the associations directly.	VOGA has consulted relevant fishing industry associations in preparing this EP.	VOGA has assessed the potential for interaction with Commonwealth fisheries and has notified CFA, SIA and Tuna Australia as well as ASBITA and PPA, at its discretion.

While feedback has been received, there were no objections or claims on this EP.	VOGA engages in ongoing consultation throughout the life of an EP. VOGA notes that further feedback may be received as part of ongoing consultation and where appropriate, VOGA will apply its Management of Change and Revision process (Section 8.5 of the EP).	VOGA accepts that AFMA has no further comment at this time.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.
Consultation demonstration statement			
VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with AFMA for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically: **Sufficient Information** • Consultation information provided to AFMA on 22 October 2025 based on their function, interest and activities. • Consultation Information Sheet has been publicly available on the VOGA website since October 2025. **Reasonable period** • A consultation period was noted in the initial consultation correspondence, and consultation material was sent. • Consultation for this EP commenced in October 2025. • VOGA has addressed and responded to AFMA over a two-month period. **Reasonable opportunity** • VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons. • From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA. • In accordance with NOPSEMA's guideline for engaging with Commonwealth government departments or agencies, VOGA consulted with AFMA via email.			
Australian Hydrographic Office (AHO)			
Consultation overview and summary of response on this EP			

- On 22 October 2025, VOGA advised the AHO by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.16).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
    - The email also included a shipping lane map (Record of Consultation, reference 3.16.1).
- On 13 November 2025, VOGA emailed AHO following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.2).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 20 November 2025, AHO emailed VOGA and reported it had no concerns with the activities associated with the EP (SI Report, reference 1.2.3).
    - The email requested that further updates be provided to the AHO once activities are due to begin.
- On 20 November 2025, VOGA emailed AHO and thanked it for its response and advised it will provide further updates once the activities are due to begin. (SI Report, reference 1.2.4).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
AHO has requested VOGA provide updates on the activities once the proposed activities are due to begin.	VOGA noted and actioned AHO's advice.	VOGA notes that the AHO's notification requirements will be incorporated into the relevant sections of this EP.	VOGA will notify the AHO of any activities four weeks prior to commencement (Section 7 Table 7.2, CM-1.2) (Section 9.4.11, Table 9-6). once activities are due to begin.

AHO advised it has no concerns with the activities associated with this EP. While feedback has been received, there were no objections or claims on this EP.	VOGA engages in ongoing consultation throughout the life of an EP. VOGA notes that further feedback may be received as part of ongoing consultation and where appropriate, VOGA will apply its Management of Change and Revision process (Section 8.5 of the EP).		VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with AHO for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to AHO on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.
- VOGA has addressed and responded to AHO over a one-month period.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- In accordance with NOPSEMA's guideline for engaging with Commonwealth government departments or agencies, VOGA consulted with AHO via email.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding AHO of the opportunity to provide feedback.

Australian Maritime Safety Authority (AMSA) – maritime safety

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the AMSA – maritime safety by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.16).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
    - The email also included a shipping lane map (Record of Consultation, reference 3.16.1).
- On 13 November 2025, VOGA emailed AMSA – maritime safety following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.2).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 14 November 2025, AMSA – maritime safety emailed VOGA advising of the consultation outreach receipt and requested that AHO be notified of any activities four weeks prior to commencement (SI Report, reference1.4.1).
    - The email also included:
        - A vessel traffic plot for the locality surrounding the project.
        - Details for the requirements of vessels used at the project.
        - A request to contact AMSA – maritime safety's Response Centre at least 24-48 hours before operations commence.
        - Details of AMSA- maritime safety's spatial data gateway and portal.
- On 14 November 2025, VOGA emailed AMSA – maritime safety to confirm the receipt of the response and thanked AMSA – maritime safety for the information confirming it would contact AHO no less than four working weeks before operations commence for notices to mariners (SI Report, reference 1.4.2).
    - VOGA noted and reviewed the vessel traffic plot provided and acknowledged the presence of vessel traffic in the area during activities.
    - VOGA confirmed it would notify AMSA – maritime safety before operations commence and ensure vessels comply with the International Rules for Preventing Collisions at Sea (COLREG) regulations and evaluate and implement adequate anti-collision measures.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

AMSA – maritime safety has requested the AHO be notified of any activities four weeks prior to commencement.	VOGA will notify AMSA – maritime safety in advance of operations commencing and will notify AHO four weeks prior to commencement.	VOGA has addressed AMSA – maritime safety's request and proposed notification protocols for the ongoing nature of the activities during this EP.	VOGA will notify the AHO of any activities for weeks prior to commencement (Section 7, Table 7.2, CM-1.24) (Section 9.4.11, Table 9-6).
AMSA – maritime safety requested that their Rescue Centre (ARC) and Joint Rescue Coordination Centre (JRCC) be notified 24-48 hours before operations commence, as well as provide all of the details for relevant vessels.	VOGA will notify ASMA – maritime safety's ARC and JRCC 24-48 hours before operations commence, and follow the advice provided.	VOGA has addressed AMSA – maritime safety's requests and proposed notification protocols for the ongoing nature of the activities during this EP.	VOGA will notify the Rescue Centre (ARC) and Joint Rescue Coordination Centre (JRCC) 24-48 hours before operations commence, as well as provide all of the details for relevant vessels (Section 7, Table 7-2, CM-1.34) (Section 9.4.11, Table 9-6).
AMSA – maritime safety requested vessels comply with COLREG regulations, including implementation of adequate anti-collision measures.	VOGA will also ensure all vessels comply with COLREG regulations.	VOGA has addressed AMSA – maritime safety's requests and proposed notification protocols for the ongoing nature of the activities during this EP.	VOGA will ensure vessels comply with COLREG regulations, including implementation of adequate anti-collision measures (Section 7, Table 7-2, CM-1.4) (Section 9.4.11, Table 9-6).

While feedback has been received, there were no objections or claims on this EP.	VOGA engages in ongoing consultation throughout the life of an EP. VOGA notes that further feedback may be received as part of ongoing consultation and where appropriate, VOGA will apply its Management of Change and Revision process (Section 8.5 of the EP).	VOGA accepts that AMSA – maritime safety has no further comment at this time.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with AMSA – maritime safety for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to AMSA – maritime safety on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.
- VOGA has addressed and responded to AMSA – maritime safety over a one-month period.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- In accordance with NOPSEMA's guideline for engaging with Commonwealth government departments or agencies, VOGA consulted with AMSA – maritime safety via email.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding AMSA – maritime safety of the opportunity to provide feedback.

Australian Maritime Safety Authority (AMSA) – marine pollution			
Consultation overview and summary of response on this EP			
• On 22 October 2025, VOGA advised the AMSA – maritime pollution by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.16). o The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation. o The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information. o The email also included a shipping lane map (Record of Consultation, reference 3.16.1). • On 13 November 2025, VOGA emailed AMSA – maritime pollution following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.2). o The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP. • On 16 December 2025 VOGA emailed AMSA – maritime pollution and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.2) o The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA). o Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback. o VOGA asked AMSA – maritime pollution to review previous information and provide any feedback by 24 December 2025. o VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.			
Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**

No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that AMSA – marine pollution has no comment at this time.	VOGA considers the measures and controls in the EP address AMSA – maritime pollution's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with AMSA – marine pollution for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to AMSA – marine pollution on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- In accordance with NOPSEMA's guideline for engaging with Commonwealth government departments or agencies, VOGA consulted with AMSA – marine pollution via email.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding AMSA – marine pollution of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising AMSA – marine pollution that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Department of Agriculture, Forestry and Fisheries (DAFF) – Biosecurity (marine pests) (vessels, aircraft and personnel)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the DAFF - Biosecurity by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.17).
  - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
  - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
  - The email also included VOGA's assessment of biosecurity risks, including:
    - An environmental description and assessment
    - Invasive marine species prevention controls
- On 22 October 2025, DAFF - Biosecurity emailed VOGA and thanked them for contacting the department and provided general information relating to the requirements for ballast water and biofouling management in Australia (SI Report, reference 1.5.1).
- On 13 November 2025, VOGA emailed DAFF - Biosecurity following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.3).
  - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed DAFF - Biosecurity and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.3)
  - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
  - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
  - VOGA asked DAFF to review previous information and provide any feedback by 24 December 2025.
  - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that DAFF - Biosecurity has no comment at this time.	VOGA considers the measures and controls in the EP address DAFF - Biosecurity's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with DAFF - Biosecurity for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to DAFF - Biosecurity on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- In accordance with NOPSEMA's guideline for engaging with Commonwealth government departments or agencies, VOGA consulted with DAFF - Biosecurity via email.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding DAFF - Biosecurity of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising DAFF - Biosecurity that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Department of Agriculture, Forestry and Fisheries (DAFF) – Fisheries
Consultation overview and summary of response on this EP

• On 22 October 2025, VOGA advised the DAFF - Fisheries by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.17).
  o The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
  o The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
  o The email also included VOGA's assessment of biosecurity risks, including:
  ▪ An environmental description and assessment
  ▪ Invasive marine species prevention controls
• On 22 October 2025, DAFF – Fisheries emailed VOGA an auto-reply which advised they would endeavour to respond as soon as possible (SI Report, reference 1.6.1).
• On 13 November 2025, VOGA emailed DAFF - Fisheries following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.3).
  o The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
• On 13 November 2025, DAFF – Fisheries emailed VOGA an auto-reply which advised they would endeavour to respond as soon as possible (SI Report, reference 1.6.2).
• On 16 December 2025 VOGA emailed DAFF - Fisheries and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.3)
  o The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
  o Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
  o VOGA asked DAFF - Fisheries to review previous information and provide any feedback by 24 December 2025.
  o VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.
• On 16 December 2025, DAFF – Fisheries emailed VOGA an auto-reply which advised they would endeavour to respond as soon as possible (SI Report, reference 1.6.3).

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that DAFF - Fisheries has no comment at this time.	VOGA considers the measures and controls in the EP address DAFF - Fisheries' functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with DAFF - Fisheries for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to DAFF - Fisheries on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- In accordance with NOPSEMA's guideline for engaging with Commonwealth government departments or agencies, VOGA consulted with DAFF - Fisheries via email.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding DAFF - Fisheries of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising DAFF - Fisheries that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) – Underwater Cultural Heritage (UCH)			
Consultation overview and summary of response on this EP			
• On 22 October 2025, VOGA advised the DCCEEW – UCH by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.36). o The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation. o The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information. o The email also included VOGA's assessment of underwater cultural heritage, including an analysis of any cultural heritage artifacts identified within the Operational Area or EMBA. • On 23 October 2025, DCCEEW emailed VOGA and advised it had received the enquiry and would action it as soon as possible (SI Report, reference 2.6.1). • On 13 November 2025, VOGA emailed DCCEEW – UCH following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.21). o The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP. • On 16 December 2025 VOGA emailed DCCEEW – UCH and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.4) o The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA). o Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback. o VOGA asked DCCEEW - UCH to review previous information and provide any feedback by 24 December 2025. o VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation. • On 16 December 2025, DCCEEW emailed VOGA and advised it had received the enquiry and would action it as soon as possible (SI Report, reference 2.6.2).			
Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**

No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that DCCEEW – UCH has no comment at this time.	VOGA considers the measures and controls in the EP address DCCEEW-UCH's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with DCCEEW – UCH for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to DCCEEW – UCH on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- In accordance with NOPSEMA's guideline for engaging with Commonwealth government departments or agencies, VOGA consulted with DCCEEW – UCH via email.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding DCCEEW – UCH of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising DCCEEW – UCH that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Department of Defence (DoD)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the DoD by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.18).
  - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
  - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
  - The email also included VOGA's assessment of impacts or risks to defence for this EP, including:
    - An assessment of defence related uses in the Operational Area and EMBA
    - It concluded there are no unexploded ordnance (UXO) potential in the Operational Area.
- On 13 November 2025, VOGA emailed DoD following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.4).
  - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed DOD and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.5)
  - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
  - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
  - VOGA asked DOD to review previous information and provide any feedback by 24 December 2025.
  - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that DoD has no comment at this time.	VOGA considers the measures and controls in the EP address DoD's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with DoD for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to DoD on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- In accordance with NOPSEMA's guideline for engaging with Commonwealth government departments or agencies, VOGA consulted with DoD via email.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding DoD of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising DoD that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Department of Industry, Science and Resources (DISR)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the DISR by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.19).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed DISR following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.5).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed DISR and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.6)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked DISR to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that DISR has no comment at this time.	VOGA considers the measures and controls in the EP address DISR's functions, interests or activities.
Consultation demonstration statement			

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with DISR for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to DISR on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- In accordance with NOPSEMA's guideline for engaging with Commonwealth government departments or agencies, VOGA consulted with DISR via email.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding DISR of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising DISR that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Director of National Parks (DNP)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the DNP by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.20).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
    - The email advised that there are no Australian Marine Parks within the Operational Area and included VOGA's assessment of the nearest relevant marine parks, including:

- An analysis of what marine parks may be situated near the Operational Area
- An assessment of potential risks to Australian Marine Parks
- A NOPSEMA-approved oil spill response plan and a list of parks within the EMBA that will be contacted in the event of a spill following a review of hydrocarbon spill modelling.

- On 13 November 2025, VOGA emailed DNP following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.6).
  - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 13 November 2025, DNP emailed VOGA and clarified that planned activities do not overlap Australian Marine Parks. DNP confirmed that no authorisation is needed from DNP (SI Report, reference 1.4.1).
  - DNP confirmed that it should be made aware of any oil or gas pollution incidences which occur within a marine park, and provided contact details for the officer to contact, as well as details on what any notification should include.
  - The email provided further information on titleholder requirements, the North-west Network Management Plan, and information for potential emergency responses.
- On 20 November 2025, VOGA emailed DNP and thanked them for their response and the information provided (SI Report, reference 1.4.2).
  - The email confirmed that VOGA will contact DNP if details regarding the activity change and result in an overlap with or new impact to a marine park, or for emergency responses.
  - VOGA also noted DNP's confirmation that planned activities do not overlap with any Australian Marine Parks.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
DNP confirmed that the activity does not overlap any Australian Marine Park.	VOGA noted DNP's confirmation of no activity overlap with Australian Marine Parks.	VOGA confirmed that no activities are set to overlap marine parks.	AMPs are assessed in Section 3.6.5 of the EP.

DNP confirmed that no authorisation is required for this activity.	VOGA noted that there were no requirements from the DNP at this time.	VOGA noted that there were no requirements from the DNP at this time.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.
DNP requested an update should the operational area change.	VOGA noted DNP's request for contact regarding any activity change and will notify the Marine Compliance Duty Officer within 24 hours of any spill.	VOGA confirmed that it will contact the DNP regarding any activity change.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.
DNP requested that the 24-hour Marine Compliance Duty Officer be notified of any spill or pollution. While feedback has been received, there were no objections or claims on this EP.	VOGA noted DNP's request to notify the Marine Compliance Duty Officer within 24 hours of any spill.	VOGA confirmed that it will notify the Marine Compliance Duty Officer within 24 hours of any spill.	VOGA will notify DNP of any spill associated with this EP (Section 7, Table 7-2, CM-11.20) (Section 9.4.11, Table 9-6).
Consultation demonstration statement			

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with DNP for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to DNP on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.
- VOGA has addressed and responded to DNP over a one-month period.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- In accordance with NOPSEMA's guideline for engaging with Commonwealth government departments or agencies, VOGA consulted with DNP via email.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding DNP of the opportunity to provide feedback.

Section 25(1)(a) and (b) of the OPGGS(E)R: Departments or agencies of Western Australia to which the activities to be carried out under the environment plan may be relevant.

State Government Departments and Agencies

Department of Planning, Lands and Heritage (DPLH)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the DPLH by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.37).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.

- The email also outlined VOGA's assessment of underwater cultural heritage and its consultation with the West Australian Museum and the Department of Climate Change, Energy, The Environment, and Water as part of the consultation outreach.

- On 22 October 2025, DPLH emailed VOGA an automatic response to confirm VOGA's email had been received and would be forwarded to the appropriate team for action (SI Report, reference 2.1.1).
- On 3 November 2025, DPLH emailed VOGA confirming that the EP is located in Commonwealth waters and the Land Use Management Division of DPLH has no comment on the EP (SI Report, reference 2.1.2).
  - The email also confirmed that the EMBA partially intersects with State Waters and several marine reserves and conservation areas and recommended VOGA consult with the DBCA, DWER and DCCEEW regarding environmental disturbances and impacts, as well as Western Australian Museum the delegated authority for the management of commonwealth historic shipwrecks and relics.
- On 13 November 2025, VOGA emailed DPLH to thank them for their response and the information provided (SI Report, reference 2.1.3).
  - The email confirmed that VOGA consults with the State and Commonwealth agencies as well as the Western Australian Museum.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
DPLH requested that VOGA consult with DBCA, DWER, DCCEEW and Western Australian Museum.	VOGA noted DPLH's request for it to consult with DBCA, DWER, DCCEEW and Western Australian Museum.	VOGA advised DPLH that it consults with DBCA, DWER, DCCEEW and Western Australian Museum.	VOGA considers the measures and controls in the EP address DPLH's functions, interests or activities.
DPLH has no comment on this EP. While feedback has been received, there were no objections or claims on this EP.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that DPLH has no comment at this time.	VOGA considers the measures and controls in the EP address DPLH's functions, interests or activities.
Consultation demonstration statement			

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with DPLH for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to DPLH on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.
- VOGA has addressed and responded to DPLH over a one-month period.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.

Department of Mines, Petroleum and Exploration (DMPE)

Consultation overview and summary of response on this EP

- On 13 October 2025, VOGA emailed DMPE to enquire who the appropriate contact person was in the department following the machinery of government changes effective 1 July 2025 (SI Report, reference 1.8.1).
- On 22 October 2025, VOGA advised the DMPE by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.21).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed DMPE following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.8).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

- On 16 December 2025 VOGA emailed DMPE and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.7)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked DMPE to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that DMPE has no comment at this time.	VOGA considers the measures and controls in the EP address DMPE's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with DMPE for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to DMPE on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.

- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding DMPE of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising DMPE that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Department of Primary Industries and Regional Development (DPIRD) – Fisheries

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the DPIRD by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.22).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
    - The Commercial Fisher Information Sheet included an overview of the proposed activities; key information for the commercial fishing sector about the activities; coordinates for operational areas; an activity summary; assessment of commercial fishing, potential effects and impacts; and VOGA's impact assessment (Record of Consultation, reference 1.2).
- On 13 November 2025, VOGA emailed DPIRD following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.7).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed DPIRD and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.8)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked DPIRD to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that DPIRD has no comment at this time.	VOGA considers the measures and controls in the EP address DPIRD's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with DPIRD for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to DPIRD on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding DPIRD of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising DPIRD that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Department of Biodiversity, Conservation and Attractions (DBCA)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the DBCA by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.23).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
    - The email acknowledged the guidance provided by DBCA in previous consultations and confirmed that these areas have been assessed as part of the EP development.
- On 13 November 2025, VOGA emailed DBCA following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.9).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 21 November 2025, DBCA emailed VOGA thanking them for the information and that it is still finalising its advice to VOGA and that it is unable to meet the deadline of 21 November 2025, due to staff changes. DBCA sought an extension and requested a date that would be acceptable to VOGA (SI Report, reference 2.2.1).
- On 25 November 2025, VOGA emailed DBCA thanking them for their email and asking DBCA if they could forward their advice by 11 December 2025 (SI Report, reference 2.2.2).
- On 2 December 2025, DBCA emailed VOGA thanking them for the consultation information and provided comments for consideration (SI Report, reference 2.2.3)
    - The email outlined considerations for marine parks and conservation reserves located within the project EMBA, including the importance of values and documentation prior to activities being conducted. DBCA requested the following:
        - VOGA establish baseline survey data on current contamination and ecological values within the EMBA, as well as risk assessment and information on threatened and protected fauna.
        - VOGA assess what baseline information may be required and determine suitable methods to identify information to ensure the impacts on ecological values are monitored and remediated. This includes a before-after, control-impact (BACI) framework in planning and evaluating VOGA's management response.
        - In the event of a hydrocarbon release, it requested that VOGA notify DBCA's Pilbara regional office.
- On 4 December 2025, VOGA emailed DBCA thanking them for their email and the guidance provided on ecological important areas within the EMBA (SI Report, reference 2.2.4). In the email, VOGA:
    - Confirmed that the ecologically important areas had been assessed as part of this EP and that VOGA maintains an understanding of ecological importance within and adjacent to the operational areas and EMBA.
    - Outlined an assessment of potential management and mitigation measures that had been considered in this EP, and all relevant controls had been adopted to reduce the impact to as low as reasonably practical (ALARP).

- Outlined that in accordance with the OPGGS(E)R 21(1) - (7), VOGA included details of the particular values and sensitivities of the environment within and in proximity to operational areas and the EMBA for impact assessment and risk evaluation.
- VOGA confirmed that as per the Oil Pollution Emergency Plan (OPEP), that in the event of an oil spill where marine wildlife is potentially impacted, VOGA would notify DBCA's Pilbara regional office.
- VOGA noted that DBCA would not implement an oiled wildlife management response on behalf of a petroleum operator.
- VOGA also advised that it has referred to guidance from the Department of Transport (DoT) and has consulted with the DoT – marine pollution as the jurisdictional authority while developing the OPEP.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
DBCA provided guidance on ecologically important areas within the EMBA, including marine parks in the vicinity of the proposed operations, and requested that baseline values and potentially affected environment areas be documented prior to any operations commencing.	VOGA acknowledged that areas of ecological importance should be assessed and that baseline values should be documented prior to operations.	VOGA confirmed that areas of ecological importance have been assessed as part of this EP's development. VOGA maintains a baseline understanding of areas of ecological importance within and adjacent to the operational areas and EMBA.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.
DBCA requested that VOGA acquire the relevant information to implement a Before-After, Control-Impact (BACI) framework.	VOGA acknowledged that a baseline understanding of ecological importance is important, and that VOGA follows the BACI framework.	VOGA confirmed an assessment of potential management and mitigation measures was considered in this EP to reduce the impact to ALARP.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.

DBCA requested VOGA contact DBCA's Pilbara regional office in the event of a hydrocarbon release.	VOGA acknowledged the request to contact DBCA's regional office in the event of a hydrocarbon release.	VOGA confirmed that it will contact DBCA's Pilbara regional office in the event of a hydrocarbon release.	VOGA will notify DBCA of any hydrocarbon release associated with this EP (Section 7, Table 7-2, CM-11.20) (Section 9.4.11, Table 9-64).
DBCA requested VOGA refer to the DoT web content and an offshore industry guidance note for WA marine oil pollution. While feedback has been received, there were no objections or claims on this EP.	VOGA acknowledged the request to refer to the DoT information and industry guidance note. VOGA engages in ongoing consultation throughout the life of an EP. VOGA notes that further feedback may be received as part of ongoing consultation and where appropriate, VOGA will apply its Management of Change and Revision process (Section 8.5 of the EP).	VOGA confirmed it has referred to the DoT's web content regarding marine pollution and has consulted with the DoT while developing the OPEP.	VOGA confirmed it has referred to the DoT's web content regarding marine pollution and has consulted with the DoT while developing the OPEP.
Consultation demonstration statement			
VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with DBCA for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically: **Sufficient Information** • Consultation information provided to DBCA on 22 October 2025 based on their function, interest and activities. • Consultation Information Sheet has been publicly available on the VOGA website since October 2025. **Reasonable period**			

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.
- VOGA has addressed and responded to DBCA over a two-month period.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding DBCA of the opportunity to provide feedback.

Department of Transport and Major Infrastructure (DTMI) – marine pollution

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the DTMI by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.24).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- The email included a reference to DTMI's previous advice to provide them with the information requested in the Guidance Note information as per Appendix 6 of the department's industry guidance note – Marine Oil Pollution: Response and Consultation Arrangements (July 2020).
- On 22 October 2025, DTMI emailed VOGA acknowledging receipt of its email and advising that the mailbox is only monitored during normal business hours (SI Report, reference 2.3.1)
- On 13 November 2025, VOGA emailed DTMI following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.10).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 24 November 2025, DTMI emailed VOGA and thanked them for the opportunity to review the EP (SI Report, reference 2.3.2).
    - The email included DTMI's observations and recommendation including:
        - The importance of determining oil properties in spill risk assessment and response
        - Identification of incorrect flash points
        - Potential implications for incorrect oil types and on oil spill modelling

- On 9 December 2025, VOGA emailed DTMI and thanked them for their feedback and assessment of the EP and responded to their query regarding the MDO and MGO oil types (SI Report, reference 2.3.3).
    - The email response noted that:
        - Different hydrocarbon parameters were used between the EP DTMI assessed and the parameters provided to DTMI to review
        - Acknowledged an incorrect Flash Point had been used for both MDO and MGO and confirmed that all documentation would be updated
        - Confirmed that the Flash Point was not used in the oil spill modelling and will not impact VOGA's oil spill response strategy determinations
        - Noted that our oil spill modelling was in fact conservative due to the use of a higher hydrocarbon residual component and that ISO 8217 standards dose not state residue content or boiling point distributions for marine fuels
        - Provided the current status of VOGA EP assessments.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
DTMI provided guidance on the importance of determining oil properties in spill risk assessment and response.	VOGA acknowledged that different hydrocarbon parameters were used between the EP DTMI assessed and the parameters provided to DTMI to review.	VOGA confirmed that areas of ecological importance have been assessed as part of this EP's development. VOGA maintains a baseline understanding of areas of ecological importance within and adjacent to the operational areas and EMBA.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.
DTMI identified incorrect flash points for both MDO and MGO and requested that VOGA update the relevant information.	VOGA acknowledged an incorrect Flash Point had been used for both MDO and MGO.	VOGA confirmed that the Flash Point was not used in the oil spill modelling and will not impact VOGA's oil spill response strategy determinations.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.

DTMI requested update on the potential implications for incorrect oil types and on the oil spill modelling. While feedback has been received, there were no objections or claims on this EP.	VOGA acknowledged an incorrect Flash Point had been used for both MDO and MGO and confirmed that all documentation would be updated. VOGA engages in ongoing consultation throughout the life of an EP. VOGA notes that further feedback may be received as part of ongoing consultation and where appropriate, VOGA will apply its Management of Change and Revision process (Section 8.5 of the EP).	VOGA confirmed that its oil spill modelling was in fact conservative due to the use of a higher hydrocarbon residual component and that ISO 8217 standards dose not state residue content or boiling point distributions for marine fuels.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with DTMI for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to DTMI on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.
- VOGA has addressed and responded to DTMI over a two-month period.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.

- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding DTMI of the opportunity to provide feedback.

Department of Water and Environmental Regulation (DWER)

Consultation overview and summary of response on this EP

- On 11 November 2025, VOGA advised DWER by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.42).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 25 November 2025, VOGA emailed DWER following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.26).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 25 November 2025, DWER emailed VOGA and confirmed the project falls outside the remit of the North West Region of DWER and that it had forwarded the information to the EPA and the Marine Ecosystems sections of DWER and suggested following up. (SI Report, reference 2.5.1).
- On 9 December 2025, VOGA emailed DWER and thanked them for their email and advice that it falls outside the remit of the North West Region of DWER and also thanked them for forwarding the consultation to the EPA and Marine Ecosystems Branch as it may be more relevant to those sections. (SI Report, reference 2.5.2).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
DWER confirmed the project falls outside the remit of the North West Region of DWER and forwarded the email to the EPA and Marine Ecosystems Branch. While feedback has been received, there were no objections or claims on this EP.	VOGA noted DWER's advice and noted there were no requirements from DWER at this time. VOGA engages in ongoing consultation throughout the life of an EP. VOGA notes that	VOGA noted that there no requirements from DWER at this time.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.

	further feedback may be received as part of ongoing consultation and where appropriate, VOGA will apply its Management of Change and Revision process (Section 8.5 of the EP).		

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with DWER for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to DWER on 11 November 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.
- VOGA has addressed and responded to DWER over a one-month period.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 25 November 2025, reminding DWER of the opportunity to provide feedback.

Ningaloo Coast World Heritage Advisory Committee (NCWHAC)

Consultation overview and summary of response on this EP

- On 13 October 2025, DBCA emailed VOGA to advise that they were no longer the contact for NCWHAC and to ask to be removed from the mailing list (SI Report, reference 2.8.1).
- On 11 November 2025, VOGA advised the NCWHAC by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.44).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 25 November 2025, VOGA emailed NCWHAC following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.28).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite a follow-up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process where appropriate (Section 8.5 of the EP).	VOGA accepts that NCWHAC has no comment at this time.	VOGA considers the measures and controls in the EP address NCWHAC's functions, interests or activities

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with NCWHAC for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to NCWHAC on 11 November 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.

- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 25 November 2025, reminding NCWHAC of the opportunity to provide feedback.

Pilbara Development Commission (PDC)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the PDC by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.25).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed PDC following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.11).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed PDC and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.9)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked PDC to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite a follow-up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process where appropriate (Section 8.5 of the EP).	VOGA accepts that PDC has no comment at this time.	VOGA considers the measures and controls in the EP address PDC's functions, interests or activities

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with PDC for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to PDC on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding PDC of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising PDC that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Pilbara Ports Authority (PPA)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the PPA by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.26).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed PPA following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.12).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 17 November 2025, PPA emailed VOGA stating that they had no feedback regarding the EP (SI Report, reference 2.4.1).
- On 25 November 2025, VOGA emailed PPA thanking them for their reply and noting that they had no feedback in relation to the proposed activities (SI Report, reference 2.4.2).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
PPA advised it has no feedback regarding the EP. While feedback has been received, there were no objections or claims on this EP.	VOGA engages in ongoing consultation throughout the life of an EP. VOGA notes that further feedback may be received as part of ongoing consultation and where appropriate, VOGA will apply its Management of Change and Revision process (Section 8.5 of the EP).	VOGA accepts that PPA has no further comment at this time.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with PPA for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to PPA on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.
- VOGA has addressed and responded to PPA over a one-month period.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding PPA of the opportunity to provide feedback.

Section 25(1)(d) of the OPGGS(E)R: Persons or organisations whose functions, interests or activities may be affected by the activities to be carried out under the environment plan

State commercial fisheries

Western Australian Fishing Industry Council (WAFIC)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised WAFIC by email of the proposed activity and provided a Consultation Information Sheet and Commercial Information Sheet (Record of Consultation, reference 1.1, 1.2 and 3.27).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
    - The Commercial Fisher Information Sheet included an overview of the proposed activities; key information for the commercial fishing sector about the activities; coordinates for operational areas; an activity summary; assessment of commercial fishing, potential effects and impacts; and VOGA's impact assessment (Record of Consultation, reference 1.2).
- On 10 November 2025, WAFIC emailed VOGA seeking an extension to Monday 24 November 2025. (SI Report, reference 5.1.2).
- On 11 November 2025, VOGA emailed WAFIC confirming the requested extension. (SI Report, reference 5.1.3).
- On 25 November 2025, WAFIC emailed VOGA providing comments and questions in relation to the proposed activities in the EP particularly about decreased water quality and the potential impact on valuable commercial species and their habitats, especially given the recent stock assessment showing the Pilbara Demersal Scalefish Resource is at severe risk and asked the following questions: (SI Report, reference 5.1.4)
    - How will drill cuttings be monitored, and what controls or procedures are in place to minimise impacts and demonstrate ALARP.

- Acknowledge that further research is needed to confirm if it is safe for fishers to operate near drill cuttings. Even if safety risks are managed, could there still be a risk of contamination to catch?
- Has VOGA considered cumulative impacts of decreased water quality from proposed activities on the marine environment and was the assessment included in the EP?
- Can VOGA clarify the exact locations and habitat characteristics of designated anchorage areas for support vessels?
- Given commercial fishers have previously raised concerns about anchor chain swing or drag impacting benthic habitats and that previous proponents anchoring barges and tugs on coral lumps northeast of the Montebello Islands, causing direct habitat damage, WAFIC requested confirmation of the measures that will be implemented to ensure that anchoring associated with the EP does not impact sensitive benthic habitats or key fishing grounds.
- For unplanned events, WAFIC understands Vermillion will have the following in place:
  - WAFIC listed as a contact in the Oil Spill Response planning documents, with notification to be made within 24 hours of any event. WAFIC can also assist with communication to the fishing industry if required.
  - Vermilion retains a current list of WA commercial fisheries that may be impacted by unplanned spill scenarios.
  - Vermilion, as required under the Regulations, will maintain an effective Operational and Scientific Monitoring Program (OSMP) to determine impacts and monitor environmental recovery.
- WAFIC also appreciates Vermilion's communication with mariners through notices on marine safety information, drilling commencement, and temporary exclusion zones. WAFIC requests to be included in any vessel-operation notifications for this EP.

- On 4 December 2025, VOGA responded to WAFIC's feedback and questions and provided the following responses: (SI Report, reference 5.1.5).
  - The controls implemented for the management of drill cuttings
    - only water-based drilling fluids will be used during exploration drilling with polymers that break down naturally in the environment
    - only drilling and completion fluids that comply with VOGA's Chemical Selection Process will be used
    - a drilling unit solids control system will be used to remove fines from drilling fluids to keep fluids in specification for reuse to minimise the volume of fluids being discharged
  - The measures being taken to mitigate contamination risks
    - the water-based mud meets VOGA's Chemical Selection Process requirements, and the short drilling duration ensures limited discharges
    - the assessment undertaken has determined that no change in water quality parameters is expected that may impact the quality of habitat for fishes
    - research indicates that the discharge of water-based drilling muds has little to no long-term adverse biological on either the water column or the seafloor.
  - The cumulative impacts of decreased water quality
    - VOGA will consider the cumulative impacts of decreased water quality from the proposed activities within its impact and risk assessment
  - The exact locations and habitat characteristics of the designated anchorage areas for support vessels
    - All support vessels would anchor within VOGA's safe anchorage locations or within the Operational Area and provided co-ordinates of the area.
    - The benthic habitat within these locations is flat and featureless, with no sensitive habitats.
    - The localise nature of the disturbance and lack of significant benthic habitat in the region, potential impacts from anchoring are considered minimal.

- The procedures in the event of an unplanned event
  - VOGA's Oil Spill Contingency Plan includes notifying WAFIC within 24 hours of any event of a Level 2 oil spill.
  - Thanked WAFIC for the offer to communicate with the fishing industry should this occur.
  - Advised VOGA routinely updates its EPs to ensure all existing environment information is up-to-date and includes a current list of State commercial fisheries that could potentially be impacted and is included in the updates.
  - VOGA has prepared and adopted an Oil Spill Monitory Plan (OSMP) utilising the joint industry framework for operational and scientific monitoring (OSM).
- Thanked WAFIC for sharing its position regarding consultation with the WA fishing industry for unplanned events and confirmed VOGA would apply WAFIC's position to its consultation methodology.
- VOGA confirmed the following:
  - Baseline scientific data on aquatic organisms and the marine environment is included within Vermilion's OSMP.
  - An understanding of the Fish Resources Management Act 1994 and the associated procedures form part of Vermilion's industry and government liaison process.
  - Scientific monitoring for potential fish tainting in the event of an oil spill is included within Vermilion's OSMP.
  - Scientific and operational monitoring in the event of an oil spill is the basis of Vermilion's OSMP.
  - Should this occur, Vermilion would consider the matter of compensation.

- On 9 December 2025, WAFIC emailed VOGA thanking them for the responses to their feedback and confirmed it had no further comments at this time. (SI Report, reference 5.1.6).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
WAFIC requested to be informed as to how drill cuttings will be monitored, and what controls or procedures are in place to minimise impacts and demonstrate ALARP.	VOGA accepts WAFIC's request for drill cutting monitoring, and its request for what controls or procedures are in place to minimise impacts and demonstrate ALARP.	VOGA advised WAFIC only water-based drilling fluids will be used during exploration drilling with polymers that break down naturally in the environment, only drilling and completion fluids that comply with VOGA's Chemical Selection Process will be used, and that a drilling unit solids control system will be used to remove fines from drilling fluids to keep fluids in specification for reuse to minimise the volume of fluids being discharged. The measures being taken to mitigate contamination risks includes the water-based mud meets VOGA's Chemical Selection Process	VOGA considers the measures and controls in the EP are appropriate.

		requirements, and the short drilling duration ensures limited discharges. VOGA advised the assessment undertaken has determined that no change in water quality parameters is expected that may impact the quality of habitat for fishes and research indicates that the discharge of water-based drilling muds has little to no long-term adverse biological on either the water column or the seafloor.	
WAFIC asked whether VOGA considered cumulative impacts of decreased water quality from proposed activities on the marine environment and did it include the assessment in the EP.	VOGA accepts WAFIC's request for cumulative impacts of water quality from proposed activities.	VOGA has considered the cumulative impacts of decreased water quality from the proposed activities within its impact and risk assessment.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required
In the event of a Level 2 oil spill, WAFIC requested to be notified of any unplanned event within 24 hours.	VOGA accepts WAFIC's request for notification in the event of an unplanned event or spill.	VOGA will notify WAFIC within 24 hours in the event of a Level 2 oil spill.	VOGA will notify WAFIC of any Level 2 spills associated with this EP within 24 hours (Section 7, Table 7-2, CM-11.20) (Section 9.4.11, Table 9-6).

WAFIC requested to be included in any vessel operation notification associated with this EP.	VOGA accepts WAFIC's request for inclusion in vessel operation notification.	VOGA will notify WAFIC of any vessel operations associated with this EP.	VOGA will notify WAFIC of any vessel operations associated with this EP (Section 7, Table 7-2, CM-1.3) (Section 9.4.11, Table 9-6).
WAFIC requested ongoing communication with mariners regarding notices on activity commencement and distances regarding temporary exclusion zones.	VOGA accepts WAFIC's request regarding ongoing communication with mariners.	VOGA has implemented a fee-for-service model with WAFIC to communicate with mariners on activity commencement and distances regarding exclusion zones.	VOGA will notify WAFIC of any vessel operations associated with this EP (Section 7, Table 7-2, CM-1.3) (Section 9.4.11, Table 9-6).
WAFIC requested VOGA clarify the exact locations and habitat characteristics of designated anchorage areas for support vessels. WAFIC requested confirmation of the measures that will be implemented to ensure that anchoring associated with the EP does not impact sensitive benthic habitats or key fishing grounds.	VOGA accepts WAFIC's request for clarification of locations and habitat characteristics of anchorage areas for support vessels and confirmation of measures to ensure anchoring does not impact sensitive benthic habitats.	VOGA advised that all support vessels would anchor within VOGA's safe anchorage locations or within the Operational Area and provided co-ordinates of the area. VOGA noted the benthic habitat within these locations is flat and featureless, with no sensitive habitats. The localise nature of the disturbance and lack of significant benthic habitat in the region, indicates potential impacts from anchoring are considered minimal.	VOGA considers the measures and controls in the EP are appropriate.

WAFIC requested that VOGA have suitable OSMP to determine impacts and recovery of marine environments.	VOGA accepts WAFIC's request for suitable OSMP's.	VOGA has initiated appropriate controls in an Oil Spill Management Plan and has initiated procedures as part of the Fish Resources Management Act 1994 as part of VOGA's industry and government liaison process, including scientific monitoring for potential fish tainting and in the event of an oil spill as the basis of VOGA's OSMP.	VOGA has enacted the appropriate controls as outlined in the EP.
WAFIC requested VOGA note WAFIC's position regarding consultation and unplanned events. While feedback has been received, there were no objections or claims on this EP.	VOGA notes WAFIC's position regarding consultation and unplanned events.	VOGA notes WAFIC's position regarding ongoing consultation and unplanned events. VOGA engages in ongoing consultation throughout the life of an EP. VOGA notes that further feedback may be received as part of ongoing consultation and where appropriate. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with WAFIC for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to WAFIC on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Commercial Fisher Information Sheet has been provided to stakeholder and publicly available on the VOGA website since October 2025.
- Consultation for this EP commenced in October 2025.
- VOGA has addressed and responded to WAFIC over a one-month period.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.

State commercial fishing - representative bodies

Mackerel Managed Fishery - Area 2

Consultation overview and summary of response on this EP

- In accordance with VOGA's "Fee for Service Agreement" with WAFIC and WAFIC's 'Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector' WAFIC engaged the licence holders of Mackerel Managed Fishery - Area 2 on behalf of VOGA as their fishing area intersects the operational area and there is expected fishing effort (Record of Consultation, references 3.27).
- On 22 October 2025, VOGA provided WAFIC with consultation information to distribute to licence holders of Mackerel Managed Fishery - Area 2 (SI Report, reference 6.1.1 and Record of Consultation, reference 3.27).
- On 23 October 2025, WAFIC contacted licence holders of Mackerel Managed Fishery – Area 2 to advise of the proposed activity and provided a Consultation Information Sheet and Commercial Fisher Information sheet (SI Report, reference 6.1.2 and Record of Consultation, reference 1.1 and 1.2).
    - The email included an activity summary, directions for providing input into the EP development through consultation, the closing date and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information Sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the Environment That May Be Affected (EMBA) based on a review of publicly available information.
    - The Commercial Fisher information sheet included an overview of the proposed activities, key information about the commercial fishing sector, coordinates for operational areas, an activity summary, an assessment of commercial fishing, potential effects and impacts, and VOGA's impact assessment.
- On 25 November 2025, WAFIC emailed VOGA advising that it did not receive any feedback from licence holders on this EP, including from Mackerel Managed Fishery – Area 2 (SI Report, reference 6.1.3).
- On 4 December 2025, VOGA emailed WAFIC thanking them for their advice that there was no feedback from licence holders on this EP, including from Mackerel Managed Fisher – Area 2 (SI Report, reference 6.1.4).

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA accepts that the individual relevant licence holders of the Mackerel Managed Fishery – Area 2 have no comment at this time.	VOGA has consulted DPIRD, WAFIC and individual relevant licence holders via WAFIC. VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA has assessed the relevancy of State fisheries in Section 3.5.1 of this EP. VOGA will notify DPIRD and WAFIC prior to the commencement and at the end of the activity. No additional measures or controls are required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Mackerel Managed Fishery - Area 2 for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient information

- Consultation information was provided to the Mackerel Managed Fishery - Area 2 through WAFIC on 23 October 2025, based on their function, interest, and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence and consultation material sent.
- Commercial Fisher Information Sheet, developed specifically for fisheries, was provided to the Mackerel Managed Fishery - Area 2 on 23 October 2025.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.

Onslow Prawn Limited Entry Fishery

Consultation overview and summary of response on this EP

- In accordance with VOGA's "Fee for Service Agreement"with WAFIC and WAFIC's 'Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector' WAFIC engaged the licence holders of Onslow Prawn Limited Entry Fishery on behalf of VOGA as their fishing area intersects the operational area and there is expected fishing effort (Record of Consultation, references 3.27).
- On 22 October 2025, VOGA provided WAFIC with consultation information to distribute to licence holders of Onslow Prawn Limited Entry Fishery (SI Report, reference 6.1.1 and Record of Consultation, reference 3.27).
- On 23 October 2025, WAFIC contacted licence holders of Onslow Prawn Limited Entry Fishery to advise of the proposed activity and provided a Consultation Information Sheet and Commercial Fisher Information sheet (SI Report, reference 6.1.2 and Record of Consultation, reference 1.1 and 1.2).
    - The email included an activity summary, directions for providing input into the EP development through consultation, the closing date and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information Sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the Environment That May Be Affected (EMBA) based on a review of publicly available information.
    - The Commercial Fisher information sheet included an overview of the proposed activities, key information about the commercial fishing sector, coordinates for operational areas, an activity summary, an assessment of commercial fishing, potential effects and impacts, and VOGA's impact assessment.
- On 25 November 2025, WAFIC emailed VOGA advising that it did not receive any feedback from licence holders on this EP, including from Onslow Prawn Limited Entry Fishery (SI Report, reference 6.1.3).
- On 4 December 2025, VOGA emailed WAFIC thanking them for their advice that there was no feedback from licence holders on this EP, including from Onslow Prawn Limited Entry Fishery (SI Report, reference 6.1.4).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA accepts that the individual relevant licence holders of the Onslow Prawn Limited Entry Fishery have no comment at this time.	VOGA has consulted DPIRD, WAFIC and individual relevant licence holders via WAFIC. VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA has assessed the relevancy of State fisheries in Section 3.5.1 of this EP. VOGA will notify DPIRD and WAFIC prior to the commencement and at the end of the activity. No additional measures or controls are required.
Consultation demonstration statement			

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Onslow Prawn Ltd Entry Fishery for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient information

- Consultation information was provided to the Onslow Prawn Ltd Entry Fishery through WAFIC on 23 October 2025, based on their function, interest, and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence and consultation material sent.
- Commercial Fisher Information Sheet, developed specifically for fisheries, was provided to the Onslow Prawn Ltd Entry Fishery on 23 October 2025.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.

Pilbara Crab Managed Fishery

Consultation overview and summary of response on this EP

- In accordance with VOGA's "Fee for Service Agreement"with WAFIC and WAFIC's 'Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector' WAFIC engaged the licence holders of Pilbara Crab Managed Fishery on behalf of VOGA as their fishing area intersects the operational area and there is expected fishing effort (Record of Consultation, references 3.27).
- On 22 October 2025, VOGA provided WAFIC with consultation information to distribute to licence holders of Pilbara Crab Managed Fishery (SI Report, reference 6.1.1 and Record of Consultation, reference 3.27).
- On 23 October 2025, WAFIC contacted licence holders of Pilbara Crab Managed Fishery to advise of the proposed activity and provided a Consultation Information Sheet and Commercial Fisher Information sheet (SI Report, reference 6.1.2 and Record of Consultation, reference 1.1 and 1.2).
    - The email included an activity summary, directions for providing input into the EP development through consultation, the closing date and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information Sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the Environment That May Be Affected (EMBA) based on a review of publicly available information.
    - The Commercial Fisher information sheet included an overview of the proposed activities, key information about the commercial fishing sector,

coordinates for operational areas, an activity summary, an assessment of commercial fishing, potential effects and impacts, and VOGA's impact assessment.

- On 25 November 2025, WAFIC emailed VOGA advising that it did not receive any feedback from licence holders on this EP, including from Pilbara Crab Managed Fishery (SI Report, reference 6.1.3).
- On 4 December 2025, VOGA emailed WAFIC thanking them for their advice that there was no feedback from licence holders on this EP, including from Pilbara Crab Managed Fisher (SI Report, reference 6.1.4).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA accepts that the individual relevant licence holders of the Pilbara Crab Managed Fishery have no comment at this time.	VOGA has consulted DPIRD, WAFIC and individual relevant licence holders via WAFIC. VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA has assessed the relevancy of State fisheries in Section 3.5.1 of this EP. VOGA will notify DPIRD and WAFIC prior to the commencement and at the end of the activity. No additional measures or controls are required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Pilbara Crab Managed Fishery for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient information

- Consultation information was provided to the Pilbara Crab Managed Fishery through WAFIC on 23 October 2025, based on their function, interest, and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence and consultation material sent.
- Commercial Fisher Information Sheet, developed specifically for fisheries, was provided to the Pilbara Crab Managed Fishery on 23 October 2025.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.

Pilbara Line Fishery (Condition)

Consultation overview and summary of response on this EP

- In accordance with VOGA's "Fee for Service Agreement"with WAFIC and WAFIC's 'Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector' WAFIC engaged the licence holders of Pilbara Line Fishery on behalf of VOGA as their fishing area intersects the operational area and there is expected fishing effort (Record of Consultation, references 3.27).
- On 22 October 2025, VOGA provided WAFIC with consultation information to distribute to licence holders of Pilbara Line Fishery (SI Report, reference 6.1.1 and Record of Consultation, reference 3.27).
- On 23 October 2025, WAFIC contacted licence holders of Pilbara Line Fishery to advise of the proposed activity and provided a Consultation Information Sheet and Commercial Fisher Information sheet (SI Report, reference 6.1.2 and Record of Consultation, reference 1.1 and 1.2).
    - The email included an activity summary, directions for providing input into the EP development through consultation, the closing date and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information Sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the Environment That May Be Affected (EMBA) based on a review of publicly available information.
    - The Commercial Fisher information sheet included an overview of the proposed activities, key information about the commercial fishing sector, coordinates for operational areas, an activity summary, an assessment of commercial fishing, potential effects and impacts, and VOGA's impact assessment.
- On 25 November 2025, WAFIC emailed VOGA advising that it did not receive any feedback from licence holders on this EP, including from Pilbara Line Fishery (SI Report, reference 6.1.3).
- On 4 December 2025, VOGA emailed WAFIC thanking them for their advice that there was no feedback from licence holders on this EP, including from Pilbara Line Fishery (SI Report, reference 6.1.4).

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA accepts that the individual relevant licence holders of the Pilbara Line Fishery have no comment at this time.	VOGA has consulted DPIRD, WAFIC and individual relevant licence holders via WAFIC. VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA has assessed the relevancy of State fisheries in Section 3.5.1 of this EP. VOGA will notify DPIRD and WAFIC prior to the commencement and at the end of the activity. No additional measures or controls are required.
Consultation demonstration statement			
VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Pilbara Line Fishery for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically: **Sufficient information** • Consultation information was provided to the Pilbara Line Fishery through WAFIC on 23 October 2025, based on their function, interest, and activities. • Consultation Information Sheet has been publicly available on the VOGA website since October 2025. **Reasonable period** • A consultation period was noted in the initial consultation correspondence and consultation material sent. • Commercial Fisher Information Sheet, developed specifically for fisheries, was provided to the Pilbara Line Fishery on 23 October 2025. • Consultation for this EP commenced in October 2025. **Reasonable opportunity** • VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons. • From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.		
Pilbara Fish Trawl (Interim) Managed Fishery			
Consultation overview and summary of response on this EP			

- In accordance with VOGA's "Fee for Service Agreement"with WAFIC and WAFIC's 'Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector' WAFIC engaged the licence holders of Pilbara Fish Trawl (Interim) Managed Fishery on behalf of VOGA as their fishing area intersects the operational area and there is expected fishing effort (Record of Consultation, references 3.27).
- On 22 October 2025, VOGA provided WAFIC with consultation information to distribute to licence holders of Pilbara Fish Trawl (Interim) Managed Fishery (SI Report, reference 6.1.1 and Record of Consultation, reference 3.27).
- On 23 October 2025, WAFIC contacted licence holders of Pilbara Fish Trawl (Interim) Managed Fishery to advise of the proposed activity and provided a Consultation Information Sheet and Commercial Fisher Information sheet (SI Report, reference 6.1.2 and Record of Consultation, reference 1.1 and 1.2).
    - The email included an activity summary, directions for providing input into the EP development through consultation, the closing date and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information Sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the Environment That May Be Affected (EMBA) based on a review of publicly available information.
    - The Commercial Fisher information sheet included an overview of the proposed activities, key information about the commercial fishing sector, coordinates for operational areas, an activity summary, an assessment of commercial fishing, potential effects and impacts, and VOGA's impact assessment.
- On 25 November 2025, WAFIC emailed VOGA advising that it did not receive any feedback from licence holders on this EP, including from Pilbara Fish Trawl (Interim) Managed Fishery (SI Report, reference 6.1.3).
- On 4 December 2025, VOGA emailed WAFIC thanking them for their advice that there was no feedback from licence holders on this EP, including from Pilbara Fish Trawl (Interim) Managed Fishery (SI Report, reference 6.1.4).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA accepts that the individual relevant licence holders of the Pilbara Fish Trawl (Interim) Managed Fishery have no comment at this time.	VOGA has consulted DPIRD, WAFIC and individual relevant licence holders via WAFIC. VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA has assessed the relevancy of State fisheries in Section 3.5.1 of this EP. VOGA will notify DPIRD and WAFIC prior to the commencement and at the end of the activity. No additional measures or controls are required.
Consultation demonstration statement			

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Pilbara Fish Trawl (Interim) Managed Fishery for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient information

- Consultation information was provided to the Pilbara Fish Trawl (Interim) Managed Fishery through WAFIC on 23 October 2025, based on their function, interest, and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence and consultation material sent.
- Commercial Fisher Information Sheet, developed specifically for fisheries, was provided to the Pilbara Fish Trawl (Interim) Managed Fishery on 23 October 2025.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.

Pilbara Trap Managed Fishery

Consultation overview and summary of response on this EP

- In accordance with VOGA's "Fee for Service Agreement"with WAFIC and WAFIC's 'Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector' WAFIC engaged the licence holders of Pilbara Trap Managed Fishery on behalf of VOGA as their fishing area intersects the operational area and there is expected fishing effort (Record of Consultation, references 3.27).
- On 22 October 2025, VOGA provided WAFIC with consultation information to distribute to licence holders of Pilbara Trap Managed Fishery (SI Report, reference 6.1.1 and Record of Consultation, reference 3.27).
- On 23 October 2025, WAFIC contacted licence holders of Pilbara Trap Managed Fishery to advise of the proposed activity and provided a Consultation Information Sheet and Commercial Fisher Information sheet (SI Report, reference 6.1.2 and Record of Consultation, reference 1.1 and 1.2).
    - The email included an activity summary, directions for providing input into the EP development through consultation, the closing date and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information Sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the Environment That May Be Affected (EMBA) based on a review of publicly available information.

- The Commercial Fisher information sheet included an overview of the proposed activities, key information about the commercial fishing sector, coordinates for operational areas, an activity summary, an assessment of commercial fishing, potential effects and impacts, and VOGA's impact assessment.

- On 25 November 2025, WAFIC emailed VOGA advising that it did not receive any feedback from licence holders on this EP, including from Pilbara Trap Managed Fishery (SI Report, reference 6.1.3).
- On 4 December 2025, VOGA emailed WAFIC thanking them for their advice that there was no feedback from licence holders on this EP, including from Pilbara Trap Managed Fishery (SI Report, reference 6.1.4).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA accepts that the individual relevant licence holders of the Pilbara Trap Managed Fishery have no comment at this time.	VOGA has consulted DPIRD, WAFIC and individual relevant licence holders via WAFIC. VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA has assessed the relevancy of State fisheries in Section 3.5.1 of this EP. VOGA will notify DPIRD and WAFIC prior to the commencement and at the end of the activity. No additional measures or controls are required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Pilbara Trap Managed Fishery for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient information

- Consultation information was provided to the Pilbara Trap Managed Fishery through WAFIC on 23 October 2025, based on their function, interest, and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence and consultation material sent.
- Commercial Fisher Information Sheet, developed specifically for fisheries, was provided to the Pilbara Trap Managed Fishery on 23 October 2025.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.

Recreational fishers and marine users and peak representative bodies

WA Game Fishing Association (WAGFA)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the WAGFA by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
  - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
  - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed the WAFGA following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.17).
  - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed the WAGFA and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.11)
  - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
  - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
  - VOGA asked the WAGFA to review previous information and provide any feedback by 24 December 2025.
  - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that WAGFA has no comment at this time.	VOGA considers the measures and controls in the EP address WAGFA's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with WAGFA for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to WAGFA on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding WAGFA of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising WAGFA that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Recfishwest

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised Recfishwest by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed the Recfishwest following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.17).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 21 November 2025, Recfishwest emailed and thanked VOGA for the information regarding the Environment Plan. (SI Report, reference 7.1.1).
    - The email detailed the importance of recreational fishing in the Pilbara region of Western Australia, including its host of offshore islands, coral reef systems and offshore habitats. It highlighted the importance of recreational fishing on tourism to the region.
    - It also outlined the area being commonly accessed for deepwater fishing by the charter sector and fishers in larger boats.
    - It also asked it be informed as activities progress so it can communicate to the recreational fishing community as required.
- On 9 December 2025, VOGA emailed Recfishwest thanking them for the email and acknowledging their support and offer to review information on recreational within the EP to ensure it is up-to-date and has been accurately captured (SI Report, reference 7.1.2).
    - VOGA confirmed it would provide Recfishwest with notifications for activity updates for planned dates and start timing and exclusion zones.
    - VOGA also thanked Recfishwest for its offer to communicate with the recreational fishing community as required.
- On 9 December 2025, VOGA emailed Recfishwest with a further email confirming that it had included the text provided by Recfishwest regarding the integral part recreational fishing played in the Pilbara. (SI Report, reference 7.1.3).
    - The email also advised that the reference to recreational fishing contributing $190m to the WA economy annually had been removed as a result of the recent changes to demersal fishing in the West Coast bioregion.
- On 6 January 2026, Recfishwest emailed and thanked VOGA for its efforts to update recreational fishing information, however, disagreed with the removal of economic data. (SI Report, reference 7.1.4).
    - The email also clarified the $190m contribution refers specifically to recreational fishing for demersals in the Pilbara bioregion only
    - recent changes to demersal fishing in the West Coast bioregion (Kalbarri to Augusta) does not affect this Pilbara-specific data
    - visitation and expenditure in the Pilbara may actually increase due to the closure elsewhere and recommends keeping the economic information in the EPs.
- On 27 January 2026, VOGA emailed Recfishwest to thank them for their response and advised that they would include the economic information provided in the EPs and provided the text that would be included. (SI Report, reference 7.1.5).

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

Recfishwest provided feedback regarding VOGA's coverage of recreational fishing and asked to be kept informed as activities progress so it can communicate to the recreational fishing community as required.	VOGA accepts Recfishwest's feedback regarding coverage of recreational fishing in this EP.	VOGA provided updated draft for this EP for Recfishwest to review and provide input. VOGA advised it will consider Recfishwest's advice on recreational fishing and acknowledged Recfishwest's offer to communicate with the recreational fishing community as required, and will incorporate it into its EP as appropriate.	No additional EP controls required.
Recfishwest provided feedback regarding VOGA's draft text and economic information on recreational fishing in this EP.	VOGA noted Recfishwest's feedback regarding the draft recreational fishing information.	VOGA accepts Recfishwest's feedback and has considered Recfishwest's advice regarding recreational fishing.	VOGA has incorporated Recfishwest's feedback into Section 3.5.4.1 of the EP.
Recfishwest requested to be notified about the progress of the EP and project to keep the recreational fishing community informed. While feedback has been received, there were no objections or claims on this EP.	VOGA accepts Recfishwest's request to be notified.	VOGA offered to provide activity updates to Recfishwest on start timing and inclusion zones. VOGA engages in ongoing consultation throughout the life of an EP. VOGA notes that further feedback may be received as part of ongoing consultation and where appropriate, VOGA will apply its Management of Change and Revision process (Section 8.5 of the EP).	VOGA has offered to provide notifications to Recfishwest on progress during this EP's activities. VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.
Consultation demonstration statement			
VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Recfishwest for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically: **Sufficient Information** • Consultation information provided to Recfishwest on 22 October 2025 based on their function, interest and activities. • Consultation Information Sheet has been publicly available on the VOGA website since October 2025.			

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.
- VOGA has addressed and responded to Recfishwest over a three-month period.
-

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Recfishwest of the opportunity to provide feedback.

Marine Tourism WA

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised Marine Tourism WA by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed Marine Tourism WA following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.17).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed Marine Tourism WA and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.11)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked Marine Tourism WA to review previous information and provide any feedback by 24 December 2025.

- VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Marine Tourism WA has no comment at this time.	VOGA considers the measures and controls in the EP address Marine Tourism WA's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Marine Tourism WA for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Marine Tourism WA on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.

- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Marine Tourism WA of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising Marine Tourism WA that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Ashburton Anglers

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the Ashburton Anglers by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed the Ashburton Anglers following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.17).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed the Ashburton Anglers and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.11)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked the Ashburton Anglers to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Ashburton Anglers has no comment at this time.	VOGA considers the measures and controls in the EP address Ashburton Anglers' functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Ashburton Anglers for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Ashburton Anglers on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Ashburton Anglers of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising Ashburton Anglers that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Exmouth Game Fishing Club (EGFC)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the EGFC by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed the EGFC following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.17).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed the EGFC and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.11)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked the EGFC to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that EGFC has no comment at this time.	VOGA considers the measures and controls in the EP address EGFC's functions, interests or activities.
Consultation demonstration statement			

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with EGFC for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to EGFC on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding EGFC of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising EGFC that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

King Bay Game Fishing Club (KBFC)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the KBFC by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed the KBFC following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.17).

- The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

- On 16 December 2025 VOGA emailed the KBFC and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.11)
  - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
  - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
  - VOGA asked the KBFC to review previous information and provide any feedback by 24 December 2025.
  - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that KBFC has no comment at this time.	VOGA considers the measures and controls in the EP address KBFC's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with KBFC for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to KBFC on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding KBFC of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising KBFC that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Nickol Bay Sportsfishing Club (NBSC)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the NBSC by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed the NBSC following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.17).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed the NBSC and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.11)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked the NBSC to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that NBSC has no comment at this time.	VOGA considers the measures and controls in the EP address NBSC's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with NBSC for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to NBSC on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding NBSC of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising NBSC that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Pilbara / Kimberley Recreational Marine Users

Consultation overview and summary of response on this EP

- On 27 October 2025, VOGA sent a letter to Pilbara / Kimberley Recreational Marine Users advising of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 3.45 and 1.1).
    - The letter included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information Sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the Environment That May Be Affected (EMBA) based on a review of publicly available information.
- On 13 November 2025, VOGA sent a follow-up letter to Pilbara / Kimberley Recreational Marine Users on the proposed activity (Record of Consultation, reference 4.29 and 1.1).
    - The email included an activity summary, directions for how to provide input to into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Pilbara / Kimberley Recreational Marine Users has no comment at this time.	VOGA considers the measures and controls in the EP address Pilbara / Kimberley Recreational Marine Users' functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Pilbara / Kimberley Recreational Marine Users for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Pilbara / Kimberley Recreational Marine Users on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent follow-up consultation letters on 13 November 2025, reminding Pilbara / Kimberley Recreational Marine Users of the opportunity to provide feedback.

Gascoyne Recreational Marine Users

Consultation overview and summary of response on this EP

- On 27 October 2025, VOGA sent a letter to Gascoyne Recreational Marine Users advising of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 3.46 and 1.1).
    - The letter included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information Sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the Environment That May Be Affected (EMBA) based on a review of publicly available information.
- On 13 November 2025, VOGA sent a follow-up letter to Gascoyne Recreational Marine Users on the proposed activity (Record of Consultation, reference 4.30).
    - The email included an activity summary, directions for how to provide input to into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Gascoyne Recreational Marine Users has no comment at this time.	VOGA considers the measures and controls in the EP address Gascoyne Recreational Marine Users' functions, interests or activities.
Consultation demonstration statement			
VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Gascoyne Recreational Marine Users for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically: **Sufficient Information** • Consultation information provided to Gascoyne Recreational Marine Users on 22 October 2025 based on their function, interest and activities. • Consultation Information Sheet has been publicly available on the VOGA website since October 2025. **Reasonable period** • A consultation period was noted in the initial consultation correspondence, and consultation material was sent. • Consultation for this EP commenced in October 2025. **Reasonable opportunity** • VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons. • From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA. • VOGA sent follow-up consultation letters on 13 November 2025, reminding Gascoyne Recreational Marine Users of the opportunity to provide feedback.			
Energy industry titleholders and operators			
3D Energi Limited			
Consultation overview and summary of response on this EP			

- On 22 October 2025, VOGA advised the 3D Energi Limited by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.28).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed 3D Energi Limited following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.14).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025 VOGA emailed 3D Energi Limited and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.20)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked 3D Energi Limited to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that 3D Energi Limited has no comment at this time.	VOGA considers the measures and controls in the EP address 3D Energi Limited's functions, interests or activities.
Consultation demonstration statement			

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with 3D Energi Limited for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to 3D Energi Limited on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding 3D Energi Limited of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising 3D Energi Limited that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Beagle No. 1 Pty Ltd / Longreach Capital Investment

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the Beagle No. 1 Pty Ltd / Longreach Capital Investment by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.28).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed Beagle No. 1 Pty Ltd / Longreach Capital Investment following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.14).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

- On 18 December 2025 VOGA emailed Beagle No. 1 Pty Ltd / Longreach Capital Investment and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.20)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked Beagle No. 1 Pty Ltd / Longreach Capital Investment to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Beagle No. 1 Pty Ltd / Longreach Capital Investment has no comment at this time.	VOGA considers the measures and controls in the EP address Beagle No. 1 Pty Ltd / Longreach Capital Investment's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Beagle No. 1 Pty Ltd / Longreach Capital Investment for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Beagle No. 1 Pty Ltd / Longreach Capital Investment on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Beagle No. 1 Pty Ltd / Longreach Capital Investment of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising Beagle No. 1 Pty Ltd / Longreach Capital Investment that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

BP Developments Australia

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised BP Developments Australia by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.28).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed BP Developments Australia following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.14).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025 VOGA emailed BP Developments Australia and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.20)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked BP Developments Australia to review previous information and provide any feedback by 24 December 2025.

- VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the meris	VOGA's statement of response	Details of the measures adopted
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that BP Developments Australia has no comment at this time.	VOGA considers the measures and controls in the EP address BP Developments Australia's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with BP Developments Australia for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to BP Developments Australia on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding BP Developments Australia of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising BP Developments Australia that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Chevron Australia

Consultation overview and summary of response on this EP

- On 11 November 2025, VOGA advised Chevron Australia by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.43).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 25 November 2025, VOGA emailed Chevron following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.27).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025 VOGA emailed Chevron Australia and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.19)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked Chevron Australia to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Chevron Australia has no comment at this time.	VOGA considers the measures and controls in the EP address Chevron Australia functions, interests or activities.
Consultation demonstration statement			
VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Chevron Australia for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically: **Sufficient Information** • Consultation information provided to Chevron Australia on 11 November 2025 based on their function, interest and activities. • Consultation Information Sheet has been publicly available on the VOGA website since October 2025. **Reasonable period** • A consultation period was noted in the initial consultation correspondence, and consultation material was sent. • Consultation for this EP commenced in October 2025. **Reasonable opportunity** • VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons. • From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA. • VOGA sent a follow-up consultation email on 25 November 2025, reminding Chevron Australia of the opportunity to provide feedback. • VOGA sent a final consultation email on 18 December 2025, advising Chevron Australia that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.		
Finder No 16 Pty Ltd			
Consultation overview and summary of response on this EP			

- On 22 October 2025, VOGA advised Finder No 16 Pty Ltd by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.28).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed Finder No 16 Pty Ltd following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.14).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025 VOGA emailed Finder No 16 Pty Ltd and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.20)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked Finder No 16 Pty Ltd to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Finder No 16 Pty Ltd has no comment at this time.	VOGA considers the measures and controls in the EP address Finder No 16 Pty Ltd's functions, interests or activities.
Consultation demonstration statement			

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Finder No 16 Pty Ltd for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Finder No 16 Pty Ltd on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Finder No 16 Pty Ltd of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising Finder No 16 Pty Ltd that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

INPEX Browse E&P Pty Ltd

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised INPEX Browse E&P Pty Ltd by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.28).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed INPEX Browse E&P Pty Ltd following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.14).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

- On 18 December 2025 VOGA emailed INPEX Browse E&P Pty Ltd and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.20)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked INPEX Browse E&P Pty Ltd to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that INPEX Browse E&P Pty Ltd has no comment at this time.	VOGA considers the measures and controls in the EP address INPEX Browse E&P Pty Ltd's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with INPEX Browse E&P Pty Ltd for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to INPEX Browse E&P Pty Ltd on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding INPEX Browse E&P Pty Ltd of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising INPEX Browse E&P Pty Ltd that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Jadestone Energy (Australia) Pty Ltd

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised Jadestone Energy (Australia) Pty Ltd by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.28).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed Jadestone Energy (Australia) Pty Ltd following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.14).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025 VOGA emailed Jadestone Energy (Australia) Pty Ltd and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.20)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked Jadestone Energy (Australia) Pty Ltd to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Jadestone Energy (Australia) Pty Ltd has no comment at this time.	VOGA considers the measures and controls in the EP address Jadestone Energy (Australia) Pty Ltd's functions, interests or activities.
Consultation demonstration statement			
VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Jadestone Energy (Australia) Pty Ltd for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically: **Sufficient Information** • Consultation information provided to Jadestone Energy (Australia) Pty Ltd on 22 October 2025 based on their function, interest and activities. • Consultation Information Sheet has been publicly available on the VOGA website since October 2025. **Reasonable period** • A consultation period was noted in the initial consultation correspondence, and consultation material was sent. • Consultation for this EP commenced in October 2025. **Reasonable opportunity** • VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons. • From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA. • VOGA sent a follow-up consultation email on 13 November 2025, reminding Jadestone Energy (Australia) Pty Ltd of the opportunity to provide feedback. • VOGA sent a final consultation email on 18 December 2025, advising Jadestone Energy (Australia) Pty Ltd that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.		
Kato Energy (WA) Pty Ltd			
Consultation overview and summary of response on this EP			

- On 22 October 2025, VOGA advised Kato Energy (WA) Pty Ltd by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.28).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed Kato Energy (WA) Pty Ltd following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.14).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025 VOGA emailed Kato Energy (WA) Pty Ltd and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.20)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked Kato Energy (WA) Pty Ltd to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Kato Energy (WA) Pty Ltd has no comment at this time.	VOGA considers the measures and controls in the EP address Kato Energy (WA) Pty Ltd's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Kato Energy (WA) Pty Ltd for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Kato Energy (WA) Pty Ltd on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Kato Energy (WA) Pty Ltd of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising Kato Energy (WA) Pty Ltd that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Kufpec (Perth) Pty Ltd

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised Kufpec (Perth) Pty Ltd by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.28).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed Kufpec (Perth) Pty Ltd following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.14).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

- On 18 December 2025 VOGA emailed Kufpec (Perth) Pty Ltd and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.20)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked Kufpec (Perth) Pty Ltd to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Kufpec (Perth) Pty Ltd has no comment at this time.	VOGA considers the measures and controls in the EP address Kufpec (Perth) Pty Ltd's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Kufpec (Perth) Pty Ltd for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Kufpec (Perth) Pty Ltd on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Kufpec (Perth) Pty Ltd of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising Kufpec (Perth) Pty Ltd that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

MEO International Pty Ltd

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised MEO International Pty Ltd by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.28).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed MEO International Pty Ltd following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.14).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025 VOGA emailed MEO International Pty Ltd and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.20)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked MEO International Pty Ltd to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that MEO International Pty Ltd has no comment at this time.	VOGA considers the measures and controls in the EP address MEO International Pty Ltd's functions, interests or activities.
Consultation demonstration statement			
VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with MEO International Pty Ltd for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically: **Sufficient Information** • Consultation information provided to MEO International Pty Ltd on 22 October 2025 based on their function, interest and activities. • Consultation Information Sheet has been publicly available on the VOGA website since October 2025. **Reasonable period** • A consultation period was noted in the initial consultation correspondence, and consultation material was sent. • Consultation for this EP commenced in October 2025. **Reasonable opportunity** • VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons. • From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA. • VOGA sent a follow-up consultation email on 13 November 2025, reminding MEO International Pty Ltd of the opportunity to provide feedback. • VOGA sent a final consultation email on 18 December 2025, advising MEO International Pty Ltd that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.		
Mobil Australia Resources Company Pty Limited			
Consultation overview and summary of response on this EP			

- On 22 October 2025, VOGA advised Mobil Australia Resources Company Pty Limited by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.28).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed Mobil Australia Resources Company Pty Limited following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.14).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025 VOGA emailed Mobil Australia Resources Company Pty Limited and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.20)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked Mobil Australia Resources Company Pty Limited to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Mobil Australia Resources Company Pty Limited has no comment at this time.	VOGA considers the measures and controls in the EP address Mobil Australia Resources Company Pty Limited's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Mobil Australia Resources Company Pty Limited for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Mobil Australia Resources Company Pty Limited on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Mobil Australia Resources Company Pty Limited of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising Mobil Australia Resources Company Pty Limited that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Santos Offshore Pty Ltd

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised Santos Offshore Pty Ltd by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.28).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed Santos Offshore Pty Ltd following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.14).

- The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

- On 18 December 2025 VOGA emailed Santos Offshore Pty Ltd and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.20)
  - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
  - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
  - VOGA asked Santos Offshore Pty Ltd to review previous information and provide any feedback by 24 December 2025.
  - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.
- On 13 January 2026, Santos emailed VOGA and confirmed it has no objections or claims in relation to the planned activity. (SI Report, reference 8.1.1).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
Santos Offshore Pty Ltd reported it had no concerns with the activities associated with the EP. Whilst feedback has been received, there were no objections or claims.	VOGA engages in ongoing consultation throughout the life of an EP. VOGA notes that further feedback may be received as part of ongoing consultation and where appropriate, VOGA will apply its Management of Change and Revision process (Section 8.5 of the EP).	VOGA notes Santos Offshore Pty Ltd has advised it has no comments on the proposed activities under this EP.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Santos Offshore Pty Ltd for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Santos Offshore Pty Ltd on 22 October 2025 based on their function, interest and activities.

- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Santos Offshore Pty Ltd of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising Santos Offshore Pty Ltd that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Shell Australia Pty Ltd

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised Shell Australia Pty Ltd by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.28).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed Shell Australia Pty Ltd following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.14).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025 VOGA emailed Shell Australia Pty Ltd and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.20)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.

- VOGA asked Shell Australia Pty Ltd to review previous information and provide any feedback by 24 December 2025.
- VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Shell Australia Pty Ltd has no comment at this time.	VOGA considers the measures and controls in the EP address Shell Australia Pty Ltd's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Shell Australia Pty Ltd for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Shell Australia Pty Ltd on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Shell Australia Pty Ltd of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising Shell Australia Pty Ltd that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Western Gas (474 P) Pty Ltd

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised Western Gas (474 P) Pty Ltd by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.28).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed Western Gas (474 P) Pty Ltd following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.14).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025 VOGA emailed Western Gas (474 P) Pty Ltd and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.20)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked Western Gas (474 P) Pty Ltd to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Western Gas (474 P) Pty Ltd has no comment at this time.	VOGA considers the measures and controls in the EP address Western Gas (474 P) Pty Ltd's functions, interests or activities.
Consultation demonstration statement			
VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Western Gas (474 P) Pty Ltd for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically: **Sufficient Information** • Consultation information provided to Western Gas (474 P) Pty Ltd on 22 October 2025 based on their function, interest and activities. • Consultation Information Sheet has been publicly available on the VOGA website since October 2025. **Reasonable period** • A consultation period was noted in the initial consultation correspondence, and consultation material was sent. • Consultation for this EP commenced in October 2025. **Reasonable opportunity** • VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons. • From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA. • VOGA sent a follow-up consultation email on 13 November 2025, reminding Western Gas (474 P) Pty Ltd of the opportunity to provide feedback. • VOGA sent a final consultation email on 18 December 2025, advising Western Gas (474 P) Pty Ltd that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.		
Woodside Energy (Australia) Pty Ltd			
Consultation overview and summary of response on this EP			

- On 22 October 2025, VOGA advised Woodside Energy (Australia) Pty Ltd by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.28).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 23 October 2025, Woodside Energy (Australia) Pty Ltd emailed VOGA and reported no concerns with the activities associated with the EP (SI Report, reference 8.2.1).
- On 23 October 2025, Woodside Energy (Australia) Pty Ltd emailed VOGA and to provide a correction and updated email (SI Report, reference 8.2.2)
- On 24 October 2025, VOGA emailed Woodside Energy (Australia) Pty Ltd and thanked it for its response (SI Report, reference 8.2.3).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
Woodside Energy (Australia) Pty Ltd reported it had no concerns with the activities associated with the EP. Whilst feedback has been received, there were no objections or claims.	VOGA engages in ongoing consultation throughout the life of an EP. VOGA notes that further feedback may be received as part of ongoing consultation and where appropriate, VOGA will apply its Management of Change and Revision process (Section 8.5 of the EP).	VOGA notes Woodside Energy (Australia) Pty Ltd has advised it has no comments on the proposed activities under this EP.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Woodside Energy (Australia) Pty Ltd for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Woodside Energy (Australia) Pty Ltd on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.

Peak industry representative bodies and associations

Australian Energy Producers (AEP)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the Australian Energy Producers by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.29).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed AEP following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.15).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025 VOGA emailed Australian Energy Producers and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.18)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked the Australian Energy Producers to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Australian Energy Producers has no comment at this time.	VOGA considers the measures and controls in the EP address Australian Energy Producers' functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Australian Energy Producers for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Australian Energy Producers on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Australian Energy Producers of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising Australian Energy Producers that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Infrastructure operators			
Vocus Communications			
Consultation overview and summary of response on this EP			

• On 22 October 2025, VOGA advised Vocus Communications by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.30).
  ○ The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
  ○ The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
• On 23 October 2025, Vocus Communications emailed VOGA to thank them for their email and to confirm that they had no comment on this EP due to the distance from Vocus' operations (SI Report, reference 10.1.1).
• On 24 October 2025, VOGA emailed Vocus Communications to thank them for their response and advice (SI Report, reference 10.1.2).			

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
Vocus Communications reported it had no concerns with the activities associated with the EP. Whilst feedback has been received, there were no objections or claims.	VOGA engages in ongoing consultation throughout the life of an EP. VOGA notes that further feedback may be received as part of ongoing consultation and where appropriate, VOGA will apply its Management of Change and Revision process (Section 8.5 of the EP).	VOGA notes Vocus Communications has advised it has no comments on the proposed activities under this EP.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.
Consultation demonstration statement			

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Vocus Communications for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Vocus Communications on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.

Traditional Custodians and First Nations nominated representative corporations

Buurabalayji Thalanyji Aboriginal Corporation (BTAC)

Historical and ongoing engagement

VOGA has been in engagement with BTAC since October 2024, prior to the consultation on this EP below. VOGA maintains an ongoing engagement with BTAC in addition to the consultation on this EP below. A summary and current status of these engagements can be found at Appendix F, Summary of Ongoing Engagement, reference 1.4.3.

Consultation overview and summary of response on this EP

- On 25 August 2025, VOGA emailed BTAC advising of upcoming consultation in the Wandoo Offshore Field for the Well Construction EP and another EP not relevant to this EP (Record of Consultation, reference 2.6).
    - VOGA advised that consultation with BTAC regarding these activities is welcome and it wanted to arrange a meeting during September – November to discuss the EP.
    - VOGA noted the EP revision was part of a standard five-year review of existing operations (not a new project) and are intended to reassess environmental risks and management measures, with an opportunity for stakeholder input including cultural heritage considerations.
- On 21 October 2025, VOGA emailed BTAC advising of proposed activities and consultation on this EP. VOGA provided a Summary Information Sheet and a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.1).

    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date, and a link to VOGA's website with additional resources on EP consultation.
    - VOGA advised it recognised the importance of cultural heritage to Native Title Holders and was committed to integrating these values into their environmental planning.
    - VOGA believes BTAC is relevant for consultation and invited them to participate in the process.
    - VOGA proposed a meeting to discuss the proposed activities, seek input, and engage in consultation.
    - VOGA provided information on confidentiality and the ability to opt out of the consultation.
    - VOGA attached a map of the native title determination in respect to location of operations and EMBA for this EP (Record of Consultation, reference 3.1.1).
    - VOGA asked that the matter be brought to the attention of the appropriate representatives from BTAC.
    - VOGA provided background to its knowledge of advice from BTAC about consultation and that a meeting had previously been discussed but hadn't progressed.
- On 7 November 2025, VOGA emailed BTAC following up on the previous email seeking confirmation from BTAC if it would like to be consulted on the EP (SI Report, reference 11.1.1).
- On 7 November 2025, BTAC emailed to confirm that the board had previously adopted the position that it is a relevant organisation for the EP and advised that it will propose a meeting date in due course (SI Report, reference 11.1.2).
- On 11 November 2025, VOGA emailed BTAC confirming receipt of its email and advised it would await further advice (SI Report, reference 11.1.3).
- On 10 December 2025, VOGA emailed BTAC following up on potential meeting dates, asked whether the proposed meeting would be in person or a virtual meeting and advised that the consultation period would be open until 17 February 2025 (SI Report, reference 11.1.4).
- On 21 January 2026, VOGA emailed BTAC following up on its previous email seeking a suitable time to meet with the BTAC board prior to the 17 February 2026, and if this timing did not suit, VOGA is still keen to progress a meeting at the next available opportunity (SI Report, reference 11.1.5).
- Between 28 January 2026 and 6 February 2026 VOGA and BTAC exchanged emails and administrational details to arrange the meeting on 16 February 2026. (SI Report, references 11.1.6 – 11.1.15).
- On 5 February 2026, VOGA emailed BTAC the agenda in advance of the meeting for BTAC's input (SI Report, reference 11.1.11).
- On 12 February 2026, VOGA emailed BTAC advising that they would like to offer an additional agenda item (not relevant to this EP) and provide an overview of an operational incident on 11 December 2025 (SI Report, reference 11.1.16).
- On 13 February 2026, VOGA emailed BTAC and attached the proposed presentation and consultation information previously sent for the meeting on 16 February 2026 (SI Report, reference 11.1.17).
- On 16 February 2026, VOGA met with BTAC Directors in Perth for an introductory consultation meeting to seek input on the Well Construction EP and another EP and start discussion on any ongoing consultation matters (SI Report, reference 11.1.18 and 11.1.19).
    - VOGA provided an overview of the Wandoo Field location and facilities, including its history, current operations and how production and offtake occur.
    - VOGA outlined the purpose of the meeting, confirming it intended to:
        - Introduce the proposed EPs.
        - Understand BTAC's preferred approach to engagement.
        - Identify any priorities BTAC wants reflected in ongoing consultation.
    - VOGA explained the differences between the Exploration Drilling EP and the Well Construction EP.

- VOGA showed an EMBA figure for the EPs with respect to BTAC native title determination.
- VOGA provided an overview of the Well Construction EP
- VOGA explained the location and timing of the activity and provided examples of similar well construction activities.
- BTAC asked whether feasibility studies had been completed for drilling locations. VOGA confirmed that initial seismic studies were completed previously and that existing seismic data and modelling are used for planning.
- BTAC providing feedback and noted a culturally significant island within the Thalanyji determination area and additional significant coastal sites. BTAC advised it will not provide sensitive site details, but requested the EP record that BTAC is to be contacted during an incident to coordinate community activation and support protection of culturally significant areas.
    - BTAC sought further visibility of what has been recorded in the EP regarding Aboriginal heritage considerations. VOGA outlined how this information is recorded and offered to share extracts of the EP, which BTAC confirmed it wanted to receive.
- As part of the ongoing engagement, VOGA discussed oil spill mitigation and response.
    - VOGA discussed scenario planning and EMBAs, and provided an overview of preparedness and response measures, with a focus on shoreline response and oiled wildlife.
    - VOGA explained how coastal information is gathered during a spill and how consultation seeks Traditional Owner input on priority areas to guide response strategies (including dugong foraging areas).
    - VOGA outlined response planning and capability, including how Traditional Owners can support protecting important areas (DTMI “no-go” mapping and incident input), and walked through response options/resources (e.g., booms/dispersants; local and overseas aviation/maritime).
- BTAC asked questions, including:
    - BTAC asked whether there is scope for involvement in emergency response measures and incident exercises. VOGA confirmed it would explore this further and incorporate relevant priorities into the EP.
    - BTAC asked whether AMOSC supports VOGA. VOGA confirmed its engagement.
    - BTAC wants to be engaged early “day one” in spill planning/response and is seeking ranger training and exercise opportunities to support on-ground protection of culturally significant coastal areas.
    - BTAC noted it has progressed heritage review and cultural mapping of priority coastal areas and intends to share outcomes with operators. BTAC asked whether VOGA could fund this work. VOGA indicated a preference for an industry-level, government-led approach rather than funding individual organisation programs.
    - BTAC noted challenges engaging DoT/DTMI but is advocating for Traditional Owner ranger program input at an industry level. BTAC said AMOSC is keen to lead the initiative and emphasised early involvement to manage access constraints.
- VOGA discussed the December CALM Buoy incident as part of the ongoing engagement.
    - VOGA gave an overview of the incident, explained the response and actions, the current status of the incident, future plans and next steps.
- BTAC asked questions, including:

        - BTAC raised questions about ageing asset integrity, including what is “normal” for ageing facilities and how integrity is assessed. VOGA outlined maintenance cycles, recent major maintenance shutdowns, replacement of export system components, and use of corrosion-resistant materials to reduce future leak potential.
        - BTAC asked whether the incident changes VOGA’s risk profile for previously submitted EPs and current EP revisions. VOGA advised preparedness is designed around worst-case scenarios that exceed the recent incident, and that response planning remains focused on higher-consequence events.
    - VOGA confirmed it would provide relevant EP extracts and Aboriginal heritage content and share an action list for the ongoing engagement around traditional owner involvement and input to priority protection planning.
    - VOGA will continue to engage with BTAC on matters arising as part of the ongoing consultation; as part of ongoing engagement.
- On 17 February 2026, VOGA emailed BTAC to thank them for meeting and requesting confirmation of the names and positions of the attendees at the meeting (SI Report, reference 11.1.20).
- On 17 February 2026, BTAC emailed VOGA and provided the names and positions of all the attendees and advised it would soon provide EP feedback (SI Report, reference 11.1.21).
- On 19 February 2026, VOGA emailed BTAC with a summary of the meeting actions and noted the key aspects of their discussion for ongoing engagement (SI Report, reference 11.1.22).
- On 19 February 2026, VOGA emailed BTAC to notify them of the last opportunity to provide feedback for this EP and that it intends to submit the EP, with the formal consultation period having closed on 17 February 2026 and inviting final comments by 20 February 2026 (SI Report, reference 11.3.23).
    - The email summarised consultation undertaken since August 2025, including the most recent meeting on 16 February 2026 in Perth.
    - VOGA acknowledged BTAC’s key interests, including identification of cultural values to inform planning and priority protection measures, early engagement of Traditional Owners in incident response, recognition of access limitations to culturally significant areas, and appropriate handling of sensitive information.
    - The correspondence noted BTAC’s progression of coastal heritage mapping to identify culturally significant priority areas, and its intention to coordinate community activation in the event of an incident rather than disclose culturally sensitive site information.
    - VOGA acknowledged BTAC’s interest in involvement of Thalanyji rangers in emergency response, including participation in training and exercises, and noted ongoing engagement on these matters.
    - VOGA noted BTAC’s cultural duty to protect Country and confirmed this has been documented in the EP.
    - VOGA confirmed that questions raised regarding operational risk management of the ageing facility had been addressed and that it considered there were no outstanding information requests.
    - BTAC was invited to provide any final feedback by 20 February 2026, with advice on how feedback would be handled.
- On 20 February 2026, BTAC emailed VOGA and attached a Cost Recovery document which included information about BTAC’s functions interests and activities (SI Report, reference 11.1.24). The letter outlined:
    - Proposed consultation arrangements and cost recovery terms between BTAC and Vermilion in relation to Environment Plans for the Wandoo oil field and related activities that may impact Thalanyji Country.
    - Vermilion to consult primarily through BTAC’s Energy Project Working Group (EPWG), with escalation to the Board or common law holders where required.
    - Thalanyji Country includes determined land, claim areas and broader sea country extending offshore (including Monte Bello Islands, Barrow Island and surrounding areas within ~150km of the Ashburton River mouth).

○ Thalanyji People maintain cultural and spiritual connections to land and waters, including offshore areas, and undertake activities there. ○ BTAC acts as representative for Thalanyji People in relation to proposed activities that may pose risks to interests or activities within Thalanyji Country. ○ BTAC asserts it is a relevant organisation for consultation where the operational area or EMBA of an EP intersects Thalanyji Country ○ Its position is stated to be consistent with Federal Court authority and NOPSEMA guidance recognising that Aboriginal interests may extend beyond determined native title to broader sea country values and cultural connections. • On 20 February 2026, BTAC emailed VOGA to advise that BTAC has further comments in respect of the EP and would aim to provide comment by close of business Monday 23 February 2026 (SI Report, reference 11.1.25).			
Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
• BTAC stated it is the Registered Native Title Body Corporate (RNTBC) for the Thalanyji People and represents the Thalanyji/Nhuwala claim group. • BTAC advised it should be consulted as a relevant person where an EP operational area or EMBA intersects Thalanyji Country. • BTAC confirmed that consultation should occur through its established governance structures. • BTAC noted that common law holders or broader groups may need to be consulted where formal decisions are required.	BTAC's status as RNTBC and representative body establishes it as a relevant person. The EMBA intersect areas identified by BTAC as Thalanyji Country.	• VOGA recognises BTAC as a relevant person for consultation in respect of this EP. • VOGA has and will continue consultation through BTAC's nominated representatives and governance structures. • Where requested, VOGA will engage with broader governance structures as advised by BTAC.	• BTAC has been recorded in the EP as a relevant person. • Consultation has been undertaken directly with BTAC in accordance with its governance framework. • Cultural and heritage values and sensitivities, including Sea Country, are described in Section 3.7.6 of the EP.
• BTAC identified a culturally significant island and other important coastal sites within Thalanyji Country. • BTAC advised it will not provide sensitive site	The request aligns with best practice for Traditional Owner involvement, respects cultural confidentiality,	VOGA has agreed to incorporate a commitment in the EP to notify and consult BTAC as soon as practicable in the event of a spill or reportable incident with potential to affect Thalanyji Country. The EP recognises the cultural significance of relevant islands and coastal areas without disclosing sensitive site-specific	• Thalanyji cultural values and interests have been recorded in Section 3.7.6 (Table 3-18) of the EP. • A notification commitment has been included in the

information due to cultural confidentiality. • BTAC requested that the EP explicitly require BTAC to be contacted in the event of an incident to support protection of cultural heritage values during spill response or other emergency activities.	and is directly relevant to spill response planning.	information. VOGA has provided BTAC an excerpt of this information documented in the EP. VOGA will continue to engage with BTAC to support culturally informed response arrangements where required.	EP, requiring contact with BTAC in the event of an incident that may impact Thalanyji Country (Section 7, Table 7.2, CM-11.20) (Section 9.4.11, Table 9-6).
• BTAC outlined that Thalanyji Country extends beyond determined native title areas to include broader sea country, offshore islands and surrounding waters. • BTAC noted that cultural and spiritual connections extend to offshore areas (including islands).	• NOPSEMA guidance recognises that Aboriginal interests may extend beyond formal native title determinations. • It is appropriate to consider broader sea country values when assessing potential impacts.	VOGA has considered Thalanyji sea country values in defining the consultation scope and in assessing potential impacts. The EP acknowledges cultural connections to offshore areas within and proximate to the planning area.	Cultural and heritage values relevant to offshore islands and surrounding waters are described in Section 3.7.6 of the EP. Impact and risk assessments consider potential effects on Sea Country values within the EMBA are assessed in Section 5.13.3.1 of the EP.
BTAC sought transparency for how Aboriginal Heritage considerations are documented in the EP.	Transparency supports accuracy and trust and is directly relevant to providing accurate information in the EP.	VOGA agreed to provide extracts of the EP relating to Thalanyji cultural values and interests. VOGA emailed BTAC with an extract of what has been recorded in the EP.	VOGA has provided BTAC an excerpt of the EP from Section 3.7.6, Table 3-18.
BTAC was willing to share outcomes of its heritage review and cultural mapping, and asked if VOGA could fund this work.	Funding of individual programs is outside EP consultation scope and may create inequity across other relevant persons.	VOGA expressed a preference for a government-led, industry-wide approach to heritage mapping rather than individual operator funding. VOGA will continue to engage with BTAC as part of ongoing consultation to receive input to the planning process.	Not required.
BTAC questioned whether the incident changes VOGA's risk	VOGA supports that this relates to BTAC's	VOGA confirmed that EP preparedness is based on worst-case scenarios that exceed the incident and that the risk profile for the Well Construction EP remains unchanged.	Not required.

profile for existing or upcoming EPs**.**	understanding of risk management.		
Expectation of early and active involvement in spill planning, response, and exercises. Interest in ranger capability development and participation in emergency response. Emphasis on priority coastal area protection, informed by Traditional Owner knowledge.	The request reflects a legitimate interest in ensuring culturally informed spill preparedness and response.	VOGA supports early as practical engagement with BTAC in relation to oil spill contingency planning relevant to Thalanyji Country. VOGA acknowledges BTAC's interest in ranger capability development and will continue discussions s part of ongoing engagement regarding how local knowledge may inform response planning and prioritisation strategies.	Section 3.7.6, Table 3-18 of the EP has been updated to reflect consultation outcomes and BTAC's interest in culturally informed spill preparedness.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with BTAC for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided BTAC on 21 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.
- A Summary Consultation Information Sheet, developed specifically for First Nations groups, was provided to BTAC on 21 October 2025.
- Maps were provided showing the location and EMBA in relation to relevant native title determination.
- BTAC has shown an understanding of the proposed activity during an in-person meeting held with VOGA on 16 February 2026 where VOGA gave a presentation and provided supplementary information, including an overview of this EP.
- VOGA responded to questions at the meeting about the activity, and BTAC indicated to VOGA that they did not have any objections or claims that required addressing.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in August 2025.
- Follow up emails were sent in November 2025 and on 10 December 2025 and 19 February 2026 advising of the consultation period.
    - BTAC responded on 7 November 2025 noting the consultation period until February 2026.
- VOGA has addressed and responded to BTAC over a six-month period.

- VOGA has provided BTAC with more than six months to consult ahead of preparing the EP for submission and continues to take feedback in relation to the EP.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA has sent follow-up consultation emails and made phone calls, reminding BTAC of the opportunity to provide feedback.
- VOGA has had a face-to-face meeting with BTAC representatives and directors to discuss this EP.
- VOGA asked for BTAC's input on how BTAC would like to engage in consultation and has consulted in a way it understands is appropriate for First Nations groups. BTAC advised it prefers meetings to take place in person and VOGA has met with BTAC in person.
- VOGA sent an email to BTAC advising of its intent to submit the EP and prompted BTAC to provide any final feedback by 20 February 2026. This correspondence included a summary of cultural values and interests recorded in the EP in Section 3.7.6 that BTAC had raised during consultation and from publicly available literature, providing BTAC the opportunity to review the information and provide any final feedback.

Kariyarra Aboriginal Corporation (KAC)

Historical and ongoing engagement

VOGA has been in engagement with KAC since October 2024, prior to the consultation on this EP below. VOGA maintains an ongoing engagement with KAC in addition to the consultation on this EP below. A summary and current status of these engagements can be found at Appendix F, Summary of Ongoing Engagement, reference 1.4.3.

Consultation overview and summary response on this EP

- On 25 August 2025, VOGA emailed KAC advising of upcoming consultation in the Wandoo Offshore Field for the Well Construction EP and another EP not relevant to this EP (Record of Consultation, reference 2.2).
    - VOGA advised that consultation with KAC regarding these activities is welcome and it wanted to arrange a meeting during September – November to discuss the EP.
    - VOGA noted the EP revision was part of a standard five-year review of existing operations (not a new project) and are intended to reassess environmental risks and management measures, with an opportunity for stakeholder input including cultural heritage considerations.

- On 26 August 2025 KAC emailed VOGA and provided potential dates for an upcoming meeting (SI Report, reference 11.3.1).
- Between 1 September and 2 September 2025 VOGA and KAC exchanged emails and administrational details to arrange the meeting on 6 October 2025 (SI Report, references 11.3.2 to 11.3.12).
- On 2 October 2025 VOGA emailed KAC the agenda in advance of the meeting for KAC's input, as well as the presentation, information sheets and a map (SI Report, reference 11.3.13).
- On 3 October 2025, VOGA and KAC exchanged emails to prepare the administrational aspects of the meeting including advance copies of consultation materials (SI Report, reference 11.3.14 to 11.3.17).
- On 6 October 2025, VOGA met with the KAC Board of Directors and its CEO and staff. This was the third meeting held with KAC to discuss ongoing consultation matters, with an agenda item included for consultation on the Well Construction Environment Plan (SI Report, reference 11.3.18 and 11.3.18).
    - VOGA provided a presentation with background on the Wandoo Field and consultation to date, outlining the next steps for consultation with KAC.
    - VOGA highlighted KAC priorities raised in previous consultation, which include:
        - Cultural duty to protect Country.
        - Interest in emergency response procedures.
        - Interest in building community awareness and a formalinizing consultation arrangement.
        - Progressing discussion on ranger program collaboration.
    - VOGA provided an overview of Well Construction EP:
        - VOGA outlined what the Well Construction EP covers, including where/when the activity would occur (timing driven by rig availability).
        - VOGA explained the drilling process and new vs existing wells, including how it can access new parts of the reservoir.
    - KAC raised several questions about the Well Construction EP:
        - KAC asked about the lifespan of Wandoo. VOGA confirmed its currently to 2035-2036.
        - KAC asked what the process was for introducing new wells vs retiring others. VOGA explained the drilling process and how it can help unlock new areas of the reservoir.
        - KAC asked about decommissioning plans. VOGA explained the facility structure, noting it is still figuring out the best way to manage decommissioning
        - KAC asked about access for fishing. VOGA discussed the exclusion zone for recreational fishers and that leaving infrastructure in could be theoretically beneficial as an artificial reef.
    - KAC then asked questions about the operations more generally:
        - KAC asked about platform staffing. VOGA explained their safety obligations
        - KAC asked whether Traditional Owners are involved in environmental monitoring. VOGA explained its obligations to notify Traditional Owners of breaches/incidents and that consultation is used to capture Traditional Owner knowledge, so important areas can be documented and protected in response planning.

        - KAC raised concerns about sharing culturally sensitive information (IP), including how it is stored/used, and what information can/cannot be shared due to Lore; noting caution shaped by past experiences with regulatory/state processes (including maritime jurisdiction). VOGA noted this concern.
    - In response to oil spill prevention discussions as part of VOGA and KAC's ongoing consultation, KAC raised several questions, including:
        - KAC's raised concerns with how priorities are determined in the spill response decision matrix. VOGA reiterated consultation is intended to capture Kariyarra priorities to inform response strategies and protection planning.
        - VOGA confirmed Traditional Owner input can inform GIS/shoreline segmentation used in tactical response planning.
        - KAC provided an example of culturally important hunting and gathering areas and asked how this information could be protected in a spill scenario, and how this sits in regard to maritime jurisdiction.
        - KAC stated it wants the capability to act on its own priorities (if sensitive) and if areas are designated non-priority under broader response arrangements. VOGA suggested sensitive information may be more appropriately retained with nominated rangers rather than broadly provided to government/industry.
        - KAC is interested to know how much funding it would get from operators to do this. VOGA explained the role of AMOSC in managing major response capability and suggested an approach beginning with formal completion of training (DOT).
    - VOGA will continue to engage with KAC on matters arising as part of the ongoing consultation; as part of ongoing engagement.
- On 21 October 2025, VOGA emailed KAC advising of proposed activities on this EP. VOGA provided a Summary Information Sheet and a link to a Consultation Information Sheet on its website (Record of Consultation, reference 1.1 and 3.2).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date, and a link to VOGA's website with additional resources on EP consultation.
        - VOGA advised it recognised the importance of cultural heritage to Native Title Holders and was committed to integrating these values into their environmental planning.
        - VOGA believes KAC is relevant for consultation and invited them to participate in the process.
    - VOGA proposed a meeting to discuss the proposed activities, seek input, and engage in consultation.
    - VOGA provided information on confidentiality and the ability to opt out of the consultation.
    - VOGA attached a map of the native title determination in respect to location of operations and EMBA for this EP (Record of Consultation, reference 3.1.1).
- On 18 February 2026, VOGA emailed KAC to notify them of the last opportunity to provide feedback for this EP and that it intends to submit the EP, with the formal consultation period having closed on 17 February 2026 and inviting final comments by 20 February 2026 (SI Report, reference 11.3.20).
    - The email summarised consultation undertaken since August 2025, including written correspondence (25 August and 21 October 2025) and the in-person meeting held in South Hedland on 6 October 2025.
    - VOGA acknowledged KAC's key interests, including incorporation of Kariyarra cultural values into spill response planning, determination of priority protection areas, appropriate handling of culturally sensitive information, co-protection of Country in the event of a spill, ranger capability building, and interest in operational matters such as field lifespan and decommissioning.
    - VOGA noted KAC's cultural duty to protect Country and confirmed that relevant cultural values and interests, including On Country access, tangible heritage sites and broader cultural connections, have been documented in the EP.

○ VOGA confirmed that questions raised during consultation on the EP had been addressed and that it considered there were no outstanding information requests. ○ KAC was invited to provide any final feedback by 20 February 2026, with advice on how feedback would be handled.			
Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
KAC has a Cultural duty to protect Country and expectation that this be recognised in VOGA's planning.	Relevant to identifying environment that may be affected and to informing culturally appropriate risk management.	VOGA has accepted KAC's cultural duty and recognised this in the EP. VOGA has provided KAC an excerpt of this documentation in the EP.	Cultural values and interests recorded in the EP in Section 3.7.6, Table 3-18.

Interest in emergency response procedures, including how spill priorities are determined. Concern regarding the industry and government spill response priority decision matrix and protection of culturally important areas. Concerns about sharing culturally sensitive information (IP), storage and use. Interest in capability to act on own priorities and funding to do so.	Relevant to impact assessment and response strategy; aligns with requirement to consult on potential impacts and management measures. Relevant to spill response planning and protection priorities. Material to consultation integrity and handling of sensitive heritage information; relevant to confidentiality provisions. Response capability and funding arrangements fall outside EP consultation scope.	Confirmed consultation is intended to capture Traditional Owner priorities to inform response strategies and protection planning. Confirmed Traditional Owner input can inform GIS/shoreline segmentation and tactical response planning. Noted concerns; advised sensitive information may be retained with nominated rangers rather than broadly shared. Explained AMOSC framework for response capability and suggested training pathway; did not commit to providing training or funding. VOGA will continue to engage with KAC on this topic as part of ongoing engagement.	Cultural values recorded in Section 3.7.6, Table 3-18, without disclosure of sensitive details. Considered as part of oil spill preparedness planning; no additional measures in this EP are required. Additional measures may be included to the OPEP as part of ongoing engagement.
Interest in progressing ranger program collaboration. Interest in building community awareness around oil spill preparation and response.	Ranger program collaboration and community awareness supports effective consultation but not to inform EP control measures.	Noted and confirmed as part of ongoing engagement. Provided a draft information document for the community as part of ongoing engagement.	Not required.
Questions regarding: • introduction of new wells vs retirement of existing wells. • access for fishing and exclusion zones.	Relevant to understanding scope of activity; explanatory in nature.	Explained drilling process and reservoir access; clarified scope of Well Construction EP. Explained exclusion zone requirements and noted theoretical reef effect of infrastructure.	Not required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with KAC for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to KAC on 21 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.
- A Summary Consultation Information Sheet, developed specifically for First Nations groups, was provided to KAC on 21 October 2025.
- Maps were provided showing the location and EMBA in relation to the native title determination.
- KAC has shown an understanding of the proposed activity during an in person meeting held with VOGA on 6 October 2025 where VOGA gave a presentation and provided supplementary information, including an overview of this EP.
- VOGA responded to questions at the meeting, and KAC indicated to VOGA that they did not have any objections or claims that required addressing.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in August 2025.
- Follow up emails were sent on 21 October 2025 and 18 February 2026 advising of the consultation period.
- VOGA has addressed and responded to KAC over a six-month period.
- VOGA has provided KAC with more than six months to consult ahead of preparing the EP for submission and continues to take feedback in relation to the EP.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA has sent follow-up consultation emails and phone calls, reminding KAC of the opportunity to provide feedback.
- VOGA has had a face-to-face meeting with the CEO and the KAC board of directors to discuss this EP.
- VOGA asked for KAC’s input on how KAC would like to engage in consultation and has consulted in a way it understands is appropriate for First Nations groups.

- VOGA sent an email to KAC advising of its intent to submit the EP and prompted KAC to provide any final feedback by 20 February 2026. This correspondence included a summary of cultural values and interests recorded in the EP in Section 3.7.6 that KAC had raised during consultation and from publicly available literature, providing KAC the opportunity to review the information and provide any final feedback.

Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC), Yinggarda Aboriginal Corporation

Historical and ongoing engagement

VOGA has been in engagement with NTGAC October 2024, prior to the consultation on this EP below. VOGA maintains an ongoing engagement with NTGAC in addition to the consultation on this EP below. A summary and current status of these engagements can be found at Appendix F, Summary of Ongoing Engagement, reference 1.4.3.

Consultation overview and summary of response on this EP

- On 25 August 2025, VOGA emailed NTGAC advising of upcoming consultation in the Wandoo Offshore Field for the Well Construction EP and another EP not relevant to this EP (Record of Consultation, reference 2.7).
    - VOGA advised that consultation with NTGAC regarding these activities is welcome and it wanted to arrange a meeting during September – November to discuss the EP.
    - VOGA noted the EP revision was part of a standard five-year review of existing operations (not a new project) and are intended to reassess environmental risks and management measures, with an opportunity for stakeholder input including cultural heritage considerations.
- On 21 October 2025, VOGA emailed NTGAC advising of proposed activities on this EP. VOGA provided a Summary Information Sheet and a link to a Consultation Information Sheet on its website (Record of Consultation, reference 1.1 and 3.3).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date, and a link to VOGA's website with additional resources on EP consultation.
        - VOGA advised it recognised the importance of cultural heritage to Native Title Holders and was committed to integrating these values into their environmental planning.
        - VOGA believes NTGAC is relevant for consultation and invited them to participate in the process.
    - VOGA proposed a meeting to discuss the proposed activities, seek input, and engage in consultation.
    - VOGA provided information on confidentiality and the ability to opt out of the consultation.
    - VOGA attached a map of the native title determination in respect to location of operations and EMBA for this EP (Record of Consultation, reference 3.3.1).
- On 10 December 2025, VOGA emailed the NTGAC engagement team to follow up on consultation information provided on 21 October 2025.
    - VOGA sought clarification on NTGAC's preferred consultation format, including whether NTGAC wished to arrange a meeting within the consultation period, and invited proposed dates (Record of Consultation, reference 5.23).
    - The correspondence confirmed that the formal consultation period was open until 17 February 2026
- On 17 February 2026, VOGA emailed NTGAC to notify them of the last opportunity to provide feedback for this EP noting the formal consultation period had closed on 17 February 2026 and inviting any final comments by 20 February 2026 (SI Report, reference 11.6.1).

- The email summarised consultation undertaken since October 2025, including provision of consultation information sheets and EMBA in respect to native title on 21 October 2025, and follow-up correspondence on 10 December 2025 and 11 February 2026 seeking NTGAC's preferred consultation format and offering to arrange a meeting within the consultation window.
- VOGA acknowledged ongoing engagement with NTGAC via Yamatji Marlpa Aboriginal Corporation (YMAC), including efforts to establish a consultation protocol, and confirmed that correspondence had been maintained in accordance with the draft protocol.
- VOGA noted that no response had been received to the consultation correspondence or follow-ups regarding the EP.
- NTGAC was invited to review the information previously provided and submit any final comments, concerns or requests for further information regarding potential impacts to its functions, interests or activities, with advice on confidentiality and how feedback would be handled.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA acknowledged that ongoing engagement with NTGAC via YMAC, including efforts to establish a consultation protocol, and confirmed that correspondence had been maintained in accordance with the draft protocol. VOGA has followed up with NTGAC via YMAC on several occasions regarding consultation on this EP and separately to seek an update on NTGAC's consideration of the Consultation Protocol draft as part of ongoing engagement. VOGA accepts that NTGAC has no comment at this time on the EP.	VOGA considers the measures and controls in the EP are appropriate.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with NTGAC for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to NTGAC on 21 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.
- A Summary Consultation Information Sheet, developed specifically for First Nations groups, was provided to NTGAC on 21 October 2025.
- Maps were provided showing the location and EMBA in relation to the NTGAC native title determination.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in August 2025.
- Follow up emails were sent on 21 October 2025, 10 December 2025 and 18 February 2026 advising of the consultation period.
- VOGA has provided NTGAC with more than six months to consult ahead of preparing the EP for submission and will continue to take feedback in relation to the EP.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA has sent follow-up consultation emails, reminding NTGAC of the opportunity to provide feedback.
- VOGA asked for NTGAC's input on how NTGAC would like to engage in consultation and has consulted in a way it understands is appropriate for First Nations groups. VOGA has consulted with NTGAC via its engagement team at YMAC as per the draft Consultation Protocol in progress between the two parties.
- VOGA sent an email to NTGAC advising of its intent to submit the EP and prompted NTGAC to provide any final feedback by 20 February 2026.

Ngarluma Aboriginal Corporation (NAC)

Historical and ongoing engagement

VOGA has been in engagement with NAC since October 2024, prior to the consultation on this EP below. VOGA maintains an ongoing engagement with NAC in addition to the consultation on this EP below. A summary and current status of these engagements can be found at Appendix F, Summary of Ongoing Engagement, reference 1.4.3.

Consultation overview and summary of response on this EP

- On 25 August 2025, VOGA emailed NAC advising of upcoming consultation in the Wandoo Offshore Field for the Well Construction EP and another EP not relevant to this EP (Record of Consultation, reference 2.3).
    - VOGA advised that consultation with NAC regarding these activities is welcome and it wanted to arrange a meeting during September – November to discuss the EP.
    - VOGA noted the EP revision was part of a standard five-year review of existing operations (not a new project) and are intended to reassess environmental risks and management measures, with an opportunity for stakeholder input including cultural heritage considerations.
- On 21 October 2025, VOGA emailed NAC advising of proposed activities in the Wandoo Field. VOGA provided a Summary Information Sheet and a link to a Consultation Information Sheet on its website (Record of Consultation, reference 1.1 and 3.4).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date, and a link to VOGA's website with additional resources on EP consultation.

        - VOGA advised it recognised the importance of cultural heritage to Native Title Holders and was committed to integrating these values into their environmental planning.
        - VOGA believes NAC is relevant for consultation and invited them to participate in the process.
    - VOGA acknowledges our previous and ongoing engagement and advised it would be happy to provide NAC with a summary of our understanding of NAC's functions, interests and activities and provide an option to discuss the proposed activities, seek input, and engage in consultation.
    - VOGA provided information on confidentiality and the ability to opt out of the consultation.
    - VOGA attached a map of the native title determination in respect to location of operations and EMBA for this EP (Record of Consultation, reference 3.4.1).
- On 10 December 2025, VOGA emailed the NAC engagement team to follow up on consultation information provided on 21 October 2025.
    - VOGA sought clarification on NAC's preferred consultation format, including whether NAC wished to arrange a meeting within the consultation period, and invited proposed dates (Record of Consultation, reference 5.21).
    - The correspondence confirmed that the formal consultation period was open until 17 February 2026
- Between 12 December 2025 and 2 February 2026, VOGA and NAC exchanged emails and administrational details to arrange the meeting on 3 February 2026 (SI Report, reference 11.8.1 – 11.8.11).
- On 2 February 2026, VOGA emailed NAC the agenda in advance of the meeting for NAC's input, as well as the presentation, information sheets and a map (SI Report, reference 11.8.12).
- On 3 February 2025, VOGA met with Ngarluma Aboriginal Corporation (NAC) Directors and its CEO in Karratha for a second time, to discuss ongoing consultation matters and consultation on the Well Construction Environment Plan (SI Report, reference 11.8.13 and 11.8.14).
    - VOGA provided a presentation with background on the Wandoo Field and consultation to date and outline the next steps for consultation with NAC.
    - VOGA highlighted NAC priorities raised in previous consultation, which include:
        - Progressing a consultation protocol agreement
        - Sea Country priorities, identifying culturally significant areas/species for planning
        - Participation in ongoing studies (UWA)
        - Priority protection planning for sensitive areas
        - Oil spill confidence and wanting clearer visibility of Vermilion Energy oil spill mechanisms
        - Clearer understanding of EP activities, timing, and pathways.
    - VOGA provided an overview of the Well Construction EP
        - Outlined how the activity is carried out (using rig and typing new wells back to existing production infrastructure.
        - Explained it needs to book a rig alongside timing from other operators.
    - NAC asked a series of questions, including:
        - NAC inquired about the existing well inventory and drilling program. VOGA advised there are five wells at Wandoo A and eighteen at Wandoo B, and that a typical campaign drills three wells.

        - NAC asked why additional wells are required / whether the reservoir is compartmentalised. VOGA explained that as the reservoir matures, water production increases and permeability declines, so wells may be drilled longer horizontally to maintain production efficiency.
        - NAC inquired about whether drill pipelines remain permanently and how the wells are connected. VOGA explained the tie-back approach connecting wells to production infrastructure
        - NAC asked if the operations were in Commonwealth or State waters. VOGA said Commonwealth.
        - NAC asked if oil spill plans cover a loss-of-well control scenario. VOGA said yes and emphasised that while wells do not free-flow and pressure is reduced, preparedness measures are maintained.
    - As part of ongoing consultation, VOGA and NAC discussed oil spill mitigation and response. NAC then asked questions about the response planning and incident communications more generally, including:
        - NAC were concerned about how it should react during an incident and when resources should be activated? VOGA supported the idea of a joint workshop following completion of priority protection planning so both parties can clarify roles.
        - NAC highlighted the importance of having a Ngarluma knowledge holder provide cultural input during incidents.
        - NAC also expressed interest in understanding VOGA's tiered spill matrix and requested this be incorporated into a future workshop with senior Elders.
        - NAC stated it would be beneficial to be trained to support response activities and participate in exercises. VOGA noted the industry's movement toward structured awareness-level spill training led by the WA Department of Transport and industry partners.
        - NAC also identified turtles and dugongs as culturally significant species requiring consideration in response planning.
- VOGA outlined its future actions, which include sharing an action list, providing a proposed emergency contact framework and to outline the communications pathways during an incident.
- VOGA will continue to engage with WAC on matters arising as part of the ongoing consultation; as part of ongoing engagement.
- On 18 February 2026, VOGA emailed NAC to notify them of the last opportunity to provide feedback for this EP noting the formal consultation period had concluded on 17 February 2026 and inviting any final comments by 20 February 2026 (SI Report, reference 11.8.15).
    - The email summarised consultation undertaken since August 2025, including written correspondence (25 August and 21 October 2025) and the in-person meeting held in Karratha on 3 February 2026.
    - VOGA acknowledged NAC's key interests, including identification of cultural values to inform planning and priority protection measures, appropriate handling of sensitive information, confidence in oil spill preparedness and response, ranger capability building, and interest in operational risk management of the ageing facility.
    - The correspondence noted discussions regarding development of joint incident notification and communication procedures, the potential for a joint workshop to clarify roles and expectations in spill response, and the importance of Ngarluma knowledge holder input during incident response.
    - VOGA acknowledged NAC's cultural duty to protect Country and confirmed that relevant cultural values and interests — including connection to Murujuga and the Dampier Archipelago, culturally significant marine species and areas, and ranger program interests — have been documented in the EP based on consultation and publicly available literature.

- VOGA confirmed that questions raised during consultation had been addressed and that it considered there were no outstanding information requests. - NAC was invited to review the information previously provided and submit any final comments, concerns or requests for further information, with advice on confidentiality and confirmation for how feedback would be handled. - On 18 February 2026, VOGA emailed NAC with a correction to their earlier email (SI Report, reference 11.8.16).			
Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
- Identification of Sea Country priorities and culturally significant areas/species for planning purposes. - Identification of turtles and dugongs as culturally significant species requiring consideration in response planning. - Priority protection planning for sensitive areas.	Relevant to environmental impact and risk assessment and evaluation of impacts on matters of cultural significance. Relevant to oil spill preparedness and response planning.	- Agreed. VOGA recognised cultural heritage importance and committed to integrating these values into environmental planning. - Agreed in principle. VOGA discussed progressing priority protection planning as part of ongoing consultation.	Cultural values recorded in Section 3.7.6, Table 3-18. The EP reflects consideration of Ngarluma cultural and sea country values.
- Concern regarding oil spill preparedness and desire for clearer visibility of oil spill mechanisms. - Concern regarding NAC's role during an incident and timing for activation of resources. - Importance of Ngarluma knowledge holder providing cultural input during incidents.		Noted and discussed. VOGA supported a joint workshop following completion of priority protection planning to clarify roles as part of ongoing engagement.	Considered as part of oil spill preparedness planning; no additional measures in this EP are required. Additional measures may be included to the OPEP as part of ongoing engagement.

• Interest in receiving training to support response activities and participate in exercises.			
Questions regarding: • well inventory and drilling program scale. • need for additional wells / reservoir compartmentalisation. • permanence of drill pipelines and well tie-back arrangements. • confirmation that oil spill plans cover loss-of-well control scenario.	Informational query relevant to understanding operational rationale and activity scope; no objections or claims.	• VOGA explained reservoir maturation, water production and horizontal drilling rationale. • VOGA explained tie-back approach to existing production infrastructure. • VOGA advised oil spill plans include loss-of-well control scenarios and preparedness measures are maintained.	Not required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with NAC for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided NAC on 21 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.
- A Summary Consultation Information Sheet, developed specifically for First Nations groups, was provided to NAC on 21 October 2025.
- Maps were provided showing the location and EMBA in relation to the relevant native title determinations.
- NAC has shown an understanding of the proposed activity during an in person meeting held with VOGA on 3 February 2026 where VOGA gave a presentation and provided supplementary information, including an overview of this EP.
- VOGA responded to questions at the meeting, and NAC indicated to VOGA that they did not have any objections or claims that required addressing.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in August 2025.
- Follow up emails were sent on 10 December 2025 and 18 February 2026 advising of the consultation period.
- VOGA has addressed and responded to NAC over a six-month period.
- VOGA has provided NAC with more than six months to consult ahead of preparing the EP for submission and continues to take feedback in relation to the EP.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA has sent follow-up consultation emails and phone calls, reminding NAC of the opportunity to provide feedback.
- VOGA has had a face-to-face meeting with the CEO and the NAC representatives and Directors to discuss this EP.
- VOGA asked for NAC's input on how NAC would like to engage in consultation and has consulted in a way it understands is appropriate for First Nations groups.
- VOGA sent an email to NAC advising of its intent to submit the EP and prompted NAC to provide any final feedback by 20 February 2026. This correspondence included a summary of cultural values and interests recorded in the EP in Section 3.7.6 that NAC had raised during consultation and from publicly available literature, providing NAC the opportunity to review the information and provide any final feedback.

Wanparta Aboriginal Corporation

Historical and ongoing engagement

VOGA has been in engagement with WAC since October 2024, prior to the consultation on this EP below. VOGA maintains an ongoing engagement with WAC in addition to the consultation on this EP below. A summary and current status of these engagements can be found at Appendix F, Summary of Ongoing Engagement, reference 1.4.3.

Consultation overview and summary of response on this EP

- On 25 August 2025, VOGA emailed WAC advising of upcoming consultation in the Wandoo Offshore Field for the Well Construction EP and another EP not relevant to this EP (Record of Consultation, reference 2.1 SI Report, reference 11.11.1).
    - VOGA advised that consultation with WAC regarding these activities is welcome and it wanted to arrange a meeting during September – November to discuss the EP.
    - VOGA noted the EP revision was part of a standard five-year review of existing operations (not a new project) and are intended to reassess environmental risks and management measures, with an opportunity for stakeholder input including cultural heritage considerations.
- Between 25 August 2025 and 27 November 2025, VOGA and WAC exchanged emails and administrational details to arrange the meeting on 28 November 2025 (SI Report, reference 11.11.1 – 11.11.6).

- On 21 October 2025, VOGA emailed WAC advising of proposed activities in the Wandoo Field. VOGA provided a Summary Information Sheet and a link to a Consultation Information Sheet on its website (Record of Consultation, reference 1.1 and 3.5).
- The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date, and a link to VOGA's website with additional resources on EP consultation.
    - VOGA advised it recognised the importance of cultural heritage to Native Title Holders and was committed to integrating these values into their environmental planning.
    - VOGA believes WAC is relevant for consultation and invited them to participate in the process.
- VOGA acknowledges our previous and ongoing engagement and advised it would be happy to provide WAC with a summary of our understanding of WAC's functions, interests and activities and provide an option to discuss the proposed activities, seek input, and engage in consultation.
- VOGA provided information on confidentiality and the ability to opt out of the consultation.
- VOGA attached a map of the native title determination in respect to location of operations and EMBA for this EP (Record of Consultation, reference 3.5.1).
- On 27 November 2025, VOGA emailed WAC the agenda in advance of the meeting for WAC's input, as well as the presentation, information sheets and a map (SI Report, reference 11.11.7).
- On 28 November 2025, VOGA met with Wanparta Aboriginal Corporation (WAC) Directors and Ngarla Elders for the second time, to discuss ongoing consultation matters and consultation on the Well Construction Environment Plan. VOGA provided a presentation with background on the Wandoo Field and consultation to date and outlined the next steps for consultation with WAC (SI Report, reference 11.11.9 and 11.11.10).
    - VOGA highlighted WAC's priorities raised in previous consultation, which include:
        - Cultural duty to protect Ngarla Country.
        - Interest in emergency response procedures (cyclone and oil spills).
        - Desire to build oil spill mitigation/preparedness/response capability and involve rangers.
        - Practical ranger training/involvement in oil spill response.
        - A formal consultation agreement.
    - VOGA provided context to the plans at Wandoo, the last consultation for EPs with WAC and the next EPs for discussion
    - VOGA provided context to the 5-year revision EPs it was seeking for WAC to consider.
    - VOGA explained the process and clarified the difference between what was discussed for the previous Eps at the last meeting and how these activities differ.
    - VOGA provided an overview of Well Construction EP:
        - Explained location and timing, which is largely driven by rig availability as a small operator.
        - Gave examples of the activity occurring.
    - WAC were interested in how wells produced. VOGA explained how wells produce using diagrams; noting production may occur via natural flow or with assistance via gas lift, reinjection or electric pumps.
    - There were no further questions from WAC about the Well Construction EP.
    - As part of ongoing consultation, VOGA also provided information on oil spill prevention and response strategies:
        - How a spill would be managed and the response options available

        - Clarified relevant partners and how VOGA would interface with them during response
        - Explained how WAC information can inform response planning
        - VOGA explained the response activation/notification process and available response options/resources (booms, dispersants, wildlife containers).
        - WAC discussed involvement and capability building via the developing sea ranger program. Ranger capability building and specialist oiled-wildlife training was discussed, noting approximately 13-15 days to mobilize resources and equipment for WAC's area.
        - WAC confirmed it will explore collaboration through the developing sea ranger program as an ongoing consultation item, focused on building ranger capability and involvement in oil spill preparedness and response (including training).
        - WAC raised several questions about the oil spill prevention and response strategies, including:
        - WAC requested further detail on how the level of oil pollution is assessed, and where oil-polluted soil, vegetation, and fauna would be disposed of. VOGA explained oiling is assessed via shoreline segmentation and shoreline assessment/clean-up forms, with Traditional Owner input needed for consistent, accurate detail.
        - WAC asked about mapping and EMBA areas. VOGA used maps to flag likely access/staging areas and noted the EMBA is worst-case but advised it would respond/intervene to minimize spill extent and impacts.
        - WAC requested VOGA to bring DTMI and AMOSC representatives to a future meeting to clarify their roles and support ranger training in oil spill response. VOGA outlined how Traditional Owner information feeds into spill response (including DTMI cultural "no-go" mapping).
        - WAC also requested VOGA to inquire whether there are any large-scale meeting programs where permit holders/representative bodies meet with multiple relevant Traditional Owner groups in addition to individual meetings between single groups and permit holders.
    - VOGA will continue to engage with WAC on matters arising as part of the ongoing consultation; as part of ongoing engagement.
- On 4 December 2025, VOGA emailed WAC to follow up with WAC regarding the document that they indicated they would provide with questions and action items (SI Report, reference 11.11.11).
- On 13 December 2025, WAC emailed VOGA and attached the action item list following the meeting of 28 November 2025 and advised that the Consultation Protocol is completed (SI Report, reference 11.11.12).
- On 11 February 2025 VOGA emailed WAC with an updated action item list with responses and further information including an attachment of files relevant to ongoing engagement topics. VOGA also made a commitment to bring a presentation for the next meeting as part of ongoing engagement (SI Report, reference 11.11.13).
- On 18 February 2026, VOGA emailed WAC to notify them of the last opportunity to provide feedback for this EP noting the formal consultation period had concluded on 17 February 2026 and inviting any final comments by 20 February 2026 (SI Report, reference 11.11.14).
    - The email summarised consultation undertaken since August 2025, including written correspondence (25 August and 21 October 2025), the in-person meeting held on 28 November 2025, and follow-up correspondence on 11 February 2026 responding to action items and confirming consultation closure timeframes.

○ VOGA acknowledged WAC's key interests, including oil spill preparedness and response (particularly shoreline and oiled wildlife response), Traditional Owner engagement to guide priority protection planning, ranger involvement and capacity building, and interest in potential noise impacts on migrating whales and turtle migration patterns. ○ The correspondence noted WAC's cultural duty to protect Country and confirmed that relevant cultural values, features and interests — including marine fauna significance, song lines between islands, culturally significant food sources, and spiritual connection to Sea Country — have been documented in the EP based on consultation and publicly available literature. ○ VOGA confirmed that questions raised during the 28 November 2025 meeting had been addressed and that it considers there were no outstanding information requests following the meeting. ○ WAC was invited to review the information previously provided and submit any final comments, concerns or requests for further information, with advice on confidentiality and confirmation for how feedback would be handled.			
Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
Cultural duty to protect Ngarla Country.	Relevant to identifying the environment that may be affected and informing culturally appropriate risk management under the EP.	Acknowledged and incorporated into the EP.	Cultural values and interests recorded in Section 3.7.6, Table 3-18.
Interest in emergency response procedures (cyclone and oil spill).	Relevant to potential environmental impacts and management measures	Provided detailed explanation of procedures and spill prevention measures.	Not required.

Desire to build oil spill mitigation/preparedness/response capability and involve rangers (including practical training). Interest in collaboration via developing sea ranger program and ongoing capability building.	Relevant to culturally informed practices; not a prescribed environmental performance outcome under this EP.	Confirmed will explore collaboration as ongoing consultation item; VOGA committed to continued engagement. Noted and discussed ranger capability building, specialist oiled-wildlife training and collaboration via developing sea ranger program; confirmed for ongoing engagement.	Matter considered through ongoing consultation; no specific EP commitment adopted beyond recording cultural interests in Section 3.7.6, Table 3-18.
Questions regarding well production methods and operational context of Well Construction EP.	Relevant to understanding scope and nature of activity. No objection or claim.	Provided explanation of well production (natural flow, gas lift, reinjection, electric pumps) and clarified EP scope.	Not required.
Request for detail on oil spill assessment methodology and disposal of polluted soil, vegetation and fauna.	Relevant to spill consequence assessment and response planning.	Explained shoreline segmentation, shoreline assessment/clean-up forms and role of Traditional Owner input; described disposal processes.	Not required.
Consultation demonstration statement			
VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with WAC for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically: **Sufficient Information** • Consultation information provided WAC on 21 October 2025 based on their function, interest and activities. • Consultation Information Sheet has been publicly available on the VOGA website since October 2025.			

- A Summary Consultation Information Sheet, developed specifically for First Nations groups, was provided to WAC on 21 October 2025.
- Maps were provided showing the location and EMBA in relation to the WAC native title determination.
- WAC has shown an understanding of the proposed activity during an in person meeting held with VOGA on 28 November 2025 where VOGA gave a presentation and provided supplementary information, including an overview of this EP.
- VOGA responded to questions at the meeting, and WAC indicated to VOGA that they did not have any objections or claims that required addressing.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in August 2025.
- Follow up emails were sent on 4 December 2025 and 18 February 2026 advising of the consultation period.
- VOGA has addressed and responded to WAC over a six-month period.
- VOGA has provided WAC with more than six months to consult ahead of preparing the EP for submission and continues to take feedback in relation to the EP.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA has sent follow-up consultation emails and phone calls, reminding WAC of the opportunity to provide feedback.
- VOGA has had a face-to-face meeting with the CEO and the WAC board of directors to discuss this EP.
- VOGA asked for WAC's input on how WAC would like to engage in consultation and has consulted in a way it understands is appropriate for First Nations groups.
- VOGA sent an email to WAC advising of its intent to submit the EP and prompted WAC to provide any final feedback by 20 February 2026. This correspondence included a summary of cultural values and interests recorded in the EP in Section 3.7.6 that WAC had raised during consultation and from publicly available literature, providing WAC the opportunity to review the information and provide any final feedback.

Wirrawandi Aboriginal Corporation (WAC)

Historical and ongoing engagement

VOGA has been in engagement with WAC since October 2024, prior to the consultation on this EP below. VOGA maintains an ongoing engagement with WAC in addition to the consultation on this EP below. A summary and current status of these engagements can be found at Appendix F, Summary of Ongoing Engagement, reference 1.4.3.

Consultation overview and summary of response on this EP

- On 25 August 2025, VOGA emailed WAC advising of upcoming consultation in the Wandoo Offshore Field Well Construction and Facility Operations Environment Plans (Record of Consultation, reference 2.5).
    - VOGA advised that consultation with WAC regarding these activities is welcome and it wanted to arrange a meeting during September – November to discuss the EP.
    - VOGA noted the EP revision was part of a standard five-year review of existing operations (not a new project) and are intended to reassess environmental risks and management measures, with an opportunity for stakeholder input including cultural heritage considerations.
- On 21 October 2025, VOGA emailed WAC advising of proposed activities in the Wandoo Field. VOGA provided a Summary Information Sheet and a link to a Consultation Information Sheet on its website (Record of Consultation, reference 1.1 and 3.6).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date, and a link to VOGA's website with additional resources on EP consultation.
        - VOGA advised it recognised the importance of cultural heritage to Native Title Holders and was committed to integrating these values into their environmental planning.
        - VOGA believes WAC is relevant for consultation and invited them to participate in the process.
    - VOGA proposed a meeting to discuss the proposed activities, seek input, and engage in consultation.
    - VOGA provided information on confidentiality and the ability to opt out of the consultation.
    - VOGA attached a map of the native title determination in respect to location of operations and EMBA for this EP (Record of Consultation, reference 3.6.1).
- On 7 November 2025, VOGA emailed WAC following up on a previous voicemail, seeking confirmation from WAC if it would like to be consulted on the EP (SI Report, reference 11.12.1).
- On 7 November 2025, WAC emailed VOGA confirming that the board had previously adopted the position that it is a relevant organisation for the EPs and asked about the timeframe for consultation so that WAC could identify a suitable time for VOGA to meet with the board (SI Report, reference 11.12.2).
- On 10 November 2025, VOGA emailed WAC following up on its email of 21 October 2025, which included the consultation materials, advice that consultation was open to 17 February 2026 and was seeking a suitable time to meet the board (SI Report, reference 11.12.3).
- On 10 November 2025, WAC emailed VOGA thanking them for their email and advised that the board was not in a position to meet until February 2026 (SI Report, reference 11.12.4).
    - The email also confirmed that WAC would like to be notified if there were any oil spills or emergencies.
- On 12 December 2025, VOGA emailed WAC thanking them for confirming it was a relevant organisation and for seeking to find a suitable time for VOGA to meet with the board (SI Report, reference 11.12.5).
    - The email also confirmed that VOGA would notify WAC in the event of an oil spill or emergencies.
- On 21 January 2026, VOGA emailed WAC to follow up on its previous email to see if the board were available to meet in February but if not VOGA would be keen to progress a meeting at the next available opportunity (SI Report, reference 11.12.6).
- On 11 February 2026, VOGA emailed WAC to follow up once again on previous emails to see if the board were available to meet and if the board did not have capacity to engage in February, VOGA would still be keen to progress a meeting when there is availability (SI Report, reference 11.12.7).
    - VOGA advised that it was approaching the end of the consultation period for the EP (closing next week on 17 February 2026). After this date, VOGA intends to prepare and submit the EPs for assessment.
- On 11 February 2026, WAC emailed VOGA to confirm that it is a relevant person for the purpose of consultation, however the board was unable to meet in February but would like to do so in March (SI Report, reference 11.12.8).

- On 11 February 2026, VOGA emailed WAC to confirm it would like to progress a meeting in March and asked WAC to provide dates for the meeting (SI Report, reference 11.12.9).
- On 12 February 2026, WAC emailed VOGA advising it would respond once the next board meeting date had been set (SI Report, reference 11.12.10).
- On 13 February 2026, VOGA emailed WAC thanking them for their email (SI Report, reference 11.12.11).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
WAC requested notification in the event of oil spills or emergencies.	Relevant to potential impacts on cultural values and activities.	Confirmed VOGA would notify WAC in the event of an oil spill or emergency.	A notification commitment has been included in the EP requiring contact with WAC in the event of an incident that may impact WAC Country (Section 7, Table 7.2, CM-11.20) (Section 9.4.11, Table 9-6).
WAC confirmed it is a relevant organisation/person for the EPs and advised Board was not available to meet until February/March 2026.	Relevant to procedural fairness and reasonable opportunity to consult; availability constraints do not preclude written consultation.	Acknowledged WAC as a relevant person; confirmed consultation open until 17 February 2026 and sought to arrange a meeting at a time suitable for the Board. Followed up on multiple occasions to secure meeting dates; confirmed willingness to progress a meeting in March if February not feasible.	WAC was recorded as a relevant person. No additional measures required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with WAC for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided WAC on 21 October 2025 based on their function, interest and activities. This was provided a second time to WAC's legal representative on 10 November 2025.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.
- A Summary Consultation Information Sheet, developed specifically for First Nations groups, was provided to WAC on 21 October 2025.

- Maps were provided showing the location and EMBA in relation to the relevant native title determination.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in August 2025.
- Follow up emails were sent on 10 November 2025 and 11 February 2026 advising of the consultation period.
- VOGA has addressed and responded to WAC over a six-month period.
- VOGA has provided WAC with more than six months to consult ahead of preparing the EP for submission and continues to take feedback in relation to the EP.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA has sent follow-up consultation emails and phone calls, reminding WAC of the opportunity to provide feedback.
- VOGA is in the process of arranging a face-to-face meeting in March 2026 with the CEO and the WAC board of directors to discuss this EP.
- VOGA asked for WAC's input on how WAC would like to engage in consultation and has consulted in a way it understands is appropriate for First Nations groups.
- VOGA sent an email to WAC advising of its intent to submit the EP after 17 February on 12 December 2025, 21 January 2026 and again on 11 February 2026.

Yindjibarndi Aboriginal Corporation (YAC)

Historical and ongoing engagement

VOGA has been in engagement with YAC since February 2025, prior to the consultation on this EP below. VOGA maintains an ongoing engagement with YAC in addition to the consultation on this EP below. A summary and current status of these engagements can be found at Appendix F, Summary of Ongoing Engagement, reference 1.4.3.

Consultation overview and summary of response on this EP

- In previous consultation, YAC advised VOGA that Yindjibarndi Aboriginal Corporation (**YAC**) does not need to be consulted in relation to offshore oil operations and that YAC defers this consultation to Ngarluma (SI Report, reference 11.14.1). VOGA has consulted with YAC via Ngarluma.
- On 25 August 2025, VOGA emailed YAC advising of upcoming consultation in the Wandoo Offshore Field for the Well Construction Ep and another EP not relevant to this EP. (Record of Consultation, reference 2.4).
    - VOGA acknowledged the previous advice from YAC and advised it would consult via Ngarluma.

- VOGA confirmed it was sending the correspondence for YAC's information as it assumed it was its preferred method for the next two EP submissions, but welcomed the opportunity for YAC to engage directly.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted
In previous consultation, YAC advised that it does not need to be consulted in relation to offshore oil operations and that it defers consultation to Ngarluma.	YAC's advice that it does not seek direct consultation and prefers engagement via Ngarluma is relevant to determining appropriate consultation pathways.	• VOGA acknowledged YAC's advice that consultation would occur via Ngarluma. • VOGA confirmed that correspondence was being provided to YAC for information purposes for the relevant EP submissions. • VOGA welcomed the opportunity for YAC to engage directly should it wish to do so. • Providing correspondence to YAC for information ensures transparency and demonstrates that a reasonable opportunity to comment has been maintained.	Engagement undertaken via Ngarluma in accordance with YAC's stated preference. Reflected in the EP in Appendix F, reference 1.2). No additional EP-specific measures required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with YAC for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Ngarluma Aboriginal Corporation (NAC) as per YAC's preferred method of consultation on 21 October 2025.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.
- A Summary Consultation Information Sheet, developed specifically for First Nations groups, was provided to NAC as per YAC's preferred method of consultation on 21 October 2025.
- A map was provided showing the location and EMBA in relation to the NAC/YAC native title determination.

Reasonable period

- A consultation period was noted in the initial consultation correspondence to NAC, and consultation material was sent.
- Consultation for this EP commenced in August 2025.
- Follow up emails were sent to NAC on 10 December 2025 and 18 February 2026 advising of the consultation period.
- VOGA has addressed and responded to NAC on behalf of YAC over a six-month period.

- VOGA has provided YAC with more than six months to consult ahead of preparing the EP for submission and continues to take feedback in relation to the EP.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA asked for YAC's input on how YAC would like to engage in consultation and has consulted in a way it understands is appropriate for First Nations groups and is YAC's preferred method of consultation.
- VOGA has sent an initial email to advise YAC of its method for consultation, in case YAC wanted to directly engage.

Murujuga Aboriginal Corporation (MAC)

Historical and ongoing engagement

VOGA has been in engagement with MAC since February 2025, prior to the consultation on this EP below. VOGA maintains and ongoing engagement with MAC in addition to the consultation on this EP below. A summary and current status of these engagements can be found at Appendix F, Summary of Ongoing Engagement, reference 1.4.3.

Consultation overview and summary of response on this EP

- On 25 August 2025, VOGA emailed MAC advising of upcoming consultation in the Wandoo Offshore Field Well Construction and Facility Operations Environment Plans (Record of Consultation, reference 2.8).
    - VOGA advised that consultation with MAC regarding these activities is welcome and it wanted to arrange a meeting during September – November to discuss the EP.
    - VOGA noted the EP revision was part of a standard five-year review of existing operations (not a new project) and are intended to reassess environmental risks and management measures, with an opportunity for stakeholder input including cultural heritage considerations.
- On 8 September 2025, MAC emailed VOGA to advise that it did not believe a meeting was necessary, however, should that change MAC would be in touch (SI Report, reference 11.15.1).
- On 21 October 2025, VOGA emailed MAC advising of proposed activities in the Wandoo Field. VOGA provided a Summary Information Sheet and a link to a Consultation Information Sheet on its website (Record of Consultation, reference 1.1 and 3.7).
- The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date, and a link to VOGA's website with additional resources on EP consultation.
    - VOGA advised it recognised the importance of cultural heritage to Native Title Holders and was committed to integrating these values into their environmental planning.
    - VOGA believes MAC is relevant for consultation and invited them to participate in the process.
- VOGA proposed a meeting to discuss the proposed activities, seek input, and engage in consultation.
- VOGA provided information on confidentiality and the ability to opt out of the consultation.

- VOGA attached a map of the native title determination in respect to location of operations and EMBA for this EP (Record of Consultation, reference 3.7.1).
- On 10 December 2025, VOGA emailed the MAC engagement team to follow up on consultation information provided on 21 October 2025.
    - VOGA sought clarification on MAC's preferred consultation format, noting MAC's previous advice that it did not require a meeting but offering MAC a general follow up or for MAC to offer any feedback in case this had changed (Record of Consultation, reference 5.22).
    - The correspondence confirmed that the formal consultation period was open until 17 February 2026.
- On 2 February 2026, VOGA emailed MAC a follow up email confirming MAC's previous advice that a meeting was not considered necessary to discuss the five-yearly revisions for the Wandoo Facility and Well Construction Environment Plans, and that the consultation period is set to close on 17 February 2026, and confirmed that VOGA would continue to receive feedback through ongoing consultation through the life of the EP. (SI Report, reference 11.15.2).
- On 17 February 2026, VOGA emailed MAC to notify them of the last opportunity to provide feedback for this EP noting the formal consultation period had concluded on 17 February 2026 and inviting any final comments by 20 February 2026. (SI Report, reference 11.15.3).
    - The email summarised consultation undertaken since August 2025, including initial notification of upcoming consultation, provision of consultation information on 21 October 2025 (including activity overview, consultation information sheets and EMBA mapping), and follow-up correspondence in December 2025 and February 2026.
        - VOGA acknowledged MAC's earlier advice that a meeting was not considered necessary for these five-year EP revisions, while maintaining the opportunity for MAC to provide feedback during the consultation period.
    - The correspondence noted MAC's interests in relation to Murujuga National Park and the Murujuga World Heritage Area, including cultural heritage values and joint management arrangements, and confirmed that overlap of the EMBA with Murujuga National Park has been assessed in the EP risk assessment.
    - VOGA referenced that DBCA had separately provided feedback regarding conservation reserves and areas of ecological significance, including Murujuga National Park, and confirmed these matters have been considered in the EP.
    - MAC was invited to review the information previously provided and submit any final comments, concerns or requests for further information, with advice on confidentiality and how feedback would be handled.
- On 18 February 2026, MAC emailed VOGA with an attached letter to provide feedback on the Wandoo Facility and Well Construction Environment Plans including:
    - MAC noted whilst the protection of environmental values is a significant aspect of protecting cultural values, MAC believed the nature and threshold of impact must be assessed separately, noting a standard of protection that is considered to minimise impact to an acceptable level by scientific or environmental standards may still have consequences for Aboriginal people.
    - MAC noted while a deviation of marine mammal migration paths had no significant environmental impact, any change to the sighting of whales would impact the seasonal calendar that marks the transition between seasons.
    - Any development that could potentially affect the natural movement, migration or other behaviour of marine species may have an impact on the cultural interpretation of the seasonal landscape
    - MAC noted that some parts of the Murujuga landscape and seascape within the EMBA have strict gender restrictions and cultural safety restrictions

- MAC asked in the event of an environmental incident whereby any of the Murujuga World Heritage Property landscape or seascape falls within the possible impact zone, MAC be immediately contacted for consultation on management of cultural values

- On 18 February 2026, VOGA emailed MAC to thank them for their prompt response and for providing feedback on its Wandoo Facility and Well Construction Environment Plans. VOGA noted that in addition to the proximity of the Environment that May Be Affected (EMBA) to Murujuga National Park, we also acknowledge and note the broader cultural and environmental values raised in your feedback. We confirm that we have reviewed, noted and will assess MAC's feedback. VOGA noted:
  - In the event of an environmental incident with the potential to impact Murujuga World Heritage Property landscape or seascape, Vermilion agrees to notify MAC as soon as practicable regarding the management of cultural values. VOGA asked for the preferred contact process for an incident notification.
  - VOGA noted the above matters, and VOGA's response will be included in the EP submission in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth)
  - VOGA noted in remained committed to ongoing consultation with MAC and valued its input and continued engagement.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
MAC stated that environmental impact thresholds considered acceptable under scientific/environmental standards may still result in cultural consequences, and that cultural impacts should be assessed separately.	Relevant to impact and risk evaluation under the Regulations, particularly in relation to impacts on cultural values and heritage.	Noted. VOGA acknowledged the broader cultural and environmental values raised and confirmed it would review, note and assess MAC's feedback.	Cultural values and interests recorded in Section 3.7.6, Table 3-18. Cultural considerations are incorporated into impact and risk assessment framework (Section 5.13.3.1).
MAC noted that deviation of marine mammal migration paths (e.g. whales), even if environmentally insignificant, may affect the seasonal calendar and cultural interpretation of seasonal transitions. MAC stated that any development affecting natural movement, migration or behaviour of marine species may impact cultural interpretation of the seasonal landscape.	Relevant to assessment of potential impacts on culturally significant species and intangible heritage values. Relevant to environmental impact assessment and evaluation of indirect cultural impacts associated with ecological change.	Noted. VOGA acknowledges the cultural values raised in relation to marine species and seasonal interpretation.	Cultural values reflected in Section 3.7.6, Table 3-18 and considered in environmental impact assessment (Section 5.11.3.1). No additional mitigation measures adopted beyond those already in the EP.

MAC advised that parts of the Murujuga landscape and seascape within the EMBA have strict gender and cultural safety restrictions.	Material to assessment of impacts to heritage values and culturally sensitive areas within the EMBA.	Noted. VOGA acknowledges the broader cultural values associated with the Murujuga landscape and seascape.	Cultural restrictions and sensitivities recorded in Section 3.7.6, Table 3-18.
MAC requested that in the event of an environmental incident where the Murujuga World Heritage Property landscape or seascape falls within the possible impact zone, MAC be immediately contacted for consultation regarding management of cultural values.	Relevant to potential impacts on cultural values and activities.	Confirmed VOGA would notify MAC in the event of an oil spill or emergency with potential to impact the Murujuga World Heritage Property landscape or seascape.	Notification commitment confirmed and recorded in the EP in Section 9.4.11.
MAC advised that it did not believe a meeting was necessary to discuss the five-yearly EP revisions and subsequently provided written feedback.	Demonstrates MAC's position regarding preferred consultation method.	VOGA respected MAC's advice and confirmed it would remain available should MAC wish to meet. Consultation progressed via written correspondence. Meeting not pursued.	Not required.
Consultation demonstration statement			

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with MAC for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided MAC on 21 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.
- A Summary Consultation Information Sheet, developed specifically for First Nations groups, was provided to MAC on 21 October 2025.
- Maps were provided showing the location and EMBA in relation to MAC's area of interest.
- MAC has shown an understanding of the proposed activity but advised it did not believe an in person meeting with VOGA was necessary.
- VOGA responded to questions sent via letter by MAC, in which MAC indicated to VOGA that they did not have any objections or claims that required addressing.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in August 2025.
- Follow up emails were sent on 10 December 2025 and 17 February 2026 advising of the consultation period.
- VOGA has addressed and responded to MAC over a six-month period.
- VOGA has provided MAC with more than six months to consult ahead of preparing the EP for submission and continues to take feedback in relation to the EP.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA has sent follow-up consultation emails and phone calls, reminding MAC of the opportunity to provide feedback.
- VOGA asked for MAC's input on how MAC would like to engage in consultation and has consulted in a way it understands is appropriate for First Nations groups.
- VOGA sent an email to MAC advising of its intent to submit the EP and prompted MAC to provide any final feedback by 20 February 2026. This correspondence included a summary of cultural values and interests recorded in the EP in Section 3.7.6 that MAC had raised during consultation and from publicly available literature, providing MAC the opportunity to review the information and provide any final feedback. \

Historical heritage groups or organisations			
Western Australian Museum (WAM)			
Consultation overview and summary of response on this EP			

• On 22 October 2025, VOGA advised the WAM by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.38).
  ○ The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
  ○ The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
  ○ The email also included VOGA's assessment of historic shipwrecks, including:
  ▪ An analysis from VOGA that no historical wrecks are present within the Operational Area or within a 100km buffer of the EMBA.
• On 23 October 2025, VOGA received an automatic reply from WAM confirm receipt of its email (SI Report, reference 16.3.1).
• On 13 November 2025, VOGA emailed the WAM following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.22).
  ○ The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.			

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that WAM has no comment at this time.	VOGA considers the measures and controls in the EP address WAM's functions, interests or activities.
Consultation demonstration statement			

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with WAM for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to WAM on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding WAM of the opportunity to provide feedback.

Local government and recognised local business and community reference/liaison groups or organisations

City of Karratha

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the City of Karratha by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed the City of Karratha following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.17).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

- On 16 December 2025 VOGA emailed the City of Karratha and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.11)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked the City of Karratha to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that City of Karratha has no comment at this time.	VOGA considers the measures and controls in the EP address City of Karratha's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with City of Karratha for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to City of Karratha on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding City of Karratha of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising City of Karratha that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Town of Port Hedland

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the Town of Port Hedland by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed the Town of Port Hedland following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.17).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed the Town of Port Hedland and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.13)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked the Town of Port Hedland to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Town of Port Hedland has no comment at this time.	VOGA considers the measures and controls in the EP address Town of Port Hedland's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Town of Port Hedland for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Town of Port Hedland on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Town of Port Hedland of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising Town of Port Hedland that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Shire of Ashburton

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the Shire of Ashburton by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed the Shire of Ashburton following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.17).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed the Shire of Ashburton and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.11)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked the Shire of Ashburton to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Shire of Ashburton has no comment at this time.	VOGA considers the measures and controls in the EP address Shire of Ashburton's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Shire of Ashburton for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Shire of Ashburton on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Shire of Ashburton of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising Shire of Ashburton that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Shire of Exmouth

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the Shire of Exmouth by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed the Shire of Exmouth following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.17).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

- On 16 December 2025 VOGA emailed the Shire of Exmouth and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.11)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked the Shire of Exmouth to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Shire of Exmouth has no comment at this time.	VOGA considers the measures and controls in the EP address Town of Shire of Exmouth's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Shire of Exmouth for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Shire of Exmouth on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Shire of Exmouth of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising Shire of Exmouth that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Port Hedland Chamber of Commerce and Industry

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the Port Hedland Chamber of Commerce and Industry by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 24 October 2025, the Port Hedland Chamber of Commerce and Industry emailed VOGA to advise it had no concerns regarding the EP (SI Report, reference 14.1.1).
- On 24 October 2025, VOGA emailed the Port Hedland Chamber of Commerce and Industry to thank them for their response and advice (SI Report 14.1.2).

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted
Port Hedland Chamber of Commerce and Industry reported it had no concerns with the activities associated with the EP. Whilst feedback has been received, there were no objections or claims.	VOGA engages in ongoing consultation throughout the life of an EP. VOGA notes that further feedback may be received as part of ongoing consultation and where appropriate, VOGA will apply its Management of Change and Revision process (Section 8.5 of the EP).	VOGA notes Port Hedland Chamber of Commerce and Industry has advised it has no comments on the proposed activities under this EP.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Port Hedland Chamber of Commerce and Industry for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Port Hedland Chamber of Commerce and Industry on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Port Hedland Chamber of Commerce and Industry of the opportunity to provide feedback.

Onslow Chamber of Commerce and Industry

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the Onslow Chamber of Commerce and Industry by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed the Onslow Chamber of Commerce and Industry following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.17).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

- On 16 December 2025 VOGA emailed the Onslow Chamber of Commerce and Industry and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.11)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked the Onslow Chamber of Commerce and Industry to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Onslow Chamber of Commerce and Industry has no comment at this time.	VOGA considers the measures and controls in the EP address Onslow Chamber of Commerce and Industry's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Onslow Chamber of Commerce and Industry for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Onslow Chamber of Commerce and Industry on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.

- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Onslow Chamber of Commerce and Industry of the opportunity to provide feedback.
- VOGA sent a final consultation email on 18 December 2025, advising Onslow Chamber of Commerce and Industry that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Western Australian Local Government Association (WALGA)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised The Western Australian Local Government Association by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 24 October, 2025, WALGA emailed an automated response advising that the enquiry will be forwarded to the appropriate business area for action (SI Report, reference 14.2.1).
- On 13 November 2025, VOGA emailed the WALGA following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.17).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 13 November, 2025, WALGA emailed an automated response advising that the enquiry will be forwarded to the appropriate business area for action (SI Report, reference 14.2.2).
- On 16 December 2025 VOGA emailed the WALGA and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.11)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked the WALGA to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.
- On 16 December 2025, WALGA emailed an automated response advising that the enquiry will be forwarded to the appropriate business area for action (SI Report, reference 14.2.3).

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that The Western Australian Local Government Association has no comment at this time.	VOGA considers the measures and controls in the EP address The Western Australian Local Government Association's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with The Western Australian Local Government Association for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to The Western Australian Local Government Association on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding The Western Australian Local Government Association of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising The Western Australian Local Government Association that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Karratha and Districts Chamber of Commerce and Industry (KDCCI)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the Karratha and Districts Chamber of Commerce and Industry by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed the Karratha and Districts Chamber of Commerce and Industry following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.17).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed the Karratha and Districts Chamber of Commerce and Industry and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.12)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked the Karratha and Districts Chamber of Commerce and Industry to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Karratha and Districts Chamber of Commerce and Industry has no comment at this time.	VOGA considers the measures and controls in the EP address Karratha and Districts Chamber of Commerce and Industry's functions, interests or activities.

Consultation demonstration statement
VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Karratha and Districts Chamber of Commerce and Industry for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically: **Sufficient Information** • Consultation information provided to Karratha and Districts Chamber of Commerce and Industry on 22 October 2025 based on their function, interest and activities. • Consultation Information Sheet has been publicly available on the VOGA website since October 2025. **Reasonable period** • A consultation period was noted in the initial consultation correspondence, and consultation material was sent. • Consultation for this EP commenced in October 2025. **Reasonable opportunity** • VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons. • From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA. • VOGA sent a follow-up consultation email on 13 November 2025, reminding Karratha and Districts Chamber of Commerce and Industry of the opportunity to provide feedback. • VOGA sent a final consultation email on 16 December 2025, advising Karratha and Districts Chamber of Commerce and Industry that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.
Regional Development Australia (Pilbara) Karratha WA
Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the Regional Development Australia (Pilbara) Karratha WA by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed the Regional Development Australia (Pilbara) Karratha WA following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.17).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed the Regional Development Australia (Pilbara) Karratha WA and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.11)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked the Regional Development Australia (Pilbara) Karratha WA to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Regional Development Australia (Pilbara) Karratha WA has no comment at this time.	VOGA considers the measures and controls in the EP address Regional Development Australia (Pilbara) Karratha WA's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Regional Development Australia (Pilbara) Karratha WA for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Regional Development Australia (Pilbara) Karratha WA on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Regional Development Australia (Pilbara) Karratha WA of the opportunity to provide feedback.
- VOGA sent a final consultation email on 16 December 2025, advising Regional Development Australia (Pilbara) Karratha WA that the EP was being prepared for submission to NOPSEMA and that there was a final opportunity to provide feedback by 24 December 2025.

Research institutes

Curtin University (Centre for Marine Science and Technology)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the Curtin University (Centre for Marine Science and Technology) by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.31).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed Curtin University (Centre for Marine Science and Technology) following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.16).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025, VOGA advised Curtin University (Centre for Marine Science and Technology) that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, 5.14).
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (CTH) VOGA is offering a final opportunity for feedback.
    - VOGA asked Curtin University (Centre for Marine Science and Technology) to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that Curtin University (Centre for Marine Science and Technology) has no comment at this time.	VOGA considers the measures and controls in the EP address Curtin University (Centre for Marine Science and Technology)'s functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Curtin University (Centre for Marine Science and Technology) for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Curtin University (Centre for Marine Science and Technology) on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Curtin University (Centre for Marine Science and Technology) of the opportunity to provide feedback.

University of Western Australia (UWA)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the University of Western Australia by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.31).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed University of Western Australia (UWA) following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.16).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

- On 18 December 2025, VOGA advised University of Western Australia (UWA) that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, 5.14).
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (CTH) VOGA is offering a final opportunity for feedback.
    - VOGA asked University of Western Australia (UWA) to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that University of Western Australia has no comment at this time.	VOGA considers the measures and controls in the EP address University of Western Australia's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with University of Western Australia for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to University of Western Australia on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding University of Western Australia of the opportunity to provide feedback.

Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the CSIRO by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 22 October 2025, CSIRO emailed VOGA and advised they had received the enquiry and would aim to respond as soon as possible and provided an enquiry reference number CAS-112984-B8D4D8 (SI Report, reference 1.7.1).
- On 13 November 2025, VOGA emailed CSIRO following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.16).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025, VOGA advised CSIRO that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, 5.14).
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (CTH) VOGA is offering a final opportunity for feedback.
    - VOGA asked CSIRO to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that the CSIRO has no comment at this time.	VOGA considers the measures and controls in the EP the CSIRO's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with the CSIRO for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to the CSIRO on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding the CSIRO of the opportunity to provide feedback.

Western Australian Marine Science Institution (WAMSI)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the WAMSI by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.32).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed WAMSI following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.16).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025, VOGA advised WAMSI that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, 5.14).
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (CTH) VOGA is offering a final opportunity for feedback.
    - VOGA asked WAMSI to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that WAMSI has no comment at this time.	VOGA considers the measures and controls in the EP address WAMSI's functions, interests or activities.
Consultation demonstration statement			

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with WAMSI for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to WAMSI on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding WAMSI of the opportunity to provide feedback.

Australian Institute of Marine Science (AIMS)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the AIMS by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.31).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed AIMS following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.16).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025, VOGA advised AIMS that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, 5.14).

- The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
- Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (CTH) VOGA is offering a final opportunity for feedback.
- VOGA asked AMCS to review previous information and provide any feedback by 24 December 2025.
- VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts that AIMS has no comment at this time.	VOGA considers the measures and controls in the EP AIMS' functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with AIMS for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to AIMS on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding AIMS of the opportunity to provide feedback.

Australian Marine Sciences Association (WA Branch)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the Australian Marine Sciences Association (WA Branch) by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.31).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed Australian Marine Sciences Association (WA Branch) following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.16).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025, VOGA advised Australian Marine Sciences Association (WA Branch) that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, 5.14).
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (CTH) VOGA is offering a final opportunity for feedback.
    - VOGA asked Australian Marine Sciences Association (WA Branch) to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts Australian Marine Sciences Association (WA Branch) has no comment at this time.	VOGA considers the measures and controls in the EP address Australian Marine Sciences Association (WA Branch)'s functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation Australian Marine Sciences Association (WA Branch) for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Australian Marine Sciences Association (WA Branch) on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 13 November 2025, reminding Australian Marine Sciences Association (WA Branch) of the opportunity to provide feedback.

Local environment and conservation groups or organisations

Protect Ningaloo

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised Protect Ningaloo by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.33).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 18 November 2025, VOGA emailed Protect Ningaloo following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.18).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025, VOGA advised Protect Ningaloo that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, 5.16).
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (CTH) VOGA is offering a final opportunity for feedback.
    - VOGA asked Protect Ningaloo to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts Protect Ningaloo has no comment at this time.	VOGA considers the measures and controls in the EP address Protect Ningaloo's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Protect Ningaloo for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Protect Ningaloo on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 18 November 2025, reminding Protect Ningaloo of the opportunity to provide feedback.

The Conservation Council of WA (CCWA)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the CCWA by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.34).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 22 October 2025, VOGA received an automatic response from CCWA which confirmed receipt of their email (SI Report, reference 16.2.1).
- On 18 November 2025, VOGA emailed the CCWA following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.19).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025, VOGA advised CCWA that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, 5.17).

- The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
- Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (CTH) VOGA is offering a final opportunity for feedback.
- VOGA asked CCWA to review previous information and provide any feedback by 24 December 2025.
- VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts CCWA has no comment at this time.	VOGA considers the measures and controls in the EP address CCWA's functions, interests or activities.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with CCWA for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to CCWA on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 18 November 2025, reminding CCWA of the opportunity to provide feedback.

Care for Hedland

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the Care for Hedland by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.34).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 18 November 2025, VOGA emailed the Care for Hedland following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.19).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 November 2025, Care for Hedland emailed VOGA and thanked them for the information and that it will not be providing any feedback at this stage (SI Report, reference 16.1.1).
- On 20 November 2025, VOGA emailed Care for Hedland and thanked them for their response and advice (SI Report, reference 16.1.2).
- On 18 December 2025, VOGA advised Care for Hedland that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, 5.17).
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (CTH) VOGA is offering a final opportunity for feedback.
    - VOGA asked Care for Hedland to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

Care for Hedland reported it had no concerns with the activities associated with the EP. Whilst feedback has been received, there were no objections or claims.	VOGA engages in ongoing consultation throughout the life of an EP. VOGA notes that further feedback may be received as part of ongoing consultation and where appropriate, VOGA will apply its Management of Change and Revision process (Section 8.5 of the EP).	VOGA notes Care for Hedland has advised it has no comments on the proposed activities under this EP.	VOGA considers the measures and controls in the EP are appropriate. No additional measures or controls are required.

Consultation demonstration statement

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with Care for Hedland for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to Care for Hedland on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 18 November 2025, reminding Care for Hedland of the opportunity to provide feedback.

Western Australian Marine Conservation Society (AMCS)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the AMCS by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.34).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 18 November 2025, VOGA emailed AMCS following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.19).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025, VOGA advised AMCS that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, 5.17).
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (CTH) VOGA is offering a final opportunity for feedback.
    - VOGA asked AMCS to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received, VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA accepts AMCS has no comment at this time.	VOGA considers the measures and controls in the EP address AMCS's functions, interests or activities.
Consultation demonstration statement			

VOGA has discharged its obligations for consultation under regulation 25 of the Environment Regulations, and consultation with AMCS for the purpose of regulation 25 is complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 10 of the EP and regulation 25 (2) and (3). Specifically:

Sufficient Information

- Consultation information provided to AMCS on 22 October 2025 based on their function, interest and activities.
- Consultation Information Sheet has been publicly available on the VOGA website since October 2025.

Reasonable period

- A consultation period was noted in the initial consultation correspondence, and consultation material was sent.
- Consultation for this EP commenced in October 2025.

Reasonable opportunity

- VOGA published advertisements in six national, state, and relevant local newspapers (see Appendix F, Consultation Activities), from 28 October 2025 – 19 November 2025 advising of the proposed activities and requesting consultation from relevant persons.
- From 22 October 2025 to 24 November 2025, VOGA ran two social media advertisement campaigns (See Appendix F, Consultation Activities) targeting potentially relevant persons within the project EMBA.
- VOGA sent a follow-up consultation email on 18 November 2025, reminding AMCS of the opportunity to provide feedback.

Table 7: Consultation Report with Non-Relevant Persons or Organisations

Section 25(1)(d) of the OPGGS(E)R: Persons or organisations whose functions, interests or activities may be affected by the activities to be carried out under the environment plan
Commonwealth commercial fishing - representative bodies
Australian Southern Bluefin Tuna Fishery Association (ASBITA)
Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the ASBITA by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.39).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
    - The Commercial Fisher Information Sheet included an overview of the proposed activities; key information for the commercial fishing sector about the activities; coordinates for operational areas; an activity summary; assessment of commercial fishing, potential effects and impacts; and VOGA's impact assessment (Record of Consultation, reference 1.2).
- On 13 November 2025, VOGA emailed the ASBITA following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.23).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed ASBITA and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.10)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked ASBITA to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the ASBITA.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address ASBITA's functions, interests or activities.
Consultation demonstration statement			

While ASBITA is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for ASBITA to provide feedback during the consultation process.

Commonwealth Fisheries Association (CFA)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the CFA by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.39).
  - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
  - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
  - The Commercial Fisher Information Sheet included an overview of the proposed activities; key information for the commercial fishing sector about the activities; coordinates for operational areas; an activity summary; assessment of commercial fishing, potential effects and impacts; and VOGA's impact assessment (Record of Consultation, reference 1.2).
- On 13 November 2025, VOGA emailed the CFA following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.23).
  - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed CFA and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.10)
  - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
  - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
  - VOGA asked CFA to review previous information and provide any feedback by 24 December 2025.
  - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the CFA.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address CFA's functions, interests or activities.

Consultation demonstration statement

While CFA is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for CFA to provide feedback during the consultation process.

Pearl Producers Association (PPA)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the PPA by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.39).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
    - The Commercial Fisher Information Sheet included an overview of the proposed activities; key information for the commercial fishing sector about the activities; coordinates for operational areas; an activity summary; assessment of commercial fishing, potential effects and impacts; and VOGA's impact assessment (Record of Consultation, reference 1.2).
- On 13 November 2025, VOGA emailed the PPA following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.23).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

- On 16 December 2025 VOGA emailed PPA and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.10)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked PPA to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the PPA.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address PPA's functions, interests or activities.

Consultation demonstration statement

While PPA is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for PPA to provide feedback during the consultation process.

Tuna Australia (TA)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised Tuna Australia (TA) by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.39).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
    - The Commercial Fisher Information Sheet included an overview of the proposed activities; key information for the commercial fishing sector about the activities; coordinates for operational areas; an activity summary; assessment of commercial fishing, potential effects and impacts; and VOGA's impact assessment (Record of Consultation, reference 1.2).
- On 27 October 2025, TA emailed VOGA, seeking further information regarding compensations plans given the importance of the commercial species spawning aggregations adjacent to the EMBA, in the unlikely event of a hydrocarbon spill (SI Report, reference 3.1.1).
- On 11 November 2025, VOGA emailed TA to thank them for their reply and advised that VOGA has a process in place to manage any impacts that a spill may have on affected stakeholders which is outlined in Section 7 of the accepted Wandoo Facility Oil Pollution Emergency Plan (OPEP).
    - The email included a link to the OPEP and asked TA to clarify if the comments were for the Wandoo Facility EP and/or the Well Construction EP to ensure comments were applied correctly.
    - VOGA also advised that it would welcome any information on species or industries that may have a presence within the EMBA (SI Report, reference 3.1.2).
- On 15 November 2025, TA emailed VOGA, confirming that the feedback provided was for both the Wandoo Facility and Well Construction EPs.
    - TA claimed that The EMBAs are both overlapping or very close to Australia's most important southern bluefin tuna spawning area.
    - The email sought clarification regarding financial support in the event of worst case spill scenarios.
    - The email also sought historical information about the original consultation reports which TA no longer had on file (SI Report, reference 3.1.3).
- On 21 November 2025, TA emailed VOGA to advise it was unable to locate any agreement between TA and VOGA.
    - The email reiterated the sensitivity of the spawning ground which are very close to the EMBA and included TA's Industry Position Statement and Consulting Services Agreement (SI Report, reference 3.1.4).
- On 4 December 2025, VOGA emailed TA thanking them for providing the industry position statement and noted TA's advice and reiterated that it has an existing process in place to manage any impacts that a spill and/or associated response activities may have on affected stakeholders. VOGA stated that it did not expect any impact to the WTBF or West Australian Skipjack Fishery as it determined there has not been active fishing from these fisheries in the operational areas of the proposed activities for the past 10 years (SI Report, reference 3.1.5).
- On 8 December 2025, TA emailed VOGA to thank and note VOGA's position on the service agreement.
    - TA accepts VOGA's position on the service agreement for the current EP renewal
    - Despite no recent fishing activity, tuna fishing grounds have shifted significantly over the past decade
    - Wandoo activities are located within the Western Tuna and Billfish Fishery (WTBF) area
    - Tuna Australia remains open to supporting VOGA's environmental approvals for future projects (SI Report, reference 3.1.6).
- On 16 December 2025, VOGA emailed TA to thank them for their response and views regarding consultation and the potential for future activity changes and has assessed the potential impacts to WTBF operators as follows:

- VOGA does not expect impacts to fishing operations or resources based on the assessment
- A permanent 500m Petroleum Safety Zone (PSZ) exists around Wandoo Production Facilities with no vessel entry permitted
- No additional spatial restrictions are proposed beyond the existing PSZ
- Before considering a service agreement VOGA would need evidence of reasonable impacts to WTBF
- TA or its members can self-identify as stakeholders if fishing activity changes and they may be affected
- Stakeholders should provide details on changes to fishing activity and how proposed activities could result in impacts
- VOGA appreciates TA's engagement and willingness to support consultation where impacts may arise (SI Report, reference 3.1.7).

- On 6 January 2025, TA emailed VOGA to thank them for their response and reiterated that TA supports constructive engagement with offshore petroleum proponents, but seeks to clarify consultation requirements stating that the absence of recent fishing activity does not eliminate the need to assess potential future impacts.
  - The WTBF involves highly migratory stocks influenced by environmental factors, stock rebuilding, market conditions and management decisions.
  - Fishing activity may return to areas with historically low effort
  - TA engages where fishing activities or ocean resources may be affected presently or in the future
  - TA reiterates its willingness to assist VOGA through a services agreement (SI Report, reference 3.1.8).
- On 21 January 2025, VOGA emailed TA to thank them for their response and views and assessed the potential impacts further as follows:
  - Acknowledges consultation obligations with affected parties under the Act
  - Reiterated that Wandoo Facility is a long established production facility with a permanent 500m Petroleum Safety Zone (PSZ)
  - The renewal does not involve new activities, spatial exclusions or changes to existing operations or controls
  - VOGA assessed potential impacts on WTBF based on activity nature, scale, longstanding spatial constraints and historic/current fishing data
  - Concluded there are no credible or reasonably foreseeable impact pathways to WTBF operations beyond those already managed
  - Environmental assessments, including fisheries activity are reviewed throughout the EP lifecycle and at each renewal
  - VOGA remains open to reassessing if circumstances change, e.g. fishing activity resumes near the Operational Area or specific impact pathways are identified and invites TA to submit information if identified (SI Report, reference 3.1.9).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
TA claimed the EMBAs overlap with or are very close to Australia's most important southern bluefin tuna spawning area and emphasised the sensitivity of spawning grounds adjacent to the EMBA. TA emphasised need for assessment of commercial species spawning aggregations adjacent to EMBA in worst-case spill scenario.	The SBT spawning area is located 628 km northwest of the Hydrocarbon Area, with SBT known to migrate southwards down the Western Australian coastline to cooler temperate waters, an accidental release of MDO is not expected to impact population functioning.	Noted and assessed. VOGA reiterated that it does not expect impacts to WTBF or WA Skipjack Fishery and that spill impact management processes are in place under the OPEP.	VOGA has assessed impact to SBT in Section 5.13.3 of the EP. No additional measures adopted beyond existing spill response arrangements and impact assessment documented in the EP and OPEP.

TA sought clarification regarding compensation / financial support arrangements in the unlikely event of a hydrocarbon spill affecting commercial spawning aggregations near the EMBA.	Relevant to potential economic impacts on commercial fisheries in the event of a spill. Relevant for the OPEP and spill response arrangements rather than impact controls.	Noted and responded. VOGA advised it has an existing process to manage impacts to affected stakeholders, as outlined in Section 7 of the accepted Wandoo Facility OPEP.	Not required.
TA noted that despite no recent fishing activity, tuna fishing grounds have shifted over the past decade and that Wandoo activities are located within the WTBF area. TA stated that absence of recent fishing activity does not eliminate the need to assess potential future impacts, noting migratory stock variability and possible return of fishing effort.	Considered in reviewing historic and current fishing data and spatial constraints.	Noted and assessed. VOGA reiterated assessment considered activity nature, scale, longstanding spatial constraints (including PSZ) and historic/current fishing data, and concluded no credible impact pathways. VOGA assessed potential impacts to WTBF and associated fisheries and advised it does not expect impacts to fishing operations or resources based on the assessment. VOGA confirmed environmental and fisheries assessments are reviewed throughout the EP lifecycle and at each renewal, and remains open to reassessing if circumstances change. VOGA appreciated TA's engagement and willingness to support consultation where impacts may arise.	No additional measures are required.

Tuna Australia provided an industry position statement for consultation with energy companies and advised it has the authority to act on behalf of concession holders. TA reiterated willingness to assist VOGA via a services agreement. While feedback has been received, there were no objections or claims on this EP.	VOGA accepts Tuna Australia's position statement. Titleholders are not required to enter into commercial agreements, consulting services arrangements, or compensation agreements as a condition of undertaking consultation	VOGA acknowledged Tuna Australia's consultation advice and would consider and apply this for future EPs where TA concession holders are considered relevant for consultation. VOGA appreciated TA's engagement and willingness to support consultation where impacts may arise. VOGA engages in ongoing consultation throughout the life of an EP. VOGA notes that further feedback may be received as part of ongoing consultation and where appropriate, VOGA will apply its Management of Change and Revision process (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address Tuna Australia's functions, interests or activities.

Consultation demonstration statement

While TA is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for TA to provide feedback during the consultation process.

Seafood Industry Australia (SIA)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised SIA by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.39).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
    - The Commercial Fisher Information Sheet included an overview of the proposed activities; key information for the commercial fishing sector about the activities; coordinates for operational areas; an activity summary; assessment of commercial fishing, potential effects and impacts; and VOGA's impact assessment (Record of Consultation, reference 1.2).

- On 13 November 2025, VOGA emailed SIA following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.23).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed SIA and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.10)
    - The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
    - Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
    - VOGA asked SIA to review previous information and provide any feedback by 24 December 2025.
    - VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the SIA.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address SIA's functions, interests or activities.

Consultation demonstration statement

While SIA is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for SIA to provide feedback during the consultation process.

Western Rock Lobster Council			
Consultation overview and summary of response on this EP			
• On 22 October 2025, VOGA advised the Western Rock Lobster Council by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.45). o The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation. o The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information. o The Commercial Fisher Information Sheet included an overview of the proposed activities; key information for the commercial fishing sector about the activities; coordinates for operational areas; an activity summary; assessment of commercial fishing, potential effects and impacts; and VOGA's impact assessment (Record of Consultation, reference 1.2). • On 13 November 2025, VOGA emailed the Western Rock Lobster Council following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.29). o The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP. • On 16 December 2025 VOGA emailed Western Rock Lobster Council and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.25) o The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA). o Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback. o VOGA asked Western Rock Lobster Council to review previous information and provide any feedback by 24 December 2025. o VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.			
Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**

No response was received on this EP despite follow up.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the Western Rock Lobster Council.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address Western Rock Lobster Council's functions, interests or activities.

Consultation demonstration statement

While Western Rock Lobster Council is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for Western Rock Lobster Council to provide feedback during the consultation process.

Commonwealth commercial fisheries

Southern Bluefin Tuna Fishery

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the Southern Bluefin Tuna Fishery by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.39).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed Southern Bluefin Tuna Fishery following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.23).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 16 December 2025 VOGA emailed Southern Bluefin Tuna Fishery and advised that the formal consultation period regarding the EP concluded on 21 November 2025 (Record of Consultation, reference 5.10)

- The email confirmed that VOGA is now preparing the EP for submission to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA).
- Under the Offshore Petroleum and Greenhouse Gas Storage (Environment Regulations 2023 (Cth) VOGA is offering a final opportunity for feedback.
- VOGA asked Southern Bluefin Tuna Fishery to review previous information and provide any feedback by 24 December 2025.
- VOGA confirmed that feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered and addressed as part of ongoing consultation.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the Southern Bluefin Tuna Fishery.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address Southern Bluefin Tuna Fishery's functions, interests or activities.

Consultation demonstration statement

While Southern Bluefin Tuna Fishery is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for Southern Bluefin Tuna Fishery to provide feedback during the consultation process.

Traditional Custodians and First Nations nominated representative corporations

Karajarri Traditional Lands Association (Aboriginal Corporation) RNTBC (KTLA)

Consultation overview and summary of response on this EP

- On 25 August 2025, VOGA emailed KTLA to introduce their operations and upcoming activities in the Wandoo Field (Record of Consultation, reference 2.9).
  - VOGA advised it welcomes consultation with KTLA regarding these activities.
  - VOGA outlined the purpose of consultation and that it values the integration of cultural heritage of Native Title Holders and aims to integrate these values into their planning.
  - VOGA requested KTLA's advice on preferred contact and consultation methods and if the board would consider allocating time for a meeting to discuss the planned activities and provide information.
- On 22 October 2025, VOGA emailed KTLA advising of proposed activities in the Wandoo Field. VOGA provided a Summary Information Sheet and a link to a Consultation Information Sheet on its website (Record of Consultation, reference 1.1 and 3.8).
  - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date, and a link to VOGA's website with additional resources on EP consultation.
  - VOGA advised it had determined that KTLA is not relevant for consultation because the planning area for the activities are not in close proximity to KTLA's native title determination.
  - VOGA provided information on confidentiality and the ability to opt out of the consultation.
  - VOGA attached a map of the native title determination in respect to location of operations and EMBA for this EP (Record of Consultation, reference 3.8.1).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the KTLA.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address KTLA's functions, interests or activities.

Consultation demonstration statement

While KTLA is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for KTLA to provide feedback during the consultation process.

Malgana Aboriginal Corporation (MAC)

Consultation overview and summary of response on this EP

- On 25 August 2025, VOGA emailed MAC to introduce their operations and upcoming activities in the Wandoo Field (Record of Consultation, reference 2.12).
  - VOGA advised it welcomes consultation with MAC regarding these activities.
  - VOGA outlined the purpose of consultation and that it values the integration of cultural heritage of Native Title Holders and aims to integrate these values into their planning.
  - VOGA requested MAC's advice on preferred contact and consultation methods and if the board would consider allocating time for a meeting to discuss the planned activities and provide information.
- On 22 October 2025, VOGA emailed MAC advising of proposed activities in the Wandoo Field. VOGA provided a Summary Information Sheet and a link to a Consultation Information Sheet on its website (Record of Consultation, reference 1.1 and 3.9).
  - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date, and a link to VOGA's website with additional resources on EP consultation.
  - VOGA advised it had determined that MAC is not relevant for consultation because the planning area for the activities are not in close proximity to MAC's native title determination.
  - VOGA provided information on confidentiality and the ability to opt out of the consultation.
  - VOGA attached a map of the native title determination in respect to location of operations and EMBA for this EP (Record of Consultation, reference 3.9.1).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the MAC.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address MAC's functions, interests or activities.

Consultation demonstration statement

While MAC is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for MAC to provide feedback during the consultation process.

Nanda Aboriginal Corporation RNTBC (NAC)

Consultation overview and summary of response on this EP

- On 25 August 2025, VOGA emailed NAC to introduce their operations and upcoming activities in the Wandoo Field (Record of Consultation, reference 2.13).
- VOGA advised it welcomes consultation with NAC regarding these activities.
  - VOGA outlined the purpose of consultation and that it values the integration of cultural heritage of Native Title Holders and aims to integrate these values into their planning.
  - VOGA requested NAC's advice on preferred contact and consultation methods and if the board would consider allocating time for a meeting to discuss the planned activities and provide information.
- On 22 October 2025, VOGA emailed NAC advising of proposed activities in the Wandoo Field. VOGA provided a Summary Information Sheet and a link to a Consultation Information Sheet on its website (Record of Consultation, reference 1.1 and 3.10).
  - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date, and a link to VOGA's website with additional resources on EP consultation.
  - VOGA advised it had determined that NAC is not relevant for consultation because the planning area for the activities are not in close proximity to MAC's native title determination.
  - VOGA provided information on confidentiality and the ability to opt out of the consultation.
  - VOGA attached a map of the native title determination in respect to location of operations and EMBA for this EP (Record of Consultation, reference 3.10.1).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the NAC.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address NAC's functions, interests or activities.

Consultation demonstration statement
While NAC is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for NAC to provide feedback during the consultation process.

Nyangumarta Karajarri Aboriginal Corporation RNTBC (NKAC)

Consultation overview and summary of response on this EP

- On 25 August 2025, VOGA emailed NKAC to introduce their operations and upcoming activities in the Wandoo Field (Record of Consultation, reference 2.11).
    - VOGA advised it welcomes consultation with NKAC regarding these activities.
    - VOGA outlined the purpose of consultation and that it values the integration of cultural heritage of Native Title Holders and aims to integrate these values into their planning.
    - VOGA requested NKAC's advice on preferred contact and consultation methods and if the board would consider allocating time for a meeting to discuss the planned activities and provide information.
- On 22 October 2025, VOGA emailed NKAC advising of proposed activities in the Wandoo Field. VOGA provided a Summary Information Sheet and a link to a Consultation Information Sheet on its website (Record of Consultation, reference 1.1 and 3.11).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date, and a link to VOGA's website with additional resources on EP consultation.
    - VOGA advised it had determined that NKAC is not relevant for consultation because the planning area for the activities are not in close proximity to NKAC's native title determination.
    - VOGA provided information on confidentiality and the ability to opt out of the consultation.
    - VOGA attached a map of the native title determination in respect to location of operations and EMBA for this EP (Record of Consultation, reference 3.11.1).
- On 23 October 2025, KLC advised VOGA by courtesy email that VOGA's email had been forwarded to the directors of the corporation for their attention and action (SI Report, reference 12.1.1).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**

No response was received on this EP.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the NKAC.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address NKAC's functions, interests or activities.

Consultation demonstration statement

While NKAC is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for NKAC to provide feedback during the consultation process.

Nyangumarta Warrarn Aboriginal Corporation RNTBC (NWAC)

Consultation overview and summary of response on this EP

- On 25 August 2025, VOGA emailed NWAC to introduce their operations and upcoming activities in the Wandoo Field (Record of Consultation, reference 2.10).
  - VOGA advised it welcomes consultation with NWAC regarding these activities.
  - VOGA outlined the purpose of consultation and that it values the integration of cultural heritage of Native Title Holders and aims to integrate these values into their planning.
  - VOGA requested NWAC's advice on preferred contact and consultation methods and if the board would consider allocating time for a meeting to discuss the planned activities and provide information.
- On 5 September 2025, NWAC emailed to thank them for their email and providing the information. NWAC advised that it is currently working to develop a Consultation Protocol with VOGA (SI Report, reference 11.10.1).
- On 21 October 2025, VOGA emailed NWAC advising of proposed activities in the Wandoo Field. VOGA provided a Summary Information Sheet and a link to a Consultation Information Sheet on its website (Record of Consultation, reference 1.1 and 3.12).
  - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date, and a link to VOGA's website with additional resources on EP consultation.
  - VOGA advised it had determined that NWAC is not relevant for consultation because the planning area for the activities are not in close proximity to NWAC's native title determination.
  - VOGA provided information on confidentiality and the ability to opt out of the consultation.

- VOGA attached a map of the native title determination in respect to location of operations and EMBA for this EP (Record of Consultation, reference 3.12.1).

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted
No response was received on this EP.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the NWAC.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address NWAC's functions, interests or activities.

Consultation demonstration statement

While NWAC is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for NWAC to provide feedback during the consultation process.

Yawuru Native Title Holders Aboriginal Corporation RNTBC (Yawuru)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA emailed Yawuru advising of proposed activities in the Wandoo Field. VOGA provided a Summary Information Sheet and a link to a Consultation Information Sheet on its website (Record of Consultation, reference 1.1 and 3.13).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date, and a link to VOGA's website with additional resources on EP consultation.
    - VOGA advised it had determined that Yawuru is not relevant for consultation because the planning area for the activities are not in close proximity to MAC's native title determination.
    - VOGA provided information on confidentiality and the ability to opt out of the consultation.
    - VOGA attached a map of the native title determination in respect to location of operations and EMBA for this EP (Record of Consultation, reference 3.13.1).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the Yawuru.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address Yawuru's functions, interests or activities.

Consultation demonstration statement

While Yawuru is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for Yawuru to provide feedback during the consultation process.

Native Title representative bodies

Kimberley Land Council (KLC)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA emailed KLC advising of proposed activities in the Wandoo Field. VOGA provided a Summary Information Sheet and a link to a Consultation Information Sheet on its website (Record of Consultation, reference 1.1 and 3.41).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date, and a link to VOGA's website with additional resources on EP consultation.
        - VOGA advised it recognised the importance of cultural heritage to Native Title Holders and was committed to integrating these values into their environmental planning.
        - VOGA advised it had determined that KLC is not relevant for consultation because the planning area for the activities are not in close proximity to KCL's native title determination.
        - VOGA stated in some circumstances, KLC may act as a conduit or formal contact point for PBCs and may provide advice on groups that could be relevant for consultation. VOGA requested guidance on this.
    - VOGA invited KLC to participate in the consultation process if believes its functions and interests could be impacted by the proposed activities.
    - VOGA advised that the consultation period is open until 21 November 2025, and Vermilion intends to submit the EPs to NOPSEMA for assessment.
- On 18 November 2025, VOGA emailed KLC following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.25).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the YMAC and their activities.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address YMAC's functions, interests or activities.
Consultation demonstration statement			

While KLC is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for KLC to provide feedback during the consultation process.

Yamatji Marlpa Aboriginal Corporation (YMAC)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA emailed YMAC advising of proposed activities in the Wandoo Field. VOGA provided a Summary Information Sheet and a link to a Consultation Information Sheet on its website (Record of Consultation, reference 1.1 and 3.40).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date, and a link to VOGA's website with additional resources on EP consultation.
        - VOGA advised it recognised the importance of cultural heritage to Native Title Holders and was committed to integrating these values into their environmental planning.
        - VOGA advised it had determined that YMAC is not relevant for consultation because the planning area for the activities are not in close proximity to YMAC's native title determination.
        - VOGA stated in some circumstances, YMAC may act as a conduit or formal contact point for PBCs and may provide advice on groups that could be relevant for consultation. VOGA requested guidance on this.
    - VOGA invited YMAC to participate in the consultation process if believes its functions and interests could be impacted by the proposed activities.
    - VOGA advised that the consultation period is open until 21 November 2025, and Vermilion intends to submit the EPs to NOPSEMA for assessment.
- On 18 November 2025, VOGA emailed YMAC following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.24).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 11 February 2026, VOGA emailed YMAC following up on its previous email and advising that consultation is proposed to close and confirming that VOGA would continue to receive feedback through ongoing consultation through the life of the EP (SI Report, reference 12.2.1).

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the YMAC and their activities.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address YMAC's functions, interests or activities.

Consultation demonstration statement

While YMAC is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for YMAC to provide feedback during the consultation process.

Local environment and conservation groups or organisations

Australian Conservation Foundation (ACF)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the ACF by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.35).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed ACF following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.20).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025, VOGA emailed the ACF following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 5.15).

- The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted
No response was received on this EP despite follow up.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the ACF and their activities.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address ACF's functions, interests or activities.

Consultation demonstration statement

While ACF is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for ACF to provide feedback during the consultation process.

Greenpeace Australia Pacific (GAP)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the GAP by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.35).
    - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
    - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 22 October 2025, VOGA received an automatic response from Greenpeace confirming receipt of its email (SI Report, reference 16.4.1).
- On 13 November 2025, VOGA emailed Greenpeace following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.20).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025, VOGA emailed the GAP following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 5,15).
    - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025, VOGA received an automatic response from Greenpeace confirming receipt of its email (SI Report, reference 16.4.2).

Relevant person objections, claims or other feedback	**VOGA's assessment of the merits**	**VOGA's statement of response**	**Details of the measures adopted**
No response was received on this EP despite follow up.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the GAP and their activities.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address GAP's functions, interests or activities.
Consultation demonstration statement			

While GAP is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for GAP to provide feedback during the consultation process.

Wilderness Society (WS)

Consultation overview and summary of response on this EP

- On 22 October 2025, VOGA advised the WS by email of the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 1.1 and 3.35).
  - The email included an activity summary, directions for how to provide input into the EP development through consultation, the consultation closing date and that it intends to prepare and submit the EP following that date, and a link to VOGA's website with additional resources on EP consultation.
  - The Consultation Information sheet included an overview of the proposed activities; potential impacts, risks and management measures; and the presence, of environmental, social, economic and cultural features and/or values within the Operational Area and the environment that may be affected based on a review of publicly available information.
- On 13 November 2025, VOGA emailed WS following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 4.20).
  - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.
- On 18 December 2025, VOGA emailed the WS following up on the proposed activity and provided a Consultation Information Sheet (Record of Consultation, reference 5.15).
  - The email included an activity summary, directions for how to provide input into the EP through consultation, a reminder of the date that consultation is proposed to close and confirmation that VOGA would continue to receive feedback through ongoing consultation through the life of the EP.

Relevant person objections, claims or other feedback	VOGA's assessment of the merits	VOGA's statement of response	Details of the measures adopted

No response was received on this EP despite follow up.	VOGA has reviewed the potential impact and ensures that the activities of this EP have minimal impact on the WS and their activities.	VOGA engages in ongoing consultation throughout the life of an EP. Should feedback be received VOGA will apply its Management of Change and Revision process, where appropriate (Section 8.5 of the EP).	VOGA considers the measures and controls in the EP address WS's functions, interests or activities.
Consultation demonstration statement			
While WS is not a relevant person under regulation 25 of the Environment Regulations, VOGA chose to contact them and considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for WS to provide feedback during the consultation process.			

1.4.2. Record of Consultation

Record Of Consultation

Well Construction Environment Plan

TABLE OF CONTENTS

1.4.2. Record of Consultation 1

1. Consultation Materials 9

1.1. Consultation Information Sheet 9

1.2. Commercial Fisher Information Sheet 15

1.3. Summary Information Sheet 22

2. Initial Consultation Outreach – August 2025 24

2.1. Email to Wanparta Aboriginal Corporation (WAC) on 25 August 2025 24

2.2. Email to Kariyarra Aboriginal Corporation (KAC) on 25 August 2025 25

2.3. Email to Ngarluma Aboriginal Corporation (NAC) on 25 August 2025 26

2.4. Email to Yindjibarndi Aboriginal Corporation (YAC) on 25 August 2025 27

2.5. Email to Wirrawandi Aboriginal Corporation (WAC) on 25 August 2025 28

2.6. Email to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) on 25 August 2025 29

2.7. Email to Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) on 25 August 2025 30

2.8. Email to Murujuga Aboriginal Corporation (MAC) on 25 August 2025 31

2.9. Email to Karajarri Traditional Lands Association (Aboriginal Corporation) RNTBC (KTLA) on 25 August 2025 32

2.10. Email to Nyangumarta Warrarn Aboriginal Corporation RNTBC (NWAC) on 25 August 2025 33

2.11. Email to Nyangumarta Karajarri Aboriginal Corporation RNTBC (NKAC) on 25 August 2025 34

2.12. Email to Malgana Aboriginal Corporation (MAC) on 25 August 2025 35

2.13. Email to Nanda Aboriginal Corporation RNTBC (NAC) on 25 August 2025 36

3. Consultation – October 2025 37

3.1. Email to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) on 21 October 2025 37

3.1.1. Attachment to email to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) on 21 October 2025 ..... **39**

3.2. Email to Kariyarra Aboriginal Corporation (KAC) on 21 October 2025 40

3.2.1. Attachment to email to Kariyarra Aboriginal Corporation (KAC) on 21 October 2025 ..... **42**

3.3. Email to Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) on 21 October 2025 43

3.3.1. Attachment to email to Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) on 21 October 2025 ..... **45**

3.4. Email to Ngarluma Aboriginal Corporation (NAC) on 21 October 2025 45

3.4.1. Attachment to email to Ngarluma Aboriginal Corporation (NAC) on 21 October 2025 ..... **48**

3.5. Email to Wanparta Aboriginal Corporation (WAC) on 21 October 2025 49

3.5.1. Attachment to email to Wanparta Aboriginal Corporation (WAC) on 21 October 2025 51

3.6. Email to Wirrawandi Aboriginal Corporation (WAC) on 21 October 2025 52

3.6.1. Attachment to email to Wirrawandi Aboriginal Corporation (WAC) on 21 October 2025..... 54

3.7. Email to Murujuga Aboriginal Corporation (MAC) on 21 October 2025..... 55

3.7.1. Attachment to email to Murujuga Aboriginal Corporation (MAC) on 21 October 2025 57

3.8. Email to Karajarri Traditional Lands Association (Aboriginal Corporation) RNTBC (KTLA) on 22 October 2025..... 58

3.8.1. Attachment to email to Karajarri Traditional Lands Association (Aboriginal Corporation) RNTBC (KTLA) on 22 October 2025 60

3.9. Email to Malgana Aboriginal Corporation (MAC) on 22 October 2025 61

3.9.1. Attachment to email to Malgana Aboriginal Corporation (MAC) on 22 October 2025 63

3.10. Email to Nanda Aboriginal Corporation RNTBC (NAC) on 22 October 2025.... 64

3.10.1. Attachment to email to Nanda Aboriginal Corporation RNTBC (NAC) on 22 October 2025 66

3.11. Email to Nyangumarta Karajarri Aboriginal Corporation RNTBC (NKAC) on 22 October 2025..... 66

3.11.1. Attachment to email to Nyangumarta Karajarri Aboriginal Corporation RNTBC (NKAC) on 22 October 2025 68

3.12. Email to Nyangumarta Warrarn Aboriginal Corporation RNTBC (NWAC) on 21 October 2025..... 69

3.12.1. Attachment to email to Nyangumarta Warrarn Aboriginal Corporation RNTBC (NWAC) on 21 October 2025..... 71

3.13. Email to Yawuru Native Title Holders Aboriginal Corporation RNTBC (Yawuru) on 22 October 2025..... 72

3.13.1. Attachment to email to Yawuru Native Title Holders Aboriginal Corporation RNTBC (Yawuru) on 22 October 2025..... 74

3.14. Email to Australian Border Force (ABF) (Maritime Border Command) on 22 October 2025..... 75

3.15. Email to Australian Fisheries Management Authority (AFMA) on 22 October 2025 77

3.16. Email to Australian Maritime Safety Authority (AMSA) – maritime safety, Australian Maritime Safety Authority (AMSA) – marine pollution, and Australian Hydrographic Office (AHO) on 22 October 2025..... 79

3.16.1. Attachment to email to Australian Maritime Safety Authority (AMSA) – maritime safety, Australian Maritime Safety Authority (AMSA) – marine pollution, and Australian Hydrographic Office (AHO) on 22 October 2025..... 81

3.17. Email to Department of Agriculture, Forestry and Fisheries (DAFF) – Fisheries and Department of Agriculture, Forestry and Fisheries (DAFF) – Biosecurity (marine pests) (vessels, aircraft and personnel) on 22 October 2025 81

3.18. Email to Department of Defence (DoD) on 22 October 2025..... 84

3.19. Email to Department of Industry, Science and Resources (DISR) on 22 October 2025 86

3.20. Email to Director of National Parks (DNP) on 22 October 2025..... 88

3.21. Email to Department of Mines, Petroleum and Exploration (DMPE) on 22 October 2025..... 90

3.22. Email to Department of Primary Industries and Regional Development (DPIRD) – Fisheries on 22 October 2025 92

3.23. Email to Department of Biodiversity, Conservation and Attractions (DBCA) on 22 October 2025..... 94

3.24. Email to Department of Transport and Major Infrastructure (DTMI) – marine pollution on 22 October 2025..... 96

3.25. Email to Pilbara Development Commission (PDC) on 22 October 2025 98

3.26. Email to Pilbara Ports Authority (PPA) on 22 October 2025 100

3.27. Email to Western Australian Fishing Industry Council (WAFIC) on 22 October 2025 101

3.28. Email to 3D Energi Limited, Beagle No. 1 Pty Ltd / Longreach Capital Investment, BP Developments Australia, Finder No 16 Pty Ltd, INPEX Browse E&P Pty Ltd, Jadestone Energy (Australia) Pty Ltd, Kato Energy (WA) Pty Ltd, Kufpec (Perth) Pty Ltd, MEO International Pty Ltd, Mobil Australia Resources Company Pty Limited, Santos Offshore Pty Ltd, Shell Australia Pty Ltd, Western Gas (474 P) Pty Ltd, and Woodside Energy (Australia) Pty Ltd on 22 October 2025..... 104

3.29. Email to Australian Energy Producers (AEP) on 22 October 2025 106

3.30. Email to Vocus Communications on 22 October 2025..... 108

3.31. Email to Curtin University (Centre for Marine Science and Technology), University of Western Australia (UWA), Commonwealth Scientific and Industrial Research Organisation (CSIRO), Western Australian Marine Science Institution (WAMSI), Australian Institute of Marine Science (AIMS), and Australian Marine Sciences Association (WA Branch) on 22 October 2025.....110

3.32. Email to City of Karratha, Town of Port Hedland, Shire of Ashburton, Shire of Exmouth, Port Hedland Chamber of Commerce and Industry, Onslow Chamber of Commerce and Industry, Western Australian Local Government Association (WALGA), Karratha and Districts Chamber of Commerce and Industry (KDCCI), Regional Development Australia (Pilbara) Karratha WA, WA Game Fishing Association (WAGFA), Recfishwest, Marine Tourism WA, Ashburton Anglers, Exmouth Game Fishing Club (EGFC), King Bay Game Fishing Club (KBFC), and Nickol Bay Sportsfishing Club (NBSC) on 22 October 2025 112

3.33. Email to Protect Ningaloo on 22 October 2025.....114

3.34. Email to The Conservation Council of WA (CCWA), Care for Hedland, and Western Australian Marine Conservation Society (AMCS) on 22 October 2025.....115

3.35. Email to Australian Conservation Foundation (ACF), Greenpeace Australia Pacific (GAP), and Wilderness Society (WS) on 22 October 2025.....117

3.36. Email to Department of Climate Change, Energy, the Environment and Water (DCCEEW) – Underwater Cultural Heritage (UCH) on 22 October 2025.....119

3.37. Email to Department of Planning, Lands and Heritage (DPLH) on 22 October 2025 122

3.38. Email to Western Australian Museum (WAM) on 22 October 2025..... 125

3.39. Email to Australian Southern Bluefin Tuna Fishery Association (ASBITA), Commonwealth Fisheries Association (CFA), Pearl Producers Association (PPA), Tuna Australia, and Seafood Industry Australia (SIA) on 22 October 2025 127

3.40. Email to Yamatji Marlpa Aboriginal Corporation (YMAC) on 22 October 2025 129

3.41. Email to Kimberley Land Council (KLC) on 22 October 2025..... 131

3.42. Email to Department of Water and Environmental Regulation (DWER) on 11 November 2025..... 133

3.43. Email to Chevron Australia on 11 November 2025..... 135

3.44. Email to Ningaloo Coast World Heritage Advisory Committee (NCWHAC) on 11 November 2025..... 136

3.45. Letter sent to Pilbara Kimberley Recreational Marine Users and Gascoyne Recreational Marine Users on 27 October 2025..... 138

4. Consultation Follow Up – November 2025.....140

4.1. Email to Australian Border Force (ABF) (Maritime Border Command) on 13 November 2025..... 140

4.2. Email to Australian Maritime Safety Authority (AMSA) – maritime safety, Australian Maritime Safety Authority (AMSA) – marine pollution, and Australian Hydrographic Office (AHO) on 13 November 2025 141

4.3. Email to Department of Agriculture, Forestry and Fisheries (DAFF) – Fisheries and Department of Agriculture, Forestry and Fisheries (DAFF) – Biosecurity (marine pests) (vessels, aircraft and personnel) on 13 November 2025 142

4.4. Email to Department of Defence (DoD) on 13 November 2025..... 142

4.5. Email to Department of Industry, Science and Resources (DISR) on 13 November 2025..... 143

4.6. Email to Director of National Parks (DNP) on 13 November 2025..... 144

4.7. Email to Department of Primary Industries and Regional Development (DPIRD) – Fisheries on 13 November 2025..... 145

4.8. Email to to Department of Mines, Petroleum and Exploration (DMPE) on 13 November 2025..... 146

4.9. Email to Department of Biodiversity, Conservation and Attractions (DBCA) on 13 November 2025..... 147

4.10. Email to Department of Transport and Major Infrastructure (DTMI) – marine pollution on 13 November 2025..... 148

4.11. Email to Pilbara Development Commission (PDC) on 13 November 2025..... 149

4.12. Email to Pilbara Ports Authority (PPA) on 13 November 2025..... 150

4.13. Email to Western Australian Fishing Industry Council (WAFIC) on 13 November 2025..... 151

4.14. Email to 3D Energi Limited, Beagle No. 1 Pty Ltd / Longreach Capital Investment, BP Developments Australia, Finder No 16 Pty Ltd, INPEX Browse E&P Pty Ltd, Jadestone Energy (Australia) Pty Ltd, Kato Energy (WA) Pty Ltd, Kufpec (Perth) Pty Ltd, MEO International Pty Ltd, Mobil Australia Resources Company Pty Limited, Santos Offshore Pty Ltd, Shell Australia Pty Ltd and Western Gas (474 P) Pty Ltd on 13 November 2025..... 152

4.15. Email to to Australian Energy Producers (AEP) on 13 November 2025..... 153

4.16. Email to Curtin University (Centre for Marine Science and Technology), University of Western Australia (UWA), Commonwealth Scientific and Industrial Reserch Organsiation (CSIRO), Western Australian Marine Science Institution (WAMSI), Australian Institute of Marine Science (AIMS), and Australian Marine Sciences Association (WA Branch) on 13 November 2025..... 154

4.17. Email to City of Karratha, Town of Port Hedland, Shire of Ashburton, Shire of Exmouth, Onslow Chamber of Commerce and Industry, Western Australian Local Government Association (WALGA), Karratha and Districts Chamber of Commerce and Industry (KDCCI), Regional Development Australia (Pilbara) Karratha WA, WA Game Fishing Association (WAGFA), Recfishwest, Marine Tourism WA, Ashburton Anglers, Exmouth Game Fishing Club (EGFC), King Bay Game Fishing Club (KBFC), and Nickol Bay Sportsfishing Club (NBSC) on 13 November 2025..... 155

4.18. Email to Protect Ningaloo on 13 November 2025..... 156

4.19. Email to The Conservation Council of WA (CCWA), Care for Hedland, and Western Australian Marine Conservation Society (AMCS) on 18 November 2025... 156

4.20. Email to Australian Conservation Foundation (ACF), Greenpeace Australia Pacific (GAP), and Wilderness Society (WS) on 13 November 2025..... 157

4.21. Email to Department of Climate Change, Energy, the Environment and Water (DCCEEW) – Underwater Cultural Heritage (UCH) on 13 November 2025..... 158

4.22. Email to Western Australian Museum (WAM) on 13 November 2025..... 159

4.23. Email to Australian Southern Bluefin Tuna Fishery Association (ASBITA), Commonwealth Fisheries Association (CFA), Pearl Producers Association (PPA), and Seafood Industry Australia (SIA) on 13 November 2025..... 160

4.24. Email to Yamatji Marlpa Aboriginal Corporation (YMAC) on 18 November 2025 161

4.25. Email to Kimberley Land Council (KLC) on 18 November 2025..... 162

4.26. Email to Department of Water and Environmental Regulation (DWER) on 25 November 2025..... 163

4.27. Email to Chevron Australia on 25 November 2025..... 164

4.28. Email to Ningaloo Coast World Heritage Advisory Committee (NCWHAC) on 25 November 2025..... 165

4.29. Letter sent to Pilbara Kimberley Recreational Marine Users and Gascoyne Recreational Marine Users on 13 November 2025..... 166

5. Notification of intent to submit – December 2025 168

5.1. Email to ABF on 16 December 2025 168

5.2. Email to AMSA Marine Pollution on 16 December 2026 168

5.3. Email to Department of Agriculture, Forestry and Fisheries (DAFF) – Fisheries and Department of Agriculture, Forestry and Fisheries (DAFF) – Biosecurity (marine pests) (vessels, aircraft and personnel) on 16 December 2025 169

5.4. Email to DCCEW on 16 December 2025 170

5.5. Email to DoD on 16 December 2025 171

5.6. Email to DISR on 16 December 2025 172

5.7. Email to DMPE on 16 December 2025 173

5.8. Email to DPIRD on 16 December 2025 174

5.9. Email to Pilbara Development Commission on 16 December 2025 175

5.10. Email to Australian Southern Bluefin Tuna Fishery Association (ASBITA), Commonwealth Fisheries Association (CFA), Pearl Producers Association (PPA), and Seafood Industry Australia (SIA) on 16 December 2025 176

5.11. Email to City of Karratha, Shire of Ashburton, Shire of Exmouth, Onslow Chamber of Commerce and Industry, Western Australian Local Government Association (WALGA), Regional Development Australia (Pilbara) Karratha WA, WA Game Fishing Association (WAGFA), Marine Tourism WA, Ashburton Anglers, Exmouth Game Fishing Club (EGFC), King Bay Game Fishing Club (KBFC), and Nickol Bay Sportsfishing Club (NBSC) on 16 December 2025 177

5.12. Email to Karratha and Districts Chamber of Commerce and Industry (KDCCI) on 16 December 2025 178

5.13. Email to Town of Port Hedland on 16 December 2025 179

5.14. Email to Curtin University (Centre for Marine Science and Technology), University of Western Australia (UWA), Commonwealth Scientific and Industrial Reserch Organsiation (CSIRO), Western Australian Marine Science Institution (WAMSI), Australian Institute of Marine Science (AIMS), and Australian Marine Sciences Association (WA Branch) on 18 December 2025 180

5.15. Email to Australian Conservation Foundation (ACF), Greenpeace Australia Pacific (GAP), and Wilderness Society (WS) on 18 December 2025 181

5.16. Email to Protect Ningaloo on 18 December 2025 182

5.17. Email to The Conservation Council of WA (CCWA), Care for Hedland, and Western Australian Marine Conservation Society (AMCS) on 18 December 2025 ... 182

5.18. Email to AEP on 18 December 2025 183

5.19. Email to Chevron Australia on 18 December 2025 184

5.20. Email to 3D Energi Limited, Beagle No. 1 Pty Ltd / Longreach Capital Investment, BP Developments Australia, Finder No 16 Pty Ltd, INPEX Browse E&P Pty Ltd, Jadestone Energy (Australia) Pty Ltd, Kato Energy (WA) Pty Ltd, Kufpec (Perth) Pty Ltd, MEO International Pty Ltd, Mobil Australia Resources Company Pty Limited, Santos Offshore Pty Ltd, Shell Australia Pty Ltd and Western Gas (474 P) Pty Ltd on 18 December 2025 185

5.21. Email to Ngarluma Aboriginal Corporation (NAC) on 10 December 2025 186

5.22. Email to Murujuga Aboriginal Corporation (MAC) on 10 December 2025 187

5.23. Email to Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) on 10 December 2025 188

1. Consultation Materials

1.1. Consultation Information Sheet

VERMILION ENERGY

INFORMATION SHEET

Wandoo Field

Well Construction Environment Plan

October 2025

About Vermilion Energy

Vermilion Energy is an international energy producer with a 30-year track record. It has operations in North America, Europe and Australia.

Vermilion Oil and Gas Australia (Vermilion) is a subsidiary of Vermilion Energy and has operated in Australia for 20 years. Our Australian operations focus on producing and developing oil at the Wandoo Field, off the shore of Western Australia.

About Wandoo Field

The Wandoo Field was discovered in 1991 and the extraction of oil started in 1993. Vermilion has been the operator since November 2005 and the sole titleholder since 2007.

The Wandoo Field is located within the Permit Area WA-14-L in Commonwealth waters within the Carnarvon Basin, approximately 80 km northwest of the port of Dampier and 110 km northeast of Barrow Island (see **Figure 1**). The water depth at the field location is in the range from 50–60 m.

Operational Area

The Operational Area for the activities outlined in the Well Construction Environment Plan (EP) is defined as the area within the existing 500 m Petroleum Safety Zone (PSZ) within the Permit Area of WA-14-L, surrounding the Wandoo Production Facilities (see **Table 1**).

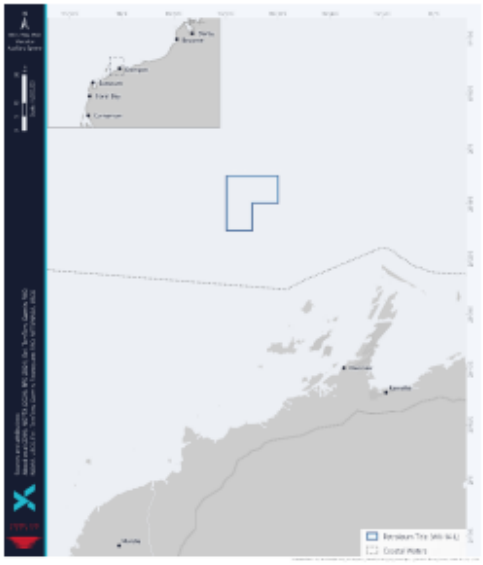


Figure 1. Location of WA-14-L

Activity overview

The Wandoo Field currently operates under approved EPs for production and well construction. The Well Construction EP is updated and reassessed every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Vermilion periodically conducts well construction operations in the Operational Area using a Mobile Offshore Drilling Unit (MODU).

Well construction operations planned over the next five years involve the drilling and completing of new production wells.

The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete.

As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Pictured: Wandoo B (left) and a MODU (right) during well construction activities

Table 1. Coordinates of the Wandoo Production Facilities (GDA2020/MGA2020)

Facility	Latitude	Longitude
Wandoo A	20° 08' 14.61" S	116° 25' 22.43" E
Wandoo B	20° 07' 37.12" S	116° 26' 08.23" E
CALM Buoy	20° 06' 57.43" S	116° 26' 06.51" E

Communications with mariners

A 500 m PSZ applies around the Wandoo Production Facilities. Commercial fishers and other marine users are not permitted to enter the Operational Area.

Environment that may be affected

As part of our environmental assessment and consultation process, Vermilion create an environment that may be affected (EMBA) map to provide geographical context for stakeholders to determine if their functions, interests or activities may be affected by an offshore activity during operations or in an emergency scenario.

Figure 2 shows the EMBA, which is based on a worst-case environmental scenario, which in this case is an unplanned release (oil spill) from a vessel spill.

The EMBA has been defined through combining 100 simulations for each unplanned release scenario under different weather and ocean conditions. This means that in the highly unlikely event an unplanned release does occur, a geographical area much smaller than the EMBA would be affected. The majority of the impacts or risks directly arising from planned activities would occur within close proximity of the operational area.

Vermilion has systematic control measures to prevent and mitigate emergencies and to reduce the impact of planned activities on the environment, including ecological, social and cultural sensitivities.

Tables 2 and **3** summarises the key impacts or risks and proposed control measures to manage these to levels that are as low as reasonably practicable (ALARP) and acceptable.

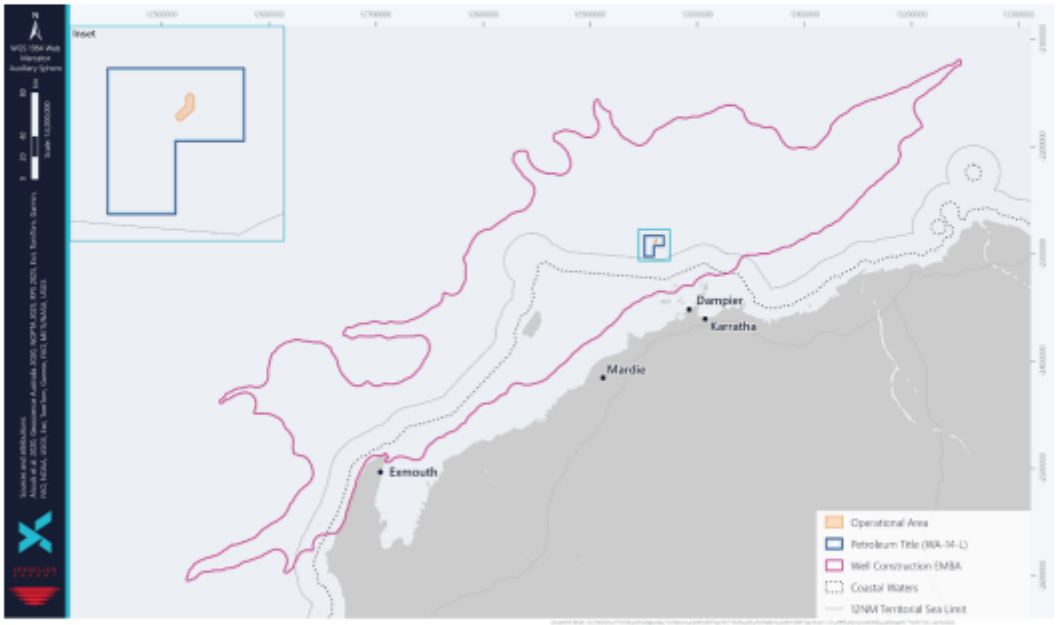


Figure 2. Operational area and environment that may be affected

Assessment

Vermilion has undertaken an assessment of the potential impacts and risks to the environment as well as potential risks to relevant persons arising from the planned activities and unplanned events. This assessment considers the timing, duration and location of the activities. A number of mitigation and management measures will be implemented and are summarised in **Tables 2** and **3**. Further details will be provided in the Well Construction EP.

In preparing the EPs, Vermilion's intent is to minimise environmental, social and cultural risks and impacts associated with the proposed activities, and Vermilion seeks your feedback to inform our decision making.

Mitigation and management measures

Vermilion has undertaken an assessment to identify potential impacts and risks to the environment arising from the activity. A number of mitigation and management measures for the activity are outlined in **Tables 2** and **3.** Further details will be provided in the Well Construction EP.

Table 2. Summary of key risks and/or impacts and preliminary management measures

Potential impact/risk	Source of potential impact/risk	Description of potential impact/risk	Preliminary draft mitigation and/or management measure
Planned activities (routine and non-routine)			
Light emissions	Drilling rig and support vessels	• Navigation and operational lighting from the operational area may result in a localised change in ambient light. • Change in ambient light may result in the temporary attraction or deterrence of light-sensitive species.	• Potential impacts from lighting are assessed as occurring within 20 km of a vessel or facility based on the National Light Pollution Guidelines for Wildlife (Commonwealth of Australia, 2019). • Facility and vessel navigation lights are compliant with the *Navigation Act 2012*.
Acoustic emissions	Drilling rig, support vessels and helicopters	• Offshore activities within the operational area may result in a localised and temporary change to ambient underwater sound.	• Vessels and helicopters comply with relevant parts of Environment Protection and Biodiversity Conservation (EPBC) Regulation (2000) Part 8. • Vessel and machinery are maintained in accordance with Flag State certification requirements. • All engines, compressors and machinery on the facilities are maintained via a maintenance management system.
Atmospheric and greenhouse gas emissions	Drilling rig, support vessels and helicopters	• Combustion of fuel may result in a localised and temporary reduction in air quality. • Greenhouse gas emissions within the operational area may result in contribution to the reduction of the global atmospheric carbon budget.	• Reduced sulphur content fuel will be used. • Flag State Certificate and/or IAPP certifies measures are in place to manage air emissions. • All engines, compressors and machinery on the facilities are maintained via a maintenance management system.
Routine discharges	Drilling rig and support vessels	• Planned discharges from operations (e.g. sewage, food waste) may result in a localised and temporary change in water and/or sediment quality, and subsequent impacts to marine life.	• Emissions and discharges of liquid waste to sea are in accordance with legislative requirements. • Compliance with Vermilion Waste Management Plan.
Discharge of drill cuttings, excess water-based drilling, completion fluids and cement	Drilling rig	• Planned discharges from operations may result in a localised and temporary change in water and/or sediment quality, and subsequent impacts to marine life.	• Drilling, completion fluids and cement components are selected using the Vermilion chemical assessment process. Only chemicals that comply with the chemical selection process will be used. • Solids Control System used to remove fines from drilling fluids in order to keep fluids in specification for reuse, to minimise the volume of fluids being discharged.
Interaction with other marine users	Drilling rig and support vessels	• Potential displacement of commercial fishing	• Consultation is undertaken with all relevant persons.

Potential impact/risk	Source of potential impact/risk	Description of potential impact/risk	Preliminary draft mitigation and/or management measure
		activities and commercial shipping vessels.	• A pre-existing 500 m PSZ is in place around the Wandoo Production Facilities and will remain in place for the duration of operations under the proposed EP. No vessels are to enter this zone.
Disturbance to seabed	Drilling rig	• Localised increase in turbidity. • Potential impacts to benthic habitat and communities.	• Seabed disturbance limited to planned activities and defined locations.

Table 3. Summary of potential risks and management measures associated with unplanned events

Potential risk	Source of potential risk	Description of potential risk	Preliminary draft mitigation and/or management measure
Unplanned events (accidents/incidents)			
Unplanned release from vessel collision	Support vessels	• A release of hydrocarbons (e.g. fuel) may result in marine pollution, change to water quality, smothering of subtidal and intertidal habitats and subsequent impacts to marine life, indirect impacts to fisheries, and reduction in amenity.	• Wandoo facilities are marked on marine charts and any changes to Wandoo facilities notified via Notices to Mariners. • 500 m restriction zone surrounding the facilities. • Vessel operations restricted in adverse weather. • Dynamic positioning requirements. • Navigation aids. • Emergency communications.
Invasive marine pests	Drilling rig and support vessels	• Planned discharge of ballast water or the presence of biofouling on vessels may result in the introduction of an invasive marine pest.	Drilling rig and vessels will comply with: • Australian Ballast Water Management Requirements consistent with the International Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Management Convention). • Annex 1 of the International Convention on the Control of Harmful Anti-Fouling Systems on Ships. • National Biofouling Guidelines for the Petroleum Production and Exploration Industry and IMO Guidelines for the control and management of a ship's biofouling to minimise the transfer of invasive aquatic species.
Vessel collision or disturbance of fauna	Support vessels	• Potential injury of marine fauna.	• Vessels contracted by Vermilion operating in the Operational Areas must have procedures that adhere to Part 8 of EPBC Regulation 2000 to minimise exposure of marine fauna.
Unplanned release during handling/ storage of hazardous materials or wastes	Drilling rig and support vessels	• A release of hazardous material or waste (e.g. fuel, sewage) may result in change to water quality, marine pollution and subsequent impacts to marine fauna, potentially resulting in injury or mortality.	Work procedures for lifts, bulk transfers and cargo loading will require: • The security of loads to be checked prior to commencing lifts • Loads to be covered if there is a risk of losing loose materials • Lifting operations to consider weather and sea state.

Potential risk	Source of potential risk	Description of potential risk	Preliminary draft mitigation and/or management measure
			• Drilling rig and vessels' procedures are compliant with MARPOL Convention Annex V and Marine Order 95.
Hydrocarbon spill response activities	Spill response	• Potential disturbance to benthic habitat, scouring of sediments, and decrease in water quality.	• Vermilion maintains contracts with oil spill response organisations, operational and scientific monitoring providers, and logistics operators for support in the event of a hydrocarbon spill. • Vermilion tests response arrangements annually to ensure preparedness for unplanned hydrocarbon spills. • Where required, implementation of response strategies will be undertaken as per the NOPSEMA-accepted Oil Pollution Emergency Plan (OPEP) and in consultation with or under direction of the Commonwealth or State Control Agency.

Consultation

Consultation provides Vermilion with an opportunity to receive feedback from authorities, persons and organisations whose functions, interests or activities may be affected by proposed petroleum activities. This feedback helps us to refine or change the management measures we are planning to address potential activity impacts and risks. Vermilion's objective for the proposed activities is to ensure the activity is carried out in a manner that is consistent with the principles of Ecologically Sustainable Development (ESD) and reduce environmental impacts and risks to a level that is ALARP and acceptable over the life of the activity.

Consultation also helps us to identify values and sensitivities where information is not publicly available, such as spiritual and cultural connection to land and sea country, as well as first-hand feedback on commercial and recreational fishing, tourism and local community activities and interests.

Feedback

If you consider you may be a relevant person, please contact us as soon as possible if you require any further information or if you think you are not on our consultation list.

We are asking for relevant persons to provide feedback by **21 November 2025.**

Feedback provided by relevant persons will be considered in an addendum to the Wandoo Facility and Well Construction EPs and through the life of the activity. Feedback from relevant persons will be included in the EP submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

Please let us know if you would like your personal/organisational details or any part of your feedback to remain private and we will ensure this remains confidential to NOPSEMA.

Contact us

Website: www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Email: abu.consultation@vermilionenergy.com

Phone: (08) 9217 5858

To visit our website, scan the QR code

1.2. Commercial Fisher Information Sheet

VERMILION ENERGY

COMMERCIAL FISHER INFORMATION SHEET

Wandoo Field

Well Construction Environment Plan

October 2025

More information is available in the general Well Construction Environment Plan Consultation Information Sheet

Information overview

This Commercial Fisher Information Sheet provides supplementary information to the Vermilion Oil and Gas Australia (Vermilion) general information sheet about the proposed well construction drilling in the Wandoo Field.

This Information Sheet provides supplementary information for the needs of commercial fishers who may be active around the Wandoo Field.

It summarises the ongoing assessment of potential impacts and risks to the commercial fishing industry and provides information for the needs of commercial fishers, who may be active around the operational area, about the proposed activities.

Activity overview

Vermilion periodically conducts well construction operations in the Operational Area using a Mobile Offshore Drilling Unit (MODU).

Well construction operations planned over the next five years involve the drilling and completing of new wells.

The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete.

As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction Environment Plan (EP), well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

About Vermilion Energy

Vermilion Energy is an international energy producer with a 30-year track record. It has operations in North America, Europe and Australia.

Vermilion is a subsidiary of Vermilion Energy and has operated in Australia for 20 years. Our Australian operations focus on producing oil at the Wandoo Field, off the coast of Western Australia.

About Wandoo Field

The Wandoo Field was discovered in 1991 and the extraction of oil started in 1993. Vermilion has been the operator of Wandoo Field since November 2005 and the sole titleholder since 2007.

The Wandoo Facility operates under existing accepted EPs in place for production and well construction.

Pictured: Wandoo B (left) and a MODU (right) during well construction activities

Key information

- **Location:** The Wandoo Field is located in Commonwealth waters within the Carnarvon Basin, approximately 80 km northwest of the port of Dampier and 110 km northeast of Barrow Island (**Figure 1**).
- **Operational area:** Commercial fishers and other marine users are **not** permitted to use the operational area and should take care around operations by adhering to standard navigation rules.
- **Timing and duration:** The first well is proposed to be drilled in 2027, pending regulatory approval and rig availability. The activity duration is expected to be between approximately 30 to 100 days of continuous well operations for each well drilled.
- **Exclusion zone:** A 500 m Petroleum Safety Zone (PSZ) is currently in place around the Wandoo Production Facilities. The MODU will be undertaking the well construction activities within this area.
- **Notifications:** Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
- **Vessels:** One to four support vessels (typically two for drilling rig support) will be involved in the activity.

VERMILION ENERGY

Wandoo Field location

The Wandoo Field is located in Commonwealth waters within the Carnarvon Basin, approximately 80 km northwest of the port of Dampier and 110 km northeast of Barrow Island (**Figure 1**). The water depth at the field location is in the range from 50–60 m.

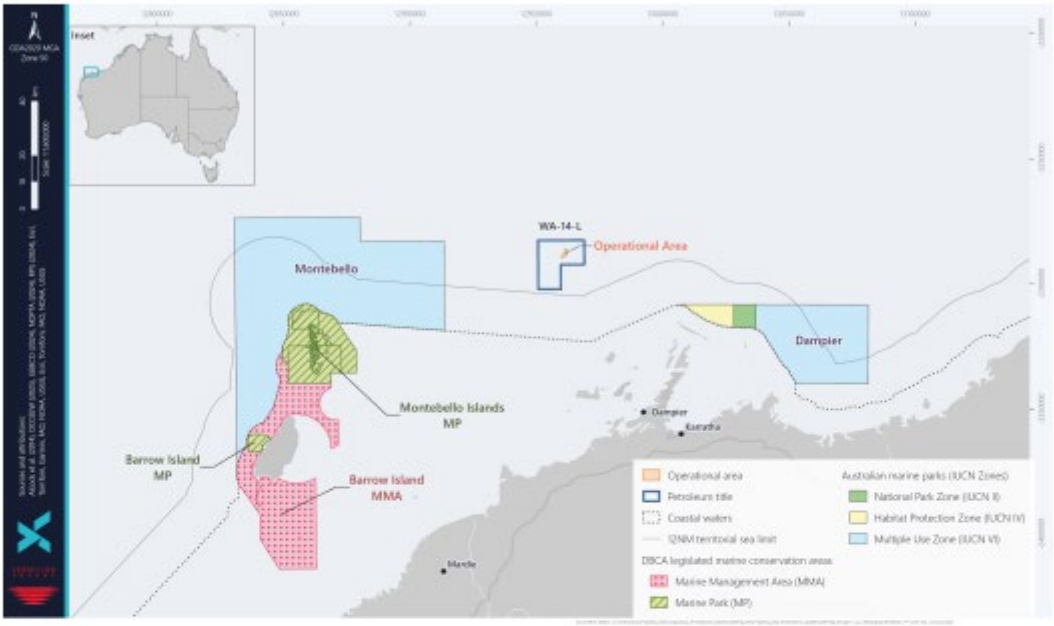


Figure 1. Location of WA-14-L and operational area

Operational area

The operational area for the activities outlined in the Well Construction EP is defined as the area within the existing 500m Petroleum Safety Zone (PSZ), surrounding the Wandoo Production Facilities (**Table 1**).

Table 1. Coordinates of the Wandoo Production Facilities (GDA2020/MGA2020)

Facility	Latitude	Longitude
Wandoo A	20° 08' 14.61" S	116° 25' 22.43" E
Wandoo B	20° 07' 37.12" S	116° 26' 08.23" E
CALM Buoy	20° 06' 57.43" S	116° 26' 06.51" E

Activity summary

Table 2. Activity summary

Production licence area	WA-14-L
Approximate duration and timing of activities	• 30-100 days (per well/campaign). • The first well is proposed to be drilled in 2027, pending regulatory approval and rig availability. • The timing of subsequent activities has not been finalised. The Well Construction EP assumes the activities may be undertaken at any time of year over the five year period following acceptance of the EP.
Approximate water depth	50–60 m
Key activities	The primary purpose of the well construction activities will be to add new production intervals to access undrained well fluids in the Wandoo reservoir. A secondary aim will be to continue the evaluation of the Wandoo Field boundaries to determine the extent of the Wandoo reservoir in the areas of the Wandoo Field which the new trajectories will access. The activities covered in the EP include MODU-based well construction activities: • Mobilisation and position of a MODU within the operational area of the well construction activity • Well interventions and side-tracks • Construction of new wells • Isolation of existing laterals and well bores • Well slot recoveries for drilling of new wells. No vertical seismic profiling (VSP) is planned during well construction activities.
Vessels	• One jack-up MODU (drilling rig). • One to four support vessels (typically two for drilling rig support) will be involved in the activity. • Vessel details are not known at this time.
Remotely operated vehicle (ROV)	A light work-class ROV will be available on location to be used to support drilling rig operations. ROV activities may include survey and monitoring operations.
Helicopters	Helicopters will be used for crew changes, critical equipment supply, surveillance and emergency response uses.
Drilling muds and cuttings	Vermilion drilling operations will use only water-based fluids called 'muds' to lubricate and stabilise the wellbores in each section and remove drilling cuttings. Drill cuttings are rock chips from the sedimentary layers that emerge from the drilling process and range from very fine to pebble sized. Water-based muds are recycled as much as possible during the drilling process. The cuttings will be processed on the drilling rig before they are discharged overboard, where they will settle rapidly on the seafloor around the well site. This is standard industry practice in Australia. Marine mammals and fish may transit through these areas but will usually avoid the temporary disturbance. Any exposure to suspended sediment before it settles on the seabed will be highly localised and temporary due to high dilution and fast dispersal in the water column.
Operational area and exclusion zones	A 500 m Petroleum Safety Zone (PSZ) is currently in place around the Wandoo production facilities. The MODU will be undertaking the well construction activities within the PSZ.
Communication with fishers	Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby. Coordinates will be provided to stakeholders 30 days before the commencement of any activities.

Assessment of commercial fishing, potential effects and impacts

Commonwealth managed fisheries

There are three Commonwealth managed commercial fisheries that have a defined management area overlapping/surrounding the operational area (**Table 3**).

Table 3. Commonwealth managed fisheries

Commonwealth managed fisheries	Summary of fishery in relation to operational area	Assessment of potential impacts
Southern Bluefin Tuna Fishery	The Southern Bluefin Tuna Fishery operates around Australia and extends to the high seas fishing zone (out to 200nm from the coast). The fishery targets southern bluefin tuna only. Fishing activity is focused in southern Australian waters with no activity expected surrounding the operational area.	No impact to the fishery expected.
Western Skipjack Tuna Fishery	The Western Skipjack Tuna Fishery extends west from Cape York Peninsula and around Australia to the South Australian/Victorian border, out to the edge of the Australian Fishing Zone. Little fishing activity has been undertaken in this fishery since 2008. No fishing activity associated with this fishery is expected to occur surrounding the operational area.	No impact to the fishery expected.
Western Tuna and Billfish Fishery	The Western Tuna and Billfish Fishery management area extends over a large area westward from Cape York Peninsula off Queensland, around the west coast of Western Australia and eastward, across the Great Australian Bight to 141°E at the South Australian/Victorian border. The fishery has operated at low levels of effort since the early 2000's. Target species include albacore, bigeye tuna, yellowfin tuna, swordfish and striped marlin. No fishing activity associated with this fishery is expected to occur surrounding the operational area.	No impact to the fishery expected.

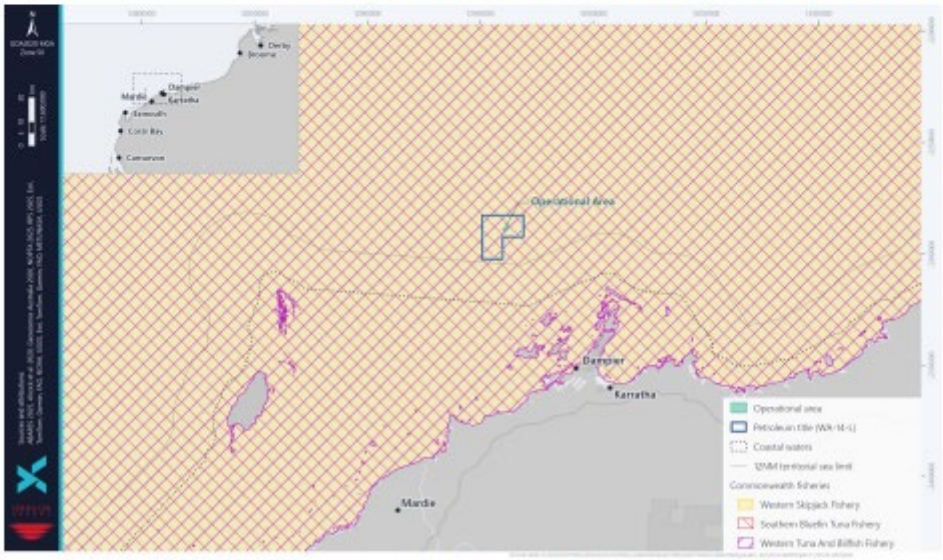


Figure 2. Commonwealth managed fisheries

State managed fisheries

State managed commercial fisheries that have historical fishing activity intersecting the operational area within the last 5 years include:

- Hermit Crab Fishery
- Mackerel Managed Fishery
- Marine Aquarium Managed Fishery
- Nickol Bay Prawn Fishery
- Onslow Prawn Limited Entry Fishery
- Pilbara Crab Managed Fishery
- Pilbara Line Fishery
- Pilbara Fish Trawl Interim Managed Fishery
- Pilbara Trap Managed Fishery
- Specimen Shell Managed Fishery, and
- Western Australian Sea Cucumber Fishery.

Figure 3 depicts the state managed commercial fisheries that had three or more vessels (per year) active around the operational area.

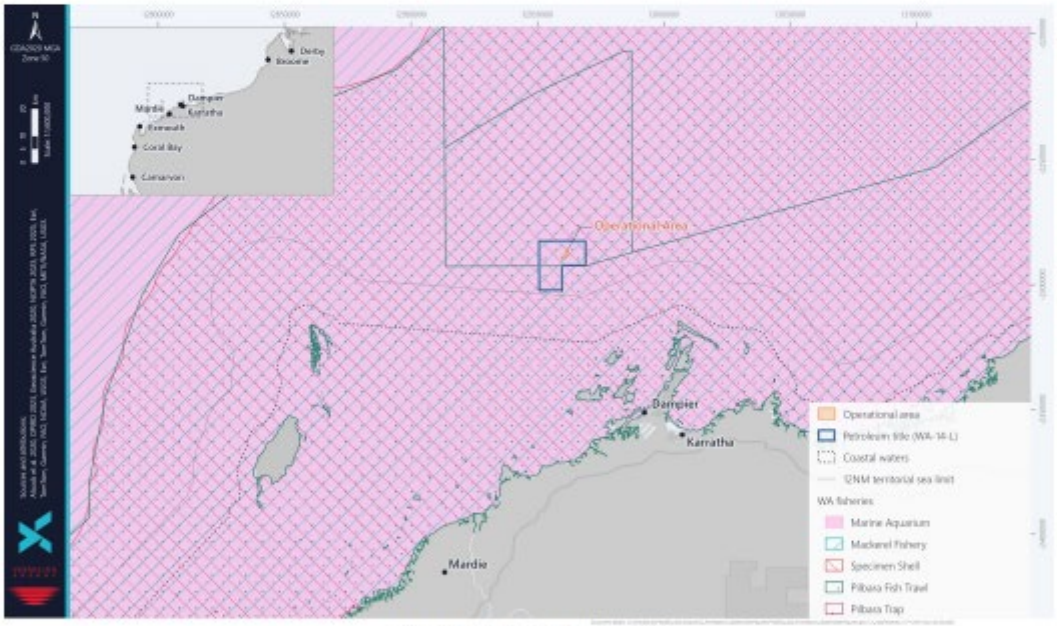


Figure 3. State managed fisheries

Vermilion impact assessment

Vermilion has undertaken an assessment to identify potential impacts and risks to commercial fishers from the activity. A number of mitigation and management measures for the activity are outlined in **Table 4.** Further details will be provided in the Well Construction EP.

Table 4. Potential interactions with commercial fishing

Potential impact	Description of potential impact/risk	Proposed control measures
Interference with commercial fishing activities	Potential displacement of commercial fishing activities.	• Drilling rig and vessel communication equipment will be maintained to allow for communication with commercial fishing vessels. • The Australian Hydrographic Office (AHO) and Australian Maritime Safety Authority (AMSA) will be notified prior to rig move activities so appropriate marine notices can be issued. • The drilling rig will have an exclusion zone of 500 m within the existing PSZ.
Introduction and establishment of invasive marine species	Potential reduction in commercial species abundance due to competition or predation.	The drilling rig and vessels will comply with: • Australian Ballast Water Management Requirements consistent with the International Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Management Convention). • Annex 1 of the International Convention on the Control of Harmful Anti-Fouling Systems on Ships. • National Biofouling Guidelines for the Petroleum Production and Exploration Industry and IMO Guidelines for the control and management of a ship's biofouling to minimise the transfer of invasive aquatic species.
Vessel collision	Decrease in water quality. Potential toxic effects to commercial species.	• The AHO and AMSA will be notified prior to rig move activities so appropriate marine notices can be issued. • The drilling rig and vessels will have navigational lights. • The vessels will have dynamic positioning capability. • The drilling rig and vessels will be equipped and crewed in accordance with the *Navigation Act 2012* and Marine Orders. • Vessels will have a dedicated Ship Oil Pollution Prevention Plan (SOPEP). • An Oil Pollution Emergency Plan (OPEP) will be prepared and implemented as required.

Consultation

Consultation provides Vermilion with an opportunity to receive feedback from authorities, persons and organisations whose functions, interests or activities may be affected by proposed petroleum activities. This feedback helps us to refine or change the management measures we are planning to address potential activity impacts and risks. Vermilion's objective for the proposed activities is to ensure the activity is carried out in a manner that is consistent with the principles of Ecologically Sustainable Development (ESD) and reduce environmental impacts and risks to a level that is As Low As Reasonably Practicable (ALARP) and acceptable over the life of the activity.

Consultation also helps us to identify values and sensitivities where information is not publicly available, such as spiritual and cultural connection to land and sea country, as well as first-hand feedback on commercial and recreational fishing, tourism and local community activities and interests.

Feedback

Vermilion is committed to working together with the commercial fishing industry so that we can all proceed with business in a safe and efficient manner.

If you consider you may be a relevant person, please contact us as soon as possible if you require any further information or if you think you are not on our consultation list.

We are asking for relevant persons to provide feedback by **21 November 2025.**

Feedback provided by relevant persons will be considered in an addendum to the Well Construction EP and through the life of the activity. Feedback from relevant persons will be included in the EP submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

Please let us know if you would like your personal/organisational details or any part of your feedback to remain private and we will ensure this remains confidential to NOPSEMA.

Contact us

Website: www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Email: abu.consultation@vermilionenergy.com

Phone: (08) 9217 5858

To visit our website, scan the QR code

1.3. Summary Information Sheet

VERMILION ENERGY

SUMMARY INFORMATION SHEET

Wandoo Field

Well Construction Environment Plan

October 2025

More information is available in the general Well Construction Environment Plan Consultation Information Sheet

Introduction

Vermilion Energy is an international energy producer with 30 years of experience. It operates in North America, Europe and Australia. Vermilion Oil and Gas Australia (the Australian branch) has been in Australia for 20 years. Our Australian operations focus on producing oil from the Wandoo Field off the shore of Western Australia.

The Wandoo Field was discovered in 1991 and oil extraction started in 1993. Vermilion has managed the Wandoo Field since November 2005 and has been the sole titleholder since 2007.

The Wandoo Field currently operates under approved Environment Plans (EPs) for production and well construction at the facility. The Well Construction EP is updated and reassessed every 5 years, as per Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

Location

The Wandoo Field is located within the Permit Area WA-14-L in Commonwealth waters within the Carnarvon Basin, approximately 80 km northwest of the port of Dampier and 110 km northeast of Barrow Island (**Figure 1**). The water depth at the field location is in the range from 50–60 m.

The Well Construction EP Consultation Information Sheet lists the geographical coordinates of the Wandoo Production Facilities.

Operational Area

The Operational Area for the activities outlined in the Well Construction EP is defined as the area within the existing 500 m Petroleum Safety Zone (PSZ) within the Permit Area of WA-14-L, surrounding the Wandoo facility infrastructure.

Activity overview

Vermilion periodically conducts well construction operations in the Operational Area using a drilling rig. Well construction operations planned over the next five years involve the drilling and, completing of new wells.

The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete.

As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

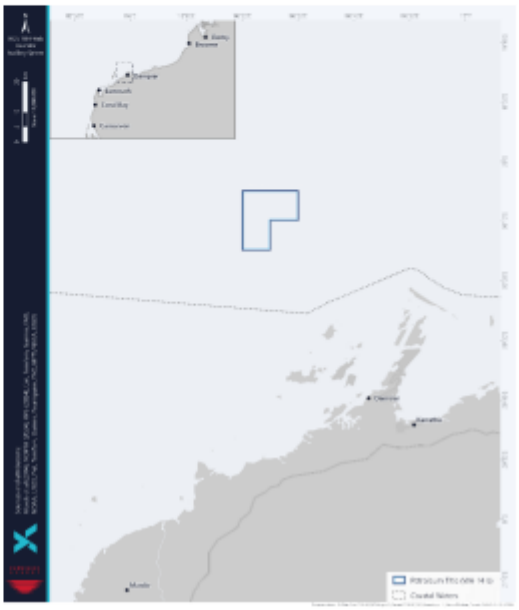


Figure 1. Location of WA-14-L

Pictured: Wandoo B (left) and a MODU (right) during well construction activities

Environmental impacts and management

The well construction activities include planned activities, but may also result in unplanned activities. Both may potentially impact the environment.

A table showing all planned and unplanned activities, potential impacts, and management measures for each is included in the Well Construction EP Consultation Information Sheet. Further details will also be provided in the Well Construction EP.

The objective is to manage the work program to reduce impacts and risks to as low as reasonably practicable.

The total area over which unplanned events could have an environmental impact is shown in **Figure 2**. This is referred to as the environment that may be affected (EMBA).

In the highly unlikely event that an unplanned activity, such as an oil release from a vessel collision the entire EMBA would not be affected. The area of the EMBA that may be affected would only be determined at the time of the event.

Consultation

Consultation provides Vermilion with an opportunity to receive feedback from those whose functions, interests or activities may be affected by proposed activities. This feedback helps us to refine the management measures to address potential activity impacts and risks.

Consultation also helps us to identify values and sensitivities where information is not publicly available.

Feedback

If you consider you may be a relevant person, please get in touch with us as soon as possible if you require any further information or if you think you are not on our consultation list.

Feedback provided by relevant persons will be considered in an addendum to the Well Construction EP and throughout the life of the activities. Feedback from relevant persons will be included in the EP submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

Please let us know if you would like your personal/organisational details or any part of your feedback to remain private and we will ensure this remains confidential to NOPSEMA.

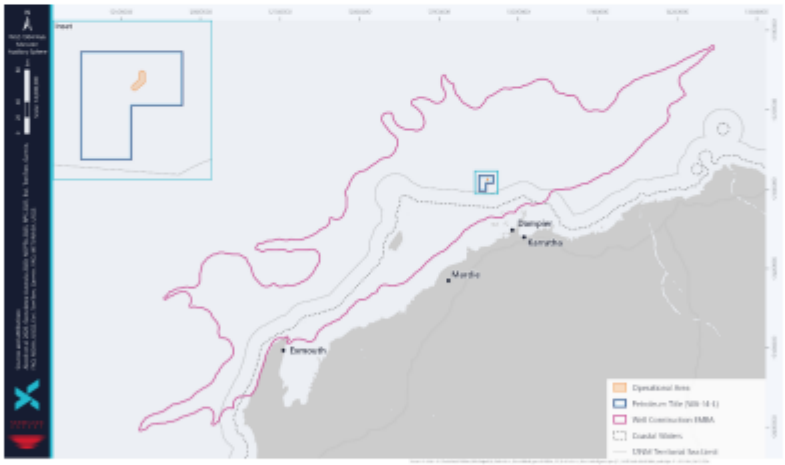


Figure 2. Operational area and environment that may be affected

Contact us

Website: www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities

Email: abu.consultation@vermilionenergy.com

Phone: (08) 9217 5858

To visit our website, scan the QR code

2. Initial Consultation Outreach – August 2025

2.1. Email to Wanparta Aboriginal Corporation (WAC) on 25 August 2025

Dear [redacted]

Subject: Upcoming Consultation - Wandoo Offshore Oil Field Well Construction and Facility Operations Environment Plans (EPs)

We are contacting you on behalf of Vermilion Oil and Gas Australia Ltd (Vermilion) which has operations in the Wandoo Field located offshore approximately 80km northwest of Dampier and 110km northeast of Barrow Island.

Meeting request

As part of our ongoing engagement, we are reaching out to Wanparta Aboriginal Corporation to arrange a consultation meeting with the group to discuss the next two EPs. We hope to arrange these meetings during September, October or November subject to your availability.

Vermilion has operated the Wandoo Field since 2005, and these activities are current and ongoing. The revised EPs will cover the continued operation of the Wandoo production facility for the next five years, as well as potential routine well construction using an offshore drilling rig.

These upcoming EP revisions do not represent new projects, but are part of a standard five-year review required for long-term activities. The revised EPs will assess the environmental impacts and risks associated with ongoing facility operations and well construction activities, and outline how these will continue to be avoided, mitigated, or managed.

Seeking your input

Even where no significant changes have occurred, the review process provides an opportunity to reassess environmental risks and management measures, and to invite feedback and input from relevant persons. The nature and scale of these activities differ from shorter-term exploration drilling previously consulted on, as they involve longer-term operations and permanent infrastructure.

We will follow up shortly with consultation information for the revised EPs once available. In the meantime, we wanted to reach out to see if your board could consider allocating time to engage in this process, as we are mindful that agendas tend to fill up quickly.

Vermilion recognises the importance of cultural heritage to the group and are committed to ensuring that these values are respected and integrated into the project planning.

We look forward to hearing from you and working together to ensure a collaborative consultation process.

Yours sincerely

2.2. Email to Kariyarra Aboriginal Corporation (KAC) on 25 August 2025

Dear [redacted]

Subject: Upcoming Consultation - Wandoo Offshore Oil Field Well Construction and Facility Operations Environment Plans (EPs)

We are contacting you on behalf of Vermilion Oil and Gas Australia Ltd (Vermilion) which has operations in the Wandoo Field located offshore approximately 80km northwest of Dampier and 110km northeast of Barrow Island.

Meeting request

As part of our ongoing engagement, we are reaching out to Kariyarra Aboriginal Corporation to arrange a consultation meeting with the group to discuss the next two EPs.

We hope to arrange these meetings during September, October or November subject to your availability.

Vermilion has operated the Wandoo Field since 2005, and these activities are current and ongoing. The revised EPs will cover the continued operation of the Wandoo production facility for the next five years, as well as potential routine well construction using an offshore drilling rig.

These upcoming EP revisions do not represent new projects, but are part of a standard five-year review required for long-term activities. The revised EPs will assess the environmental impacts and risks associated with ongoing facility operations and well construction activities, and outline how these will continue to be avoided, mitigated, or managed.

Seeking your input

Even where no significant changes have occurred, the review process provides an opportunity to reassess environmental risks and management measures, and to invite feedback and input from relevant persons. The nature and scale of these activities differ from shorter-term exploration drilling previously consulted on, as they involve longer-term operations and permanent infrastructure.

We will follow up shortly with consultation information for the revised EPs once available. In the meantime, we wanted to reach out to see if your board could consider allocating time to engage in this process, as we are mindful that agendas tend to fill up quickly.

Vermilion recognises the importance of cultural heritage to the group and are committed to ensuring that these values are respected and integrated into the project planning.

We look forward to hearing from you and working together to ensure a collaborative consultation process.

Yours sincerely

2.3. Email to Ngarluma Aboriginal Corporation (NAC) on 25 August 2025

Dear [redacted]

Subject: Upcoming Consultation - Wandoo Offshore Oil Field Well Construction and Facility Operations Environment Plans (EPs)

We are contacting you on behalf of Vermilion Oil and Gas Australia Ltd (Vermilion) which has operations in the Wandoo Field located offshore approximately 80km northwest of Dampier and 110km northeast of Barrow Island.

Meeting request

As part of our ongoing engagement, we are reaching out to Ngarluma Aboriginal Corporation to arrange a consultation meeting with the group to discuss the next two EPs. We understand that you also act for Yindjibarndi Aboriginal Corporation.

We hope to arrange these meetings during September, October or November subject to your availability.

Vermilion has operated the Wandoo Field since 2005, and these activities are current and ongoing. The revised EPs will cover the continued operation of the Wandoo production facility for the next five years, as well as potential routine well construction using an offshore drilling rig.

These upcoming EP revisions do not represent new projects, but are part of a standard five-year review required for long-term activities. The revised EPs will assess the environmental impacts and risks associated with ongoing facility operations and well construction activities, and outline how these will continue to be avoided, mitigated, or managed.

Seeking your input

Even where no significant changes have occurred, the review process provides an opportunity to reassess environmental risks and management measures, and to invite feedback and input from relevant persons. The nature and scale of these activities differ from shorter-term exploration drilling previously consulted on, as they involve longer-term operations and permanent infrastructure.

We will follow up shortly with consultation information for the revised EPs once available. In the meantime, we wanted to reach out to see if your board could consider allocating time to engage in this process, as we are mindful that agendas tend to fill up quickly.

Vermilion recognises the importance of cultural heritage to the group and are committed to ensuring that these values are respected and integrated into the project planning.

We look forward to hearing from you and working together to ensure a collaborative consultation process.

Yours sincerely

2.4. Email to Yindjibarndi Aboriginal Corporation (YAC) on 25 August 2025

Dear [redacted]

Subject: Upcoming Consultation - Wandoo Offshore Oil Field Well Construction and Facility Operations Environment Plans (EPs)

We are contacting you on behalf of Vermilion Oil and Gas Australia Ltd (Vermilion) which has operations in the Wandoo Field located offshore approximately 80km northwest of Dampier and 110km northeast of Barrow Island.

As part of our ongoing engagement, we are reaching out to Ngarluma Aboriginal Corporation to arrange a consultation meeting with the group to discuss the next two EPs. We hope to arrange these meetings during September, October or November subject to their availability.

As per our previous email and telephone correspondence, we have engaged with Ngarluma Aboriginal Corporation and will seek to engage with Ngarluma on behalf of the Yindjibarndi Aboriginal Corporation (YAC) as we understand that YAC does not need to be consulted in relation to offshore oil operations and that YAC defers this consultation to Ngarluma.

We are sending this email for your information as we assume this is your preferred method for our next two EPs submissions, but welcome the opportunity if that has changed and you want to engage directly with us.

Vermilion has operated the Wandoo Field since 2005, and these activities are current and ongoing. The revised EPs will cover the continued operation of the Wandoo production facility for the next five years, as well as potential routine well construction using an offshore drilling rig.

These upcoming EP revisions do not represent new projects, but are part of a standard five-year review required for long-term activities. The revised EPs will assess the environmental impacts and risks associated with ongoing facility operations and well construction activities, and outline how these will continue to be avoided, mitigated, or managed.

Welcome your input

Even where no significant changes have occurred, the review process provides an opportunity to reassess environmental risks and management measures, and to invite feedback and input from relevant persons. The nature and scale of these activities differ from shorter-term exploration drilling previously consulted on, as they involve longer-term operations and permanent infrastructure.

We will follow up shortly with consultation information for the revised EPs once available. Vermilion recognises the importance of cultural heritage to the group and are committed to ensuring that these values are respected and integrated into the project planning.

We welcome any further discussion with you to ensure a collaborative consultation process.

Yours sincerely

2.5. Email to Wirrawandi Aboriginal Corporation (WAC) on 25 August 2025

Dear [redacted]

Subject: Upcoming Consultation - Wandoo Offshore Oil Field Well Construction and Facility Operations Environment Plans (EPs)

We are contacting you on behalf of Vermilion Oil and Gas Australia Ltd (Vermilion) which has operations in the Wandoo Field located offshore approximately 80km northwest of Dampier and 110km northeast of Barrow Island.

Meeting request

As part of our ongoing engagement, we are reaching out to Wirrawandi Aboriginal Corporation to arrange a consultation meeting with the group to discuss the next two EPs. We hope to arrange these meetings during September, October or November subject to your availability.

Vermilion has operated the Wandoo Field since 2005, and these activities are current and ongoing. The revised EPs will cover the continued operation of the Wandoo production facility for the next five years, as well as potential routine well construction using an offshore drilling rig.

These upcoming EP revisions do not represent new projects, but are part of a standard five-year review required for long-term activities. The revised EPs will assess the environmental impacts and risks associated with ongoing facility operations and well construction activities, and outline how these will continue to be avoided, mitigated, or managed.

Seeking your input

Even where no significant changes have occurred, the review process provides an opportunity to reassess environmental risks and management measures, and to invite feedback and input from relevant persons. The nature and scale of these activities differ from shorter-term exploration drilling previously consulted on, as they involve longer-term operations and permanent infrastructure.

We will follow up shortly with consultation information for the revised EPs once available. In the meantime, we wanted to reach out to see if your board could consider allocating time to engage in this process, as we are mindful that agendas tend to fill up quickly.

Vermilion recognises the importance of cultural heritage to the group and are committed to ensuring that these values are respected and integrated into the project planning.

We look forward to hearing from you and working together to ensure a collaborative consultation process.

Yours sincerely

2.6. Email to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) on 25 August 2025

Dear [redacted]

Subject: Upcoming Consultation - Wandoo Offshore Oil Field Well Construction and Facility Operations Environment Plans (EPs)

We are contacting you on behalf of Vermilion Oil and Gas Australia Ltd (Vermilion) which has operations in the Wandoo Field located offshore approximately 80km northwest of Dampier and 110km northeast of Barrow Island.

Meeting request

As part of our ongoing engagement, we are reaching out to Buurabalayji Thalanyji Aboriginal Corporation to arrange a consultation meeting with the group to discuss the next two EPs. We hope to arrange these meetings during September, October or November subject to your availability.

Vermilion has operated the Wandoo Field since 2005, and these activities are current and ongoing. The revised EPs will cover the continued operation of the Wandoo production facility for the next five years, as well as potential routine well construction using an offshore drilling rig.

These upcoming EP revisions do not represent new projects, but are part of a standard five-year review required for long-term activities. The revised EPs will assess the environmental impacts and risks associated with ongoing facility operations and well construction activities, and outline how these will continue to be avoided, mitigated, or managed.

Seeking your input

Even where no significant changes have occurred, the review process provides an opportunity to reassess environmental risks and management measures, and to invite feedback and input from relevant persons. The nature and scale of these activities differ from shorter-term exploration drilling previously consulted on, as they involve longer-term operations and permanent infrastructure.

We will follow up shortly with consultation information for the revised EPs once available. In the meantime, we wanted to reach out to see if your board could consider allocating time to engage in this process, as we are mindful that agendas tend to fill up quickly.

Vermilion recognises the importance of cultural heritage to the group and are committed to ensuring that these values are respected and integrated into the project planning.

We look forward to hearing from you and working together to ensure a collaborative consultation process.

Yours sincerely

2.7. Email to Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) on 25 August 2025

Dear [redacted]

Subject: Upcoming Consultation - Wandoo Offshore Oil Field Well Construction and Facility Operations Environment Plans (EPs)

We are contacting you on behalf of Vermilion Oil and Gas Australia Ltd (Vermilion) which has operations in the Wandoo Field located offshore approximately 80km northwest of Dampier and 110km northeast of Barrow Island.

Meeting request

As part of our ongoing engagement, we are reaching out to Nganhurra Thanardi Garrbu Aboriginal Corporation and Yinggarda Aboriginal Corporation to arrange a consultation meeting with the group to discuss the next two EPs. We hope to arrange these meetings during September, October or November subject to your availability.

Vermilion has operated the Wandoo Field since 2005, and these activities are current and ongoing. The revised EPs will cover the continued operation of the Wandoo production facility for the next five years, as well as potential routine well construction using an offshore drilling rig.

These upcoming EP revisions do not represent new projects, but are part of a standard five-year review required for long-term activities. The revised EPs will assess the environmental impacts and risks associated with ongoing facility operations and well construction activities, and outline how these will continue to be avoided, mitigated, or managed.

Seeking your input

Even where no significant changes have occurred, the review process provides an opportunity to reassess environmental risks and management measures, and to invite feedback and input from relevant persons. The nature and scale of these activities differ from shorter-term exploration drilling previously consulted on, as they involve longer-term operations and permanent infrastructure.

We will follow up shortly with consultation information for the revised EPs once available. In the meantime, we wanted to reach out to see if your board could consider allocating time to engage in this process, as we are mindful that agendas tend to fill up quickly.

Vermilion recognises the importance of cultural heritage to your groups and are committed to ensuring that these values are respected and integrated into the project planning.

We look forward to hearing from you and working together to ensure a collaborative consultation process.

Yours sincerely

2.8. Email to Murujuga Aboriginal Corporation (MAC) on 25 August 2025

Dear [redacted]

Subject: Upcoming Consultation - Wandoo Offshore Oil Field Well Construction and Facility Operations Environment Plans (EPs)

We are contacting you on behalf of Vermilion Oil and Gas Australia Ltd (Vermilion) which has operations in the Wandoo Field located offshore approximately 80km northwest of Dampier and 110km northeast of Barrow Island.

Meeting request

As part of our ongoing engagement, we are reaching out to Murujuga Aboriginal Corporation to arrange a consultation meeting with the group to discuss the next two EPs. We hope to arrange these meetings during September, October or November subject to your availability.

Vermilion has operated the Wandoo Field since 2005, and these activities are current and ongoing. The revised EPs will cover the continued operation of the Wandoo production facility for the next five years, as well as potential routine well construction using an offshore drilling rig.

These upcoming EP revisions do not represent new projects, but are part of a standard five-year review required for long-term activities. The revised EPs will assess the environmental impacts and risks associated with ongoing facility operations and well construction activities, and outline how these will continue to be avoided, mitigated, or managed.

Seeking your input

Even where no significant changes have occurred, the review process provides an opportunity to reassess environmental risks and management measures, and to invite feedback and input from relevant persons. The nature and scale of these activities differ from shorter-term exploration drilling previously consulted on, as they involve longer-term operations and permanent infrastructure.

We will follow up shortly with consultation information for the revised EPs once available. In the meantime, we wanted to reach out to see if your board could consider allocating time to engage in this process, as we are mindful that agendas tend to fill up quickly.

As mentioned at our July meeting this year, we look forward to continuing the conversation with you and welcome the opportunity to meet with the Circle of Elders in the coming months.

Vermilion recognises the importance of cultural heritage to the group and are committed to ensuring that these values are respected and integrated into the project planning.

We look forward to hearing from you and working together to ensure a collaborative consultation process.

Yours sincerely

2.9. Email to Karajarri Traditional Lands Association (Aboriginal Corporation) RNTBC (KTLA) on 25 August 2025

Dear [redacted]

Subject: Upcoming Consultation - Wandoo Offshore Oil Field Well Construction Environment Plan (EP)

We are contacting you on behalf of Vermilion Oil and Gas Australia Ltd (Vermilion) which has operations in the Wandoo Field located offshore approximately 80km northwest of Dampier and 110km northeast of Barrow Island.

Meeting request

As part of our ongoing engagement, we are reaching out to Karajarri Traditional Lands Association (Aboriginal Corporation) to arrange a consultation meeting with the group to discuss the next EP. We hope to arrange these meetings during September, October or November subject to your availability.

Vermilion has operated the Wandoo Field since 2005, and these activities are current and ongoing. The revised EP will cover the continued operation of the Wandoo production facility for the next five years, as well as potential routine well construction using an offshore drilling rig.

These upcoming EP revisions do not represent new projects, but are part of a standard five-year review required for long-term activities. The revised EPs will assess the environmental impacts and risks associated with ongoing facility operations and well construction activities, and outline how these will continue to be avoided, mitigated, or managed.

Seeking your input

Even where no significant changes have occurred, the review process provides an opportunity to reassess environmental risks and management measures, and to invite feedback and input from relevant persons. The nature and scale of these activities differ from shorter-term exploration drilling previously consulted on, as they involve longer-term operations and permanent infrastructure.

We will follow up shortly with consultation information for the revised EP once available. In the meantime, we wanted to reach out to see if your board could consider allocating time to engage in this process, as we are mindful that agendas tend to fill up quickly.

Vermilion recognises the importance of cultural heritage to the group and are committed to ensuring that these values are respected and integrated into the project planning.

We look forward to hearing from you and working together to ensure a collaborative consultation process.

Yours sincerely

2.10. Email to Nyangumarta Warrarn Aboriginal Corporation RNTBC (NWAC) on 25 August 2025

Dear [redacted]

Subject: Upcoming Consultation - Wandoo Offshore Oil Field Well Construction Environment Plan (EP)

We are contacting you on behalf of Vermilion Oil and Gas Australia Ltd (Vermilion) which has operations in the Wandoo Field located offshore approximately 80km northwest of Dampier and 110km northeast of Barrow Island.

Meeting request

As part of our ongoing engagement, we are reaching out to Nyangumarta Warrarn Aboriginal Corporation to arrange a consultation meeting with the group to discuss the next EP. We hope to arrange these meetings during September, October or November subject to your availability.

Vermilion has operated the Wandoo Field since 2005, and these activities are current and ongoing. The revised EP will cover the continued operation of the Wandoo production facility for the next five years, as well as potential routine well construction using an offshore drilling rig.

These upcoming EP revisions do not represent new projects, but are part of a standard five-year review required for long-term activities. The revised EPs will assess the environmental impacts and risks associated with ongoing facility operations and well construction activities, and outline how these will continue to be avoided, mitigated, or managed.

Seeking your input

Even where no significant changes have occurred, the review process provides an opportunity to reassess environmental risks and management measures, and to invite feedback and input from relevant persons. The nature and scale of these activities differ from shorter-term exploration drilling previously consulted on, as they involve longer-term operations and permanent infrastructure.

We will follow up shortly with consultation information for the revised EP once available. In the meantime, we wanted to reach out to see if your board could consider allocating time to engage in this process, as we are mindful that agendas tend to fill up quickly.

Vermilion recognises the importance of cultural heritage to the group and are committed to ensuring that these values are respected and integrated into the project planning.

We look forward to hearing from you and working together to ensure a collaborative consultation process.

Yours sincerely

2.11. Email to Nyangumarta Karajarri Aboriginal Corporation RNTBC (NKAC) on 25 August 2025

Dear [redacted]

Subject: Upcoming Consultation - Wandoo Offshore Oil Field Well Construction Environment Plan (EP)

We are contacting you on behalf of Vermilion Oil and Gas Australia Ltd (Vermilion) which has operations in the Wandoo Field located offshore approximately 80km northwest of Dampier and 110km northeast of Barrow Island.

Meeting request

As part of our ongoing engagement, we are reaching out to Nyangumarta Karajarri Aboriginal Corporation to arrange a consultation meeting with the group to discuss the next EP. We hope to arrange these meetings during September, October or November subject to your availability.

Vermilion has operated the Wandoo Field since 2005, and these activities are current and ongoing. The revised EP will cover the continued operation of the Wandoo production facility for the next five years, as well as potential routine well construction using an offshore drilling rig.

These upcoming EP revisions do not represent new projects, but are part of a standard five-year review required for long-term activities. The revised EPs will assess the environmental impacts and risks associated with ongoing facility operations and well construction activities, and outline how these will continue to be avoided, mitigated, or managed.

Seeking your input

Even where no significant changes have occurred, the review process provides an opportunity to reassess environmental risks and management measures, and to invite feedback and input from relevant persons. The nature and scale of these activities differ from shorter-term exploration drilling previously consulted on, as they involve longer-term operations and permanent infrastructure.

We will follow up shortly with consultation information for the revised EP once available. In the meantime, we wanted to reach out to see if your board could consider allocating time to engage in this process, as we are mindful that agendas tend to fill up quickly.

Vermilion recognises the importance of cultural heritage to the group and are committed to ensuring that these values are respected and integrated into the project planning.

We look forward to hearing from you and working together to ensure a collaborative consultation process.

Yours sincerely

2.12. Email to Malgana Aboriginal Corporation (MAC) on 25 August 2025

Dear [redacted]

Subject: Upcoming Consultation - Wandoo Offshore Oil Field Well Construction Environment Plan (EP)

We are contacting you on behalf of Vermilion Oil and Gas Australia Ltd (Vermilion) which has operations in the Wandoo Field located offshore approximately 80km northwest of Dampier and 110km northeast of Barrow Island.

Meeting request

As part of our ongoing engagement, we are reaching out to Malgana Aboriginal Corporation to arrange a consultation meeting with the group to discuss the next EP. We hope to arrange these meetings during September, October or November subject to your availability.

Vermilion has operated the Wandoo Field since 2005, and these activities are current and ongoing. The revised EP will cover the continued operation of the Wandoo production facility for the next five years, as well as potential routine well construction using an offshore drilling rig.

These upcoming EP revisions do not represent new projects, but are part of a standard five-year review required for long-term activities. The revised EPs will assess the environmental impacts and risks associated with ongoing facility operations and well construction activities, and outline how these will continue to be avoided, mitigated, or managed.

Seeking your input

Even where no significant changes have occurred, the review process provides an opportunity to reassess environmental risks and management measures, and to invite feedback and input from relevant persons. The nature and scale of these activities differ from shorter-term exploration drilling previously consulted on, as they involve longer-term operations and permanent infrastructure.

We will follow up shortly with consultation information for the revised EP once available. In the meantime, we wanted to reach out to see if your board could consider allocating time to engage in this process, as we are mindful that agendas tend to fill up quickly.

Vermilion recognises the importance of cultural heritage to the group and are committed to ensuring that these values are respected and integrated into the project planning.

We look forward to hearing from you and working together to ensure a collaborative consultation process.

Yours sincerely

2.13. Email to Nanda Aboriginal Corporation RNTBC (NAC) on 25 August 2025

Dear [redacted]

Subject: Upcoming Consultation - Wandoo Offshore Oil Field Well Construction Environment Plan (EP)

We are contacting you on behalf of Vermilion Oil and Gas Australia Ltd (Vermilion) which has operations in the Wandoo Field located offshore approximately 80km northwest of Dampier and 110km northeast of Barrow Island.

As part of our ongoing engagement, we are reaching out to Nanda Aboriginal Corporation to arrange a consultation meeting with the group, if it would like one, to discuss the next EP. We hope to arrange these meetings during September, October or November subject to your availability.

Vermilion has operated the Wandoo Field since 2005, and these activities are current and ongoing. The revised EP will cover the continued operation of the Wandoo production facility for the next five years, as well as potential routine well construction using an offshore drilling rig.

These upcoming EP revisions do not represent new projects, but are part of a standard five-year review required for long-term activities. The revised EPs will assess the environmental impacts and risks associated with ongoing facility operations and well construction activities, and outline how these will continue to be avoided, mitigated, or managed.

Seeking your input

Even where no significant changes have occurred, the review process provides an opportunity to reassess environmental risks and management measures, and to invite feedback and input from relevant persons. The nature and scale of these activities differ from shorter-term exploration drilling previously consulted on, as they involve longer-term operations and permanent infrastructure.

We will follow up shortly with consultation information for the revised EP once available. In the meantime, we wanted to reach out to see if your board could consider allocating time to engage in this process if it was interested, as we are mindful that agendas tend to fill up quickly.

Vermilion recognises the importance of cultural heritage to the group and are committed to ensuring that these values are respected and integrated into the project planning.

We look forward to hearing from you and working together to ensure a collaborative consultation process.

Yours sincerely

3. Consultation – October 2025

3.1. Email to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) on 21 October 2025

Dear [redacted],

Re: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

We reached out in August to advise that Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the Wandoo Facility Environment Plan and Well Construction Environment Plan (EP). We are now providing further information, with the consultation period starting from today.

Relevance for Buurabalayji Thalanyji Aboriginal Corporation (BTAC)

Vermilion recognises the importance of cultural heritage to the Thalanyji people and are committed to ensuring that these values are respected and integrated into our project planning.

We have determined that BTAC might be a relevant person to the Environment Plans because the planning area for those activities (particularly the 'environment that may be affected' (EMBA)) modelling shows proximity to the Thalanyji native title determination area.

We have attached a map for your consideration.

Reach out directly via email if this is of interest to you. Alternatively, if BTAC does not have an interest in the proposed activities or determines consultation is not required beyond receipt of this information, please let us know.

About these Environment Plan revisions

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when

	sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Attached are summary and detailed consultation information sheets that explain the activities we plan to undertake.

Our website includes consultation information and resources for further information, including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed **here**.

Request: Please bring this to the attention of the appropriate representatives from BTAC.

Please feel free to forward this email and the attached documents to BTAC's members or other people who you think may be interested as required.

BTAC has previously advised that consultation is usually with the CEO and/or Heritage and Native Title Manager in the first instance, and that BTAC may also request consultation through its board of directors or broader group of common law holders.

We had previously discussed the possibility of a meeting between BTAC and Vermilion, though didn't progress on this topic.

Please let us know if there is interest from BTAC's representatives to discuss the Wandoo operations and EPs if BTAC has considered or may consider itself a relevant person to be consulted.

Feedback on the proposed activities

Our standard consultation period is 30-days, however we are affording additional time to stakeholders like BTAC to engage in the process as we are aware there may be limited capacity to engage during the standard 30-day period.

The consultation period is open from today until 17 February 2026.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

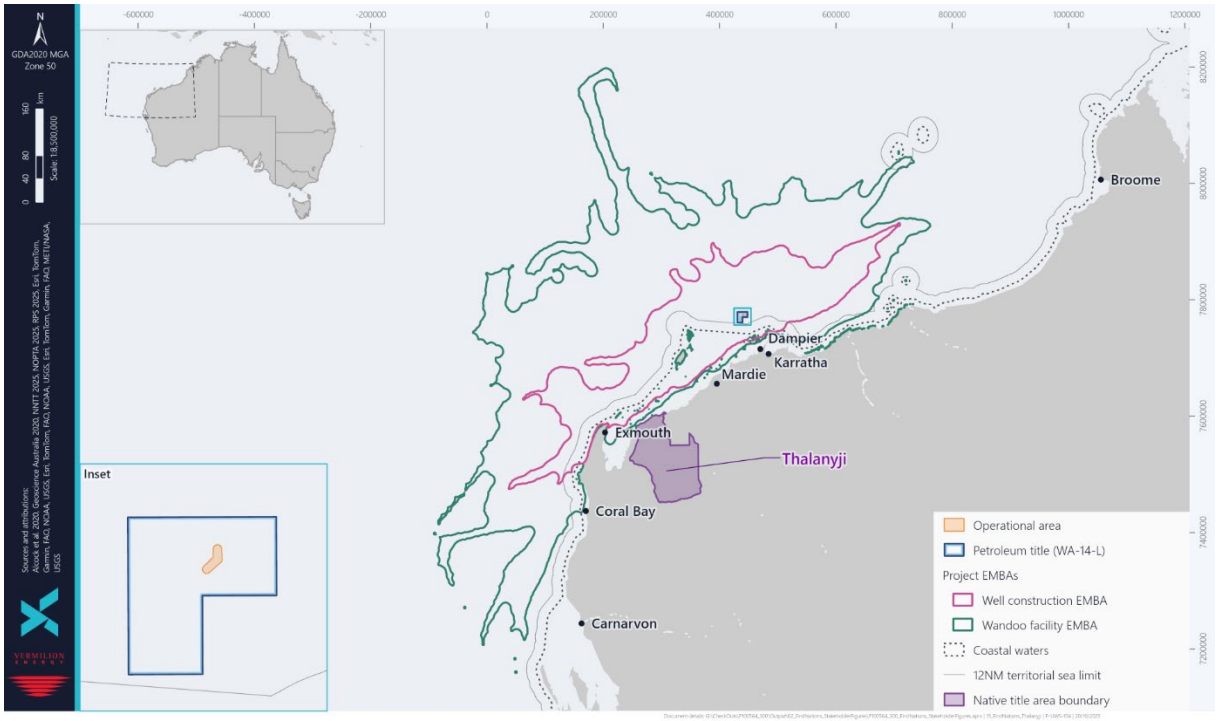
If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.1.1. Attachment to email to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) on 21 October 2025



3.2. Email to Kariyarra Aboriginal Corporation (KAC) on 21 October 2025

Hi [redacted]

Re: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

It was great to meet with you and the Kariyarra Directors a couple of weeks back.

At the meeting, we advised that Vermilion is planning to submit five yearly revisions of the Wandoo Facility Environment Plan and Well Construction Environment Plan (EP). We provided an overview of those EPs at the meeting and are now providing further information, with the consultation period starting from today.

Relevance for Kariyarra

Vermilion recognises the importance of cultural heritage to the Kariyarra People and are committed to ensuring that these values are respected and integrated into our project planning.

We have determined that Kariyarra might be a relevant person to the EPs because the planning area, particularly the 'environment that may be affected' (**EMBA**)) modelling shows an overlap and close proximity with the Kariyarra native title determination.

We have attached a map for your consideration.

About these Environment Plan revisions

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Attached are detailed and summary consultation information sheets that explain the activities we plan to undertake.

Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Request: Please bring this to the attention of the Kariyarra Board and appropriate representatives.

Please feel free to forward this email and the attached documents to Kariyarra's members or other people who you think may be interested as required.

Acknowledging our previous and ongoing engagement, we would be happy to provide you with a summary of our understanding of your functions, interests and activities, to be documented in the EPs. Providing the option for Kariyarra to review and build upon this with any feedback on the EP.

Please let us know if this approach is still suitable, and we can ensure to have this to you ahead of the next Directors' meeting.

Feedback on the proposed activities

Our standard consultation period is 30-days, however we are affording additional time to stakeholders like Kariyarra to engage in the process as we are aware there may be limited capacity to engage during the standard 30-day period.

The consultation period is open from today until 17 February 2026.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

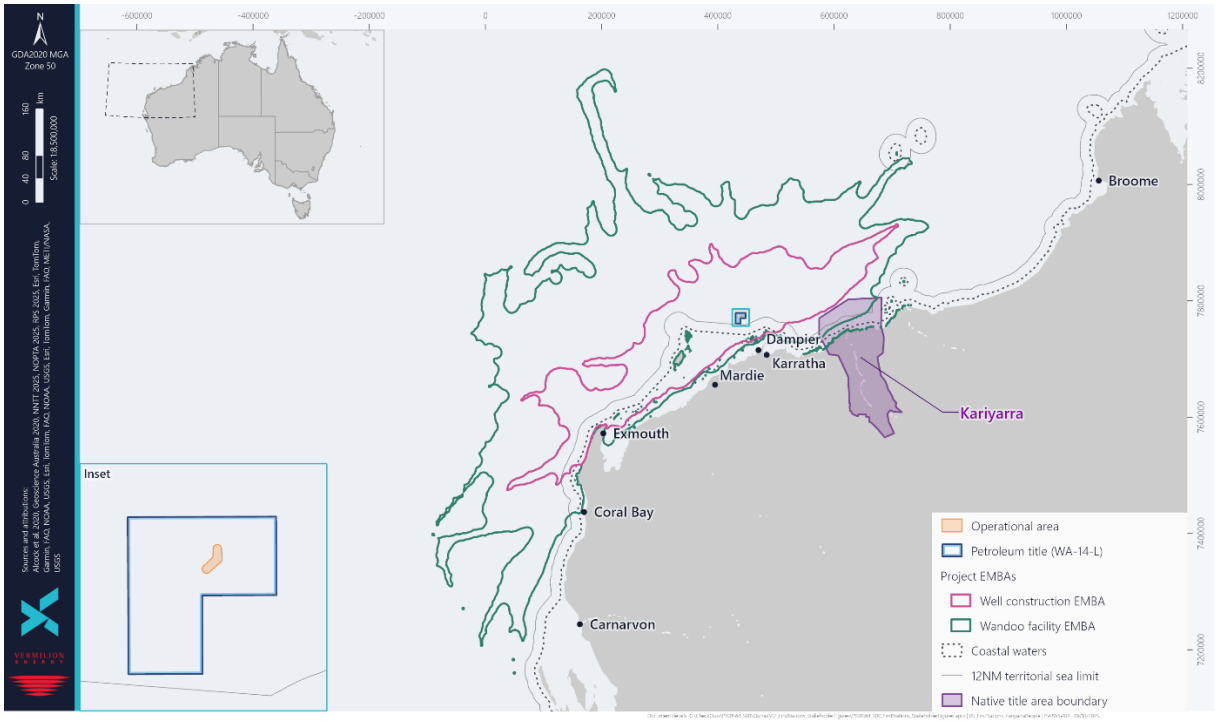
If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.2.1. Attachment to email to Kariyarra Aboriginal Corporation (KAC) on 21 October 2025



3.3. Email to Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) on 21 October 2025

Dear [redacted] and NTGAC engagement team

Re: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

We reached out in August to advise that Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the Wandoo Facility Environment Plan and Well Construction Environment Plan (EP). We are now providing further information, with the consultation period starting from today.

Relevance for Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC), Yinggarda Aboriginal Corporation

Vermilion recognises the importance of cultural heritage to First Nations people and are committed to ensuring that these values are respected and integrated into our project planning.

We have determined that NTGAC might be a relevant person to the EPs because the planning area for those activities (particularly the 'environment that may be affected' (**EMBA**)) modelling shows an overlap with the The Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji Peoples' native title determination.

We have attached a map for your consideration.

Reach out directly via email if this is of interest to you. Alternatively, if NTGAC does not have an interest in the proposed activities or determines consultation is not required beyond receipt of this information please let us know.

About these Environment Plan Revisions

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when

	sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Attached are summary and detailed consultation information sheets that explain the activities we plan to undertake.

Our website includes resources for further information including detailed consultation information sheets and frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Request: Please bring this to the attention of the appropriate representatives from NTGAC.

Please feel free to forward this email and the attached documents to NTGAC's members or other people who you think may be interested as required.

Feedback on the proposed activities

Our standard consultation period is 30-days, however we are affording additional time to stakeholders like NTGAC to engage in the process as we are aware there may be limited capacity to engage during the standard 30-day period.

The consultation period is open from today until 17 February 2026.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

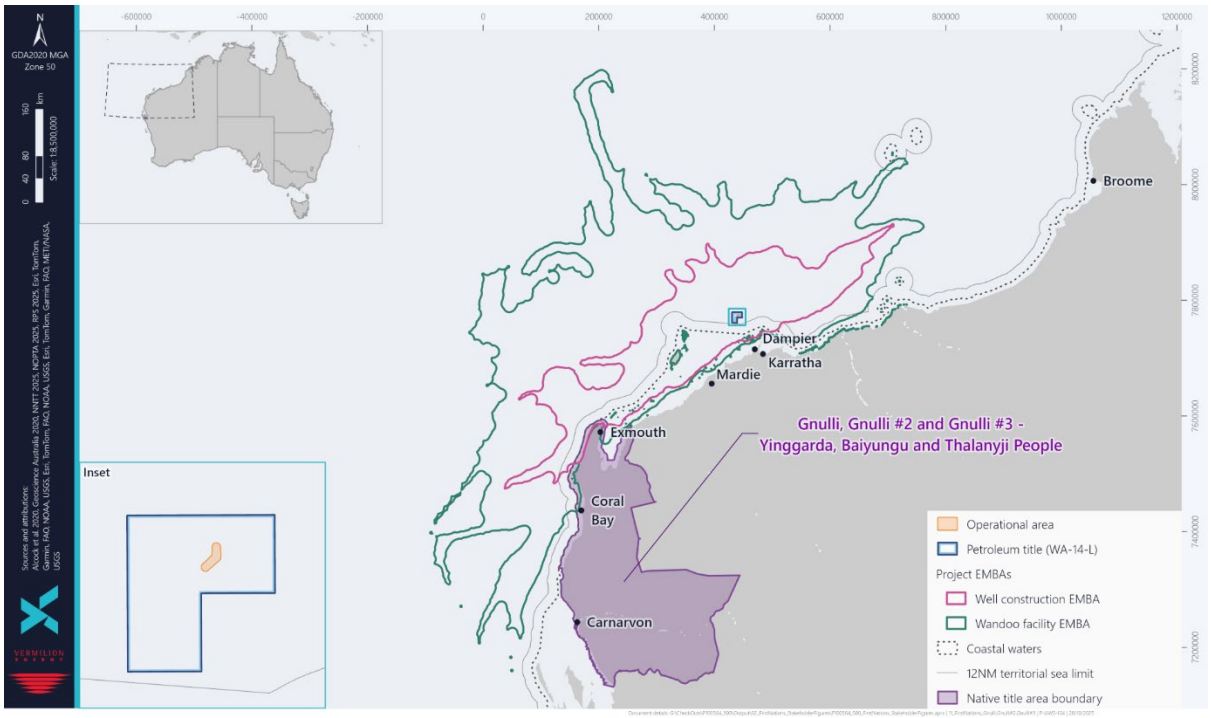
If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.3.1. Attachment to email to Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) on 21 October 2025



3.4. Email to Ngarluma Aboriginal Corporation (NAC) on 21 October 2025

Dear [redacted] and Ngarluma representatives

Re: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Dear Jeff and Ngarluma representatives

We reached out in August to advise that Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the Wandoo Facility Environment Plan and Well Construction Environment Plan (EP). We are now providing further information, with the consultation period starting from today.

Relevance for Ngarluma Aboriginal Corporation (NAC)

Vermilion recognises the importance of cultural heritage to the Ngarluma people and are committed to ensuring that these values are respected and integrated into our project planning.

We have determined that Ngarluma Aboriginal Corporation might be a relevant person to the EPs because the planning area for those activities (particularly the 'environment that may be affected' (**EMBA**)) modelling shows:

- an overlap with the Ngarluma/Yindjibarndi People's native title determination; and
- a close proximity to the Ngarluma People's native title determination.

We have attached maps for your consideration.

Reach out directly via email or phone call if this is of interest to you. Alternatively, if NAC does not have an interest in the proposed activities or determines consultation is not required beyond receipt of this information, please let us know.

About these Environment Plan Revisions

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field.

	The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Attached are summary and detailed consultation information sheets that explain the activities we plan to undertake.

Our website includes resources for further information including detailed consultation information sheets and frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Request: Please bring this to the attention of the appropriate representatives from NAC.

Please feel free to forward this email and the attached documents to NAC's members or other people who you think may be interested as required.

Acknowledging our previous and ongoing engagement, we would be happy to provide you a summary of our understanding of your functions, interests and activities, to be documented in the EPs. Providing the option for NAC to review and build upon this with any feedback on the EP.

Feedback on the proposed activities

Our standard consultation period is 30-days, however we are affording additional time to stakeholders like NAC to engage in the process as we are aware there may be limited capacity to engage during the standard 30 day period.

The consultation period is open from today until 17 February 2026.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

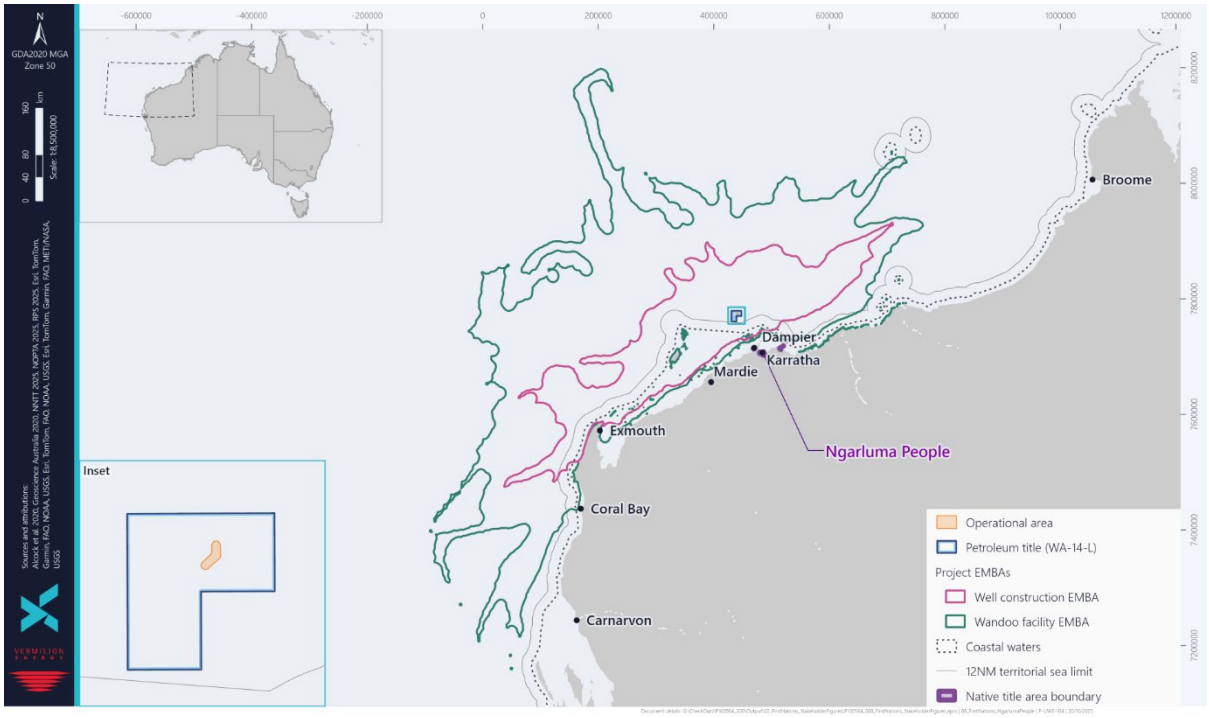
If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

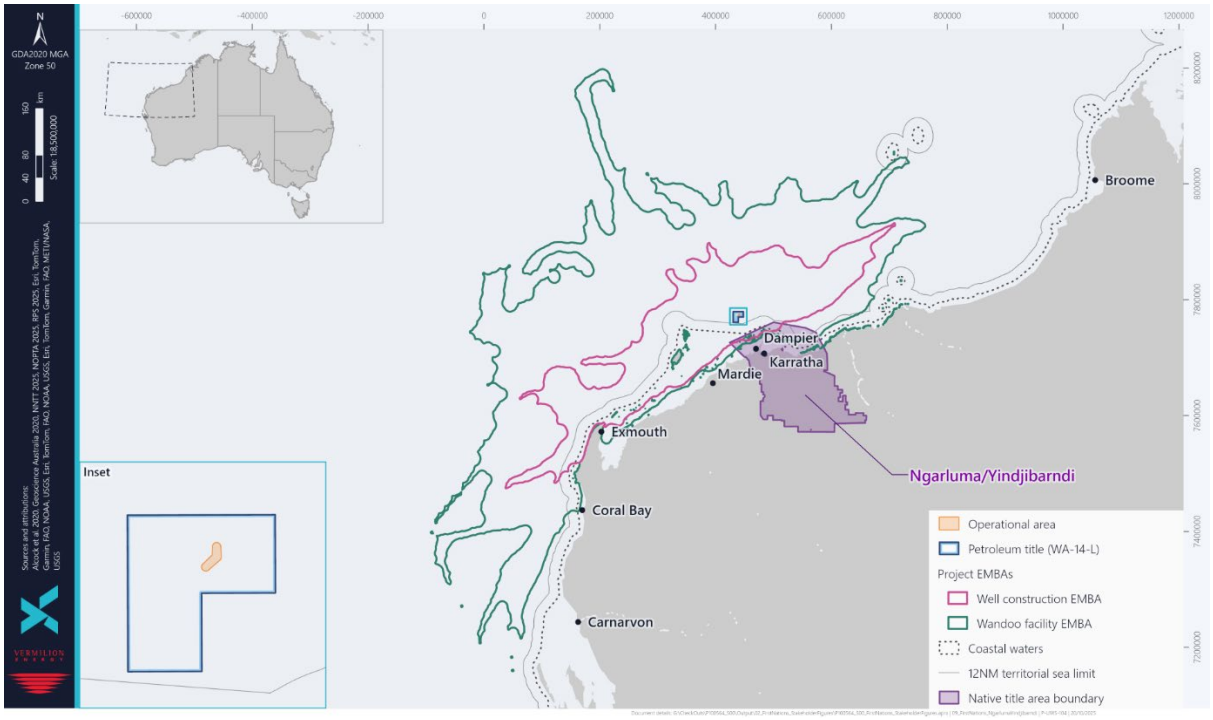
Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.4.1. Attachment to email to Ngarluma Aboriginal Corporation (NAC) on 21 October 2025





3.5. Email to Wanparta Aboriginal Corporation (WAC) on 21 October 2025

Dear [redacted]

Re: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

We reached out in August to advise that Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the Wandoo Facility Environment Plan and Well Construction Environment Plan (EP). We are now providing further information, with the consultation period starting from today.

Relevance for Wanparta Aboriginal Corporation (WAC)

Vermilion recognises the importance of cultural heritage to the Ngarla people and are committed to ensuring that these values are respected and integrated into our project planning.

We have determined that WAC might be a relevant person to the EPs because the planning area for those activities (particularly the 'environment that may be affected' (**EMBA**)) modelling shows an overlap and close proximity with the Ngarla people's native title determination.

We have attached a map for your consideration.

We propose to include an overview and consultation discussion for these two EPs in the agenda at our upcoming meeting in Perth on 28 November 2025.

Of course, if Wanparta does not have an interest in the proposed activities or determines consultation is not required beyond receipt of this information please let us know.

About these Environment Plan Revisions

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Attached are summary and detailed information sheets that explain the activities we plan to undertake.

Our website includes resources for further information including detailed consultation information sheets and frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Request: Please bring this to the attention of the appropriate representatives from Wanparta.

Please feel free to forward this email and the attached documents to Wanparta's members or other people who you think may be interested as required.

Acknowledging our previous and ongoing engagement, we would be happy to provide you a summary of our understanding of your functions, interests and activities, to be documented in the EPs. Providing the option for Wanparta to review and build upon this with any feedback on the EP.

Feedback on the proposed activities

Our standard consultation period is 30-days, however we are affording additional time to stakeholders like Wanparta to engage in the process as we are aware there may be limited capacity to engage during the standard 30 day period.

The consultation period is open from today until 17 February 2026.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

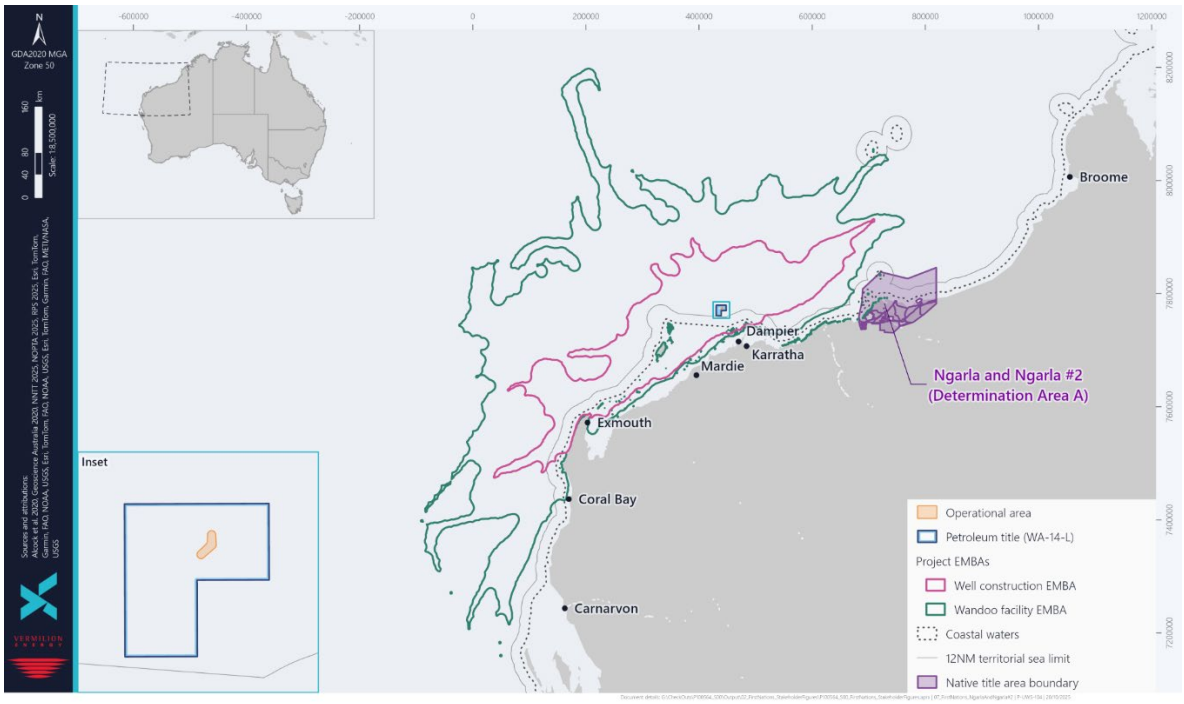
If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.5.1. Attachment to email to Wanparta Aboriginal Corporation (WAC) on 21 October 2025



3.6. Email to Wirrawandi Aboriginal Corporation (WAC) on 21 October 2025

Dear [redacted]

Re: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

We reached out in August to advise that Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the Wandoo Facility Environment Plan and Well Construction Environment Plan (EP). We are now providing further information, with the consultation period starting from today.

Relevance for Wirrawandi Aboriginal Corporation (WAC)

Vermilion recognises the importance of cultural heritage to the Yaburara & Mardudhunera People and is committed to ensuring that these values are respected and integrated into our project planning.

We have determined that WAC might be a relevant person to the EPs because the planning area for those activities (particularly the 'environment that may be affected' (**EMBA**)) modelling shows an overlap with the Yaburara & Mardudhunera People's native title determination.

We have attached a map for your consideration.

Reach out directly via email if this is of interest to you. Alternatively, if WAC does not have an interest in the proposed activities or determines consultation is not required beyond receipt of this information please let us know.

About these Environment Plan Revisions

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field.

	The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Attached are summary and detailed consultation information sheets that explain the activities we plan to undertake.

Our website includes resources for further information including detailed consultation information sheets and frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Request: Please bring this to the attention of the appropriate representatives from WAC.

Please feel free to forward this email and the attached documents to WAC members or other people who you think may be interested as required.

Feedback on the proposed activities

Our standard consultation period is 30-days, however we are affording additional time to stakeholders like WAC to engage in the process as we are aware there may be limited capacity to engage during the standard 30 day period.

The consultation period is open from today until 17 February 2026.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

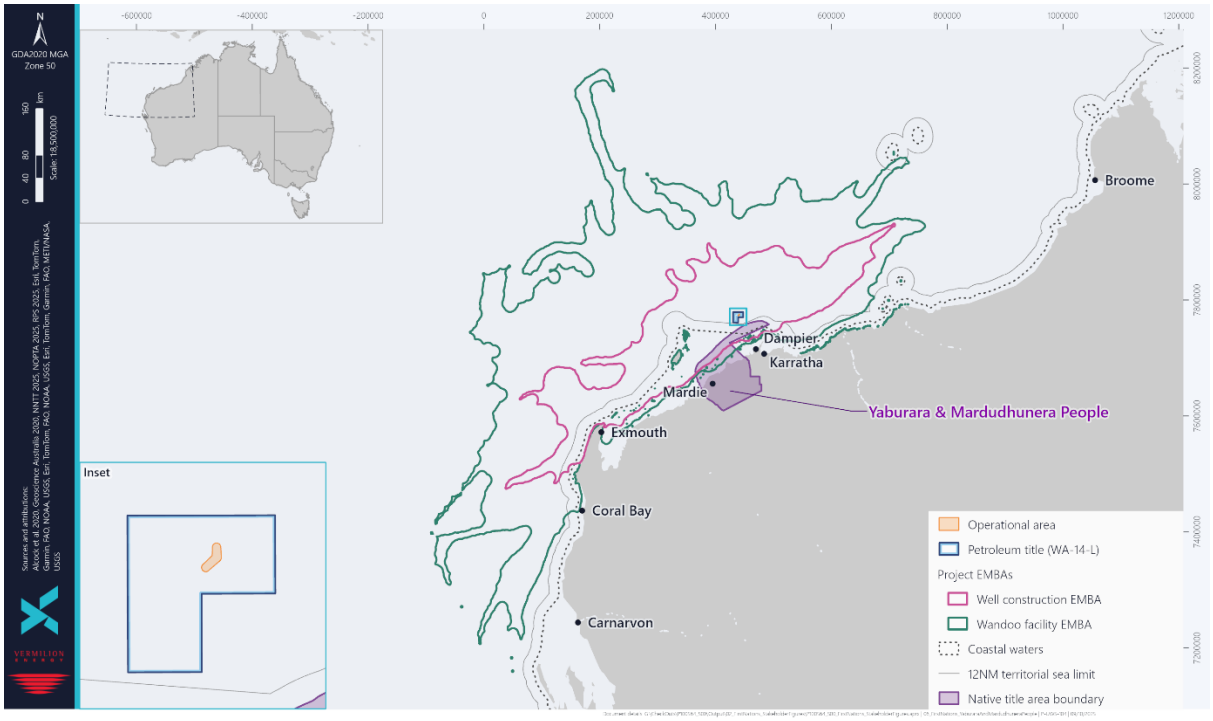
Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in

accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.6.1. Attachment to email to Wirrawandi Aboriginal Corporation (WAC) on 21 October 2025



3.7. Email to Murujuga Aboriginal Corporation (MAC) on 21 October 2025

Dear [redacted]

Re: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

We reached out in August to advise that Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the Wandoo Facility Environment Plan and Well Construction Environment Plan (EP). We are now providing further information, with the consultation period starting from today.

Relevance for Murujuga Aboriginal Corporation (MAC)

Vermilion recognises the importance of cultural heritage to MAC's members and First Nations people. We and are committed to ensuring that these values are respected and integrated into our project planning.

We have determined that MAC might be a relevant person to the EPs because the planning area for those activities (particularly the 'environment that may be affected' (**EMBA**)) modelling shows an overlap with the Murujuga National Park.

We have attached a map for your consideration.

Your previous email that a meeting is not considered necessary by MAC to discuss these matters.

Reach out directly via email or phone call if this is of interest to you. Alternatively, if MAC does not have an interest in the proposed activities or determines consultation is not required beyond receipt of this information please confirm and let us know.

About these Environment Plan Revisions

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Attached are summary and detailed information sheets that explain the activities we plan to undertake.

Our website includes resources for further information including detailed consultation information sheets and frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Request: Please bring this to the attention of the appropriate representatives from MAC. We note from your previous email it may be reviewed by the environment and heritage teams.

Please feel free to forward this email and the attached documents to other MAC representatives or members or other people who you think may be interested as required.

Feedback on the proposed activities

Our standard consultation period is 30-days, however we are affording additional time to stakeholders like MAC to engage in the process as we are aware there may be limited capacity to engage during the standard 30 day period.

The consultation period is open from today until 17 February 2026.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

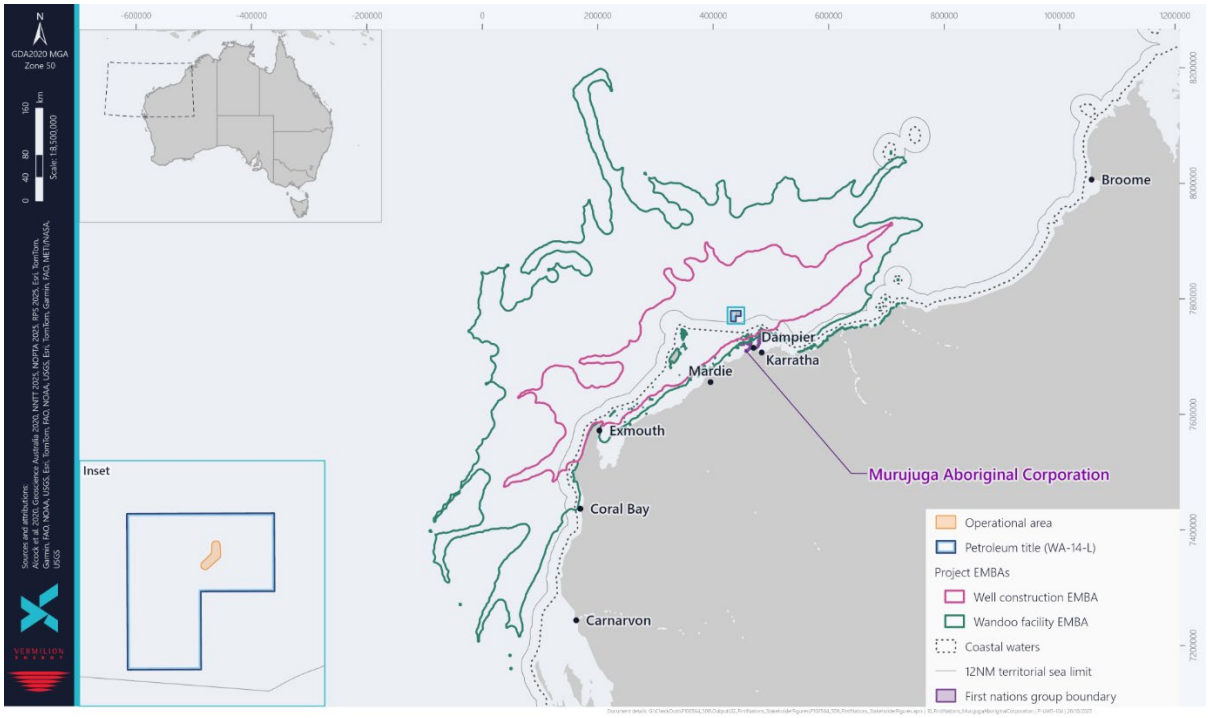
If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.7.1. Attachment to email to Murujuga Aboriginal Corporation (MAC) on 21 October 2025



3.8. Email to Karajarri Traditional Lands Association (Aboriginal Corporation) RNTBC (KTLA) on 22 October 2025

Dear [redacted]

We reached out in August to advise that Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the Wandoo Facility Environment Plan and Well Construction Environment Plan. We are now providing further information, with the consultation period starting from today.

Relevance for Karajarri Traditional Lands Association

We have determined that Karajarri is not a relevant person to the Environment Plans because the planning area for those activities (particularly the 'environment that may be affected' (**EMBA**)) modelling shows no close proximity to the Karajarri native title determination.

However, If KTLA considers it is relevant to the proposed activities and would like to participate in the process or provide feedback, Vermilion welcomes consulting with representatives for the KTLA.

We have attached a map for your consideration. Reach out directly via email or phone call if this is of interest to you.

About these Environment Plan Revisions

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM

	Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Attached are summary and detailed information sheets that explain the activities we plan to undertake.

Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Request: Please bring this to the attention of the appropriate representatives from KTLA.

Please feel free to forward this email and the attached documents to KTLA members or other people who you think may be interested as required.

Feedback on the proposed activities

Our standard consultation period is 30-days, however we are affording additional time to stakeholders like KTLA to engage in the process as we are aware there may be limited capacity to engage during the standard 30-day period.

The consultation period is open from today until 17 February 2026.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

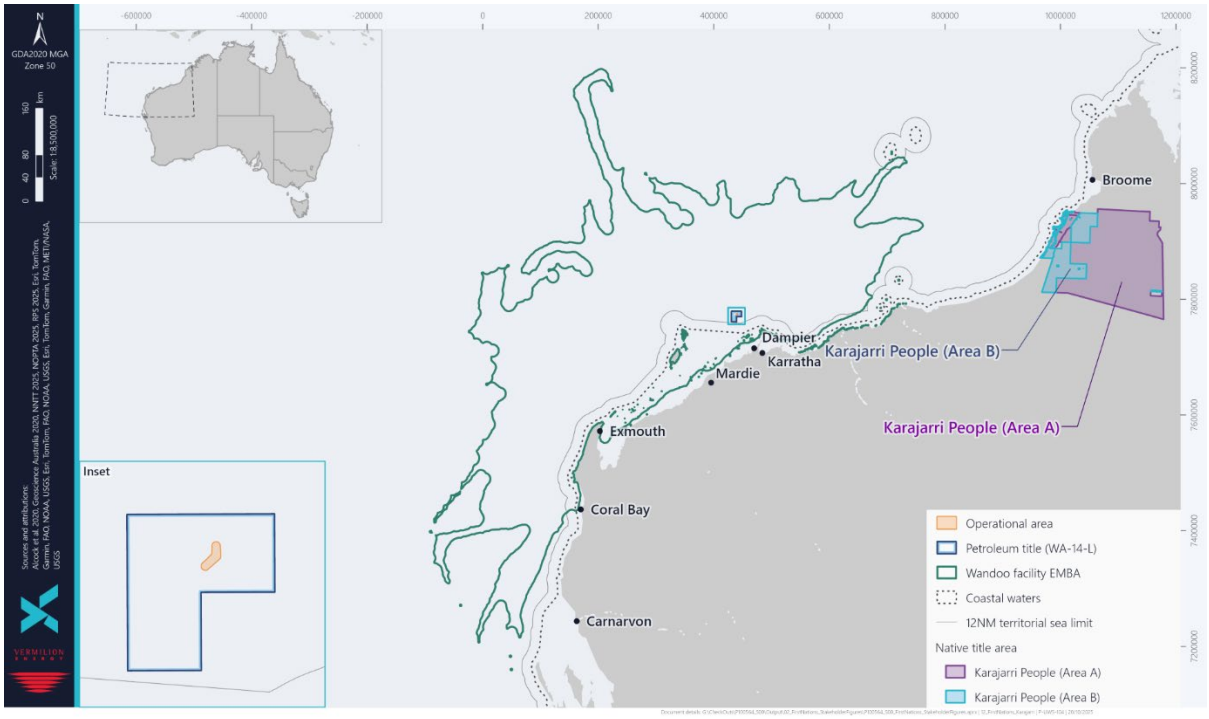
If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.8.1. Attachment to email to Karajarri Traditional Lands Association (Aboriginal Corporation) RNTBC (KTLA) on 22 October 2025



3.9. Email to Malgana Aboriginal Corporation (MAC) on 22 October 2025

Dear Malgana Aboriginal Corporation

We reached out in August to advise that Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the Wandoo Facility Environment Plan and Well Construction Environment Plan. We are now providing further information, with the consultation period starting from today.

Relevance for Malgana Aboriginal Corporation

We have determined that Malgana Aboriginal Corporation is not a relevant person to the Environment Plans because the planning area for those activities (particularly the 'environment that may be affected' (**EMBA**)) modelling shows no proximity to the Malgana people's native title determination.

However, If Malgana Aboriginal Corporation considers it is relevant to the proposed activities and would like to participate in the process or provide feedback, Vermilion welcomes consulting with representatives from the Malgana Aboriginal Corproation.

We have attached a map for consideration. Reach out directly via email or phone call if this is of interest to Malgana.

About these Environment Plan Revisions

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the

	Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Attached are summary and detailed information sheets that explain the activities we plan to undertake.

Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Request: Please bring this to the attention of the appropriate representatives from Malgana Aboriginal Corporation.

Please feel free to forward this email and the attached documents to Malgana members or other people who you think may be interested as required.

Feedback on the proposed activities

Our standard consultation period is 30-days, however we are affording additional time to stakeholders like Malgana Aboriginal Corporation to engage in the process as we are aware there may be limited capacity to engage during the standard 30 day period.

The consultation period is open from today until 17 February 2026.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

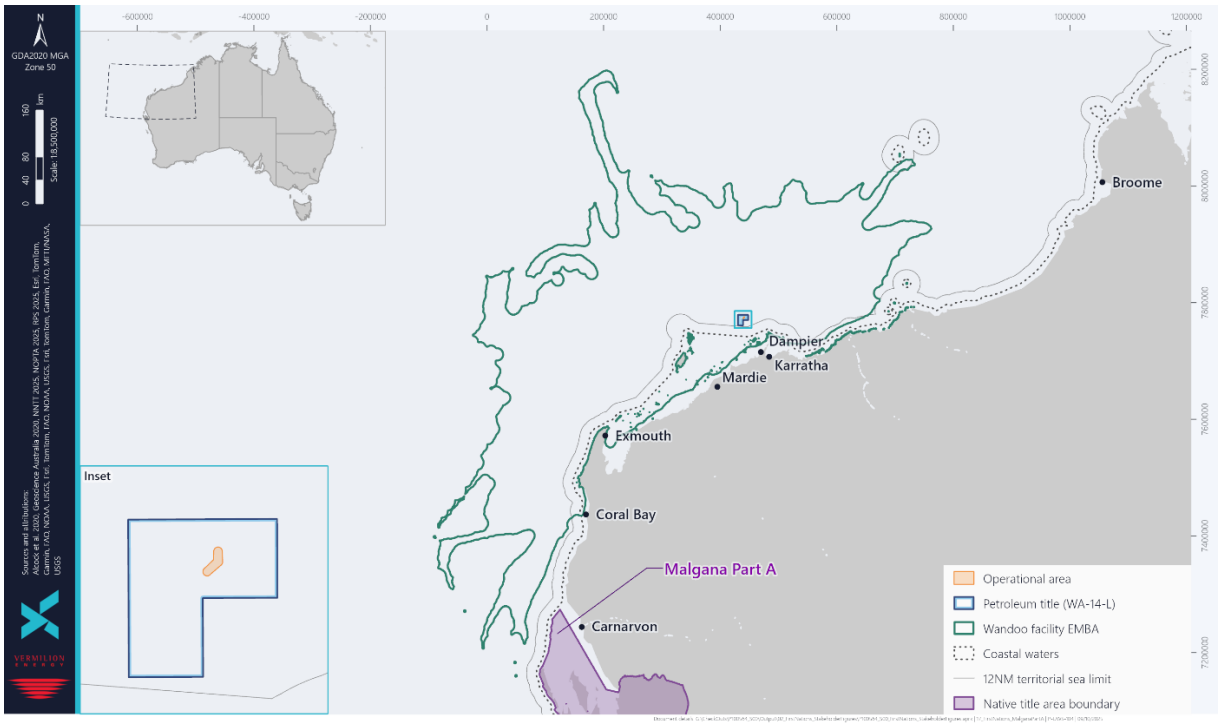
If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.9.1. Attachment to email to Malgana Aboriginal Corporation (MAC) on 22 October 2025



3.10. Email to Nanda Aboriginal Corporation RNTBC (NAC) on 22 October 2025

Dear [redacted]

We reached out in August to advise that Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the Wandoo Facility Environment Plan and Well Construction Environment Plan. We are now providing further information, with the consultation period starting from today.

Relevance for Nanda Aboriginal Corporation

We have determined that Nanda Aboriginal Corporation is not a relevant person to the Environment Plan(s) because the planning area for those activities (particularly the 'environment that may be affected' (**EMBA**)) modelling shows no proximity to the Nanda People's native title determination.

However, If Nanda Aboriginal Corporation considers it is relevant to the proposed activities and would like to participate in the process or provide feedback, Vermilion welcomes consulting with representatives from Nanda.

We have attached a map for your consideration. Reach out directly via email or phone call if this is of interest to you.

About these Environment Plan Revisions

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM

	Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Attached are summary and detailed information sheets that explain the activities we plan to undertake.

Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Request: Please bring this to the attention of the appropriate representatives from the Nanda Aboriginal Corporation.

Please feel free to forward this email and the attached documents to Nanda members or other people who you think may be interested as required.

Feedback on the proposed activities

Our standard consultation period is 30-days, however we are affording additional time to stakeholders like Nanda to engage in the process as we are aware there may be limited capacity to engage during the standard 30 day period.

The consultation period is open from today until 17 February 2026.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

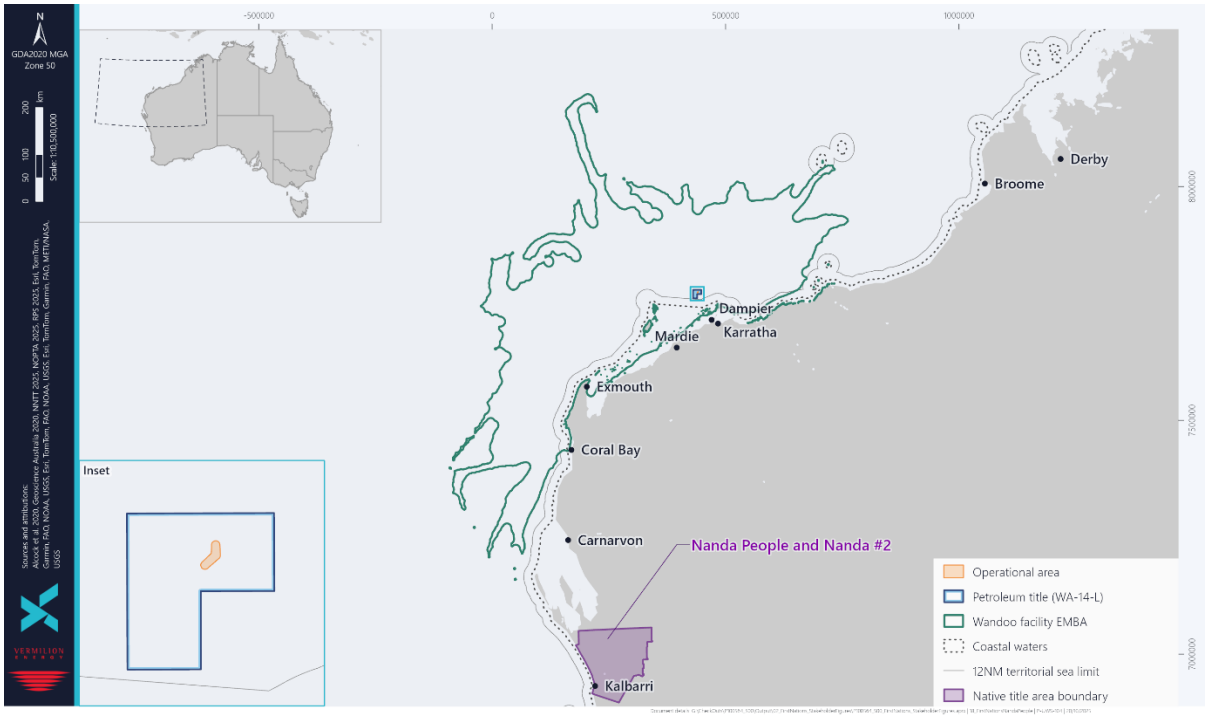
If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.10.1. Attachment to email to Nanda Aboriginal Corporation RNTBC (NAC) on 22 October 2025



3.11. Email to Nyangumarta Karajarri Aboriginal Corporation RNTBC (NKAC) on 22 October 2025

Dear [redacted]

We reached out in August to advise that Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the Wandoo Facility Environment Plan and Well Construction Environment Plan. We are now providing further information, with the consultation period starting from today.

Relevance for Nyangumarta Karajarri Aboriginal Corporation (NKAC)

We have determined that NKAC is not a relevant person to the Environment Plans because the planning area for those activities (particularly the 'environment that may be affected' (**EMBA**)) modelling shows no proximity to the Nyangumarta Karajarri People's native title determination.

However, If NKAC considers it is relevant to the proposed activities and would like to participate in the process or provide feedback, Vermilion welcomes consulting with representatives from NKAC.

We have attached a map for consideration. Reach out directly via email or phone call if this is of interest to NKAC.

About these Environment Plan Revisions

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Attached are summary and detailed information sheets that explain the activities we plan to undertake.

Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Request: Please bring this to the attention of the appropriate representatives from NKAC.

Please feel free to forward this email and the attached documents to NKAC members or other people who you think may be interested as required.

Feedback on the proposed activities

Our standard consultation period is 30-days, however we are affording additional time to stakeholders like NKAC to engage in the process as we are aware there may be limited capacity to engage during the standard 30 day period.

The consultation period is open from today until 17 February 2026.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

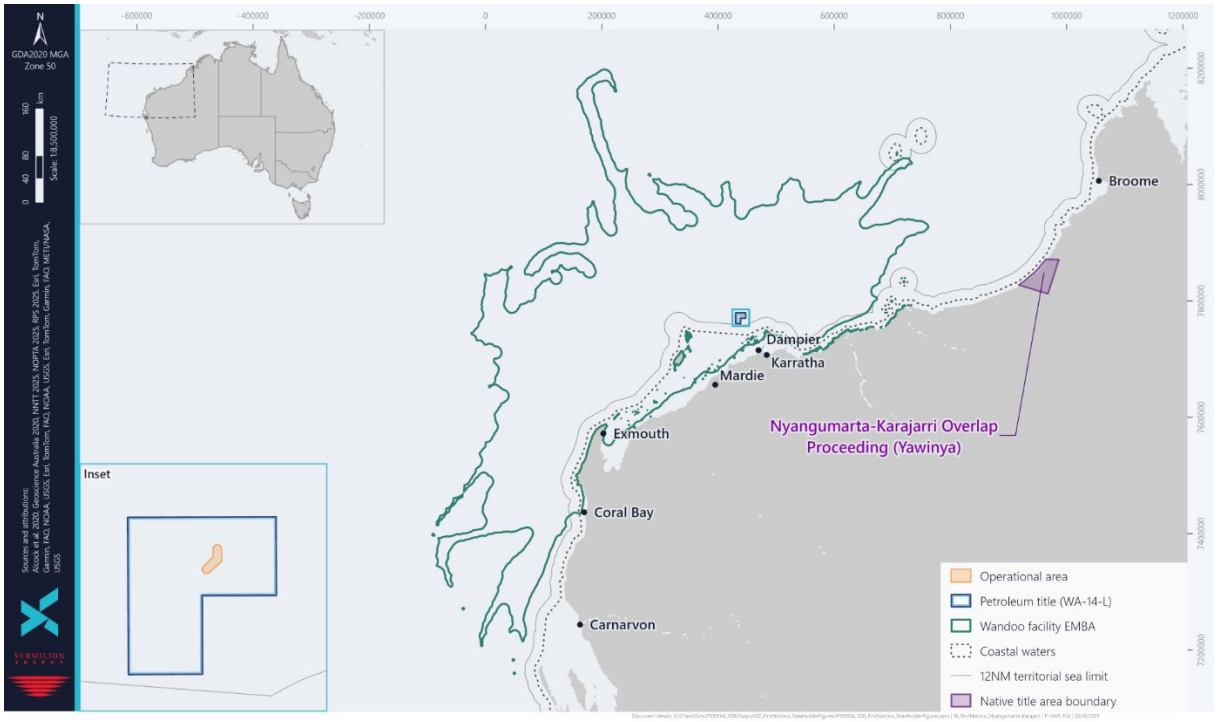
If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.11.1. Attachment to email to Nyangumarta Karajarri Aboriginal Corporation RNTBC (NKAC) on 22 October 2025



3.12. Email to Nyangumarta Warrarn Aboriginal Corporation RNTBC (NWAC) on 21 October 2025

Dear [redacted] and the NWAC engagement team

We reached out in August to advise that Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the Wandoo Facility Environment Plan and Well Construction Environment Plan. We are now providing further information, with the consultation period starting from today.

Relevance for Nyangumarta Warrarn Aboriginal Corporation (NWAC)

We have determined that Nyangumarta Warrarn Aboriginal Corporation is not a relevant person to the Environment Plans because the planning area for those activities (particularly the 'environment that may be affected' (**EMBA**)) modelling shows no proximity to the Nyangumarta People (Part A)'s native title determination.

However, If NWAC considers it is relevant to the proposed activities and would like to participate in the process or provide feedback, Vermilion welcomes consulting with representatives of NWAC.

We have attached a map for your consideration. Reach out directly via email or phone call if this is of interest to NWAC.

About these Environment Plan Revisions

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a

	Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Attached are summary and detailed information sheets that explain the activities we plan to undertake.

Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Request: Please bring this to the attention of the appropriate representatives from NWAC.

Please feel free to forward this email and the attached documents to NWAC members or other people who you think may be interested as required.

Feedback on the proposed activities

Our standard consultation period is 30-days, however we are affording additional time to stakeholders like NWAC to engage in the process as we are aware there may be limited capacity to engage during the standard 30-day period.

The consultation period is open from today until 17 February 2026.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

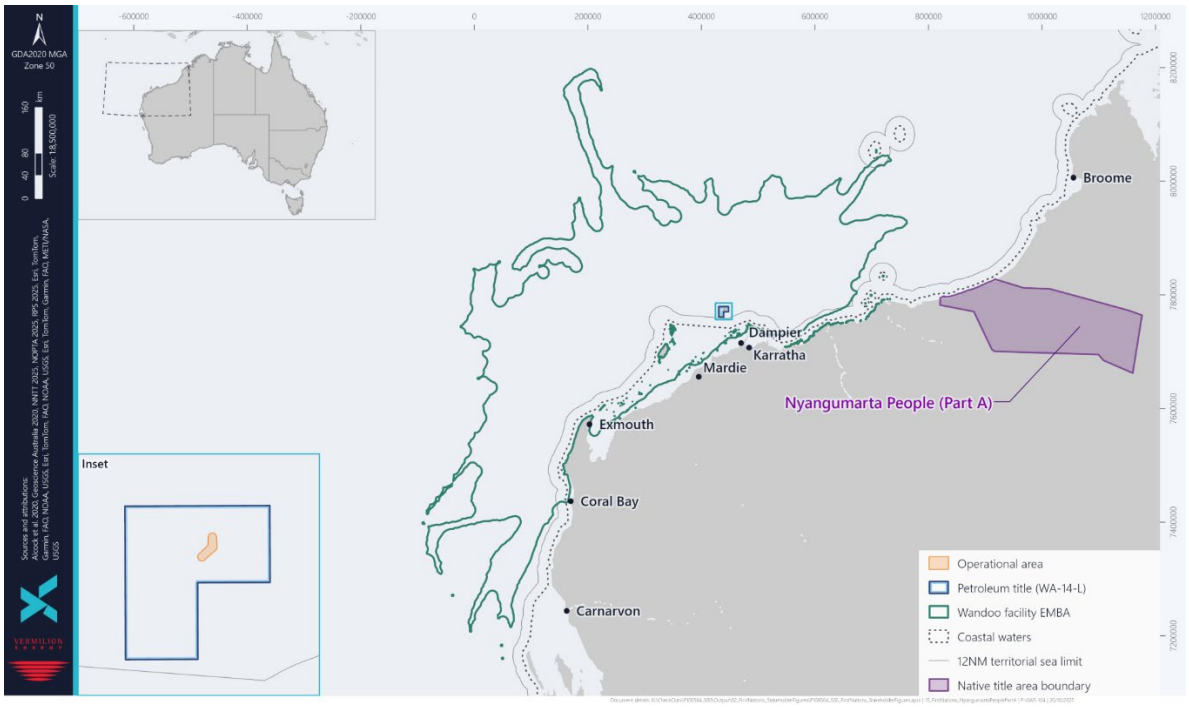
If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.12.1. Attachment to email to Nyangumarta Warrarn Aboriginal Corporation RNTBC (NWAC) on 21 October 2025



3.13. Email to Yawuru Native Title Holders Aboriginal Corporation RNTBC (Yawuru) on 22 October 2025

Dear [redacted]

We reached out to you previously about Consultation on Vermilion Oil and Gas Australia Pty Ltd (Vermilion)'s Wandoo Field Exploration Drilling Environment Plan, see email attached.

This email is a general follow up and to also advise that Vermilion is planning to submit five yearly revisions of the Wandoo Facility Environment Plan and Well Construction Environment Plan.

We are providing information about these EPs, with the consultation period starting from today.

Relevance for Yawuru Native Title Holders Aboriginal Corporation (Yawuru)

We have determined that Yawuru is not a relevant person to the Environment Plans because the planning area for those activities (particularly the 'environment that may be affected' (**EMBA**)) modelling shows no proximity to the Rubibi Community's native title determination.

However, If Yawuru considers it is relevant to the proposed activities and would like to participate in the process or provide feedback, Vermilion welcomes consulting with representatives of Yawuru.

We have attached a map for your consideration. Reach out directly via email or phone call if this is of interest to Yawuru.

Also, please let us know if there is any outcome and response to the correspondence attached for the Wandoo Field Exploration Drilling Environment Plan.

About these Environment Plan Revisions

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field.

	The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Attached are summary and detailed information sheets that explain the activities we plan to undertake.

Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Request: Please bring this to the attention of the appropriate representatives from Yuwuru.

Please feel free to forward this email and the attached documents to Yuwuru members or other people who you think may be interested as required.

Feedback on the proposed activities

Our standard consultation period is 30-days, however we are affording additional time to stakeholders like Yuwuru to engage in the process as we are aware there may be limited capacity to engage during the standard 30-day period.

The consultation period is open from today until 17 February 2026.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

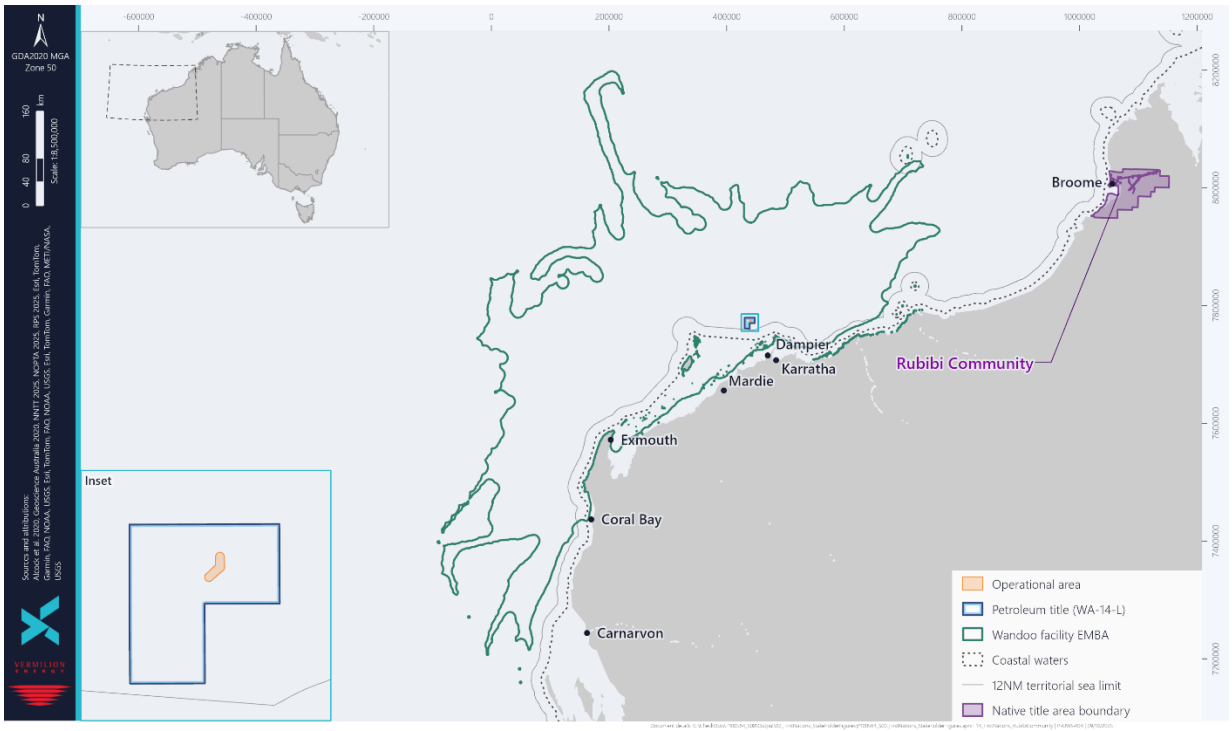
If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.13.1. Attachment to email to Yawuru Native Title Holders Aboriginal Corporation RNTBC (Yawuru) on 22 October 2025



3.14. Email to Australian Border Force (ABF) (Maritime Border Command) on 22 October 2025

Dear ABF,

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete.

	As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.15. Email to Australian Fisheries Management Authority (AFMA) on 22 October 2025

Dear AFMA,

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Information for the commercial fishing sector

Fisheries have been identified as relevant to the proposed activity based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth. A summary of the relevant commonwealth and state managed fisheries are included in the Commercial Fishing Information Sheets attached.

We have identified potential impacts to active commercial fishers and the environment, which are also summarised in the Commercial Fishing Information Sheets. We have endeavoured to reduce these risks to as low as reasonably practicable (ALARP).

Information about exclusionary and cautionary zones and communication with fishers and mariners are included in the attached documents.

Vermilion has acknowledged consultation guidance from Commonwealth commercial fishing industry associations, where applicable and has contacted relevant industry associations directly. Fishing industry associations we have contacted include: **Australian Southern Bluefin Tuna Fishery Association; Commonwealth Fisheries Association; Pearl Producers Association; Tuna Australia; Seafood Industry Australia.**

Vermilion also consults with **WAFIC** and has acknowledged WAFIC's consultation guidance and has applied this by consulting state managed fisheries assessed as having a potential for interaction surrounding the operational area via WAFIC.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.16. Email to Australian Maritime Safety Authority (AMSA) – maritime safety, Australian Maritime Safety Authority (AMSA) – marine pollution, and Australian Hydrographic Office (AHO) on 22 October 2025

Dear AMSA and AHO,

Re: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells.

	The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

We acknowledge your advice and confirm that we will provide a minimum of four working weeks' notice to the AHO prior to any activity. A shipping lane map is also attached.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

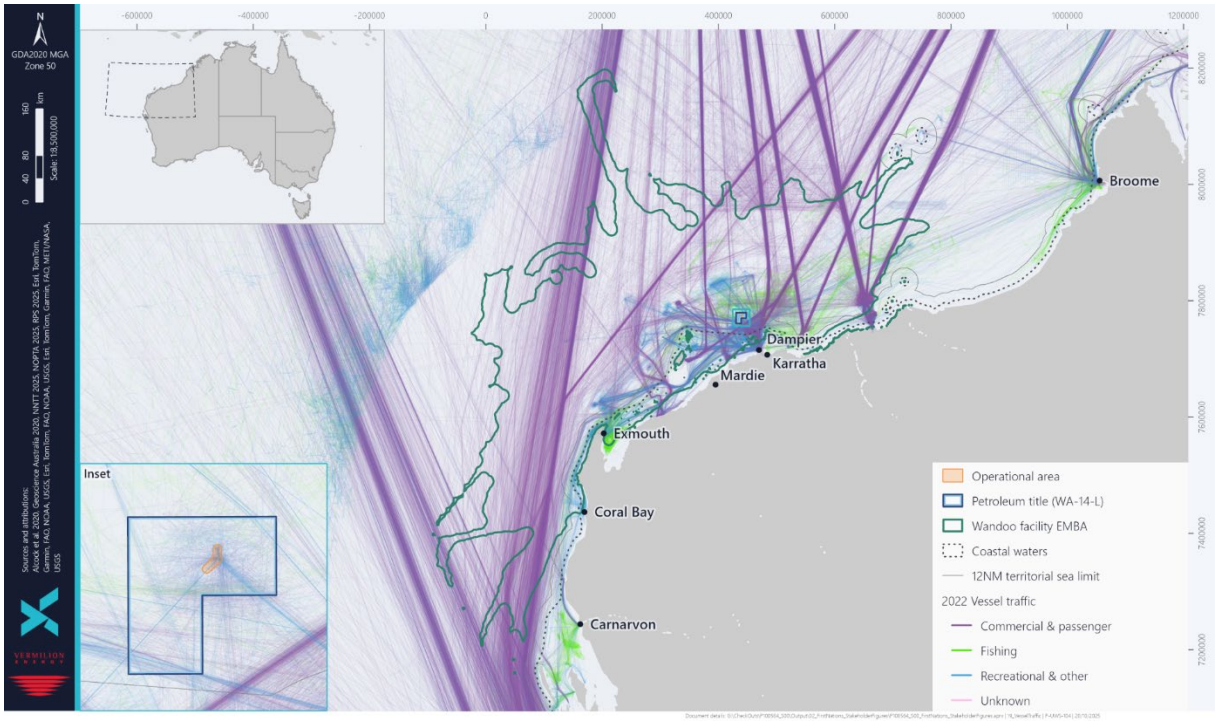
If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.16.1. Attachment to email to Australian Maritime Safety Authority (AMSA) – maritime safety, Australian Maritime Safety Authority (AMSA) – marine pollution, and Australian Hydrographic Office (AHO) on 22 October 2025



3.17. Email to Department of Agriculture, Forestry and Fisheries (DAFF) – Fisheries and Department of Agriculture, Forestry and Fisheries (DAFF) – Biosecurity (marine pests) (vessels, aircraft and personnel) on 22 October 2025

Dear DAFF,

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Biosecurity

With respect to the biosecurity matters, please note the following information below outlines our proposed biosecurity risk management to prevent the introduction of invasive marine species:

Environment Description and Assessment
The Operational Area is located in a deep-water (50-60 m) open-ocean environment that is ~63 km (34 nm) from the nearest shoreline and has a lack of hard substrate. Values and sensitivities of benthic habitats and communities within the operational area are limited to soft sediment benthic habitats that are widespread and homogenous in the North West Shelf (NWS). ROV surveys on the NWS, at similar water depths to those in the operational area, have indicated the seafloor is comprised of fine silt/sand substrates and benthic communities were generally sparse with low densities of organisms (e.g. crustaceans, molluscs, and polychaetes). Further, no key ecological features, often associated with provided hard substrate habitats are located within the operational area. Therefore, it is considered that the operational area does not provide a location conducive to marine pest establishment and survival, and that there is little potential for invasive organisms to accumulate and multiply. Displacement of native marine species or a reduction in abundance from predation, competition or interspecies breeding is not expected to occur.
Invasive Marine Species Prevention Controls
Vessels will have an approved ballast water management plan and valid ballast water management certificate, unless an exemption applies or is obtained, as specified in the Australian Ballast Water Management Requirements. Vessels will complete a Vermilion Biofouling Risk Assessment, identifying a low risk before mobilisation to the Operational Area: • Biofouling risk based on a range of information including presence of a biofouling management plan and record book, last port of call, age of anti-fouling coating etc. If a risk category of moderate, uncertain or high is scored, the process requires an independent IMS expert to be engaged and further risk assessment and/or management measures undertaken. Anti-fouling Systems on vessels are maintained in compliance with International Convention on the Control of Harmful Anti-Fouling Systems on Ships (IMO, 2001): • Prohibits the use of harmful organotins in antifouling paints used on ships and establishes a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.18. Email to Department of Defence (DoD) on 22 October 2025

Dear Department of Defence

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the

	Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Information on defence training area and restricted airspace

There are no defence related uses within the operational area. The EMBAs encompasses the military installations near Exmouth, including a naval communication station. The Department of Defence has several offshore training areas including the North West Exercise Area (NWXA) (approximately 95 km southwest of the operational area) and Learmonth Air Weapons Range (approximately 275 km west-southwest of the operational area) in the EMBAs. These areas are used for Defence Force training exercises, including live firing. No unexploded ordnance (UXO) potential has been identified within the operational area.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.19. Email to Department of Industry, Science and Resources (DISR) on 22 October 2025

Dear DISR,

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the

	Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.20. Email to Director of National Parks (DNP) on 22 October 2025

Dear Director of National Parks,

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been

	assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Australian Marine Parks (AMPs)

We note Australian Government Guidance on consultation activities and confirm that:

- No Australian Marine Parks (AMPs) are within the operational area. The nearest AMPs to the operational area are:
    - Montebello AMP ~37 km to the west
    - Dampier AMP ~47 km to the south east
    - Montebello Islands Marine Part (State) ~ 75 km to the west-south west
    - Barrow Island Marine Management Area (State) ~89 km to the west-south west.
- We have assessed potential risks to AMPs in the development of the proposed EPs and believe that there are no credible risks as part of planned activities that have potential to impact the values of the Marine Parks.

A National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) approved oil spill response plan will be in place for the duration of the activities, which will include notification to relevant agencies and organisations as to the nature and scale of the event, as soon as practicable following an occurrence. The Director of National Parks will be advised if an environmental incident occurs that may impact on the values of the Marine Park.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the NOPSEMA for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.21. Email to Department of Mines, Petroleum and Exploration (DMPE) on 22 October 2025

Dear DMPE,

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM

	Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.22. Email to Department of Primary Industries and Regional Development (DPIRD) – Fisheries on 22 October 2025

Dear DPIRD,

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete.

	As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Information relating to commercial fisheries

Fisheries have been identified as relevant to the proposed activity based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth. A summary of the relevant commonwealth and state managed fisheries are included in the Commercial Fishing Information Sheets attached.

We have identified potential impacts to active commercial fishers and the environment, which are also summarised in the Commercial Fishing Information Sheets. We have endeavoured to reduce these risks to an as low as reasonably practicable (ALARP).

Information about exclusionary and cautionary zones and communication with fishers and mariners are included in the attached documents.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.23. Email to Department of Biodiversity, Conservation and Attractions (DBCA) on 22 October 2025

Dear DBCA

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete.

	As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Environmental Management and Regulatory Commitments

- Vermilion appreciates the guidance provided by DBCA in previous consultations about ecologically important areas within the Environment that May Be Affected (EMBA). We confirm that these areas have been assessed as part of the Environment Plan development. Vermilion maintains a strong understanding of ecological values within and adjacent to our operational areas, and within the EMBA.
- An assessment of potential management and mitigation measures has been undertaken, and relevant controls have been incorporated into the EPs to ensure impacts are reduced to as low as reasonably practicable (ALARP).
- In accordance with Regulations 21(1)–(7) of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, under the *Commonwealth Offshore Petroleum and Greenhouse Gas Storage Act 2006*, Vermilion includes in its EPs a description of the existing environment, including the particular values and sensitivities within and near operational areas and the EMBA, to support impact assessment and risk evaluation.
- Regarding the *National Light Pollution Guidelines for Wildlife*, Vermilion confirms that these guidelines, issued by the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW), have been referenced in the development of our EPs. We acknowledge these guidelines as industry best practice for managing potential impacts of light pollution on marine fauna.
- In relation to incidents and emergency response, Vermilion confirms that our Oil Pollution Emergency Plan (OPEP) includes notification to DBCA's Pilbara regional office in the event of a spill where marine wildlife may be affected. We also acknowledge that DBCA does not implement oiled wildlife response on behalf of petroleum operators.
- Finally, Vermilion advises that we have referred to guidance from the Department of Transport and Major Infrastructure (DTMI) and consulted with DTMI – Marine Pollution as the jurisdictional authority during the development of our OPEP.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.24. Email to Department of Transport and Major Infrastructure (DTMI) – marine pollution on 22 October 2025

Dear DTMI,

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field.

	The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Information for DTMI

Vermilion has provided the requested information as per Appendix 6 of the Department of Transport Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements (July 2020) for both EPs in an attachment.

Do let us know if you require further information following your review.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.25. Email to Pilbara Development Commission (PDC) on 22 October 2025

Dear Pilbara Development Commission

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM

	Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.26. Email to Pilbara Ports Authority (PPA) on 22 October 2025

Dear Pilbara Ports,

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete.

	As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.27. Email to Western Australian Fishing Industry Council (WAFIC) on 22 October 2025

Dear WAFIC,

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further

information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Information for the commercial fishing sector

Fisheries have been identified as relevant to the proposed activity based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth. A summary of the relevant commonwealth and state managed fisheries are included in the Commercial Fishing Information Sheet attached.

We have identified potential impacts to active commercial fishers and the environment, which are also summarised in the commercial fishing information sheet attached. We have endeavoured to reduce these risks to an as low as reasonably practicable (ALARP).

Information about exclusionary and cautionary zones and communication with fishers and mariners are included in the attached documents.

Vermilion acknowledges WAFIC's consultation guidance and has applied this, by consulting fisheries assessed as having a potential for interaction surrounding the operational area via WAFIC.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.28. Email to 3D Energi Limited, Beagle No. 1 Pty Ltd / Longreach Capital Investment, BP Developments Australia, Finder No 16 Pty Ltd, INPEX Browse E&P Pty Ltd, Jadestone Energy (Australia) Pty Ltd, Kato Energy (WA) Pty Ltd, Kufpec (Perth) Pty Ltd, MEO International Pty Ltd, Mobil Australia Resources Company Pty Limited, Santos Offshore Pty Ltd, Shell Australia Pty Ltd, Western Gas (474 P) Pty Ltd, and Woodside Energy (Australia) Pty Ltd on 22 October 2025

Dear Titleholder

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.

Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until 21 November 2025. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.29. Email to Australian Energy Producers (AEP) on 22 October 2025

Dear AEP

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.

Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until 21 November 2025. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.30. Email to Vocus Communications on 22 October 2025

Dear Vocus

Re: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells.

	The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until 21 November 2025. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.31. Email to Curtin University (Centre for Marine Science and Technology), University of Western Australia (UWA), Commonwealth Scientific and Industrial Research Organisation (CSIRO), Western Australian Marine Science Institution (WAMSI), Australian Institute of Marine Science (AIMS), and Australian Marine Sciences Association (WA Branch) on 22 October 2025

Dear Stakeholder,

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.

Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Vermilion is also seeking your feedback for the EP regarding any research activities that you may be undertaking that could be affected by our proposed activities.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.32. Email to City of Karratha, Town of Port Hedland, Shire of Ashburton, Shire of Exmouth, Port Hedland Chamber of Commerce and Industry, Onslow Chamber of Commerce and Industry, Western Australian Local Government Association (WALGA), Karratha and Districts Chamber of Commerce and Industry (KDCCI), Regional Development Australia (Pilbara) Karratha WA, WA Game Fishing Association (WAGFA), Recfishwest, Marine Tourism WA, Ashburton Anglers, Exmouth Game Fishing Club (EGFC), King Bay Game Fishing Club (KBFC), and Nickol Bay Sportsfishing Club (NBSC) on 22 October 2025

Dear Stakeholder

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.

Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until 21 November 2025. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.33. Email to Protect Ningaloo on 22 October 2025

Dear Protect Ningaloo

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been

	assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until 21 November 2025. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.34. Email to The Conservation Council of WA (CCWA), Care for Hedland, and Western Australian Marine Conservation Society (AMCS) on 22 October 2025

Dear Stakeholder

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until 21 November 2025. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.35. Email to Australian Conservation Foundation (ACF), Greenpeace Australia Pacific (GAP), and Wilderness Society (WS) on 22 October 2025

Dear Stakeholder

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

As part of this process, we have assessed your functions, interests, and activities using publicly available information in relation to the proposed activities. Based on this assessment, we have determined that they are not likely to be affected by the potential risks and impacts of the planned activities, in line with the intended outcomes of the consultation process.

However, we acknowledge that stakeholders are best placed to determine whether their interests may be affected. If you believe your functions, interests, or activities could be impacted by the proposed activities, we invite you to self-identify with this information and participate in the consultation process.

The consultation period is open from today until 21 November 2025. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.36. Email to Department of Climate Change, Energy, the Environment and Water (DCCEEW) – Underwater Cultural Heritage (UCH) on 22 October 2025

Dear DCCEEW,

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the operational area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Underwater cultural heritage

Vermilion is undertaking an assessment of underwater cultural heritage:

Well Construction Environment Plan	No cultural heritage artefacts have been identified within the operational area or EMBA. There are no historical wrecks within the operational area, however ~30 historical wrecks were identified within a 100 km buffer of the EMBA. The closest shipwrecks are located 40.6 km from the operational area (*McCormack* and *McDermott Derrick Barge No 20*). There are no registered Aboriginal cultural heritage sites within the operational area, ~50 registered sites are present within the EMBA.
Wandoo Facility Environment Plan	No cultural heritage artefacts have been identified within the operational area. Vermilion intends to undertake an assessment using The Australasian Underwater Cultural Heritage Database to identify any historic underwater cultural heritage artefact within the EMBA. Vermilion can follow up and provide this information if required. There are no historical wrecks within the operational area. However, historical wrecks are expected to have been identified within a 100 km buffer of the EMBA. Vermilion can follow up and advise the list of shipwrecks present if required. There are no registered Aboriginal cultural heritage sites within the operational area. Vermilion expects registered sites are present within the EMBA. Vermilion can follow up and advise of the quantity following its assessment.

Vermilion advises that:

Unlocated Underwater Cultural Heritage (UCH) may be present within the operational area and EMBA and that the AUCHD is useful for assessing located UCH sites and artefacts.

We acknowledge the legislation and protections that are outlined in *the Underwater Cultural Heritage Act 2018* and our obligations and key responsibilities under the act, namely that Vermilion is aware:

- Of the relevant UCH legislation
- All actions will be compliant with the relevant legislation
- That there is no adverse impact to protected UCH without a permit
- That in the event of suspect UCH that we notify the discovery within 21 days of discovery.

We are committed to ensuring compliance with the UCH Act and will take the necessary steps to avoid any adverse impact on protected UCH.

As part of Vermilion's consultation approach on EPs, we have engaged with Traditional Owners and Prescribed Body Corporates to gather input on environmental and cultural sensitivities, which would include any UCH. We also issued local area consultation notices and public advertisements through

traditional and social media to encourage participation from relevant stakeholders who could provide input in similar aspects.

We acknowledge the DCCEEW's recommendation that proponents engage a qualified maritime or underwater archaeologist to advise on mitigating risks associated with protected UCH. We also note the recommendation to undertake a desktop UCH assessment as part of our planning process.

Vermilion also advises that it has contacted the West Australian Museum as part of our consultation.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.37. Email to Department of Planning, Lands and Heritage (DPLH) on 22 October 2025

Dear DPLH,

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Underwater cultural heritage

Vermilion is undertaking an assessment of underwater cultural heritage:

Well Construction Environment Plan	No cultural heritage artefacts have been identified within the operational area or EMBA. There are no historical wrecks within the operational area, however ~30 historical wrecks were identified within a 100 km buffer of the EMBA. The closest shipwrecks are located 40.6 km from the operational area (*McCormack* and *McDermott Derrick Barge No 20*). There are no registered Aboriginal cultural heritage sites within the operational area, ~50 registered sites are present within the EMBA.
Wandoo Facility Environment Plan	No cultural heritage artefacts have been identified within the operational area. Vermilion intends to undertake an assessment using The Australasian Underwater Cultural Heritage Database to identify any historic underwater cultural heritage artefact within the EMBA. Vermilion can follow up and provide this information if required. There are no historical wrecks within the operational area. However, historical wrecks are expected to have been identified within a 100 km buffer of the EMBA. Vermilion can follow up and advise the list of shipwrecks if required. There are no registered Aboriginal cultural heritage sites within the operational area. Vermilion expects a number of registered sites are

	present within the EMBA. Vermilion can follow up and advise of the quantity following its assessment.

Vermilion also advises that it has contacted the West Australian Museum as part of our consultation.

Yours sincerely

3.38. Email to Western Australian Museum (WAM) on 22 October 2025

Dear WA Museum

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.

Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from today until **21 November 2025**. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Underwater cultural heritage – historical shipwrecks

Well Construction Environment Plan	There are no historical wrecks within the operational area, however ~30 historical wrecks were identified within a 100 km buffer of the EMBA. The closest shipwrecks are located 40.6 km from the operational area (*McCormack* and *McDermott Derrick Barge No 20*).

Wandoo Facility Environment Plan	There are no historical wrecks within the operational area. However, historical wrecks are expected to have been identified within a 100 km buffer of the EMBA. Vermilion can follow up and advise the list of shipwrecks if required.

Vermilion also advises that it has contacted the Department of Planning, Lands and Heritage (DPLH) as part of our consultation.

Yours sincerely

3.39. Email to Australian Southern Bluefin Tuna Fishery Association (ASBITA), Commonwealth Fisheries Association (CFA), Pearl Producers Association (PPA), Tuna Australia, and Seafood Industry Australia (SIA) on 22 October 2025

Dear Commonwealth Fishing Industry Association and / or Member Representative Body

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the

	Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Information for the commercial fishing sector

Fisheries have been identified as relevant to the proposed activity based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth. A summary of the relevant commonwealth and state managed fisheries are included in the Commercial Fishing Information Sheets attached.

We have identified potential impacts to active commercial fishers and the environment, which are also summarised in the Commercial Fishing Information Sheets. We have endeavoured to reduce these risks to an as low as reasonably practicable (ALARP).

Information about exclusionary and cautionary zones and communication with fishers and mariners are included in the attached documents.

Vermilion has acknowledged consultation guidance from Commonwealth commercial fishing industry associations and is contacting you as the representative industry association directly.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

We acknowledge that stakeholders are best placed to determine whether their functions, interests or activities may be affected. If you believe your functions, interests, or activities could be impacted by the proposed activities, we invite you to self-identify with this information and participate in the consultation process.

The consultation period is open from today until 21 November 2025. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.40. Email to Yamatji Marlpa Aboriginal Corporation (YMAC) on 22 October 2025

Dear YMAC

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary

	Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

As part of this process, we have assessed your functions, interests, and activities using publicly available information in relation to the proposed activities. Based on this assessment, we have determined that they are not likely to be affected by the potential risks and impacts of the planned activities, in line with the intended outcomes of the consultation process.

Based on our understanding and engagements to date and a review of information online and documentation available from other proponents, we assume that individual consultation may not be required with YMAC for the purpose of providing feedback or input to the environmental planning process, particularly relating to cultural features of the environment.

Our assumption is that YMAC would not consider it appropriate to represent the views of groups and organisations that use their services. However, in some circumstances, YMAC may act as a conduit or formal contact point for PBCs and may provide advice on groups that could be relevant for consultation and to gather insights about preferred consultation approaches.

We would appreciate your confirmation or guidance on this. However, if you believe your functions, interests, or activities could be impacted by the proposed activities, we invite you to self-identify and participate in the consultation process.

The consultation period is open from today until 21 November 2025. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.41. Email to Kimberley Land Council (KLC) on 22 October 2025

Dear KLC

Subject: Consultation - Wandoo Facility Environment Plan and Well Construction Environment Plan

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field.

	The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

As part of this process, we have assessed your functions, interests, and activities using publicly available information in relation to the proposed activities. Based on this assessment, we have determined that they are not likely to be affected by the potential risks and impacts of the planned activities, in line with the intended outcomes of the consultation process.

Based on our understanding and engagements to date and a review of information online and documentation available from other proponents, we assume that individual consultation may not be required with KLC for the purpose of providing feedback or input to the environmental planning process, particularly relating to cultural features of the environment.

Our assumption is that KLC would not consider it appropriate to represent the views of groups and organisations that use their services. However, in some circumstances, YMAC may act as a conduit or formal contact point for PBCs and may provide advice on groups that could be relevant for consultation and to gather insights about preferred consultation approaches.

We would appreciate your confirmation or guidance on this. However, if you believe your functions, interests, or activities could be impacted by the proposed activities, we invite you to self-identify and participate in the consultation process.

The consultation period is open from today until 21 November 2025. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at **abu.consultation@vermilionenergy.com** or by phone at **(08) 9217 5858**.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.42. Email to Department of Water and Environmental Regulation (DWER) on 11 November 2025

Dear DWER

It has been recommended by the Department of Planning, Lands and Heritage that we include you in our consultation to advise that Vermilion Oil and Gas Australia Pty Ltd (Vermilion) intends to submit five-yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage

	and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open for DWER from today until 11 December 2025. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.43. Email to Chevron Australia on 11 November 2025

Dear Titleholder

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells.

	The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from 21 October until 21 November 2025. As we have sent this to you today, Chevron can comment on this until December 11, 2025. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.44. Email to Ningaloo Coast World Heritage Advisory Committee (NCWHAC) on 11 November 2025

Dear NCWHAC

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan

- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Vermilion has operated the Wandoo Field (within Permit Area WA-14-L) since 2005 in Commonwealth waters of the Carnarvon Basin, approximately 80 km northwest of Dampier and 110 km northeast of Barrow Island.

These revisions address the continued operations and activities for the next five years, reassess environmental impacts and risks and outline how these will continue to be managed. Even where no significant changes are identified, the review validates controls and invites feedback from relevant persons.

Activity Overview

Wandoo Facility Environment Plan	Vermilion plans to continue producing hydrocarbons at the Wandoo Production Facility. This EP is limited to the hydrocarbon well production, process, storage and export activities, and supporting operations and maintenance activities conducted within the Wandoo Field. The oil produced from Wandoo A is piped to the Wandoo B platform. After treatment, the oil is stored in the concrete gravity structure and then, when sufficient volumes are available, offloaded through flexible flowlines to a Catenary Anchor Leg Mooring Buoy (CALM Buoy) located 1.2 km north of the Wandoo B platform. A floating hose is used to transfer the oil from the CALM Buoy to export tankers situated at the mooring facility. Export tankers are used to offload the oil.
Well Construction Environment Plan	Vermilion periodically conducts well construction operations in the Operational Area using a mobile offshore drilling rig. Well construction operations planned over the next five years involve the drilling and completing of new wells. The frequency of campaigns will vary depending on a range of operational and commercial factors. Each campaign will likely take between 30 to 100 days to complete. As drilling rig availability is unable to be predicted for the five-year period of operation of the Well Construction EP, well construction activities have been assessed on the basis that they may occur at any time during the calendar year.

Consultation information sheets for both activities are attached, providing additional background, including summaries of potential key impacts and risks, and associated management measures.

These are also available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities. Our website includes resources for further information including frequently asked questions about Wandoo Field Environment Plan Consultation, which can be accessed here.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open from 21 October until 21 November 2025. As we have sent this to you today, NCWHAC can comment on this until December 11, 2025. Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

3.45. Letter sent to Pilbara Kimberley Recreational Marine Users and Gascoyne Recreational Marine Users on 27 October 2025

VERMILION
OIL & GAS
AUSTRALIA PTY LTD

LEVEL 5
30 THE ESPLANADE
PERTH
WESTERN AUSTRALIA 6000

TEL: 08 9217 5858
ABN: 29 113 023 591

27 October 2025

Dear Licence Holder

Consultation on Wandoo Facility Operations and Well Construction Environment Plans

Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit two Environment Plans (EPs) related to its continued operations and production from the Wandoo Field in production licence area WA-14-L.

Location

The Wandoo Field is situated approximately 80 kilometres northwest of the port Dampier and 110 kilometres northeast of Barrow Island. The proposed activities will occur in Commonwealth waters within the Carnarvon Basin, operating at a water depth in the range from 50-60 metres.

1. **Wandoo Facility Environment Plan** – this revised EP supports continued hydrocarbon production at the Wandoo Facility and will cover production, processing, storage, export, and associated operations and maintenance activities.
2. **Well Construction Environment Plan** – the revised EP supports future routine drilling activities and addresses the environmental management of well construction, including drilling, completions and associated support operations.

Further information on both EPs is available in the attached information sheets. These provide background on the proposed activities, summaries of potential key impacts and risks, associated management measures, exclusion zones and communication protocols with fishers and mariners.

Additional resources, including frequently asked questions, can be found on Vermilion's website: www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities.

Feedback

If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at abu.consultation@vermilionenergy.com or (08) 9217 5858 by **30 November 2025.**

If you would like to opt out of consultation opportunities please contact us via email to confirm.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

Vermilion Oil and Gas Australia

4. Consultation Follow Up – November 2025

4.1. Email to Australian Border Force (ABF) (Maritime Border Command) on 13 November 2025

Dear ABF

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.2. Email to Australian Maritime Safety Authority (AMSA) – maritime safety, Australian Maritime Safety Authority (AMSA) – marine pollution, and Australian Hydrographic Office (AHO) on 13 November 2025

Dear AMSA and AHO

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.3. Email to Department of Agriculture, Forestry and Fisheries (DAFF) – Fisheries and Department of Agriculture, Forestry and Fisheries (DAFF) – Biosecurity (marine pests) (vessels, aircraft and personnel) on 13 November 2025

Dear DAFF

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.4. Email to Department of Defence (DoD) on 13 November 2025

Dear Department of Defence

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.5. Email to Department of Industry, Science and Resources (DISR) on 13 November 2025

Dear DISR

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.6. Email to Director of National Parks (DNP) on 13 November 2025

Dear Director of National Parks

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.7. Email to Department of Primary Industries and Regional Development (DPIRD) – Fisheries on 13 November 2025

Dear DPIRD

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also**

included consultation information sheets and information about exclusionary and cautionary zones and communication with fishers and mariners attached.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.8. Email to to Department of Mines, Petroleum and Exploration (DMPE) on 13 November 2025

Dear DMPE

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.9. Email to Department of Biodiversity, Conservation and Attractions (DBCA) on 13 November 2025

Dear DBCA

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.10. Email to Department of Transport and Major Infrastructure (DTMI) – marine pollution on 13 November 2025

Dear DTMI

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be

provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.11. Email to Pilbara Development Commission (PDC) on 13 November 2025

Dear Pilbara Development Commission

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.12. Email to Pilbara Ports Authority (PPA) on 13 November 2025

Dear Pilbara Ports

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.13. Email to Western Australian Fishing Industry Council (WAFIC) on 13 November 2025

Dear WAFIC

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.14. Email to 3D Energi Limited, Beagle No. 1 Pty Ltd / Longreach Capital Investment, BP Developments Australia, Finder No 16 Pty Ltd, INPEX Browse E&P Pty Ltd, Jadestone Energy (Australia) Pty Ltd, Kato Energy (WA) Pty Ltd, Kufpec (Perth) Pty Ltd, MEO International Pty Ltd, Mobil Australia Resources Company Pty Limited, Santos Offshore Pty Ltd, Shell Australia Pty Ltd and Western Gas (474 P) Pty Ltd on 13 November 2025

Dear Titleholder

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.15. Email to to Australian Energy Producers (AEP) on 13 November 2025

Dear AEP

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.16. Email to Curtin University (Centre for Marine Science and Technology), University of Western Australia (UWA), Commonwealth Scientific and Industrial Reserch Organsiation (CSIRO), Western Australian Marine Science Institution (WAMSI), Australian Institute of Marine Science (AIMS), and Australian Marine Sciences Association (WA Branch) on 13 November 2025

Dear Stakeholder

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.17. Email to City of Karratha, Town of Port Hedland, Shire of Ashburton, Shire of Exmouth, Onslow Chamber of Commerce and Industry, Western Australian Local Government Association (WALGA), Karratha and Districts Chamber of Commerce and Industry (KDCCI), Regional Development Australia (Pilbara) Karratha WA, WA Game Fishing Association (WAGFA), Recfishwest, Marine Tourism WA, Ashburton Anglers, Exmouth Game Fishing Club (EGFC), King Bay Game Fishing Club (KBFC), and Nickol Bay Sportsfishing Club (NBSC) on 13 November 2025

Dear Stakeholder

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.18. Email to Protect Ningaloo on 13 November 2025

Dear Protect Ningaloo

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.19. Email to The Conservation Council of WA (CCWA), Care for Hedland, and Western Australian Marine Conservation Society (AMCS) on 18 November 2025

Dear Stakeholder

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.20. Email to Australian Conservation Foundation (ACF), Greenpeace Australia Pacific (GAP), and Wilderness Society (WS) on 13 November 2025

Dear Stakeholder

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.21. Email to Department of Climate Change, Energy, the Environment and Water (DCCEEW) – Underwater Cultural Heritage (UCH) on 13 November 2025

Dear DCCEEW

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.22. Email to Western Australian Museum (WAM) on 13 November 2025

Dear WA Museum

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.23. Email to Australian Southern Bluefin Tuna Fishery Association (ASBITA), Commonwealth Fisheries Association (CFA), Pearl Producers Association (PPA), and Seafood Industry Australia (SIA) on 13 November 2025

Dear Commonwealth Fishing Industry Association and /or Member Representative Body

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling

unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.24. Email to Yamatji Marlpa Aboriginal Corporation (YMAC) on 18 November 2025

Dear YMAC

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.25. Email to Kimberley Land Council (KLC) on 18 November 2025

Dear KLC

We are writing to follow up on any feedback you may have regarding the consultation information sent on October 22, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open until 21 November 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.26. Email to Department of Water and Environmental Regulation (DWER) on 25 November 2025

Dear DWER

We are writing to follow up on any feedback you may have regarding the consultation information sent on November 11, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open for DWER until 11 December 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.27. Email to Chevron Australia on 25 November 2025

Dear Titleholder

We are writing to follow up on any feedback you may have regarding the consultation information sent on November 13, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open for Chevron until 11 December 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in

accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.28. Email to Ningaloo Coast World Heritage Advisory Committee (NCWHAC) on 25 November 2025

Dear NCWHAC

We are writing to follow up on any feedback you may have regarding the consultation information sent on November 13, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit. **Further information can be found in the previous sent email included below, which also included consultation information sheets attached.**

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs.

The consultation period is open for NCWHAC until 11 December 2025.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

4.29. Letter sent to Pilbara Kimberley Recreational Marine Users and Gascoyne Recreational Marine Users on 13 November 2025

VERMILION
OIL & GAS
AUSTRALIA PTY LTD

LEVEL 5
30 THE ESPLANADE
PERTH
WESTERN AUSTRALIA 6000

TEL: 08 9217 5858
ABN: 29 113 023 591

13 November 2025

Dear Licence Holder

Consultation on Wandoo Facility Environment Plan and Well Construction Environment Plan

This letter follows Vermilion Oil and Gas Australia Pty Ltd (Vermilion)'s previous correspondence.

We are writing to follow up on any feedback you may have regarding the proposed activities outlined in the consultation information sent to you on 27 October 2025.

Vermilion is planning to submit two Environment Plans (EPs) related to its continued operations and production from the Wandoo Field in production licence area WA-14-L.

Location

The Wandoo Field is situated approximately 80 kilometres northwest of the port Dampier and 110 kilometres northeast of Barrow Island. The proposed activities will occur in Commonwealth waters within the Carnarvon Basin, operating at a water depth in the range from 50-60 metres.

1. **Wandoo Facility Environment Plan** – this revised EP supports continued hydrocarbon production at the Wandoo Facility and will cover production, processing, storage, export, and associated operations and maintenance activities.

2. **Well Construction Environment Plan** – the revised EP supports future routine drilling activities and addresses the environmental management of well construction, including drilling, completions and associated support operations.

Feedback on Proposed Activities: We are consulting with relevant persons who may be affected by these activities. Consultation information sheets are available on our website at www.vermilionenergy.com/our-operations/australia/wandoo-consultation-activities.

Seeking Your Input: If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at abu.consultation@vermilionenergy.com or (08) 9217 5858 by **30 November 2025.** Feedback can also be provided after the consultation period closes, throughout the life of an EP, as part of ongoing consultation.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Yours sincerely

Vermilion Oil and Gas Australia

5. Notification of intent to submit – December 2025

5.1. Email to ABF on 16 December 2025

Dear ABF

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.2. Email to AMSA Marine Pollution on 16 December 2026

Dear AMSA - Marine Pollution

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.3. Email to Department of Agriculture, Forestry and Fisheries (DAFF) – Fisheries and Department of Agriculture, Forestry and Fisheries (DAFF) – Biosecurity (marine pests) (vessels, aircraft and personnel) on 16 December 2025

Dear DAFF

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.4. Email to DCCEW on 16 December 2025

Dear DCCEEW

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.5. Email to DoD on 16 December 2025

Dear Department of Defence

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.6. Email to DISR on 16 December 2025

Dear DISR

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.7. Email to DMPE on 16 December 2025

Dear DMPE

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.8. Email to DPIRD on 16 December 2025

Dear DPIRD

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.9. Email to Pilbara Development Commission on 16 December 2025

Dear Pilbara Development Commission

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:

- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.10. Email to Australian Southern Bluefin Tuna Fishery Association (ASBITA), Commonwealth Fisheries Association (CFA), Pearl Producers Association (PPA), and Seafood Industry Australia (SIA) on 16 December 2025

Dear Commonwealth Fishing Industry Association and /or Member Representative Body

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.

- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.11. Email to City of Karratha, Shire of Ashburton, Shire of Exmouth, Onslow Chamber of Commerce and Industry, Western Australian Local Government Association (WALGA), Regional Development Australia (Pilbara) Karratha WA, WA Game Fishing Association (WAGFA), Marine Tourism WA, Ashburton Anglers, Exmouth Game Fishing Club (EGFC), King Bay Game Fishing Club (KBFC), and Nickol Bay Sportsfishing Club (NBSC) on 16 December 2025

Dear Stakeholder

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.

- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.12. Email to Karratha and Districts Chamber of Commerce and Industry (KDCCI) on 16 December 2025

Dear Stakeholder

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 28 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.

- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.13. Email to Town of Port Hedland on 16 December 2025

Dear Stakeholder

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 23 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally

sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.14. Email to Curtin University (Centre for Marine Science and Technology), University of Western Australia (UWA), Commonwealth Scientific and Industrial Reserch Organsiation (CSIRO), Western Australian Marine Science Institution (WAMSI), Australian Institute of Marine Science (AIMS), and Australian Marine Sciences Association (WA Branch) on 18 December 2025

Dear Stakeholder

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.15. Email to Australian Conservation Foundation (ACF), Greenpeace Australia Pacific (GAP), and Wilderness Society (WS) on 18 December 2025

Dear Stakeholder

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.16. Email to Protect Ningaloo on 18 December 2025

Dear Protect Ningaloo

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.17. Email to The Conservation Council of WA (CCWA), Care for Hedland, and Western Australian Marine Conservation Society (AMCS) on 18 December 2025

Dear Stakeholder

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 18 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.18. Email to AEP on 18 December 2025

Dear AEP

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.19. Email to Chevron Australia on 18 December 2025

Dear Titleholder

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:

- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.
- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.20. Email to 3D Energi Limited, Beagle No. 1 Pty Ltd / Longreach Capital Investment, BP Developments Australia, Finder No 16 Pty Ltd, INPEX Browse E&P Pty Ltd, Jadestone Energy (Australia) Pty Ltd, Kato Energy (WA) Pty Ltd, Kufpec (Perth) Pty Ltd, MEO International Pty Ltd, Mobil Australia Resources Company Pty Limited, Santos Offshore Pty Ltd, Shell Australia Pty Ltd and Western Gas (474 P) Pty Ltd on 18 December 2025

Dear Titleholder

We are writing to inform you that the formal consultation period regarding the Wandoo Facility Environment Plan and Well Construction Environment Plan concluded on 21 November 2025.

Vermilion is now preparing the EPs for submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

We've previously shared consultation information regarding these EPs with you on 22 October 2025 via email, including a consultation information sheet. We also followed up with you on 13 November 2025. See emails below.

Last Opportunity for Feedback

As part of the formal consultation process under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth), this is your **last opportunity to provide feedback** on these two proposed activities before the EPs are submitted for NOPSEMA assessment. We invite you to:

- Review the information previously provided (attached or access it again here:
- Please send any feedback by **24 December 2025** at abu.consultation@vermilionenergy.com or (08) 9217 5858.

- Feedback received by this date will be assessed and taken into account in finalising the EP, in accordance with the Environment Regulations.
- If you are unable to respond by this date but wish to provide input, please reply to this email and let us know.
- Feedback received after 24 December 2025 will not be included in the submission to NOPSEMA but will still be reviewed, considered, and addressed where appropriate as part of ongoing consultation.
- Your feedback and our response will be included in our EPs in accordance with the Environment Regulations. If any part of your feedback is commercially or culturally sensitive, please advise us when responding so that we can request it be treated as confidential by NOPSEMA upon submission.

We value your input and thank you for your time and continued engagement.

Yours sincerely

5.21. Email to Ngarluma Aboriginal Corporation (NAC) on 10 December 2025

Hi [redacted]

This is a follow up email regarding the consultation information sent to you on behalf of Ngarluma Aboriginal Corporation on 21 October, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Further information can be found in the previous sent email included below, which also included consultation information sheets attached.

I wanted to follow up on the phone call you had with Matt in November in which you confirmed Ngarluma may wish to be consulted for these two EPs.

Can you please advise the best format for consultation with Ngarluma for these EPs? Vermilion would be happy to arrange a second meeting with its representatives either in person or via MS Teams.

Acknowledging our previous and ongoing engagement, we would be happy to provide you with a summary of our understanding of your functions, interests and activities, to be documented in the EPs. Providing the option for NAC to review and build upon this with any feedback on the EPs.

Please let us know Ngarluma's preference for the consultation format and suitable dates for a meeting.

Building on our last meeting and noting Ngarluma's interests particularly in oil spill related matters, we wanted to advise that we can arrange for Vermilion's Oil Spill Response Coordinator to attend our next meeting to discuss this matter further and answer any questions.

I also thought to share a draft oil spill information sheet we have developed. We would be happy to further develop this with Ngarluma in our ongoing engagement.

Please be advised regarding consultation and feedback on the proposed activities:

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs. **The consultation period is open until 17 February 2025**.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

I look forward to hearing from you.

Kind regards,

Vermilion Oil & Gas Australia

E: abu.consultation@vermilionenergy.com

Level 5 | 30 The Esplanade | Perth WA 6000

5.22. Email to Murujuga Aboriginal Corporation (MAC) on 10 December 2025

Dear [redacted]

This is a follow up email regarding the consultation information sent to you both on behalf of Murujuga Aboriginal Corporation on 21 October, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan

- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Further information can be found in the previous sent email included below, which also included consultation information sheets attached.

Consultation with Murujuga Aboriginal Corporation

Noting your previous advice that a meeting is not considered necessary by MAC to discuss these matters, we just wanted to send a general follow up in case this has changed or if MAC wishes to provide any feedback on the EPs.

Alternatively, if MAC does not have an interest in the proposed activities or determines consultation is not required beyond receipt of the supplied information please confirm and let us know.

Please be advised regarding consultation and feedback on the proposed activities:

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs. **The consultation period is open until 17 February 2025**.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Thanks and Kind Regards,

Vermilion Oil & Gas Australia
E: abu.consultation@vermilionenergy.com
Level 5 | 30 The Esplanade | Perth WA 6000

5.23. Email to Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) on 10 December 2025

Dear NTGAC engagement team,

This is a follow up email regarding the consultation information sent to you on behalf of Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) and Yinggarda Aboriginal Corporation on 21 October, 2025.

As our previous email outlined, Vermilion Oil and Gas Australia Pty Ltd (Vermilion) is planning to submit five yearly revisions of the following Environment Plans (EPs):

- Wandoo Facility Environment Plan
- Well Construction Environment Plan.

These revised EPs, required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, will cover the next five years of continued operation of the Wandoo Production Facility and routine well construction activities, using a mobile offshore drilling unit.

Further information can be found in the previous sent email included below, which also included consultation information sheets attached.

Consultation with NTGAC

While we anticipate your feedback on the consultation protocol and Vermilion's sought amendments, we wanted to ask if and how NTGAC would like to be consulted for these EPs?

Vermilion would be happy to arrange a meeting with NTGAC's representatives if that is the preference, and so we wanted to ensure this can be arranged, hopefully before the consultation period closes.

Please advise NTGAC's preference for the consultation format and suitable dates for any meeting.

Feedback on the proposed activities

Vermilion is now consulting with relevant persons with functions, interests or activities that may be affected by the activities proposed under these EPs. **The consultation period is open until 17 February 2025**.

Following this, Vermilion intends to prepare and submit the EPs to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment. Feedback can also be provided after the consultation period closes, throughout the life of an Environment Plan, as part of ongoing consultation.

If you have feedback specific to the proposed activities described under the proposed EP, please contact us via email at abu.consultation@vermilionenergy.com or by phone at (08) 9217 5858.

Your feedback and our response will be included in our EPs which will be submitted to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Thanks and Kind Regards,

Vermilion Oil & Gas Australia

E: abu.consultation@vermilionenergy.com

Level 5 | 30 The Esplanade | Perth WA 6000

1.4.3. Summary of Ongoing Engagement

VOGA maintains ongoing consultation engagements with Traditional Custodians and their nominated representative corporations as part of our Ongoing Engagement Plan with First Nations Groups ("Ongoing Engagement Plan"). .A summary and current status of these engagements for relevant persons for this EP are in Table 8 below.

TABLE OF CONTENTS

Table 8: Ongoing Consultation Summary with Relevant First Nations Groups
Ngarluma Aboriginal Corporation (NAC) 2
Kariyarra Aboriginal Corporation (KAC) 5
Wanparta Aboriginal Corporation (WAC) 8
Murujuga Aboriginal Corporation (MAC) 10
Wirrawandi Aboriginal Corporation (WAC) 12
Buurabalayji Thalanyji Aboriginal Corporation (BTAC) 14
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC), Yinggarda Aboriginal Corporation 18

Table 8: Ongoing Consultation Summary with Relevant First Nations Groups

Ngarluma Aboriginal Corporation (NAC)
Background Ngarluma Aboriginal Corporation RNTBC (NAC) is established under the Native Title Act 1993 (Cth) by the Ngarluma people to represent the Ngarluma people and their communal interests including, among other things, management and protection of cultural values. NAC advised it is authorised to establish a formal consultation process for engagement with Oil and Gas Operators regarding Environmental Plans (EPs). NAC's approach includes: • The NAC Board has delegated a NAC working group of directors authorised to meet with Operators. • Maintains Consultant and Legal support to assist with Oil and Gas EP Consultations. • Establishes Consultation Protocols with Operators as a mutually effective way to facilitate good faith consultations.
Historical and Ongoing Engagement
VOGA has been in engagement with the Ngarluma Aboriginal Corporation (NAC) since October 2024. At this time, VOGA reached out to NAC to advise it believes NAC might be relevant for consultation on proposed activities in the Wandoo offshore oil field and requested advice from NAC on its preferred method of engagement. Vermilion has: • outlined the purpose of consultation and that it values the integration of cultural heritage of Native Title Holders and aims to integrate these values into their planning. • requested NAC's advice on preferred contact and consultation methods and if a formal consultation agreement is needed. • proposed a meeting to discuss the planned activities and provide information. • emphasised a co-design approach for the consultation process to ensure it meets NAC's needs. • provided information on confidentiality and the option to opt out of the consultation. In December 2024, VOGA engaged with NAC for consultation on its EPs. VOGA advised it recognised the importance of cultural heritage to Native Title Holders and was committed to integrating these values into environmental planning. • VOGA believed NAC was relevant for consultation and invited them to participate in the process. • VOGA proposed a meeting in February 2025 to discuss the proposed activities, seek input, and engage in consultation. • VOGA requested to begin the process for formal consultation agreements before coordinating meetings if it was required by NAC. • VOGA provided information on confidentiality and the ability to opt out of the consultation. Between January 2025 and July 2025, VOGA continued to follow up with NAC and provided detail about the consultation process for its EPs and finite time period to provide any feedback as the formal consultation period was coming to a close. In July 2025, NAC's Consultant and Legal Representation commenced engagement with Vermilion on behalf of NAC. NAC and Vermilion also co-developed a consultation protocol.

- NAC sent a standard consultation protocol that includes cost recovery provisions.
- VOGA provided proposed changes which were agreed by NAC.
- The Consultation Protocol is to be executed by both parties. It was agreed in principle and provided to NAC again in February 2026 to be reviewed and executed.

NAC has expressed specific interest in the Wandoo facility due to its proximity (approximately 20km) to islands within Ngarluma Sea Country. As Wandoo is a late-life oil operation, NAC has requested:

- A dedicated consultation session with the Operator
- More detailed information about potential risks to Ngarluma country
- Review of management plans, particularly those ensuring protection of sensitive Ngarluma values and sites
- Discussion about facility closure planning

A meeting was held in Perth between the NAC working group and representatives and Vermilion on 31 July 2025.

- At the meeting, the NAC Chair emphasised the importance of VOGA understanding their systems and cultural protocols to protect the coastline of its country.
- The coastline features numerous significant cultural sites for NAC including islands and Maitland River.
- During the meeting, NAC requested that they be notified in the event of an oil spill and that they sight the plan.
- During the meeting, NAC expressed an interest in oil spill preparedness and emergency response and asked a series of clarification questions.
- Following the meeting, Vermilion provided soft copies of maps and research requested by NAC at the meeting.

In October – December 2025 VOGA reached out regarding additional consultation opportunities at Wandoo. NAC advised that given the relative proximity of the Wandoo oil facility to Ngarluma sensitive coastal sites, and in particular the impact of oil spill risk to these sites, it has a very high level of interest for the group. NAC and Vermilion began making arrangements for a second consultation meeting in Karratha in early February 2026 to discuss the new consultation opportunities.

In December 2025, VOGA notified Ngarluma and remained in contact with them about an incident in the Wandoo offshore oil field.

A second meeting was held in Karratha between the NAC Directors and Vermilion on 3 February 2026. The meeting provided an overview of two EPs and progressed ongoing consultation topics following the first meeting, as part of the ongoing engagement plan.

During the meeting, NAC asked clarification questions about the EPs:

- Well Construction program: Interest in the existing wells, the need for new wells and oil spill coverage scenarios.
- NAC raised questions about the Wandoo facility operations, including the ageing facility, changes made to risk management following the recent incident, future infrastructure replacement priorities, impact on marine life around the facility and cyclone response procedures.
- NAC expressed a strong interest in oil spill preparedness, incident communications, response roles and cultural input during response training and incidents.
- NAC also identified turtles and dugongs as culturally significant species requiring consideration in oil spill response planning.
- NAC highlighted the importance of having a Ngarluma knowledge holder to provide cultural input during incidents.

- NAC noted that training to support response activities and participate in exercises would be beneficial.

Following the meeting, VOGA shared the summarised action list and next steps for the ongoing engagement, agreed at the meeting. This included:

- Vermilion to provide: DoT contacts for cultural heritage mapping resources
- Vermilion to provide: NAC with the SitRep from 11 December Incident
- NAC: Progress the cultural mapping workshop with Elders
- Vermilion to provide: Industry-standard Tier 1-3 spill classification framework to guide NAC's internal activation protocols (NAC seeks this for its internal workshop).
- NAC and Vermilion to develop jointly: Emergency response contact framework outlining contacts and agreed communication channels. NAC to advise contacts and communication channels.
- Vermilion: Consider incident response exercises to test the notification process
- Vermilion and NAC: Consider holding a joint workshop after NAC's cultural heritage mapping and priority protection planning is progressed.

On 16 February 2026, VOGA sent a final update on the December incident.

Following the meeting on the proposed EPs, a final opportunity to provide feedback email was sent to NAC on 18 February 2026.

Current Status and Forward Plan	**Description of Value/Interests**
• Vermilion to provide DoT contacts for cultural heritage mapping resources • Vermilion to provide NAC with the SitRep from 11 December Incident • Vermilion to provide industry-standard Tier 1-3 spill classification framework to guide NAC's internal activation protocols • NAC and Vermilion to develop an emergency response contact framework outlining contacts and agreed communication channels. • Vermilion and NAC to consider holding a joint workshop after NAC's cultural heritage mapping and priority protection planning is progressed. • VOGA and NAC will continue ongoing consultation on these topics.	• Value: Strong connection to tangible cultural heritage, system, and cultural protocols. Cultural connection to the World Heritage-listed Dampier Archipelago, including Whim Creek and Delambre Island. • Value: Importance of local wildlife, primarily on sea turtle nesting, marine migration, and culturally significant areas, including particular importance of the Maitland River. • Function: the Ngarluma people have responsibilities for sea country in the Dampier Marine Park. • Interest: The Sea Rangers program has been developed, and there is an interest in upskilling for a potential offshore impact event.

Kariyarra Aboriginal Corporation (KAC)

Background

Kariyarra Aboriginal Corporation (KAC) is established under the Native Title Act 1993 (Cth) by Kariyarra people to represent the Kariyarra people and represent their communal interests including the management and protection of cultural values.

KAC provided VOGA with a "Consultation Flow Chart" in October 2024, outlining its preferred process for proceeding with meaningful consultation. The consultation flow chat included requirements for how information should be presented, KAC's expectations and that funding was required for KAC's participation. KAC advised in May 2025 that it had resolved the Board will be the nominated representatives for all consultations with offshore oil and gas moving forward. KAC has advised that for level of consultation required, KAC would determine this based on the level of risk to their country. At a meeting it was agreed that consultation with significant material may usually require a face to face meeting, and in other cases may only require an email or teams meeting.

KAC is interested in working with operators to co-protect the coastline in the event of an oil spill; however, the Board was concerned about capacity issues for protecting the coastline. This is a cultural responsibility for KAC. KAC is developing a ranger program for Kariyarra Country.

Historical and Ongoing Engagement

VOGA has been in engagement with KAC since October 2024. At this time, VOGA reached out to NAC to advise it believes NAC might be relevant for consultation on proposed activities in the Wandoo offshore oil field and requested advice from NAC on its preferred method of engagement. VOGA has:

- outlined the purpose of consultation and that it values the integration of cultural heritage of Native Title Holders and aims to integrate these values into their planning.
- requested NAC's advice on preferred contact and consultation methods and if a formal consultation agreement is needed.
- proposed a meeting to discuss the planned activities and provide information.
- emphasised a co-design approach for the consultation process to ensure it meets NAC's needs.
- provided information on confidentiality and the option to opt out of the consultation.

In December 2024, VOGA thanks KAC for its guidance via the Consultation Flow Chart and engaged with KAC for consultation on EPs. VOGA advised it recognised the importance of cultural heritage to Native Title Holders and was committed to integrating these values into their environmental planning.

- VOGA believed KAC was relevant for consultation and invited them to participate in the process.
- VOGA proposed a meeting in February 2025 to discuss the proposed activities, seek input, and engage in consultation.
- VOGA requested formal consultation agreements before coordinating meetings.
- VOGA provided information on confidentiality and the ability to opt out of the consultation.

Between January 2024 and March 2025, VOGA followed up and made arrangements with KAC for a meeting with the CEO of KAC in March 2025. A meeting was held in March 2025. At the meeting KAC shared with VOGA some information about its cultural values and interests and a forward plan was discussed for consultation with KAC representatives. KAC confirmed that information would be provided to the Board and representatives.

In May 2025 KAC invited VOGA to attend a KAC Board meeting to present the materials and take questions from the Board of Directors. A meeting was held in June 2025 in South Hedland. KAC expressed interest in operational aspects of the Wandoo Facility, equipment and structural integrity of the facility, potential environmental impacts. As part of ongoing engagement expressed interest in emergency preparedness and response in the case of an oil spill and also for cyclone preparedness.

- KAC was interested in understanding VOGA's management plans and strategies for oil spill mitigation, preparedness and response.
- KAC shared ranger program development plans and identified possible joint opportunities for ongoing engagement including:
    - Training for coastal protection.
    - Knowledge transfer programs.
    - Response capacity building.
    - Cultural area prioritisation administrative considerations.
    - KAC noted resource burden.
    - Discussion of government role while maintaining Traditional Owner independence.
    - Need for coordinated stakeholder approach.
- Following the presentation and discussion, KAC made several requests which will be managed as part of ongoing consultation:
    - KAC requested development of community information package by early September.
    - KAC asked for educational materials to be prepared for their October AGM.
    - KAC expressed interest in developing their marine ranger program in collaboration with VOGA.
    - KAC requested detailed information about prevention and response strategies for community awareness.
    - VOGA agreed to provide leave-behind documentation on prevention and response strategies.

In July 2025, VOGA addressed actions from the meeting via email and requested any potential dates for the next ongoing engagement meeting in September, which was agreed by both parties at the June meeting:

- VOGA invited KAC to forward the details of who to contact in the case of an oil spill, including their contact details, so VOGA can include this in the notification section of this EP.
- VOGA highlighted that KAC had requested it develop an information pack by the start of September to which VOGA confirmed it would develop a leave behind document outlining the information on its operations, prevention and response measures. VOGA confirmed that it has taken action to develop the document and provide a draft to KAC ahead of the next meeting as part of ongoing engagement measures on oil spill, prevention and response.

In August 2025, VOGA reached out as part of ongoing engagement to arrange the next meeting which was indicated for September, and regarding additional consultation opportunities at Wandoo. KAC responded with potential dates and a meeting was arranged for October 2025.

In October 2025, a meeting was held between VOGA and KAC in South Hedland. Ahead of the meeting, VOGA provided a draft information sheet on oil spill mitigation, preparedness and response for co-development as part of ongoing engagement, as required by KAC.

VOGA also invited its oil spill response coordinator to the meeting to provide further information on areas of interest (i.e. oiled wildlife and response a the shoreline) and to gather targeted input for oil spill response strategies.

- VOGA explained their decision-making process during spill scenarios and how Traditional Owners' input helps identify priority areas for protection.
    - The practicalities of response in the area and existing response strategies were discussed between the parties.
    - KAC was still KAC concerned about providing its IP to protect its cultural places. There was discussion about how there is a fear for Traditional Owners sharing culturally sensitive information and the storage and use of that information.
    - KAC voiced significant concern about the decision-making matrix, expressing doubt that their cultural priorities would be adequately represented in government or industry response decisions.
- KAC indicated strong interest in developing their own response capabilities, particularly for shoreline protection, rather than relying on external decision-makers.
    - VOGA shared information about training opportunities through AMOSC and suggested KAC personnel could participate in Department of Transport training.
- KAC discussed their hesitation to share culturally sensitive information, noting past negative experiences with government agencies and expressing concern about intellectual property protection.
- KAC identified they need internal discussions to determine what information they're comfortable sharing, suggesting a three-tiered approach: general information for planning, some information for rangers, and sensitive information kept private due to Lore.
- Both parties agreed on the value of KAC building capacity through ranger programs and specialised training, with KAC noting they want to coordinate support from different operators without duplication.
- KAC committed to selecting appropriate personnel for training and developing their capabilities specifically for shoreline protection and cleanup.

Following the October 2025 meeting, VOGA provided further information for EP consultation.

In December 2025, VOGA notified Kariyarra and remained in contact with them about an incident in the Wandoo offshore oil field.

On 16 February 2026, VOGA sent a final update on the December incident.

Following the meeting on the proposed EPs, a final opportunity to provide feedback email was sent to KAC on 18 February 2026.

Current Status and Forward Plan	**Description of Value/Interests**

• KAC will be kept informed via touch points at project milestones (once a quarter). • KAC advised that if information sent is not too heavy from VOGA, in future, meetings and engagement can be managed as a Teams meeting moving forward • KAC to progress further on its sea ranger program and cultural mapping studies. • VOGA and KAC will continue ongoing consultation on input to priority protection planning and its sea ranger program.	• Value: On Country access – visiting offshore 'Kariyarra Island' at low tide. Has cultural significance to the Kariyarra people for intergenerational knowledge transfer and is a place of cultural importance. • Value: Cultural obligations to care for Kariyarra Country. • Feature: Tangible cultural heritage (sites) with engravings on the coast, considered fragile. • Interest: Co-protecting Kariyarra country in the event of a spill. A ranger program is being developed to address potential environmental impacts of offshore operations.

Wanparta Aboriginal Corporation (WAC)

Background

Wanparta Aboriginal Corporation (WAC) is established under the Native Title Act 1993 by the Ngarla people to represent the Ngarla people and represent their communal interests including the management and protection of cultural values.

WAC jointly manages the 80 Mile Beach Marine Park. VOGA has an existing relationship with WAC and is in contact regularly to provide information and receive feedback.

VOGA has finalised an agreement with WAC through a process that began in June 2025 when the initial agreement was received, culminated with the final version being sent to VOGA in November 2025 and concluded with formal signing on 3 December 2025.

Historical and Ongoing Engagement

VOGA has been in engagement with WAC since October 2024. At this time, VOGA reached out to WAC to advise it believes WAC might be relevant for consultation on proposed activities in the Wandoo offshore oil field and requested advice from WAC on its preferred method of engagement.

VOGA has:

- outlined the purpose of consultation and that it values the integration of cultural heritage of Native Title Holders and aims to integrate these values into their planning.
- requested WAC's advice on preferred contact and consultation methods and if a formal consultation agreement is needed.
- proposed a meeting to discuss the planned activities and provide information.
- emphasised a co-design approach for the consultation process to ensure it meets WAC's needs.
- provided information on confidentiality and the option to opt out of the consultation.

WAC called and emailed VOGA in October 2024 to confirm receipt of VOGA's email and to provide details regarding a consultation meeting which included

details relating to cost, location and next available meeting date.

In November 2024, WAC emailed VOGA to inform them that the proposed meeting date would need to be postponed and advised that the first available meeting date would be in 2025.

Between December 2024 and March 2025, VOGA followed up with WAC via email and phone to discuss meeting arrangements and request a formal consultation agreement, after which WAC confirmed a half-day meeting in Perth scheduled for Tuesday, May 6, 2025.

A meeting was held with WAC Directors and Ngarla Elders in May 2025 in Perth.

At the meeting on 6 May 2025, VOGA provided information on the Wandoo operations and EPs for consultation.
WAC shared their connection to marine environment and fauna, highlighting stingrays, sharks, octopus, fish and birds as significant species and requested that VOGA:

- Share UWA marine study results
- Offer training on VOGA's crude oil
- Include Ngarla/Wanparta in oil spill notifications
- Bring oil sample to next meeting
- Provide details on activity timing relative to whale/turtle migrations
- Share information about oiled wildlife containers
- Schedule follow-up meeting in six months, potentially in Port Hedland

A second meeting was held in Perth between the WAC Directors and Vermilion on 28 November 2025

- During the meeting, VOGA provided an update on actions taken since the previous meeting, including documenting WAC interests in the EPs and advancing a consultation agreement.
- VOGA provided information on oil spill preparedness, including shoreline and oiled wildlife response and how Traditional owner knowledge should inform decision-making pathways.
- VOGA explained both EPs and addressed WAC's questions, including how the wells produce, NOPSEMA's role, and the EMBA.
- WAC noted a cultural duty to protect Country, including coastline and important sites, and sought further detail on how oil pollution levels are assessed.
- WAC confirmed it will explore collaboration through the developing sea ranger program as an ongoing consultation item.
- WAC were concerned with how impacted soil, vegetation and fauna would be managed and disposed of in a spill scenario.
- WAC requested further involvement in oil spill preparedness and requested future attendance from DTMI and AMOSC representatives.

In December 2025, VOGA notified Wanparta and remained in contact with them about an incident in the Wandoo offshore oil field.

On 11 February, VOGA sent Wanparta a response to the list of actions from the meeting including providing additional attachments for review and further information, as part of the ongoing engagement. This was relating to:

- Share updated contact details of Department of Transport representative to Brooke O'Donnell
- Confirm where the disposal of waste materials (including vegetation, sand and animal matter) will be taken following an oil spill clean up
- Bring a Department of Transport and Australian Marine Oil Spill Centre (AMOSC) representative to the next meeting to meet Wanparta representatives
- Revert with further details on the Australian Energy Producers Consultation Working Group and the scope of what they do
- Discuss the shoreline oil spill plan and access to local knowledge
- Invite Matt Oliver and Chris Nutt to the next meeting for the discussion on shoreline oil spill planning to see how the Wanparta Rangers can be involved/trained on oil spill training (pending conversation with DoT
- Finalise Consultation Protocols and circulate to signatories
- Package together wildlife resources (clean-up training)

On 16 February 2026, VOGA sent a final update on the December incident.

Following the meeting on the proposed EPs, a final opportunity to provide feedback email was sent to WAC on 18 February 2026.

Current Status and Forward Plan	**Description of Value/Interests**
Actions completed following November 2025 meeting: • Provided contact details for the Department of Transport (DOT) representative. • Provided information regarding where waste materials would be disposed of following an oil spill. • Responded regarding scope of work for the Australian Energy Producers Consultation Working Group. Ongoing items: • Bringing a Department of Transport (DOT) representative and an Australian Marine Oil Spill Centre (AMOSC) representative to the next meeting. • Discussing the shoreline oil spill plan. • Discussion on shoreline oil spill planning and Wanparta Ranger involvement. VOGA and WAC will continue ongoing consultation. The next meeting date is yet to be confirmed.	• Interest: Particular interest in potential noise impacts on migrating whales and turtle migration patterns. • Value: Cultural connection to the marine environment and fauna, with Stingrays being a significant animal totem to the group. Additional importance is placed on sharks, octopus, fish and birds. • Feature: Cultural heritage (sites) with the presence of Songlines between three islands within the native title area, which were once accessible on foot. • Interest: Species of bird of high importance and was impacted on the islands due to a recent cyclone. • Value: Detailed lore, culture and customs with a strong spiritual connection to the sea country. Protection and management of marine life are significant to the group. • Interest: Co-protecting Wanparta Country in the event of a hydrocarbon spill. A ranger program is being developed and Wanparta is interested in capacity building for offshore operations and incident response.
Murujuga Aboriginal Corporation (MAC)	
Background	

Murujuga Aboriginal Corporation (MAC) holds the freehold title to Murujuga National Park which overlaps the EMBA. Murujuga Aboriginal Corporation is made up of members from five traditional custodial groups: the Ngarluma, Mardudhunera, Yaburara, Yindjibarndi, and Wong-Goo-Tt-Oo peoples. DBCA staff and Murujuga Aboriginal Corporation National Park Rangers work closely together to jointly manage Murujuga National Park.

Historical and Ongoing Engagement

VOGA commenced consultation with MAC in February 2025, sending consultation information for its EPs and advised it believes MAC might be relevant for consultation on proposed activities in the Wandoo offshore oil field and requested advice from MAC on its preferred method of engagement. VOGA has:

- outlined the purpose of consultation and that it values the integration of cultural heritage of Native Title Holders and aims to integrate these values into their planning.
- requested MAC's advice on preferred contact and consultation methods and if a formal consultation agreement is needed.
- proposed a meeting to discuss the planned activities and provide information.
- emphasised a co-design approach for the consultation process to ensure it meets MAC's needs.
- provided information on confidentiality and the option to opt out of the consultation.

After a number of attempts to connect, MAC contacted VOGA in July 2025 about the potential to meet. MAC emailed to confirm that upon their return from Paris following World Heritage Listing activities, they would be available on July 17-18, 2025. Following further coordination, a Microsoft Teams meeting was ultimately scheduled for July 23, 2025.

At the meeting, MAC suggested engagement with their Circle of Elders for heritage matters, with the CEO indicating the proposed activities were understood and considered reasonable, and both parties agreed to arrange a meeting at some point, with MAC requesting that VOGA consider traveling to Karratha for this purpose.

In July and October 2025, Vermilion commenced consultation with MAC on two new EPs.
MAC emailed VOGA in September to advise that it did not believe a meeting was necessary.
VOGA followed up again in December 2025 and February 2026.
After VOGA emailed in February advising of the last opportunity to provide feedback, MAC responded with a written communication to provide feedback on the EP.

- MAC noted whilst the protection of environmental values is a significant aspect of protecting cultural values, MAC believed the nature and threshold of impact must be assessed separately, noting a standard of protection that is considered to minimise impact to an acceptable level by scientific or environmental standards may still have consequences for Aboriginal people.
- MAC noted while a deviation of marine mammal migration paths had no significant environmental impact, any change to the sighting of whales would impact the seasonal calendar that marks the transition between seasons.
- Any development that could potentially affect the natural movement, migration or other behaviour of marine species may have an impact on the cultural interpretation of the seasonal landscape
- MAC noted that some parts of the Murujuga landscape and seascape within the EMBA have strict gender restrictions and cultural safety restrictions

○ MAC asked in the event of an environmental incident whereby any of the Murujuga World Heritage Property landscape or seascape falls within the possible impact zone, MAC be immediately contacted for consultation on management of cultural values VOGA provided a confirmation to MAC on 18 February that its feedback had been included in the EP.	
Current Status and Forward Plan	**Description of Value/Interests**
• MAC provided feedback in response to the 5-year revision Wandoo EPs, which may be considered in future consultation for Wandoo EPs. • Vermilion agreed (via email) to this request and asked MAC to confirm the preferred contact process and contact details for this type of notification. • Vermilion also stated that it remains committed to ongoing consultation with MAC. • VOGA and MAC will continue ongoing consultation.	• Feature: Recent World Heritage Listing of importance to the group with cultural heritage sites on the coastline. • Value: Whilst the protection of environmental values is a significant aspect of protecting cultural values, the nature and threshold of impact must be assessed separately. A standard of protection that is considered to minimise impact to an acceptable level by scientific or environmental standards may still have consequences for Aboriginal people. • Value: The deviation of marine mammal migration paths, for example may have no significant environmental impact, but any change to the sighting of whales at a particular point in the landscape would impact the seasonal calendar that marks the transition between seasons. • Value: Any development that could potentially affect the natural movement, migration and/or other behaviour of marine species may have an impact on the cultural interpretation of the seasonal landscape and seascape and associated cultural behaviours. • Value: Some parts of the Murujuga landscape and seascape within the EMBA have strict gender restrictions and cultural safety restrictions that would need to be considered in the event of managing any unexpected environmental incident. • Interest: In the event of an environmental incident whereby any of the Murujuga World Heritage Property landscape or seascape falls within the possible impact zone, Murujuga Aboriginal Corporation must be immediately contacted for consultation on management of cultural values.
Wirrawandi Aboriginal Corporation (WAC)	
Background Wirranwandi Aboriginal Corporation (WAC) is established under the Native Title Act 1993 (Cth) by the Mardudhunera and Yaburara people and represent their communal interests including the management and protection of cultural values.	

Historical and Ongoing Engagement
VOGA commenced consultation with WAC in October 2024 and advised it believes WAC might be relevant for consultation on proposed activities in the Wandoo offshore oil field and requested advice from WAC on its preferred method of engagement. VOGA has: • outlined the purpose of consultation and that it values the integration of cultural heritage of Native Title Holders and aims to integrate these values into their planning. • requested WAC's advice on preferred contact and consultation methods and if a formal consultation agreement is needed. • proposed a meeting to discuss the planned activities and provide information. • emphasised a co-design approach for the consultation process to ensure it meets WAC's needs. • provided information on confidentiality and the option to opt out of the consultation. WAC confirmed that they were a relevant organisation for consultation and expressed a preference for formal consultation under high-level agreement covering expectations, meetings, information sharing and costs. WAC indicated it would provide potential meeting dates when they were available. A meeting was never progressed on the Wandoo EPs during 2024/2025. In August and October 2025, VOGA commenced consultation with WAC again regarding new consultation opportunities for Wandoo EPs. WAC responded in November, advising the board had previously adopted the position that it is a relevant organisation for the EPs and asked about the timeframe for consultation so that WAC could identify a suitable time for VOGA to meet with the board. VOGA followed up in November and WAC responded advising the board was not in a position to meet until February 2026. WAC advised it would like to be notified if there were any oil spills or emergencies and VOGA confirmed it would do so. In December 2025, VOGA notified Wanparta and remained in contact with them about an incident in the Wandoo offshore oil field. In December 2025 VOGA responded to WAC seeking to find a time to meet with the Board. In January 2026 VOGA followed up to find a suitable time to meet with the Board. In February WAC responded and advised the board was unable to meet in February but would like to do so in March. On 16 February 2026, VOGA sent a final update on the December incident. No further contact has been made to this point.

Current Status and Forward Plan	**Description of Value/Interests**

• Vermilion will meet with WAC in March 2026 as part of the ongoing consultation process.	• Value: Moral, legal and cultural obligation to obtain, own and protect our cultural materials, including evidence trail of continued cultural connection to Country and the kinship of people (WAC, 2023).

Buurabalayji Thalanyji Aboriginal Corporation (BTAC)

Background

Buurabalyii Thalanyii Aboriginal Corporation (BTAC) is established under the Native Title Act 1993 by the Thalanyji people to represent the Thalanyji people and represent their communal interests including the management and protection of cultural values. BTAC also represents the registered native title claim of the Thalanyji/Nhuwala People.

BTAC is governed by its registered Rule Book under the *Corporations (Aboriginal and Torres Strait Islander) Act 2006* (Cth) and has obligations to act as the representative body for Thalanyji People in matters that may affect their native title rights, interests, cultural values and broader sea country connections.

Thalanyji Country encompasses the native title determination area, the registered claim area, and broader sea country. This includes offshore areas such as the Monte Bello Islands, Barrow Island, Thevenard Island, the Mackerel Islands, Direction Island, Airlie Island, Weld Island, North and South Islands, Ashburton Islands, Twin Island, proximate islands and atolls, and a general radius of 150 kilometres from the mouth of the Ashburton River. BTAC considers that Thalanyji interests extend beyond the strict boundaries of native title determinations and include cultural, spiritual and environmental connections to sea country.

BTAC considers itself a relevant organisation for consultation where proposed offshore oil and gas activities, including those authorised under EPs, intersect or may affect Thalanyji Country. The BTAC Board has resolved that BTAC should be consulted as a relevant stakeholder in relation to offshore activities that may pose risks to Thalanyji Country, including impacts to heritage, cultural values and environmental connections.

BTAC ordinarily undertakes consultation through its Energy Project Working Group (EPWG), an advisory body comprising BTAC members and Independent Directors, supported by staff and advisors. The EPWG does not have decision-making authority; formal decisions or agreements require ratification by the BTAC Board or its authorised delegate. Depending on the nature and materiality of the proposed activity, BTAC may require consultation to occur directly with the Board and/or broader common law holders.

Historical and Ongoing Engagement

VOGA commenced consultation with BTAC in October 2024 and advised it believes BTAC might be relevant for consultation on proposed activities in the Wandoo offshore oil field and requested advice from BTAC on its preferred method of engagement. VOGA has:

- outlined the purpose of consultation and that it values the integration of cultural heritage of Native Title Holders and aims to integrate these values into their planning.
- requested WAC's advice on preferred contact and consultation methods and if a formal consultation agreement is needed.
- proposed a meeting to discuss the planned activities and provide information.
- emphasised a co-design approach for the consultation process to ensure it meets WAC's needs.
- provided information on confidentiality and the option to opt out of the consultation.

In December 2024, BTAC confirmed that they were a relevant organisation and requested further consultation.

Between January and June 2025, VOGA followed up and endeavoured to make arrangements to arrange a meeting. A meeting did not progress in 2024/2025.

In August and October 2025, VOAG commenced consultation on two new EPs with BTAC and sought BTAC's advice if it would like to be engaged in the consultation.

VOGA followed up in November and BTAC advised that the board had previously adopted the position that it is a relevant organisation for the EP and advised that it will propose a meeting date in due course.

In December 2025, VOGA attempted to contact BTAC by phone and email about an incident in the Wandoo field.

VOGA followed up again in December 2025, and January 2026, and both parties exchanged emails during January to arrange a meeting in February 2026.

On 16 February 2026, VOGA met with the BTAC working group for an introductory and consultation meeting.

- BTAC wants earlier, "day one" involvement in spill planning, response, and ranger training to protect culturally significant coastal areas.
- BTAC is progressing cultural mapping and heritage work and asked VOGA about funding; VOGA prefers a coordinated, government-led, industry-wide approach.
- BTAC raised challenges engaging DoT/DTMI and noted AMOSC's willingness to support Traditional Owner ranger involvement.
- VOGA confirmed engagement with AMOSC and agreed to explore BTAC involvement in emergency response measures and exercises.
- VOGA briefed BTAC on the CALM Buoy incident, including actions taken and next steps.
- BTAC questioned ageing asset integrity; VOGA outlined maintenance cycles, upgrades, and corrosion-resistant materials.
- BTAC asked whether the incident affects VOGA's EP risk profile; VOGA said planning is based on worst-case scenarios that exceed the incident.

Following the discussion on 19 February 2026, VOGA sent an email to confirm the actions and notes for the ongoing engagement. This stated:

Actions

- VOGA to provide: Information about what it has recorded in the EP for BTAC and from its own Aboriginal Heritage studies.
- VOGA to provide: An overview of the prior contact attempts for the past EP to show what has been recorded for BTAC as a relevant person.
- BTAC to provide: Any feedback on VOGA's EPs in addition to the discussion.
- BTAC to advise: Priorities for the engagement and advice about how regular it would like to maintain ongoing engagement with Vermilion (i.e., quarterly updates?).
- VOGA and BTAC to continue ongoing engagement on incident response and TO involvement / input for priority protection.

Notes for our ongoing engagement

- BTAC suggested it could provide information for VOGA to review to understand what has been mapped in the Thalanyji area to inform planning.

BTAC advised that Thalanyji will not provide culturally sensitive information about its significant sites but would like it to be recorded in the EP to contact the organisation so it can coordinate with its community to activate in an incident and protect culturally significant areas.

- BTAC comments on the need for early engagement with Traditional Owners to understand access constraints in incident response (i.e., gender restricted and significant areas).
- BTAC would like the Thalanyji rangers to be involved in emergency response. BTAC was also interested in ranger training opportunities and emergency exercises.
- BTAC advised that it has been progressing heritage review of the coastline to map culturally significant priority areas for baseline information, with the intention of sharing outcomes with operators. BTAC asked if VOGA would fund this kind of activity. VOGA maintained that it was hoping for the program to be strategic at an industry level, led by government, and was not in a position to fund individual organisations.

On 19 February 2026, VOGA sent a last opportunity for feedback email to BTAC outlining the consultation summary and information recorded in the EP for BTAC to review and input.

BTAC replied on 20 February advising it has further comment and would aim to submit feedback by the close of business, else it requested an extension to 23 February 2026 due to a Board meeting.

On 23 February, VOGA emailed to acknowledge the earlier email from BTAC on 20 February and to ask if BTAC was aiming to provide feedback on the EP.

Current Status and Forward Plan	**Description of Value/Interests**
• A draft agreement has been forwarded by BTAC intended to formalise engagement with Vermilion. • Vermilion confirmed the letter was in review and information regarding BTAC's functions, interests and activities had been recorded in the EP.	• Value: Thalanyji people have cultural and spiritual connection to, and undertake activities in, land and waters that include but are not limited to the Thalanyji Native Title Determination and Thalanyji/Nhuwala claim and extend to offshore areas that include: Monte Bello Islands; Barrow Island; Thevenard Island, Mackeral Islands, Direction Island, Airlie Island, Weld Island, North and South Islands, Ashburton Islands, Twin Island, any island or atoll proximate to the above islands and a general radius of 150 km from the mouth of the Ashburton River. Together, this is Thalanyji Country. • Value: Thalanyji Country encompasses both the native title determination and claim and broader Sea Country. • Interest: Co-protecting Thalanyji Country in the event of an operational incident (i.e. hydrocarbon spill). BTAC seeks to be contacted so it can coordinate with its community to activate in an incident and protect culturally significant areas.

	• Interest: BTAC would like the Thalanyji rangers to be involved in emergency response. BTAC was also interested in ranger training opportunities and emergency exercises.

Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC), Yinggarda Aboriginal Corporation

Background

Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) is established under the Native Title Act 1993 by the Baiyungu people to represent the Baiyungu people and their communal interests including the management and protection of cultural values.

NTGAC is represented by Yamatji Marlpa Aboriginal Corporation (YMAC) in relation to native title and associated consultation matters. In accordance with the draft consultation agreement currently under discussion, VOGA engages with YMAC on behalf of NTGAC for the purposes of consultation regarding proposed offshore oil and gas activities and Environment Plans.

NTGAC has indicated a preference for a formal consultation agreement to be in place including agreed cost recovery arrangements. The establishment of this agreement remains an ongoing matter, with VOGA having provided comments on the draft agreement for consideration by the YMAC/NTGAC engagement team.

Historical and Ongoing Engagement

VOGA commenced consultation with NTGAC in October 2024 and advised it believes NTGAC might be relevant for consultation on proposed activities in the Wandoo offshore oil field and requested advice from NTGAC on its preferred method of engagement.

Between October 2024 and February 2025 VOGA followed up and made arrangements for a meeting on 17 February 2025.
VOGA provided consultation material again in February 2025 in advance of the meeting.

In March 2025, NTGAC provided a one-off contribution invoice for the meeting and expressed a preference for a consultation agreement.

VOGA followed up with NTGAC on the agreement in March 2025.

- NTGAC sent a draft agreement in June 2025 for VOGA to consider.
- VOGA responded with comments on the Consultation protocol in October 2025.

VOGA emailed NTGAC advising of its last opportunity to provide feedback on Wandoo EPs previously consulted in July 2025.

In August 2025, VOGA emailed about new upcoming EP consultation opportunities at Wandoo.

In October 2025, VOGA commenced consultation with NTGAC regarding two new EPs at Wandoo.

VOGA followed up on the Consultation protocol in November 2025.

VOGA followed up on the EP consultation in December 2025.

VOGA followed up again on the Consultation protocol in February 2026.

VOGA followed up on the EP consultation in February 2026, and sent another note in February 2026 to advise of its intent to submit the EP and last opportunity to provide feedback.

Current Status and Forward Plan	**Description of Value/Interests**
VOGA has not received a response from the NTGAC engagement team to the correspondence and follow up regarding engagement on the five-year revision Environment Plans or Consultation Protocol. VOGA will continue to follow up to progress the Consultation Protocol with NTGAC.	• Value: Whale sharks, Pygmy blue whales, humpback whales and any potential impact or risk to these species or their migratory habits. • Value: Cultural significance of water at Cape Range National Park. Increased tourism may have an impact on the landscape in Exmouth and Cape Range.

Appendix G Greenhouse Gas (GHG) Assessment Technical Note

Vermilion Oil & Gas Australia Pty Ltd

Wandoo Environment Plans 5 year updates

GHG Assessment Technical Note

ASSIGNMENT **P100564-S00**
DOCUMENT **P-100564-S00-A-REPT-001**

XODUS

Perth

Level 1
1 William Street . Perth
WA 6000 . Australia

T +61 (0)86555 5600
E Alison.Richmond@xodusgroup.com

www.xodusgroup.com

REVISIONS & APPROVALS

This document has been prepared by Xodus Group exclusively for the benefit and use of Vermilion Oil & Gas Australia Pty Ltd. Xodus Group expressly disclaims any and all liability to third parties (parties or persons other than Vermilion Oil & Gas Australia Pty Ltd) which may be based on this document.

The information contained in this document is strictly confidential and intended only for the use of Vermilion Oil & Gas Australia Pty Ltd. This document shall not be reproduced, distributed, quoted or made available – in whole or in part – to any third party other than for the purpose for which it was originally produced without the prior written consent of Xodus Group.

The authenticity, completeness and accuracy of any information provided to Xodus Group in relation to this document has not been independently verified. No representation or warranty express or implied, is or will be made in relation to, and no responsibility or liability will be accepted by Xodus Group as to or in relation to, the accuracy or completeness of this document. Xodus Group expressly disclaims any and all liability which may be based on such information, errors therein or omissions therefrom.

REV	DATE	DESCRIPTION	ISSUED	CHECKED	APPROVED	CLIENT
R02	04/02/2026	Issued for Review	FC	MH	MH, AR	
R01	17/12/2025	Issued for Review	FC	MH	MH, AR	

CONTENTS

1 INTRODUCTION 4

2 BOUNDARY OF ASSESSMENT 5

3 METHODOLOGY 7

4 RESULTS 9

5 REFERENCES 10

1 INTRODUCTION

Vermilion Oil & Gas Australia Pty Ltd (VOGA) periodically conducts well construction operations in Operational Area WA-14-L using a Mobile Offshore Drilling Unit (MODU). VOGA currently operates the Wandoo Field within WA-14-L and has performed numerous infield development drilling campaigns. The scope of the well construction operations planned for the Wandoo Field over the next five years includes:

- Well drilling activities:
  - Construction of new wells
  - Isolation of existing laterals and well bores
  - Well slot recoveries for drilling of new wells
  - Well interventions and side-tracks
- Temporary suspension
- Plug and abandonment (P&A)
- Blow out preventer (BOP) Installation and Testing.

This Greenhouse Gas (GHG) Emissions Technical Note has been prepared from information in the Environment Plan (EP), with the purpose of assessing all scopes of GHG emissions generated from the well construction activities.

2 BOUNDARY OF ASSESSMENT

The GHG emissions assessment includes all well construction activities planned for the Wandoo Field over the next five years. The Operational Area (OA) is the existing PSZ, defined as a 500 m radius around Wandoo A, Wandoo B and the CALM Buoy, or within 2 km radius of any potential relief well location during emergency conditions.

Well construction is performed in campaigns, which will involve up to 3 wells. Typical durations are between 30 and 50 days per well, giving a maximum campaign duration of 150 days. Up to 3 campaigns will be completed within the life of the EP.

The above durations do not include vessel transit times, potential delays caused by ocean conditions, weather downtime, standby and equipment failure or other delays relative to the petroleum activity plan, as these factors are difficult to predict or quantify. Should additional time be required to complete the exploration drilling, VOGA will assess the situation in accordance with the VOGA Management of Change (MoC) Procedure. For the GHG emissions assessment, a factor of 20% is used to account for the schedule and weather contingencies.

The GHGs included in the emissions assessment are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulphur hexafluoride (SF_6), and specified kinds of hydrofluorocarbons and perfluorocarbons, as defined in the National Greenhouse and Energy Reporting (NGER) Scheme (CER, 2025). No SF6 and specified kinds of hydrofluorocarbons and perfluorocarbons are expected to be generated from the activities.

The GHG emissions assessment covers all emission scopes—Scopes 1, 2 and 3, defined as:

- Scope 1: The GHG emissions released as a direct result of VOGA's well construction activities. These are emissions from sources owned or controlled by the company. In this case, scope 1 emissions will be zero as well testing (flaring) is not part of well construction activities and no deliberate releases from system upsets, accidents and process vents is expected. Fuel use by the MODU and vessels is not included in scope 1 emissions.
- Scope 2: The indirect GHG emissions from the generation of electricity, steam, heating and cooling purchased, not owned or controlled by the company. Scope 2 will be zero as there is no purchased electricity/energy involved.
- Scope 3: The indirect GHG emissions from VOGA's well construction activities, not including scope 2, not owned or controlled by the company, e.g., fuel use by MODU and vessels, purchased goods and services (support operations, materials).

The GHG emission sources and scope included in the assessment and relevant to the activities are summarised in Error! Reference source not found.. Emissions from fugitives and employee commuting (road travel and fixed wing aircraft) are assumed to be immaterial. There is no recovery of hydrocarbons associated with the exploration drilling activities, and as such no processing, transport, or third party end-use of hydrocarbons would occur as a result of the petroleum activity within scope of the EP and GHG emissions assessment.

Table 2-1: Emission sources and scopes included in the GHG assessment.

EMISSION SCOPE	EXPLORATION DRILLING ACTIVITIES
Scope 1	Immaterial fugitive emissions; no other sources
Scope 2	Not applicable
Scope 3	• Support operations, including vessels[1] and helicopters • Materials[2] • Waste generated[3]

[1] Include vessels and MODU activities within the OA only, as per the EP scope.
[2] Include embodied carbon for the major items only – cement, casing, and water-based mud (WBM).
[3] Include landfilling of the wellhead retrieved assuming immaterial emissions from waste discharge.

Activities excluded from the scope of the EP and GHG emissions assessment are:

- Well testing (flaring) is not part of well construction activities and is not within the scope of the EP.
- Vessel operations within Port Boundaries or State waters given they are managed under the *Shipping and Pilotage Act 1967* (WA) as administered by the relevant Port Authority under the *Port Authorities Act 1999* (WA)
- Vessel operations within Commonwealth waters outside of the Operational Areas/Petroleum Activity Area given they are managed under the *Navigation Act 2012* (Cth) as administered by the Australian Maritime Safety Authority (AMSA).

3 METHODOLOGY

Table 3-1: GHG emissions estimation methods.

CATEGORY	EMISSION SCOPE	EMISSION ESTIMATION METHOD
Support operations	Scope 3	• Vessel and helicopter fuel consumption data provided by VOGA if applicable, and from Xodus database for the unavailable data • For vessel operations: the emission factor of 'Diesel oil' taken from NGER Determination 2008, Division 4.1, Item 54 • For helicopter operations: the emission factor of 'kerosene for use as fuel in an aircraft' taken from NGER Determination 2008, Division 4.1, Item 56 • Emissions estimated using the equation: Emission factor (t CO_2-e/m^3) x Activity data (m^3).
Materials	Scope 3	• For cement: the emission factor of 'Cement – General (UK average)' taken from the Inventory of Carbon and Energy (ICE Database V4.1) • For casing: the emission factor of 'Steel, Stainless' taken from ICE Database V4.1 • Emissions estimated using the equation: Emission factor (t CO_2-e/t) x Activity data (t).
Waste	Scope 3	The emission factor of 'Commercial and industrial waste disposal' taken from the National Greenhouse Accounts Factors (DCCEEW, 2025) and emissions estimated with the equation: Emission factor (t CO_2-e/t) x Activity data (t).

The info and assumptions used in the GHG emissions assessment are listed below:

General

- The maximum duration of 450 days over the 5-year period is used to include all the relevant well construction activities.
- A contingency factor of 20% is included when estimating the wait-on-weather emissions from vessel and helicopter operations, to account for potential delays caused by ocean conditions, weather downtime, standby and equipment failure or other delays relative to the petroleum activity plan.
- Immaterial emissions from road commuting and aircraft travel.
- Assumed no deliberate releases from process upsets, accidents and process vents, and immaterial fugitive GHG emissions from dry bulk transfer and storage.
- Only water-based mud (WBM) will be used for the well.

Support operations

- Well construction assumed to take a maximum of 150 days, including contingencies.

- The MODU used will be a jack-up drilling rig with a fuel consumption of 12~18 m^3/d (18 m^3/d is used in GHG emissions assessment).
- Two AHTS support vessels are typically contracted for the duration of each campaign. A third vessel of similar or lesser specs may also be used during rig moves and to provide additional logistical support. In the GHG emissions assessment, total of 3 AHTS support vessels are included for each campaign. The AHTS has the following fuel consumptions:
  - Standby: 6 m^3/d
  - Economic speed: 16 m^3/d
  - Max speed: 50 m^3/d.
- As diesel fuel transfers from AHTS supply vessels to the MODU or the WNB platform will take place approx. once a week during the period spent on location, it is assumed that two AHTS support vessels will traverse the OA once a week.
- Helicopter operations will be based out of the Karratha Airport.
- Helicopter flights are expected to be approximately 6-7 times to the MODU each week during well construction activities (7 helicopter flights per week is used in the GHG emissions assessment).
- Helicopter refuelling on the MODU is not planned while it is jacked up on location in the OA.

Materials and waste

- Only cement, WBM and casing are considered in the GHG emissions assessment.
- The amounts of major materials required are assumed to be:
  Well drilling:
  - 45 m^3 of cement per well
  - 1750 m^3 of WBM per well
  - 350 t of casing and tubing per well.

  Well P&A:
  - 20 m^3 of cement per well
  - 50 m^3 of WBM per well.
- It is assumed the emissions from waste discharged at sea are immaterial and the retrieved wellheads (carbon steel) are assumed to weigh ~8 t/well which will be transported onshore for landfilling.

4 RESULTS

The total GHG emissions resulting from the activities are expected to be approximately 89.4 kt CO_2-e, consisting of entirely scope 3 emissions (Table 4-1).

The support operations (vessels and helicopter) are expected to generate approximately 86.1 kt CO_2-e, ~96.4% of the total GHG emissions. The vessel and helicopter emissions have included a contingency factor of 20% to account for the potential delays from the schedule and weather.

Table 4-1: Summary of the GHG emissions assessment results.

Emissions Source	Total (scope 3) Emissions	Percentage
	kt CO_2-e	%
Well construction activities	3.23	3.61
Materials[1]	3.20	3.58
Waste[2]	0.03	0.03
Support operations	86.14	96.39
Vessels[3]	85.57	95.75
Helicopter[4]	0.57	0.64
Total GHG Emissions (kt CO_2-e)	89.37	100.00

[1] Major materials required for well construction activities for 3 wells in total: 195 m^3 cement, 1050 t casing and tubing, and 5,400 m^3 WBM in total.

[2] Weight of wellhead retrieved for landfill:24 tonnes in total.

[3] Only MODU and vessel operations within OA considered; Jack-up MODU used for well drilling and P&A with 3 AHTS vessels.

[4] Helicopter flights 7 times a week (max) during drilling and P&A activities, departing from Karratha Airport.

[5] A contingency factor of 20% applied for vessel and helicopter operations to account for potential delays.

5 REFERENCES

CER, 2025, Emissions and energy types, Clean Energy Regulator, Australian Government, https://cer.gov.au/schemes/national-greenhouse-and-energy-reporting-scheme/about-emissions-and-energy-data/emissions-and-energy-types (Assessed on 14 December 2025).

DCCEEW, 2025. National Greenhouse Accounts Factors, Department of Climate Change, Energy, the Environment and Water, Australian Government, https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-accounts-factors (Assessed on 14 December 2025).