ATTENTION:

For **First Strike (initial 48hrs) Response Actions** see:

- Section 2.4 – 'Regulatory Notifications'
- Section 2.5 - 'Action Sequence Checklists'

BMG Closure Project (Phase 1)
Oil Pollution Emergency Plan

VIC/RL13

Decommissioning | BMG | OPEP

Document Control

Approvals	Name	Role	Signature	Document Control
Document Originator:	J Melvin	Environmental Consultants	Joe Morris Digitally signed by Joe Morris Date: 2022.03.10 14:43:54 +08'00'	**Document Number:** BMG-ER-EMP-0004
Document Reviewer:	J Morris	Environmental Advisor	Joe Morris Digitally signed by Joe Morris Date: 2022.03.10 14:44:19 +08'00'	**Revision Number:** 1
Document Approver:	Mike Jacobsen	GM Projects and Operations	Mike Jacobsen Digitally signed by Mike Jacobsen Date: 2022.03.10 15:16:44 +08'00'	**Revision Date:** 10 March 2022

Revision History

Revision	Date	Originator	Revision Summary
A	19 Feb 21	Xodus	Draft for Cooper Review
B	Mar 21	Xodus	Draft for AMOSC input
C	1 Jun 21	Xodus	Final draft for State Government Review
D	28 Sept 21	Xodus	Address State review comments
E	19 Oct 21	Xodus	Final for approval
0	Nov 21	Xodus	For Issue
1	10 March 22	JJM	For Issue. Updated in response to regulator OMR comments on EP and OPEP.

Approvals

This Oil Pollution Emergency Plan has been approved by Cooper Energy for the BMG Closure Project (Phase 1) Operations.

Name	Signature	Date
Mike Jacobsen **General Manager** **Projects and Operations** **Cooper Energy Limited**		

Health, Safety and Environment Policy

Cooper Energy | HSE | Policy

Our Commitment

Care is a core value of Cooper Energy.

Cooper Energy is committed to taking all reasonably practicable steps to protect the health and safety of our workers, contractors, partners, and communities in the areas in which we operate. In addition, we will ensure our business is conducted in an environmentally responsible manner.

Our Actions

Wherever we operate we will develop, implement, and maintain HSE protocols that are consistent with recognised standards and practices, which will enable us to:

- Proactively assess and control our health and safety risks and environmental aspects and impacts
- Provide the HSE systems and resources to adequately support organisation in meeting its objectives
- Continually improve HSE systems through periodic consultation and review with the workforce
- Ensure all employees and contractors are appropriately trained and competent and suitably supervised to ensure works are undertaken in a safe and environmentally responsible manner
- Monitor HSE performance through the identification and communication to the workforce of clear, effective HSE objectives and targets
- Encourage participation in promoting improvements in safety, health and environmental practices and supporting a positive and caring culture in all areas of Cooper Energy's business
- Identify and comply with relevant HSE legislation and regulations and other requirements to which we subscribe and incorporating any changes into our HSE systems.

Governance

The HSEC Committee has oversight of this policy. The Managing Director is accountable for communicating this Policy and for ensuring compliance with its undertakings. All Executive Leadership Team members and Managers shall ensure the effective implementation, management, and monitoring of the HSEC Management System and its subsequent outcomes. All Staff are responsible for compliance with our policy, standards, and procedures. This policy will be reviewed at appropriate intervals and revised, as necessary.

David Maxwell

Managing Director

Role	Name	Signature	Document Properties
Document Author:	Ben Edwards	Ben Edwards	Doc No. CMS-HS-POL-0001
CEMS Review:	Sean Brooks		Rev: 5
Document Owner:	Iain MacDougall	Iain MacDougall Digitally signed by Iain MacDougall Date: 2021.12.20 10:30:31 +10'30'	Rev Date: 22 Sept 2021
Document Approver:	David Maxwell		

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Glossary

Acronym	Definition
ADIOS	Automated Data Inquiry for Oil Spills
AGL	Above Ground Level
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
API	American Petroleum Institute
ASAP	As soon as possible
ASX	Australian Securities Exchange
ATBA	Area to be Avoided
B2	Basker-2 Well
B3	Basker-3 Well
B4	Basker-4 Well
B5	Basker-5 Well
B6	Basker-6 ST-1 Well
B7	Basker-7 Well
BAM	Basker-A Manifold
BAOAC	Bonn Agreement Oil Appearance Code
Bbl	Barrels
BBMT	Barry Beach Marine Terminal

Acronym	Definition
BMG	Basker Manta Gummy
BOM	Bureau of Meteorology
BTEX	Benzene, Toluene, Ethyl-benzene, Xylene
CA	Control Agency
CFSR	Climate Forecast System Reanalysis
CMT	Crisis Management Team
COP	Common Operating Picture
Cwth	Commonwealth
DAWE	Department of Agriculture, Water and Environment (DAWE) (responsible for Environment portfolio (of DOEE) effective 1/02/2020)
DJPR	Department of Jobs, Precincts and Regions (formerly Department of Economic Development, Jobs, Transport and Resources [DEDJTR]) (Victoria)
DJPR ERR	Department of Jobs, Precincts and Regions - Earth Resources Regulation (Victoria)
DELWP	Department of Environment, Land Water and Planning (Victoria)
DoT	Department of Transport (Victoria)
DSV	Dive Support Vessel
EMBA	Environment that may be affected
EMLO(s)	Emergency Management Liaison Officer(s)
EP	Environment Plan
EPA	Environment Protection Authority
EPBC	Environment Protection and Biodiversity Conservation
EPO	Environmental Performance Outcome
ERP	Emergency Response Plan
ERT	Emergency Response Team
ESI	Environmental Sensitivity Index
FSP	First Strike Plan
GDA	Geocentric Datum of Australia
HAZMAT	Hazardous Materials
Hrs	Hours
HSE	Health Safety & Environment
HSEC	Health Safety Environment & Community
IAP	Incident Action Plan
IC	Incident Controller

Acronym	Definition
ICC	Incident Control Centre
IMP	Incident Management Plan
IMT	Incident Management Team
IPIECA	International Petroleum Industry Environmental Conservation Association
ISV	Infield Support Vessel
JHA	Job Hazard Analysis
km	Kilometre
LOC	Loss of containment
LOWC	Loss of well control
M2A	Manta-2A Well
m^3	Cubic metres
MDO	Marine Diesel Oil
MGO	Marine Gas Oil
Min	Minute
mm	Millimetre
MODU	Mobile Offshore Drilling Unit
MOU	Mobile Offshore Unit
N/A	Not Applicable
NATA	National Association of Testing Authorities
NATPLAN	National Plan for Maritime Environmental Emergencies
NEBA	Net Environmental Benefit Assessment
NCEP	National Centre for Environmental Prediction
Nm	Nautical miles
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOPTA	National Offshore Petroleum Titles Authority
NP	National Park
NRT	National Response Team
NSR	Non search and rescue
NSW	New South Wales
OM	Operational Monitoring
OPEP	Oil Pollution Emergency Plan
OPGGS	Offshore Petroleum and Greenhouse Gas Storage
OSMP	Operational and Scientific Monitoring Plan
OSRA	Oil Spill Response Atlas
OSTM	Oil Spill Trajectory Modelling
OWR	Oiled Wildlife Response

Acronym	Definition
PAH	Poly-aromatic hydrocarbons
POLREP	Marine Pollution Report
PPE	Personal Protective Equipment
QLD	Queensland
RCC	Rescue Coordination Centre
ROV	Remotely Operated Vehicle
SCAT	Shoreline Clean-up Assessment Technique
SCERP	Source Control Emergency Plan (replaces VSCP)
SCT	Source Control Team
SEC	Site Emergency Controller
SITREP	Situation Report
SMEAC	Situation, Mission, Execution, Administration and (Logistics), Command (and Communication)
SMPEP	Shipboard Marine Pollution Emergency Plan
Tas	Tasmania
TRP	Tactical Response Plan
Vic	Victoria
VMRA	Victorian Marine Pollution Risk Assessment
VSCP	Victoria Source Control Plan

References

Document code	Title
COE-ER-ERP-0001	Cooper Energy Incident Management Plan
COE-ER-ERP-0003	Cooper Energy Crisis Management Plan
-	Campaign Source Control Emergency Response Plan
VIC-ER-EMP-0002	Offshore Victoria Operational & Scientific Monitoring Plan
BMG-DC-EMP-0001	BMG Closure Project (Phase 1) Environment Plan
BMG-EN-TFN-0003	BMG Well Abandonments - Spill Modelling Approach
BMG-RE-TFN-0002	BMG Worst Case Discharge Analysis
MAQ0951J	BMG Well Abandonment Oil Spill Modelling
MAQ0951J	BMG Well Abandonment Oil Spill Modelling Dispersant Study
BMG-EN-REP-0023	BMG P&A Oil Spill Response Resourcing Assessment
COE-EN-EMP-0001	Description of the Environment
External Documents / Resources	
Australian Marine Oil Spill Plan (AMOS Plan), viewable from AMOSC webpage or Google search 'AMOS Plan'	
AMSA. 2017. NP-GUI-015: National Plan management and disposal of oil spill debris. Available at: https://www.amsa.gov.au/marine-environment/national-plan-maritime-environmental-emergencies/np-gui-015-national-plan [Accessed 16/02/2021]	
BMT WBM. 2017. New South Wales Marine Estate Threat and Risk Assessment Report Final Report. Available at: https://www.marine.nsw.gov.au/__data/assets/pdf_file/0010/736921/NSW-Marine-Estate-Threat-and-Risk-Assessment-Final-Report.pdf [Accessed 16/02/2021]	
CoastKit. A tool developed by DELWP to provide an online data repository for the community to explore and use Victoria's marine and coastal information. https://www.marineandcoasts.vic.gov.au/coastal-programs/coastkit	
EstuaryWatch. A citizen science program that supports the monitoring and recording of estuary health. http://www.estuarywatch.org.au/	
LISTmap. Hosted by the Tasmanian government. Listmap is publicly accessible, searchable geospatial tool providing access to a wide range of information including oil spill sensitivity layers, shoreline types, species presence and seasonal sensitivity. https://maps.thelist.tas.gov.au/listmap/app/list/map	
NATPLAN viewable from https://www.amsa.gov.au/marine-environment/national-plan-maritime-environmental-emergencies	
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Tasmania Marine Oil and Chemical Spill Contingency Plan, available from **https://epa.tas.gov.au/Documents/TasPlan.pdf**	
Victorian Maritime Emergencies (non-search and rescue) Plan available from: https://www.emv.vic.gov.au/responsibilities/state-emergency-plans	
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1 Scope of OPEP

This Oil Pollution Emergency Plan (OPEP) has been prepared to support the Cooper Energy closure project (Phase 1) activities at the Basker Manta Gummy (BMG) fields, in offshore Victorian waters (Figure 1-1).

This OPEP has been developed to address the oil spill risk associated with the BMG well P&A scope described within the BMG Closure Project (Phase 1) Environment Plan (EP) (BMG-DC-EMP-0001). The EP provides further detail on the existing environment, environmental impacts, risk management, performance standards, reporting compliance, and the decision processes that will apply if a spill occurs.

The objectives of this OPEP are to ensure:

- Cooper Energy has timely access to appropriately trained people and resources in order to effectively respond and manage an oil spill;
- There is timely implementation of the pre-determined response strategies as outlined in this OPEP;
- The processes and response structures used by Cooper Energy are consistent with those used in applicable plans such as the National Plan for Maritime Environmental Emergencies ('NATPLAN'), the State Maritime Environmental Emergencies (e.g. 'Victorian Maritime Emergencies NSR Plan') and the Australian Industry Cooperative Oil Spill Arrangements (AMOS Plan); and
- Effective integration and use of industry/government response efforts and resources.

This OPEP has been prepared in accordance with Regulation 14(8) (8AA) (8A) of the OPGGS(E) Regulations.

1.1 BMG Closure Project (Phase 1) Activities

The primary objective of the Activity is to safely install permanent barriers in all seven wells, sealing off subsurface oil reservoirs. The project will also utilise campaign vessels to remove structures and well equipment, depending on progress with the primary objective. For a description of the project scope, refer to the BMG Closure Project (Phase 1) Environment Plan.

The BMG facility is located entirely within licence area VIC/RL13 in Commonwealth waters (Figure 1-1). The facility lies in water depths circa 135 m – 270 m, approximately 50 km from the Victorian coastline.

BMG lies to the east of the Area to be Avoided (ATBA); an exclusion zone around a large proportion of the existing oil and gas facilities within the Gippsland region, detailed in schedule 2 to the OPGGS Act.

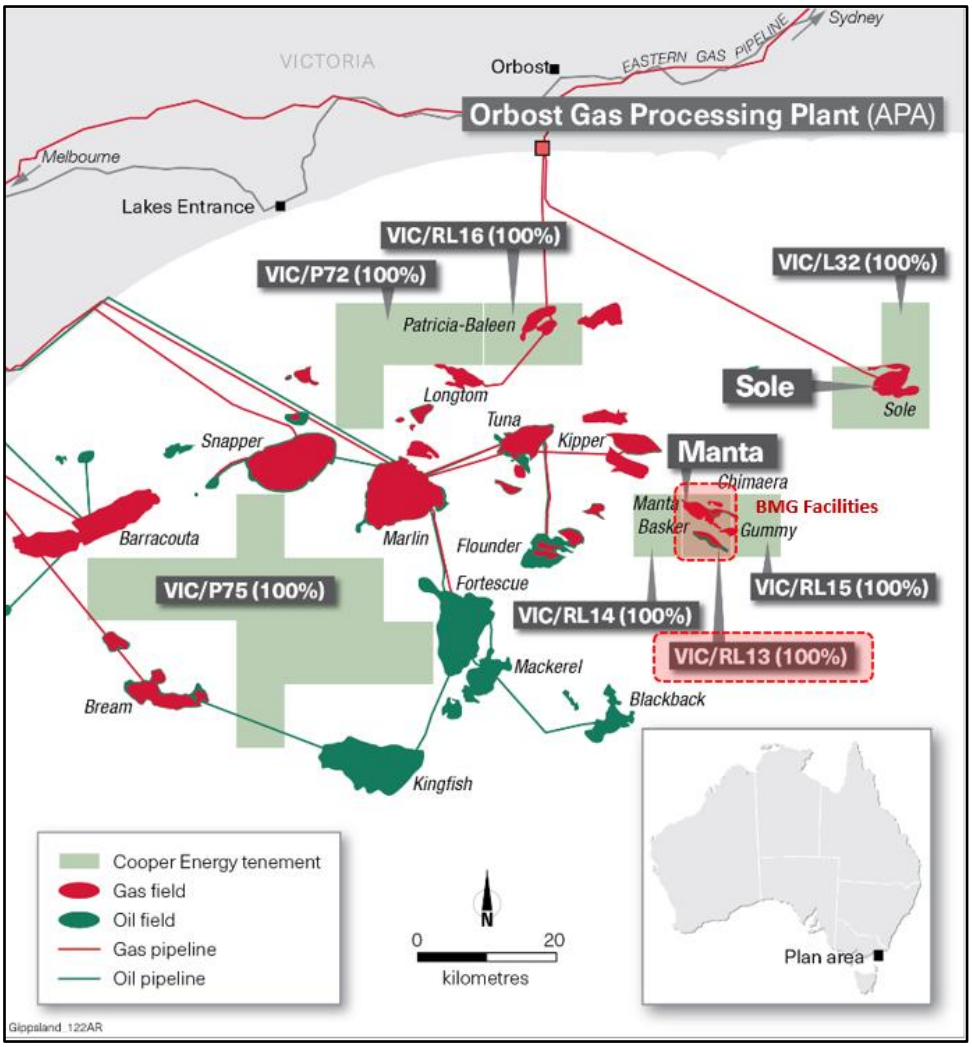


Figure 1-1: Location of the BMG Closure Project (Phase 1) Activities

Table 1-1 and Figure 1-2 provide location details for the main drill centre (Basker-A) and satellite wells (Basker-6 and Manta-2A) at BMG.

Refer to EP Section 3 for detailed Activity description.

Table 1-1: BMG Subsea infrastructure Key Location Coordinates (GDA94)

Locations	Longitude (E)	Latitude (S)	Approx. Water Depth (m)
Basker-6 ST-1 Well (B6)	148° 43' 54.76"	38° 19' 17.47"	263
Manta-2A Well (M2A)	148º 42' 58.03"	38º 16' 39.41"	135
Basker-A Drill Centre			
– Basker-A Manifold (BAM)	148° 42' 24.32"	38° 17' 58.74"	155
– Basker-2 Well (B2)	148° 42' 24.72"	38° 17' 58.51"	155
– Basker-3 Well (B3)	148° 42' 24.94"	38° 17' 58.97"	155
– Basker-4 Well (B4)	148° 42' 23.58"	38° 17' 58.86"	155
– Basker-5 Well (B5)	148° 42' 23.80"	38° 17' 59.31"	155
– Basker-7 Well (B7)	148° 42' 22.31"	38° 17' 58.79"	155

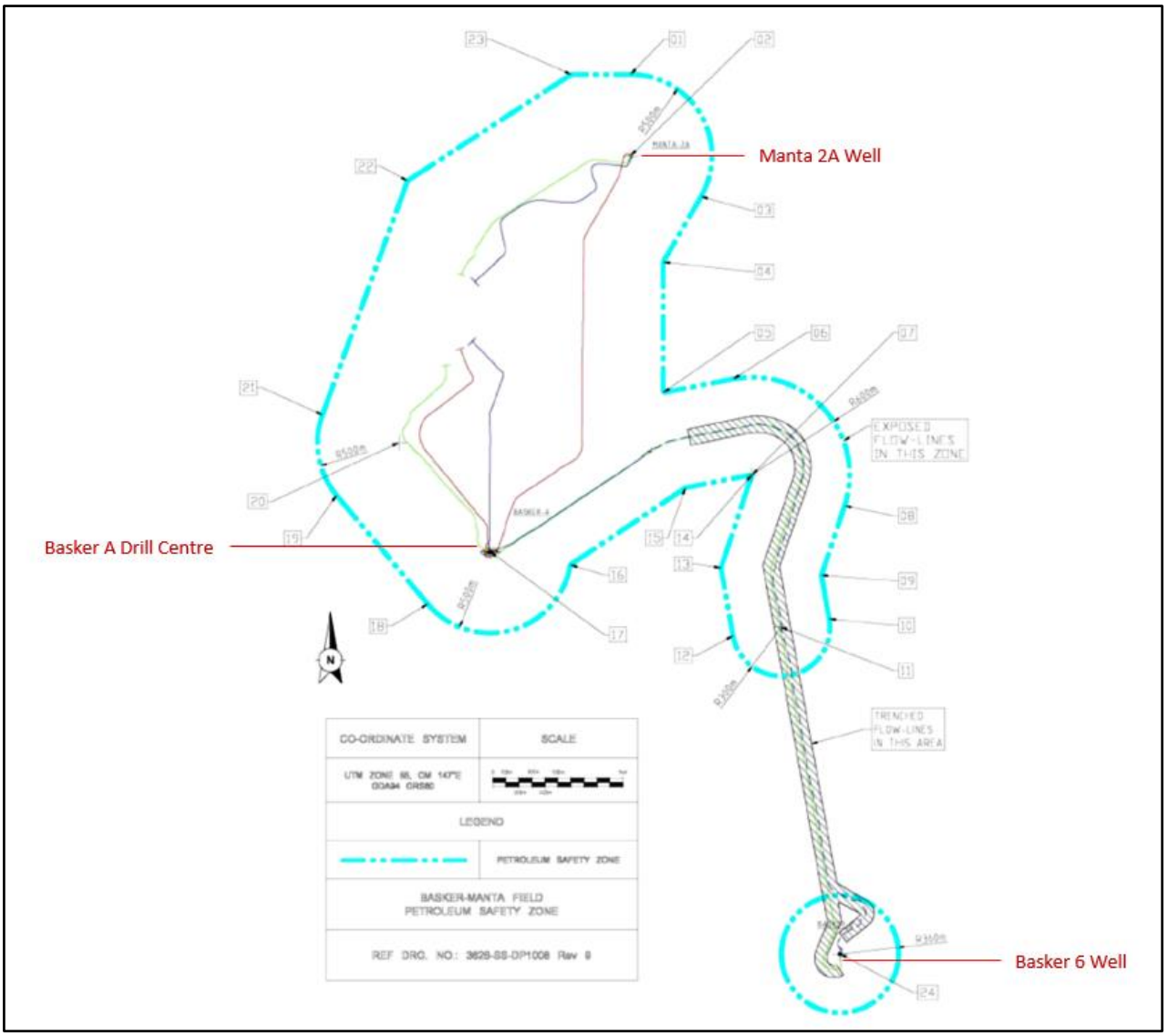


Figure 1-2: Current BMG Field Layout, including Gazetted Petroleum Safety Zone (PSZ)

1.2 Spill Scenarios

The spill scenarios for the BMG Closure Project (Phase 1) activities are identified in Section 6.7 of the BMG Closure Project (Phase 1) EP (BMG-DC-EMP-0001) and described in Table 1-2 below.

Table 1-2: Spill scenarios for this OPEP

Spill Risk	Spill Level**	Fluid Type	Release Depth	Worst-Case Volume
Minor spill LOC	Level 1	MDO, hydraulic oil	Surface	Up to~1 m^3
Bunkering LOC	Level 1	MDO, hydraulic oil	Surface	Up to ~ 50 m^3
LOC – Subsea Infrastructure	Level 1	Inhibited seawater / diesel / light crude	Subsea	Up to ~1 m^3
Vessel Collision LOC	Level 1 or 2	MDO (Group II)*	Surface	500 m^3

Spill Risk	Spill Level**	Fluid Type	Release Depth	Worst-Case Volume
Subsea LOWC	Level 2 or 3	Light Crude	Subsea	77,339 m^3

* MDO adopted in modelling to account for worst case spill scenario. Note however vessel contracts are not yet in place thus vessel may utilise MGO.

** Refer to Table 2-1 for spill level explanation as per NATPLAN Guidance.

1.3 OPEP Exclusions

This OPEP does not include the following:

- Spills from vessels or activities not part of the petroleum activity. For example, vessels transiting to or from the Operational Area. These vessels are deemed to be operating under the Commonwealth Navigation Act 2012 and not performing a petroleum activity.
- All activities outside the petroleum activities defined in Section 1.1 of this OPEP, and the BMG Closure Project (Phase 1) Environment Plan.
- Response during the non-production phase; this is addressed within the existing Gippsland Operations EP and Offshore Victoria OPEP (VIC-ER-EMP-0001).

1.4 Supporting Documents

Cooper Energy manages emergencies from the offshore operations and activities in accordance with the Cooper Energy Incident Management Plan (COE-ER-ERP-0001) (IMP). The purpose of the IMP is to provide the Cooper Energy Incident Management Team (IMT) with the necessary information to respond to an emergency affecting operations or business interruptions. Specifically, this plan:

- Describes the Emergency Management Process;
- Details the response process; and
- Lists the roles and responsibilities for the IMT members.

This OPEP is integrated with the IMP and related documentation and supports the EP (BMG-DC-EMP-0001). It should be read in conjunction with the supporting documents:

- Cooper Energy Incident Management Plan (IMP) (COE-ER-ERP-0001)
- Cooper Energy Crisis Management Plan (CMP) (COE-ER-ERP-0003)
- Offshore Victoria Source Control Plan (VSCP) (VIC-DC-ERP-0001)
- Cooper Energy Source Control Emergency Response Plan
- Offshore Victoria Operational and Scientific Monitoring Plan (OSMP) (VIC-ER-EMP-0002)
- Tactical Response Plans (site specific)
- Vessel Shipboard Marine Pollution Emergency Plan (SMPEP) and Emergency Response Plans (ERPs) for vessels undertaking activities on Cooper Energy's behalf.

Additionally, this OPEP has been developed to integrate with NATPLAN, Victorian Maritime Emergencies NSR Plan, NSW State Waters Marine Oil and Chemical Spill Contingency Plan, Tasmanian Marine Oil Spill Plan (TasPlan) and AMOS Plan.

Figure 1-3 describes the relationship between this plan and other related documentation.

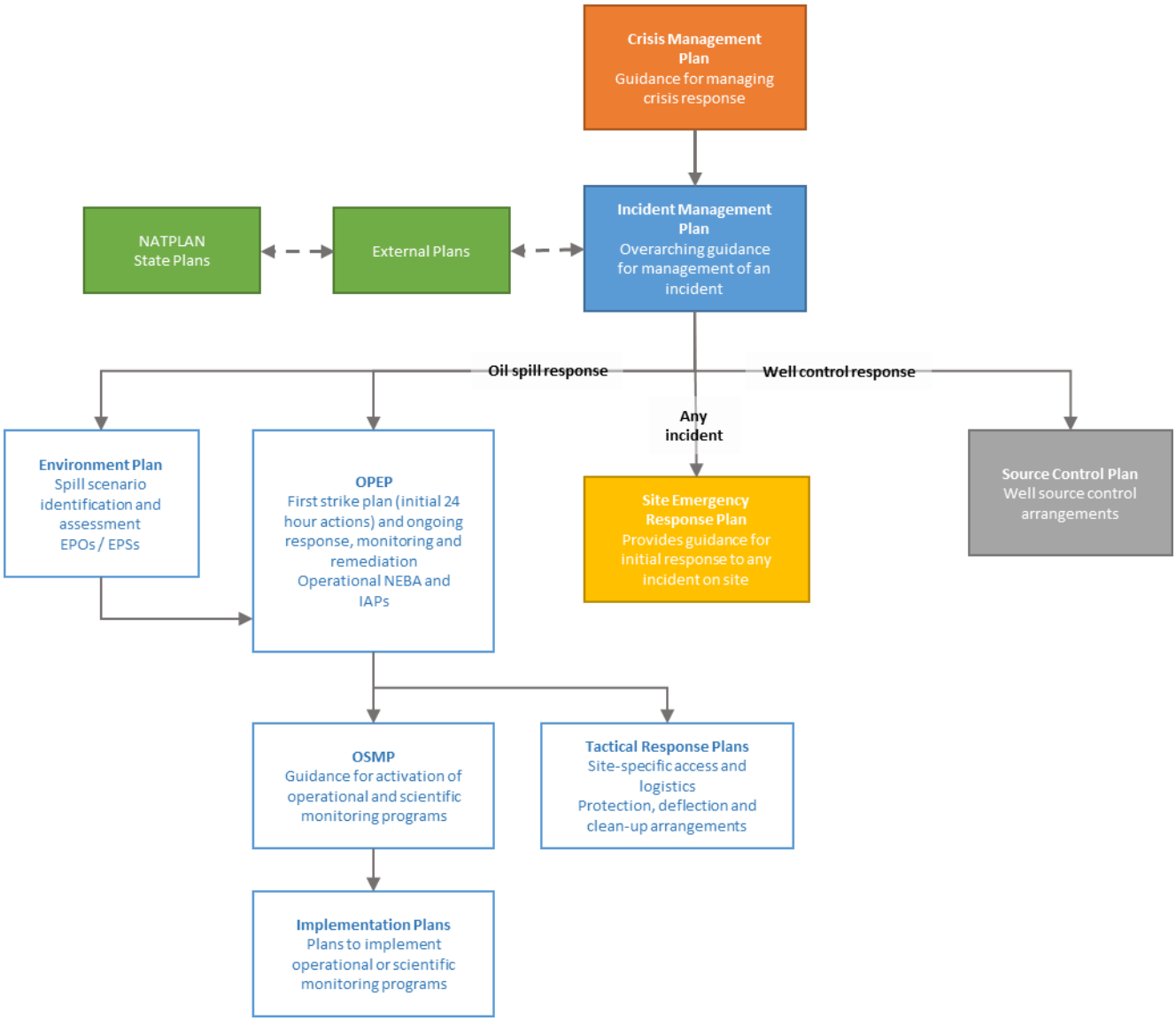


Figure 1-3: Relationship between Cooper Energy emergency and documents supporting oil spill response.

1.5 Review of OPEP

1.5.1 Internal OPEP Reviews

The OPEP should be reviewed internally at least annually, in addition to the following circumstances:

1. Following any exercises or other means of testing of the arrangements, as required, to capture learnings.
2. Following activation, to capture lessons learned.

Changes to the OPEP or the OSMP resulting from exercise outcomes, altered contractual arrangements, corrective actions, routine information updates (i.e. contact details change), or other items will be managed per the MOC process.

1.5.2 State Government OPEP Review Arrangements

From the Victorian Joint Industry and State Oil Pollution Responses Guidance Note 2019, and as advised by Victoria DoT July 2021:

It is recognised that after an OPEP is accepted, titleholders may incorporate additional assets and update its OPEP during the 5-year lifespan before re-submission to NOPSEMA. In such circumstances, timely notification and consultation is required should these asset(s) **alter or increase the likelihood or threat of pollution, and/or pose a significant difference to the spill scenario modelled in the original OPEP** such as including a different product.

Any **internal/organisational alterations to titleholder response arrangements detailed in their OPEPs such as emergency management structure amendments, do not necessitate further consultation**. However, to promote an ongoing partnership and enhance collaborative engagement, amendments would be useful to share electronically between titleholder and DoT.

This process remains relevant to NSW and Tasmania marine pollution teams also, unless otherwise advised by those teams.

1.6 Training and Testing Arrangements

In accordance with Regulation 14 (8A) & (8C) of the OPGGS(E) Regulations and HSEC MS Standard 16: Crisis and Emergency Preparedness and Response, the response arrangements will be tested:

- When they are introduced;
- When they are significantly amended;
- Not later than 12 months after the most recent test; and
- If a new location for the activity is added to the EP after the response arrangements have been tested, and before the next test is conducted – testing the response arrangement in relation to the new location as soon as practicable after it is added to the plan.

Training and Testing arrangements appropriate to the nature and scale of Cooper Energy's activities are included in Table 1-4. The arrangements detail those actions which will be undertaken by Cooper Energy and response partners to maintain readiness for the activity response scenarios. Position specific training and competency provisions are detailed in Section 3.2. Response organisations such as AMOSC, State and National response teams also run testing and exercise regimes to maintain preparedness for credible spill events across a broader portfolio of areas and activities; these are outlined below but do not form part of Cooper Energy's specific training and exercise plans for the activity.

The effectiveness of Cooper Energy's training and testing will be measured by the performance standards detailed in Table 1-3 for each exercise type. At the completion of the exercise, the observers (where relevant to the test) and participants will hold a debrief session during which the exercise is reviewed, and lessons learned and areas for improvement are identified. All exercises will be documented, and corrective actions/recommendations tracked to closure. For Cooper Energy drills, lessons learned, and actions will be captured via action tracking system (e.g. Synergi).

Table 1-3: OPEP Training and Testing Performance Outcomes Standards

ID	Environmental Performance Outcome	Control	Environmental Performance Standard	Measurement Criteria
1	**Response personnel are trained and prepared to respond to a worst-case spill scenario for the activity.** **The OPEP is implemented and is effective in mitigating a spill event.**	C1 Response Training	Response personnel are trained according to schedule.	• Training records.
		C2 Response Exercise and Testing.	Exercise and testing is completed according to schedule.	• Exercise and testing plan progress tracked via Synergi.
			Lessons from exercises and testing are captured, actioned and integrated into the relevant part of the OPEP.	• Exercise report including observations and opportunities for improvement. • Actions are managed through Synergi.

Table 1-4: OPEP Training and Testing Schedule and Objectives

Aspect	Who	Plan	Timing	Preparedness Activity Scope (arrangements and capabilities tested)	Training / Testing Objectives	Indicative duration	Evaluation / lessons learned
Training	Cooper Energy	OPEP	Valid through well abandonment	IMO Oil Spill Response Training for IMT, FOB and Field Team Lead Roles.	Demonstrated competency to undertake lead role in an IMT.	3-5 days	Feedback during training.
Training	Cooper Energy	OPEP	Valid through well abandonment	BMG OPEP Induction for: • IMT, FOB and Field Team Lead and support Roles. OPEP induction covers aspects including titleholder obligations, Scenarios, hydrocarbon fate/behaviour, Response documents, Response Organisation, Response Options, Response Termination and Debrief.	Demonstrated understanding of OPEP responses, roles, and support services.	1.5 hours	Feedback during training.
Training	AMOSC & AMOSC Core Group	AMOSC Plan	Valid through well abandonment.	IMO Oil Spill Response Training IMT, FOB and Field Team Lead Roles, and training of specialist roles such as aerial surveyor. Training provided in accordance with AMOSC core group agreement.	Demonstrated competency to undertake lead role in an IMT.	3-5 days	Feedback during training.
Training	Cooper Energy	SCERP	Valid through well abandonment.	Current well control training certificate for relevant Source Control Team Leads (Table 3-5).	Demonstrated competency to undertake lead role in source control team task groups.	3-5 days	Feedback and testing during training.
Training	Cooper Energy	OPEP	Prior to well abandonment commencing.	Incident Control System Refresher Training for IMT IC and Functional Leads.	Understanding of IMT incident control system.	1 hour	Feedback during training.
Exercise	Cooper Energy & AMOSC	OPEP	Prior to well abandonment commencing.	Level 2/3 OPEP Drill (Desktop) - IMT response teams form and initiate alert and call-out of response teams to respective incident control centers. - Notifications to regulators undertaken within the regulatory timeframes (simulated). - First-strike response operation activated monitoring and surveillance (simulated) within implementation timeframes.	IMT Roles are provided for and responsibilities are understood. IMT communications and support coordinated and efficient response. IMT remote systems support coordinated and efficient response.	1 day	Observer for the duration of the drill. Evaluation against the planned scope and objectives.

				- Call out of external resources to support first strike response. - Common Operating Picture established - IAP generated for the next operational period integrating information from monitoring and surveillance and NEBA recommendations.	Capability to Develop IAP for the next operational phase of a response. Response Option Initiation inside OPEP implementation timeframes. External resources are available to respond.		
Exercise	Cooper Energy & OSMP contractors	OSMP	Prior to well abandonment commencing.	OSMP Drill. Call out of external resources for at least two OSMP module simultaneously (nominally Hydrocarbon weathering assessment and coastal shoreline assessment (simulated scenario). Test of logistical arrangements to meet implementation timeframes form nominated modules. Confirm sufficient Principle Investigators for all OSMP Modules.	Response Options are initiated according to OPEP implementation timeframes. IMT-OSMP Contractor communications are established. External resources sufficient for a worst-case scenario for the activity are available to respond.	½ day	Evaluation against the planned scope and objectives.
Exercise	Cooper Energy	OPEP / Crisis Management Plan	Prior to well abandonment commencing.	CMT activated and provide support to IMT during L3 incident. - CMT forms and establishes communications with the IMT IC. - CMT obtain situational awareness. - External notifications are issued (simulated) including media release.	CMT Roles are provided for and responsibilities are understood. CMT-IMT Communication protocols are understood. IMT Remote systems support coordinated and efficient response. Notifications developed efficiently.	2 hours	Observer for the duration of the drill. Evaluation against the planned scope and objectives.
Exercise	AMOSC, National and State response personnel	AMOSC Plan / Nat Plan	Ongoing testing and exercise regime.	IMT Desktop and Operational exercises spanning all potential response strategies both nearshore and offshore including: • Monitoring and Evaluation • Containment and Recovery • Chemical dispersant application	In accordance with AMOSC Plan, National Plan and State Response Plan Testing and Exercise priorities.	5-10 days	Evaluation against the planned scope and objectives.

				• Protection and Deflection • Shoreline Response • Wildlife Response These exercises involve field responders and use of response equipment.			
Exercise	Cooper Energy	SCERP	Prior to well abandonment commencing.	Level 2/3 SCERP Drill - SCERP Leads availability to implement selected source control options (capping, relief well) is verified - Communications between leads are established - Vessel and MODU availability and mobilisation times are verified - Equipment (capping, relief well long leads) availability and mobilisation times are verified	SCERP source control response times verified. Source control response logistics confirmed.	½ day	Evaluation against the planned scope and objectives.
Exercise	Cooper Energy and Response Contractors	OPEP / OSMP / SCERP	Prior to well abandonment commencing.	Callout response contact details and personnel availability verification: - OPEP contractors - OSMP contractors - SCERP contractors	Personnel required to implement OPEP, OSMP and SCERP are available to respond.	½ day	Evaluation against the planned scope and objectives.
Exercise	Cooper Energy MOU and Vessel Service Partners	OPEP	During mobilization or transit to site	Communications check between vessel / MOU and shore-based response personnel.	Incident notification channels are established.	30 minutes	Improvements are identified, logged and resolved.
Exercise	MOU Service Partner	OPEP / SCERP / SMPEP	Prior to and during activity according to vessels operating procedures	DP system trials. Emergency shutdown / well control.	DP systems are tested. Emergency shutdown protocol is tested.	2 hours	Evaluation against the planned scope and objectives.
Exercise	Vessel and MOU Service Partners	SMPEP	Prior to and during activity according to vessel drill schedule	Vessel SMPEP drills	Personnel are familiar in their role and equipment available for SMPEP strategies	2 hours	Evaluation against the planned scope and objectives.

1.7 Regulatory Responsibilities

This plan recognises that under existing Commonwealth and State Intergovernmental Agreements, authorities have been nominated with statutory and control responsibility for spills within harbours, State waters and Commonwealth waters around Australia.

While Cooper Energy remains accountable for spills relating to its Petroleum Activities, the nominated Control Agency (CA) will vary depending on source, size and location of the spill. Table 1-5 provides a summary of Statutory Agency and CA scenarios in the event of a spill.

NOPSEMA has the regulatory responsibility for any activities in Commonwealth waters covered in this OPEP.

Although DJPR have conferred functions for the regulation of health and safety and structural integrity to NOPSEMA for petroleum activities occurring in State waters, State Authorities (as relevant) retain the regulatory responsibility for any spill response activities in State waters covered in the OPEP. DELWP is the lead agency for responding to wildlife impacted by marine pollution in Victorian waters or along the coastline.

Table 1-5: Summary of Regulatory Responsibilities (Statutory and Control Agencies)

Spill Source	Spill Level	State Waters (<3nm from coast baseline)	Commonwealth Waters (>3 nm from coast baseline)	Statutory Agency	Control Agency
Subsea infrastructure LOC or LOWC	1	N/A	N/A	-	-
			✓	NOPSEMA	Cooper Energy
	2 & 3	✓		State Agency (as relevant)*	State Agency (as relevant)*
			✓	NOPSEMA	Cooper Energy
Vessel Collision	1	✓		State Agency (as relevant)*	State Agency (as relevant)*
			✓	AMSA	Vessel owner
	2 & 3	✓		State Agency (as relevant)*	State Agency (as relevant)*
			✓	AMSA	AMSA
Wildlife	1	✓		State Agency (as relevant)	
			✓		NOPSEMA[#]
	2 & 3	✓		State Agency (as relevant)	
			N/A		

* relevant State Statutory Agencies and/or Control Agencies include DoT (Victorian State waters), EPA Tasmania (Tasmanian State waters), Transport for NSW (NSW State waters), Maritime Safety Queensland (Queensland State waters). A live contract register for relevant State Statutory Agencies and/or Control Agencies available at: **Emergency Roster and Emergency Contacts Directory Cooper Energy SharePoint.**

[#] where wildlife are captured in Commonwealth waters and bought to shore for assessment and treatment, they will fall under the responsibility of the Lead Agency for Wildlife impacted by marine and freshwater pollution (DELWP) and all relevant state based legislation.

1.7.1 Joint Strategic Coordination Committee (Cooper Energy Interface with State Governments)

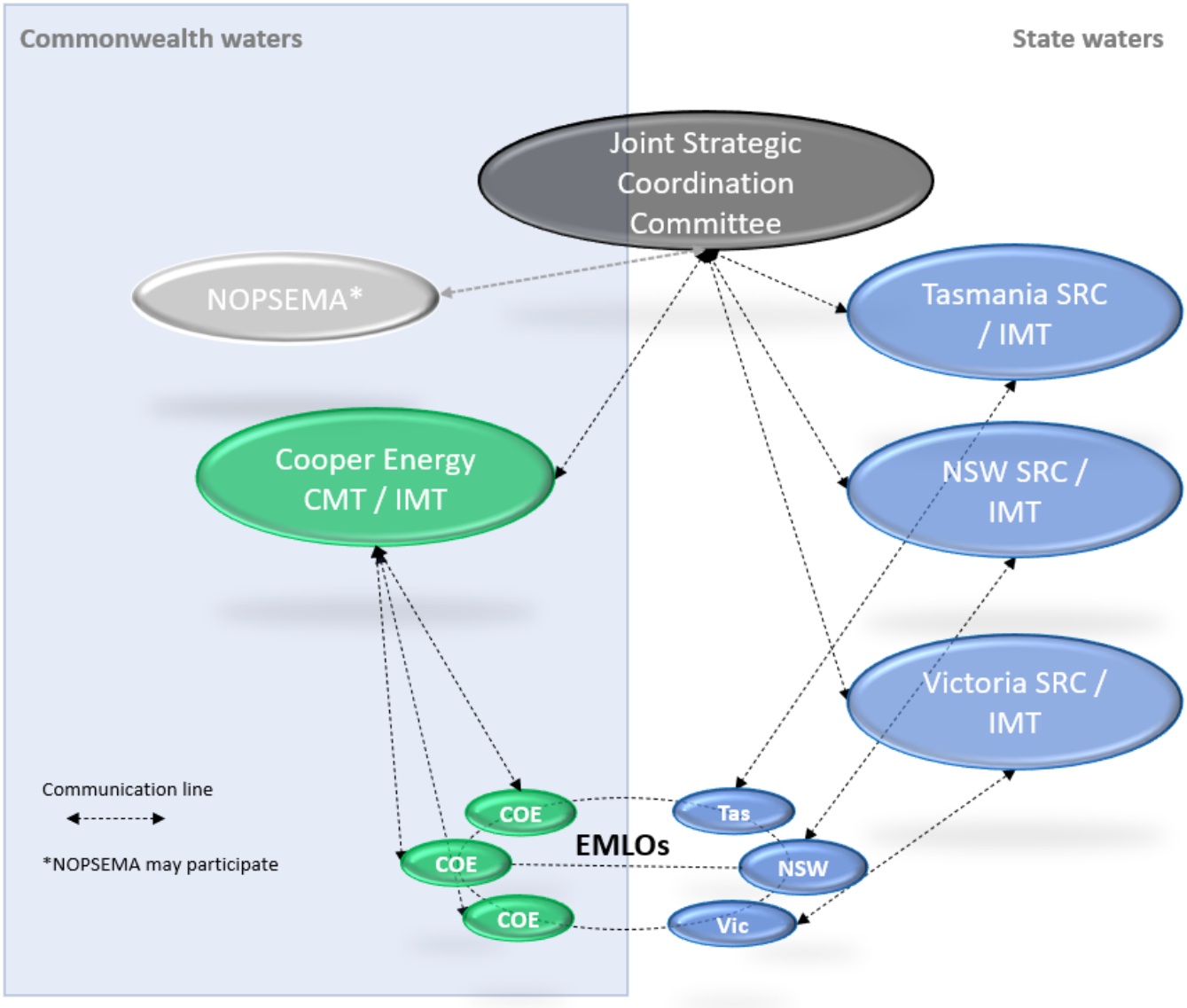
In the instance where a spill from the BMG P&A activity impacts on state waters, a Joint Strategic Coordination Committee will be established (JSCC). The role of the JSCC is to facilitate effective coordination between Cooper Energy and the State Control Agency IMTs.

Initiation: Initially, the JSCC would be administered by the DoT, and convened by the State Controller Maritime Emergencies (SCME).

Organisation: The JSCC will be jointly chaired by the SCME and Cooper Energy Senior Representative. The JSCC will ensure a coordinated response across the multiple control agencies.

Because the BMG P&A worst case spill scenario has the potential to impact multiple states (Vic, NSW, Tas), the JCC may adapt to accommodate more than one state jurisdiction (Figure 1-4). Each control agency will identify and Emergency Management Liaison Officer (EMLO) who will be the primary contact for interagency and interstate coordination. The Cooper Energy EMLO(s) will:

- Facilitate effective communications between agency IMT Teams
- Provide enhanced and consistent situational awareness to State IMT Teams
- Receive and feed-back technical advice from State agencies to the Cooper Energy IMT



Adapted from DoT Joint Industry and State Oil Pollution Response Guidance Note, 2020.

Figure 1-4: Cross-jurisdictional control and coordination structure

2 Response Activation

2.1 Cooper Energy Incident Management Plan and OPEP Activation

Cooper Energy manages emergencies from offshore activities in accordance with the Cooper Energy Incident Management Plan (IMP). The purpose of the IMP is to provide the Incident Management Team (IMT) with the necessary information to respond to an emergency. The IMP:

- Describes the emergency management process
- Details the response process
- Lists the roles and responsibilities for the IMT members
- Includes duty cards for the IMT Members.

All spill events under the scope of this OPEP will be reported to the Cooper Energy Duty Manager by operator/maintainers or by contracted vessel masters. The Cooper Energy Duty Manager will notify the IC of the incident, providing the following information to allow the IC to assess the required response level:

- The source of the spill and the location
- The type of hydrocarbon released
- How much material has been released (e.g. estimated size based on a 'known' hydrocarbon inventory; estimates based on flowrates from wells; or an estimate based upon the appearance and area of oil on the sea surface (refer Section 7))
- Whether the source been contained or whether the spill is continuing
- Worst-case scenario
- Weather conditions – wind speed and direction, swell and current speed and direction (if available).

Based on the information made available, the IC is responsible for:

1. Identifying the Control Agency (CA) (Section 0 provides description of regulator responsibilities);
2. Determining the response level;
3. Activating the Cooper Energy IMT (either where Cooper Energy is the CA or is directed by CA); and
4. Implementing the OPEP

2.2 Control Agency

The CA is determined based on the source of the spill and whether the spill takes place in Commonwealth or State waters. CA for the spill scenarios within the scope of this this OPEP are detailed in Table 1-5.

AMSA is the designated control agency for oil spills from vessels within the Commonwealth jurisdiction. Upon notification of an incident involving a ship, AMSA will assume control of the incident and respond in accordance with AMSA's Marine Pollution Response Plan. Co-ordination of resources under NATPLAN will occur through formal request of the appointed Incident Controller.

Where a spill originates in Commonwealth waters but has the potential to impact State waters or lands, State CA would establish an IMT and may assume control of response activities within State jurisdiction. Where response activities are implemented in Commonwealth jurisdiction, the CA remains either AMSA for vessel spills or Cooper Energy for spills relating to petroleum activities.

2.3 Response Level

The level of spill response depends on the nature and scale of the spill, whether on-site resources can manage the response or additional support resources are required, and the environmental sensitivities at risk.

The IC must make an initial assessment of the spill level based upon the initial information provided and NATPLAN criteria. Table 2-1 provides NATPLAN criteria for spill level classification together with guidance on possible level classifications for credible maximum spill scenarios for the BMP Closure Project (Phase 1) activities.

Throughout the response, the Cooper Energy IC must continue to assess the response level in accordance with NATPLAN criteria, considering factors which may lead to escalation of the response level. Within State boundaries, the State Control agency will determine the response level.

Table 2-1: NATPLAN Guidance on Spill Level Classification

Criteria	Level 1	Level 2	Level 3
		Management	
Jurisdiction	Single jurisdiction	Multiple jurisdiction	Multiple jurisdictions including international
Number of Agencies	First Response Agency	Routine multi-agency response	Agencies from across government and industry
Incident Action Plan	Simple/Outline	Outline	Detailed
Resources	Onsite resources required only	Requires intra-state resources	Requires national or international resources
		Type of Incident	
Type of response	First Strike	Escalated	Campaign
Duration	Single shift	Multiple shifts Days to weeks	Extended response Weeks to months
Hazard	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 (Habitat)	Isolated impacts with natural recovery in a few weeks	Significant impacts and recovery may take months. Remediation required.	Significant area and recovery may take months or years. 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
		Spill Scenarios– Notional Level Classification (Worst case)	
BMP Closure Project (Phase 1) activities	• Minor Spill LOC • Bunkering LOC • Subsea LOC	• Vessel Collision LOC	• Subsea LOWC

2.4 Notification Requirements

Internal and regulatory notifications must be made in accordance with requirements outlined in Table 2-2 for Level 1 spills, Table 2-3 for Level 2/3 spills.

It is important that information generated during an initial response is accurately recorded, transmitted, acted upon and ultimately stored for future use. The information is to include:

- Incident details – where, what, when, how, why (where possible)
- Extent of spill
- Immediate actions taken.

Copies of forms referenced in these tables and Appendix 1 can be found on the Cooper Energy SharePoint system: Regulatory Management System:

https://cooperenergy.sharepoint.com/sites/HSEC2/Emergency/Forms/Documents.aspx?web=1

Table 2-4 also provides additional external notifications (excluding response resources) which may be required depending on the nature and scale of the spill incident (specified scenarios). These notifications will be made by the IC or delegate.

Table 2-2 Notification Requirements for Spill Level 1 (Vessel spill, infrastructure LOC and LOWC)

Spill Level 1 Notifications						
From	**To**	**Circumstance**	**Type**	**Timing**	**Contact Details**	**Supporting Information**
Vessel Master (where relevant)	Cooper Energy Duty Manager	• All spills	Verbal	Immediately	Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020	• spill circumstances • time and location of the incident • proposed response arrangements as per the SOPEP
Vessel Master or Cooper Energy Duty Manager (as relevant)	AMSA	• All spills to sea	Verbal (or by email if phone contact not possible)	ASAP (no later than 2 hours after incident)	**Phone**: 1800 641 792 (24-hour) **Email**: reports@amsa.gov.au	Incident Alert form 18 available at: https://www.amsa.gov.au/vessels-operators/incident-reporting/incident-alert-form-18
			Written notification	ASAP	https://amsa-forms.nogginoca.com/public/	Completed POLREP
			Written updates	As requested, or every 24 hours	**Email**: reports@amsa.gov.au	Provide SITREP / POLREP and IAP SITREP / POLREP available at: https://amsa-forms.nogginoca.com/public/
Cooper Energy Duty Manager	Cooper Energy IMT & Cooper Energy CMT	• All spills to sea requiring IMT response support	Verbal	As required	Contact details available at: Emergency Roster and Emergency Contacts Directory	Situational updates sent to rostered personnel as per IMT Duty Roster and CMT Duty Roster
Cooper Energy Duty Manager (or delegate)	NOPSEMA	Dangerous occurrences at or near facilities must be reported to NOPSEMA under the applicable safety case. Occurrences include: • Any vessel collision with a facility or MODU	Verbal	ASAP (no later than 2 hours after incident)	**Phone**: 1300 674 472	• spill circumstances • titleholder details • time and location of the incident • proposed response arrangements as per the OPEP (e.g. monitor & evaluate, containment, etc.) • contact details for the response coordinator

Spill Level 1 Notifications					
	within Commonwealth waters (> 3 nm) • Any hydrocarbon spill >80 L	Written notification	ASAP after oral notification	**Email**: submissions@nopsema.gov.au *(Copy also to NOPTA Email: info@nopta.gov.au & titles@nopta.gov.au)* ***Phone**: (08) 6424 5317*	• spill circumstances • titleholder details • time and location of the incident • proposed response arrangements as per the OPEP (e.g. monitor & evaluate, containment, etc.) • contact details for the response coordinator
		Written report	ASAP, but within 3 days of incident	**Email**: submissions@nopsema.gov.au *(Copy also to NOPTA Email: info@nopta.gov.au & titles@nopta.gov.au)* ***Phone**: (08) 6424 5317* **Sharefile:** at https://securefile.nopsema.gov.au/filedrop/submissions	Completed NOPSEMA Form N-03000-FM0831

Table 2-3 Notification Requirements for Spill Level 2/3 (vessel spill, infrastructure LOC and LOWC)

Spill Level 2/3 Notifications						
From	**To**	**Circumstance**	**Type**	**Timing**	**Contact Details**	**Supporting Information**
Vessel Master or Cooper Energy Duty Manager (or delegate) as relevant	Cooper Energy IMT & Cooper Energy CMT	Spill level 1 escalation	Verbal	Immediately	Contact details available at: Emergency Roster and Emergency Contacts Directory	• Situational updates sent to rostered personnel as per IMT Duty Roster and CMT Duty Roster
Vessel Master or Cooper Energy Duty Manager (as relevant)	AMSA	Level 2/3 vessel spills	Verbal (or by email if phone contact not possible)	ASAP (no later than 2 hours after incident)	**Phone**: 1800 641 792 (24-hour) **Email**: reports@amsa.gov.au	• Incident Alert form 18 available at: https://www.amsa.gov.au/vessels-operators/incident-reporting/incident-alert-form-18
			Written notification	ASAP	https://amsa-forms.nogginoca.com/public/	• Completed POLREP
			Written updates	As requested, or every 24 hours	**Email**: reports@amsa.gov.au	Provide SITREP / POLREP and IAP • SITREP / POLREP available at: https://amsa-forms.nogginoca.com/public/
Vessel Master or Cooper Energy Duty Manager (or delegate) as relevant	State and Port Authorities	Level 2/3 vessel spills (threatening State waters) or Spill has caused, or has the potential to cause, moderate to significant environmental damage to State assets	Verbal	ASAP (no later than 2 hours after risk identification)	As relevant to Port (Port Master) and/or State Waters (State Duty Officer). Authorities include: **Victorian State Waters** **Duty Officer - Dept of Transport** **Phone:** 1800 961 311 (24/7) **Victorian Port** Duty Pilot Harbour Master Port of Portland Incident Notification 24hr Gippsland Ports **NSW State Waters**	• spill circumstances and situational update • titleholder details • time and location of the incident as relevant • proposed response arrangements as per the OPEP (e.g. monitor & evaluate, containment, etc.)

Spill Level 2/3 Notifications						
					Maritime emergency (24 hr) NSW Maritime **NSW Port (phone diverted for out-of-hours response)** Port of Eden Port of Kembla Port of Sydney Port of Newcastle Port of Yamba **Tasmanian State Waters** EPA Tasmania **Tasmanian Port** TasPorts Contact details available at: Emergency Roster and Emergency Contacts Directory	• contact details for the response coordinator
Cooper Energy Duty Manager (or delegate)	NOPSEMA	• All spills in Commonwealth Waters (> 3 nm) • Level 2/3 spills	Verbal	ASAP (no later than 2 hours)	**Phone**: 1300 674 472	• spill circumstances • titleholder details • time and location of the incident • proposed response arrangements as per the OPEP (e.g. dispersant, containment, etc.) • contact details for the response coordinator
			Written notification	ASAP after oral notification	**Email**: submissions@nopsema.gov.au *(Copy also to NOPTA Email: info@nopta.gov.au & titles@nopta.gov.au)* ***Phone**: (08) 6424 5317*	
Cooper Energy IC (or delegate)	Director of National Parks	Spill with potential to impact Australian Marine Park(s) or impact matters of national environmental	Verbal	ASAP	Marine Compliance Duty Officer (24-hr): 0419 293 465	• titleholder details • time and location of the incident (including name of marine park likely to be affected)

Spill Level 2/3 Notifications						
		significance (including potential for oiled wildlife)				• proposed response arrangements as per the OPEP (e.g. dispersant, containment, etc.) • confirmation of providing access to relevant monitoring and evaluation reports when available; and • contact details for the response coordinator
Cooper Energy IC (or delegate)	Relevant marine stakeholders (Fishers, AHS, adjacent titleholders etc.)	Spill has caused, or has the potential to cause, moderate to significant environmental damage relevant to Stakeholder interests and functions	Telephone	As directed (or directed by IC)	Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020 Emergency Roster and Emergency Contacts Directory	

Table 2-4: Additional External Notifications

Issue	Stakeholder	Spill Level	Timeframe	References
Protection of mariners from safety and environmental impacts of spill	Australian Hydrographic Service	2, 3	2 hrs	Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020)
Protection from spill impacts and/or notify of safety exclusion zones	Fishery Groups / Marine users	2, 3	As soon as practicable	
Spill notification	Adjacent Titleholders	2, 3	As soon as practicable	
Oiled Wildlife	VIC - Department of Environment Land Water and Planning (DELWP)	1, 2, 3	Immediately, or whenever wildlife in Victoria's jurisdiction is expected to be impacted	1300 134 444 Email: sccvic.scmdr.delwp@scc.vic.gov.au
	TAS -Environmental Protection Agency (EPA)	1, 2, 3	Immediately, or whenever wildlife in Tasmania's jurisdiction is expected to be impacted	1800 005 171
	NSW - Department of Primary Industries (DPI)	1, 2, 3	Immediately, or whenever wildlife in NSW jurisdiction is expected to be impacted	Maritime emergency (24 hr): 1800 641 792
	QLD – Maritime Safety Queensland	1, 2, 3	Immediately, or whenever wildlife in QLD jurisdiction is expected to be impacted	07 3305 1700 BrisbaneRegion@msq.qld.gov.au brisbane.maritime@msq.qld.gov.au
Damage to wildlife of national environmental significance (NES)	Department of Agriculture, Water and Environment (DAWE)	1, 2, 3	As soon as practicable following the discovery of impact to wildlife of NES (but not longer than 7 days) and/or under the direction of relevant State authority	Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020
International waters threatened	Department of Foreign Affairs and Trade (DFAT)	3	As soon as practicable, where spill is threatening waters outside of Australia's maritime jurisdiction	24-hour consular emergency helpline Within Australia: 1300 555 135

2.4.1 Environmental Performance Outcome (Notifications)

The appropriate notification of an oil spill is identified as an Environmental Performance Outcome (EPO). In the event of a spill, adherence to this EPO and the corresponding environmental performance standard and measurement criteria is required. The EPO for notification activities is provided in Table 2-5.

Table 2-5: Spill Notification EPO

ID	Environmental Performance Outcome	Control	Environmental Performance Standard	Applicable Level	Measurement Criteria	Frequency
2	**Notification and reporting to regulators and other**	C3 Response Communications	Notifications and written reporting to be undertaken in accordance with the	All levels	Incident log verifies this action has been	N/A

ID	Environmental Performance Outcome	Control	Environmental Performance Standard	Applicable Level	Measurement Criteria	Frequency
	relevant persons occur in a timely manner.		relevant content and timeframes specified in Table 2-2, Table 2-3 and Table 2-4.		undertaken in the required timeframe.	

2.5 Action Sequence Checklists

The sequence of actions following alerting the IMT and activating this OPEP will be determined based on the spill scenario and level. Specific action sequence checklists are provided in this section for the following scenarios:

- Vessel Collision resulting in (MDO) spill (Level 2) (Table 2-6)
- Subsea Infrastructure LOC or LOWC resulting in light crude oil spill (Level 1 or 2) (Table 2-7).

Table 2-6: Spill Response Action List - Vessel Collision Marine Diesel (MDO) Spill

Vessel Collision (MDO) Spill – Response Actions			
Action		**Responsible Party**	**Timing/ Additional Information**
1.	On discovery of the spill notify the Vessel Master	Spill Observer	*ASAP*
2.	Manage the safety of all personnel. Secure sources of ignition and alert all personnel (appropriate to the level of the spill)	Vessel Master	*ASAP*
3.	If safe, stop the spill through source control actions. Assess incident and prevent further spillage. Estimate the quantity of oil released and provide initial incident information. In the event of a significant (Level 2 or 3) spill, deploy the Oil Spill Tracking Buoy (if available) following the deployment instructions.	Vessel Master	*ASAP*
4.	Notify the Cooper Energy Duty Manager of the spill, providing information available from preliminary spill assessment. Including • What is it - Oil type/group/properties • Where is it - Lat/long • How big is it - Area/volume • Where is it going - Weather conditions/currents/tides • What is in the way - Resources at risk • When will it get there - Weather conditions/currents/tides • What is happening to it - Weathering processes predicted	Vessel Master	*ASAP*
5.	Based on the preliminary spill assessment and operational monitoring from the Vessel Master approximate the spill level, Assess response required. Response commensurate to the size and level of risk.	Cooper Energy Duty Manager	*ASAP*
6.	Undertake regulatory notifications and other stakeholder notifications (as required). Refer to **Section 2.4** above.	Cooper Energy Duty Manager	*ASAP*
7.	Assemble Cooper Energy Incident Management Team (as required). Number of, and team members selected, will be based upon the nature and scale of response required. The IC is responsible for: • identifying the CA; • determining the response level,	Cooper Energy Duty Manager	*ASAP*

Vessel Collision (MDO) Spill – Response Actions

- Activate the Cooper Energy IMT (either where Cooper Energy is the control agency or is directed by CA); and
- Implementing this FSP and the OPEP (where relevant)

NOTE: Cooper Energy is in a support role for this scenario to AMSA (Commonwealth waters) or designated State CA (State waters).

8. Activate AMOSC Member Agreement to support the response. Cooper Energy Authorising Officer to activate via the AMOSC Duty Manager. — IC (or Delegate) — ***Section 3.1***

Level 1 spill for remote advice.

Level 2/3 for on-site support (e.g. aerial observers, SCAT, oil spill trajectory modelling, shoreline clean-up coordinators, boom equipment).

Name	Position	Work	Mobile	Email
Iain MacDougall	GM HSEC and Technical Services	(08) 8100 4916	0401 710 091	iain.macdougall@cooperenergy.com.au
Andrew Thomas	GM Exploration & Subsurface	(08) 8100 4920	0408 967 221	andrew.thomas@cooperenergy.com.au
Amelia Jalleh	Company Secretary & General Counsel	(08) 8100 4914	0458 555 775	amelia.jalleh@cooperenergy.com.au
Mike Jacobsen	GM Projects and Operations	(08) 6556 2103	0417 902 944	mike.jacobsen@cooperenergy.com.au
David Maxwell	Managing Director	(08) 8100 4900	-	david.maxwell@cooperenergy.com.au

9. Login to AMOSC – AMOSPlan for the latest equipment and personnel information. — Planning Officer (or delegate)

Username: cooper

Password: qmur67F5ny

http://www.amosc.com.au

10. Determine spill trajectory – weather conditions and perform initial vector analysis. — Planning Officer (or delegate) — ***Section 7***

Estimator Tools on SharePoint

11. Identify protection priorities at risk and confirm response strategies via NEBA. — Planning Officer (or delegate) — ***Section 4***

12. Based on operational monitoring and in consultation with CA, where applicable activate the relevant Tactical Response Plan (TRP). — Planning Officer (or delegate) — ***Section 7***

13. Support incident action plan (IAP) (as required) in consultation with AMOSC and CA (AMSA or State CA). — IC (or Delegate) — ***Section 5***

14. Allocate responsibilities to support implementation of IAP (as required). — IC (or Delegate)

15. In collaboration with CA undertake consultation with appropriate land managers for any shoreline activities (as required). — IC (or Delegate)

16. As directed by CA, implement response strategies and monitor effectiveness. — IC (or Delegate) — ***Section 5***

17. As directed by CA, continue until termination criteria met. — IC (or Delegate) — ***Section 5***

Monitor & Evaluate – if required (NOTE: Cooper Energy is in a support role for this scenario)

18. Obtain weather data via of the Bureau of Meteorology (http://www.bom.gov.au/) for the spill location. — Planning Officer (or delegate) — **Section 7**

19. Use vectoring to identify predicted spill trajectory or initiate APASA modelling (as required) via AMOSC Duty Manager. APASA contact: — Planning Officer (or delegate) — **Section 7**

Name	Position	Work	Email
Sasha Zigic	Manager	(07) 5574 1112	info@apasaresponse.com

20. Undertake ADIOS modelling using hydrocarbon characteristics in **Section 4.2** — Planning Officer (or delegate) — **Section 7**

https://response.restoration.noaa.gov/adios

Vessel Collision (MDO) Spill – Response Actions		
21. As directed by CA, mobilise aerial observation. Refer to: Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020), available on the Cooper Energy Intranet). Confirm the 'opening status' of estuaries identified as areas for priority protection. Preliminary information may be obtained via: http://www.estuarywatch.org.au/	Logistics Officer (or delegate)	**Section 7**
22. Access oil spill tracking buoy live feed data if a buoy has been deployed from the vessel: **Website:** https://simplyunified.telematics.guru/Account **Login name:** Perth.IMT@cooperenergy.com.au **Password:** password	Logistics Officer (or delegate)	**Section 7**
Shoreline Assessment and Clean-up - if required (NOTE: Cooper Energy is in a support role for this scenario)		
23. As directed by CA (as relevant to State) and in consultation with AMOSC, identify Shoreline Assessment and Clean-up Team (SCAT).	IC (or delegate)	**Section 10**
24. In consultation with CA (as relevant to State) and AMOSC, identify SCAT locations.	Planning Officer (or delegate)	**Section 10**
25. As directed by CA (as relevant to State), initiate SCAT surveys.	Operations Officer/OSMP Support Contractors	**Section 10**
26. Undertake NEBA for shoreline clean-up as required.	Planning Officer (or delegate)	**Section 5**
Protection and Deflection – if required (NOTE: Cooper Energy is in a support role for this scenario)		
27. Assess deployment location with AMOSC, CA (as relevant to State) and relevant waterway manager.	Operations Officer	**Section 8**
28. As directed by CA (as relevant to State), mobilise equipment and people to location.	Logistics Officer	**Section 8**
29. In consultation with EPA, and as directed by CA (as relevant to State), mobilise waste management contractor	Logistics Officer	**Section 12**
Oiled Wildlife Response – if required (NOTE: Cooper Energy is in a support role for this scenario)[1]		
30. Notify relevant State Authority if any oiled wildlife is identified or have the potential to be impacted and provide support services as directed. Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020 Emergency Roster and Emergency Contacts Directory	IC (or delegate)	**Section 11**
31. In consultation with State government Lead Agency for wildlife response, and as directed by CA (as relevant to State), mobilise waste management contractor.	Logistics Officer	**Section 11**
Scientific Monitoring – if required (NOTE: Cooper Energy is in a support role for this scenario)		
32. Consult with State government environmental department (as relevant), and State Statutory Authority on the scope of the scientific monitoring if required.	Planning Officer	**Section 13**
33. Initiate scientific monitoring contractor – GHD. **24/7 Emergency Response Hotline: 1800 290 963**	Planning Officer or delegate	**Section 13**
34. As directed by CA (as relevant to State) define monitoring and control sites. CA may consult with AMOSC to define monitoring and control sites.	Planning Officer or delegate	**Section 13**
35. Continue with scientific monitoring until termination criteria are met.	Planning Officer or delegate	Refer OSMP

[1] As relevant, oiled wildlife response agency varies between State

Table 2-7: Spill Response Action List – Subsea Infrastructure LOC / LOWC

Subsea Infrastructure LOC / LOWC – Response Actions		
Action	**Responsible Party**	**Timing/ Additional Information**
Operational Response		
1. On discovery of the spill: • Initiate source control to prevent further spillage • Notify the Duty Incident Manager providing initial incident information. • In the event of a significant (Level 2 or 3) spill, deploy the Oil Spill Tracking Buoy (if available and safe to do so) following the deployment instructions.	Site Operator/ Maintainer	ASAP
2. Undertake spill assessment. • What is it - Oil type/group/properties • Where is it - Lat/long • How big is it - Area/volume • Where is it going - Weather conditions/currents/tides • What is in the way - Resources at risk • When will it get there - Weather conditions/currents/tides • What is happening to it - Weathering processes predicted • Assess response required - Response commensurate with the size and level of risk. • Marine Safety Assessment undertaken	Cooper Energy Duty Manager	ASAP
3. Undertake regulatory notifications and other stakeholder notifications (as required), including Notice to Mariners if necessary. Refer to **Section 2.4**.	Cooper Energy Duty Manager (or delegate)	ASAP
4. Assemble Cooper Energy Incident Management Team (as required). Number of, and team members selected, will be based upon the nature and scale of response required. The IC is responsible for: • Determining the response level, • Activating the Cooper IMT and Source Control Team (SCT); and • Implementing the OPEP (where relevant) **N.B. the Cooper Energy SCT initiate the Source Control Emergency Response Plan**	Cooper Energy Duty Manager	ASAP
5. Activate AMOSC Member Agreement to support the response. Cooper Energy Authorising Officer to activate via the AMOSC Duty Manager on 0438 379 328. • AMOSC (Level 2/3 for advice/support) (e.g. aerial observers, SCAT, oil spill trajectory modelling, spill response equipment, core group).	Cooper Energy Authorising Officer	**Section 3.1**
6. Login to AMOSC - AMOSPlan for the latest equipment and personnel information Username: cooper Password: qmur67F5ny	Planning Officer or delegate	

Name	Position	Work	Mobile	Email
Iain MacDougall	GM HSEC and Technical Services	(08) 8100 4916	0401 710 091	iainm@cooperenergy.com.au
Andrew Thomas	GM Exploration & Subsurface	(08) 8100 4920	0408 967 221	andrewt@cooperenergy.com.au
Amelia Jalleh	Company Secretary & General Counsel	(08) 8100 4914	0458 555 775	amelia.jalleh@cooperenergy.com.au
Mike Jacobsen	GM Projects and Operations	(08) 6556 2103	0417 902 944	mikej@cooperenergy.com.au
David Maxwell	Managing Director	(08) 8100 4900	-	**davidm@cooperenergy.com.au**

Subsea Infrastructure LOC / LOWC – Response Actions		
http://www.amosc.com.au		
7. Contact AMSA (Level 2/3 for support) as per **Table** 2-3 on +61 2 6230 6811	Cooper Energy Duty Manager	
8. Determine Spill Trajectory – weather conditions and vectoring and/or APASA modelling via AMOSC Duty Manager. APASA contact: **Name** / **Position** / **Work** / **Email** **Sasha Zigic** / Manager / (07) 5574 1112 / info@apasaresponse.com	Planning Officer or delegate Officer	
9. Identify protection priorities at risk and confirm response strategies via NEBA in consultation with Control Agency for state waters that may be impacted.	Planning Officer or delegate	**Section 5**
10. Based on operational monitoring and in consultation with Control Agency activate the relevant Tactical Response Plan (TRP), where applicable.	Planning Officer or delegate	**Section 4**
11. Develop incident action plan (IAP) in consultation with relevant expertise, AMOSC and Control Agency (where state waters may be impacted) and communicate the IAP.	Planning Officer or delegate	**Section 5**
12. In collaboration with Control Agency (as relevant to State) undertake consultation with appropriate land managers for any shoreline activities.	IC (or Delegate)	
13. Implement IAP response strategies and monitor effectiveness.	Operations Officer	**Section 5**
14. Response Termination – continue until termination criteria met.	IC (or delegate)	**Section 5**
Monitor & Evaluate - if required (NOTE: Cooper Energy is in a support role for this scenario)		
15. Obtain weather data via of the Bureau of Meteorology (http://www.bom.gov.au/) for the spill location.	Planning Officer or delegate	**Section 7**
16. Use manual vectoring to identify predicted spill trajectory and initiate APASA modelling using Form in **Section 4**. **Name** / **Position** / **Work** / **Email** **Sasha Zigic** / Manager / (07) 5574 1112 / info@apasaresponse.com	Planning Officer or delegate	**Section 7**
17. Undertake ADIOS modelling using hydrocarbon characteristics in **Section 4.2** - https://response.restoration.noaa.gov/adios	Planning Officer or delegate	**Section 4**
18. Mobilise Aerial Observation aircraft (if Level 2/3 incident) to commence operations in daylight hours. - Confirm Spill trajectory and estimate volume - Confirm the 'opening status' of estuaries for priority protection. **Name** / **Telephone / Email** **Sharp Airlines - Essendon** / (03) 9374 3987 **Sally Mitchell, Crewing & Logistics** / 0422 366 151 **Bairnsdale Air Charter** / **(03) 5152 4617** **Director, Office Mgr**	Operations & Logistics Officer	**Section 7**
19. Mobilise vessel observations and confirm deployment of satellite tracking buoys (as appropriate if Level 2/3 incident). Access oil spill tracking buoy live feed data if a buoy has been deployed from the vessel / MOU: **Website:** https://simplyunified.telematics.guru/Account **Login name:** Perth.IMT@cooperenergy.com.au **Password:** password	Operations & Logistics Officer	**Section 7**
Protection and Deflection – if required (NOTE: Cooper Energy is in a support role for this scenario)		
20. Assess deployment location with AMOSC, Control Agency (as relevant to State) and relevant waterway manager.	Operations Officer	**Section 8**
21. As directed by Control Agency (as relevant to State), mobilise equipment and people to location.	Logistics Officer	**Section 8**

Subsea Infrastructure LOC / LOWC – Response Actions		
22. In consultation with EPA, and as directed by Control Agency (as relevant to State), mobilise waste management contractor.	Logistics Officer	**Section 12**
Shoreline Assessment and Clean-up - if required		
23. As directed by Control Agency (as relevant to State) and in consultation with AMOSC identify Shoreline Assessment and Clean-up Team (SCAT), where relevant	Operations Officer	**Section 10**
24. In consultation with Control Agency (as relevant to State) and AMOSC to identify SCAT locations, where relevant	Planning Officer/CA	**Section 10**
25. As directed by Control Agency (as relevant to State) initiate SCAT surveys, where relevant	Operations Officer /OSMP Support Contractors	**Section 10**
26. Undertake NEBA (**Appendix 3**) for shoreline clean-up as required.	Planning Officer/CA	**Section 5**
27. Initiate shoreline clean-up (as required).	Operations & Logistics Officer	**Section 10**
28. Mobilise waste management contractor.	Logistics Officer	**Section 12**

Name	Contact
Cleanaway	Emergency Spills Hotline 1800 774 557 (1800 SPILLS)

Oiled Wildlife Response – if required		
29. Notify relevant State Authority if any oiled wildlife is identified or have the potential to be impacted and provide support services as directed.	Cooper Energy Oil Spill Team	**Section 11**
30. In consultation with State government Lead Agency for wildlife response and as directed by Control Agency (as relevant to State), mobilise waste management contractor.	Logistics Officer	**Section 12**
Scientific Monitoring – if required		
31. Consult with State government environmental department (as relevant to State) and Control Agency on the scope of the scientific monitoring if required.	Planning Officer	**Section 13**
32. Initiate scientific monitoring contractor – GHD	Planning Officer	**Section 13**
24/7 Emergency Response Hotline: 1800 290 963		
33. As directed by Control Agency (as relevant to State), define monitoring and control sites. Control Agency may consult with AMOSC to define monitoring and control sites.	Planning Officer/CA	**Section 13**
34. Continue with scientific monitoring until termination criteria are met.	Cooper Energy Oil Spill Team	Refer OSMP

2.6 Safety Exclusion Zones

On activation of the OPEP, the Cooper Energy Operations Officer will establish a safety exclusion zone for all Level 2/3 spill incidents. The extent of the exclusion zone will be determined based on the risks associated with the incident and may be informed by modelling to predict areas where safety thresholds are exceeded.

All aircraft and vessels will observe the exclusion zone around infrastructure to prevent personnel exposure to safety hazards. All vessels and aircraft are to remain up wind and up-current from the source of the spill.

The following additional notifications will be made to protect the health and safety of third-party marine stakeholders:

- Exclusion zones will be established on-water around the source and slick area by requesting a Notice to Mariners via the Australian Hydrographic Service (refer Table 2-7) and via the AMSA RCC on (02) 6230 6811 who will issue an AusCoast warning;
- Cooper Energy to notify adjacent petroleum titleholders and relevant fishing stakeholders to advise of the spill conditions and any exclusion requirements (refer Table 2-7).

Safety exclusion zones are maintained until the hydrocarbon release is terminated and/or the Cooper Energy Spill Incident Controller (IC) has determined there is no hazard to personnel, contractors, or third-party marine users. The establishment of safety exclusion zones is captured as an enforceable EPO in the event of a spill and is described along with the corresponding performance standards and measurement criteria in Table 2-8.

Table 2-8: Safety Exclusion Zones

ID	Environmental Performance Outcome	Control	Environmental Performance Standard	Applicable Level	Measurement Criteria	Frequency
3	**Establish and implement safety exclusion zones**	C4 Exclusion Zones	IAP documents the need for, and if required, refines throughout the incident safety exclusion areas to prevent exposure of Cooper Energy contractors and third parties to hazardous conditions.	2 & 3	IAP reflects these constraints have been identified and communicated to user groups.	N/A

3 Emergency Response Organisation

Cooper Energy's emergency management structure is scalable according to the level of incident. In general, incident response is managed by the Cooper Energy response teams listed in Table 3-1. The relationship between these groups is provided in Figure 3-1. Incidents that are extremely large, complex, or protracted, may be managed more effectively by splitting the management of that incident between two or more response teams, (i.e. source control and oil spill response). An incident could be split geographically or functionally depending on the circumstances. Cooper Energy's incident control system provides for remote access and integration of IMT personnel.

Table 3-1: Emergency Response Groups

Parameter	Crisis Management Team (CMT)	Incident Management Team (IMT) and Field Teams	Source Control Team (SCT)
Role	Manages corporate strategic issues (i.e. wider spill implications) and provides support in terms of finance, insurance, legal, external affairs, media, Joint Venture partner liaison, ASX releases and Government Department liaison.	Supports tactical response for the oil spill and supports site-based ERT. Interface between local stakeholders, external spill response and support agencies.	Responsible for planning and recovery from source control incidents.
Leader	CMT Leader	Incident Controller	SCT Leader
Plan	Cooper Energy Crisis Management Plan (CMP)	Cooper Energy Incident Management Plan (IMP); Cooper Energy BMG Closure Project (Phase 1) Oil Pollution Emergency Plan (OPEP); Cooper Energy Tactical Response Plans; and Any relevant FSPs.	Cooper Energy Source Control Emergency Response Plan
Nominal Location	CMT Room Level 8, 70 Franklin St, Adelaide, SA	Incident Control Centre Level 8, 70 Franklin St, Adelaide, SA Note, the IMT may move to another nominated location such as AMOC HQ in Geelong or as nominated by Vic DoT. FOB and Field Teams will be directed by the IMT to locations identified through the IAP cycle.	Perth Level 15, 123 St Georges Terrace, Perth WA.
Interface with regulator/industry response plans & resources	-	NATPLAN; Victorian Maritime Emergencies (Non search and rescue) (NSR) Plan; NSW State Waters Marine Oil and Chemical Spill Contingency Plan; Tasmanian Marine Oil Spill Plan (TasPlan) and AMOSPlan.	MoU between Titleholders

Parameter	Crisis Management Team (CMT)	Incident Management Team (IMT) and Field Teams	Source Control Team (SCT)
External Liaison Positions within Team	AMOSC Industry Intergovernmental Advisor	Liaison Officers (AMOSC, AMSA, State CA, State government Lead Agencies) (as required).	-

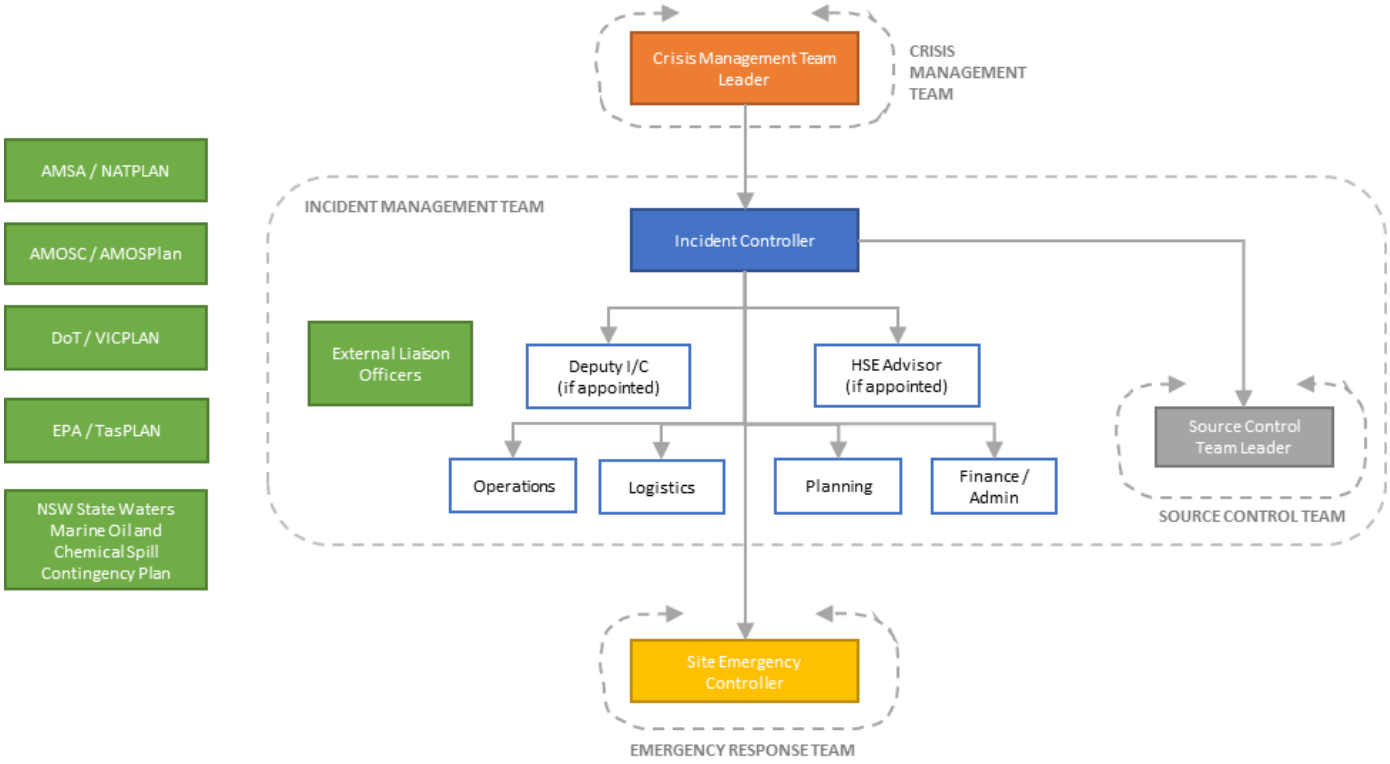


Figure 3-1: Cooper Energy Oil Spill Response Structure

3.1 Spill Management Team – Level Structures

Figure 3-1 provides the Cooper Energy emergency response structure, which is scalable, according to the emergency or oil spill level.

This structure is consistent with the Australasian Inter-service Incident Management System (AIIMS) structure adopted by NATPLAN and Victorian Maritime Emergencies NSR Plan where the IC holds overall management responsibility for activities to control the incident. Use of this structure provides consistency in role definition between Cooper Energy and regulator/industry plans and allows external trained resources to fit seamlessly into the Cooper Energy IMT structure in a surge capacity.

Table 3-2: Cooper Energy Emergency Response Structure

Level 1 Spill Management Structure:
A Level 1 spill is within the response capabilities of Cooper Energy site or the vessel operator's resources. The response structure is site-based with notification to the Cooper Energy Duty Manager. The Cooper Energy IMT or CMT may be mobilised if there is a possibility that the spill incident could escalate.
Level 2 Spill Management Structure
A Level 2 spill incident, where Cooper Energy is the control agency for the spill, will likely activate the Cooper Energy IMT to support oil spill response. The IC will nominate the positions which need to be filled and allocate subordinate functions as required.

Level 1 Spill Management Structure:

In a Level 2 spill event the IC must notify the CMT Leader and determine if the spill response requires support from CMT resources. Additional resources (i.e. media) may be mobilised as required. The mobilisation and composition of the CMT are detailed in the IMP.

For Level 2 spills where Cooper Energy is not the control agency (i.e. significant vessel spills), the Cooper Energy IMT will support the control agency (either AMSA or relevant State Authority [i.e. DJPR EMB]). A Cooper Energy liaison officer may be deployed to the AMSA or State Authority incident team to facilitate support activities (i.e., equipment and personnel).

Level 3 Spill Management Structure:

A level 3 spill incident requires resources which exceed the capacity of Cooper Energy. Control Agency (as relevant) may request additional personnel from external agencies such as AMOSC, industry mutual aid (core group) assistance through AMOSPlan (via AMOSC) and AMSA to act as surge resources for the Cooper Energy IMT in an on-going large-scale response.

The IMT would be expected to mobilise for a Level 3 spill event when notified by the Duty Manager.

If the Level 3 spill event is well-related, the Source Control Team will also be activated to initiate source control. The IC will interface with the Source Control Team Leader.

3.2 Roles and Responsibilities

3.2.1 Incident Management Team

Figure 3-2 provides details of a Level 3 oil spill support organisation. Each unit within the Planning, Operations, Logistics and Finance / Administration functional area is headed by a coordinator who reports to their relevant functional officer.

The initial Cooper Energy IMT resourcing strategy, and the responsibilities for these key roles is provided in Table 3-3. Surge capacity resources are also nominated together with the role training and competency requirements. In the event of a prolonged large-scale oil spill event, additional resources would be sourced from external agencies to fulfil the necessary roles.

Maximum IMT resourcing requirements for the well abandonment WCD spill response have been evaluated in consultation with AMOSC. Appendix 4 provides further information on where IMT personnel will be sourced from to match the response requirements identified in the OPEP.

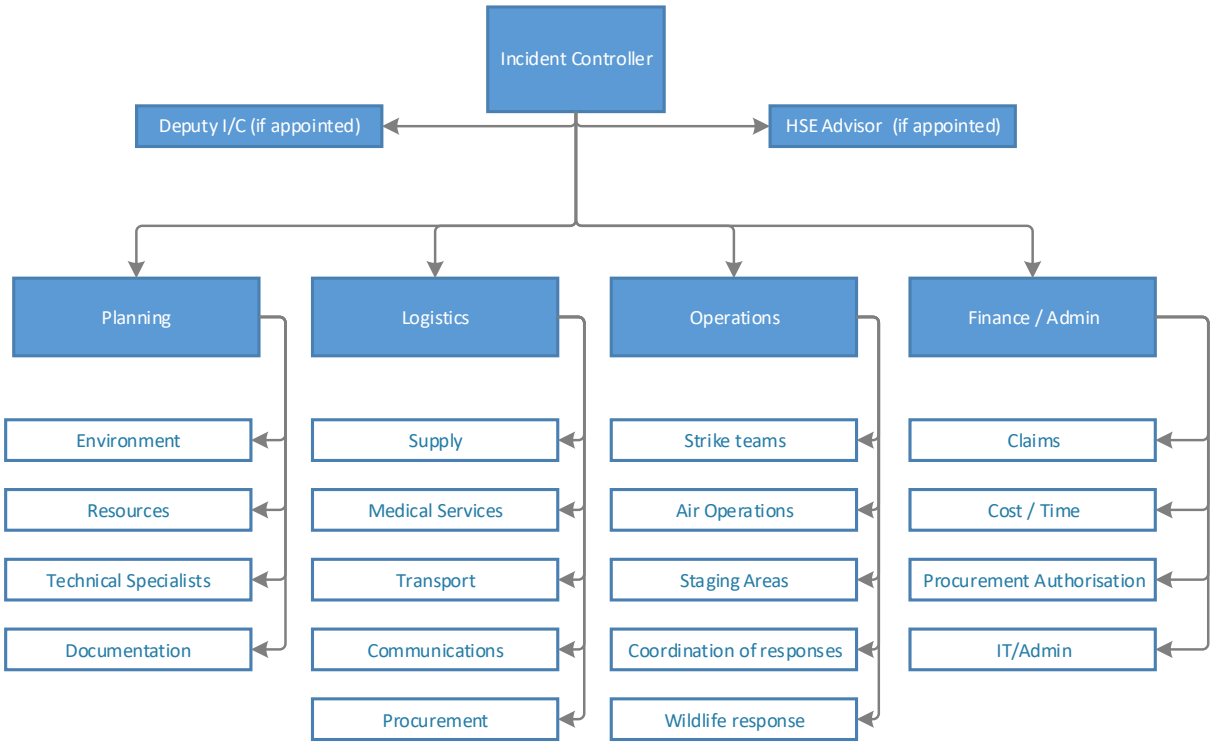


Figure 3-2: Spill Level 3 Support Organisation (Indicative)

Table 3-3: IMT Lead Roles, Responsibilities, Competencies and Provision

Responder	Responsibilities	Output	Responder Competency / Training	Initial / Surge
Incident Controller	The management of all activities necessary for the resolution of an incident.	Safe and efficient response structure and organisation.	IMO3 or equivalent BMG OPEP Induction	Cooper Energy / AMOSC Core Group
Safety Officer	Oversees the health and safety of the response operations.	Health and Safety Plans, control measures and evaluation.	Industry HES role > 5 years BMG OPEP Induction	Cooper Energy
Liaison Officers	Relaying critical information to key stakeholders (government, community). Feeding back stakeholder concerns to the IC for resolution.	External/pubic/stakeholder affairs are managed.	Industry or communications role > 5 years BMG OPEP Induction	Cooper Energy / AMOSC Core Group
Planning Lead	The collection, analysis and dissemination of information and the development of plans for the resolution of an incident.	Drive the planning process that develops the IAP. Tracking resources. COP – situational assessment (intelligence).	IMO2 or equivalent Internal competencies* BMG OPEP Induction	Cooper Energy / AMOSC Core Group (Ext interface: AMSA NRT)
Environment Unit Lead	Reports to Planning Officer Collects and analyses environmental information for areas that are or may be impacted by the incident. Undertakes NEBA. Works with experts to provide concise and accurate environmental advice to the IC	OPEP strategies are tactically implemented consistent with good global practice, accounting for the net. environmental benefit of each strategy. Assessment of environmental risks.	Internal competencies* BMG OPEP Induction	Cooper Energy / Environmental Consultancy or AMOSC Core Group. (Ext interface: State Environmental Officers)
Operations Lead	The tasking and application of resources to achieve resolution of an incident.	Run the operations in the field. Provide technical input to the production of the next operational period IAP. Draft the daily operational orders for each field team. Provide tech input to the safety plans.	IMO2 or equivalent Internal competencies* BMG OPEP Induction	AMOSC Core Group, AMSA NRT
Logistics Lead	The acquisition and provision of human and physical resources, facilities, services and materials to support achievement of incident objectives.	Acquire resources and materials that match the operations. Ensure resources are serviced and maintained to required specifications.	IMO2 or equivalent Internal competencies* BMG OPEP Induction	AMOSC Core Group, AMSA NRT
Finance and Administration Lead	The management of all financial and administrative activities to enable and record the incident.	Tracks all costs and provides financial oversight consistent with the control agency requirements.	Internal competencies* BMG OPEP Induction	Cooper Energy

Notes
**Defined for role and maintained as part of the Cooper Energy training and competence matrix.*
Support from National Response Team (NRT) under National Plan arrangements and AMOSC-AMSA MoU.

3.2.2 Forward Operating Base and Field Teams

The IMT will provide support to the Field Team (FT) Forward Operating Base (FOB) Leads (Table 3-4). The FOB(s) will be located near to response activities to manage and provide for the daily operations of the field response. Maximum resourcing requirements for the well abandonment WCD spill response have been evaluated in consultation with AMOSC; Appendix 4 provides further information on where FOB and Field Team Leader personnel, additional expertise and support can be sourced from to match the response requirements identified in the OPEP.

FOB guidance is provided in Appendix 6.

Table 3-4: FOB and Field Team Lead Roles, Responsibilities, Competencies and Provision

Initial Responder (Competency)	Responsibilities	Output	Responder Competency / Training	Initial / Surge
FOB Lead	Set-up and management of the forward operating base, IT systems, personnel, materials and equipment.	Functional FOB	IMO2 or equivalent BMG OPEP Induction	Cooper Energy / AMOSC
Safety Officer	Coordinate welfare requirements for all field response personnel.	Implementation of health and safety plan measures.	Industry HES role > 5 years BMG OPEP Induction	Cooper Energy
Aerial Operations Manager	Coordination of Aerial Response Operations	Aerial response operations are implemented in line with the IAP.	IMO2 or equivalent BMG OPEP Induction	AMOSC
Aerial Observer	Plotting and recording of oil spill	Observer reports outlining location, extent and thickness of oil.	AMOSC Aerial Surveillance Course or equivalent HUET	AMOSC
Marine Operations Manager	Coordination of Marine Response Operations	Marine response operations are implemented in line with the IAP.	IMO1 or equivalent BMG OPEP Induction	AMOSC
Contain and Recover Team Leads	Coordinate day to day containment and recovery at respective field location	Containment and recovery operations are implemented in line with the IAP.	IMO1 or equivalent	AMOSC & AMOSC Core Group
Shoreline Operations Manager	Coordination of Shoreline Response Operations	Shoreline response operations are implemented in line with the IAP.	IMO1 or equivalent BMG OPEP Induction	AMOSC
SCAT Team Leads	Coordinate day to day SCAT at respective field location	SCAT operations are implemented in line with the IAP.	IMO1 or equivalent	AMOSC & AMOSC Core Group
Shoreline Response Team Leads	Coordinate day to day shoreline response at respective field location	Shoreline response operations are implemented in line with the IAP.	IMO1 or equivalent BMG OPEP Induction	AMOSC Core Group and NRT
TRP Team Leads	Coordinate tactical response at respective tactical response site	Response operations are implemented in line with TRPs / IAP.	IMO1 or equivalent	AMOSC Core Group
Oiled Wildlife Coordinator	Coordinate oiled wildlife response	Oiled wildlife response is implemented in line with TRPs / IAP.	AMOSC Functional specific training oiled wildlife response management BMG OPEP Induction	AMOSC Core Group

Initial Responder (Competency)	Responsibilities	Output	Responder Competency / Training	Initial / Surge
Oiled Wildlife Rehabilitation Manager	Coordinate rehabilitation of oiled wildlife rescued during the response	Process implemented for the rehabilitation of oiled wildlife.	Functional specific training oiled wildlife response management	Philip Island Nature Park

3.2.3 Source Control Team (Well Incident)

The Cooper Energy Campaign Source Control Emergency Response Plan provides details and guidance on emergency well control management in Cooper Energy's offshore Victoria fields. It covers the activities to be carried out to assess the well control incident and to plan and execute appropriate response measures to regain control of and secure the well.

The IC will interface with the Source Control Team Leader (Section 3, Figure 3-1).

Maximum resourcing requirements for the well abandonment WCD source control response have been evaluated in consultation with Wild Well Control. Appendix 4 provides further information on where lead source control personnel will be sourced from to match the response requirements identified in the OPEP. A detailed resourcing plan is developed as part of the campaign SCERP.

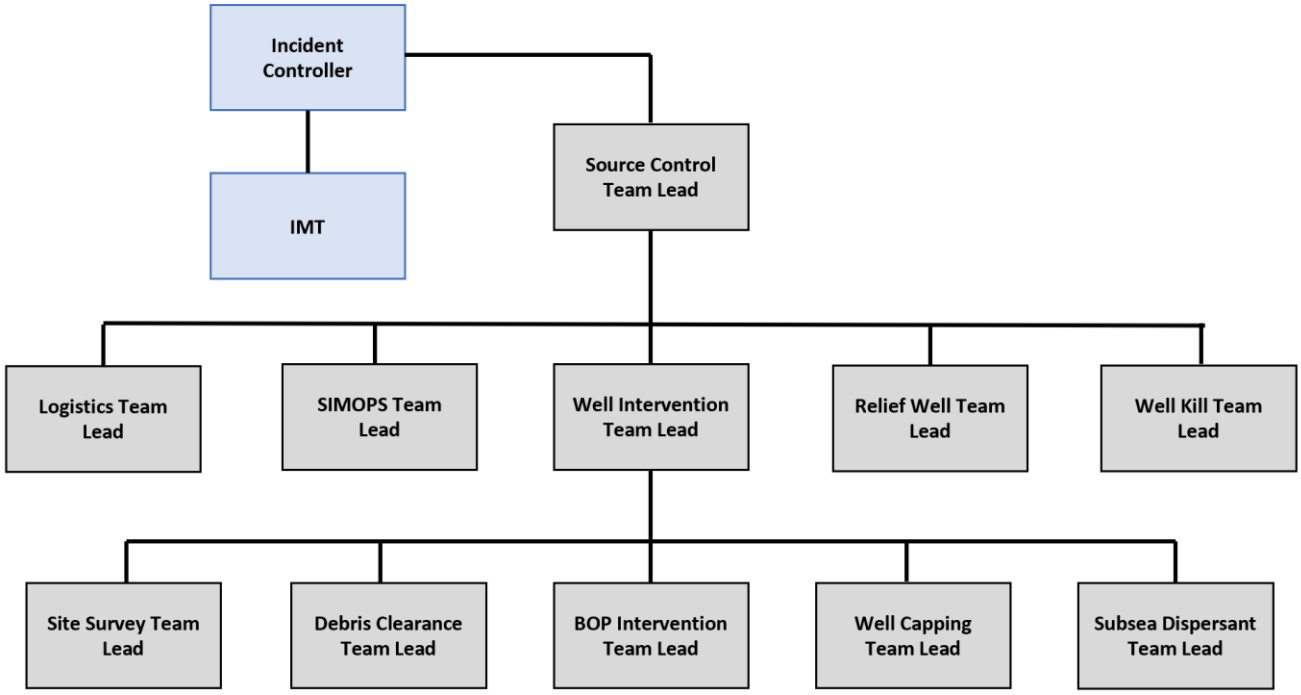


Figure 3-3 Source Control Team Structure

Table 3-5: Source Control Team Lead Roles, Responsibilities, Competencies and Provision

Initial Responder (Competency)	Responsibilities	Output	Responder Competency / Training	Initial / Surge
Source Control Team Lead	The Source Control Team Leader gathers all of the information from the source control sub groups to manage and report on the progress of the various source control methods being pursued.	Approve and authorise the implementation of a Source Control Action Plan.	IMO III, IWCF Subsea Supervisor Well Control or equivalent	Cooper Energy, WWC / Labour Agency
Well Intervention Team Lead	The Well Intervention Team Leader reports to the Source Control Team Leader and supports activities related to site surveys, debris removal, subsea dispersant and well intervention of the incident well.	Approve and authorise the implementation of an: Site Survey Plan BOP/ Well Intervention Plan Debris Removal Plan Subsea Dispersant Plan	IMO II, IWCF Subsea Supervisor Well Control	Cooper Energy Labour Agency WWC
Site Survey Team Lead	The Site Survey Team Leader is responsible for the management and coordination of surveying the site subsea.	Provides data for all other source control efforts to assist in the development of the operational plans and procedures.	Experience offshore subsea survey lead role	Cooper Energy Fugro Oceaneering
BOP Intervention Team Lead	The BOP Intervention Team Leader is responsible for the management and coordination of an intervention on the BOP of the incident well.	Approve the BOP intervention plans and procedures, secures resources and manages BOP intervention operations with the objective of closing the BOP.	Experience offshore subsea intervention lead role	Cooper Energy WWC Service Rep. - BOP/Well Head
Debris Removal Team Lead	The Debris Removal Team Leader is responsible for the management and coordination of subsea debris removal operations.	Coordinate the development of operational plans and procedures, secure resources, and manage debris removal operations to ensure clear access for the relief well.	Experience offshore subsea operations lead role	Cooper Energy WWC Oceaneering Service Rep. – CSV / Debris Vessel
Subsea Dispersants Team Lead	The Dispersant Team Leader is responsible for the management and coordination of subsea dispersant operations at or near the source.	Coordinate the development of the subsea dispersant application and monitoring plans and procedures, secure resources, and manage subsea dispersant operations. Prepare procedures and plans for submission to be approved by the local governmental authority and coordinated through the SIMOPS Team.	Experience offshore subsea operations lead role	Cooper Energy AMOSC WWC Oceaneering Service Rep. – Dispersant Vessel
SIMOPS Team Lead	The SIMOPS Leader reports to the Source Control Team Leader and supports activities related to SIMOPS plans and activities of the incident well.	Approve and coordinate activities at the incident site. Coordinate and schedule all activities within the SIMOPS area. Coordinate with other groups for the transport of all well control materials to the site	Experience SIMOPS lead role	Cooper Energy Labour Agency Oceaneering Service Rep. – Vessel

Initial Responder (Competency)	Responsibilities	Output	Responder Competency / Training	Initial / Surge
		Create and maintain SIMOPS plan detailing organization and process flow Establish On-Site SIMOPS Control/Coordination Centre		
Well Capping Team Lead	The Well Capping Leader reports to the Source Control Team Leader and supports activities related to well capping.	Approve and authorise the implementation of a Well Capping Action Plan.	Experience offshore well intervention lead role. IWCF Subsea Supervisor Well Control or equivalent	WWC Service Rep. – Capping Vessel
Relief Well Team Lead	The Relief Well Leader reports to the Source Control Team Leader and supports activities related to planning and operations for drilling the relief well and well kill modelling, planning and operations associated with well kill from the relief well to the incident well.	Determine if impacted rig may be used for relief rig. Determine number of relief wells to be drilled Obtain and assess information on reservoir and wellbore geometry Source rigs to drill the well(s) Identify available resources (i.e., rig, oil country tubular goods, pumping fluids) Identify surface location and develop relief well plan Submit permit(s) and receive approval Finalize well design Drill relief well	Experience offshore well construction lead role. IWCF Subsea Supervisor Well Control or equivalent	Cooper Energy WWC Labour Agency Schlumberger Wellsite Services MODU Manager Fluid provider
Well Kill Team Lead	Well Kill Team Leader is responsible for the management and coordination of well kill operations.	Coordinate the development (and approval) of the well kill plans and procedures, secure resources, and manage well kill operations via a relief well or capping stack, concurrently with all other source control efforts until the well is dead.	Experience offshore drilling lead role	Cooper Energy WWC Schlumberger Wellsite Services MODU Manager Service Rep. – Vessel Fluid Provider
Logistics Team Lead	The Logistics Team Leader will support the Source Control Team during a subsea well containment incident. The Logistics Team will coordinate internal and external to the Source Control Team to ensure that all necessary resources and services for source control operations are procured.	Approve and authorise the implementation of SCERP logistics strategy, manage vessel support, materials support, facility support, and communications support for source control operations	Experience logistics lead role	Cooper Energy Service Rep. – Vessel Pentagon Cube Energy Labour Agency

3.2.4 Crisis Management Team

The Cooper Energy Crisis Management Team (CMT) typically comprises senior executives representing the major areas of the Cooper Energy business (Table 3-6). The CMT Leader will activate support as required to assist with legal and media issues. The focus of the CMT includes:

- Supporting the IMT to contain an incident.
- Communicating with all relevant stakeholders and managing the demand for information.
- Strategic planning of control and recovery processes.

Table 3-6: Crisis Management Team Roles, Responsibilities, Competencies and Provision

Initial Responder (Competency)	Responsibilities	Output	Level	Initial / Surge
CMT Lead	Overall responsibility for management of the Crisis Team including overall responsibility for internal and external communications to the Board, JV partners, ASX and other stakeholders	Supports the IC to provide Safe and efficient response structure and organisation.	General Management (or delegate)	Cooper Energy
External Affairs / Stakeholder relations	Advise on development of internal and external affairs and communications strategy. Brief company spokesperson	Provision of information to external parties in timely manner.	Manager (or delegate)	Cooper Energy
Legal	Assist in the development of a positive legal direction	Legal implications of the response are assessed and communicated to the CMT lead	General council, Manager (or delegate)	Cooper Energy
Finance	Financial notifications, provision of adequate funds, advice on financial impacts	Response is adequately funded to implement the IAP.	General Manager (or delegate)	Cooper Energy
Human Resources	Source relief and specialist personnel	Response is adequately resourced to implement the IAP	Manager (or delegate)	Cooper Energy

4 Pre-Operational Response Options

Spill response options will be based on the general conditions, oil type and the response priorities. This section describes pre-operational spill response options based on known scenarios, fate and trajectory predictions and an assessment of impacts.

The response taken in an actual event may draw on this information initially but must be appropriate to the conditions of the spill at the time. Approaches to support the live operational response are provided in Section 5.

4.1 General Environmental Conditions of the Bass Strait

The Gippsland Basin lies within the eastern portion of the Bass Strait, which is a sea strait separating Tasmania from the southern Australian mainland. The strait is a relatively shallow area of the continental shelf, connecting the southeast Indian Ocean with the Tasman Sea. The Bass Strait region has a reputation for high winds and strong tidal currents (Jones, 1980). Currents within the strait are primarily driven by tides, winds and density driven flows. In winter and spring, waters within the strait are well mixed with no obvious stratification, while during summer the central regions of the strait become stratified (Baines and Fandry, 1983; Middleton and Black, 1994).

The varied geography and bathymetry of the region, in addition to the forcing of the south-eastern Indian Ocean and local meteorology lead to complex shelf and slope circulation patterns (Middleton and Bye, 2007). During winter there is a strong eastward water flow due to the strengthening of the South Australian Current (fed by the Leeuwin Current in the Northwest Shelf), which bifurcates with one extension moving though the Bass Strait, and another forming the Zeehan Current off western Tasmania (Sandery and Kampf, 2007). During summer, water flow reverses off Tasmania, King Island and the Otway Basin travelling westward, as the coastal current develops due to south-easterly winds (Figure 4-1).

To support the development of EP and this OPEP Cooper Energy commissioned RPS to undertake comprehensive oil spill modelling for the BMG Closure Project (Phase 1) activities which considers the following hypothetical spill scenarios. As part of this scope of work RPS developed a 10-year (2008 to 2017) wind and current dataset (includes the combined influence of ocean and tidal currents).

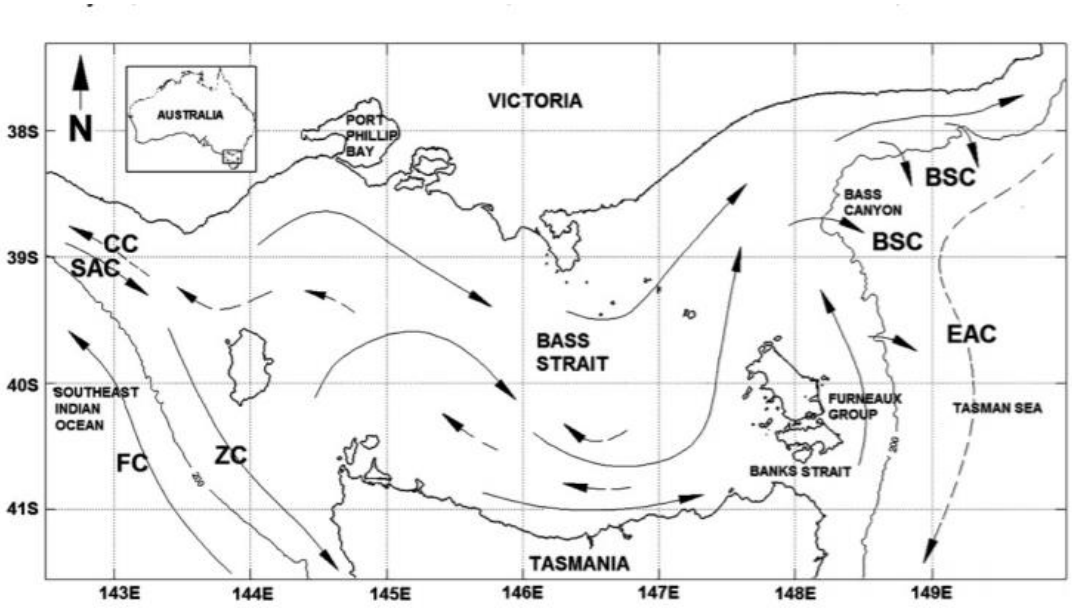


Figure 4-1 Schematic representation of currents in the region. Dashed arrows denote summer currents. Shelf break depth (200 m isobath) is indicated (Sandery and Kampf, 2007)

4.1.1 Surface Currents

Within the vicinity of the Operational Area (nearest to B2 and M2A well locations), surface currents generally flow in a northeast to southwest axis with different intensities depending on the month. The average current speed ranged between 0.18 m/s and 0.24 m/s while maximum current speeds ranged between 0.59 m/s (December) and 0.96 m/s (March) (RPS, 2020).

Figure 4-2 illustrates the monthly current rose distributions based on 10-year dataset for the period 2008 to 2017 (inclusive).

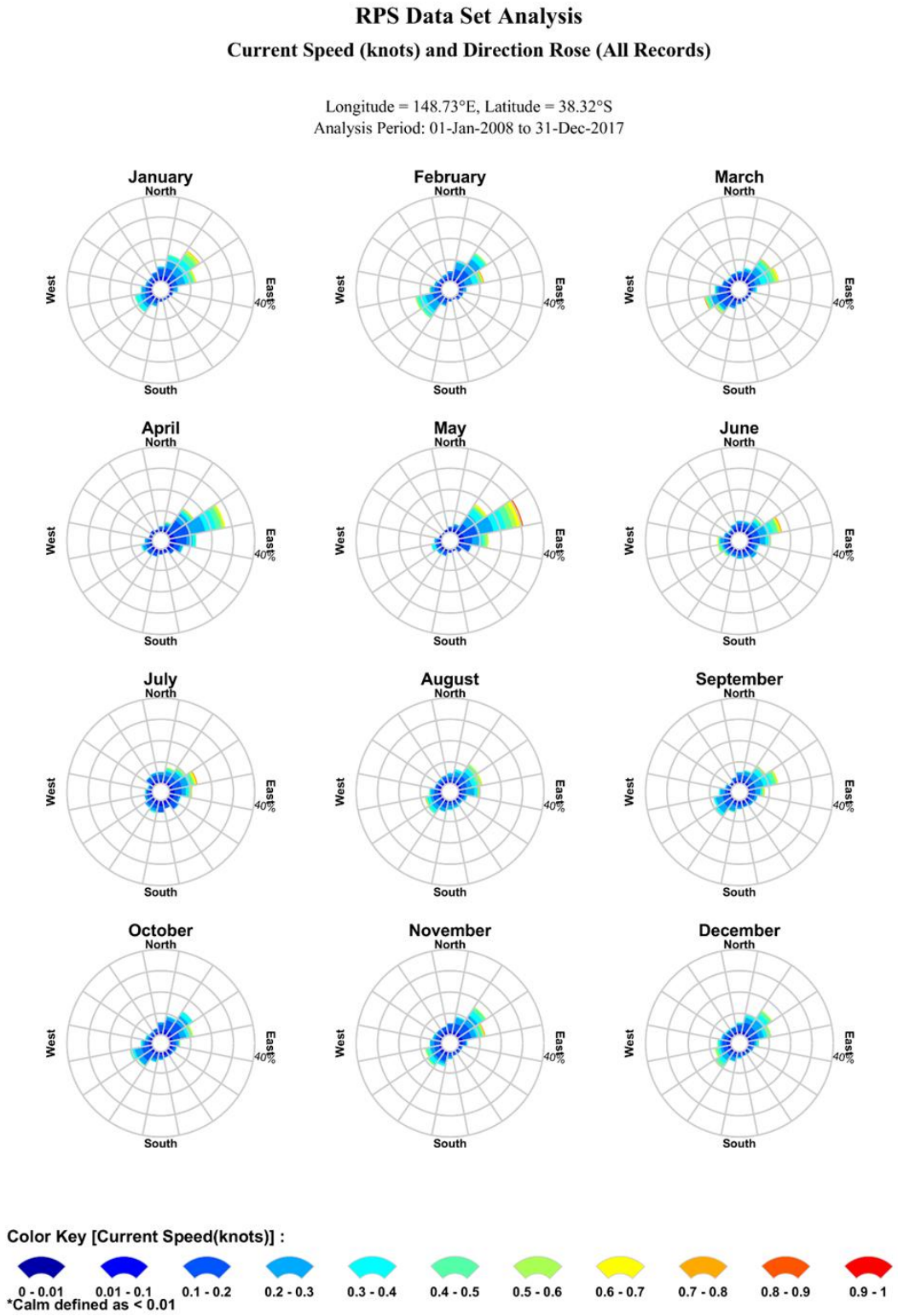


Figure 4-2 Monthly surface current rose plots within Operational Area for 2008 to 2017, inclusive (RPS, 2020)

4.1.2 Water Temperature and Salinity

Monthly average sea surface temperatures range from 14.1°C (September) to 20.5°C (March). Salinity tends to remain consistent throughout the year, between 35.4-35.6 psu (RPS, 2020).

Figure 4-3 illustrates the monthly depth-varying water temperature and salinity profiles within the vicinity of B2 and M2A well locations within the Operational Area based on World Ocean Atlas 2013 database produced by the National Oceanic and Atmospheric Administration's (NOAA) National Center for Environmental Information (formerly the National Oceanographic Data Centre) (Levitus et al., 2013). Noting the depth range across the Operational Area varies between 135m to 270m.

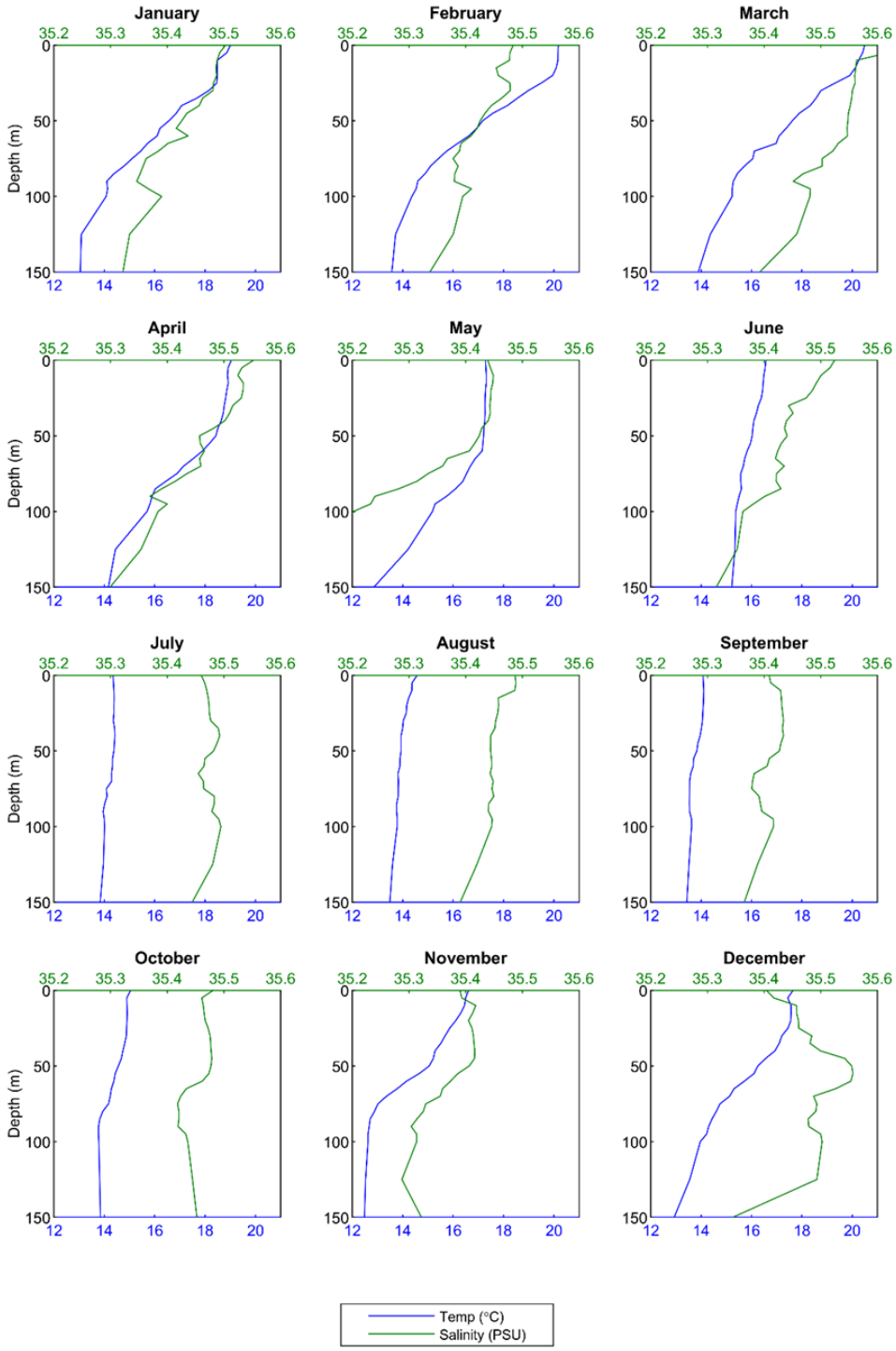


Figure 4-3 Monthly temperature and salinity profiles throughout the water column within the vicinity of the B2 and M2A well locations (RPS, 2020)

4.1.3 Wind

High resolution wind data for the period 2008 to 2017 (inclusive) has been sourced from the National Centre for Environmental Prediction (NCEP) Climate Forecast System Reanalysis (CFSR; see Saha et al., 2010). The dataset

demonstrated that the Gippsland Basin typically experiences moderate to strong winds all year round and although the monthly average wind speeds remain under 10 knots, winds can at times blow over 25 knots. Winds in the region typically blow from the southwest during the summer months and west-southwest during the winter months.

Figure 4-4 illustrates the monthly rose distributions for the selected CFSR wind node.

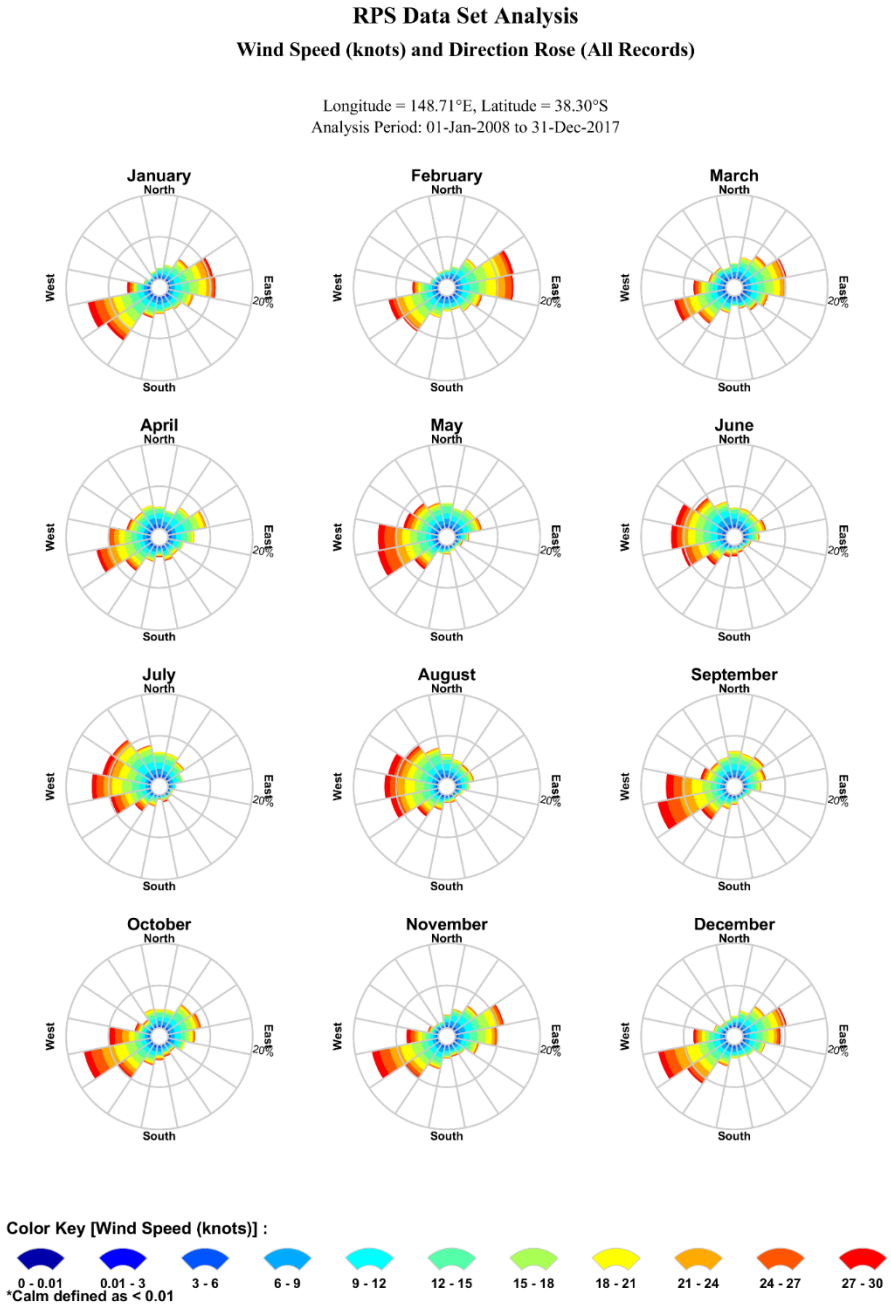


Figure 4-4 Monthly wind rose distributions derived from CFSR model from 2008 to 2017 (inclusive), within Operational Area (RPS, 2020)

4.2 Hydrocarbon Characteristics

4.2.1 Marine Diesel Oil

Vessels engaged will use marine diesel oil (MDO) which is a mixture of both volatile and persistent hydrocarbons and is classified as Group II oil. MDO has the following behaviour at sea:

- The hydrocarbon spreads very rapidly to thin thicknesses elongated in the direction of the wind and current.

- Evaporation is the dominant process contributing to the removal of spilled MDO from the sea surface and can account for 60-70% loss (depending upon wind conditions, sea state and sea temperature).
- MDO residues usually consist of heavy components which may persist for longer and tend to disperse as oil droplets in the upper layers of the water column in the presence of waves but can re-float to the surface if wave energies abate.

Table 4-1 provides the physical properties of MDO.

Table 4-1: MDO Properties and Behaviour

		MDO
API Gravity		37.6
Density@25°C g/ml		0.83
Dynamic Viscosity @ 25°C (cP)		4.0
Pour Point (°C)		-14
Boiling Point Curve (% mass)	Volatiles (<180°C)	6
	Semi-volatile (180-265°C)	34.6
	Low Volatility (265-380°C)	54.4
	Residual (>380°C)	5
Group		II

4.2.2 BMG Field Light Crude Oil

The Basker Manta Gummy (BMG) development produced light crude oil. The oil type used to represent the LOWC was a composite crude using B6 as a basis, with B2 properties used to resolve the full data set required for modelling purposes. The oil from the BMG development is categorised as a group II oil (light-persistent).

B6 crude has the following behaviour at sea:

- About 19.4% of mass should evaporate within the first 12 hours with a further 19.5% within the first 24 hours and an additional 20.8% evaporate over several days (total evaporation 59.7%).
- Approximately 40.3% (by mass) of B6 crude is considered persistent compound, with a wax content of 27.7%. (depending upon wind conditions, sea state and sea temperature).
- Wax component is likely to solidify over time to form small waxy flakes as it loses the light end hydrocarbons acting as solvent to the heavier compounds.
- B6 has the capacity to entrain into the water column in the presence of moderate winds (> 10 knots) and can potentially remain entrained for as long as the winds persist
- Maximum portion of hydrocarbons that can be lost to the atmosphere varies between 30% and 50% under moderate and calm wind conditions, respectively

Table 4-2 and Table 4-3 summarise the Basker hydrocarbon properties (RPS, 2020) based on assay information for the B2 and B6 production wells.

Table 4-2: Basker Light Crude Oil Hydrocarbon Physical Properties (RPS, 2020)

Physical Properties	Value
Density (kg/m^3)	829.8 (at 15°C)
API	45.2
Dynamic Viscosity (cP)	2.8 (at 40°C)
Pour Point (°C)	15
Wax Content (%)	27.7

Physical Properties	Value
Hydrocarbon property category	Group II

Table 4-3: Distillation Characteristics of Basker Light Crude Oil (RPS, 2020)

Parameter	Volatiles	Semi-volatiles	Low volatiles	Residual
Boiling Point (°C)	<180	180-265	265-380	>380
Aromatic 'Type'	MAHs	2 ring PAHs	3-ring PAHs	≥ 4-ring PAHs
Aliphatics	C4-C10	C10-C15	C15-C20	>C20
Basker Crude (%)	19.4	19.5	20.8	40.3
		Non-Persistent		Persistent

4.3 Response Option Effectiveness

An assessment of the suitability and effectiveness of spill response options for the hydrocarbon types which could potentially be released from BMG Closure Project (Phase 1) activities is described in Section 7.3 of the BMG Closure Project (Phase 1) EP (BMG-DC-EMP-0001), and summarised below (Table 4-4).

Given the hydrocarbon types the primary response strategy will be to initiate source control and then monitor and evaluate the spill (natural weathering). Additional secondary measures to protect specific environmental sensitivities within the spill response environment that may be affected (EMBA) where response activities may offer net benefit includes protection and deflection, shoreline monitoring and clean-up (on sandy beaches) and oiled wildlife response.

Further information on each of the selected response strategies is provided in Section 6 to Section 11.

Table 4-4: Response option summary

Response Option (OPEP Section Reference)	Description	MDO	Crude Oil
Source Control (Section 6)	Limit flow of hydrocarbons to environment.	✓	✓
Monitor & Evaluate (Section 7)	Direct observation – Aerial or marine; Vector Calculations; Oil Spill Trajectory Modelling; Satellite Tracking Buoys To maintain situational awareness, all monitor and evaluate options suitable.	✓	✓
Dispersant Application (Section 6)	Breakdown surface spill & draw droplets into upper layers of water column. Increases dispersion and in turn biodegradation and provides benefit to sea-surface /air breathing animals.	X	Surface application: x Subsea application: ✓
Contain and Recover (Section 9)	Booms and skimmers to corral and contain. Containment and recovery is a secondary response strategy.	X	✓*
Protect & Deflect (Section 8)	Booms and skimmers deployed to protect environmental sensitivities.	✓	✓
Shoreline Clean-up (Section 10)	The selection and application of shoreline clean-up methods will take into account environmental sensitives based on NEBA	✓	✓
Oiled Wildlife Response (Section 11)	Consists of capture, cleaning and rehabilitation of oiled wildlife. May include hazing or pre-spill captive management.	✓	✓

Response Option (OPEP Section Reference)	Description	MDO	Crude Oil
	In Victoria, this is managed by DELWP.		

*Offshore containment and recovery is considered to be an unlikely response strategy given typical high energy conditions offshore Gippsland versus the consistently calm conditions required for containment and recovery. However, Containment and Recovery has been retained in this OPEP as a secondary response strategy. Containment and Recovery is more likely to be undertaken as part of the protect and deflect strategy close to shore in protected bays and inlets, and is described in more detail in applicable TRPs.

4.4 Priority Protection Areas

Predictive modelling has been used to identify the areas that may be exposed to hydrocarbons from hypothetical worst-case spill scenarios. To identify the primary response planning areas the following oil exposures were used from AMSA's foreshore assessment guide (NP-GUI-025; AMSA 2015):

- A sea surface oil exposure of >10 g/m^2 as this represents the practical limit for surface response options; below this loading, oil containment, recovery and chemical treatment (dispersant) become ineffective.
- A shoreline contact exposure of >100 g/m^2 as this represents the minimum loading that is not likely to inhibit the potential for recovery; hydrocarbons below this loading may be best remediated by natural coastal processes alone.

The primary response planning areas were developed based on the modelling of the worst-case spill scenarios that covered the greatest area above the exposures stated above for the BMG Closure Project (Phase 1) activities.

Based on the modelling outputs, priority protection areas have been identified as have other areas where response strategies may be practically implemented. Table 4-2 shows the primary response areas the BMG Closure Project (Phase 1) activities.

A timely and appropriate response for the identified areas for priority protection have been planned for in the EP to ensure that the risks and impacts are as low as reasonably practicable (ALARP) and acceptable. A series of Tactical Response Plans (TRPs) have been developed to assist in implementing a rapid response at these protection priority areas (Section 4.4.2).

4.4.1 Sensitivity Criteria

To support the identification of priority response areas, shoreline sensitivity analysis and mapping was undertaken guided by IPIECA principles and informed by the regional description of the environment and understanding of receptor presence in the region. Coastal landform types, habitats and other receptors within the region have been ranked based upon sensitivity to hydrocarbon exposure in accordance with the criteria in Table 4-5.

Table 4-5: Sensitivity Criteria

Sensitivity	Code	Criteria
Severe Impact	**S1**	Region of known sensitive habitat (mangrove, salt marshes, and sheltered tidal flats) which if impacted may have significant impacts and long recovery periods. Presence of known threatened species feeding, breeding, nesting or congregation areas. Areas of national significance or biological processes for species of national significance (e.g. breeding sites and National and State Parks, Commonwealth Heritage listed areas). Identified marine sanctuary or reserve.
Medium Impact	**S2**	Region of known moderately sensitive habitats (sheltered rocky rubble coasts, exposed tidal flats, gravel beaches, mixed sand and gravel beaches) which have a medium recovery period (~2-5 years). Presence of known threatened species or cultural heritage impacted. Region of significant commercial activity (e.g. fishing, tourism). Places of public interest such as beaches.
Low Impact	**S3**	Region of known low sensitivity habitat (fine grained beaches, exposed wave-cut platform and exposed rocky shores) which have a rapid recovery period (~ year). Minimal impact to marine life, business, public areas or cultural heritage items.

4.4.2 Tactical Response Plans for Priority Protection Areas

Tactical Response Plans (TRPs) are developed for sensitive sites predicted to be exposed to a hydrocarbon spill where there is limited time to contact (as determined by predictive modelling). It is estimated that it takes approximately 5 days to develop and ground truth a tactical response plan and 24-48 hours to mobilise equipment and personnel to site, thus those areas of high sensitivity within the priority response area with the potential to be exposed to hydrocarbons within 7 days of the spill commencing were identified as the priority protection areas.

The priority response planning areas identified for spill scenarios that are relevant to the BMG Closure Project (Phase 1) activities are shown in Figure 4-5, and relevant TRPs are listed in Table 4-6.

Further TRPs to those identified in Table 4-6 are developed which cover sites and sensitivities in NSW, Tasmania and Victoria. In the event of a spill, any additional TRPs required will be developed. This would be undertaken as part of incident action planning in the operational response.

Table 4-6: Tactical Response Plans relevant to BMG Closure Project (Phase 1) Activities

Tactical Response Plans	Sector Name	Summary
Victoria (Refer to Table 4-7, Table 4-8)		
Benadore River	Mallacoota	High coastal habitat sensitivity
Betka River	Mallacoota	High coastal habitat sensitivity
Beware Reef	Cape Conran	High biological sensitivity
Cape Howe Marine National Park	Mallacoota	High biological sensitivity
Easby Creek	Point Hicks	High coastal habitat sensitivity
Gabo Island	Mallacoota	High biological sensitivity
Mallacoota	Mallacoota	High coastal habitat sensitivity
Merriman Creek	Seaspray	High coastal habitat sensitivity
Mueller River	Point Hicks	High coastal habitat sensitivity
Point Hicks	Point Hicks	High biological sensitivity
Red River	Mallacoota	High coastal habitat sensitivity

Tactical Response Plans	Sector Name	Summary
Shipwreck Creek	Mallacoota	High coastal habitat sensitivity
Snowy River	Marlo	High coastal habitat sensitivity
Sydenham Inlet	Bemm River	High coastal habitat sensitivity High biological sensitivity
Tamboon Inlet	Bemm River, Point Hicks	High coastal habitat sensitivity High biological sensitivity
The Skerries	Point Hicks	High biological sensitivity
Thurra River	Point Hicks	High coastal habitat sensitivity
Tullaburga Island	Tullaburga Island	High biological sensitivity
Wingan Inlet	Point Hicks	High coastal habitat sensitivity
Yeerung River	Cape Conran	High coastal habitat sensitivity
NSW (Refer to Table 4-9)		
Bittangabee Bay	Bega Valley NSW	High biological sensitivity
Nadgee Nature Reserve including Merica River	Bega Valley NSW	High coastal habitat sensitivity
Wonboyn River	Bega Valley NSW	High coastal habitat sensitivity

In addition to site-specific TRPs, the following Response Plans have been developed:

- Species response Plans:
  - Southern right whale
  - Sperm whale
  - White-faced storm petrel
  - Short tailed shearwater
- Tactical Response Plan – Shoreline Protection & Clean Up. Developed in collaboration with ExxonMobil, the purpose of the TRP is to provide a plan outlining the strategy to be adopted and actions required to undertake safe and effective shoreline protection and clean-up along any shoreline type, in response to a release of hydrocarbons to the marine environment.

4.4.3 Pre-spill Net Environmental Benefit Assessment (NEBA)

An assessment of effective spill mitigation techniques and the net benefit they offer to specific environmental sensitivities located in the identified priority protection areas is provided in the following tables.

NOTE: wildlife response activities will focus on addressing wildlife welfare as a result of the spill regardless of the NEBA. The NEBA is an important tool in decision making, but provided it is safe to do so, all accessible wildlife with welfare needs should be addressed.

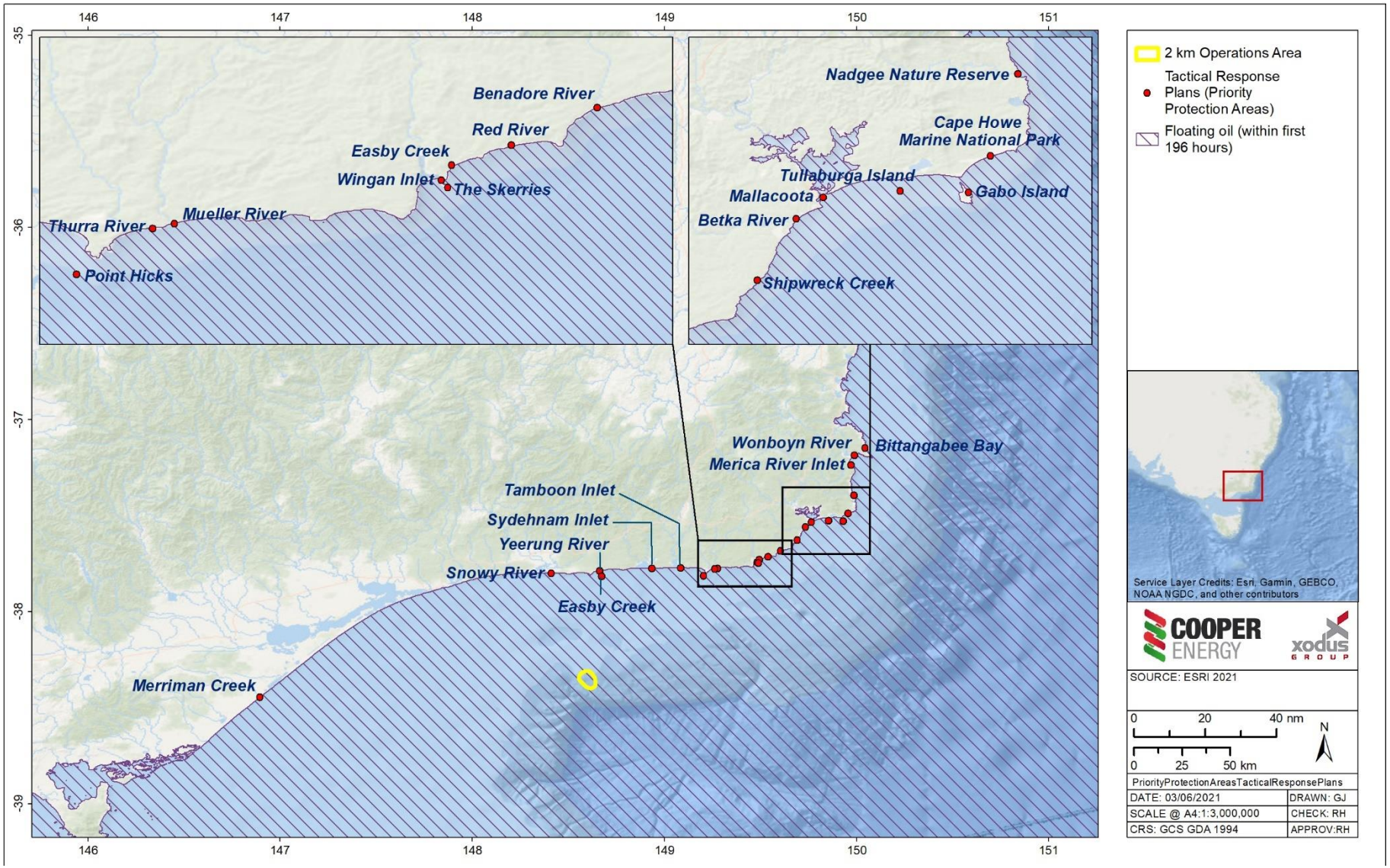


Figure 4-5 Priority Protection Areas and Tactical Response Plans

Table 4-7: Sensitivities within the identified Protection Response Planning Areas (Victoria, Table 1 of 2), Response Option Feasibility & Planning NEBA

			Priority Response Planning Areas (Victoria)										Response Options	Response Effectiveness Assessment						
Receptor	*Sensitivity*	*Marine*	*Benadore River*	*Betka River*	*Beware Reef*	*Cape Howe Marine National Park*	*Easby Creek*	*Gabo Island*	*Mallacoota*	*Merriman Creek*	*Mueller River*			***Oil Type***	***Source Control***	***Monitor & Evaluate***	***Dispersant Application***	***Contain & Recover (offshore)***	***Protect & Deflect***	***Shoreline Clean-up***	***Oiled Wildlife Response***
														MDO	***Yes***	***Yes***	***No***	***No***	***Yes***	***Yes***	***Yes***
														Light Crude Oil	***Yes***	***Yes***	***Yes*** *[subsea only, at the well in Cwth waters]*	***Yes*** *[secondary]*	***Yes***	***Yes***	***Yes***
Significant Marine Ecology																					
Cetaceans	*S1*	✓				✓									↑	-	↑	↑	*NA*	*NA*	*NA*
Pinnipeds	*S2*	✓			✓	✓		✓			✓				↑	-	↑	↑	*NA*	*NA*	*NA*
Turtles	*S2*	✓													↑	-	↑	↑	*NA*	*NA*	↑
Fish & Sharks	*S2*	✓		✓	✓										↑	-	↓	↑	*NA*	*NA*	*NA*
Seabirds	*S1*	✓				✓		✓	✓						↑	-	↑	↑	*NA*	*NA*	↑
Shorebirds	*S1*			✓		✓		✓	✓	✓					↑	-	↑	↑	*NA*	*NA*	↑
Invertebrates	*S3*	✓			✓										↑	-	↓	↑	*NA*	*NA*	*NA*
Plankton	*S3*	✓													↑	-	↓	↑	*NA*	*NA*	*NA*
Significant Coastal Habitats																					
Saltmarsh/ Seagrass	*S1*										✓				↑	-	↑	↑	↑	↓	*NA*
Mangroves	*S1*			✓					✓						↑	-	↑	↑	↑	↓	*NA*
Mudflats	*S1*			✓					✓						↑	-	↑	↑	↑	↓	*NA*
Kelp Habitats (inter-tidal)	*S2*				✓										↑	-	↑	↑	*NA*	*NA*	*NA*
Sand Beaches	*S3*			✓				✓			✓				↑	-	↑	↑	*NA*	↑	*NA*
Sub-tidal Reef	*S3*										✓				↑	-	↑	↑	*NA*	*NA*	*NA*
Inter-tidal Rocky Flat/Headland	*S3*			✓	✓						✓				↑	-	↑	↑	*NA*	↑	*NA*
Wetlands	*S1*			✓					✓						↑	-	↑	↑	↑	↓	*NA*
Significant Coastal Ecology																					
Shoreline Birds	*S1*							✓	✓						↑	-	↑	↑	↑	↑	↑
Pinniped Haul-out Sites	*S2*				✓			✓							↑	-	↑	↑	*NA*	*NA*	↑
Penguin Colonies	*S2*					✓		✓							↑	-	↑	↑	*NA*	*NA*	↑
Protected Area	*S2*		✓	✓		✓	✓				✓				↑	-	-	↑	*NA*	*NA*	↑
Significant Socio-economic																					
Tourism	*S2*		✓	✓	✓		✓	✓		✓	✓				↑	-	↑	↑	↑	↑	*NA*
Amenity Beach	*S3*			✓				✓	✓	✓	✓				↑	-	↑	↑	↑	↑	*NA*
Ports, Harbours, Yacht Club	*S3*								✓						↑	-	↑	↑	↑	↑	*NA*
Commercial Fishing/ Aquaculture	*S2*	✓													↑	-	-	↑	*NA*	↑	*NA*
Recreational Fishing/Diving	*S3*			✓	✓				✓	✓	✓				↑	-	-	↑	*NA*	↑	*NA*
Shipwrecks (submerged)	*S3*				✓				✓						↑	-	↓	↑	*NA*	*NA*	*NA*
Aboriginal Heritage/Cultural	*S2*		✓	✓	✓	✓	✓	✓		✓	✓				↑	-	↑	↑	↑	↓	*NA*

Legend	
Benefits Assessment	**Effectiveness Assessment**
↑ Net Benefit Compared with only Monitor & Evaluate	Yes: Option suitable for oil type, few restrictions in implementing
↓ Net Loss Compared with only Monitor and Evaluate	Possible: Option suitable for oil type, potential limitations on application
- No net benefit or Loss	Not Recommended: Option not suitable for oil type
	NA: Option is not applicable to the Receptor given credible worst-case discharge potential

Table 4-8: Sensitivities within the identified Protection Response Planning Areas (Victoria, table 2 of 2), Response Option Feasibility & Planning NEBA

Receptor	Sensitivity	Marine	Priority Response Planning Area (Victoria): Point Hicks	Red River	Shipwreck Creek	Snowy River	Sydenham Inlet	Tamboon Inlet	The Skerries	Thurra River	Tullaburga Island	Wingan Inlet	Yeerung River
Significant Marine Ecology													
Cetaceans	S1	✓											
Pinnipeds	S2	✓							✓		✓		
Turtles	S2	✓											
Fish & Sharks	S2	✓	✓		✓		✓	✓		✓			✓
Seabirds	S1	✓				✓					✓	✓	✓
Shorebirds	S1					✓			✓		✓	✓	✓
Invertebrates	S3	✓	✓										
Plankton	S3	✓											
Significant Coastal Habitats													
Saltmarsh/ Seagrass	S1		✓			✓	✓	✓		✓		✓	
Mangroves	S1												
Mudflats	S1						✓	✓		✓			
Kelp Habitats (inter-tidal)	S2												
Sand Beaches	S3		✓		✓		✓	✓		✓	✓		
Sub-tidal Reef	S3												
Inter-tidal Rocky Flat/Headland	S3		✓									✓	
Wetlands	S1					✓	✓	✓				✓	
Significant Coastal Ecology													
Shoreline Birds	S1		✓			✓					✓		✓
Pinniped Haul-out Sites	S2		✓						✓		✓		
Penguin Colonies	S2								✓		✓		
Protected Area	S2		✓	✓	✓					✓			
Significant Socio-economic													
Tourism	S2		✓	✓	✓	✓	✓	✓		✓		✓	✓
Amenity Beach	S3					✓							
Ports, Harbours, Yacht Club	S3		✓										
Commercial Fishing/ Aquaculture	S2	✓				✓							
Recreational Fishing/Diving	S3		✓			✓		✓				✓	
Shipwrecks (submerged)	S3		✓		✓						✓		
Aboriginal Heritage/Cultural	S2		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓

Response Options: Oil Type	Response Effectiveness Assessment: Source Control	Monitor & Evaluate	Dispersant Application	Contain & Recover	Protect & Deflect	Shoreline Clean-up	Oiled Wildlife Response
MDO	Yes	Yes	No	No	Yes	Yes	Yes
Light Crude Oil	Yes	Yes	Yes [subsea only, at the well in Cwth waters)]	No	Yes	Yes	Yes
Significant Marine Ecology							
Cetaceans	↑	-	↑	↑	NA	NA	NA
Pinnipeds	↑	-	↑	↑	NA	NA	NA
Turtles	↑	-	↑	↑	NA	NA	↑
Fish & Sharks	↑	-	↓	↑	NA	NA	NA
Seabirds	↑	-	↑	↑	NA	NA	↑
Shorebirds	↑	-	↑	↑	NA	NA	↑
Invertebrates	↑	-	↓	↑	NA	NA	NA
Plankton	↑	-	↓	↑	NA	NA	NA
Significant Coastal Habitats							
Saltmarsh/ Seagrass	↑	-	↑	↑	↑	↓	NA
Mangroves	↑	-	↑	↑	↑	↓	NA
Mudflats	↑	-	↑	↑	↑	↓	NA
Kelp Habitats (inter-tidal)	↑	-	↑	↑	NA	NA	NA
Sand Beaches	↑	-	↑	↑	NA	↑	NA
Sub-tidal Reef	↑	-	↑	↑	NA	NA	NA
Inter-tidal Rocky Flat/Headland	↑	-	↑	↑	NA	↑	NA
Wetlands	↑	-	↑	↑	↑	↓	NA
Significant Coastal Ecology							
Shoreline Birds	↑	-	↑	↑	↑	↑	↑
Pinniped Haul-out Sites	↑	-	↑	↑	NA	NA	↑
Penguin Colonies	↑	-	↑	↑	NA	NA	↑
Protected Area	↑	-	-	↑	NA	NA	↑
Significant Socio-economic							
Tourism	↑	-	↑	↑	↑	↑	NA
Amenity Beach	↑	-	↑	↑	↑	↑	NA
Ports, Harbours, Yacht Club	↑	-	↑	↑	↑	↑	NA
Commercial Fishing/ Aquaculture	↑	-	-	↑	NA	↑	NA
Recreational Fishing/Diving	↑	-	-	↑	NA	↑	NA
Shipwrecks (submerged)	↑	-	↓	↑	NA	NA	NA
Aboriginal Heritage/Cultural	↑	-	↑	↑	↑	↓	NA

Legend	
Benefits Assessment	**Effectiveness Assessment**
↑ Net Benefit Compared with only Monitor & Evaluate	Yes: Option suitable for oil type, few restrictions in implementing
↓ Net Loss Compared with only Monitor and Evaluate	Possible: Option suitable for oil type, potential limitations on application
- No net benefit or Loss	Not Recommended: Option not suitable for oil type
	NA: Option is not applicable to the Receptor given credible worst-case discharge potential

Table 4-9: Sensitivities within the identified Protection Response Planning Areas (NSW), Response Option Feasibility & Planning NEBA

						Response Options	Response Effectiveness Assessment						
			Priority Response Planning Area (NSW)				Oil Type	Source Control	Monitor & Evaluate	Dispersant Application	Contain & Recover	Protect & Deflect	Shoreline Clean-up	Oiled Wildlife Response
Receptor	*Sensitivity*	*Marine*	*Bittangabee Bay*	*Nadgee Nature Reserve (including Merica River)*	*Wonboyn River*		*MDO*	***Yes***	***Yes***	***No***	***No***	***Yes***	***Yes***	***Yes***
							Light Crude Oil	***Yes***	***Yes***	***Yes*** *[subsea only, at the well in Cwth waters]*	***No***	***Yes***	***Yes***	***Yes***
Significant Marine Ecology														
Cetaceans	*S1*	✓						↑	-	↑	↑	*NA*	*NA*	*NA*
Pinnipeds	*S2*	✓						↑	-	↑	↑	*NA*	*NA*	*NA*
Turtles	*S2*	✓						↑	-	↑	↑	*NA*	*NA*	↑
Fish & Sharks	*S2*	✓			✓			↑	-	↓	↑	*NA*	*NA*	*NA*
Seabirds	*S1*	✓	✓					↑	-	↑	↑	*NA*	*NA*	↑
Shorebirds	*S1*		✓					↑	-	↑	↑	*NA*	*NA*	↑
Invertebrates	*S3*	✓						↑	-	↓	↑	*NA*	*NA*	*NA*
Plankton	*S3*	✓						↑	-	↓	↑	*NA*	*NA*	*NA*
Significant Coastal Habitats														
Saltmarsh/ Seagrass	*S1*		✓		✓			↑	-	↑	↑	↑	↓	*NA*
Mangroves	*S1*							↑	-	↑	↑	↑	↓	*NA*
Mudflats	*S1*							↑	-	↑	↑	↑	↓	*NA*
Kelp Habitats (inter-tidal)	*S2*							↑	-	↑	↑	*NA*	*NA*	*NA*
Sand Beaches	*S3*							↑	-	↑	↑	*NA*	↑	*NA*
Sub-tidal Reef	*S3*							↑	-	↑	↑	*NA*	*NA*	*NA*
Inter-tidal Rocky Flat/Headland	*S3*							↑	-	↑	↑	*NA*	↑	*NA*
Wetlands	*S1*			✓				↑	-	↑	↑	↑	↓	*NA*
Significant Coastal Ecology														
Shoreline Birds	*S1*							↑	-	↑	↑	↑	↑	↑
Pinniped Haul-out Sites	*S2*							↑	-	↑	↑	*NA*	*NA*	↑
Penguin Colonies	*S2*							↑	-	↑	↑	*NA*	*NA*	↑
Protected Area	*S2*			✓				↑	-	-	↑	*NA*	*NA*	↑
Significant Socio-economic														
Tourism	*S2*		✓	✓	✓			↑	-	↑	↑	↑	↑	*NA*
Amenity Beach	*S3*		✓		✓			↑	-	↑	↑	↑	↑	*NA*
Ports, Harbours, Yacht Club	*S3*							↑	-	↑	↑	↑	↑	*NA*
Commercial Fishing/ Aquaculture	*S2*	✓	✓		✓			↑	-	-	↑	*NA*	↑	*NA*
Recreational Fishing/Diving	*S3*		✓		✓			↑	-	-	↑	*NA*	↑	*NA*
Shipwrecks (submerged)	*S3*							↑	-	↓	↑	*NA*	*NA*	*NA*
Aboriginal Heritage/Cultural	*S2*		✓	✓	✓			↑	-	↑	↑	↑	↓	*NA*

Legend	
Benefits Assessment	**Effectiveness Assessment**
↑ Net Benefit Compared with only Monitor & Evaluate	Yes: Option suitable for oil type, few restrictions in implementing
↓ Net Loss Compared with only Monitor and Evaluate	Possible: Option suitable for oil type, potential limitations on application
- No net benefit or Loss	Not Recommended: Option not suitable for oil type
	NA: Option is not applicable to the Receptor given credible worst-case discharge potential

Table 4-10: Sensitivities within the identified Protection Response Planning Areas (Tasmania), Response Option Feasibility & Planning NEBA

Receptor	Sensitivity	Marine	Priority Response Planning Area (Tasmania): Babel Island	Break O'Day	Cape Barren Island	Flinders Island	Kent Island Group
Significant Marine Ecology							
Cetaceans	S1	✓	✓		✓		✓
Pinnipeds	S2	✓	✓	✓	✓		✓
Turtles	S2	✓					
Fish & Sharks	S2	✓				✓	
Seabirds	S1	✓	✓	✓	✓		
Shorebirds	S1		✓	✓	✓	✓	✓
Invertebrates	S3	✓					✓
Plankton	S3	✓					
Significant Coastal Habitats							
Saltmarsh/ Seagrass	S1					✓	
Mangroves	S1						
Mudflats	S1						
Kelp Habitats (inter-tidal)	S2						
Sand Beaches	S3			✓		✓	
Sub-tidal Reef	S3						
Inter-tidal Rocky Flat/Headland	S3			✓		✓	✓
Wetlands	S1				✓	✓	
Significant Coastal Ecology							
Shoreline Birds	S1		✓	✓	✓	✓	✓
Pinniped Haul-out Sites	S2						✓
Penguin Colonies	S2						✓
Protected Area	S2				✓	✓	
Significant Socio-economic							
Tourism	S2			✓		✓	✓
Amenity Beach	S3		✓	✓			
Ports, Harbours, Yacht Club	S3			✓			
Commercial Fishing/ Aquaculture	S2	✓					
Recreational Fishing/Diving	S3			✓		✓	
Shipwrecks (submerged)	S3						✓
Aboriginal Heritage/Cultural	S2		✓	✓	✓	✓	✓

Response Options: Oil Type	Response Effectiveness Assessment: Source Control	Monitor & Evaluate	Dispersant Application	Contain & Recover	Protect & Deflect	Shoreline Clean-up	Oiled Wildlife Response
MDO	Yes	Yes	No	No	Yes	Yes	Yes
Light Crude Oil	Yes	Yes	Yes [subsea only, at the well in Cwth waters]	No	Yes	Yes	Yes
	↑	-	↑	↑	NA	NA	NA
	↑	-	↑	↑	NA	NA	NA
	↑	-	↑	↑	NA	NA	↑
	↑	-	↓	↑	NA	NA	NA
	↑	-	↑	↑	NA	NA	↑
	↑	-	↑	↑	NA	NA	↑
	↑	-	↓	↑	NA	NA	NA
	↑	-	↓	↑	NA	NA	NA
	↑	-	↑	↑	↑	↓	NA
	↑	-	↑	↑	↑	↓	NA
	↑	-	↑	↑	↑	↓	NA
	↑	-	↑	↑	NA	NA	NA
	↑	-	↑	↑	NA	↑	NA
	↑	-	↑	↑	NA	NA	NA
	↑	-	↑	↑	NA	↑	NA
	↑	-	↑	↑	↑	↓	NA
	↑	-	↑	↑	NA	↑	↑
	↑	-	↑	↑	NA	NA	↑
	↑	-	↑	↑	NA	NA	↑
	↑	-	-	↑	NA	NA	↑
	↑	-	↑	↑	↑	↑	NA
	↑	-	↑	↑	↑	↑	NA
	↑	-	↑	↑	↑	↑	NA
	↑	-	-	↑	NA	↑	NA
	↑	-	-	↑	NA	↑	NA
	↑	-	↓	↑	NA	NA	NA
	↑	-	↑	↑	↑	↓	NA

Legend	
Benefits Assessment	**Effectiveness Assessment**
↑ Net Benefit Compared with only Monitor & Evaluate	Yes: Option suitable for oil type, few restrictions in implementing
↓ Net Loss Compared with only Monitor and Evaluate	Possible: Option suitable for oil type, potential limitations on application
- No net benefit or Loss	Not Recommended: Option not suitable for oil type
	NA: Option is not applicable to the Receptor given credible worst-case discharge potential

5 Operational Response

Section 4 presents the predicted response to a spill, however in the event of a spill, the proposed likely response strategies will be reviewed and verified prior to implementation to ensure that the assumptions made in the planning process are valid and the response strategy will be effective.

5.1 Verification of Response Strategy

The process for reviewing response strategies is illustrated in Figure 5-1. The purpose of including this process in the OPEP is to ensure effective and efficient decision making into selecting response strategies which are suitable to the conditions at the location at the time of the spill event. Outputs from this process are captured through the spill response NEBA process.

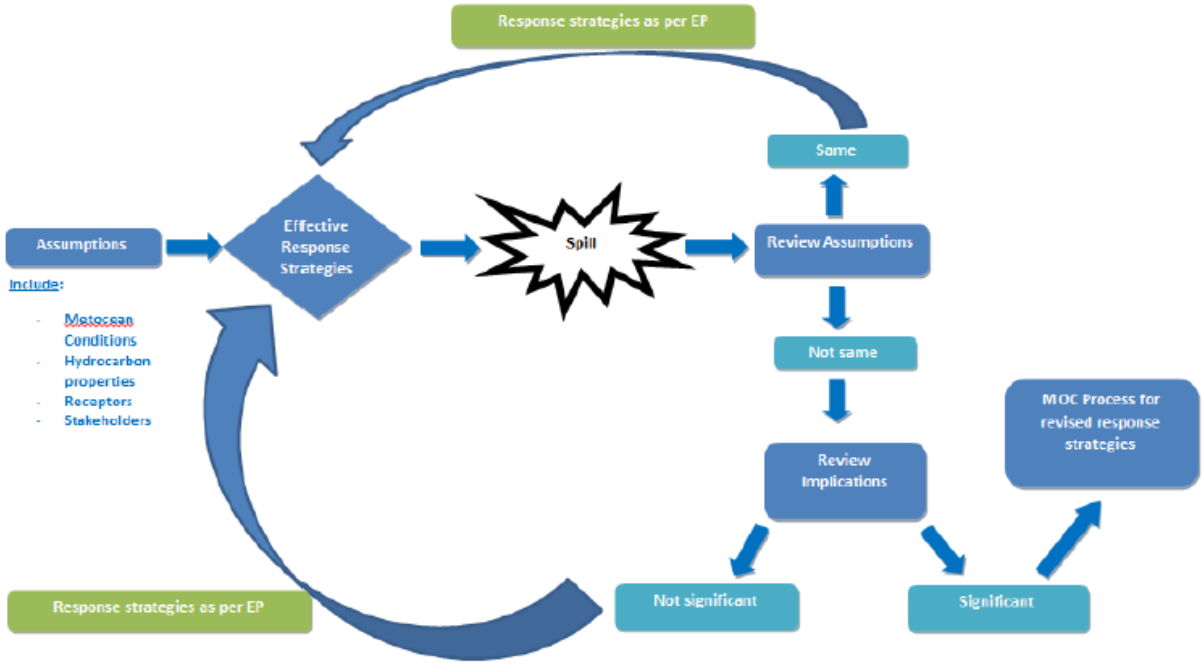


Figure 5-1: Process for Reviewing Response Strategy Effectiveness in the Event of a Spill

5.2 Spill Operational NEBA

A NEBA is used to compare the environmental and socio-economic benefits of implementing a response option against a 'do-nothing' (monitor and evaluate) strategy. The process considers the advantages and disadvantages of implementing a response to arrive at a response strategy for the location which results in the lowest overall environmental and socioeconomic impacts.

The NEBA process has been developed to help facilitate the selection of the most appropriate response options to effectively combat an oil spill.

Pre-spill (planning) NEBAs have been undertaken for locations within the respective asset response EMBAs to identify response strategies which may offer a net benefit. In the event of a spill, an operational NEBA will be completed to confirm net benefits based upon the spill volume, spill type, spill location, weather conditions, weathering and trajectory predictions (including any aerial surveillance output), and the sensitivities requiring protection.

If impacts to State waters or shorelines are predicted, or have occurred, an operational NEBA will be undertaken in consultation with the State Control Agency or State Environmental and Scientific Coordinator (or equivalent) to confirm the net benefits for the strategy.

Cooper Energy has adopted the Victorian NEBA protocol from Victorian Maritime Emergencies NSR Plan which is consistent with the pre-spill (planning) NEBA undertaken in Section 4.

The Victorian Maritime Emergencies NSR Plan NEBA template is provided in Appendix 3.

When the operational NEBA is finalised, the IC must endorse the assessment. The NEBA must be used to develop the Incident Action Plan for the spill incident.

Provided it is safe to do so, all accessible wildlife with welfare needs should be addressed DELWP, supported by the Titleholder, regardless of the NEBA.

5.3 Incident Action Plan (IAP)

An Incident Action Plan (IAP) will be prepared at the time of the spill, outlining the short-term operational objectives and activities for the response. It will detail the response mechanisms and priority areas for protection based on the actual circumstances of the event, considering the spill trajectory and weather conditions, but also importantly safety considerations. The IAP will provide details of the operational activities and objectives to be achieved over a specified, short-term period. Initially this may be for the subsequent few hours only, but once the operation is underway it is likely to address the activities required over each of the following 24-hour periods or longer.

The main steps in planning the response and preparing the IAP are:

- Setting the incident objectives – what are we trying to do or what are we trying to protect?
- Describing the strategies – for example, deployment of planes for aerial surveillance.
- Developing the tactics – detail how we will undertake these strategies including responsibilities, logistics, etc.

An IAP is a critical step in the response strategy. It is the responsibility of the Planning Officer to prepare an IAP under the direction of the IC for his endorsement. The Cooper Energy oil spill IMT will implement and monitor the effectiveness of the IAP ensuring regular updates to the plan are made as appropriate.

To ensure that the IAP is appropriate for the nature of the spill, Cooper Energy will seek the advisory support of technical experts or liaison officers from State CA, relevant State Government Agencies (wildlife), AMSA and/or AMOSC.

An IAP template is included in Appendix 1.

5.4 Effectiveness Monitoring

During the incident response, the effectiveness of the response will be assessed using the NEBA process. This assessment must utilise predictive modelling results, received monitoring data in the context of the affected environment, the environmental conditions and the level of hydrocarbons released.

Initially this will be undertaken every 24 hours (as minimum) or when relevant new information is received, until the termination criteria have been met. The NEBA, in consultation with the State Control Agency will be used to inform the decision to terminate the response (refer to Section 5.5).

Outcomes of the effectiveness monitoring will inform the IAP process.

5.5 Response Termination

Generally, the decision to stop the spill response will be made by the Control Agency when response efforts are not returning any tangible benefit. This may include a gradual downsizing of response teams and resources or complete termination of the response. Cooper Energy will undertake a NEBA with the relevant response team members / liaison officers to inform the decision to terminate the response in line with the NEBA format used in formulating the spill response strategy.

Decision factors will include:

- The efficacy and benefit of the response options implemented against natural cleaning;
- The significance of the environmental receptor impacted;
- Potential for environmental damage caused by further clean-up efforts weighed up against other factors such as response team risk in undertaking the activity;
- Any other requirements under national or state plans.

Table 5-1 provides indicative termination criteria which may be amended because of response team advice and/or the outcomes of stakeholder engagement during a spill event. Although indicative, it provides a guide for the purpose of capability planning.

For spill clean-up operations in Victorian waters, termination of response will be taken by the state IC.

The IC will ensure that all relevant organisations and personnel are notified to stand down once the termination criteria have been satisfied. Upon conclusion of the response, the IC must:

- Inform all personnel involved in the response;
- Advise all government authorities involved in the response;
- Provide an incident brief internally and to all government authorities involved in the response;
- Instigate an investigation into the cause of the spill;
- Prepare reports and collate all documents including statements concerning the incident; and
- Undertake an inventory of all consumables and prepare accounts for dissemination.

Table 5-1: Spill Response Termination Criteria

Response Option	Termination Criteria
Vessel Spill: SMPEP / SOPEP **LOWC: Source Control Emergency Response Plan**	Termination criteria varies according to the incident and spill level: • For vessels, the spill source has been eliminated (e.g. fuel tank is secure (tank rupture)) or the leak has been contained and controlled on-board. • For subsea infrastructure, infrastructure is verified as isolated from feedstock. • For a LOWC, the hydrocarbon release has been contained and source control re-established.
Monitor and evaluate	Termination occurs when the following criteria is fulfilled: • The spill has ceased; • The spill is no longer visible to human observers. Specifically, a silver/grey sheen as defined by the BAOAC is not observable and 24 hours have elapsed since the last confirmed observation of surface hydrocarbons; • Modelling results (OM1) do not predict surface exposures at visible levels. Termination criteria to be agreed with Control Agency in state waters.
Chemical Dispersion	Termination occurs when the following criteria is fulfilled: • Application of chemical dispersants will cease when dispersant efficacy is no longer providing a net environmental benefit as assessed through the NEBA process; and / or • Agreement is reached with Statutory Agency to terminate the response
Contain and Recover	Termination occurs when the following criteria is fulfilled: • The spill has ceased; • The spill is no longer visible to human observers. Specifically, a silver/grey sheen as defined by the BAOAC is not observable and 24 hrs has elapsed since the last confirmed observation of surface hydrocarbons; • Response technique is proving ineffective (less than 1 m^3 oil per day); • Modelling results (OM1) do not predict surface exposures at levels above which an effective response can be implemented; • Sea state or weather conditions do not allow for effective or safe operation; • Agreement is reached with Statutory Agency to terminate the response
Protect and Deflect	To be determined in consultation with State CA. Suggested criteria: • The spill is no longer observable to human observers and all oil has impacted shorelines and is unlikely to remobilise;

Response Option	Termination Criteria
	• Slick thickness and characteristics mean that protection/deflection booms will not be effective as determined by the NEBA; • NEBA concludes that continued activity will not produce any net environmental benefit. NEBA has been signed off by State IC.
Shoreline Assessment and Clean-up	To be determined in consultation with State CA, and aligned with the National Plan Response, Assessment and Termination Guidance (NP-GUI-025). Suggested criteria: • The hydrocarbon spill has ceased; • No additional response or clean-up of habitat is predicted; • Locations predicted to be contacted by hydrocarbons have been contacted; • Independent scientific advice indicates that hydrocarbon levels are below 100 g/m^2 or further clean-up activities are unlikely to materially decrease hydrocarbon impacts on environmental sensitivities.
Oiled wildlife response	To be determined in consultation with State Control Agency and relevant State nominated oiled wildlife authority. Suggested criteria: • Is discontinued when all affected/recovered animals are cleaned and rehabilitated to their natural habitat as advised by the Lead Control Agency.

6 Source Control

Source control is a priority response in an oil spill to limit the loss of hydrocarbon to the environment. Source control will be implemented only when safe to do so.

6.1 Response Activities

6.1.1 Vessel Collision (Level 1 & 2)

The performance outcome for vessel-related hydrocarbon releases is provided in Table 6-1.

Table 6-1: Source Control – Vessel Collision (Level 1 and Level 2 spills)

ID	Environmental Performance Outcome	Control	Environmental Performance Standard	Spill Level	Measurement Criteria
4	**Source control, isolation and containment prevent hydrocarbon release to the marine environment**	C5 Vessel SMPEP	In a level 1 or 2 spill, the vessel implements it's SMPEP to prevent/limit discharge to the environment.	1, 2	Vessel incident report verifies action taken.

6.1.1.1 Level 1 Spill

Vessels engaged to undertake petroleum activities operate under Shipboard Marine Pollution Emergency Plans (SMPEPs) (or equivalent to class). In the event of a spill the relevant vessel SMPEP will be implemented to limit the volume of hydrocarbon released to the environment.

6.1.1.2 Level 2 Spill

In the event of a spill such as a diesel release from a vessel, the vessel master will initiate actions to reduce the fuel to the marine environment as identified in the vessel SMPEP (or equivalent according to class).

While preserving the structural integrity and stability of the vessel, actions include reducing the affected tank inventory by pumping contents into an empty tank, possibly pumping water into the leaking tank to create a water cushion to prevent cargo loss or other measures as listed in the vessel's SMPEP. By immediately implementing these controls the amount of hydrocarbon released to the environment will be reduced.

6.1.2 Subsea Infrastructure Loss of Containment (Level 1)

A subsea infrastructure LOC could occur as a result of dropped objects, corrosion and other damage, with a volume in the order of 1 m^3.

On notification of an incident associated with a loss of containment resulting from loss of integrity or dropped object, the IC will assess damage and accessibility, and options to minimise the release; this may include plugging of release points.

6.1.3 Subsea LOWC during Well Intervention (Level 2 & 3)

On notification of an incident associated with a loss of well control, the IC will activate the Source Control Emergency Response Plan (SCERP) for the campaign and notify the Cooper Energy Source Control Team Leader. Upon SCERP initiation, the Source Control Team Leader will mobilise the Cooper Energy Well Construction Team and Well Control Contractors and collectively these resources will assess and determine the appropriate source control option based upon the available surveillance / survey information.

Options to manage well control incidents may include mobilising and ISV with work class ROVs to intervene on the wellhead with specialist ROV tooling. For some incidents well capping and relief well installation may be considered as a means for source control. Within the SCERP are vessel and drill rig/MOU specifications required to implement these source control options.

6.1.3.1 Survey, Clearance and Intervention – Scope of Activity

Site survey and debris clearance are key preliminary tasks that assist in selecting subsequent source control options. Intervention and is likely the earliest opportunity to stem or stop the release of hydrocarbons. Intervention would include the use of ROVs and tooling which can interface with the BMG wells and project subsea pressure control equipment.

Various options are available for equipment supply. Response specialists such as AMOSC/Oceaneering and Wild Well Control can provide equipment packages. Comparison of the AMOSC SFRT equipment list against the planned equipment scope of supply indicates that Cooper Energy will already have the applicable survey, debris clearance and intervention equipment available for the planned activities (Table 6-2).

A high-level response time model for the mobilisation of the SFRT is provided within Section 6.2.2.

Table 6-2: Survey, Clearance and Intervention equipment

Response Options	Campaign equipment applicable to Survey, clearance and intervention
Survey Debris clearance Intervention	Cameras inspection ROV operated ROVs Grinders / super grinders Impact wrenches Multipurpose cleaning tools Remote control units Hydraulic cutters Chopsaws Diamond wire cutters Hydraulic power units ROV dredges Torque tools Test jig Pressure control equipment intervention skid and operating equipment Linear valve override tools Manipulator knife Flying lead orientation tool 2” black eagle hose

6.1.3.2 Capping – Scope of Activity

Capping provides a means to hydraulically seal a well and stop the flow of oil during a LOWC prior to the completion of a relief well should intervention be unsuccessful. Capping may not be suitable in all scenarios or under all environmental conditions; relief well drilling remains the primary source control solution in the event of a LOWC.

The timeline to cap the well varies depending on the scenario. A study undertaken by Wild Well Control identifies the feasible options to cap under different scenarios; this includes options using campaign and MOU equipment as well as a light weight capping stack available from Wild Well Control, air-freightable from Scotland.

Table 6-3: Capping Solutions for BMG P&A campaign LOWC scenarios

Loss of well control via	Options to cap the well							Interface Requirements
	Run IRS	Run EDP	Run XT Cap	Run XT	Run ROAM	Run ROAM Running Tool	Run LW Capping Stack (CS)	
Subsea Tree (XT)	*		*					Crossover required to interface between the LW CS and the XT. Additional scope of supply.
IRS-LRP		*						Crossovers required to interface between the LW CS and IRS-LRP. Additional scope of supply.
ROAM	*					*		18-3/4” H4 connector required for interface between LW Capping

Loss of well control via	Options to cap the well							Interface Requirements
	Run IRS	Run EDP	Run XT Cap	Run XT	Run ROAM	Run ROAM Running Tool	Run LW Capping Stack (CS)	
								stack and ROAM. This is within the LW Capping Stack scope of supply.
Wellhead (WHD)	*			*	*			18-3/4" H4 connector required for interface with WHD.

**Capping option is expected to be available locally during the campaign*

The campaign MOU is expected to be capable of running capping equipment. Cooper Energy also monitors the marine market and access to active vessels with a range of specifications that may be required for cap deployment. Vessels of the type and specification that would be required for this activity can typically be sourced from Singapore. The prerequisites for a capping vessel include:

- CSV type vessel or similar
- DP2 minimum
- Minimum 65T heave compensated crane
- Work class ROV installed
- Australian Safety Case

6.1.3.3 Relief Well – Scope of Activity

The scope of drilling a relief well is the same as drilling a standard well, although the need to keep a safe distance from the release means it will be a deviated well.

Detailed well kill modelling has demonstrated that the BMG wells can be killed via a single relief well, a kill weight mud of 1.15 sg and a pump rate of 636 L/min (4bbl/min). Relief wells are expected to have similar formation strength as existing wells at BMG, hence modelling and planning has provided for formation fracture gradients recorded during historical drilling at BMG. The basic design (based on Basker-2 well kill) is for a directional relief well targeting the targeting the 244 mm (9-5/8") wellbore above the 178 mm (7") liner hanger.

A relief well complexity assessment (refer EP Section 7) indicates a relief well at BMG would be medium complexity, though can be executed with standard tools, casing and wellheads, and with a semi-submersible MOU typically available within Australia waters.

Planning for the relief well begins simultaneously with others well intervention options such as well capping. Relief well plans and methodology will be provided for within the campaign Source Control Emergency Response Plan and activity WOMP. These documents details the process for relief well design with the following activities prioritised as part of the immediate response operations:

- Mobilisation of well control and relief well specialists;
- Confirmation of the highest probability of success relief well strategy with well specialist to define vessel requirements (considering aspects such as required kill fluid type/amount);
- Screen available semi-submersible MODU in the region with current NOPSEMA Safety Case and select MODU to execute the strategy;
- Confirm relief well location using geophysical site survey data. This will consider the prevailing weather at the time of the incident; seabed infrastructure in the area and directional drilling requirements for well intersection;
- Confirm location of, and mobilise appropriate ranging tools for relief well strategy; and
- Validate casing design, confirm availability and mobilise.

6.1.3.4 Subsea Dispersant (SSD) Application – Scope of Activity

Subsea Dispersant Application involves injecting dispersant into the flow of hydrocarbons at the well. SSD is injected when the oil is fresh and warm, prior to weathering. Contact and mixing between SSD and oil is maximised by injection directly at the source. SSD can be applied 24-hours/day where resources allow (Section 6.2.2).

SSD is applied via specialist materials and equipment including dispersant chemicals, dispersant distribution and routing manifolds, chemical hoses and applicators, Subsea Dispersant equipment packages and technicians are available via several response specialists including AMOSC / Oceaneering, and Wild Well Control.

A vessel with ROV and capability to deploy subsea equipment is required to support SSD, such as a construction support vessel (CSV).

Option Selection Rationale

In the case of a LOWC involving Basker crude, subsea dispersant is considered likely to be the only effective dispersant application method. Surface application of dispersant is not expected to be effective given the high pour point relative to ambient sea water temperature (which results in rapid cooling and solidification of the crude), and strong winds and wave conditions in the Gippsland which are typically not favourable to surface dispersant application. The application of SSD has the effect of reducing oil droplet size, which increases the potential for dissolution within the water column (Gros *et al.* 2017). Effectiveness of SSD application at BMG has been modelled and indicates that a considerable reduction in shoreline loading of oil could be achieved by applying SSD (RPS 2021). Other benefits could include reduced surface VOCs within the atmosphere, lowering health risks for response workers (Gros *et al.* 2017)

Dispersant efficacy testing has not been possible given the absence of fresh crude samples from BMG. Flounder crude has some analogous properties to Basker crude; Esso's dispersant efficacy testing of Flounder indicates some amenability to dispersant (Esso 2021), though no testing has been completed which replicates subsea conditions.

6.2 Response Resources

6.2.1 Source Control

Cooper Energy maintains contracts/agreements with specialist vendors to supply technical services and guidance, specialised equipment for debris clearance and capping systems, for relief well planning and execution and for well kill operations.

Well source control activities for the BMG P&A Activity, including methodologies and resources to implement source control and limit the hydrocarbon released to the environment will be detailed in a Source Control Emergency Response Plan. Table 6-4 details the planned resource availability as applicable to the activity.

Table 6-4: Source Control Resource Availability

Resource	Requirement	**Availability / Provider**
Survey, Debris Clearance, Intervention		
Engineering support	Well and subsea engineering support services	Available throughout the P&A campaign.
Vessels	Construction support vessel with knuckle boom crane (nominal >50 tonnes for safe deployment of subsea equipment) and ROV capacity (or ROV can be deployed from separate vessel).	Campaign MOU and vessels available immediately and include capability to run subsea equipment and ROVs. Vessels of opportunity typically available either in the region or elsewhere within Australia and could be mobilised via APPEA MoU or direct agreement within 5-8 days.
Offshore Personnel	Vessel crew and response equipment technicians to install, run and monitor equipment.	Vessel Crew provided through vessel operator. Equipment Technicians provided through response specialists

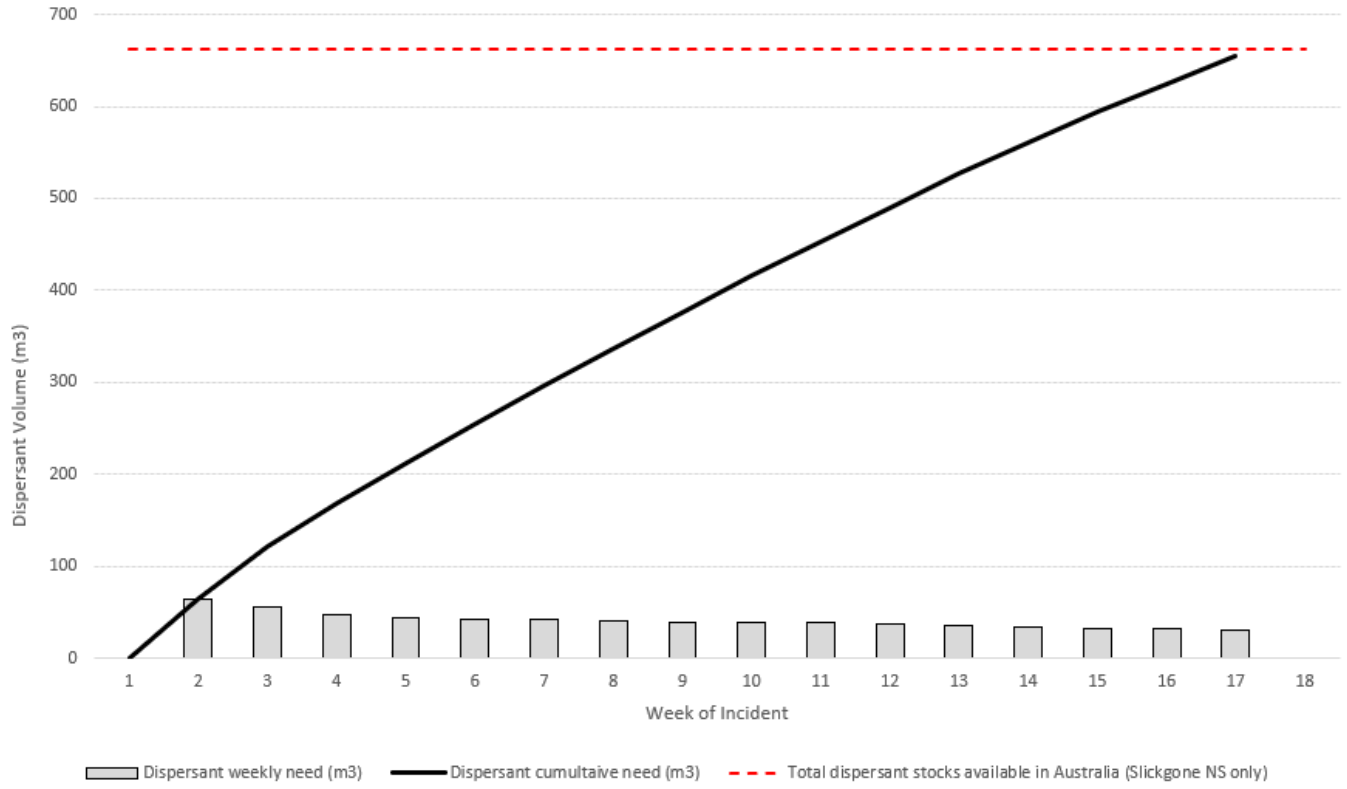
Resource	Requirement	**Availability / Provider**
		Equipment operator provided through source control contractor or separate offshore engineering contractor.
ROVs and ROV crew	Work Class ROV and crew 24 hrs/day to install and operate subsea equipment.	See 'Vessels'
Equipment	Refer Table 6-2 Survey Clearance and Intervention Equipment.	The equipment scope of supply for the P&A campaign will include tools for survey, debris clearance and intervention of well equipment. Additional equipment could be mobilised from other equipment providers such as AMOSC (SFRT package within Australia), or Wild Well Control (international) with time to site, estimated within 8-days.
Capping Solution		
Engineering support	Well and subsea engineering support services	Available throughout the P&A campaign.
Vessels	Construction support vessel with minimum 65T heave compensated crane and ROV capacity (or ROV can be deployed from separate vessel).	Campaign MOU and vessels available immediately and include capability to run capping solutions. If local resources are occupied or immobile then option to source additional vessels estimated 5-13 days to site depending on point of mobilisation.
Offshore Personnel	Vessel crew and response equipment technicians to install, run and monitor equipment.	Vessel Crew provided through vessel operator. Equipment Technicians provided through response specialists. Equipment operator provided through source control contractor or separate offshore engineering contractor.
ROVs and ROV crew	Work Class ROV and crew 24 hrs/day to install and operate subsea equipment.	See 'Vessels'
Equipment	Refer Table 6-3 Capping solutions for BMG P&A campaign LOWC scenarios.	The preferred MOU and equipment spread for the campaign provides multiple options for capping the well under different scenarios. Alternate light weight capping stack (supplied by WWC) could be mobilised from overseas (Scotland) to site within 17.6 days utilising project DP MOU, or between 22.1 and 30.1 days if the DP MOU is unavailable and an alternate CSV is mobilised.
Relief Well		
Engineering support	Well and subsea engineering support services	Available throughout the P&A campaign.
Relief well MOU	Technically suitable rig and support vessels (nominally 2 x anchor handling and tow support vessels).	Multiple suitable semi-submersible MODU likely to be operating offshore Australia; moored rigs would already be operating with AHTS vessels. Memorandum of understanding has been established between Australian operators (including Cooper Energy) to expediate access to suitable MODUs for relief well drilling. If

Resource	Requirement	**Availability / Provider**
		required Cooper Energy can request the use of a MODU that may be under contract to another operator.
Materials	Casing and Wellhead (standard specifications) Drilling fluids Moorings	Multiple materials suppliers to Australia, to enable mobilisation of relief well materials to site inside 50-days of an incident. Multiple providers of drilling fluids with plants either operational or can be set-up in the SE region. MOU moorings or rental moorings.
Offshore Personnel	Vessel crew and response equipment technicians to install, run and monitor equipment.	Vessel Crew provided through vessel operator. Equipment Technicians provided through response specialists. Equipment operator provided through source control contractor or separate offshore engineering contractor.
ROVs and ROV crew	Work Class ROV and crew 24 hrs/day to install and operate subsea equipment.	See 'Vessels'
Cooper Energy Relief Well Readiness Form	The Cooper Energy Relief Well Readiness Form is a live document and supports source control preparedness by documenting current information on the availability and location of resources required to manage a LOWC, more specifically: • Available and suitable MODUs and contacts. • Available CSVs and contacts. • Available equipment* required to support a source control response and contacts. *Tracked equipment includes wellhead systems, conductor, surface and intermediate casing, and capping stack status.	The Cooper Energy Relief Well Readiness Form is verified 2-months prior to commencing well abandonment, then every 2-months when undertaking well abandonment activities.
Regulatory Approvals		
Safety Case	Facility safety Case Revision required for vessels undertaking well activities.	- Preferential selection of MOUs and vessels with existing AU safety cases (monitored via the relief well readiness form). - Safety case specialists available within Australia to enable expedition of Safety Case Revision preparation *(technical limit to prepare estimated at 3 weeks + 1 week for prioritised regulatory approval).*

6.2.2 Subsea Dispersant Application

IPECA 2015 recommends a treatment rate of 1:100 dispersant: oil for subsea dispersant application. Work undertaken by RPS (2021) concurs that 1:100 is likely to be the optimal treatment rate for the BMG LOWC scenario, and therefore provides a basis for planning. Cooper Energy has estimated SSD application begins at the well 7.6 days into the incident response. Based on a 1:100 treatment rate and the daily worst case discharge profile, weekly dispersant usage could range from a peak of 65 m^3/w from week 2, to 30 m^3/w at week 17 (Figure 6-1).

Figure 6-1 Dispersant Analysis: Need vs Availability



Cooper Energy proposes to use dispersants on the AMSA Register of oil spill control agents. Included on the register is Dasic Slickgone NS which is the industry dispersant of choice for SSD. AMOSC hold OSCA dispersant stocks including Dasic Slickgone NS in Geelong, Victoria. Other mutual aid dispersant stockpiles exist within Australia and may be accessed by member companies through AMOSC. Total available stocks of Dasic Slickgone NS within Australia are >660m^3 (at the time of writing), providing sufficient stocks for BMG P&A LOWC response period.

During a response, initial quantities of subsea dispersant would likely be mobilised from within Victoria and additional stocks mobilised from elsewhere in Australia (e.g. Fremantle stockpile) via road haulage. Table 6-5 details current resource availability.

Table 6-5: Subsea Dispersant Application Resource Availability

Resource	Requirement	Availability / Provider
Subsea Dispersant Application		
Vessels	Construction support vessel with knuckle boom crane (nominal >50 tonnes for safe deployment of subsea dispersant equipment) and ROV capacity (or ROV can be deployed from separate vessel).	Campaign vessels available immediately and include capability to run subsea equipment and ROVs. Vessels of opportunity typically available either in the region or elsewhere within Australia and could be mobilised via APPEA MoU or direct agreement within 5-8 days.
Personnel	Vessel crew and response equipment technicians to install, run and monitor dispersant equipment at surface.	Vessel Crew provided through vessel operator. Equipment Technicians provided through response specialists

Resource	Requirement	Availability / Provider
		Equipment operator provided through source control contractor or separate offshore engineering contractor.
ROVs and ROV crew	Work Class ROV and crew 24 hrs/day to install and monitor dispersant equipment subsea.	See 'Vessels'
Subsea dispersant application package	Dispersant distribution and routing manifolds, chemical hoses and applicators, power packs and accumulators	Available in Australia through agreements with AMOSC or alternate internationally. Lead times to site are in the order of 8-days.
Dispersant	Dasic Slickgone NS (nominal dispersant for subsea application) in sufficient quantities for the WCD scenario and treatment rate 1:100 (SSD:oil)	Available in Australia through existing agreements with AMOSC. Lead times to site are in the order of 1 week (inside SSD equipment mobilisation timeframes).
Modelling	Oil slick modelling throughout response.	Available through existing contracts with modelling specialists and AMOSC.
Gas monitors	Existing vessel / rig gas monitoring; additional PGMs / portable gas monitoring as required.	Multiple providers, available within 1-week (inside major source control equipment mobilisation timeframes (Section 6.1.3.4 (Source Control)).
Continual interpretation / evaluation of effectiveness	Monitor and evaluate gas LELs vs dispersant application effectiveness (dispersant volumes and treatment rates).	Provided for through equipment technicians and other existing resources available under OSMP service agreements.
Operational and Scientific Monitoring	Mobilisation of Operational and scientific monitoring service providers (e.g. to monitor water quality parameters).	Available through OSMP service agreements.

6.3 Environmental Risk Assessment (Source Control)

An assessment of possible environmental impact and risk associated with source control techniques is undertaken as part of the BMG Closure Project (Phase 1) EP (BMG-DC-EMP-0001).

6.4 Environmental Performance Outcomes (Source Control)

Table 6-6 provides the performance outcomes, standards and measurement criteria for source control including dispersant application.

Table 6-6: Source Control Performance Outcomes and Standards

ID	Environmental Performance Outcome	Control	Environmental Performance Standard	Responsible person	Measurement Criteria
5	**Cooper Energy maintains capability to implement the Source Control Emergency Response**	**C6 Source Control Emergency Response Planning**	A SCERP will be developed in line with the APPEA Source the Control Guideline and will include (or be supplemented by): • Accepted WOMP and Field Safety Case which provide for source control activities. • Pre-identified quadrant suitable for relief well locations covering all well clusters. • Nominal mooring analysis for drilling in field from moored MODU. **Timing:** Prior to well abandonment.	General Manager Projects and Operations	SCERP in place
		C7 Source Control Emergency Response Personnel	Cooper Energy maintains: - Resourcing plan to enable the implementation of source control strategies defined within the campaign SCERP. - Project team with capability to initiate source control response strategies. - Agreements or contractor pre-qualifications with specialist service providers, including: • Well control specialist (e.g. Wild Well Control) • Well engineering services provider • Australian safety case expertise • Subsea engineering services • ROV contractors **Timing:** Established prior to and maintained throughout well abandonment.	General Manager Projects and Operations	Contracts/ agreements demonstrate preparedness.
		C8 Source Control Emergency Response Equipment	Cooper Energy maintains agreements or contractor pre-qualifications to enable access to source control equipment in line with the strategies and equipment defined within the campaign SCERP, including: • Survey equipment • Debris clearance equipment • Intervention equipment	General Manager Projects and Operations	Contracts/ agreements demonstrate preparedness.

ID	Environmental Performance Outcome	Control	Environmental Performance Standard	Responsible person	Measurement Criteria
			• Subsea dispersant and application equipment • Capping solution for credible scenarios including international capping stack maintained in ready to deploy status • Industry MOU for access to relief well resources including relief well MODU **Timing:** Established prior to and maintained throughout well abandonment.		
			Survey and debris clearance capability will be designed into the project via: • Selection of project vessel with ROV capability • Selection and inclusion of equipment suitable for survey and debris clearance operations **Timing:** Resources are available during well abandonment.	General Manager Projects and Operations	Contract with vessel Project Equipment Manifests
			Capping capability will be designed into the project via: • Selection of MOU capable of deploying capping equipment • Capping equipment available within project inventory	General Manager Projects and Operations	Contract with MOU Project Equipment Manifests
		C9 Source Control Response Resources Monitoring	Cooper Energy monitors the location and availability of source control response resources and materials defined within the campaign SCERP, including: • Available and suitable MODUs and contacts. • Available CSVs and contacts. • Available equipment* required to support a source control response and contacts. *Tracked equipment includes wellhead systems, conductor, surface and intermediate casing, and capping stack status. Readiness is recorded within the Cooper Energy Relief Well Readiness Form. The form is verified 2-months prior to commencing well abandonment, then every 2-months during well abandonment. SCERP Response Time Models are updated accordingly. **Timing:** Established prior to and maintained throughout well abandonment.	General Manager Projects and Operations	Completed Relief Well Readiness Form (verified 2-months prior to commencing well abandonment, then every- 2 months and during P&A)

ID	Environmental Performance Outcome	Control	Environmental Performance Standard	Responsible person	Measurement Criteria
		C10 Source Control Response Logistics	Cooper Energy maintains agreements or contractor pre-qualifications with the following specialists: • Freight Services Provider **Timing:** Established prior to and maintained throughout well abandonment.	General Manager Projects and Operations	Contracts/ agreements demonstrate preparedness.
			In the event that monitoring indicates a suitable MODU is not available through APPEA MoU, Cooper Energy will: • Develop a mobilisation plan for nominal international MODU. • Identify pathway for biosecurity clearance of a nominal MODU and vessels from southeast Asia prior to commencing well P&A. **Timing:** Prior to well abandonment commencing.	General Manager Projects and Operations	SCR resource monitoring identifies suitable MODUs Mobilisation Plan for international MODU (if needed)
			Cooper Energy will complete an Invasive Marine Species (IMS) Risk Assessment of most suitable relief well MODU. **Timing:** Prior to well abandonment commencing and updated if MODU changes.	General Manager Projects and Operations	Completed IMS risk assessment
		C11 Source Control Response Exercises	Cooper Energy conducts source control desktop exercise in accordance with the activity SCERP. **Timing:** Prior to well abandonment.	General Manager Projects and Operations	Facilitated by third party with report issued in 30 days.
6	**Implement Source Control Emergency Response Plan to regain control of the well and eliminate the release of hydrocarbons to the environment**	**C12 Survey Capability**	ROV is mobilised from project vessel or MOU within 1-day (if safe) to gain visual on the well leak and assist with planning. **Timing:** The activity will be completed by implementing suitable options with the shortest response time. This will be facilitated via frequent review and update of SCERP response time models adjusted according to Source Control Response Resource Monitoring (C9).	Cooper Energy Incident Controller	Incident log verifies field mobilisation within this timeframe.

ID	Environmental Performance Outcome	Control	Environmental Performance Standard	Responsible person	Measurement Criteria
		C13 Source Control Diagnostics	Source control specialists are mobilised to support within 3 days to assist with the diagnosis of the well problem and develop remedial action options. **Timing:** The activity will be completed by implementing suitable options with the shortest response time. This will be facilitated via frequent review and update of SCERP response time models adjusted according to Source Control Response Resource Monitoring (C9).	Cooper Energy Incident Controller	Incident log verifies mobilisation within this timeframe.
		C14 Debris Clearance and Intervention	Debris clearance and intervention activities commence within 5-days (if safe) from MOU or project vessels. If project resources are unavailable, alternate vessel with appropriate tooling mobilised to initiate repairs to well / subsea equipment (as required). **Timing:** The activity will be completed by implementing suitable options with the shortest response time. This will be facilitated via frequent review and update of SCERP response time models adjusted according to Source Control Response Resource Monitoring (C9).	Cooper Energy Incident Controller	Incident log verifies field mobilisation within this timeframe according to SCERP response time models.
		C15 Capping Solution	If considered a suitable option, capping equipment is deployed using project equipment and MOU/vessels as soon as it is safe to do so. If project resources are unavailable, alternate vessel is mobilised to deploy capping stack. **Timing:** The activity will be completed by implementing suitable options with the shortest response time. This will be facilitated via frequent review and update of SCERP response time models adjusted according to Source Control Response Resource Monitoring (C9).	Cooper Energy Incident Controller	Incident log verifies deployment within best achievable timeframes according to SCERP response time models.
		C16 Relief well	Relief well installation will be completed by implementing suitable options with the shortest response time. This will be facilitated via frequent review and update of SCERP response time models adjusted according to Source Control Response Resource Monitoring (C9).	Cooper Energy Incident Controller	Incident log verifies completion within best achievable timeframes according to SCERP response time models.

ID	Environmental Performance Outcome	Control	Environmental Performance Standard	Responsible person	Measurement Criteria
7	**No unacceptable risk chemicals used for activities described**	**C17 Chemical selection process**	All planned chemical discharges shall be assessed and deemed acceptable before use, in accordance with Cooper Energy's Offshore Environment Chemical Assessment Process (COE-MS-RCP-0042).	Incident Controller	Current database of assessed chemicals will identify dispersants that are acceptable for use during the response.
8	**Dispersant use provides net environmental benefit**	**C18 Dispersant Optimisation**	Dispersant use is targeted at the flowing well.	Incident Controller	Daily field report shows where dispersant was applied
			During the response the following parameters will be monitored and compared at least daily: • Dispersant Product used • Dispersant volumes used • Dispersant dilutions applied • Surface VOCs (LELs) in vicinity of the well • Extent of surface oil. • Volume and extent of shoreline oil.	Incident controller	Daily field reports provide dispersant and LEL monitoring results for the day.
			Dispersant use is terminated if any of the following criteria are met: • Well is controlled • NEBA indicates no net environmental benefit	Incident controller	Incident log verifies where criteria met for termination.

7 Monitor and Evaluate

Ongoing monitoring and evaluation of the oil spill is a key strategy and critical for maintaining situational awareness and to complement and support the success of other response activities. In some situations, monitoring and evaluation may be the primary response strategy where the spill volume/risk reduction through dispersion and weathering processes is considered the most appropriate response. Monitor and evaluate will apply to all marine spills. Higher levels of surveillance such as vessel/aerial surveillance, oil spill trajectory modelling and deployment of satellite tracking drifter buoys will only be undertaken for Level 2/3 spills given the nature and scale of the spill risk.

It is the responsibility of the Control Agency to undertake monitoring and evaluation during the spill event to inform the response and assess the impacts.

7.1 Response Activities

Monitoring and evaluation will include the following:

- Spill size estimation:
  - Information regarding the incident (volumes, inventory etc.)
  - Aerial and vessel observations
- Spill movement and behaviour:
  - Aerial and vessel observations
  - Utilisation of satellite tracking drifter buoys
- Spill trajectory prediction:
  - Oil spill trajectory modelling
  - Vector analysis (manual calculation)
  - Automated Data Inquiry for Oil Spills (ADIOS) (a spill weathering model).

Refer to the BMG Closure Project (Phase 1) EP (BMG-DC-EMP-0001) for the evaluation of potential impacts and risk and ALARP evaluation associated monitoring and evaluation strategies.

7.1.1 Spill Size Estimation

The spill size may be determined based on:

- the estimated amount of hydrocarbon released from a ‘known’ hydrocarbon inventory;
- an estimate of release rates from time of the commencement of the incident;
- or an estimate of the appearance of oil on the sea surface observed during visual observations and based on the likely thickness and type of oil (refer Table 7-1 and Figure 7-1).

Table 7-1: Guidelines for Estimating Spill Volume

Code	Description of Appearance	Approximate Thickness (µm)	Approximate litres per km^2
1	Sheen	0.04 to 0.30	40-300
2	Rainbow	0.3 to 5.0	300-5,000
3	Metallic	5.0 to 50	5,000-50,000
4	Discontinuous true oil colour (heavy oil)	50 to 200	50,000 – 200,000
5	Continuous true colour (heavy oil)	>200	>200,000
Other	Mousse or Emulsion		

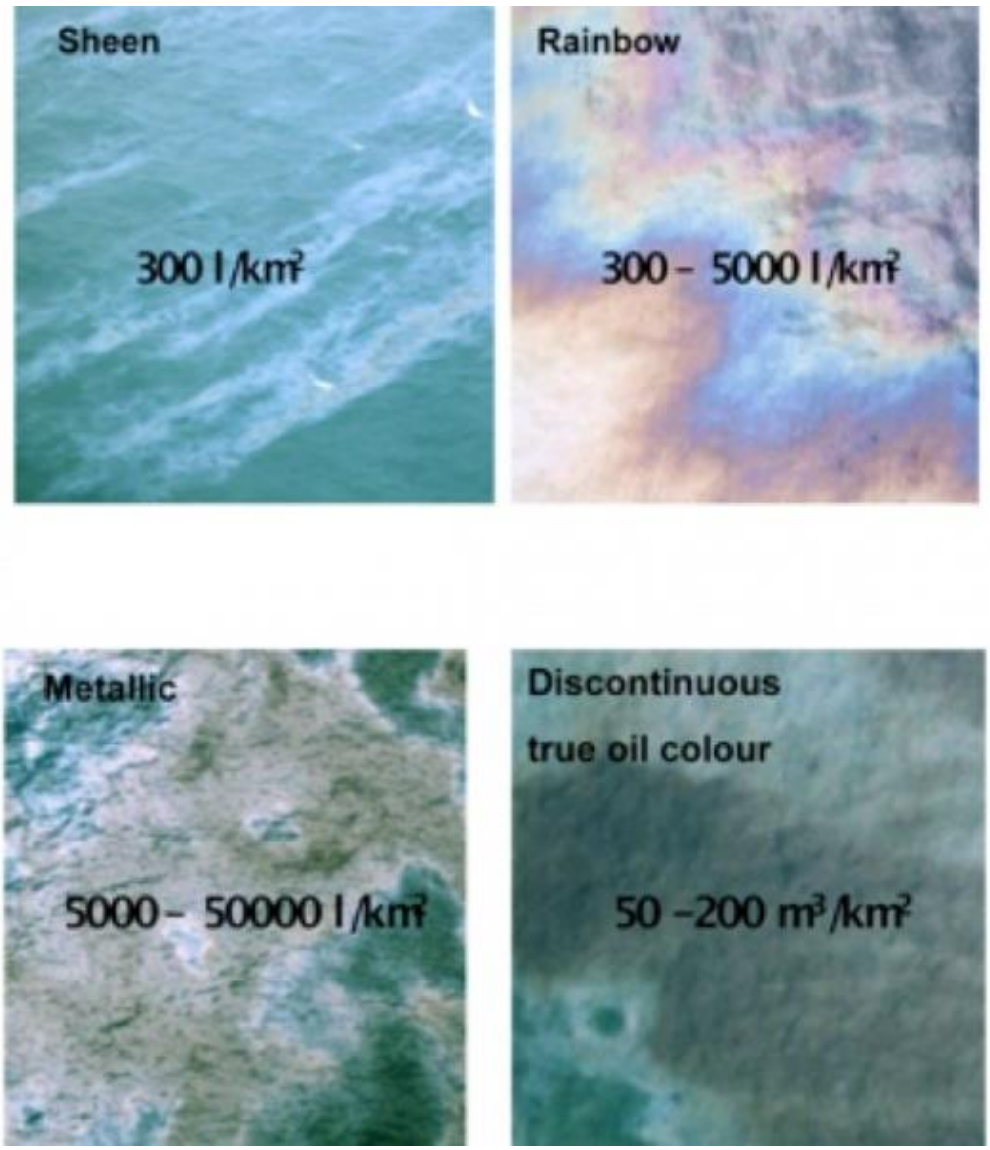


Figure 7-1: Bonn Agreement Oil Appearance Code (Examples)

7.1.2 Spill Movement and Behaviour Monitoring

The movement and behaviour of an oil slick may be monitored through several methods:

- Aerial and vessel based visual observations
- Tracking buoys

7.1.2.1 Visual Observation - Aerial Surveillance

To gain situational awareness and inform the spill response, observation can be carried out via aerial surveillance.

Trained aerial observers are available and sourced through AMOSC (staff/core group members) and AMSA (NRT Members). The observers will undertake observations over the spill location and any predicted areas of shoreline contact.

From aerial observations, coarse estimates of spill volume can be made on the basis of its appearance at sea, using the area covered and colour of spill (Table 7-1). Examples of appearance are provided in Figure 7-1. AMSA also provides guidance called 'Identification of Oil on Water – Aerial Observation and Identification Guide' which can be found at: https://www.amsa.gov.au/forms-and publications/Publications/AMSA22.pdf .

Aerial surveillance observations can only be undertaken in weather conditions deemed safe by the IMT and in good visibility conditions (i.e. 150ft above ground level (AGL) for the Ceiling & 5000m Visibility or 1500ft AGL Ceiling & 1500m Visibility during daylight hours).

Aerial observations should be documented in the Aerial Observer log contained in the Offshore Victoria Operational and Scientific Monitoring Plan (OSMP) Module OP2 – Hydrocarbon Spill Surveillance and Tracking (VIC-ER-EMP-0005).

The resources required for this strategy are summarised in Table 7-2 with the corresponding environmental performance outcomes, standard and measurement criteria presented in Table 7-4.

7.1.2.2 Visual Monitoring – Vessel Surveillance

Monitoring and evaluation may involve visual monitoring from vessels of opportunity (as available) immediately following a spill incident. For Level 2/3 spills, visual observations may also be undertaken from specially chartered vessels and aircraft, proposed to be onsite within 24 hours.

Spill observers may include project team members, vessel crew and in the event of a Level 2/3 spill, AMOSC staff/core group members and/or AMSA NRT members.

Vessel-based observations are only effective if the sea-sate conditions are calm.

7.1.2.3 Satellite Tracking Drifter Buoys

An Oil Spill Tracking Buoy (i.e. satellite tracking drifter buoy) will be available for deployment for offshore campaigns, and will be used in the event of a significant spill. Instructions are provided for the deployment of the buoy to the client representative or vessel master.

At the time of a Level 2 or 3 spill, the drifter buoy will be activated and deployed overboard to allow for real-time satellite tracking of the spill direction and speed. The location of the buoy will be monitored real-time and through regular data downloads.

Satellite tracking buoys currently in use by Cooper Energy have an operating life/endurance which is determined by the reporting frequency. The default endurance is 30 days based on 30-minute reporting frequency. However, this could be extended out to 365 days endurance for a reporting frequency of 24 hours.

7.1.3 Spill Trajectory Prediction

Spill trajectory can be predicted using either:

- Vector calculations
- Trajectory modelling

7.1.3.1 Vector Calculations

Manual calculations can commence as soon as the preliminary information on the spill is known. For spills in close proximity to shore and where oil spill tracking buoys are utilised, this method may provide the best option for predicting the likely spill trajectory and timeframes before receptors are impacted.

Prior to commencing the calculation, wind and current data is required. This can be obtained via:

- for currents, Oil Spill Tracking Buoy;
- for winds, Bureau of Meteorology Meteye (http://www.bom.gov.au/australia/meteye)

The calculation is based on the spill moving 100% of the current vector and 3% of the wind vector, as shown in Figure 7-2.

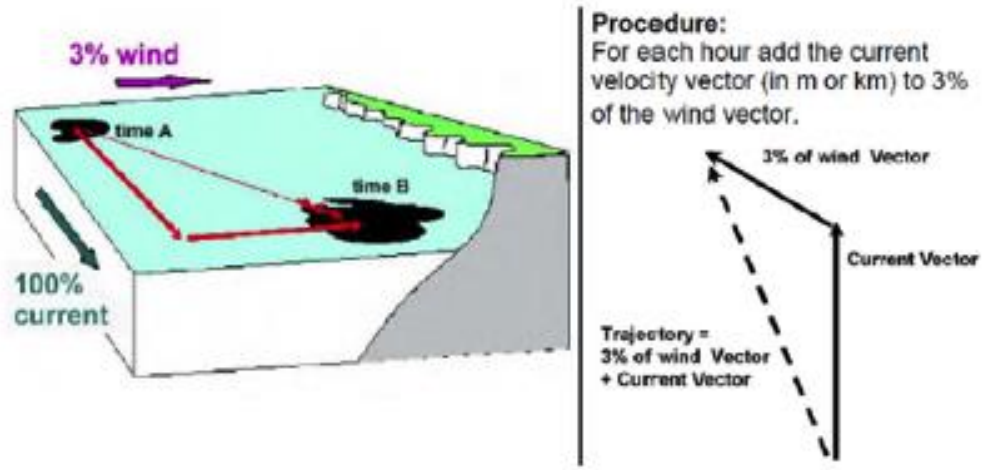


Figure 7-2: Spill Vectoring Overview (AMSA Oil Spill Monitoring Handbook)

7.1.3.2 Oil Spill Trajectory Modelling

The movement of a hydrocarbon slick can be estimated in real time using computerised oil spill trajectory modelling available from RPS-APASA. Cooper Energy can utilise an AMOSC agreement with RPS-APASA to provide real-time modelling of an actual spill event. RPS-APASA have previously been utilised to undertake predictive modelling to support the preparation of the asset EPs and this OPEP.

To predict the early movement of larger spills, RPS-APASA will undertake real-time oil spill trajectory modelling. Preliminary modelling results are generally available within 4 hrs following notification of a spill event. RPS-APASA are contracted to AMOSC in a 24/7 emergency capability.

For smaller spills closer to shore Cooper Energy may elect not to undertake trajectory modelling due to the limitations of using the model near shore with such small volumes. Satellite tracking drifter buoys together with aerial observations and shoreline assessment may be used to ground truth the spill location.

During the spill, RPS-APASA will utilise all available information from operational surveillance monitoring and from satellite imagery (as available) to validate hydrodynamic forecasts.

7.1.3.3 Spill Fate Prediction

The Automated Data Inquiry for Oil Spills (ADIOS) can be used to provide weathering predictions of hydrocarbon types for spill volumes at different wind speeds and water temperatures. This computer-based oil spill response tool is available to download from http://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/response-tools/downloading-installing-and-running-adios.html

7.1.4 Oil Spill Operational Monitoring

Based on the outcomes of the monitoring of spill characteristics, trajectory and behaviour and prediction of likely trajectory and fate of the spill, operational monitoring will be undertaken as per the Operational and Scientific Monitoring Plan.

7.2 Response Resources

Table 7-2 details the resources required to undertake monitor and evaluate activities in accordance with the identified required resources above, their availability and hence Cooper Energy's capability to support a 'monitor and evaluate' response.

Table 7-2: Monitor and Evaluate Resource Capability

Resource	Resource Requirement	Resource Availability	Comments
Satellite Tracking Buoys	1 x Satellite Tracking Buoy offshore	Buoys available from Australian Marine Oil Spill Centre (AMOSC) or Worley Parsons.	Satellite Tracking Buoy will be located offshore and ready for deployment for the duration of the campaign. Operating instructions which accompany buoy rental will be provided to offshore vessel prior to mobilisation with instruction to deploy from vessel in the event of a significant spill event.
Oil Spill Trajectory Modelling	Access to RPS-APASA via contract to initiate callout on a 24/7 basis.	AMOSC contract with RPS-APASA for immediate call-out.	AMOSC membership allows access to APASA contract which provides for OILMAP results to be provided within 2 hrs and SIMAP results within 4 hours of activation. *AMOSC Service Level Statement confirms access to APASA Trajectory Modelling within 60 minutes.*
Manual Trajectory Calculation	1 x IMT member (IMO2)	IMT Planning Officer (or equivalent).	Resources available within Cooper Energy.
	Current & wind data	Bureau of Meteorology (BOM) “Meteye” Service.	Wind data available online. Current data obtained from satellite tracking buoy.
Satellite Imagery	Access to KSAT Satellite imagery via contract to initiate callout on a 24/7 basis.	AMOSC contract with Kongsberg Satellite Services for immediate call-out.	AMOSC membership allows access to Kongsberg contract which provides access to KSAT Satellite Imagery. Delivery time between 4-24 hours. *Imagery to be determined at the time of request will dictate supply timeframes depending on satellite availability.*
Aerial / Vessel Surveillance	1 x pilot/aircraft	Pre-qualification with aviation contractor.	Supplier has identified that surplus aircraft are usually available and can be supplied within 24 hours.
	1 x aerial observer	Trained observers via AMOSC.	Available on site – best endeavours eight personnel within 3 hrs and guaranteed terrestrially in 12 hrs (AMOSC Service Level Agreement). AMOSC has 5 trained observers and AMOSC Core Group have 4 trained members available within 24-48 hours. *AMOSC Service Level Statement confirms AMOSC Gore Group (CG) activation – within 1 hour of initial activation.*
	1 x vessel	Vessel contract with Marine Charter	Cooper Energy maintains an agreement with Marine Charter to provide vessels and can be supplied in 24 hrs.

7.3 Environmental Risk Assessment (Monitor and Evaluate)

An assessment of possible environmental impact and risk associated with operational monitoring has been undertaken as part of the EP (BMG-DC-EMP-0001).

Use of vessels and aircraft has the potential to disturb marine fauna. To mitigate these impacts the Cooper Energy oil spill IC (or delegate) will ensure the control measures identified in Table 7-3 are implemented.

Table 7-3: Monitor and Evaluate Activity Controls

Control measure	Environmental Performance Standard	Responsible Person
Consultation ensures stakeholder readiness to support	Consultation in the event of a spill will ensure that relevant government agencies support the monitor and evaluate strategy thus minimising potential impacts and risks to sensitivities.	Cooper Energy Oil Spill Incident Controller
Surveillance platforms maintain buffer distance to prevent disturbance to fauna	Fauna Buffer Distances - Aircraft Surveillance aircraft will ensure buffer distances of 500m (helicopters) and 300m (fixed wing) are maintained to whales and dolphins.	Pilots
	Vessel/Cetacean Caution Zones: Vessels adhere to the distances and vessel management practices of EPBC Regulations (Part 8): • Vessels will travel at less than 6 knots within the caution zone of a cetacean and minimise noise (Caution Zone is 150m radius for dolphins and 300 m for whales); • The vessel must not drift closer than 50 m (dolphin) and 100 m (whale); • If whale comes within above limits, the vessel master must disengage gears and let the whale approach or reduce the speed of the vessel and continue on a course away from the whale; • If cetacean is disturbed immediately withdrawn at speed less than 6 knots; • The vessel must not restrict the path of the cetacean; • If a dolphin approaches the vessel, the master must not change the course or speed of the vessel suddenly.	Vessel Masters

7.4 Environmental Performance Outcomes (Monitor and Evaluate)

Table 7-4 identifies monitoring and evaluation strategy outcomes, performance standards and measurement criteria.

Table 7-4: Monitor and Evaluate Performance Outcomes and Standards

ID	Environmental Performance Outcome	Control	Environmental Performance standard	Responsible person	Measurement Criteria
11	**Cooper Energy maintains capability to implement operational monitoring in a Level 2 or 3 spill event.**	**C19: Service Agreements Monitor & Evaluate**	Cooper Energy maintains the following agreements (or contractor pre-qualifications) to maintain operational response capabilities: • AMOSC membership (Aerial Observers, RPS-APASA	General Manager Projects and Operations	Contracts/ memberships and pre-qualification records are current.

ID	Environmental Performance Outcome	Control	Environmental Performance standard	Responsible person	Measurement Criteria
			Contract, Kongsberg Contract). • AMSA support obligations under the National Plan. • Aviation support • Marine support services		
		C20: Oil Spill Tracking Buoy	An oil spill tracking buoy and instructions for deployment will be located offshore at all times when vessels are operating at BMG.	Project Manager	Equipment manifest (or equivalent evidence) verifies Oil Spill Tracking Buoy is available on-board / offshore.
12	**As requested by the relevant Control Agency Cooper Energy implements operational monitoring to inform spill response (Level 2 or 3 spill only).**	**C21: Response – Aerial Observation**	Operational monitoring is initiated during daylight hours within 24 hrs for aircraft observation and 24 hrs for additional vessel. Observation to be undertaken in accordance with OSMP OP2 (Hydrocarbon Spill Surveillance and Tracking).	Incident Controller	Spill response log notes that aircraft are deployed within 24 hours of spill (or nearest daylight hours immediately post 24 hours). Completed Aerial Observation Logs (per OSMP OP2) emailed to Cooper Energy IMT.
		C22: Response – Vessel Observation	Operational monitoring from vessels is initiated immediately (within 2 hours). Observation to be undertaken in accordance with OSMP OP2 (Hydrocarbon Spill Surveillance and Tracking).	Incident Controller	Spill response log notes that in-field vessels are deployed within 2 hours of spill. Completed Observation Logs (per OSMP OP2) emailed to Cooper Energy IMT.
		C23: Oil Spill Trajectory Modelling	RPS-APASA provides OSTM results within four hours of spill notification in accordance with OSMP OP1 (Operational Forecast Modelling).	Incident Controller	Incident records verify operational monitoring timeframes met.
		C24: Response – Oil Spill Vector Calculation	Manual vector calculations identify spill impact areas within 2 hrs of spill incident notification.	Incident Controller	Spill response log verifies manual trajectory calculation is provided within 2 hrs of spill notification.
13	**No injuries or death of megafauna resulting from vessel strike within operational area**	**C25: Marine Mammal No Approach Zones**	Vessel masters and crew will be briefed on and adhere to caution and ‘no approach zones’ and interaction management actions as defined in the EPBC Regulations 2000 – Part 8 Division 8.1 and Victorian Wildlife (Marine Mammals) Regulations 2019.	HSEC Officer	Records confirm vessel masters and crew have been briefed on the performance standard. Daily operations reports note when cetaceans were sighted in the caution zone and if interaction management actions were implemented.

ID	Environmental Performance Outcome	Control	Environmental Performance standard	Responsible person	Measurement Criteria
			A vessel master (or delegate) will be on duty at all times.	Vessel Master	Bridge watch records confirm vessel master (or delegate) on duty at all times.
14	**Injury or death to listed megafauna from vessel strike will be reported**	**C26 Incident reporting**	Any injury to, or mortality of, an EPBC Act Listed Threatened or Migratory Species (including those from a vessel strike) will be recorded on the National Ship Strike database within 72 hours.	Vessel Master	Submission date on the National Ship Strike Database confirm that any injury to, or mortality of, an EPBC Act Listed Threatened or Migratory Species (including those from a vessel strike) is reported within 72 hours of the incident.

8 Shoreline Response: Protect & Deflect

8.1 Response Activities

Booms and skimmers deployed to protect or deflect oil from environmental sensitivities. Noting that the effectiveness of boom operation is dependent on current, wave and wind conditions.

The methods to be used in the response have been proposed for the priority protection areas. These, where applicable, are detailed in the respective TRPs, but options may include:

- Installation of a boom system to collect surface oils on incoming tidal events; or
- Placement of a temporary sand barrier/berm across the inlet mouth if the prevailing flow regime (channel width, depth and flow) is suitable.

8.2 Response Resources

Response resources would be activated via AMOSC in the first instance, with equipment and resources selected on the basis of the TRP activation and subsequent IAPs. AMOSC has undertaken an assessment of response resource needs for this strategy (BMG-EN-REP-0023), and have determined how these needs will be met. A summary of the process undertaken is provided in Appendix 4.

Protection and deflection equipment and personnel can be accessed from multiple locations including:

- AMOSC Geelong equipment stockpile. A selection of boom/skimmer types will be mobilised with the equipment to be deployed at the location selected based upon the environmental conditions on the day;
- AMOS Plan Industry Mutual Aid stockpile (Esso Australia) located at Longford and Barry Beach Marine Terminal (BBMT). This equipment may be deployed in addition to the AMOSC equipment due to its closer proximity.
- Gippsland Ports Authority (located at Lakes Entrance) also has boom available, to protect estuary systems. This is the property of DoT and Gippsland Ports, as port authority for the Snowy River would provide a first-strike response in the port. In the event of a rapid response to an oil spill threat, the IC (or delegate) would liaise with DoT and Gippsland Ports for deployment of this equipment.
- Port Authority of NSW maintains its own stockpile of Level Two/Three equipment which is stored at its Level One equipment locations in Sydney and Newcastle. Oil companies also own a quantity of oil spill response equipment which is stored on their individual premises.
- Queensland regional stockpiles of oil spill response equipment, owned and maintained by Marine Safety Queensland, are located at six strategic locations along the Queensland Coast including Brisbane (Pinkenba), Gladstone, Mackay, Townsville, Cairns, and Thursday Island in Torres Strait.

8.3 Environmental Risk Assessment (Protect & Deflect)

An assessment of possible environmental impact and risk associated with protect and deflect activities has been undertaken as part of the EP (BMG-DC-EMP-0001).

Boom deployment and associated waste management activities has the potential to cause disturbance to vegetation and aboriginal heritage; disturb sensitive estuarine habitats; restricting access to the shoreline; and may lead to secondary oil spill impacts. To mitigate these impacts the IC (or delegate) will ensure the control measures identified in Table 8-1 are implemented.

Table 8-1: Protect and Deflect Activity Controls

Control measure	Environmental Performance Standard	Responsible Person
Consultation	Consultation In the event of a spill will ensure that relevant government agencies support the tactical response arrangements thus minimising potential impacts and risks to sensitivities.	General Manager Projects and Operations
Use of Existing Tracks and Pathways	Utilising existing tracks and paths where possible will ensure the disturbance footprint associated with the implementation of this response technique is reduced to ALARP.	Incident Controller

8.4 Environmental Performance Outcomes (Protect & Deflect)

Table 8-2 provides the performance outcomes, standards and measurement criteria for the “protect and deflect” response option.

Table 8-2: Protect and Deflect – Performance Outcomes and Standards

ID	**Environmental** Performance Outcome	Control	Environmental Performance standard	Responsible person	Measurement Criteria
15	Tactical response planning undertaken for priority protection sites	**C27 Tactical Response Plans**	TRPs are developed for priority protection areas identified in Section 4.4.2 prior to undertaking activities that have the potential to impact these locations.	General Manager Project and Operations	TRPs developed prior to petroleum activities that could impact priority protection areas identified in Section 4.4.2.
16	Cooper Energy maintains capability to implement protect and deflect in a Level 2 or 3 spill event.	**C28 Service Agreements Protect & Deflect**	**Agreements** Cooper Energy maintains the following agreements to maintain shoreline assessment/protect and deflect capabilities: • AMOSC membership (equipment, personnel, CORE Group. Mutual aid). • AMSA support obligations under the National Plan (equipment, personnel). • Scientific resource support agreement (GHD or equivalent). • Marine support services • Vessel of Opportunity listing • Waste management provider	General Manager Projects and Operations	Agreements/memberships are current. National Plan
17	Cooper Energy implements or supplies	**C29 Shoreline Assessment –**	SCAT teams deployed and available onsite within 24 hours	Incident Controller	Incident management records verify that SCAT teams are

ID	**Environmental** Performance Outcome	Control	Environmental Performance standard	Responsible person	Measurement Criteria
	resources for shoreline protection and deflection (Level 2 or 3 spill), appropriate to the nature and scale of predicted shoreline impacts.	**Resource Deployment**	of spill event (daylight hours permitting) in consultation with the State CA. SCAT information provided to the Planning function of the IMT for NEBA preparation, which will form part of the IAP.		deployed to site within the designated timeframe.
		C30 Operational NEBA	An operational NEBA is undertaken to determine net benefits with State Control Agency to confirm implementation of the response strategy.	Incident Controller	Operational NEBA is available, approved and was undertaken prior to shoreline protect and deflect.
18	**Impacts to cultural heritage and social values are prevented**	**C31 Consultation with Traditional owners**	In consultation with State CA, engage with Traditional Owners to facilitate site surveys and tagging out and protection of identified areas or importance.	Incident controller	Incident records verify consultation has occurred and controls implemented.
		C32 Land and Waterway Manager Consultation	In conjunction with State CA, consultation is undertaken with land and waterway manager prior to deployment of equipment to establish recreational user controls along affected coastline.	Incident Controller	Incident records verify consultation has occurred and controls implemented.
19	**Impacts to native vegetation and fauna are prevented.**	**C33 Site survey for critical habitat**	Surveys are undertaken to identify, mark out and protect nesting and critical habitat	Incident Controller	Incident records verify surveys have occurred and controls implemented
		C34 Trained Fauna Handlers	Only trained and accredited teams deployed by the Lead Agency for oiled wildlife will approach and handle fauna.	Incident Controller	Shoreline induction reinforces this constraint. Induction records.

9 Containment and Recovery

9.1 Response Activities

If the IMT deems containment and recovery a viable response strategy through the use of NEBA and IAP, strike teams will be deployed using work vessels with sufficient deck space and storage for oil/water waste.

The offshore containment and recovery team will be supported by the marine operating base and aerial support. Aerial support will comprise of fixed wing aircraft and/or helicopters to direct the vessel operators to the oil location.

9.2 Response Resources

Response resources would be activated via AMOSC in the first instance, with equipment and resources selected on the basis of the incident, conditions and IAPs. AMOSC has undertaken an assessment of response resource needs for this strategy (BMG-EN-REP-0023), and have determined the resources required to respond to a worst-case LOWC, assuming suitable offshore conditions. A summary of the process undertaken is provided in Appendix 4.

9.3 Environmental Risk Assessment (Containment and Recovery)

An assessment of possible environmental impacts and risks associated with containment and recovery activities has been undertaken as part of the EP (BMG-DC-EMP-0001).

Boom deployment and associated waste management activities has the potential to cause disturbance to vegetation and aboriginal heritage; disturb sensitive estuarine habitats; restricting access to the shoreline; and may lead to secondary oil spill impacts. To mitigate these impacts the IC (or delegate) will ensure the control measures identified in Table 9-1 are implemented.

Table 9-1: Containment and Recovery Activity Controls

Control measure	Environmental Performance Standard	Responsible Person
Consultation	Consultation In the event of a spill will ensure that relevant government agencies support the tactical response arrangements thus minimising potential impacts and risks to sensitivities.	General Manager Projects and Operations

9.4 Environmental Performance Outcomes (Containment and Recovery)

Table 9-2 provides the performance outcomes, standards and measurement criteria for the “containment and recovery” response option.

Table 9-2: Containment and Recovery – Performance Outcomes and Standards

ID	**Environmental** Performance Outcome	Control	Environmental Performance standard	Responsible person	Measurement Criteria
20	Cooper Energy maintains capability to implement containment and recovery in a Level 2 or 3 spill event.	**C35 Service Agreements Contain & Recover**	Cooper Energy maintains the following agreements to maintain shoreline assessment/protect and deflect capabilities: • AMOSC membership (equipment, personnel, CORE Group. Mutual aid). • AMSA support obligations under the National Plan (equipment, personnel).	General Manager Projects and Operations	Agreements/memberships are current. MoU in place.

ID	**Environmental** Performance Outcome	Control	Environmental Performance standard	Responsible person	Measurement Criteria
			• Scientific resource support agreement (GHD or equivalent). • Marine support services • Vessel of Opportunity listing • Waste management provider		
21	Cooper Energy implements or supplies resources for containment and recovery (Level 2 or 3 spill), appropriate to the nature and scale of predicted shoreline impacts.	**C36 Protect and Deflect Deployment**	Cooper will commence implementation the containment and recovery response by 24 hours of notification of the spill occurring, subject to offshore conditions. Operational monitoring will be used to continuously ensure containment and recovery operations are effective.	Incident Controller	Incident management records verify that equipment and resources are deployed to site within the designated timeframe.
		C37 Decanting limited to daylight hours	Offshore decanting will be assessed and undertaken in accordance with AMSA guidelines, during daylight hours only, Following minimum residence time of 30 minutes to allow settling of water: oil interface Decanting will be suspended if visible sheen identified from discharge water.	Incident Controller	Incident management records demonstrate decanting was undertaken in accordance with AMSA guidelines
		C38 Spill boom monitoring	Visual observations undertaken to determine whether booming operations are effective, specifically; • 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).	Incident Controller	Incident records demonstrate visual observations of boom effectiveness were undertaken.

ID	**Environmental** Performance Outcome	Control	Environmental Performance standard	Responsible person	Measurement Criteria
		C30 Operational NEBA	Deploy containment and recovery equipment in the trajectory of identified priority sites, prior to exposure, where NEBA determines deployment to be of net benefit.	Incident Controller	Incident records demonstrate containment and recovery equipment deployment considers sensitivities identified as part of the NEBA process.

10 Shoreline Response: Clean-up

10.1 Response Activities

Based on modelling of the spill scenarios associated with the Activity, the potential hydrocarbon exposure to shorelines from a loss of well control is 1,975 m^3 (2.5 % of total volume released) accumulated over 37 days (peak volume ashore). The three most common shoreline types where contact is predicted by spill modelling are:

- Cliff
- Rocky
- Sandy

As per Section 2, a State IMT would be established in response to a Level 2/3 spill potentially impacting State coastline. As such, the Control Agency would be State specific for managing shoreline response and/or at-sea response within State waters. Cooper Energy will remain actively engaged in the response until stood down by the Control Agency IC and will place a Cooper Energy liaison Coordinator within the state incident management team. Cooper Energy remains responsible for managing the origin of the spill outside State coastal waters.

State Control Agency will place a Liaison Officer within the IMT to act as the interface with other State government agencies and to ensure ongoing consultation and coordination of Maritime Emergencies resources.

10.1.1 Shoreline Assessment

Cooper Energy will support shoreline assessment and/or clean-up activities as directed by State CA.

If spill residues are predicted to reach the shoreline or aerial observations show oil has reached the shoreline, an assessment of the area will be undertaken using the Shoreline Clean-up and Assessment Technique (SCAT).

SCAT execution is described in Appendix 4.

10.1.2 Shoreline Clean-up

If oil is observed on the shoreline a NEBA will be prepared in consultation with State Control Agency to determine whether a clean-up response will be implemented.

Based upon predictions of MDO and light crude oil fate and behaviour (refer Section 4.2), clean-up response would involve the manual removal of actionable (> 100 g/m^2) and weathered light crude oil or MDO on shorelines. Mechanical washing may be a suitable option for hydrocarbon residues where machinery access to the beach is possible. The maximum volume of hydrocarbon ashore was 1,975 m^3 for LOWC (Figure 10-1), which arrives reaches the shoreline over approximately 12-days. The maximum length of coastline affected by actionable oil (>100g/m^2) was predicted at 287 km (66 km average).

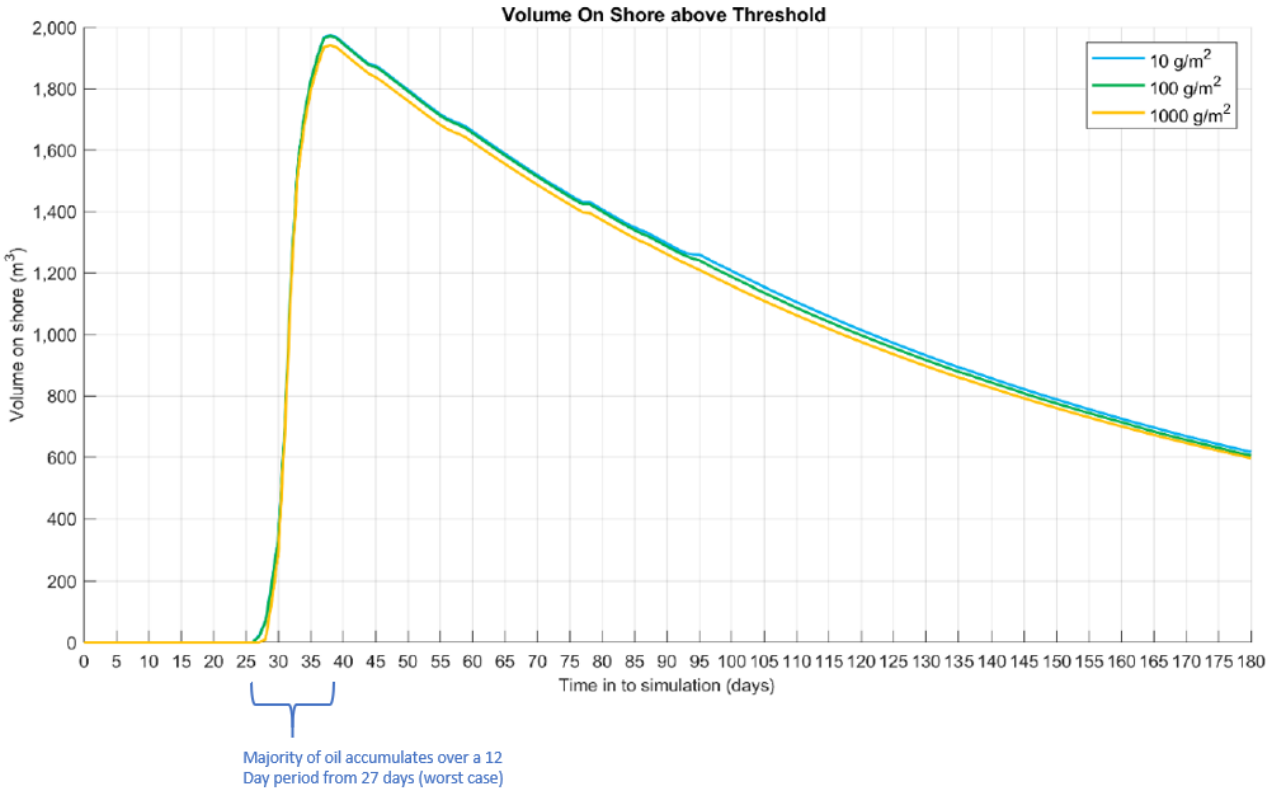


Figure 10-1 Oil on shore over time. B6 LOWC Scenario.

To understand the response equipment and personnel associated with shoreline clean-up response, Cooper Energy identified the quantity and type of equipment and personnel required for a single response team (Table 10-1). This information is based upon the assumption that each manual clean-up team has the treatment capacity of 10 m^3 per day (based upon a single person collecting 1 m^3 per day); and each mechanical collection team had a treatment capacity of 2.4 m^3 per hour (based upon bucket size of 0.04 m^3 and a single excavation per minute).

Cooper Energy identified the estimated waste types associated with shoreline clean-up response techniques to provide a conservative indication as to the level of waste that may be required to be managed during a response. Based upon a bulking factor of 10 m^3 per day for each 'shoreline clean-up team', Cooper Energy has estimated that the volume of waste that may need to be managed could be up to 19,750 m^3 (based on spill modelling suggesting maximum volume of hydrocarbons ashore is 1,975 m^3 and AMSA (2017) volume of collected oil based on multiplying by a factor of ten.)

Table 10-1: Single Shoreline Clean-up Team Equipment and Personnel Requirements per day

Equipment/personnel	Requirements
Manual clean-up	
Support personnel	10
Team supervisor	1
Waste storage (per team)	10 m^3 per day
Mechanical collection	
Equipment (single excavator/machine)	1
Operator	1
Waste storage (per team)	25 m^3 per day

10.1.3 Laboratory Analysis

SCAT resources will obtain samples of any oil on shorelines and send to a NATA accredited laboratory for the analysis of hydrocarbon properties (including BTEX and PAH) and the physical properties of the oil (including wax content).

10.2 Response Resources

The number and tasks of personnel will vary according to the quantity of spill debris, its rate of delivery to the site and the disposal method chosen.

Response resources would be activated via AMOSC in the first instance, with equipment and resources selected based on the TRP activation and subsequent IAPs. AMOSC has undertaken an assessment of response resource needs for this strategy (BMG-EN-REP-0023) and have determined how these needs will be met. A summary of the process undertaken is provided in Appendix 4.

10.3 Environmental Risk Assessment (Shoreline Clean-up)

An assessment of possible environmental impact and risk associated with shoreline assessment and clean-up activities has been undertaken as part of the EP (BMG-DC-EMP-0001).

Shoreline assessment and clean-up activities have the potential to cause disturbance to vegetation, fauna habitats and aboriginal heritage; restricting access to the shoreline; and may lead to secondary oil spill impacts. To mitigate these impacts the IC will ensure the control measures identified in Table 10-2 are implemented.

Table 10-2: Shoreline Assessment and Clean-up Activity Controls

Control measure	Environmental Performance Standard	Responsible Person
Consultation	Consultation In the event of a spill will ensure that relevant government agencies support the shoreline assessment and clean up strategy thus minimising potential impacts and risks to sensitivities.	Cooper Energy Oil Spill Incident Controller
Use of Existing Tracks and Pathways	Utilising existing tracks and paths where possible will ensure the disturbance footprint associated with the implementation of this response technique is reduced to ALARP.	Cooper Energy Oil Spill Incident Controller

10.4 Environmental Performance Outcomes (Shoreline Clean-up)

Table 10-3 provides the performance outcomes, standards and measurement criteria for shoreline clean-up.

Table 10-3: Shoreline Response – Performance Outcomes and Standards

ID	Environmental Performance Outcome	Control	Environmental Performance standard	Responsible person	Measurement Criteria
22	**Cooper Energy maintains capability to implement SCAT and shoreline clean-up in a Level 2 or 3 spill event.**	**C39 Service Agreements Shoreline Clean-up**	Cooper Energy maintains the following agreements to maintain shoreline assessment/clean-up response capabilities: • AMOSC membership (equipment, personnel, CORE Group. Mutual aid). • AMSA support obligations under the National Plan (equipment, personnel).	General Manager Projects and Operations	Agreements/memberships are current. MoU in place.

ID	Environmental Performance Outcome	Control	Environmental Performance standard	Responsible person	Measurement Criteria
			• Scientific resource support agreement (GHD or equivalent). • Waste management provider. • Labour hire provider		
23	**Cooper Energy implements or supplies resources for shoreline assessment and clean-up (Level 2 or 3 spill), appropriate to the nature and scale of predicted shoreline impacts.**	**C40 Shoreline Assessment Resource Deployment**	SCAT teams deployed and available onsite within 12 hours of spill event (daylight hours permitting) in consultation with the CA. SCAT information will be provided to Planning function of the IMT for NEBA preparation, which will form part of the IAP.	Cooper Energy Oil Spill Incident Controller	Incident management records verify that SCAT teams are deployed to site within the designated timeframe.
		C30 Operational NEBA	An operational NEBA is undertaken to determine net benefits with Control Agency to confirm implementation of the response strategy.	Cooper Energy Oil Spill Incident Controller	Operational NEBA is available, approved and was undertaken prior to shoreline clean-up.
24	**Impacts to cultural heritage and social values are prevented**	**C31 Consultation with Traditional owners**	In consultation with State CA, engage with Traditional Owners to facilitate site surveys and tagging out and protection of identified areas or importance.	Incident controller	Incident records verify consultation has occurred and controls implemented.
		C32 Land and Waterway Manager Consultation	In conjunction with CA, consultation is undertaken with land and waterway manager prior to deployment of equipment to establish recreational user controls along affected coastline.	Cooper Energy Oil Spill Incident Controller	Incident records verify consultation has occurred and controls implemented.
25	**Impacts to native vegetation and fauna are prevented.**	**C33 Site survey for critical habitat**	**Site survey for critical habitat** Surveys are undertaken to identify, mark out and protect nesting and critical habitat	Incident controller	Incident records verify surveys have occurred and controls implemented.
		C34 Trained Fauna Handlers	**Fauna Handling** Only trained and accredited teams deployed by the Lead Agency for oiled wildlife will approach and handle fauna.	Site Representative	Shoreline induction reinforces this constraint. Induction records.

11 Oiled Wildlife Response

11.1 Wildlife Sensitivities

Based upon the environmental sensitivities present in the OSRA (Appendix 2) and the EP (BMG-DC-EMP-0001) fauna which may be affected by hydrocarbon residues include seabirds, shorebirds, pinnipeds and whales. The potential for hydrocarbon impact to these species is detailed in the EP.

11.2 Notification and Response Arrangements

Each State has a dedicated agency responsible for responding to wildlife affected by a marine pollution emergency in State waters. If a small incident which affects wildlife occurs in Commonwealth waters, AMSA may request support from relevant State agency to assess and lead a response if required. State agency response to oiled wildlife is undertaken in accordance with the State specific Wildlife Response Plan (or equivalent).

Cooper Energy will provide support for the response through the provision of resources. The equipment which Cooper Energy can access through external assistance (such as AMOSC) includes:

- Vessels for transport of wildlife and equipment;
- Oiled Fauna Kits;
- Wildlife intake and triage; and
- Wildlife cleaning and rehabilitation kits.

Personnel may also be deployed under the direction of State agency to undertaken wildlife response activities. Only trained resources may interact with oiled fauna species in accordance with State specific legislation (i.e. in Victorian State waters Victorian Wildlife Act 1975).

The states ensure that effective wildlife response arrangements are available within their jurisdictions. These arrangements are detailed within the relevant agency contingency plans.

In general, the following applies in the event the State is notified of oiled wildlife:

1. Notify the relevant State Duty Officer or State Agency Commander for wildlife within the jurisdiction immediately.
2. Notify AMSA (02 6230 6811) if the oil spill occurs in Commonwealth waters and wildlife is affected.
3. Determine the exact location of the animal and provide accurate directions. Maintain observation until State agency can deploy staff to the site.
4. Take response actions only as advised by State agency or AMSA:
    - Determine the exact location of the animal for accurate directions for appropriately trained wildlife response personnel. Maintain observation and keep people, dogs and wildlife scavengers away until accredited wildlife teams have arrived.
    - Avoid handling or treating injured wildlife as this may cause further stress and injury and poses a safety risk to untrained handlers.

11.3 Response Activities

Oiled wildlife response can be broken down into three stages; primary, secondary and tertiary (refer Table 11-1).

Table 11-1: Oiled Wildlife Response Phases

Response Phase	Response Activity Description
Primary Response	This response is associated with hydrocarbon recovery and removing the threat of oil to wildlife. For this OPEP this involves source control, deflection and protection of high protection priority (estuaries) and shoreline assessment and clean-up as discussed in Section 8 and Section 10.

Response Phase	Response Activity Description
Secondary Response	This response uses hazing and pre-emptive capture techniques. Hazing techniques include systems to keep wildlife away from areas where impact is expected through a system of artificial threats (including noise and visual devices). The decision to undertake this within Victoria would be determined by DELWP as the Lead Agency for oiled wildlife. Pre-emptive capture involves: • The isolation and/or capture of wildlife from contaminated sites by either physical barriers preventing access or exclusion to contaminated sites; • Transferring the wildlife well away from contaminated sites and releasing them; or • Holding the wildlife in short-term captivity, while the contamination threat is removed. Secondary responses are unlikely to be required.
Tertiary Response	Tertiary response will be applied as required by oil spill trained and accredited teams deployed by the Lead Agency. Tertiary response includes capturing, cleaning, rehabilitation, transportation, and stabilisation of contaminated wildlife for release.

11.4 Response Resources

11.4.1 Oiled Wildlife Waste Management

To understand the response equipment and personnel required to support waste management activities, Cooper Energy identified the estimated waste types associated with an Oiled Wildlife response technique to provide a conservative indication as to the level of waste that may be required to be managed by this activity.

Response resources would be activated via AMOSC in the first instance, with equipment and resources selected on the basis of the TRP activation and subsequent IAPs. AMOSC has undertaken an assessment of response resource needs for this strategy (BMG-EN-REP-0023), and have determined how these needs will be met. A summary of the process undertaken is provided in Appendix 4.

Cooper Energy will not deploy any resources without first receiving a formal deployment request from relevant State agency.

11.5 Environmental Risk Assessment

An assessment of possible environmental impact and risk associated with oiled wildlife response has been undertaken as part of the EP (BMG-DC-EMP-0001).

Oiled wildlife response has the potential to cause disturbance, injury or death to fauna if handlers are not appropriately trained. To mitigate these impacts the Cooper Energy Operations Officer (or delegate) will ensure the control measures identified in Table 11-2 are implemented.

Table 11-2: Oiled Wildlife Management Activity Controls

Control measure	Standard	Responsible Person
Consultation	Consulting and working with relevant government agencies on agreed OWR actions and plans will minimise potential impacts and risks to sensitivities.	Cooper Energy Oil Spill Incident Controller
Use of existing tracks and pathways	Utilising existing tracks and paths where possible will ensure the disturbance footprint associated with the implementation of this response technique is reduced to ALARP.	State Government Incident Controller
Wildlife is only approached or handled by State agency trained oiled wildlife responders unless formal direction is received from the State Government IMT.	Cooper Energy *Response Personnel Inductions* Cooper Energy response personnel are advised of wildlife interaction restrictions through site safety inductions.	Cooper Energy Oil Spill Incident Controller State Government Incident Controller

11.6 Environmental Performance Outcomes (Oiled Wildlife Management)

Table 11-3 provides the performance outcomes, standards and measurement criteria for oiled wildlife management.

Table 11-3: Oiled Wildlife Response – Performance Outcomes and Standards

ID	Environmental Performance Outcome	Controls	Environmental Performance standard	Responsible person	Measurement Criteria
26	**Cooper Energy maintains capability to support oiled wildlife management in a Level 2 or 3 spill event.**	**C41 Service Agreements Oiled Wildlife Response**	Cooper Energy maintains the following agreements to maintain OWR response capabilities: • AMOSC membership (equipment, personnel). • Waste management provider • Labour hire provider. • Vessel of Opportunity listing	General Manager Projects and Operations	Contracts/memberships verify currency of membership.
27	**Cooper Energy provides resources to support oiled wildlife response strategies as directed by State Control Agency.**	**C42 Notification to State Agency of Oiled Wildlife**	Relevant state agency is notified as soon as possible after the sighting of oiled wildlife has occurred or it is considered wildlife are likely to be impacted.	Cooper Energy Oil Spill Incident Controller	Incident management records verify that verbal and/or written notification was provided to relevant State agency as soon as possible after the sighting was noted.
		C43 Oiled Wildlife Response Kits	AMOSC OWR kits are deployed to site within timeframes as directed by State agency.	Cooper Energy Oil Spill Incident Controller	Incident records verify oiled wildlife response kits are deployed to site as directed by State agency.
		C44 Oiled Wildlife Response Resourcing	Cooper Energy meets State agency resourcing needs throughout the response, meeting IAP performance outcomes.	Cooper Energy Oil Spill Incident Controller	Incident log verifies requested Cooper Energy resources met required IAP outcomes for oiled wildlife response.
28	**Wildlife is only approached or handled by State agency trained oiled wildlife responders, unless formal direction is received from the State Government IMT.**	**C45 Oiled Wildlife Response Induction**	Cooper Energy personnel are inducted into wildlife interaction restrictions.	Cooper Energy Oil Spill Incident Controller	Incident records verify no interaction by Cooper Energy personnel and wildlife without formal direction and induction by

ID	Environmental Performance Outcome	Controls	Environmental Performance standard	Responsible person	Measurement Criteria
					the State Government IMT.
29	**Impacts to native vegetation and fauna are prevented.**	**C33 Site survey for critical habitat**	**Site survey for critical habitat** Surveys are undertaken to identify, mark out and protect nesting and critical habitat	Incident controller	Incident records verify surveys have occurred and controls implemented.
30	**Impacts to cultural heritage and social values are prevented**	**C31 Consultation with Traditional owners**	**Consultation with Traditional owners** In consultation with State CA, engage with Traditional Owners to facilitate site surveys and tagging out and protection of identified areas or importance.	Incident controller	Incident records verify consultation has occurred and controls implemented.

12 Decontamination and Waste Management

12.1 Waste Types and Volumes from a Spill Event

Waste types generated through spill response activities may include sand with oil residue, oily water, wash-waters from oiled wildlife clean-up and possible oiled carcase disposal (noting State agency will lead this aspect).

It is noted that MDO and light crude oil residues reaching shorelines will still be relatively mobile residues and will penetrate shoreline sediments due to the low viscosity of the oil and will not be as visually obvious as other hydrocarbons such as heavy fuel or crude oils.

An estimation of maximum waste volumes generated for credible spill scenarios for these assets is provided in Table 12-1.

Table 12-1: Estimated Oil Waste Volumes

		Waste Type	Source Maximum Volume (m^3)	Waste Volume (m^3)	Assumptions
Spill Scenarios	Vessel collision (500 m^3 of MDO over 30 days)	Weathered debris	Ashore 64.8 m^3	648 m^{3*}	• Average volume ashore expected to be 4.5 to 23.1 m^3
	LOWC (77,338 m^3 Light Crude Oil over 120 days)	Weathered debris	Ashore 1,975 m^3	19,750 m^{3*}	• Average volume ashore expected to be 424 m^3
Waste Stream	Shoreline Clean-up	Manual clean-up	**PPE:** 0.055 m^3 per team per day **Waste Storage:** 10 m^3 per team per day	10.05 m^3 per team per day	• 5 kg or 0.005 m^3 PPE waste per person per day • Assume 11 persons per team
		Mechanical collection	**PPE:** 0.05 m^3 per team **Waste Storage:** 25 m^3 per team per day	25.005 m^3 per team per day	• 1 operator per equipment • 5 kg or 0.005 m^3 PPE waste per person
	Oiled Wildlife Waste	Waste water	**PPE:** 0.4 m^3 per day **Waste water:** 50 m^3	50.4 m^3 per day	• Assume 50 birds per day • 1 m^3 per unit (1 bird = 1 unit) • 5 kg or 0.005 m^3 PPE waste per team • Assume 80 persons per day

* Based on AMSA (2017) volume of collected oil based on multiplying by a factor of ten for shore-based clean-up.

12.2 Waste Management

12.2.1 Decontamination

In the event that shoreline clean-up is activated, decontamination stations must be placed at control points to prevent the spread of oil residues. Hot and cold zones must be clearly identified at the decontamination station and all response personnel should be briefed on the decontamination procedures before entering the Hot Zone. The decontamination zone should be constantly attended and kept as neat as organised as possible.

12.2.2 Regulatory Requirements/Characterisation

Waste generated as part of shoreline clean-up activities will be handled by Cooper Energy's Waste Management Contractor who will be activated in a Level 2/3 event to collect and manage waste generated.

The waste management contractor must ensure:

- Suitable receptacles are provided for waste materials into ensure its correct segregation into appropriate regulatory classifications,
- Wastes are manifested to ensure they are sent to appropriately licenced treatment or disposal facilities; and
- Transported via correctly permitted vehicles to those locations in accordance with relevant State Environment Protection Authority (EPA) (or equivalent) requirements.

All waste manifests, to ensure recovered oil residues are tracked, must be sent by the Waste Contractor to the Cooper Energy Logistics Officer as soon as possible.

12.2.3 Interim Storage & Segregation Requirements and Resources

All requirements for interim storage arrangements must be discussed with Cooper Energy's waste management contractor and a site waste management plan developed in consultation with the EPACA and the appropriate land manager.

The site waste management plan must ensure that all interim storage and handling arrangements are fully bunded, isolated from the public and site activities supervised. All interim storages must have suitable spill kits available to limit spill residues.

Waste storage resources, in addition to Cooper Energy's waste management contractor resources, can be found on the AMSA, AMOSC and relevant State government websites referenced in Section 8.2.

12.3 Environmental Risk Assessment

Risks associated with waste management have been assessed in Section 8 (Protection and Deflection) and Section 9 (Shoreline Assessment and Clean-up).

13 Scientific Monitoring

The Offshore Victoria Operations Operational and Scientific Monitoring Plan (OSMP) (VIC-ER-EMP-0002) provides a comprehensive framework for the monitoring programs that may be implemented in the event of a Level 2 or level 3 hydrocarbon spill.

13.1 Consultation to Support Operational and Scientific Monitoring

In the event of a level 2/3 spill, Cooper Energy will consult with Commonwealth and State authorities for all areas potentially exposed to hydrocarbons, including Australian Marine Parks (AMPs) to ensure that scientific monitoring is undertaken to the satisfaction of the Commonwealth and State. The State Control Agency will coordinate the whole of State Government advice on the focus, scope and duration of the scientific program.

Cooper Energy will notify these relevant authorities on a level 2/3 spill event and provide operational data to these authorities relevant to the spill level. Cooper Energy will consult with these authorities at the commencement of a level 2/3 spill on any proposed baseline/scientific studies and control sites to allow for feedback and OSMP study implementation plan modification to fulfil all State requirements (e.g. ‘on-the-day sampling design, modified scope).

Operational monitoring results will continue to be provided throughout the response to allow for continued feedback and modification of baseline/scientific requirements. Other critical liaison points will be established between relevant authorities through the spill consultation process.

14 Demobilisation

There are specific tasks that are required to be undertaken by various response personal on the demobilisation of the response. Some of these are detailed in the sections to follow.

14.1 Demobilisation tasks for the IC

Upon conclusion of the spill activity, the following tasks will be undertaken by the IC (or delegate):

- Advise all relevant contractors and Cooper Energy personnel.
- Advise all relevant government authorities.
- Prepare detailed reports on the response activities and outcomes and collate all documents for secure storage and/or submission to regulators.
- Undertake an inventory of consumables and prepare accounts.
- Arrange for the return and/or refurbishment of equipment.
- Investigate the cause of the incident and report to relevant authorities.
- Assess environmental monitoring requirements.

14.2 Demobilisation tasks for the Operations Officer

Upon completion of the oil pollution response operation, the Cooper Energy Operations Officer (or delegate) will:

- Arrange recovery of all equipment and unused materials.
- Ensure that all equipment is cleaned, to the extent that available facilities allow.
- Ensure that all equipment is returned to the owner by the quickest possible means (having regard to costs).
- Upon its return to the owner, equipment must be thoroughly serviced or replaced in accordance with equipment maintenance schedules prior to being stored.

With regards to marine operations, upon receipt of response termination, the IMT will ensure:

- All equipment is recovered and cleaned;
- All vessels return to their respective berths;
- All personnel are accounted for;
- Equipment is safely offloaded and transported to a site for cleaning or repair;
- All equipment returned is logged; and
- All equipment is returned to the correct owner/ location.

For shoreline response activities, the Operations Officer (or delegate) will ensure:

- All equipment is retrieved and stowed away;
- All equipment is retrieved and returned to the relevant location for cleaning and redistribution;
- Any equipment not collected is secured;
- All clean-up team members are transported back to the contractor's base for demobilisation; and
- All shorelines are left free of litter or other refuse.

14.3 Response Debrief/Critique

The IC will hold a post-spill debriefing for any spill for which a response was activated. De-briefing should address:

- Spill causes (if known);
- Speed of response activation;

- Effectiveness of tactics and strategies;
- Equipment suitability;
- Health and safety issues (if any);
- Communications;
- Integration of OPEP and procedures with other agencies; and
- Lessons learned for implementation in future responses.

Appendix 1 - Documentation

The following forms can be found on the Cooper Energy SharePoint system: Regulatory Management System:

https://cooperenergy.sharepoint.com/sites/HSEC2/Emergency/Forms/Documents.aspx?web=1

- POLREP
- SITREP
- NOPSEMA – Reportable Incident (Form FM0831)
- Incident Action Plan (IAP) Template
- NEBA Template
- Emergency response Contacts
- Incident Action Plan templates
- Oil Spill Response Officer Position Checklists – see Incident Management Plan Appendix A.

Appendix 2 - Oil Spill Response Atlas (OSRA)

OSRA:
https://cooperenergy.sharepoint.com/:f:/s/HSEC2/EgVdlU8qCZtAgHfO7KVTHiMBlPIBaorLDMnyyEkA5tEP3w?e=r2fPTV

Coast Kit: https://mapshare.vic.gov.au/coastkit/

Estuary Watch: http://www.estuarywatch.org.au/

Appendix 3 - Net Environmental Benefit Assessment (NEBA) Template

Purpose

Net Environmental Benefit Analysis (NEBA) is a simple tool intended to rapidly assess the risks posed by an oil spill to a specific location as well as facilitate and simultaneously document the decision-making process to most effectively deploy resources and minimise environmental impacts. This provides evidence to justify priority setting and response option selection.

Impacts are ranked from slight - severe and recovery time is considered from slow – rapid using a matrix (Figure A3-1). Protection priority of resources is ranked numerically (refer Table A3-1). This includes the assessment of whether the sensitivity (impact) ranking of various spill response options would increase, decrease or remain the same when compared with no action (natural recovery i.e. monitor and evaluate).

This process should be conducted by the IMT Planning Officer (or delegate) in consultation with appropriately qualified experts from AMOSC, AMSA, DJPR EMB and other agencies (as required). Resources required include the respective asset Environment Plans, this OPEP, OSRA maps [refer Appendix 2), OSTM/vectors for the spill event and marine charts. Local knowledge of the resources at stake is highly desirable to inform the assessment.

Instructions:

1. Identify which of the resources in Table A3-1 occur in the affected area and list details. Resources are grouped into 3 categories (water surface, shoreline, water column) and may have biological/ecological (emphasis), economic or social/cultural significance. Use OSTM in conjunction with an OSRA/MIGS[2] map of the projected impact area.
2. Rank sensitivity (Low/Medium/High) using the Resource Oil Sensitivity Matrix in Figure A3-1 to give a qualitative measure of likely impact if no response actions are taken (Natural Recovery i.e. Monitor and Evaluate). Sensitivity can be assessed by selecting a potential impact rank (Slight/Minor/Major/Severe) and recovery time (>10 years/5-10 years/2-5 years/<1 year). For particular shoreline types, use the Environmental Sensitivity Index (ESI) rankings in Figure A3-1 (shoreline types) as a guide. Record this information for each resource in Table A3-1.
3. Assign priority protection numbers (1-n) for each resource based upon sensitivity rankings assuming no response actions are taken (Natural Recovery i.e. Monitor and Evaluate). Highest priority resources should be assigned ‘1’ – n is lowest priority. Resources may be ranked equally. Record this information for each resource in Table A3-1.
4. Assess whether the sensitivity (impact) ranking would increase (←), decrease (→) or remain the same (–) for each of the 3 remaining response strategies (Dispersant Application, Offshore Containment and Recovery, Protection and Deflection & Shoreline Clean-up). The Oiled Wildlife Response Strategy is adopted for all Level 2/3 spills.
5. Select which overall response strategy (Natural Recovery i.e. Monitor and Evaluate, Dispersant Application, Offshore Containment and Recovery, Protection and Deflection and Shoreline Clean-up) would reduce or increase the sensitivity (impact) ranking for the highest priority shorelines/resources for protection. I.e. what response option provides net environmental benefit.

[2] Maritime Incident Geospatial Support

HIGH IMPACT MEDIUM IMPACT LOW IMPACT

			RECOVERY TIME SLOW ⟷ RAPID			
			>10 years	5 – 10 years	2 – 5 years	< 1 year
			1	2	3	4
Potential Impact Rank	Severe	A	**High 1A**	**High 2A**	**High 3A**	**Medium 4A**
	Major	B	**High 1B**	**High 2B**	**Medium 3B**	**Low 4B**
	Minor	C	**High 1C**	**Medium 2C**	**Medium 3C**	**Low 4C**
	Slight	D	**Medium 1D**	**Low 2C**	**Low 3D**	**Low 4D**

	ESI	High	ESI	Medium	ESI	Low
Shoreline Types	9	Sheltered tidal flats	5	Mixed sand and gravel beaches	1	Exposed Rocky Shores
	10	Salt marshes and mangroves	6	Gravel beaches	2	Exposed Wave-Cut Platform
			7	Exposed tidal flats	3	Fine-medium grain sand beaches
			8	Sheltered rocky-rubble coasts	4	Coarse grain sand beaches

Figure A3-1: Resource sensitivity assessment matrix and shoreline type sensitivity ranks

Table A3-1: Net Environmental Benefit Analysis - Environmental Effects of Response Options Risk Analysis Matrix

Receptor Type	Details (seasonality, life cycle etc)	Protection Priority Ranking			Expected impact under each scenario					
		Priority Site 1 (insert location)	Priority Site 2 (insert location)	Priority Site 3 (insert location)	Monitor and Evaluate	Chemical Dispersant	Offshore Containment and Recovery	Protect & Deflect	Shoreline Assessment/ Clean-up	Oiled Wildlife
Environmental Receptors										
Saltmarshes										
Coastal Vine Thickets										
Soft Sediment										
Seagrass										
Algae										
Coral										
Seabirds and Shorebirds (feeding, roosting, nesting)										
Marine Invertebrates										
Fish and Sharks (including spawning/nursery areas)										
Marine Reptiles										
Marine Mammals (Seals /Dolphins /Whales)										
Estuaries										
Marine Parks/Sanctuaries										
Sheltered tidal flats										

Receptor Type	Details (seasonality, life cycle etc)	Protection Priority Ranking			Expected impact under each scenario					
		Priority Site 1 (insert location)	Priority Site 2 (insert location)	Priority Site 3 (insert location)	Monitor and Evaluate	Chemical Dispersant	Offshore Containment and Recovery	Protect & Deflect	Shoreline Assessment/ Clean-up	Oiled Wildlife
Sheltered rocky/rubble coasts										
Exposed tidal flats										
Gravel beaches										
Mixed sand and gravel beaches										
Coarse grain sand beaches										
Fine-medium grain sand										
Exposed wave-cut platform										
Exposed rocky shores										
Benthic systems										
Sea-grass										
Rocky reef										
Other										
Commercial Receptors										
Shipping channels										
Commercial port										
Aquaculture										
Commercial water intakes										
Commercial Fisheries										

Receptor Type	Details (seasonality, life cycle etc)	Protection Priority Ranking			Expected impact under each scenario					
		Priority Site 1 (insert location)	Priority Site 2 (insert location)	Priority Site 3 (insert location)	Monitor and Evaluate	Chemical Dispersant	Offshore Containment and Recovery	Protect & Deflect	Shoreline Assessment/ Clean-up	Oiled Wildlife
Abalone										
Rock Lobster										
Fin fish										
Aquaculture										
Recreational and Cultural Receptors										
Tourism/Recreational facilities										
Recreational marinas										
Amenity beaches										
Archaeological sites										
Heritage sites										
Geological sites										
Recreational fisheries										
Recommended Response Strategies										

Approved by (Name):		Signature:	Company/ Agency (if required)
Position:	**Incident Controller (or delegate)**	**Phone/Mobile:**	**Fax/Email:**

Appendix 4 – Response Resources Needs Assessment

Peak Response Needs – Cooper Energy

Cooper Energy's IMT structure is designed to be scalable to meet the particular requirements of any credible spill scenario during the BMG decommissioning campaign. Analysis of personnel requirements vs the resource pool accessible via agreement in place during the activity indicates a sufficient level of trained and competent people.

Needs Assessment Process

As part of the planning process for the BMG P&A campaign, Cooper Energy and AMOSC undertook a needs analysis, with a focus on the Incident Management Team (IMT), Forward Operating Base (FOB) and Field Team capacity and capability required to respond to a worse-case discharge scenario during the BMG P&A campaign.

Figure A 1 shows the process undertaken to determine response needs. Further detail on this process is provided within the BMG Well Abandonment Incident Management Team and Response Team Justification Statement (BMG-EN-REP-0023). Using this method, the Response Personnel 'needs' have been determined. Against these needs, resource pools have been assigned from Cooper Energy and response parties.

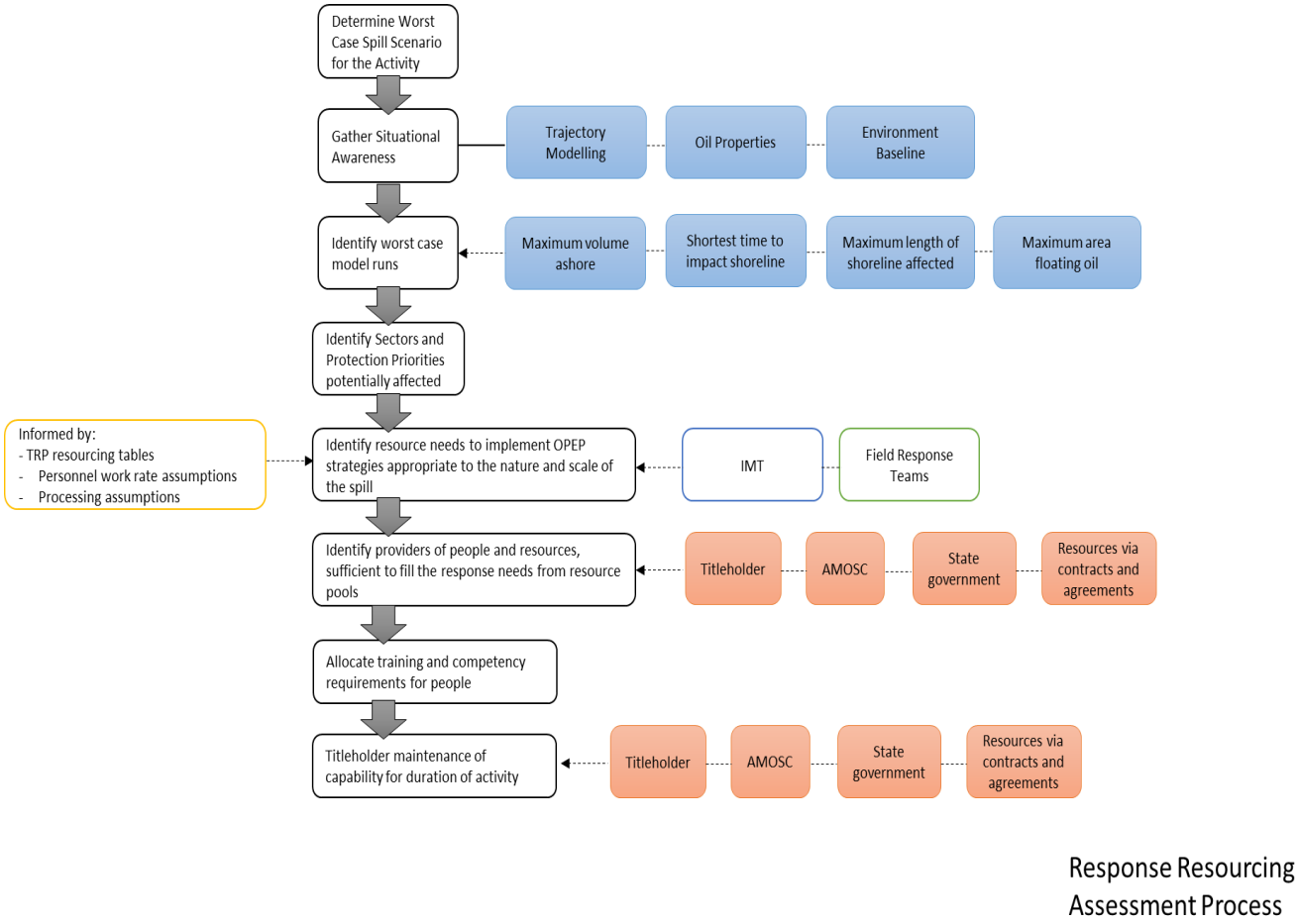


Figure A 1: Response Resource Assessment Process

4.2 OPEP Pre-determined Peak Capacity

Given the hydrocarbon properties (light crude oil) and the potential for weathering, the primary field options are:

- source control
- monitor and evaluate.

Secondary measures were also considered and include:

- Containment and Recovery
- Protect and deflect
- Shoreline clean up
- Oiled wildlife response

Further information on each of these response strategies is provided in the OPEP.

Table A 1 provides a summary of the strategy, tactics and peak field resourcing requirements for a worst case scenario response during the BMG P&A campaign. Table A 2 provides a detailed resourcing estimates for the entire IMT, FOB and Field Team Lead and Coordinator roles, including resource pool sizes, personnel numbers by shift/team and where those persons would be sourced from.

Table A 1: Peak Field Resourcing Requirements

	Strategy	Tactics	Peak Capacity Description / Amount	Provider	Time to initiate	Approx. Peak resourcing
1.	**IMT**	Incident Control	IMT Teams working roster	Refer Table A-2	Immediate	Refer Table A-2 Peak / plateau day 4
2.	**Source Control Team Leads**	Survey, Intervention, Debris Clearance Capping Relief Well Drilling Well Kill	Elements of all source control responses active simultaneously	Refer Table A-3	Refer SCERP response time models	Refer Table A-3 Peak around relief well MODU arrival.
3.	**FOB Team Leads**	Aerial Observation Marine Response Shoreline Response	FOB Teams working Roster	Refer Table A-2	Immediate	Refer Table A-2 Peak / plateau from day 19.
			Field Response Teams			
4.	**Surveillance, Monitoring & Visualisation**	Overflights of the spill / search area	2 x daily overflights of the oil spill / search area	Aerial observers – AMOSC Aircraft – Third party arranged by Cooper Energy	Immediate	Daily 3 personnel Week 1
5.	**Containment and Recovery**	Boom and skimmer deployment to recover oil	9 x C&R teams if conditions allow the deployment. Teams comprising 1 team lead to 4 workers / equipment operators.	Equipment and personnel – AMOSC Vessels - Third party arranged by Cooper Energy	Secondary response	45 personnel Week 1
6.	**Protection & deflection booming;**	Shoreline sensitivity	3 x protection & deflection strike teams. (initial	OSPR crew – AMOSC CG, labour hire	Ongoing consideration over the duration of the	86 personnel Week 4

Strategy	Tactics	Peak Capacity Description / Amount	Provider	Time to initiate	Approx. Peak resourcing
recovery operations	protection & deflection booming, recovery operations	establishment of TRP). The need and extent of the boom required will be dependent on the status of each of the TRP sensitivities. Teams Comprising approx.. 1 lead, 1-4 trained responders, 14 general labour, 10 equipment operators.	OSPR shoreline equipment – AMOSC, then NP resources Small Vessels – Cooper Overseen/directed by State Jurisdiction.	spill of the need for initiation of the TRP dependent on the state of the sensitivity (i.e. whether an estuary entrance is open)	
7. Shoreline assessment & clean-up	Shoreline Clean-up Assessment Technique (SCAT) field survey teams	4 x 4 person SCAT (data collection) teams – including 1 wildlife SME.	SCAT teams – AMOSC CG, OSMP provider	Ongoing consideration	16 personnel Week 1
	Shoreline clean up (shoreline type specific)	High rapid levels of shoreline accumulation: 106 shoreline clean-up teams across the identified oiled sectors. Or Sustained low levels of shoreline accumulation: 13 shoreline clean-up teams across the identified oiled sectors.	Shoreline Clean up – Directed by AMOSC, bulk labour hire (under control of State Jurisdiction)	Ongoing consideration	High rapid levels of accumulation: 1170 personnel week 3+ Or Sustained low levels of accumulation: 138 personnel Week 3 +
4. Oiled Wildlife Response		3 x wildlife coordinators (24/7 ops) within planning unit, a triage unit and multiple field and transport teams ~75 responders	Directed by state jurisdiction	Dependent on wildlife encounter	78 personnel Week 3+

Table A 2: IMT, FOB and Field Team (Leads & Coordinators) Peak Resourcing Requirements

	Resource requirement				Resource Pool						
IMT Functional Role	**Team 1**	**Team 2**	**Night Shift**	**Total Persons**	**Cooper Energy**	**AMOSC & Core Group**	**OSMP Contractor**	**State Government**	**NRT**	**Agency / Consultancy**	**Total Available**
Incident Controller	1	1	1	3	3			*			3
Deputy IC	1	1	1	3	1	2					3
Health & Safety Officer	1	1		2	2						2
Liaison Officers (external / government)	3	3		6	5	1		*			6
Planning Section Lead	1	1	1	3	3			*			3
Environment Unit Lead	1	1	1	3	2			*		2	4
OSMP Coordinator	1	1		2		2	4	*			5
Shoreline Response Programme Manager	1	1		2		1			1		2
Operation Section Lead	1	1	1	3	2	1					3
Air Operations Branch Manager	1	1		2		2					2
Marine Operations Branch Manager	1	1		2		2					2
Shoreline Clean-up Coordinator	1	1		2		2					2
Oiled Wildlife Division Lead	1	1		2		2		*			2
Logistics Section Lead	1	1	1	3	3						3
Support Branch Coordinator (Facilities / Equipment)	1	1		2	2						2
Service Branch Coordinator (Comms, IT, Medical, Food)	1	1		2	2						2
Finance and Administration Lead	1	1	1	3	3						3
Procurement Coordinator	1	1		2	1					1	2
Compensation Coordinator	1	1		2	1					1	2
Administration and Records	1	1		2	1					1	2
FOB Lead	1	1	1	3	1	2					3
Deputy FOB Lead	1	1	1	2	1						3
Safety Officer	1	1		2	2						2
Aerial Base FOB Lead	1	1		2		2					2
Aerial Observer	1	1		2		2					2
Marine FOB Lead	1	1		2		2					2
C&R / P&D Team Leads	9	9		18		9			9		18
SCAT Team Leads	4	4		8		4	4		4		12
TRP Team Leads	3	3		6		6					6
Shoreline Response Team Leads	23	43		66	10	30			26		66
Oiled Wildlife Coordinators	1	1	1	3		3					3
Reconnaissance Manager	1	1		2		2	2				4
Rescue and Transport Manager	1	1		2		2					2
Staging and Holding Manager	1	1		2		2					2
Rehabilitation Manager	1	1		2		2					2
Resource Need			**Total:**	**173**							
Resource Pool										**Total:**	**185**

Notes:
The assessment considers teams working a roster to provide relief in the event of a protracted response.
**Denotes State government resources have not been factored into this table, though are likely to provide input/direction where they are the designated Control Agency.*

4.3 *SCERP Pre-determined Peak Capacity*

The source control response options for the BMG P&A activity are:

- Survey, Intervention and survey / debris clearance
- Capping
- Relief well drilling & Well Kill

Further information on each of these response strategies is provided in Section 6.

Table A 3 provides a summary of the peak resources required to fill leadership roles for the source control team, during a worst-case scenario source control response for the BMG P&A campaign. A detailed resourcing plan for the source control team is prepared as part of the campaign SCERP.

Table A 4 Peak Resourcing Requirements (Source Control Leads)

	Resources Required			Resource Pool					
Source Control IMT Lead Roles	**Team 1 (Pax / 24hr)**	**Team 2 (Pax / 24hr)**	**Total**	**Cooper Energy**	**Well Control Services**	**Subsea Engineering**	**Well Construction Engineering**	**Survey Services**	**Total Sourced**
Source Control Team Lead	2	2	4	4					4
Well Intervention Team Lead	1	1	**2**	2					2
Site Survey Team Lead	2	2	4					4	4
BOP Intervention Team Lead	2	2	4	2			2		4
Subsea Dispersants Team Lead	2	2	4			4			4
Debris Clearance Team Lead	2	2	4	2	2				4
SIMOPS Team Lead	2	2	4	4					4
Well Capping Team Lead	2	2	4		4				4
Relief Well Team Lead	2	2	4	4					4
Well Kill Team Lead	2	2	4		4				4
Logistics Team Lead	2	2	4	4					4
Resource Need		**Total**	**42**						
Resources Sourced								**Total**	**42**

Appendix 5 – Shoreline Clean-up Supporting Information

Shoreline Types

The three most common shoreline types where contact is predicted by spill modelling are:

- Cliff
- Rocky
- Sandy

Areas of rocky shore, including bedrock outcrops, platforms, low cliffs (less than five metres), and scarps is common along the southern and eastern Australian coastline, including limestone coast and features occurs frequently along the Great Ocean Road, Victoria.

Along the Tasman Peninsula (south-eastern Tasmanian) rocky shores are typically laterite or soft limestone, often featuring rocky cliffs over five metres in height.

Beaches dominated by sand-sized (0.063–2 mm) particles; also includes mixed sandy beaches (i.e. sediments may include muds or gravel, but sand is the dominant particle size) is a very common shoreline type along the entire coast, including Ninety Mile Beach (East Gippsland, Victoria) and Apollo Bay (east of Cape Otway, Victoria).

Actionable shoreline oil contact (>100 g/m^2) is predicted to extend from Gippsland Basin, Victoria to Southern New South Wales. Figure A5-2 shows shoreline zoning definitions, while Figure A5-2 to Figure A5-4 show shoreline types based on Oz Coast 'Smartline' data set; a GIS data resource managed by Commonwealth of Australia (Geoscience Australia), which allows rapid capture of diverse coastal data into a single consistently classified map. This format has been used to create a detailed nationally consistent coastal geomorphic map of Australia. Note the term 'exposure' (Figure A5-4) used in the 'Smartline' data set refers to the exposure of the individual coastal segment to whatever swell wave energy is received by the coastal region.

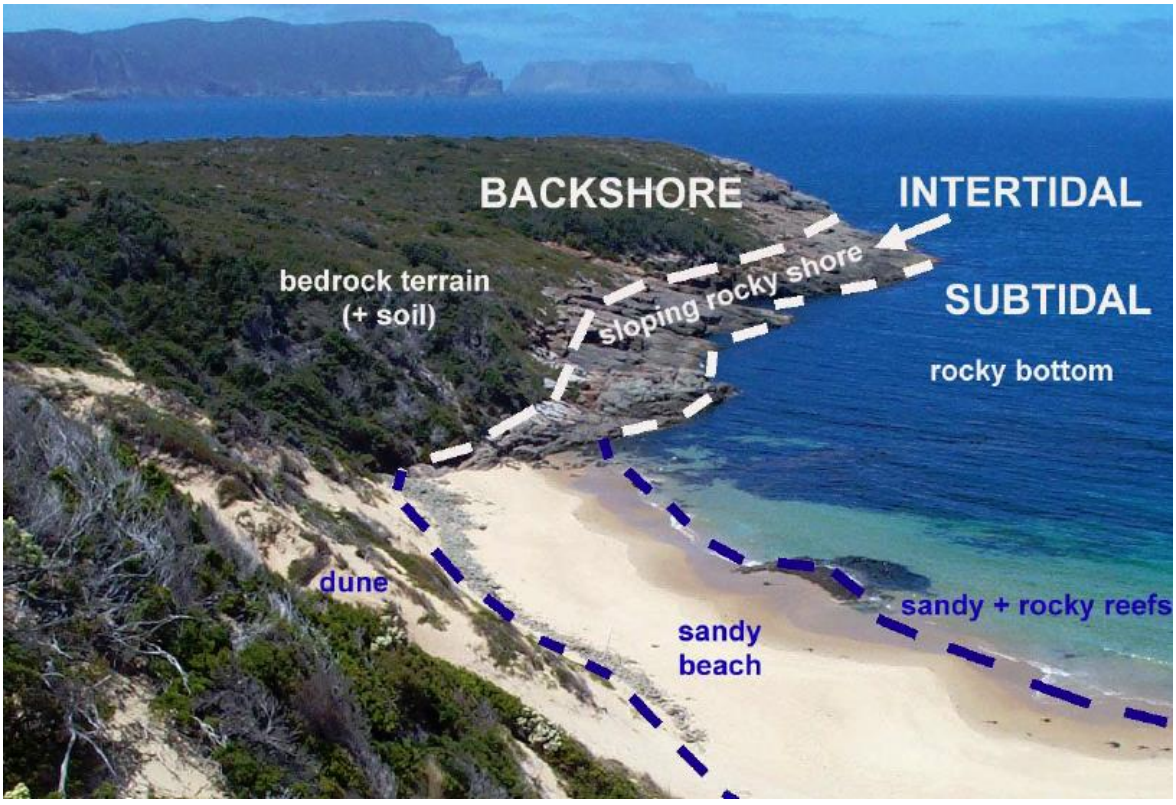


Figure A5-1 Example illustration showing Backshore, Intertidal and Subtidal zones within a coastal area (Sharples et al., 2009)

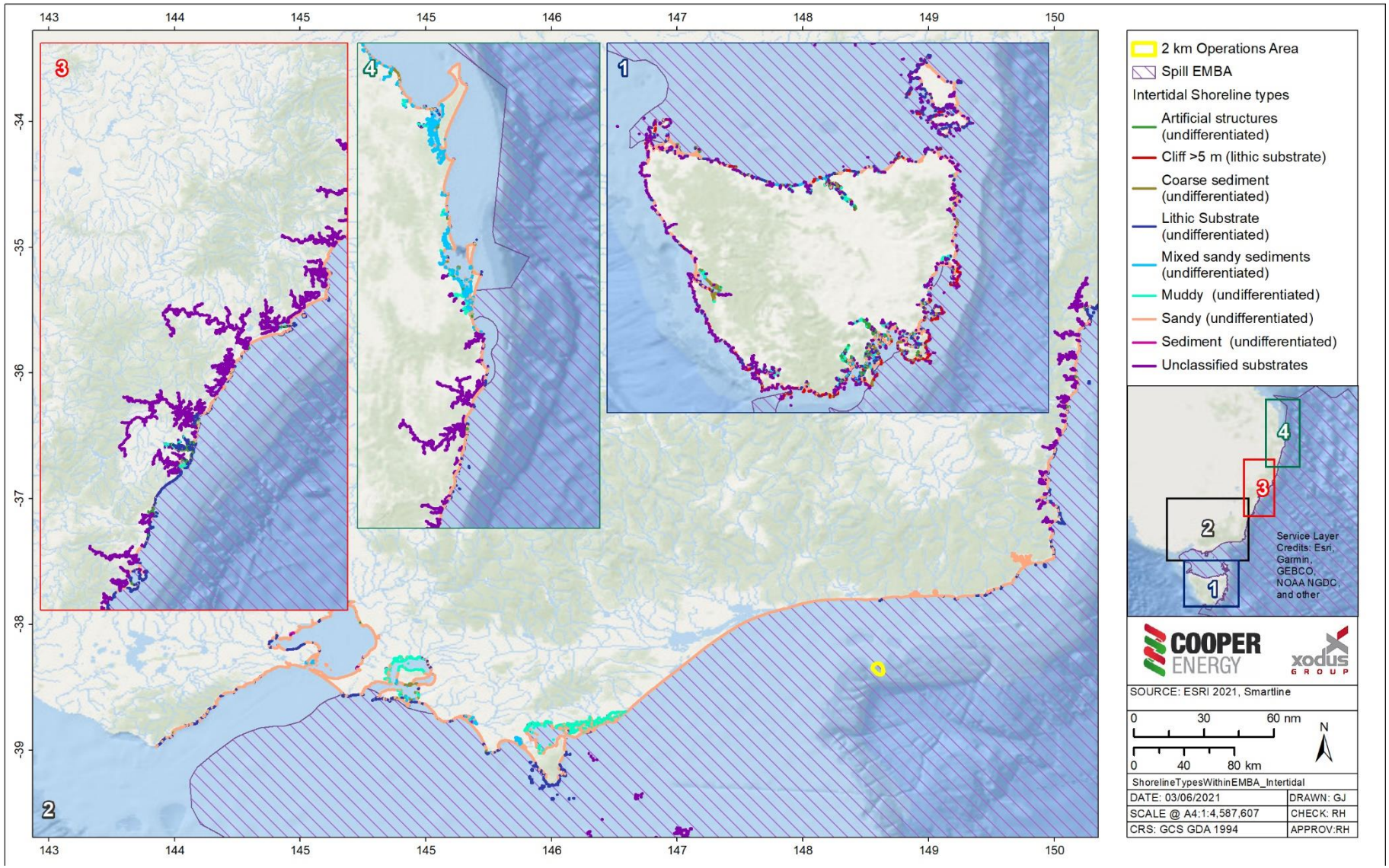


Figure A5-3 Intertidal zone shoreline types as per 'Smartline' datasets (Oz Coast, 2021)

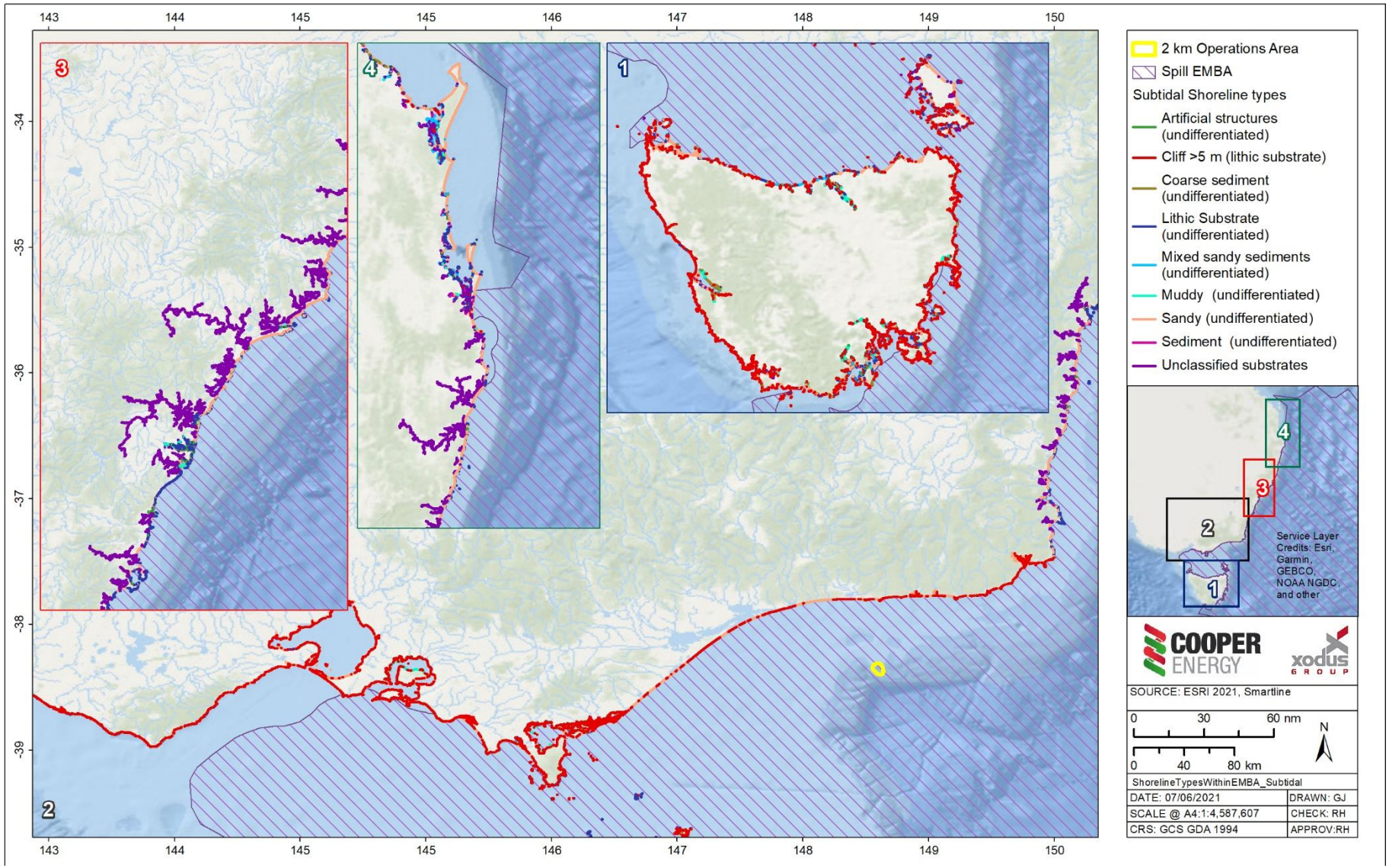


Figure A5-4 Subtidal zone shoreline types as per 'Smartline' datasets (Oz Coast, 2021)

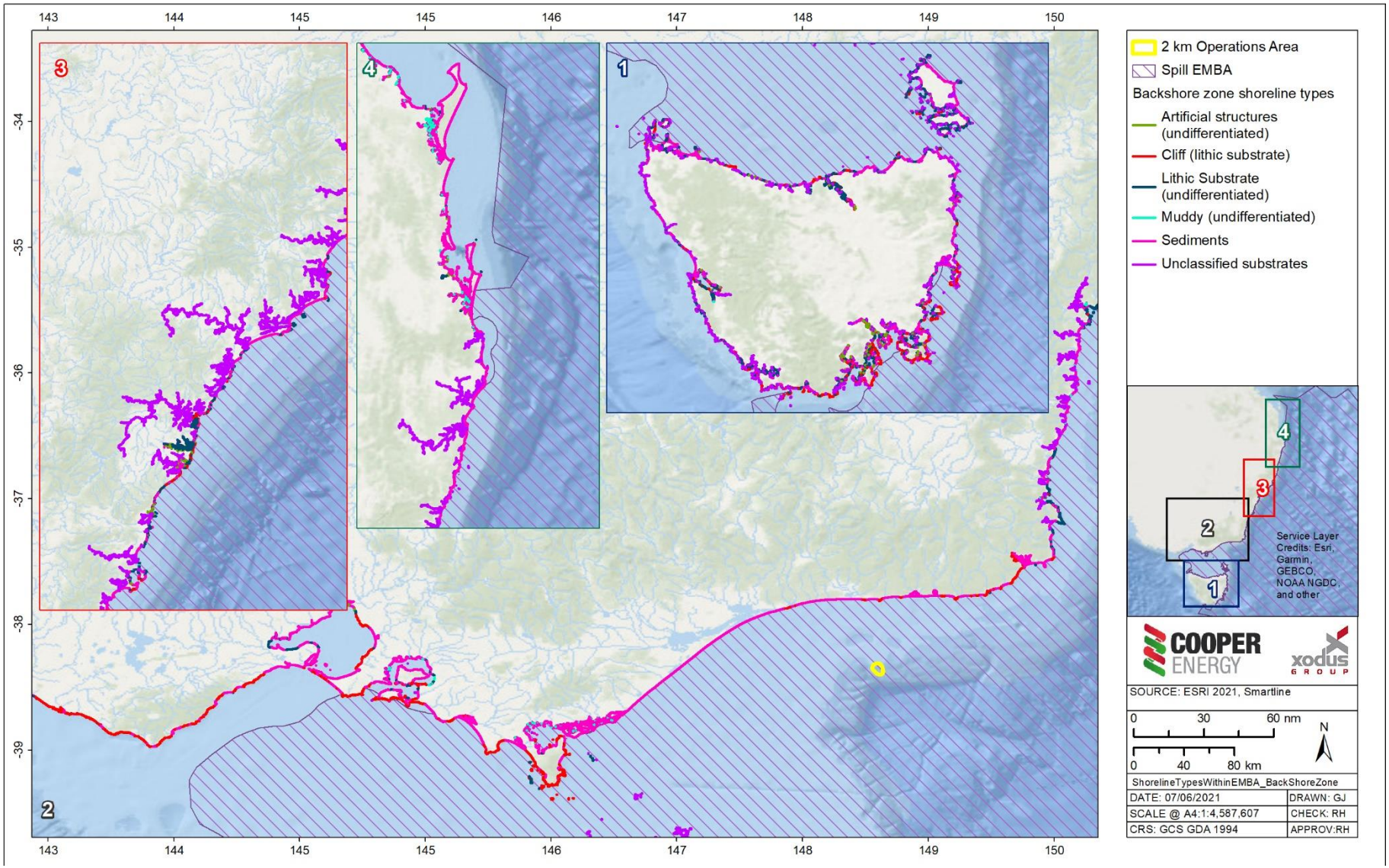


Figure A5-5 Backshore zone shoreline types as per 'Smartline' datasets (Oz Coast, 2021)

9.1.1.1 SCAT Execution

To undertake the assessment, the shoreline predicted to be contacted will be divided into segments within which the shoreline character is relatively homogenous in terms of physical features and sediment type. Methods adopted to describe State shoreline segments have been derived based on relevant State Agency processes; namely the Victorian Marine Pollution Risk Assessment (VMRA11) (DoT, 2011) for Gippsland Basin and the NSW Marine Threat and Risk Assessment (TARA) (BMT WBM, 2017) for New South Wales coastline. There is no specific shoreline clean-up process for Tasmania, therefore any response would follow the process described in the Tasmanian Marine Oil Spill Contingency Plan (TasPlan) (EPA, 2019).

Once the SCAT is onsite, the following tasks will be conducted:

1. Undertake a Job Hazard Analysis (JHA) with the team to identify hazards and put controls in place where possible;
2. Conduct a segment overview or full site walk over to gain the overall perspective of the survey area and verify the pre-determined segment boundaries are correct;
3. Complete observations and measurements of the segment. The following shoreline characteristics should be documented during the baseline assessment:
    - Shoreline description including shoreline type (beach, cliff, reef, dune etc.), substrate (bedrock, boulder, pebble, gravel, sand etc.) and energy (high or low).
    - Biological character of the shoreline – flora and fauna inhabiting the shoreline.
    - In addition, the following information about the site under assessment should be documented:
    - Site access (e.g. road or track access);
    - Site hazards and constraints (e.g. steep cliffs, slippery rocks);
    - Sensitive areas (e.g. bird nesting areas);
    - Features and landmarks (natural or man-made); and
    - Potential decontamination and waste storage areas.
4. Take photos and videos wherever possible;
5. Annotate or draw maps and beach profiles;
6. Fill in Shoreline Assessment Form.

The Shoreline Assessment form as contained in the OSMP Module OP4B – Coastal Shoreline Assessment (Gippsland) will be used to record the shoreline assessment results. The assessment will be communicated to the IMT and used to inform the NEBA (refer Section 5) to determine whether the implementation of shoreline clean-up activities will be of net benefit. The daily NEBA outcome will be used to inform the IAP.

Tools to support tactical response planning include:

- Victoria: CoastKit - https://mapshare.vic.gov.au/coastkit/
- Tasmania: Tas LIST - https://maps.thelist.tas.gov.au/listmap/app/list/map:
    - Tasmanian Marine Environmental Prioritisation Project (MEPP) layer
    - Marine Oil Spill Sensitivity Rating (MOSR) layer

AU-wide: Seamap Australia – https://seamapaustralia.org/

Post exposure Assessment

In the event that oil reaches the shoreline, the SCAT will undertake a post exposure assessment. This includes recording the following description of the oiling:

- Oil Character (colour, viscosity, stickiness);
- Percentage oil cover and position;
- Oil thickness and depth.

The SCAT must immediately notify the Cooper Energy Operations Officer of any observed, or at-risk oiled wildlife, to inform the potential Oiled Wildlife Response if required.

In the event a shoreline clean-up response is activated, the SCAT must be undertaken twice daily to document the effectiveness of the clean-up response measures implemented. This information will be provided to the Cooper Energy Operations Officer.

Appendix 6– Forward Operating Base Guidance Note

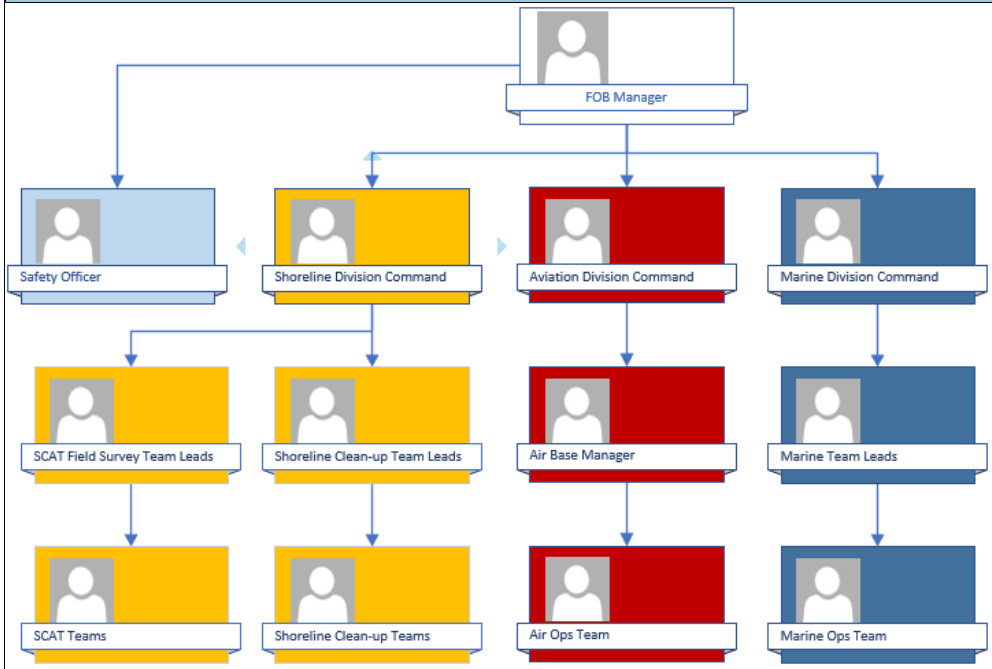
Forward Operating Base

MARINE POLLUTION RESPONSE INFORMATION

OBJECTIVE

To provide guidance on establishment and management of a Forward Operating Base (FOB) with personnel/field responders, resources, and communications support to enable effective coordination of the tactical operations during an oil spill response. FOB Primary location for marine operations.

FOB ORGANOGRAM



MOBILISATION

The need for the FOB is initiated when the response processes detailed in the Incident Management Plan, developed by the Incident Management Team, determine that implementation of the OPEP and/or ongoing response activities are required closer to a marine pollution source location for operational reasons. Depending on the nature of the response, separate FOBs may be required for marine, shoreline, and aviation operations support.

ACTIVATION

- < 4hrs after notification from the establishment of Cooper Energy IMT.
- FOB Manager reports to the Operations Section

ADDITIONAL RESOURCES

- FOB Manager Duty Card
- Field Operations Tasking Assignments
- HSE Documentation (Tactical Brief, Site Safety Assessment, SOP, JHA, Take 5, etc)

IMT ACTIONS

- Identify possible FOB locations and determine the most appropriate facility for the spill scenario.
- Request the use of the identified location.
- Notify and mobilise Cooper personnel as appropriate for incident level.
- Notify and request additional support from external agencies, including AMOSC (Including Core Group), state, National Plan Response Team, and oil spill response specialists.

MOBILISATION PLAN

	By	Action	Status
1.	IMT	Mobilise personnel	
2.	FOB Manager	Establish FOB and confirm communications with Operations Section (IMT)	
3.	IMT/FOB	Validate Communications Sub-plan (Points of contact, phones, mobile, email, etc)	
4.	FOB Manager	Establish IT capability (WIFI, phone, email, information management)	
5.	IMT/IC	Prepare and mobilise sufficient field resources appropriate to level of response and detailed strategies to be applied.	
6.	IMT/IC	Coordinate, communicate FOB and Point of Contact (PoC) details to SMPC/DoT.	
7.	FOB Mgr/HSE	Coordinate welfare requirements for all response personnel.	
8.	FOB Manager	Brief to Division Commanders + field personnel. Coordinate/communicate IAP updates and allocated taskings/tactical assignments.	
10.	FOB Mgr/DivComm	DivComm and Team Leads to coordinate AM/PM briefings/debriefings for field team response personnel.	

STRATEGIC REQUIREMENTS				
FOB MANAGER TASKS		**ACTIONS**		
1.	Aviation Activities	With Aviation Division Commander/Section Chief	**Required**	**Completed**
		- Validate aviation response resources are sufficient, where required by the IAP, to support: • Aerial Observation • Aerial support for dispersant spray operations • Aerial support for marine operations • Search and Rescue (SAR) requirements - Communication of additional requirements or excess resources status via Comms Sub-plan to IMT - Maintain awareness of HSE requirements for Aviation operations including: • Safety and pre-flight briefings • Established acceptable operational weather and visibility conditions • Notification through aviation authority to alert aircraft pilots of potential hazards (Posting of notice to airmen or NOTAMs) as required - Debriefing and lessons learned	yes/no	yes/no
2.	Marine Activities	With Marine Division Commander/Section Chief	**Required**	**Completed**
		- Ensure marine response resources are sufficient, where required by the IAP, to support: • Vessel based surveillance and/or scientific monitoring • Offshore Containment and Recovery • Vessel based dispersant spray operations • Nearshore protection and deflection operations - Communication of additional requirements or excess resources status via Comms Sub-plan to IMT	yes/no	yes/no
3.	Shoreline Activities	With Shoreline Division Commander/Section Chief	**Required**	**Completed**
		- Ensure resources are sufficient, where required by the IAP, to support the Shoreline Response Program, including: • SCAT • Shoreline clean-up - Communication of additional requirements or excess resources status via Comms Sub-plan to IMT	yes/no	yes/no
4.	Wildlife Response	With Oiled Wildlife Division Commander/Section Chief	**Required**	**Completed**
		- Validate Oiled Wildlife Response resources are sufficient, where required by the IAP, to support: • Detailed OWR Sub-plan or regional plan • Field wildlife response operations • Health and Safety of OWR personnel - Communication of additional requirements or excess resources status via Comms Sub-plan to IMT	yes/no	yes/no
5.	Waste Management	With Waste Management Division Commander/Section Chief	**Required**	**Completed**
		- Ensure and validate that a Waste Management Sub-plan has been established and includes: • Consideration and compliance with applicable laws and regulations • Suitable handling, transport, storage, and disposal planning - Communication of additional requirements or excess resources status via Comms Sub-plan to IMT	yes/no	yes/no

FACILITY REQUIREMENTS AND HSE CONSIDERATIONS			
Record keeping		• SRP: Shoreline Clean-up	
• Maintain log of actions / decision log		• Marine: Containment and Recovery	
• Prepare shift handover documents		• Marine: Offshore/Nearshore Containment and Recovery	
• Provide written records of briefings delivered		• Oiled Wildlife Response	
• Detail selected hazard controls with Safety Officer		• Night operations	
Safety Briefings/Inductions for all personnel		• Transport and vehicles	
Medical plan and emergency first aid procedures		• Decontamination	
Emergency contact list for field personnel		• Waste management	
• Safety and Health		**Regional locations**	
• Wildlife		• Hazardous locations (Rocky shorelines, islands, significant tidal movement)	
• Indigenous Affairs		• Hazardous wildlife (snakes, stingers)	
• Resources (FOB)		• Affected wildlife (Handling, disease)	
Spilled pollutant hazards		**Environmental conditions**	
• Air monitoring considerations		• Heat and UV exposure	
Personnel Management		• Cold climate exposure	
• Sign in/Sign out, or QR code ID attendance tracking		• Weather and warnings	
• Emergency contact information			
• Medical history/fitness for task			
• Fatigue management			
• Catering and supplies			
• Security			
• Feedback Communications to the IMT			
• Field reporting of potential hazards			
• Incident reporting			
• Investigation outcomes& recommended actions			
• Areas of operation			
• Office space, IT and communications established			
• Aviation: Aerial dispersant loading / aircraft movement			
• Aviation: Helicopter/Aerial Observation			
• Aviation: Dispersant Application			
• SRP: Shoreline Assessment			

EMERGENCY CONTACTS Refer to the IMT Communications Sub-Plan for incident specific contact details		
EMERGENCY	**Phone:**	000
	VHF:	Channel 16
	Marine:	27MHz, Ch 88
State Emergency Services	13 25 00	
Australian Maritime Safety Authority	1800 641 792	
Australian Volunteer Coast Guard *Website:* *www.coastguard.com.au*	(03) 9598 9092	
Victoria		
DoT - 24/7 Marine Pollution Duty Watch Officer	0409 858 715	
DELWP *Website: www2.delwp.vic.gov.au* **VicEmergency Hotline**	136 186 1800 226 226	
Emergency Management Victoria	1300 368 722	
EPA Victoria (24hrs) Email: *contact@epa.vic.gov.au*	1300 372 842	
Parks Victoria *Website:* *www.parks.vic.gov.au*	131 963	
New South Wales		
Emergency NSW	(02) 9212 9200	
NSW Maritime	131 256	
EPA NSW (24hrs) Email: *info@epa.nsw.gov.au*	131 555	
Tasmania		
EPA Incident Response (24hrs) Email: *incidentresponse@epa.tas.gov.au*	1800 005 171	
EPA Tasmania Email: *Enquiries@epa.tas.gov.au*	(03) 6165 4599	
Tasmania Fire Service Email: *fire@fire.tas.gov.au*	(03) 6230 8600	
TasPorts Email: *reception@tasports com.au*	1300 366 742	

PERSONNEL and RESOURCES		
Personnel Resources	**Management (FOB)**	**Operational Staff (Per team)**
FOB Leader	1	-
FOB 2IC	1	-
FOB Administration Officer	1	-
Aerial Ops Manager	1	-
Airbase Personnel	-	5
Marine Ops Manager	1	-
Marine Operations	-	6
Shoreline Ops Manager	1	-
Shoreline Team Lead	-	1
Shoreline Clean-up Team (Untrained)	-	10
Safety Officer	1	3
Site Control (Per secure location)	-	2
Total – initial mobilisation	**7**	**27**

Vehicles/Vessels	**Quantity**
Vehicle Support – FOB	1
Vehicle Support - Marine	1
Vehicle Support - Aviation	1
Vehicle Support - Shoreline	1
Vehicle Support - Safety	3
Vehicle Support - additional	Consider
Vessel Support – Marine and Safety	Consider
Vessel Support - Shoreline	Consider
Utility Task Vehicle (UTV - shoreline)	Consider
Heavy Plant (Excavator/Bulldozer)	-
All terrain forlift – Shoreline/Marine/Aviation	Consider
4WD support – Shoreline	Consider

(Resource estimates above are based on initial mobilisation per one team, per shift for FOB supporting combined strategies. Additional personnel will be required in the event of multiple FOBs being required and for response escalation and duration)

In the event that marine oil pollution impact on wildlife is identified, additional equipment and personnel will be required. Resources listed below are a scalable quantity estimated to provide for 10 trained OWR personnel.

SITE SUPPORT	**Quantity**	
Standard Site Set-up Kit	1	Unit
Standard Decontamination Kit	1	Unit
VHF Radio Comms – person to person	4	Unit
Satellite Phones	1	Unit
General Workwear Kit	2	Unit
PPE Kit	2	Unit

Notes.
1 - Ongoing manning levels will need to be based on initial responders completing agreed tour (7 - 14 days) before changing out. Ongoing shifts will then be 14 days for the duration of the response.
2 - Manning levels can be expected to reduce for ongoing maintenance of booms and recovery however shoreline clean-up crew requirements may need to be re-assessed as the response progresses.
3 – 4WD or UTV access and operations in restricted areas are to be coordinated and managed through the appropriate authorities.

	Forward Operating Base **MARINE POLLUTION RESPONSE INFORMATION**	

SUBJECT MATTER EXPERTS

Region	Sites and Locations	Species
Victoria	Parks Victoria	DEWLP
NSW	NSW RMS	NSW Parks and Wildlife Services
Tasmania	EPA Tas	EPA Tas

SUPPORTING DOCUMENTATION – COOPER ENERGY

Cooper Energy Incident Management Plan – COE-ER-ERP-0001	Company Incident Management Plan
Offshore Victoria OPEP – VIC-ER-EMP-0001	Operations and non-production Phase OPEP
BMG Closure Project (Phase-1) Environment Plan – BMG-DC-EMP-0001	BMG Well Abandonment OPEP
Cooper Energy OSMP– VIC-ER-EMP-0003	Operational and Scientific Monitoring Plan
Bass Strait Aerial Operations Plan – V01	AMOSC internal documentation
Area Tactical Response Plans	Cooper Energy and AMOSC documents
Species Response Plans	AMOSC documents

FOB SELECTION	
SHORELINE FOB CRITERIA	**Comments/Actions/Considerations**
Identify potential operating base/s or facilities within vicinity of incident based on operational requirements	Community hall, State Emergency Services, Fire services, government offices, etc
Liaise with asset manager or stakeholder to arrange access	
Assess facilities – • Operations/coordination room • Office facilities – internet, fax, telephone • Catering facilities / Amenities – toilets, kitchen, break room, water, showers • Access arrangements – 24/7 • Security arrangements – equipment, operations room, vessel access, open water access • Vehicle access – truck, 4wd, car, bus • Storage, handling and laydown of equipment • Fuel Availability	If facilities are unsuitable and alternative arrangements cannot be put in place another base may need to be considered.
Identify and document local Emergency Service arrangements – fire, ambulance, rescue, hospital	
Establish induction and personnel tracking procedures (Sign in, sign out)	
Identify transport arrangements required for personnel	- Distance from town/accommodation - Access to site
MARINE FOB CRITERIA	**Comments/Actions/Considerations**
Identify vessels to be utilised	Consider support vessels in addition to operational assets (Personnel transfer, accomodation, SAR, etc)
Consult with Contractor to identify specific vessel operational requirements	- Draught - Numbers - Loading and handling of equipment - Fuel and consumables
Identify acceptable operating base within vicinity of incident based on vessel and operational requirements	
Liaise with Port Operations Manager / harbour master or equivalent to arrange access	
Assess facilities – • Operations/coordination room • Office facilities – internet, fax, telephone • Catering facilities / Amenities – toilets, kitchen, break room, water, showers • Access arrangements – 24/7 • Security arrangements – equipment, operations room, vessel access, open water access • Availability of bulk and potable water • Vehicle access – truck, 4wd, car, bus • Storage, handling and laydown of equipment • Fuel Availability	If facilities are unsuitable and alternative arrangements cannot be put in place another base may need to be considered.
Identify and document local Emergency Service arrangements – fire, ambulance, rescue, hospital	
Identify transport arrangements required for personnel	- Distance from town/accommodation - Access to port

AVIATION FOB CRITERIA – ***For additional information on specific airfields and contact/contractor details refer to the Bass Strait Aerial Operations Plan (AMOSC)***	**Comments/Actions/Considerations**
Identify Aircraft to be utilised.	Consider fixed wing and rotary assets. Ensure consideration has been made for support aircraft as well as operational aircraft (Air Attack, SAR, etc)
Consult with Contractor to identify specific aircraft and operational requirements.	- Size - Numbers - Loading and handling of equipment - Fuel and consumables
Identify accepted primary airbase within vicinity of incident.	
Liaise with Airport Operations Manager / Aerodrome Reporting Officer or equivalent to arrange access to airfield	
Assess airfield facilities – • Operations/coordination room • Office facilities – internet, fax, telephone • Catering facilities / Amenities – toilets, kitchen, break room, water, showers • Access arrangements – 24/7 • Security arrangements – equipment, operations room, airfield • Availability of bulk water • Vehicle access – truck, 4wd, car, bus • Storage for equipment • Fuel Availability	If facilities are unsuitable and alternative arrangements cannot be put in place another airfield may need to be considered.
• Refuelling payment options • Identify fuel requirements of aircraft – Turbine / Piston • Identify availability and transfer arrangements for refuelling	
Identify and document local Emergency Service arrangements – fire, ambulance, rescue, hospital	
Prepare to manage transport arrangements for airbase personnel – distance from town	

Potential FOB Locations

- ***Based on potential Zone of Impact estimated from OSTM for identified assests/activities: largest volume ashore combined with longest length of shoreline accumulation above 100g/m^2***
- ***Information on facility details, utility, and access would need to be arranged and validated through appropriate stakeholder engagement***

GIPPSLAND BASIN

SHORELINE FOB

Location	Facility
Golden Beach Community Hall (Vic)	Previously utilised in 2014
Vic SES Bairnsdale Unit (Vic)	Possible locations only. Suitable building/s and facilities would need to be determined. Local knowledge or site visit or contact may identify a more appropriate facility.
Lakes Entrance SLSC (Vic)	
Lakes Entrance – multiple hotels with conference facilities	
Marlo CFA (Vic)	
Bemm River CFA (Vic)	
Mallacoota CFA (Vic)	
Mallacoota Mudbrick Pavillion (Town Hall)	
KillieCrankie (Tas)	
Eden SES (NSW)	

MARINE FOB

Location	Details
Port of Hastings (Vic)	Additional information publicly available.
Port Welshpool (Vic)	
Barry Beach Marine Terminal (Vic)	Qube/Esso
Lakes Entrance (Vic)	Additional information publicly available.
Lady Barron (Tas)	
Whitemark (Tas)	
Port of Eden (NSW)	
Port of Botany (Sydney, NSW)	
Port of Newcaslte (NSW)	

AVIATION FOB

Location	Details
Yarram Airport (Vic)	Additional details available in the AMOSC Bass Strait Aerial Operations Plan
Bairnsdale Airport (Vic)	
Orbost Airport (Vic)	
Sale (Vic)	
Barwon Heads (Vic)	Additional information publicly available.
Lady Barron airport (Tas)	
Whitemark Airport (Tas)	
Merimbula Airport (NSW)	
Shellharbour (Illawara) Airport (NSW)	
Newcastle Airport (NSW)	

OTWAY BASIN

SHORELINE FOB

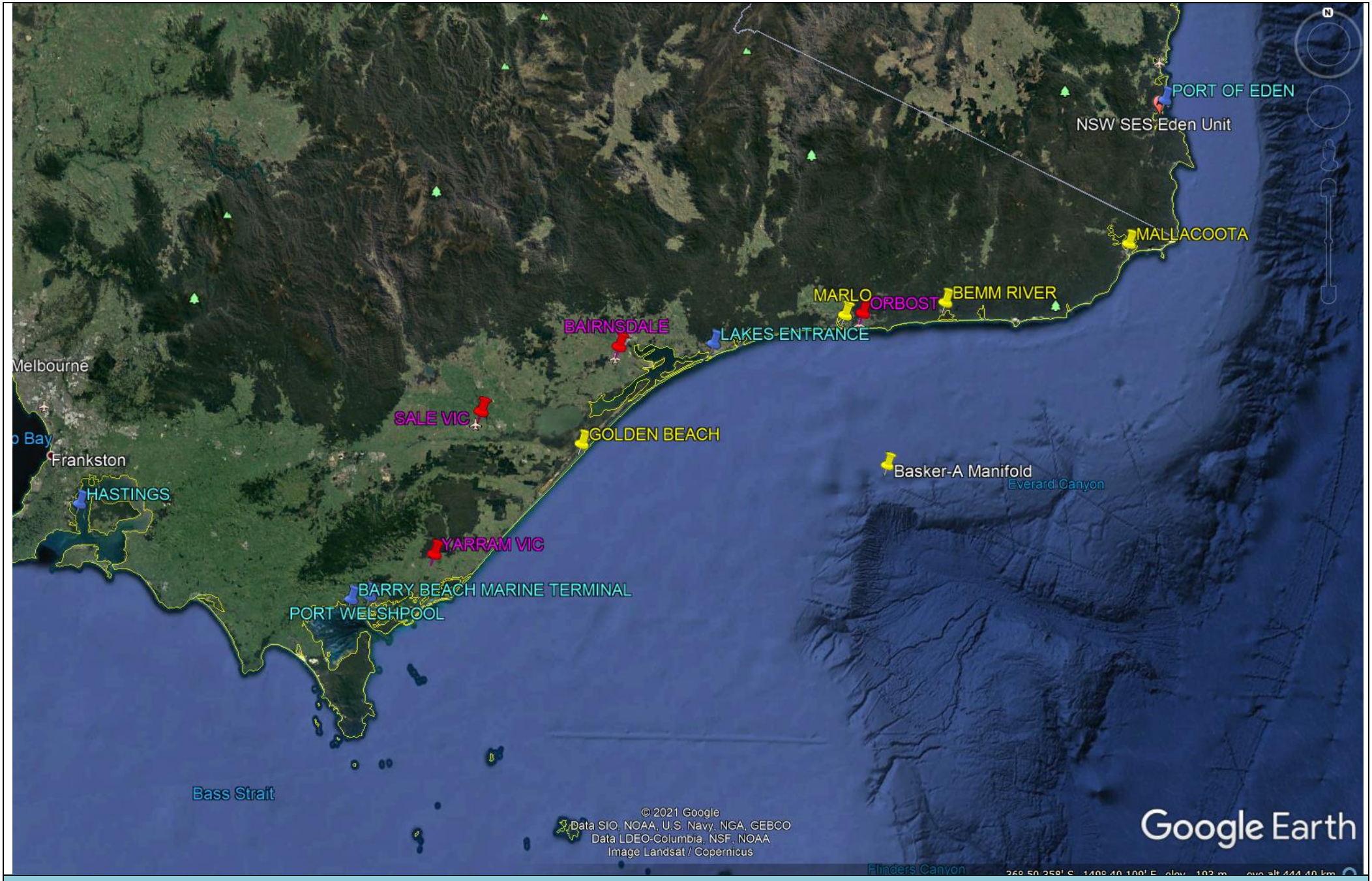
Location	Facility
Warrnambool Community Centre (Vic)	
Warrnambool – Deakin Uni	
Port Campbell SLSC (Vic)	
Apollo Bay Community Centre (Vic)	

MARINE FOB

Location	Facility
Portland (Vic)	Additional information publicly available.
Port of Geelong (Vic)	

AVIATION FOB

Location	
Peterborough Airport (Vic)	Additional details available in the AMOSC Bass Strait Aerial Operations Plan
Warrnambool Airport (Vic)	


PORT OF EDEN
NSW SES Eden Unit
MALLACOOTA
MARLO
ORBOST
BEMM RIVER
BAIRNSDALE
LAKES ENTRANCE
Melbourne
SALE VIC
GOLDEN BEACH
Frankston
HASTINGS
Basker-A Manifold
Everard Canyon
YARRAM VIC
BARRY BEACH MARINE TERMINAL
PORT WELSHPOOL
Bass Strait
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Data LDEO-Columbia, NSF, NOAA
Image Landsat / Copernicus
Google Earth
Flinders Canyon

Gippsland

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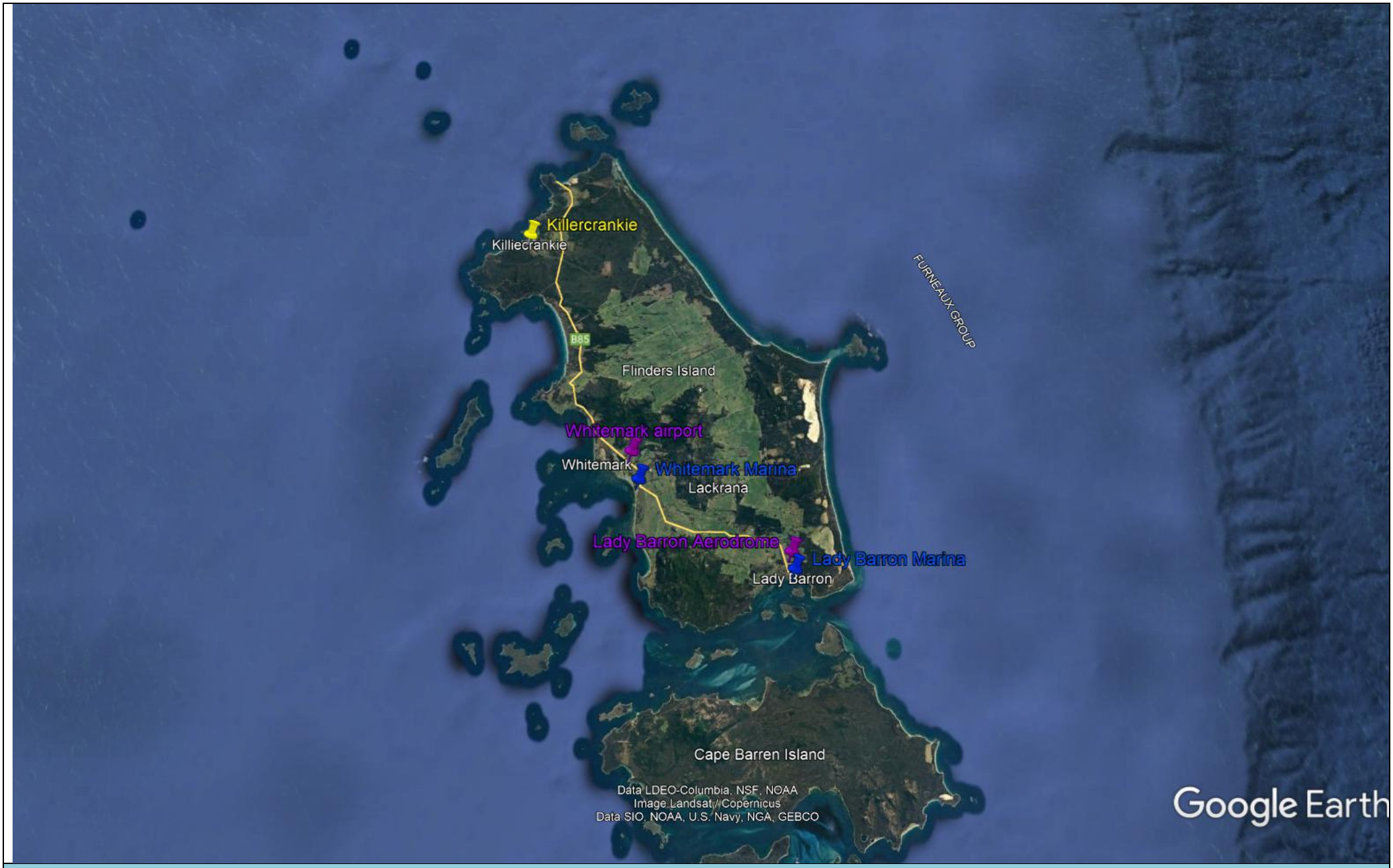

Flinders Island


Terang
Camperdown
WARRNAMBOOL VIC
Koroit
Cobden
Colac
WARRNAMBOOL
Warrnambool
Allansford
Timboon
Simpson
Iona Gas Plant
PETERBOROUGH
PORT CAMPBELL
Port Campbell
Henry and Netherby (Approx)
Princetown
APOLLO BAY
Casino (Approx)
Apollo Bay Surf Lifesaving Club
Apollo Bay
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Otway Basin