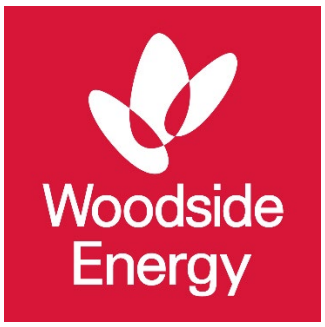

Woodside Operational and Scientific Monitoring Bridging Implementation Plan

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Part A – Preparedness

This Plan is presented in two parts. Part A outlines the relationship between Woodside Energy Ltd ("Woodside") environmental management document framework and the Joint Industry Operational and Scientific Monitoring (OSM) Framework (AEP, 2021). Part B provides operationally focused guidance for Woodside personnel, OSM Services Provider and subcontracted Monitoring Service Providers to coordinate the implementation of monitoring plans.

1 Introduction

OSM is a key component of the environmental management document framework for offshore petroleum activities, which also include an Environment Plan (EP) and Oil Pollution Emergency Plan (OPEP). Operational Monitoring (OM) is instrumental in providing situational awareness of a hydrocarbon spill, enabling the Corporate Incident Management Team (CIMT) or site-based Incident Management Teams (IMT) to mount a timely and effective spill response and continually monitor the effectiveness of the response. Scientific Monitoring (SM) is the principal tool for determining the extent, severity and persistence of environmental impacts from a hydrocarbon spill and for informing resultant remediation activities.

Woodside has elected to use the Joint Industry OSM Framework and supporting Operational Monitoring Plans (OMPs) and Scientific Monitoring Plans (SMPs) as the foundation of its OSM approach. The Joint Industry OSM Framework is available on the Australian Energy Producers (AEP) Environmental Publications Webpage.

Use of the Joint Industry OSM Framework requires each Titleholder to develop a Bridging Implementation Plan (this plan) which fully describes how the Framework interfaces with the Titleholder's own activities, spill risks and internal management systems.

Table 1-1 describes key documents that form Woodside's environmental management document framework.

Mobilisation of OSM should follow the process listed in Part B: Section 12 Mobilisation and Activation Process.

Table 1-1: Key documents in Woodside's environmental management framework

Document	Description
Activity specific Environment Plan (EP)	Each activity-specific EP describes the activity and the location, the environment, the risks to the environment as a result of the activity and the associated management controls. Of particular relevance to this plan, each EP identifies sensitive receptors, potential impacts from hydrocarbon spills and the environment that may be affected (EMBA).
Oil Pollution Emergency Arrangements (OPEA) – Australia	Describes the arrangements, legislative framework and processes adopted by Woodside when responding to a hydrocarbon spill from a petroleum activity in Commonwealth and State waters.
Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) (usually Appendix D of the EP)	Evaluates response options to address the potential environmental impacts resulting from an unplanned loss of hydrocarbon containment associated with the petroleum activities program described in the EP. Performance outcomes, standards and measurement criteria related to hydrocarbon spill preparedness and response are included in this document.
Oil Pollution First Strike Plan (usually Appendix I/J of the EP and a component of the Oil Pollution Emergency Plan)	Facility specific document providing details and tasks required to mobilise a first strike response. Primarily applied to the first 24 hours of a response until a full Incident Action Plan (IAP) specific to the event is developed. Oil Pollution First Strike Response Plans are intended to be the first document used to provide immediate guidance to the responding IMT.
Corporate Incident Management Guideline	Provides the Corporate Incident Management Team (CIMT) team members with the resources and guidance to manage a Level 2 or 3 incident effectively.

1.1 Scope

This Operational and Scientific Monitoring - Bridging Implementation Plan (OSM-BIP) addresses the requirements of the Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations 2023 and Western Australian Petroleum (Submerged Lands) (Environment) Regulations 2012 for all Woodside activities within the North West Shelf and North West Cape zones of Western Australia, and the Timor Sea. This includes all activities which have an EP accepted by Commonwealth and State regulators. This Plan supersedes Woodsides' Operational and Scientific Monitoring Programs and OMPs and SMPs within existing OSPRMAs.

A Management of Change (MOC) has been completed to document Woodside's transition to, and adoption of, the Joint Industry OSM Framework via this OSM-BIP.

When an EP is prepared for a new activity, there are three main steps for assessing whether this OSM-BIP adequately covers the OSM requirements for each new activity. These include (Refer to APPENDIX A):

1. Determine if the new activity EMBA fits within the BIP Combined EMBA, as outlined in Section 2.1
2. Determine the locations requiring a baseline review (as described in Section 2.2) and whether these locations are currently included in Table 2-2.
3. Determine whether the capability requirements and monitoring arrangements of the new activity exceed or are met by the capability requirements outlined in Section 8 and capability arrangements described in Sections 9 and 10.

Prior to submission for regulatory approval, each new/revised EP shall document whether the OSM-BIP adequately covers the OSM requirements as per the three steps described above. If additional operational and/or scientific monitoring capability is required for a new activity above the OSM capability described in Sections 9 and 10, the Environment Advisers in the Line, Environment Plan Delivery Coordinators and associated Project Team will follow Woodside's EP MOC and risk assessment process, to determine if new performance standards or separate resourcing is justified. Corporate Environment will support the assessment and recommendation to obtain any additional capability (if required) before the activity commences.

Woodside will implement OSM, as applicable, for oil spills across both State and Commonwealth waters. In the event that control of scientific monitoring in WA State waters is taken over by the Western Australian Department of Transport (WA DoT) under advice from the State Environmental Scientific Coordinator (ESC), Woodside will follow the direction of WA DoT as Control Agency and provide all necessary resources as available via the Joint Industry OSM Framework (monitoring personnel, equipment and planning) to assist as a supporting agency.

2 EMBA and Identification of Locations for Baseline Review

2.1 Combined Socio-Cultural EMBA

This OSM-BIP provides monitoring guidance and arrangements for all Woodside activities in the North West Shelf, North-west Cape regions, and the Timor Sea. Therefore, a Combined Socio-Cultural EMBA has been prepared to represent the geographical extent of this OSM-BIP (Figure 2-1). The Combined Socio-Cultural EMBA corresponds to the low exposure values using stochastic modelling results applying the following thresholds:

- 1 g/m^2 floating oil thickness, which is considered to be below levels which would cause environmental harm and is more indicative of the areas perceived to be affected due to its visibility on the sea-surface
- 10 g/m^2 for accumulated (shoreline) oil, which represents the area visibly contacted by the spill
- 10 ppb for dissolved hydrocarbons, which corresponds generally with potential for exceedance of water quality triggers
- 10 ppb entrained hydrocarbons represents the low exposure zone and corresponds generally with potential for exceedance of water quality triggers.

The Combined EMBA has been determined based on the modelling results for the activities and worst-case credible spill scenarios outlined in Table 2-1. These spill scenarios are considered representative of

Woodside's worst-case credible scenarios given the extent of their EMBAs, hydrocarbon type, proximity to receptors, minimum time to contact and their representation of Woodside's activity locations within the North West Shelf and North-west Cape regions of Western Australia, and the Timor Sea.

For a description of the environment within each socio-cultural EMBA, refer to the activity-specific EPs and the Woodside Master Description of the Existing Environment. In accordance with Regulation 56 of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations (Cth) 2023, this Master Description of the Existing Environment was accepted on 30 November 2023 as Appendix D in the Griffin Gas Export Pipeline Decommissioning EP. The Master Description of the Existing Environment includes the following pertinent information: EPBC Act protected matters of national environmental significance including threatened and migratory species and any associated Part 13 Instruments: recovery plans/conservation advices, biologically important areas designations, key ecological features (KEFs), protected areas, significant socio-economic industries, and cultural-heritage significant places.

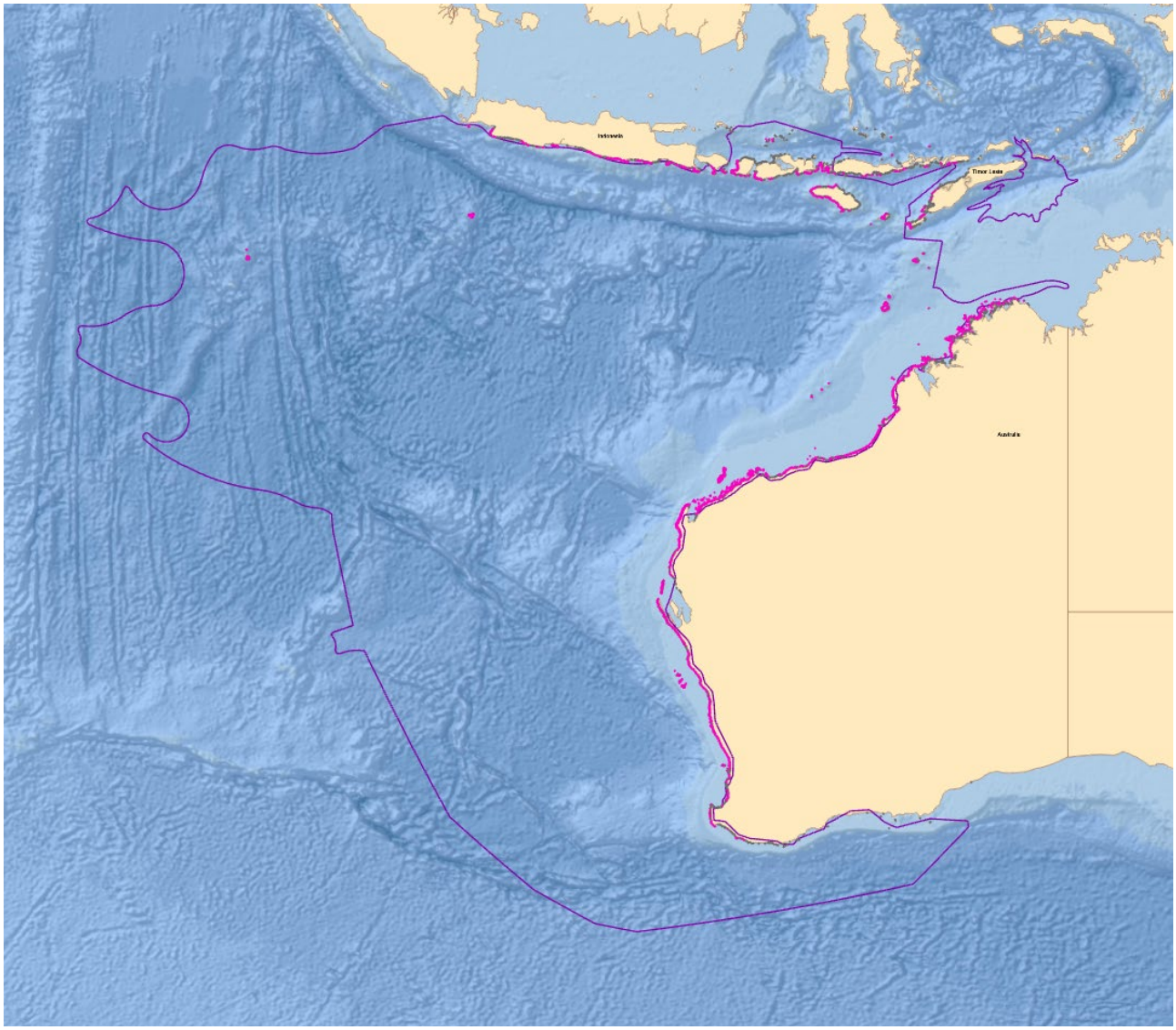


Figure 2-1: Woodside Combined EMBA for activities in the North West Shelf and North-west Cape regions of Western Australia, and the Timor Sea

Table 2-1: Worst-case spill scenarios used for determining the planning area for operational and scientific monitoring

Environment plan (EP)/ Offshore production plan (OPP)	Hydrocarbon type	Scenario
North West Shelf Infill OPP	PYA-01 condensate	Goodwyn area infill development surface/subsurface release of 645,721 m^3 of PYA-01 Condensate over 77 days from a loss of well integrity in the Wilcox Prospect
North West Shelf Infill OPP	PYA-01 condensate	Goodwyn area infill development surface/subsurface release of 745,012 m^3 of PYA-01 Condensate over 77 days from a loss of well integrity in the Wilcox Prospect
Ngujima-Yin Floating Production Storage and Offloading (FPSO) Facility Operations EP	Vincent Crude	Ngujima-Yin subsea release of 258,549 m^3 of Vincent crude over 77 days from a loss of well integrity from Vincent Infill Well (VNBH4-ST2)
Ngujima-Yin FPSO Facility Operations EP	Ngujima-Yin Topside Blend	Ngujima-Yin short-term (16 hours) surface release of 40,828 m^3 Ngujima-Yin Topside Blend caused by a vessel collision with the FPSO
Pyrenees Phase 4 Infill Drilling Program EP	Stickle Crude	Pyreness subsea reales of 154,531 m^3 of Stickle Crude over 69 days from a loss of well integrity from Stickle-4H1 well
Scarborough Subsea Intervention and Trunkline Installation EP	Marine Diesel Oil	Instantaneous surface release of 2,000 m^3 of marine diesel, representing a loss of vessel fuel tank integrity after a collision outside Mermaid Sound (Scarborough Subsea Intervention and Trunkline Installation)
Sunrise Wellheads Management EP	Marine Diesel Oil	Instantaneous surface release of 500 m^3 of marine diesel, representing a loss of vessel fuel tank integrity after a collision at Sunrise Wellhead Abandonment location

2.2 Locations Requiring a Baseline Review

Baseline monitoring provides information on the condition of ecological receptors prior to, or spatially independent (e.g. if used in control chart analyses) of, a spill event and is used for comparison with post-impact scientific monitoring, where required. This is particularly important for scientific monitoring where the ability to detect changes between pre-impact and post-impact conditions and evaluate and quantify environmental impact from the spill (compared to natural variation and/or impacts unrelated to the spill) is necessary. Therefore, an enhanced understanding of the extent, quality and suitability of any existing baseline data is required to prioritise the scientific monitoring response.

Locations requiring a baseline review have also been drawn from the worst-case spill scenarios listed in Table 2-1, and based on the stochastic modelling results of each activity, provided in the activity specific OPEPs and as identified from the Woodside combined EMBA (Figure 2-1). Locations and associated receptors requiring a baseline review were identified as those sensitive receptors contacted by hydrocarbons at the low threshold for entrained (≥10 ppb), dissolved (≥10 ppb), floating (≥1 g/m^2), and shoreline contact (≥10 g/m^2), within 7.0 days (7 days was used to delineate the First-Strike Monitoring response) at a probability >10%. Table 2-2 provides a cumulative list of all the locations identified and APPENDIX B lists the background information on key receptors/sensitivities associated with each of these locations.

First-strike monitoring priorities are subsequently identified as those locations and associated receptors predicted to be contacted within 7.0 days at a probability >10%, and where baseline data is either not available or not sufficient (as depicted in Table 4-3 and outlined in Section 4).

Table 2-2: Summary of locations in the Combined Socio-Cultural EMBA requiring a baseline review (all locations predicted to be contacted within 7 days at the low thresholds and a probability > 10% from all worst-case scenarios presented in Table 2-1)

Location	
Australian Marine Parks (AMP)	
Dampier AMP	
Gascoyne AMP	
Montebello AMP	
Ningaloo MAP	
Shark Bay AMP	
Coastlines	
Exmouth (Including Ningaloo World Heritage Area, Cape Range, Exmouth Gulf West, Exmouth Gulf South East)	
Southern Pilbara/Ashburton – Islands and Shoreline	
Middle Pilbara – Islands and Shoreline	
Northern Pilbara/Dampier Region – Islands and Shoreline	
Dampier Archipelago (including Cape Bruguieres)	
Karratha-Port Hedland	
Islands	
Barrow Island	
Lowendal Islands	
Muiron Islands	
Montebello Islands	
Dampier Archipelago	Cohen Island
	Delambre Island
	Dolphin Island
	Gidley Island
	Keast Island
	Kendrew Island
	Legendre Island
	Rosemary Island
Southern Pilbara Islands	Flat Island
	Peak Island
	Round Island
	Serrurier Island
	Sunday Island
	Thevenard Island
Marine Parks (MP)	
Barrow Island Marine Management Area	
Barrow Island MP (State)	
Montebello Island MP	
Muiron Island MP	
Ningaloo Coast World Heritage	
National Park (NP)	

Location
Cape Range
Nature Reserves (NR)
Boodie, Double Middle Islands Nature Reserve NP
Great Sand Island NR
Reefs, Shoals and Banks
Bellona Bank
Cod Bank
Courtenay Shoal
Dailey Shoal
Echo Shoals
Fairway Reef
Hammersley Shoal
Hood Reef
Madeleine Shoals
McLennan Bank
Montebello Shoals
Ningaloo Reef
North West Reefs
Otway Reef
Outtrim Patches
Penguin Bank
Poivre Reef
Rankin Bank
Ripple Shoals
Rosily Shoals
Tryal Rocks

3 Relevant Existing Baseline Information Sources

Woodside has access to a number of different baseline data sources that are relevant to the high-value receptors in the EMBA. These include the Woodside Geographic Information System (GIS) (including habitat/fauna distribution layers and satellite imagery) and the following external data sources.

3.1 Data.gov.au

Data.gov.au is the central source of Australian open government data published by federal, state and local government agencies. In addition, it includes publicly-funded research data and datasets from private institutions that are in the public interest.

3.2 Australian Ocean Data Network

The Australian Ocean Data Network (AODN) is the primary access point for search, discovery, access and download of data collected by the Australian marine community. Data is presented as a regional view of all the data available from the AODN. Primary datasets are contributed to by Commonwealth Government agencies, State Government agencies, Universities, the Integrated Marine Observing System (IMOS – an Australian Government Research Infrastructure project), and the Western Australian Marine Science Institution (WAMSI).

3.3 Western Australian Oil Spill Response Atlas

The Western Australian Oil Spill Response Atlas (OSRA) is a spatial database of environmental, logistical and oil spill response data. Using a geographical information system (GIS) platform, OSRA displays datasets collated from a range of custodians allowing decision makers to visualise environmental sensitivities and response considerations in a selected location. Oil spill trajectory modelling (OSTM) can be overlaid to assist in determining protection priorities, establishing suitable response strategies and identifying available resources for both contingency and incident planning. OSRA is managed by the Oil Spill Response Coordination unit within WA DoT Marine Safety and is part funded through the National Plan for Maritime Environmental Emergencies and the Australian Maritime Safety Authority (AMSA).

3.4 The Atlas of Living Australia

The Atlas of Living Australia (ALA) is a collaborative, online, open resource that contains information on all the known species in Australia aggregated from a wide range of data providers. It provides a searchable database when considering species within the EMBA. The ALA receives support from the Australian Government through the National Collaborative Research Infrastructure Strategy and is hosted by the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

3.5 Index of Marine Surveys Assessment

The Index of Marine Surveys for Assessments (IMSA) is an online portal to information about marine-based environmental surveys in Western Australia. IMSA is a project of the WA Department of Water and Environmental Regulation (DWER) for the systematic capture and sharing of marine data created as part of an environmental impact assessment.

3.6 Other Sources

Other sources include:

- the WA Department of Biodiversity and Attractions (DBCA) Biodiversity and Conservation Science Annual Reports;
- Australian Institute for Marine Science (AIMS) Research Data Platform; ;

- WA State of Fisheries Report;
- Commonwealth State of Fisheries Report;
- eAtlas.org.au;
- North West Atlas;
- Western Australian Marine Science Institution;
- Geosciences Australia data and publications;
- Australian Marine Parks Science Atlas; and
- Birdlife Data Zone.

Other sources of information including Woodside commissioned studies, reports and peer reviewed journal articles were also accessed via research and journal databases such as PubMed and Google Scholar, as well as unpublished monitoring reports.

4 Baseline Data Review and Identification of First-Strike Monitoring Priorities

Understanding the presence or absence, suitability and quality of baseline data for locations and associated receptors predicted to be contacted within 7 days is an important preparatory measure for first-strike OSM. During a spill event, the First-Strike Monitoring capability will be prioritised to those receptors with insufficient baseline data (deemed First-Strike Monitoring Priorities) to collect baseline data post-spill pre-impact. An overview of the process used to identify First-Strike Monitoring Priorities is outlined in Figure 4-1, with additional detail provided in the steps below. Further, where post-spill pre-impact monitoring is not feasible due to short contact times, understanding which receptors have insufficient baseline data will help quickly guide the finalisation of each SMP design and the need to include alternative designs (e.g. the Gradient Approach versus Before-After Control-Impact (BACI) design).

The baseline data assessment includes the following steps:

1. **Identification of locations requiring a baseline review:** Receptor locations predicted to be contacted at the low thresholds within 7 days, at a probability greater than 10%, are identified and aligned with OMPs and SMPs (as per Table 2-2).
2. **Collection of baseline data:** Environmental baseline monitoring data relevant to the locations and receptors is located (as per sources outlined in Section 3).
3. **Assessment of baseline data:** The relevance of each data source is assessed:
    a. For each data source obtained, a meta-analysis is performed to determine if the parameters and methods align with the key parameters and methods outlined in the Joint Industry SMPs (Table 4-1), the spatial extent of the data, the sampling effort/duration, and the temporal relevance is also noted. Table 4-2 outlines the overall assessment criteria used for each data source.
4. **Assessment of baseline data:** An annual evaluation of the adequacy (in terms of the likely ability to detect changes between pre-impact and post-impact conditions) of the collective baseline data for each location and associated receptors is undertaken. This evaluation takes into consideration the following:
    a. Background historical information on the presence, distribution, seasonality, and if applicable, the reproductive state of the receptor (as outlined in APPENDIX B) is compared with the data available from studies and monitoring activities within the last 5 years. Depending on the receptor and associated Joint Industry SMP, the following is considered:
        i) Does the data collectively cover the required spatial extent of the receptor within a location (taking into consideration any background historical information on the distribution of the receptor)?
        ii) Does the data collectively cover all the species/biological communities required for the relevant Joint Industry SMP and that may be present at the location?
5. **Assessment outcome:** Each location and associated receptor is then categorised as either ‘First-Strike Monitoring Priority’ or ‘Lower Priority for First-Strike Monitoring’, as outlined below, and summarised in Table 4-3:
    a. First-Strike Monitoring Priority - current baseline data is not in place, not suitable or not sufficient; and post-spill pre-impact baseline data collection should be prioritised; and

b. Lower Priority for First-Strike Monitoring – collectively there is substantial baseline data or on-going monitoring from within the last 5 years. These data align with the key parameters and methodologies of the relevant Joint Industry SMP, encompasses the required species/biological communities, and covers the required spatial extent of the location. The current baseline data is therefore considered sufficient and could likely be used to detect and quantify a level of change in the event of a significant impact. Hence this receptor is considered a lower priority for post-spill, pre-impact data collection.

During an actual spill, the monitoring priorities will vary according to the spill event and it should be noted that the monitoring priorities provided in Table 4-3 are listed for planning and guidance purposes (note: the First-Strike Monitoring Priorities listed are a cumulative list based on all the worst-case spill scenarios outlined in Table 2-1). There is a paucity of baseline data for all of the reefs, shoals and banks listed in Table 2-2. Monitoring should focus on locations most at risk of consequences, such as in shallow waters, in sensitive habitats, and in areas with protected species. Consequently, shorelines and adjacent nearshore areas will generally take priority over offshore reefs, shoals and banks, unless they are the main locations impacted by a spill event. The WA DoT protection priority rankings, determined as part of the Western Australian Marine Oil Pollution Risk Assessment, may also be consulted to provide further focus and prioritisation.

At the time of a spill, Woodside will work with its OSM Services Provider, sub-contracted Monitoring Service Providers and key stakeholders in the initial stages of the spill to identify priority monitoring receptors and to assist in the finalisation of the monitoring design, ensuring that resources are allocated appropriately and according to the greatest risk of impact. This process is outlined in Section 13.

It is noted that it is difficult to obtain absolute statistical proof of oil spill impacts, due to the variability (spatially and temporally) of the natural environment, the lack of experimental control due to the nature of spills and because suitable baseline data may not be available (Kirby, *et al*. 2018). Alternative approaches exist for detecting impacts where post-spill, pre-impact monitoring may not be feasible. These include impact versus control design approaches and/or a gradient approach. The Joint Industry OSM Framework provides guidance and considerations for survey designs to enable the acquisition of sufficiently robust data during SMP implementation.

Once SMP monitoring reports are drafted (post-spill) they will be peer reviewed by an expert panel (Refer to Section 10.10 of the Joint Industry OSM Framework).

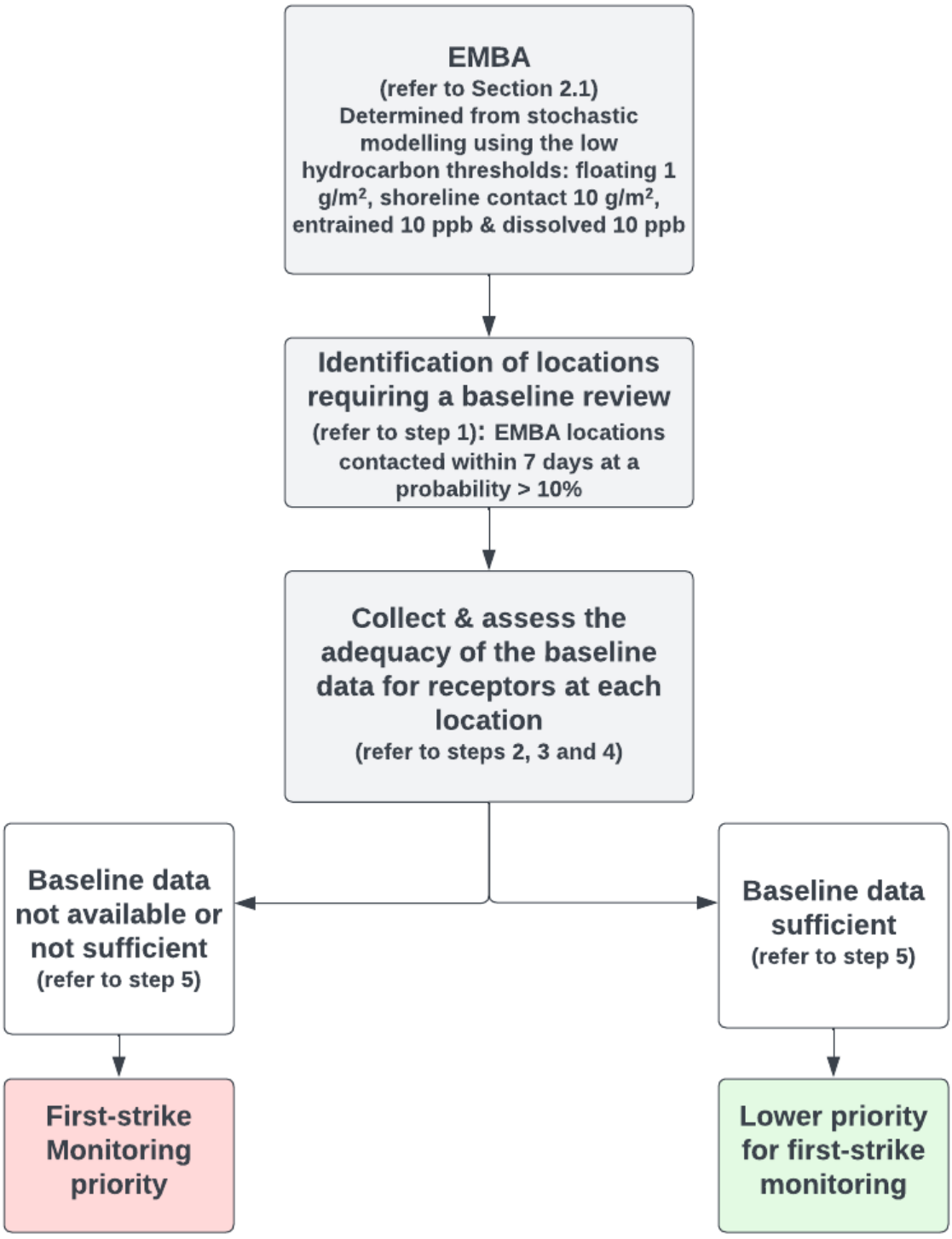


Figure 4-1: Summary of the process for identifying First-Strike Monitoring Priorities

Table 4-1: Key parameters and key methodology from the Joint Industry SMPs

SMP	Key parameter	Key methodology
Water quality impact assessment	At least one key parameter: • Total recoverable hydrocarbons (TRH); • Total petroleum hydrocarbons (TPH); • Benzene, toluene, ethylbenzene and xylenes and naphthalene (BTEXN); or • Polycyclic aromatic hydrocarbons (PAH)	In situ UV fluorometer and/or samples analysed at National Association of Testing Authorities (NATA) accredited lab using NATA accredited method
Sediment quality impact assessment	At least one key parameter: TRH, TPH, BTEXN, PAH, heavy metals	Sediment collected by corer/grab and samples analysed at NATA accredited lab using NATA accredited method
Intertidal and coastal habitat assessment	At least one key parameter: presence, diversity, distribution	Any of the following, as appropriate to the parameters: • Ground and vessel-based intertidal surveys (e.g. quadrats, transects, including video and still photography) • Remote sensing • Infauna sampling
Benthic habitat assessment	At least one key parameter: presence, diversity, distribution	Any of the following, as appropriate to the parameters: • Transects • Towed camera • Drop camera • Remotely Operated Vehicle (ROV) camera • Diver-based camera surveys • Remote sensing (coral & seagrass broad scale survey) • Sediment grab for infauna
Marine fish and elasmobranch assemblages assessment	At least one key parameter: species identification, abundance, habitat type	Any of the following, as appropriate to the parameters: • Baited remote underwater video stations (BRUVS) • Stereo Baited Remote Underwater Video Stations (SBRUVS) • ROV • Towed video survey
Fisheries impact assessment	At least one key parameter: Abundance, catch-rate, stock structure, size structure	Catch and effort for stock assessment
Marine megafauna - reptile	At least one key parameter: species identification, abundance / counts, key behaviour (foraging, mating, nesting, internesting)	As appropriate to the species and behaviour / life stage: • Nesting turtles: ground surveys • In water turtles: vessel and aerial surveys • Sea snakes: manta board and snorkel surveys • Estuarine crocodiles: vessel-based spotlight surveys at night
Marine megafauna- whale sharks, dugong and cetaceans	At least one key parameter: species identification, abundance / counts, key behaviour	Aerial or vessel surveys, acoustic monitoring

SMP	Key parameter	Key methodology
Seabirds and shorebirds	At least one key parameter: species present, abundance / counts, behaviour (resting, roosting, foraging, nesting)	Ground surveys and standardised methodology for counting birds

Table 4-2: Assessment criteria for quality of environmental baseline data

Year of most recent data capture	Duration of monitoring program	Frequency of data capture	Similarity of methods to Joint Industry SMP	Similarity of parameters to Joint Industry SMP
High= 2019-2024	High= >4 years	High= 4+ sampling trips per year	High	High
Medium= 2013-2018	Medium= 2-4 years	Medium= 2-3 sampling trips per year	-	-
Low= <2012	Low= <2 years	Low= one-off sampling trip	Low	Low

Table 4-3: Proposed First-Strike Monitoring Priority locations versus SMPs for the worst-case spill scenarios in the OSM-BIP Combined EMBA

Location	Water quality impact assessment	Sediment quality impact assessment	Intertidal and coastal habitat assessment	Seabirds and shorebirds	Marine megafauna assessment- reptiles	Marine megafauna assessment- whale sharks, dugong and cetacean	Benthic habitat assessment	Marine fish and elasmobranch assemblages assessment	Fisheries impact assessment	Heritage and social impact assessment
Exmouth Gulf										
Ningaloo World Heritage Area					Turtle Sea snake	Whale Shark Cetaceans & dugong				
Muiron Islands										
Barrow Island					Flatback turtle Green turtle, hawksbill turtle, sea snake					
Montebello Islands										
Southern Pilbara to Onslow										
Middle Pilbara & Northern Pilbara (to Dampier)										
Dampier Archipelago			Mangroves							
Karratha – Port Hedland					Flatback turtle					
Reefs, shoals and banks										

Key

	First-strike monitoring priority
	Lower priority for First-Strike Monitoring

5 OSM Organisational Structure

Woodside uses the Incident Command System (ICS) to respond to incidents and therefore adopts the key roles and responsibilities used in this system, as described in the activity EPs and/or OSPRMAs. The IMT will be responsible for coordinating OSM activities, which will be led by the Planning Section, with support from each Section, in particular the Operations Section.

The Woodside IMT structure is shown in Figure 5-1. Where the WA DoT is the Control Agency, the IMT will be managed through coordinated command and Woodside will still be expected to continue monitoring activities in State waters, with oversight from WA DoT.

Figure 5-2 illustrates the hierarchy of key OSM roles during the response phase. The IMT Incident Commander is ultimately accountable for managing the response operation, which includes this plan. Depending on the scale of the event, individual people may perform multiple roles; similarly, multiple people may share the same role.

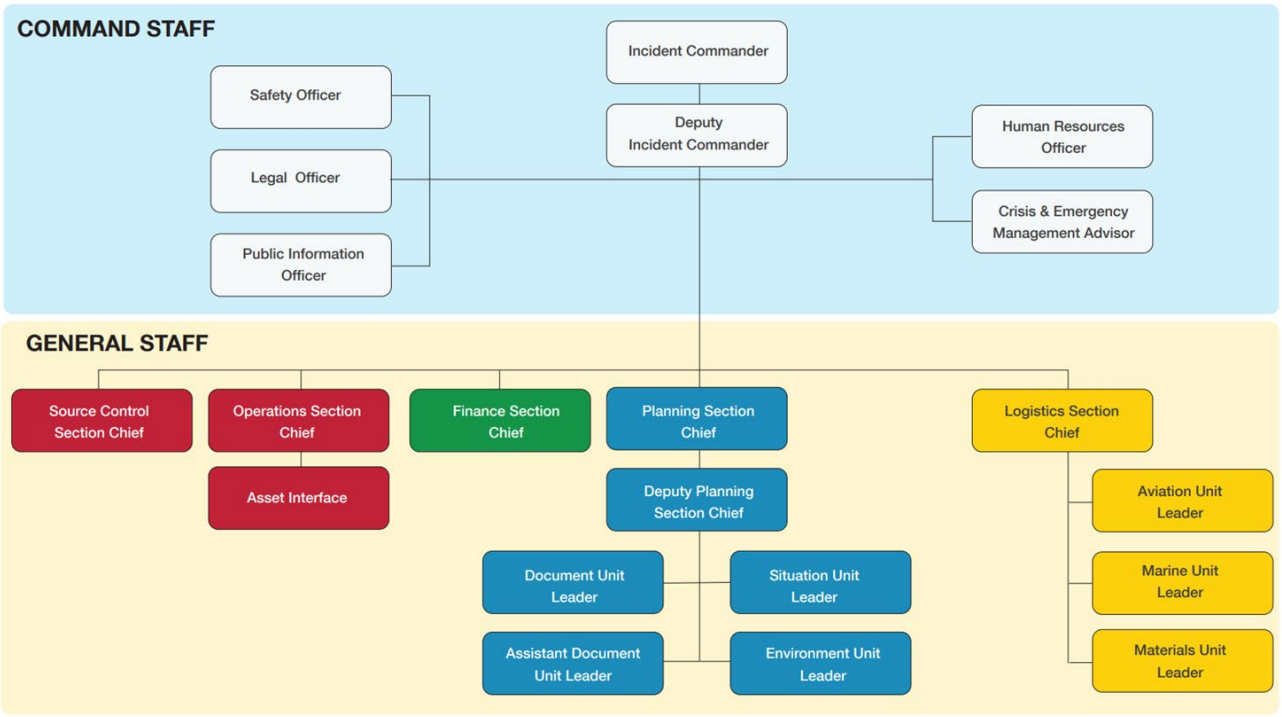


Figure 5-1: Woodside IMT Structure

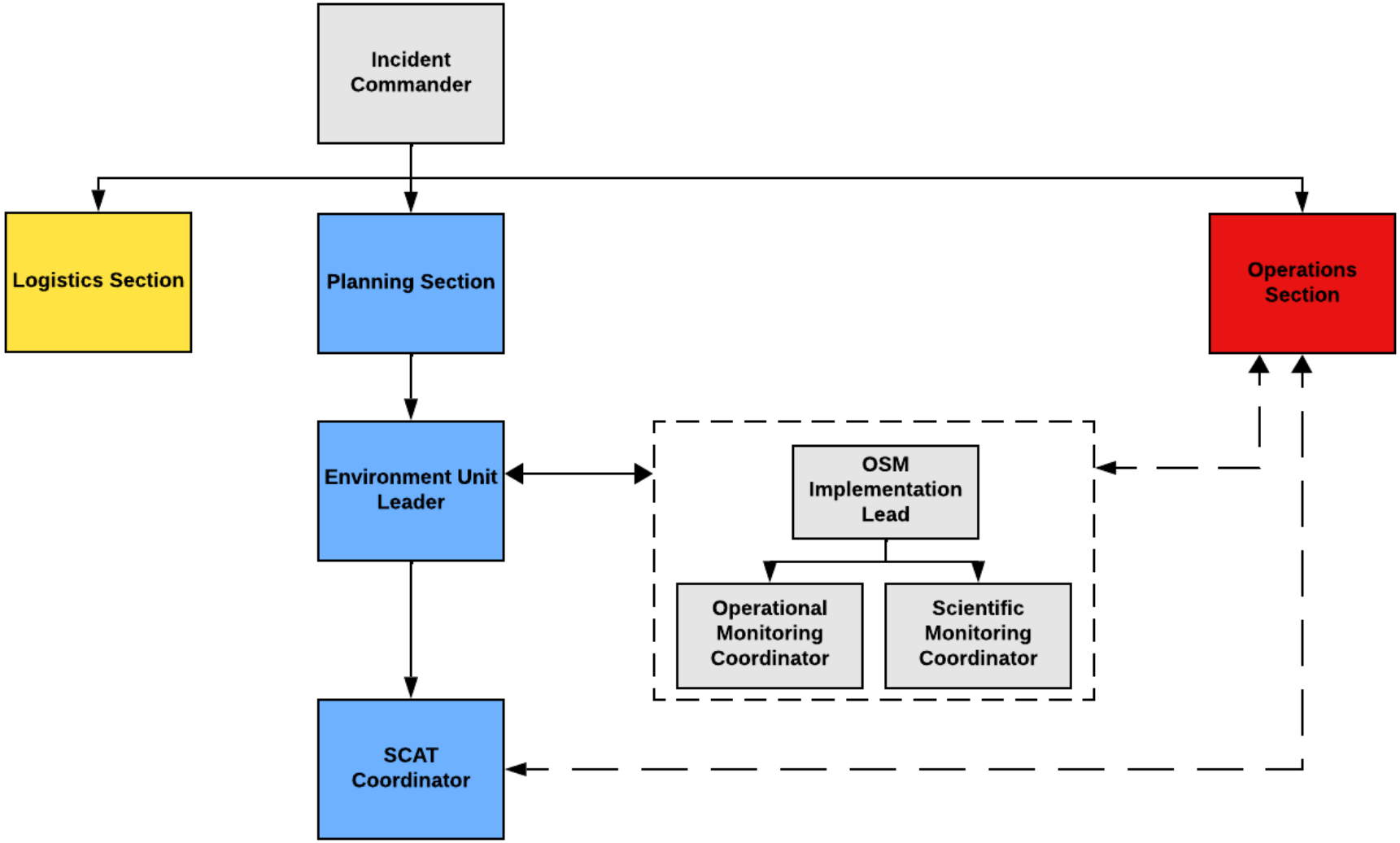


Figure 5-2: Woodside IMT Structure with OSM Team

6 OSM Roles and Responsibilities

OSM roles and responsibilities are listed in Section 10.13.2 of the Joint Industry OSM Framework. Table 6-1 outlines the key OSM roles held by Woodside and the OSM Services Provider.

During the post-response phase the Woodside Environment Unit Leader and the OSM Services Provider OSM Implementation Lead will continue to be responsible for the coordination and delivery of monitoring plans.

Table 6-1: Roles and responsibilities for OSM

Role	Held by
Environment Unit Leader	Woodside
OSM Implementation Lead	OSM Services Provider
Operational Monitoring Coordinator and/or Scientific Monitoring Coordinator	OSM Services Provider
OSM Field Operations Manager	OSM Services Provider
OSM Field Teams	OSM Services Provider

7 Mobilisation and Timing of OMP and SMP implementation

Table 7-1 provides an indicative implementation schedule for OMPs and SMPs in the EMBA and adjacent waters. ‘Implementation’ of an OMP/SMP is defined as being ready, at the point of staging or departure, to mobilise for monitoring. If the monitoring plan is desktop-based, implementation is defined as commencing the work (e.g. computer model inputs). Refer to activity specific OSPRMA for an indication of worst-case minimum contact times based on stochastic modelling (stochastic modelling represents all possible outcomes that could potentially occur, in reality, only a subset of locations will likely be contacted during a spill event).

Due to short contact times, there may be instances where post-spill pre-impact monitoring is not feasible. For these locations, and where baseline data does not exist, or may not be recent and applicable, the application of a BACI design may not be possible. The finalisation of each SMP design will consider this and may need to include alternative designs (e.g. data from an expected BACI design may need to be analysed as a Gradient Approach).

Table 7-1: Indicative OMP and SMP implementation schedule for OSM activities if initiation criteria are met

Proximity to spill source	Monitoring type	0–48 hours from OSM activation	Within 72 hours of OSM activation	~5-7 days from OSM activation	Weeks 1-2 from OSM activation	On-going
Spill site and surrounding waters	OM	Activation of OMP Team Leads. Finalise OMPs. Commence activation and mobilisation of OM personnel.	• OMP: Hydrocarbon Properties and Weathering Behaviour, where resources are available (e.g. Supply Vessel with onboard sampling equipment). • OMP: Water Quality Assessment • OMP: Sediment Quality Assessment • Marine Fauna Assessment • OMP: Surface Chemical Dispersant Effectiveness (commencing with Tier 1 SMART Protocol) • Continue to finalise OMPs. • Continue to activate and mobilise OM personnel.	Continued (as per on-going arrangements)	Continued (as per on-going arrangements)	As results from implemented OMPs are available, data are provided to relevant personnel in IMT (e.g. Situation Unit) and used in the Incident Action Planning process for the next operational period. OMP is redesigned or reallocated according to the specifics of the actual spill.
	SM	• Commence activation and mobilisation process. • Activation of SMP Team Leads.	• Continue to activate and mobilise personnel. • Work on finalising SMPs.	• SMP: Water Quality Impact Assessment • SMP: Sediment Quality Impact Assessment • SMP: Benthic Habitat Assessment • SMP: Marine fish and elasmobranch assemblages assessment	Continued	Continue SMP monitoring until termination criteria are met
Sensitive receptors (including shorelines, reefs, banks and shoals)	OM	• Activation of OMP Team Leads. • Finalise OMPs.	• OMP: Hydrocarbon Properties and Weathering Behaviour at Sea • OMP: Water Quality Assessment	Continued (as per on-going arrangements)	Continued (as per on-going arrangements)	As results from implemented OMPs are available, data are provided to relevant personnel in IMT (Situation Unit Lead) and

Proximity to spill source	Monitoring type	0–48 hours from OSM activation	Within 72 hours of OSM activation	~5-7 days from OSM activation	Weeks 1-2 from OSM activation	On-going
predicted to be contacted within 7 days		• Commence activation and mobilisation of OM personnel.	• OMP: Sediment Quality Assessment • OMP: Shoreline Clean-up Assessment • OMP: Marine Fauna Assessment • Continue to finalise OMPs. • Continue to activate and mobilise OM personnel.			used in the Incident Action Planning process for the next operational period. OMP is redesigned or reallocated according to the specifics of the actual spill until termination criteria are met
	SM	• Activation of SMP Team Leads and finalisation of SMPs.	• Continue to activate and mobilise personnel. • Work on finalising SMPs.	• SMP: Water Quality Impact Assessment • SMP: Sediment Quality Impact Assessment • SMP: Benthic Habitat Assessment • SMP: Intertidal and Coastal Habitat Assessment • SMP: Seabirds and Shorebirds • SMP: Marine Mega-fauna Assessment-Reptiles • SMP: Marine Mega-fauna Assessment-Cetaceans, Whale Sharks, Dugong • SMP: Marine Fish and Elasmobranch Assemblages assessment • SMP: Commercial and recreational fisheries impact assessment • SMP: Heritage Assessment	Continued	Continue SMP implementation until termination criteria are met.

Proximity to spill source	Monitoring type	0–48 hours from OSM activation	Within 72 hours of OSM activation	~5-7 days from OSM activation	Weeks 1-2 from OSM activation	On-going
				• SMP: Social Impact Assessment		
Sensitive receptors (including shorelines, reefs, banks and shoals) predicted to be contacted week 1-2	OM	-	-	• Additional Activation of OMP Team Leads. • Commence activation and mobilisation of additional OM personnel.	• Continue to finalise OMPs. • Continue to activate and mobilise OM personnel. • OMP: Hydrocarbon Properties and Weathering Behaviour at Sea • OMP: Water Quality Assessment • OMP: Sediment Quality Assessment • OMP: Shoreline Clean-up Assessment • OMP: Marine Fauna Assessment	As results from implemented OMPs are available, data are provided to relevant personnel in IMT (Situation Unit Leader) and used in the Incident Action Planning process for the next operational period. OMP is redesigned or reallocated according to the specifics of the actual spill until termination criteria are met
	SM	-	-	• Additional Activation of SMP Team Leads. • Commence activation and mobilisation of additional SM personnel.	• SMP: Water Quality Impact Assessment • SMP: Sediment Quality Impact Assessment • SMP: Marine Mega-Fauna Assessment - Reptiles • SMP: Marine Fish and Elasmobranch Assemblages Assessment • SMP: Benthic Habitat Assessment • SMP: Intertidal and Coastal Habitat Assessment	Continue SMP monitoring until termination criteria are met

Proximity to spill source	Monitoring type	0–48 hours from OSM activation	Within 72 hours of OSM activation	~5-7 days from OSM activation	Weeks 1-2 from OSM activation	On-going
					• SMP: Seabirds and Shorebirds • SMP: Marine Mega-fauna Assessment-Reptiles • SMP: Marine Mega-fauna Assessment-Cetaceans, Whale Sharks, Dugong • SMP: Marine Fish and Elasmobranch Assemblages assessment • SMP: Commercial and recreational fisheries impact assessment • SMP: Heritage Assessment • SMP: Social Impact Assessment	

8 Resourcing Requirements

To guide resource requirements, the spill scenario most likely to require the greatest first-strike and on-going capability was selected from those informing the OSM-BIP Combined EMBA. Selection was based on stochastic modelling results, focussing on the scenario with the greatest predicted number of locations contacted at the low thresholds (Section 2.1) within 7 days; followed by the greatest number of locations contacted within 7-14 days; and at the highest contact probabilities. Other factors influencing the selection of the scenario with the highest capability requirements were location of the spill, proximity to receptors, and hydrocarbon properties.

The Pyrenees subsea release of 154,531 m^3 of Stickle Crude over 60 days from a loss of well control was determined to be Woodside's worst-case spill scenario requiring the greatest OSM capability. This scenario was selected as having the greatest resourcing demand on OSM capability as it had the highest number of shoreline locations predicted to be contacted within the first 7 days (first-strike) and in the following 7-14 days. Shoreline locations typically require activation of more OMPs and SMPs to assess impacts to emergent features and receptors, whereas submerged receptors (e.g. banks, reefs and shoals) have an absence of emergent features and therefore will not require the corresponding OMPs and SMPs (e.g. Shoreline clean-up assessment, intertidal and coastal habitats, shorebirds) to be monitored.

To further guide first-strike resource requirements for OSM, deterministic modelling was undertaken and the run with the most receptors contacted by floating oil ≥1 g/m^2 within 7.0 days was selected. Run 100 had the most receptors contacted by floating oil ≥1 g/m^2 within 7 days, including the Montebello Islands and surrounding State and Commonwealth Marine Parks, Muiron Islands and surrounding marine park, Onslow region, Barrow Island and surrounding marine park, and Lowendal Islands; and one additional receptor (the Dampier Region – northern Pilbara to Karratha) contacted within 7-14 days (Table 8-1).

The resources required to assist the IMT in the coordination and management of OSM for this worst-case scenario (Pyrenees subsea release from a loss of well control run 100) are outlined in Table 8-2. The resources required to commence operational and scientific monitoring components during weeks 1-2 are presented in Table 8-3 and Table 8-4 respectively, which are based on the locations requiring a baseline review in Section 2.2, the implementation schedule outlined in Table 7-1, and the worst-case deterministic trajectory (Pyrenees subsea release from a loss of well control run 100) outlined in Table 8-1. If required, additional resources will be mobilised from weeks 2-3 onwards via the OSM Services Provider Contract, which includes provision of scale-up resources.

Note: Each new future activity will be assessed, as outlined in Section 1.1 and APPENDIX A, to determine whether their spill scenario(s) exceed the resourcing requirements of the Pyrenees subsea release from a loss of well control run 100.

Table 8-1: Deterministic modelling results (Run 100) - Pyrenees subsea release of 154,531 m^3 of Stickle Crude over 69 days from a loss of well integrity from Stickle-4H1 well (GHD, 2022)

Location	Minimum arrival time (days)			
	Films at ≥ 1 g/m^2	Shoreline oil at ≥ 10 g/m^2	Total submerged oil ≥ 10 ppb	Dissolved oil ≥ 10 ppb
Muiron Islands MP (State)	3.9	4.6	8.8	NC
Montebello Australian Marine Park (AMP)	3.9	NA	5.5	NC
Muiron Islands	4.1	4.6	9.0	NC
Onslow Region (Southern Pilbara to Middle Pilbara)	4.2	11.9	4.9	NC
Barrow Island MP (State)	4.6	5.0	5.8	NC
Barrow Island	4.7	5.0	5.8	NC
Montebello Islands MP (State)	4.7	5.0	5.9	NC

Location	Minimum arrival time (days)			
	Films at ≥ 1 g/m^2	**Shoreline oil at ≥ 10 g/m^2**	**Total submerged oil ≥ 10 ppb**	**Dissolved oil ≥ 10 ppb**
Montebello Islands	5.1	5.0	6.6	NC
Lowendal Islands	5.6	NC	6.3	NC
Dampier Region (Northern Pilbara to Karratha)	14.1	14.3	16.8	NC
Dampier Archipelago	17.4	17.0	18.9	NC
Gascoyne AMP	27.1	NA	10.8	NC
Ningaloo Region	NC	29.7	9.3	NC
Dampier AMP	29.9	NA	30.8	NC
Hedland Region	34.0	28.0	34.2	NC
Ningaloo AMP	41.2	NA	7.6	NC
Ningaloo MP (State)	64.7	29.7	9.3	NC
Agro-Rowley Terrace	69.6	NA	64.9	NC
Dirk Hartog Island	NC	72.9	NC	NC
Dorre Island	NC	73.1	NC	NC
Thevenard Island	NC	85.1	NC	NC
Jurien Bay	NC	97.9	NC	NC
Perth Region	NC	97.9	NC	NC
Geraldton Region	NC	98.4	NC	NC
Rowley Shoals MP (State)	NC	100.3	NC	NC
Imperieuse Reef	NC	100.3	100.2	NC
Eighty Mile Beach AMP	NC	NA	35.9	NC
Carnarvon AMP	NC	NA	43.8	NC
Shark Bay AMP	NC	NA	49.2	NC
Abrolhos AMP	NC	NA	60.1	NC
Abrolhos MP (State)	NC	NC	90.9	NC

NC: No contact to receptor predicted for specified threshold

Table 8-2: Resources required for key OSM coordination roles

Role	Resources required	Arrangement
OSM Implementation Lead (OSM Services Provider)	1 x OSM Implementation Lead	Oil Spill Response Limited (OSRL) OSM Supplementary Service Agreement
Operational Monitoring Coordinator and Scientific Monitoring Coordinator (OSM Services Provider)	1 x Operational Monitoring Coordinator 1 x Scientific Monitoring Coordinator	
OSM Field Operations Manager (OSM Services Provider)	1 x OSM Field Operations Manager	

Table 8-3: Resources required for initially implementing operational monitoring plans for the identified worst-case scenario from the OSM-BIP Combined EMBA[#]

OMP	Week 1 (total)	Week 2 (total)	Arrangement
Hydrocarbon properties and weathering behaviour at sea*	1 team (spill site and surrounds) 1 team per site (e.g for worst-case estimating as per Table 8-1 this amounts to 5 sites [Muiron Islands, Onslow region, Barrow Island, Montebello Islands, Lowendal Islands]) Total 6 teams	1 team (spill site and any surrounds) 1 team per site (e.g for worst-case estimating as per Table 8-1 this amounts to 6 sites [Muiron Islands, Onslow region, Barrow Island, Montebello Islands, Lowendal Islands and Dampier region]) Total 7 teams Note: these resources may not be required if relevant scientific monitoring components initiation criteria have been triggered.	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangements
Shoreline clean-up assessment	Detail on resources required for shoreline clean-up assessment are presented in the activity-specific OSPRMA		Australian Marine Oil Spill Centre (AMOSC) Master Services Agreement (MSA) and/or OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers State/Territory Response Teams and AMSA National Response Team
Surface chemical dispersant effectiveness and fate	1 team for visual observations, which may be performed by trained aerial observers used during monitor and evaluate if trained in observation and verification of chemical dispersant effectiveness For water quality observations, refer to OMP: Water quality assessment		OSRL OSM Supplementary Service Agreement AMOSC MSA Woodside Contracted Vessel Providers
Subsea dispersant injection monitoring	No subsea dispersant injection until week 2 due to transportation requirements	1 team	OSRL OSM Supplementary Service Agreement AMOSC MSA Woodside Contracted Vessel Providers

OMP	Week 1 (total)	Week 2 (total)	Arrangement
Water quality assessment*	Refer to OMP: Hydrocarbon properties and weathering behaviour at sea resourcing* (all sites)		OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers
Sediment quality assessment*	Refer to OMP: Hydrocarbon properties and weathering behaviour at sea resourcing* (all sites)		OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers
Marine fauna assessment	1 team to conduct initial aerial surveys for Montebello Islands, Barrow Island and Lowendal Islands (2 observers per aircraft) 1 team to conduct initial aerial surveys for Muiron Islands, Onslow region and Dampier region (2 observers per aircraft) Total 2 teams Note: Fauna related SMPs are likely to be initiated simultaneously or following aerial assessment with vessel and ground based fauna surveys carried out as part of the relevant fauna SMP.		OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Aviation contractors
Air quality modelling (responder health and safety)	1 model	1 model	3rd party modelling provider / OSRO

[#] *Specific locations are mentioned for planning and guidance purposes based on a worst case planning approach. In the event of an actual spill, other locations and/or receptors may be contacted. This would be identified and managed as part of implementation as per the guidance in Section 13.*

** Initial co-mobilisation between OMP: Hydrocarbon properties and weathering behaviour at sea, OMP: Water quality assessment and OMP: Sediment quality assessment*

Table 8-4: Resources required for initially implementing scientific monitoring plans for the identified worst-case scenario from the OSM-BIP Combined EMBA[#]

SMP	Week 1 (total)	Week 2 (total)	Arrangement
Water quality impact assessment	1 team (spill site and surrounds) 1 team per site (e.g. for worst-case estimating as per Table 8-1 this amounts to 5 sites [Muiron Islands, Onslow region, Barrow Island, Montebello Islands, and Lowendal Islands]) Total 6 teams Note: can initially be performed by the same team as OMP: Water quality assessment. This SMP may replace OMP: Water quality assessment if the OMPs termination criteria are triggered	1 team (spill site and surrounds) 1 team per site (e.g. for worst-case estimating as per Table 8-1 this amounts to 6 sites [Muiron Islands, Onslow region, Barrow Island, Montebello Islands, Lowendal Islands and Dampier region]) Total 7 teams Note: can initially be performed by the same team as OMP: Water quality assessment. This SMP may replace OMP: Water quality assessment if the OMPs termination criteria are triggered	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
Sediment quality impact assessment	Refer to SMP: Water quality impact assessment* (all sites)		OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers

SMP	Week 1 (total)	Week 2 (total)	Arrangement
			Laboratory arrangement
Intertidal and coastal habitat assessment	1 team per site (e.g. for worst-case estimating as per Table 8-1 this amounts to 5 sites [Muiron Islands, Onslow region, Barrow Island, Montebello Islands and Lowendal Islands]) Total 5 teams	1 team per site (e.g. for worst-case estimating as per Table 8-1 this amounts to 6 sites [Muiron Islands, Onslow region, Barrow Island, Montebello Islands, Lowendal Islands and Dampier region]) Total 6 teams	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
Seabirds and shorebirds	Based on worst-case estimating as per Table 8-1: 1 team to conduct initial aerial surveys for Barrow Island, Montebello Islands and Lowendal Islands 1 team to conduct initial aerial surveys for Muiron and Onslow region Total 2 aerial teams Note: can initially be performed by the same team as OMP: Marine fauna assessment – seabirds and shorebirds. This SMP may replace OMP: Marine fauna assessment – seabirds and shorebirds if the OMPs termination criteria are triggered	Based on worst-case estimating as per Table 8-1: 1 team to conduct aerial surveys for Barrow Island, Montebello Islands and Lowendal Islands 1 team to conduct aerial surveys for Muiron, Onslow region and Dampier region (Can initially be performed by the same aerial team as OMP: Marine fauna assessment) Total 2 aerial teams 1 team to conduct vessel-based surveys per site (Muiron Islands, Onslow region, Barrow Island, Montebello Islands, Lowendal Islands and Dampier region) (surveys would include all fauna [birds, reptiles, cetaceans, dugong and whale shark]) Total 6 vessel-based teams 1 team to conduct ground-based surveys per site (Muiron Islands, Onslow region, Barrow Island, Montebello Islands, Lowendal Islands and Dampier region)* (1 experienced ornithologists per team) Total 6 ground-based teams	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
Marine mega-fauna assessment (whale shark, dugong and cetaceans)	Aerial surveys refer to SMP: Seabirds and shorebirds This SMP may replace the relevant OMP: Marine fauna assessment if the OMPs termination criteria are triggered	Aerial surveys refer to SMP: Seabirds and shorebirds Vessel surveys refer to SMP: Seabird and shorebirds	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement

SMP	Week 1 (total)	Week 2 (total)	Arrangement
Marine mega-fauna assessment (reptiles)	Aerial surveys refer to SMP: Seabirds and shorebirds This SMP may replace the relevant OMP: Marine fauna assessment if the OMPs termination criteria are triggered	Aerial surveys refer to SMP: Seabirds and shorebirds Vessel surveys refer to SMP: Seabird and shorebirds Ground based survey refer to SMP: Seabird and shorebirds (including 1 member experienced with ground turtle surveys)	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
Benthic habitat assessment	1 team (spill site and surrounds) 1 team per site (e.g. for worst-case estimating as per Table 8-1 this amounts to 5 sites [Muiron Islands, Onslow region, Barrow Island, Montebello Islands and Lowendal Islands]) Total 6 teams	1 team (spill site and surrounds) 1 team per site (e.g. for worst-case estimating as per Table 8-1 this amounts to 6 sites [Muiron Islands, Onslow region, Barrow Island, Montebello Islands, Lowendal Islands and Dampier region]) Total 7 teams	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
Marine fish and elasmobranch assemblages assessment	1 team (spill site and surrounds) 1 team per site (e.g. for worst-case estimating as per Table 8-1 this amounts to 5 sites [Muiron Islands, Onslow region, Barrow Island, Montebello Islands and Lowendal Islands)) Total 6 teams	1 team (spill site and surrounds) 1 team per site (e.g. for worst-case estimating as per Table 8-1 this amounts to 6 sites [Muiron Islands, Onslow region, Barrow Island, Montebello Islands, Lowendal Islands and Dampier region]) Total 7 teams	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
Fisheries impact assessment	Total 2 teams to cover all relevant Commonwealth and State fisheries		OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
Heritage features assessment	1 team	1 team	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
Social impact assessment	1 team	1 team	OSRL OSM Supplementary Service Agreement

[#] *Specific locations are mentioned for planning and guidance purposes based on a worst case planning approach. In the event of an actual spill, other locations and/or receptors may be contacted. This would be identified and managed as part of implementation as per the guidance in Section 13.*

** Initial co-mobilisation between SMP: Water quality impact assessment and SMP: Sediment quality impact assessment.*

9 Capability Arrangements

Woodside is a Member to the OSRL OSM Supplementary Service Agreement, which provides OSM Annual Services and Response Services to members who have subscribed to this supplementary service. This OSM Supplementary Service Agreement includes access to OSRL's sub-contracted Monitoring Service Providers in Australia and internationally (who will report through OSRL) to deliver monitoring capability.

Details of OSM services are provided in Table 9-1. Woodside will maintain responsibility for implementing air quality modelling (responder health and safety).

OSRL (referred to as the OSM Services Provider in this BIP), via the OSM Supplementary Service Agreement is contracted to provide Members with a monthly Capability Register, which details personnel requirements for OMPs/SMPs, numbers of available personnel and competencies for service provider and sub-contracted personnel.

Personnel listed on the monthly update are accessible following a Member's initial activation of OSM Services.

Table 9-1: OSM services provider preparedness and activation / monitoring services

Preparedness[1]
24/7 Duty Manager accessed through 24 hr. hotline
Provision of a suitably trained operational and scientific monitoring personnel
Monthly reports on personnel and equipment availability
Access to OSM Services Provider's sub-contracted Monitoring Service Providers
Access to OSM Sevices Provider's network of laboratories and equipment providers
Activation / Monitoring[2]
Provision of an OSM Services Lead and OSM Implementation Lead to the Woodside IMT within 12 hours of notification
Provision of a First-Strike Monitoring team within 72 hours of notification, ready to deploy from a nominated port(s) or staging location (e.g. Forward Operating Base [FOB])
Assisting Woodside in finalisation of monitoring plans
Provision of scientific monitoring personnel within 5-7 days of notification
Access to OSM Services Provider personnel and equipment

9.1 Personnel Competencies

The OSRL OSM Supplementary Service Agreement specifies the training and competency requirements for key OSM personnel consistent with the Joint Industry OSM Framework. The role of the OSM Implementation Lead aligns with the responsibilities listed in the Joint Industry OSM Framework and is also outlined in the OSPRMA.

In addition and where practicable, Woodside's pool of environmental advisers will be leveraged to provide guidance in the initial and ongoing stages of the monitoring program including plans to determine monitoring locations and designs.

9.2 Equipment

Equipment requirements are listed in the individual OMPs and SMPs. A generalised breakdown of equipment types and the source is listed in Table 9-2.

[1] Defined as Annual OSM Services in OSM Supplementary Service Agreement

[2] Defined as Response Services in OSM Supplementary Service Agreement

In accordance with the OSRL OSM Supplementary Service Agreement, the OSM Services Provider will provide specialised field monitoring equipment to implement individual OMPs and SMPs. Woodside will remain responsible for support and field logistics, including monitoring platforms (e.g. vessels, vehicles and aircraft), flights and accommodation for personnel and transportation/couriers for samples to be sent to laboratories.

Availability of key equipment will be listed in the OSM Services Provider's Equipment Register.

Table 9-2: OSM equipment

Equipment type	Source
Woodside equipment	
Desktop equipment (e.g. Oil Spill Response Atlas, GIS)	Geospatial Support coordinated through IMT
Logistical equipment (e.g. in-field accommodation, vessels, aircraft)	Marine contracts, aviation contracts coordinated through IMT
OSM Service Provider equipment	
In-field specialised monitoring equipment (e.g. fluorometers, sample bottles, ROVs)	Coordinated through the OSM Services Provider's OSM response and implementation services

9.3 Exercises

The OSM Services Provider, via the OSM Supplementary Service Agreement, is contracted to maintain an OSM Services Annual Assurance Program. As part of this program, the OSM Services Provider will conduct at least one of a number of different exercise types, which are outlined in Table 9-3. The purpose of this testing is to confirm that the response arrangements and capability in place are available when needed and function as intended. Following the Notification and Tabletop excises listed in Table 9-3, the OSM Services Provider will prepare exercise reports and track any action items to completion.

In addition, Woodside will conduct an annual notification test of the OSM Services Provider, as outlined in the Woodside Testing of Arrangements Register.

Table 9-3: Exercise types

Exercise Type	Who	Description	Frequency
Assurance Program Workshop	OSRL, Steer-Co and Monitoring Service Providers	The outputs from the annual OSM Services and Assurance Program Workshop will form the basis of the OSM Annual Services and Assurance Program for the coming Contract Year.	Annually
Notification exercise	Woodside with OSRL	Test procedures to notify and activate the OSM Services, including subcontracted Monitoring Service Providers.	Annually
Tabletop exercise	Steer-Co and OSRL to agree a lead Titleholder for each Calendar Year	A discussion-based exercise that involves no physical deployment of personnel or equipment. The exercise will simulate all actions to validate the enactment of plans, procedures, protocols, roles and tasks during a simulated incident.	Annually
Desktop review	Monitoring Service Providers & OSRL.	A desktop review of capability for any OMP and/or SMP not tested during the annual table-top exercise. The review can also be based on the outcomes/findings of the OMPs and/or SMPs that were tested.	Annually

10 Capability Assessment

Table 10-1 provides a comparison of Woodside's worst-case capability requirements (as outlined in Table 8-3 and Table 8-4) with the OSRL OSM Supplementary Service Agreement capability to implement each OMP and SMP. Where there are synergies between OMPs and SMPs, the same personnel may implement multiple OMPs/SMPs simultaneously, as identified in Table 10-1. For example, personnel assigned to the OMP for Hydrocarbon Properties and Weathering Behaviour at Sea can also carry out the OMPs for Water Quality Assessment and Sediment Quality Assessment concurrently.

Table 10-1: OSM capability

Component	Total Personnel Required (Weeks 1–2) [3]	Personnel available via OSM Services Provider	Personnel available via OSROs	Woodside	Total Personnel Available[#]
OSM Personnel embedded in IMT	1 OSM Implementation Lead 1 OM Coordinator 1 SM Coordinator 1 Field Operations Manager	1 OSM Implementation Lead 1 OM Monitoring Coordinator 1 SM Coordinator 1 Field Operations Manager	-	1 OSM Implementation Lead (initial)	2 OSM Implementation Leads 1 OM Coordinator 1 SM Coordinator 1 Field Operations Manager
OMPs					
Hydrocarbon properties and weathering behaviour at sea*	7 teams	7 teams	-	-	7 teams
Shoreline clean-up assessment	Refer to the activity specific EP				
Surface chemical dispersant effectiveness and fate	Visual observations: 1 team Water quality assessment – refer to OMP: Water quality assessment	1 visual observation team Refer to OMP: Water quality assessment	4 AMOSC Staff 2 AMOSC Core Group trained personnel	-	Visual observations: 1 team 4 AMOSC Staff 2 AMOSC Core Group trained personnel
Subsea chemical dispersant injection monitoring	1 team (week 2 onwards)	1 team	-	-	1 team
Water quality assessment*	Refer to OMP: Hydrocarbon properties and weathering behaviour at sea				
Sediment quality assessment*	Refer to OMP: Hydrocarbon properties and weathering behaviour at sea				

[3] If additional resources are required for week 3 onwards then this will be identified early in the monitoring process and Woodside will activate additional contracted resources through its OSM Services Provider to increase capacity

Component	Total Personnel Required (Weeks 1–2) [3]	Personnel available via OSM Services Provider	Personnel available via OSROs	Woodside	Total Personnel Available[#]
Marine fauna assessment	2 aerial teams	2 teams	-	-	2 teams
Air quality modelling (responder health and safety)	1 model	-	3rd party modelling provider / OSRO	-	3rd party modelling provider / OSRO
SMPs					
Water quality impact assessment	7 teams Note: can initially be performed by the same team as OMP: Water quality assessment. This SMP may replace OMP: Water quality assessment if the OMPs termination criteria are triggered	7 teams	-	-	7 teams
Sediment quality impact assessment	Refer to SMP: Water quality impact assessment*				
Intertidal and coastal habitat assessment	6 teams	6 teams	-	-	6 teams
Seabirds and shorebirds	2 aerial teams (Can initially be performed by the same aerial team as OMP: Marine fauna assessment) 6 vessel teams (surveys would include all fauna [birds, reptiles, cetaceans, dugong and whale shark]) 6 ground teams (including 1 experienced ornithologist per team)	2 aerial teams 6 vessel teams 6 ground based teams	-	-	2 aerial teams 6 vessel teams 6 ground based teams
Marine mega-fauna assessment – whale shark, dugong and cetaceans	Refer to SMP: seabirds and shorebirds				

Component	Total Personnel Required (Weeks 1–2) [3]	Personnel available via OSM Services Provider	Personnel available via OSROs	Woodside	Total Personnel Available[#]
Marine mega-fauna assessment – reptiles	Aerial and vessel - Refer to SMP: seabirds and shorebirds Ground surveys - Refer to SMP: seabirds and shorebirds (plus 1 team member per team experienced with ground turtle surveys)		-		
Benthic habitat assessment	7 teams	7 teams	-	-	7 teams
Marine fish and elasmobranch assemblages assessment	7 teams	7 teams	-	-	7 teams
Fisheries impact assessment	2 teams	2 teams	-	-	2 teams
Heritage features assessment	1 team	1 team	-	-	1 team
Social impact assessment	1 team	1 team	-	-	1 team

** Initial co-mobilisation between OMP: Hydrocarbon properties and weathering behaviour at sea, OMP: Water quality assessment and OMP: Sediment quality assessment*

[#] During capability assessment, available personnel were allocated to one monitoring team only

11 Document Review

As part of the Environment Plan review cycle, this document will be reviewed annually and revised, if required, in accordance with the Woodside EP Management of Change Manual. This could include changes required in response to one or more of the following:

- When major changes have occurred which affect Operational and/or Scientific Monitoring coordination or capabilities (e.g. change of services provider);
- Changes to the activity that affect Operational and/or Scientific Monitoring coordination or capabilities (e.g. a significant increase in spill risk);
- Changes to legislative context related to Operational and/or Scientific Monitoring (e.g. *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) protected matters requirements);
- Following routine testing of the OSM if improvements or corrections are identified; or
- After a Level 2/3 spill incident.

The extent of changes made to this OSM Bridging Implementation Plan and resultant requirements for regulatory resubmission will be informed by the relevant Commonwealth regulations, i.e. the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 Regulations (OPGGS (E) Regulations).

Part B – Implementation

Control Agencies and Jurisdictional Authorities

The Oil Pollution First Strike Plan of each Woodside EP provides detailed information on Control Agency responsibilities and should be referred to when planning operational and scientific monitoring activities, particularly in WA State Waters and along WA shorelines. Where the WA DoT is the Control Agency, OMP: Shoreline Clean-up Assessment will be implemented under their direction, with resources provided by Woodside.

In addition, Section 1 of all Woodside Oil Pollution First Strike Plans provides regulatory and stakeholder notification and reporting requirements. Whilst all notification and reporting will be performed by Woodside CIMT/ IMT personnel, monitoring personnel should be aware of these requirements, and confirm all relevant notifications and reporting have been completed prior to undertaking monitoring activities.

The Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) are the designated Jurisdictional Authority for all spills within Commonwealth waters.

12 Mobilisation and Activation Process

Woodside's IMT Environment Unit Leader is responsible for activating OSM components, subject to approval from the Incident Commander. Table 12-1 outlines the Woodside OSM activation process.

Table 12-1: OSM Mobilisation and Activation Process

Responsibility	Task	Timeframe	Complete
Woodside Environment Unit Leader	Review initiation criteria of OMPs and SMPs (provided in Table 9-1 (OMPs) and Table 9-2 (SMPs) of the Joint Industry Operational and Scientific Monitoring Framework) during the preparation of the initial IAPs and subsequent IAPs; and if any criteria are met, activate relevant OMPs and SMPs	Within 4 hours of spill notification	☐
	Obtain approval from Incident Commander or Deputy Incident Commander to activate OSM Services Provider	Within 4 hours of spill notification	☐
	Contact OSM Services Provider and verbally notify their Duty Manager of the incident, requesting provision of OSM Implementation Lead to the IMT. Complete Call Off Order Form (APPENDIX D) and submit to OSM Services Provider[4] to confirm activation of OSM Services	Within 4 hours of spill notification	☐
	Provide monitor and evaluate data (e.g. aerial surveillance, fate and weathering modelling, tracking buoy data, current IAPs) to OSM Services Provider	Within 1 hour of data being received by IMT	☐
	Liaise with Woodside Logistics Section Chief to identify potential staging and departure location/s for monitoring activities. Provide this information to OSM Services Provider	Within 4-6 hours of spill notification	☐
	Record tasks in Individual Log	At time of completion of task	☐
Safety Officer (Woodside)	Develop a Site Safety and Control Plan	Prior to mobilisation of personnel to the field	☐
Logistics Section Chief (Woodside)	Commence arrangements for vessels, accommodation and transport to mobilise monitoring teams	Within 24 hours of spill notification	☐

[4] A copy of the Call Off Order Form is provided in APPENDIX D, however a copy of the Call-off Order Form will also be available via OSRL Duty Manager upon request.

Responsibility	Task	Timeframe	Complete
OSM Services Provider	Duty Manager to activate relevant Sub-Contracted Monitoring Service Providers	Within 30 minutes of Call Off Order Form being received by OSM Services Provider	☐
	OSM personnel (OSM Implementation Lead and OM/SM Coordinators) requested by Woodside (via Call Off Order Form) to be sent to Woodside's IMT	Within 12 hours of notification being made to OSM Services Provider	☐
	Liaise directly with Environment Unit Leader to confirm which OMPs and SMPs are to be fully activated	Within 4 hours of monitor and evaluate data being received from IMT	☐
	Confirm availability of initial personnel and equipment resources	Within 5 hours of monitor and evaluate data being received from IMT	☐

13 First-Strike Monitoring Priorities

As described in Section 2 and Section 4, the available stochastic and deterministic spill trajectory modelling, in conjunction with a desktop review of any current baseline data, has been analysed to understand the likely First-Strike Monitoring Priorities. Table 4-3 provides a review and categorisation of baseline data for First-Strike Monitoring Priority and lower priority for First-Strike Monitoring to assist in identifying where post-spill, pre-impact monitoring should be focused

The First-Strike Monitoring Priorities provided Table 4-3 are to be used for guidance when confirming monitoring priorities in consultation with key stakeholders and sub-contracted Monitoring Service Providers (including subject matter experts, where available) at the time of the spill. Table 13-1 provides a checklist to assist in the confirmation of monitoring priorities for individual spills.

Table 13-1: Checklist for determining monitoring priorities

Responsibility	Task	Timeframe	Complete
Woodside Environment Unit Leader	Evaluate monitoring priorities in consultation with key stakeholders, including the appointed State/Territory Environmental Scientific Coordinator	Within 12 hours of monitor and evaluate spill data being received from IMT	☐
Woodside Environment Unit Leader with input from OSM Services Provider	Confirm monitoring locations for activated OMPs and SMPs based on: • Current monitor and evaluate data (i.e. situational awareness data, including predicted time to receptor impact, aerial/vessel surveillance observations, tracking buoy data, satellite data); • First-strike monitoring locations identified in Table 4-3; • Nature of hydrocarbon spill (i.e. subsea blow out, surface release, hydrocarbon characteristics, volume, expected duration of release); • Seasonality and presence of receptors impacted or at risk of being impacted; • Current information on transient and broadscale receptors (surface and subsea); • Current operational considerations (e.g. weather, logistics); • Nature of hydrocarbon spill (i.e. subsea blow out, surface release, hydrocarbon characteristics, volume, expected duration of release); • Monitoring priorities identified in Table 4-3; and	Within 12 hours of monitor and evaluate spill data being received from IMT	☐

Responsibility	Task	Timeframe	Complete
	• Existing literature, baseline data, and monitoring programs.		
	Using the results of the baseline data analysis in Table 4-3 and the information above, determine first-strike priority locations for post-spill, pre-impact monitoring	Within 12 hours of monitor and evaluate data being received from IMT	☐
	Confirm the need for any additional reactive baseline monitoring data for SMPs and determine suitable locations, noting that suitable control or reference sites may be outside of the EMBA	Within 12 hours of monitor and evaluate data being received from IMT	☐
	Continually re-evaluate monitoring priorities in consultation with Environment Unit Leader and relevant key stakeholders throughout spill response	Ongoing	☐

14 Protected Matters Requirements

Table 14-1 provides a checklist to ensure monitoring personnel consider protected matters requirements in the finalisation of OMPs and SMPs.

The Woodside Master Description of the Existing Environment outlines the management plans, recovery plans and conservation advice statements relevant for the EPBC Act MNES (protected matters) within the EMBA of all Western Australian Woodside activities. This information is likely to be important for the final design of the OMPs and SMPs. The Master Description of the Existing Environment and APPENDIX B also includes relevant locations where these receptors are known to occur in order to expedite consideration of relevant information into finalised monitoring designs.

Table 14-1: Checklist for inclusion of protected matters into monitoring designs

Responsibility	Task	Complete
Environment Unit Leader with input from OSM Services Provider	Review Monitoring, Evaluation and Surveillance data and available OM data to determine likely presence and encounter of protected species in predicted trajectory of the spill	☐
	Review the relevant recovery plan/conservation advice/management plan in the Master Description of the Existing Environment (G2000RH1401743486) and online protected matters search tool and determine if there have been any updates to the relevant conservation threats/actions. Integrate relevant considerations into the final monitoring design for affected OMPs and SMPs	☐
	Review restrictions on marine mammal buffer distances in SMP: Marine mega-fauna and ensure this is included in all relevant response and monitoring IAPs (e.g. Shoreline Protection Plan, Shoreline Clean-up Plan, OSM Plan), so that response and monitoring field teams maintain required buffer distances from fauna during operations	☐

15 Finalising Monitoring Design

The methods presented in the Joint Industry OMPs and SMPs are designed to allow the OSM Services Provider and their sub-contracted Monitoring Service Providers with the flexibility to modify the standard operating procedures, so that the latest research, technologies, equipment, sampling methods and variables may be used. Monitoring designs may also be varied *in-situ*, according to the factors presented in Section 10.6 of the Joint Industry OSM Framework.

Woodside's checklist for finalising monitoring designs post-spill is provided in Table 15-1. The OSM Implementation Lead, in liaison with the Environment Unit Leader, will be responsible for approving the finalised monitoring design used in the OMPs and SMPs upon first deployment and ongoing monitoring.

Table 15-1: Checklist for finalising monitoring design

Responsibility	Task	Timeframe	Complete
OSM Implementation Lead in liaison with EUL and OSM Services Provider	Confirm survey objectives, sampling technique, for each initiated OMP and SMP	Within 48 hours of initial monitoring priorities being confirmed by IMT	☐
	Determine suitable sampling frequency	Within 48 hours of initial monitoring priorities being confirmed by IMT	☐
	Finalise standard operating procedures	Within 48 hours of initial monitoring priorities being confirmed by IMT	☐
	Review Table 10-4 of the Joint Industry OSM Framework to ensure potential impacts from response activities are considered and incorporated into relevant OMP/SMP designs	Prior to the finalisation of monitoring designs	☐
	Liaise with the Woodside Environment Unit Leader to review the Environmental Performance Standards listed in the activity-specific OSPRMA and integrate checks into the monitoring design that will help determine if relevant Environmental Performance Standards are being met	Prior to the finalisation of monitoring designs	☐
	Scientific monitoring: • Establish the OMPs and SMPs to be used • Confirm indicator species • Confirm parameters and metrics	Within 96 hours of initial monitoring priorities being confirmed by IMT	☐

16 Mobilisation of Monitoring Teams

When the monitoring design has been finalised for each OMP and SMP, the OSM Services Provider shall work in conjunction with Woodside to develop and execute a monitoring mobilisation plan, which will be incorporated into the Incident Action Planning process.

The OSM Services Provider will be required to coordinate the availability of personnel and equipment for all monitoring programs. Woodside will be responsible for flights, accommodation and victualing for field personnel. Woodside will also be required to procure all vessels, aerial platforms and vehicles for OMP and SMP implementation.

A checklist for mobilising monitoring teams is provided in Table 16-1.

Note: OMP: Air quality modelling is a desk top assessment and should be mobilised as soon as practicable as it is not reliant on any mobilisation of field personnel.

Table 16-1: Checklist for mobilisation of monitoring teams

Responsibility	Task	Complete
OSM Services Provider with input from Woodside Environment Unit Leader	Confirm availability of all monitoring personnel (noting required competencies in Section 9.1 and individual OMPs/SMPs)	☐
	Allocate number of teams, personnel, equipment and supporting resource requirements	☐
	Undertake HAZIDs as required and consolidate/review field documentation including safety plans, emergency response plans, and daily field reports	☐
	Develop site-specific health and safety plans which is compliant with health safety and environment systems (including call in timing and procedures)	☐
	Conduct pre-mobilisation meeting with monitoring team/s on survey objectives, logistics, safety issues, reporting requirements and data management collection requirements	☐

Responsibility	Task	Complete
	Determine data management delivery needs of the IMT and process requirements, including data transfer approach and frequency/timing	☐
	Confirm data formats and metadata requirements with personnel receiving data	☐
	Logistics	
	Confirm Woodside Logistics Section have arranged flights, accommodation, and car hire arrangements are in place	☐
	Develop field survey schedules, detailing staff rotation	☐
	Equipment	
	Confirm Woodside Logistics Section have arranged survey platforms (vessel, vehicle, aircraft) as required to survey or access survey sites and ensure they are equipped with appropriate fridge and freezer space for transportation of samples (and carcasses if collecting)	☐
	Confirm Woodside Logistics Section have arranged vessels with correct fit-out specifications (e.g. winches, Geographic Positioning System (GPS), satellite, deck crane, sufficient deck space, water supplies (fresh and/or salt), accommodation)	☐
	Confirm consumables (including personal protective equipment) have been purchased and will be delivered to required location	☐
	Liaise with NATA-accredited laboratories to confirm availability, limits of detection, sampling holding times, transportation, obtain sample analysis quotes and arrange provision of appropriate sample containers, Chain of Custody (CoC) forms and suitable storage options for all samples. Make arrangements for couriers (if necessary)	☐
	Confirm specialist equipment requirements and availability (including redundancy)	☐
	Check GPS units and digital cameras are working and that sufficient spare batteries and memory cards are available	☐
	Confirm sufficient equipment to allow integration of survey software and navigational systems (e.g. GPS, additional equipment and adaptors), and additional GPS units prepared	☐
	Confirm GPS survey positions (where available) have been Quality Assurance and Quality Control (QA/QC) checked and pre-loaded into navigation software/positioning system	☐
	Check field laptops, ensuring they have batteries (including spares), power cable, and are functional	☐
	Check if a first aid kit or specialist personal protective equipment (PPE) is required	☐
	Confirm arrangements for freight to mobilisation port is in place	☐

17 Permits and Access Requirements

Permit and access requirements apply to Marine Parks, Marine Protected Areas, restricted heritage areas, operational areas of industrial sites, defence locations, certain fauna and managed fisheries as listed in Table 17-1. For a list of all such locations and fisheries refer to the Woodside Combined Socio-Cultural EMBA Protected Areas and Fisheries Spreadsheet.

The OSM Services Provider will work with Woodside to request access and permit applications to all relevant Jurisdictional Authorities to conduct monitoring for OMPs and SMPs.

Safety Note: Due to the risk posed by unexploded ordnances, landing on Cartier Island or anchoring anywhere within the Cartier Island Marine Park is strictly prohibited without express prior written approval.

If anchoring is unavoidable due to emergency (e.g. extreme weather conditions), great care should be taken to ensure anchoring is on sand, and anchors do not drag.

Any metal objects or suspicious objects found in the reserve should not be touched or disturbed and reported immediately to the police and the Parks Australia Work Health and Safety Advisor on 02 6274 2369 or parkshealthandsafety@dcceew.gov.au.

Table 17-1: Permits required in EMBA

Receptor	Jurisdictional Authority	Relevant information on permits
Permits for monitoring fauna	DCCEEW DBCA	Any interactions involving nationally listed threatened fauna may require approval from DCCEEW (http://www.environment.gov.au/biodiversity/threatened/permits) WA- appropriate permits can be found at: https://www.dbca.wa.gov.au/licences-and-permits/fauna
State Marine Protected Area	DBCA	No specific permitting requirements exist for monitoring in WA marine protected areas, but additional information is available at: https://www.dbca.wa.gov.au/management/marine-planning
Ramsar wetland	DCCEEW	Additional information on Ramsar wetlands and how they are protected as a matter of national environmental significance under the EPBC Act is available at: https://www.environment.gov.au/epbc/what-is-protected/wetlands
Australian (Commonwealth) Marine Parks	Director of National Parks Parks Australia	Permit and licence application information for Marine Protected Areas (including monitoring) can be found at: https://onlineservices.environment.gov.au/parks/australian-marine-parks and https://onlineservices.environment.gov.au/parks/australian-marine-parks/permits Additional information on permitting requirements in Australian Marine Parks can be obtained through Parks Australia. Information on permits to access biological resources in Commonwealth areas can be found at: http://www.environment.gov.au/topics/science-and-research/australias-biological-resources/access-biological-resources-commonwealth
State Managed Fisheries	Department of Primary Industries and Reginal Development (DPIRD)	No specific permitting requirements exist for WA Fisheries, but additional information is available at – https://www.fish.wa.gov.au/Fishing-and-Aquaculture/Pages/default.aspx
Commonwealth Managed Fisheries	Australian Fishing Management Authority	Commonwealth Managed Fisheries (scientific permit for research/monitoring in an Australian Fishing Zone) https://www.afma.gov.au/fisheries-services/fishing-rights-permits
Indigenous Cultural Heritage	Department of Planning, Lands and Heritage (DPLH)	Entry access permits to Aboriginal Lands in WA: https://www.wa.gov.au/service/aboriginal-affairs/aboriginal-heritage-conservation/apply-permit-access-or-travel-through-aboriginal-land Aboriginal heritage sites in WA: https://www.wa.gov.au/service/aboriginal-affairs/aboriginal-cultural-heritage/search-aboriginal-sites-or-heritage-places
Defence/restricted military area	Department of Defence	Unexploded Ordanances (mapping information): https://www.defence.gov.au/UXO/default.asp Maritime military firing practice and exercise areas: https://www.hydro.gov.au/n2m/2010/annual/n2m/9.pdf
Industry (e.g. operational zone of offshore oil or gas platform)	Operating company	Safety zones (up to 500 m from outer edge of well or equipment) – https://www.nopsema.gov.au/safety/safety-zones/
Shipwrecks	DCCEEW	Refer to the *Underwater Cultural Heritage Act 2018* (Commonwealth): https://www.dcceew.gov.au/parks-heritage/heritage/underwater-heritage/underwater-cultural-heritage-act

18 Use of Data in Response Decision-making

18.1 Operational Monitoring to Inform Response Activities

The OSM Services Provider is responsible for the collection of data by field teams, which shall be QA/QC checked by the Field Team Lead in accordance with the requirements listed in the finalised OMPs and SMPs (where applicable). Table 18-1 provides a checklist to assist in utilising OM data to inform decision making.

The Field Team Lead will be responsible for communicating data back to the OSM Implementation Lead via field reporting forms, debriefs and reports. Laboratory analysis reports should also be directed to the OSM Implementation Lead.

The OSM Implementation Lead is responsible for the interpretation and analysis of data. OM data should be analysed rapidly so that it may be used to inform response planning and decisions in the current and/or next operating period. SM data is designed to be more scientifically robust and long-term in nature and is not relied upon by the CIMT/ IMT for spill response decision-making. Therefore, SM data will be analysed more thoroughly by the OSM Implementation Lead.

Once OM data is analysed and checked by the Field Team Lead, it will be provided to the Planning Section, who will then distribute the data from each monitoring component to the relevant IMT Unit and/or Section. Table 18-2 provides guidance on the type of data generated from each OMP, which IMT Section/Unit requires the data and how the data may be used during a response. During a response, all SM data will also be provided to the Planning Section, when available.

Analysed data will then be incorporated into the Common Operating Picture (managed by the Situation Unit Leader) and used by the Environment Unit Leader during development of the operational Spill Impact Mitigation Assessment (SIMA) (also referred to as a Net Environmental Benefit Analysis (NEBA)), which would be included in the IAP for the current or next operating period.

As ultimately responsible for the IAPs, the Planning Section Chief will be required to utilise the OM data to aid in decision making and determine if the response strategies can be commenced, continued, escalated, terminated, or if controls need to be put in place to manage impacts of the response activities. These decisions will be communicated to the broader IMT during regular situation debriefs.

Table 18-1: Checklist for utilising OM data to inform IMT decision making

Responsibility	Task	Timeframe	Complete
OSM Services Provider - Field Team Lead	Data collected whilst implementing OMPs and SMPs is checked that it aligns with the requirements listed in the finalised OMPs and SMPs (where applicable)	Ongoing	☐
	OM data provided to the IMT Situation Unit Leader	Daily and ongoing	☐
Field Team	Reports from OMP: Shoreline Clean-up Assessment will be provided to the IMT daily, detailing the assessed areas to maximise effective utilisation of resources	Daily reporting	☐
Woodside Situation Unit Leader	Incorporate OM data into Common Operating Picture	Daily and ongoing	☐
Woodside Environment Unit Leader	Incoporate OM data into operational SIMA/NEBA and IAP for the next operating period	Each operational period	☐

Table 18-2: Data generated from each OMP and how this may be used by IMT in decision-making

OMP	Data generated[5]	IMT Section requiring data	How data may be used by IMT
Hydrocarbon properties and weathering behaviour at sea	Hydrocarbon physical characteristics (e.g. viscosity, asphaltene content, fingerprinting, weathering ratios of hydrocarbon chains)	Planning Section to aid in response option selection / modification	Changes to the hydrocarbon properties will affect the window of opportunity for particular responses and the associated logistical requirements of these responses, such as use of chemical dispersants, recovery and pumping equipment suitability, hydrocarbon storage and hydrocarbon disposal requirements
Shoreline clean-up assessment	Assessment of shoreline character; assessment of shoreline oiling; recommendations for response activities; post-treatment surveys	Planning Section to aid in IAP development and response option selection / modification	• Confirmation of shoreline character, habitats and fauna present which may influence selection of response tactics (e.g. no mechanical recovery if turtles are known to be nesting); • Oil deposition and/or removal rate for a shoreline sector will help determine effectiveness of relevant tactics (e.g. shoreline protection and/or clean-up operations); • Assessment teams provide ground truthing of sites that are not possible via satellite imagery, therefore the IMT can rely on the recommendations of Assessment Teams (e.g. flagging access issues, suitable tactics, likely resourcing needs)
Surface chemical dispersant effectiveness and fate	Visual observations of dispersant efficacy; flurometric readings in water column (see also water quality assessment);	Environment Unit for use in operational SIMA; Planning Section to aid in IAP development; Operations Section to confirm dispersant effectiveness for decision-making purposes in current operations period.	Determine the effectiveness of dispersant in removing oil from sea surface and how dispersed oil is being distributed through the water column. This information can be used in SIMA to help decide if dispersants are being effective at minimising oil reaching sensitive receptors (SIMA to evaluate any trade-offs between receptors)
Subsea dispersant injection	Visual observations of dispersant efficacy; flurometric readings in water column (see also water quality assessment)	Source Control Section to aid decision-making for other source control operations; Environment Unit for use in operational SIMA; Planning Section to aid in IAP development.	Determine efficacy of subsea dispersant in treating oil to help understand if injection should continue or be modified; understand the nature and extent of the subsea plume; and provide an initial assessment of potential ecological effects. This information can be used in SIMA to help decide if dispersants are being effective at minimising oil reaching sensitive receptors (SIMA to evaluate any trade-offs between receptors) and also if subsea dispersants are effectively reducing volatile organic compound (VOC) levels so that operations are within lower explosive limits (LEL)
Water quality assessment	Distribution of oil in water column and change in hydrocarbon concentrations (e.g. total recoverable hydrocarbons, BETEXN, PAH), physio-chemical	Situation Unit Leader to validate surveillance and modelling data; Planning Section for use in IAP	Confirm spatial extent of spill within the water column and verify spill modelling and surveillance data; extent of spill can in turn influence location of other OMP and SMP monitoring components and sites. Data can also influence ongoing use of dispersant through ongoing operational SIMA.

[5] Summary only. For additional detail, please refer to individual OMPs. Also note data outputs will be reliant on finalised monitoring design.

OMP	Data generated[5]	IMT Section requiring data	How data may be used by IMT
	parameters and dispersant detection		
Sediment quality assessment	Distribution of oil in sediment and change in hydrocarbon concentrations (e.g. Total recoverable hydrocarbons, BETEXN, PAH)	Situation Unit Leader to validate surveillance and modelling data; Planning Section for use in IAP	Confirm spatial extent of spill; extent of spill can in turn influence location of other OMP and SMP monitoring components and sites
Marine fauna assessment	Rapid assessment of presence and distribution of marine fauna; evaluate impact of spill and response activities on fauna	Planning Section for use in IAP; Oiled Wildlife Unit / Division to help in developing wildlife portion of the IAP	Understanding of species, populations and geographical locations at greatest risk from spill impacts. IMT can use this information to help qualify locations with highest level of protection priority (e.g. dugong nursery area is at risk of high contact therefore dispersant use closest to spill source may be a preferred option); understanding the impacts of spill response activities can help IMT to modify or terminate activities if they are assessed as creating more harm than the oil alone (e.g. large shoreline clean-up teams and staging areas may disturb shorebird nesting resulting in adults abandoning chicks)
Air quality modelling (responder health and safety)	Modelled outputs of VOCs	Operations Section to help determine safe zones in close vicinity of spill; Planning Section for use in IAP	Determine safe distances from spill source for response personnel; determine the presence and persistence of volatile organic compounds to know if response areas are safe for personnel

18.2 Impacts from Response Activities

Table 10-4 of the Joint Industry OSM Framework outlines the potential impacts from response activities and the relevant OMP/SMP for monitoring impacts. For example, if shoreline clean-up was being considered as a response option, then possible impacts resulting from that activity could include physical presence, ground disturbance, water/sediment quality decline and lighting/noise impacts to fauna.

When finalising monitoring designs, the OSM Implementation Lead shall review Table 10-4 of the Joint Industry OSM Framework and the relevant activity EP to ensure potential impacts from response activities are considered and incorporated into relevant OMP/SMP designs.

18.3 Operational Monitoring of Effectiveness of Control Measures and to Ensure Environmental Performance Standards are Met

As stated in Table 15-1, when finalising monitoring designs, the OSM Implementation Lead and Woodside Environment Unit Leader (or delegate) shall review the Environmental Performance Standards (EPSs) listed in the activity-specific OSPRMA and integrate checks into the monitoring design that will help determine if relevant EPSs are being met.

Table 18-3 provides relevant EPSs listed in Woodside's activity-specific OSPRMAs and how operational monitoring may be able to confirm they are being met.

Table 18-3: Environmental Performance Standards

Environmental Performance Standard	Confirmation that EPS is being met
Shoreline Clean-up	
Clean-up operations for shorelines in line with results and recommendations from shoreline clean-up assessment outputs	Ongoing implementation of OMP: Shoreline Clean-up Assessment will involve a continual assessment of the Shoreline Clean-up operations
All shoreline clean-up sites will be zoned and marked before clean-up operations commence to prevent secondary contamination and minimise the mixing of clean and oiled sediment and shoreline substrates.	Implementation of OMP: Shoreline Clean-up Assessment will involve assessment teams mapping any demarcation zones in sensitive habitat areas
Vehicle access will be restricted on dunes, turtle nesting beaches and in mangroves.	Implementation of OMP: Shoreline Clean-up Assessment will involve assessment teams determining suitable access routes, including utilisation of existing roads and tracks
Oiled Wildlife Response	
Initiate a wildlife first strike response within a minimum of 24 hours (if required) prior to confirmed or imminent wildlife contact as directed by OMP: Marine Fauna Assessment and in liaison with DBCA	Implementation of OMP: Marine Fauna Assessment will involved a rapid assessment of fauna including species, populations, habitats and geographical locations at greatest risk from potential spill impacts

19 Data Management

Minimum standards for data management are provided in Section 10.10 of the Joint Industry OSM Framework and will be adopted by Woodside and the OSM Services Provider.

20 Quality Assurance and Quality Control

Refer to Section 10.11 of the Joint Industry OSM Framework for QA/QC minimum standards, which will be adopted by Woodside and the OSM Services Provider.

21 Communication Protocols

21.1 OSM Services Provider

Communication protocols between Woodside and its OSM Services Provider with respect to delivery of the OMPs and SMPs (during both preparedness and implementation) are intentionally defined to ensure clear and consistent information is provided in both directions.

The following communication protocols must be observed:

- Communication between Woodside and its OSM Services Provider during the preparedness phase (pre-spill) will be between the nominated Industry Member Technical Advisory Group representative and the OSM Services Provider.
- Communication between Woodside and its OSM Services Provider during activation (prior to deployment) will be between the Environment Unit Leader (or delegate) and the OSM Services Provider representative.
- During implementation (post deployment), primary communication occurs via two pathways:
  - Environment Unit Leader and the OSM Services Provider Duty Manager for contractual, management, scientific and general direction matters; and
  - Woodside's On-Scene Commander and the OSM Services Provider's Field Operations Manager/s / Field Team Leaders for on-site matters.
- All key OSM decisions should be logged in an ICS 214a Individual Log maintained by the OSM Implementation Lead.
- All key OSM tasks, actions and requirements should be documented in an IAP during the response phase of the spill
- The Woodside Environment Unit Leader will keep the Operations Section Chief, Logistics Section Chief and Planning Section Chief briefed of the OSM status as required.
- All correspondence (copies of emails and records of phone calls) between Woodside and the OSM Services Provider during a response should be recorded and kept on file.
- All communication received by OSM Services Provider not in line with these protocols should be reported to the Environment Unit Leader who will seek guidance on the accuracy of the information received.
- Unless related to safety (e.g. evacuation), any direction or instruction received by the OSM Services Provider outside of these protocols should be confirmed via the Woodside Environment Unit Leader or On-Scene Commander prior to implementation.

During the post-response phase, all communications shall be between a nominated Woodside representative and the OSM Services Provider.

21.2 External Stakeholders

Results of OMPs and SMPs will be discussed with relevant stakeholders. Information will be shared with regulatory agencies/authorities as required and inputs received from stakeholders will be evaluated and where practicable, will be used to refine the ongoing spill response and/or ongoing operational and/or scientific monitoring.

The Woodside CIMT Public Information Officer will be the focal point for external engagement during the response operation.

Stakeholder communications post-response will be managed by the Woodside Corporate Affairs.

23 Stand Down Process

Monitoring for each component will continue until termination criteria for individual components are reached. Typically, OMPs will terminate when agreement has been reached with the Jurisdictional Authorities relevant to the spill to terminate the response or a relevant SMP has been activated. SMPs will continue after the spill response has been terminated and until such time as their termination criteria are also reached. A list of criteria is provided in the OSM Framework.

After OMPs are terminated, the OM monitoring teams will be advised to stand down. Following this stage, Woodside is responsible for coordinating a lessons-learnt meeting between the OSM Services Provider, sub-contracted Monitoring Service Providers and other relevant stakeholders. It is the responsibility of Woodside to ensure that lessons learnt are communicated to the relevant stakeholder groups. The lessons discussed should include both positive actions to be reinforced and lessons for actions that could be improved in future standby or response campaigns. Table 22-1 provides a checklist to assist in terminating the OMPs and SMPs and the monitoring effort.

Table 22-1: Checklist for terminating monitoring components

Responsibility	Task	Complete
Woodside's Environment Unit Leader / Environment Advisor with input from OSM Services Provider	Review termination criteria of OMPs and SMPs (provided in Table 9-1 (OMPs) and Table 9-2 (SMPs) of the Joint Industry Operational and Scientific Monitoring Framework) to ensure OMPs and SMPs are terminated in accordance with these criteria	☐
	Ensure all SMP monitoring reports are peer reviewed by an expert panel (Refer to Section 10.10 of the Joint Industry OSM Framework)	☐
	Conduct lessons-learnt/after action review meeting	☐

24 References

AEP (2021) Joint Industry Operational and Scientific Monitoring Plan Framework. Rev D. Report prepared by BlueSands Environmental for AEP Marine and Environmental Science Working Group.

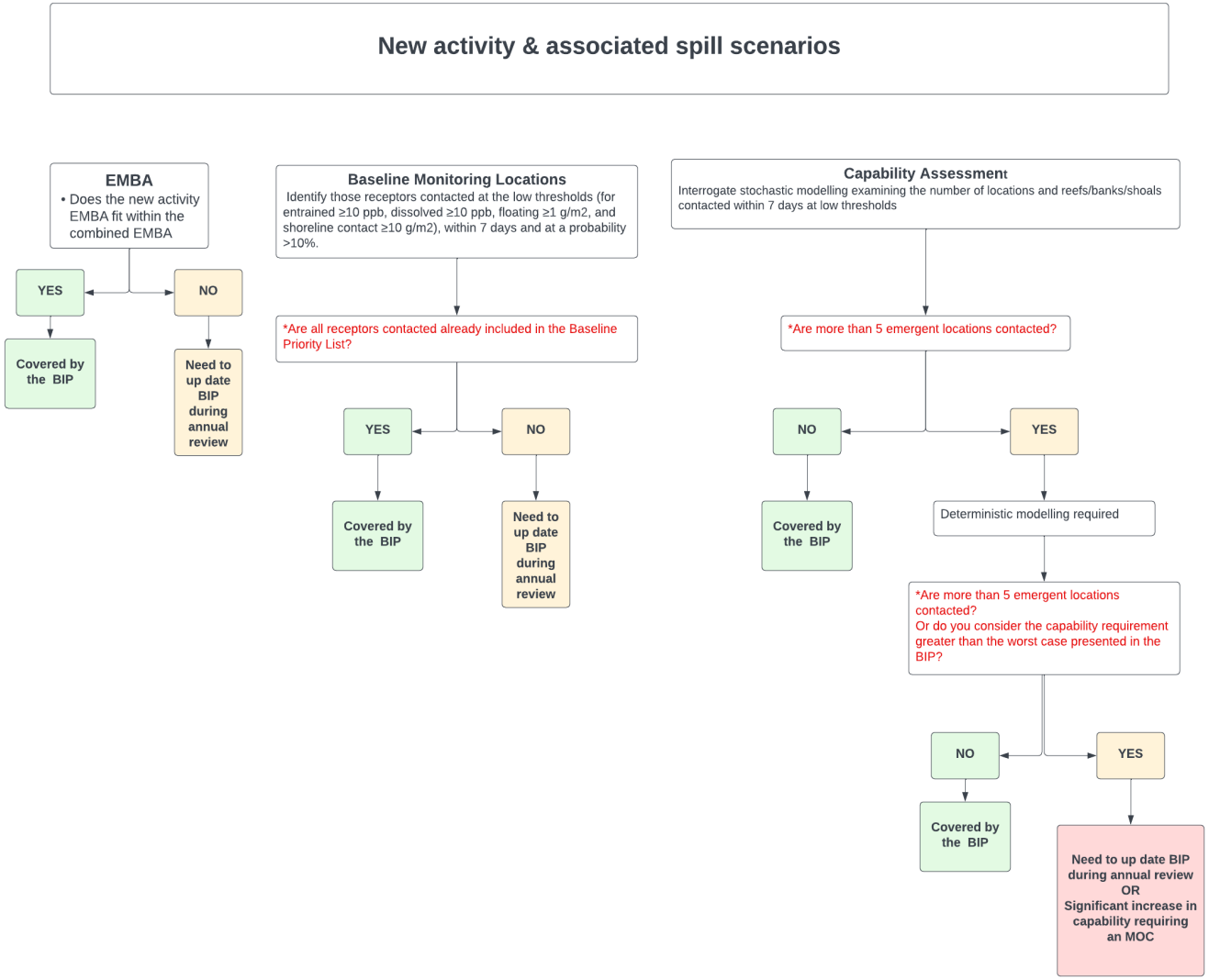
Kirby MF, Brant J, Moore J, Lincoln S (eds) (2018) PREMIAM – Pollution Response in Emergencies – Marine Impact Assessment and Monitoring: Post-incident monitoring guidelines. Second Edition. Science Series Technical Report. Cefas, Lowestoft.

25 Abbreviations and Acronyms

Abbreviation/Acronym	Definition
AEP	Australian Energy Producers (formerly Australian Petroleum Production and Exploration Association [APPEA]; from 13 September 2023)
AIMS	Australian Institute for Marine Science
ALA	Atlas of Living Australia
AMOSC	Australian Marine Oil Spill Centre
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
AODN	Australian Ocean Data Network
BACI	Before-After Control-Impact
BIA	Biologically Important Areas
BIP	Bridging Implementation Plan
BRUV	Baited Remote Underwater Video
BTEXN	Benzene, Toluene, Ethylbenzene, Xylene, Naphthalene
CIMT	Corporate Incident Management Team
CoC	Chain of Custody
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DBCA	Western Australian Department of Biodiversity Conservation and Attractions
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DPIRD	Department of Primary Industries and Reginal Development
DPLH	Department of Planning, Lands and Heritage
DWER	WA Department of Water and Environmental Regulation
EMBA	Environment that may be Affected
EP	Environment Plan
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Cth)
EPS	Environmental Performance Standard
ESC	Environmental Scientific Coordinator
FPSO	Floating Production, Storage and Offloading
GIS	Geographic Information System
GPS	Geographic Positioning System
IAP	Incident Action Plan
ICS	Incident Command System
IMOS	Integrated Marine Observing Systemm
IMT	Incident Management Team
IMSA	Index of Marine Surveys for Assessments
KEF	Key Ecological Feature
Monitoring Service Providers	The subcontracted specialist monitoring service providers subcontracted by OSRL to perform certain operational and scientific monitoring services
MP	Marine Park
NATA	National Association of Testing Authorities
NP	National Park
NR	Nature Reserve

Abbreviation/Acronym	Definition
OM	Operational Monitoring
OMP	Operational Monitoring Plan
OPEA	Oil Pollution Emergency Arrangements- Australia
OPEP	Oil Pollution Emergency Plan
OPGGS (E)	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023
OSM	Operational and Scientific Monitoring
OSM-BIP	Operational and Scientific Monitoring-Bridging Implementation Plan
OSM Services Provider	The operational and scientific monitoring services to be provided by OSRL via the OSM Supplementary Service Agreement
OSPRMA	Oil Spill Preparedness and Response Mitigation Assessment
OSRA	Oil Spill Response Atlas
OSRL	Oil Spill Response Limited
OSTM	Oil Spill Trajectory Modelling
PAHs	Polycyclic Aromatic Hydrocarbons
PPE	Personal Protective Equipment
QA/QC	Quality Assurance and Quality Control
ROV	Remotely Operated Vehicle
SBRUV	Stereo Baited Remote Underwater Video
SIMA	Spill Impact Mitigation Assessment
SM	Scientific Monitoring
SMP	Scientific Monitoring Plan
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons
VOC	Volatile Organic Compound
WA	Western Australia
WA DoT	Western Australian Department of Transport
WAMSI	Western Australian Marine Science Institution

APPENDIX A SUMMARY OF THE PROCESS TO DETERMINE WHETHER THE OSM-BIP ADEQUATELY COVERS THE OSM REQUIREMENTS FOR NEW CREDIBLE SPILL SCENARIOS



APPENDIX B BACKGROUND INFORMATION FOR KEY SENSITIVITIES

Table A-2: Background information for key sensitivities for locations predicted to be contacted within 7 days, at a probability >10%, and requiring a baseline review

Location	Receptor	Background	Key locations	Seasonality
Barrow Island	Birds	Important feeding and resting area for migratory shorebirds. Under the Ramsar Convention, an area is recognised as an internationally-significant littoral avifauna site if it supports > 1% of a species' population. Barrow Island meets this Ramsar criterion for six trans-equatorial migratory species: grey-tailed tattler (*Tringa brevipes*), ruddy turnstone (*Arenaria interpres*), red-necked stint (*Caladrius ruficollis*), sanderling (*Calidris alba*), greater sand plover (*Charadrius leschenaultia*) and lesser sand plover (*Charadrius mongolus*). It is also significant for two non-migratory birds: fairy tern (*Sterna nereis*) and the northern race of the sooty oystercatcher (*Haematopus fuliginosus opthalmicus*) (DEC 2006). Nesting area for seabirds.	The highest abundances of shorebirds are associated with the extensive tidal mudflats of the south-eastern and southern coasts, such as Bandicoot Bay.	Migratory shorebird abundances increase on the island as the birds arrive from the north during September to December. The abundances of some migratory shorebirds continue to increase in January and February, suggesting local movements of birds from the mainland to Barrow Island. Abundances decrease as the migratory species leave the region to return north at the end of summer.
	Turtle	Green (*Chelonia mydas*), flatback (*Natator depressus*), hawksbill (*Eretmochelys imbricata*), loggerhead (*Caretta caretta*) and leatherback (*Dermochelys coriacea*) turtles (DEC 2006).	Flatbacks nest on sandy beaches on the mid-eastern coast (DEC 2006). Green turtles predominantly use exposed sandy beaches on the west coast (DEC 2006). Substantial mating populations of green turtles are found in the waters of north-western Barrow Island (DEC 2006). Green turtle can be found year-round feeding on algae-covered rocky intertidal and subtidal platforms off the west coast (DEC 2006). Feeding grounds for hawksbill turtles have been identified to the south of the Barrow Shoals (DEC 2006).	Flatback: breeding/nesting season October – January. Hatching season: February – March. Green turtle: mating aggregations may commence from October with peak nesting from December to January, however, nesting does occur year round (Moro and MacAulay 2010). Hawksbill: The peak season for nesting is between October and November, with less frequent nesting during December and January round (Moro and MacAulay 2010).

Location	Receptor	Background	Key locations	Seasonality
	Cetaceans	Whale species that may occasionally visit include the humpback whale (*Megaptera novaeangliae*), short-finned pilot whale (*Globicephala macrorhynchus*), false killer whale (*Pseudorca crassidens*), killer whale (*Orcinus orca*), minke whale (*Balaenoptera acutorostrata*), Bryde's whale (*Balaenoptera edeni*), sei whale (*Balaenoptera borealis*), pygmy blue whale (*Balaenoptera musculus brevicauda*), fin whale (*Balaenoptera physalus*), melon-headed whale (*Peponocephala electra*), sperm whale (*Physeter macrocephalus*) and the blue whale (*Balaenoptera musculus musculus*). Of these, only the humpback whale is a regular visitor to the area (DEC 2006). Bottlenose dolphins (*Tursiops truncatus*) and humpback dolphins (*Sousa sahulensis*) have resident populations within the shallow waters of the inner Rowley Shelf, including the Barrow Island area (DEC 2006). Spinner dolphins (*Stenella longirostris*), common dolphins (*Delphinius delphis*), and striped dolphins (*Stenella caeruleoalba*) are abundant in the waters around Barrow Island (DEC 2006).	Spinner dolphins, common dolphins, and striped dolphins are generally oceanic species and are likely to be most abundant on the west coast of the island (DEC 2006).	
	Dugong	Dugong (*Dugong dugon*) significant sightings (Bancroft et al. 2000)		
	Mangroves	Restricted areas of stunted *Avicennia marina* occurring in narrow fringing strips in embayments (DEC 2006).	Mattress Point, south of the Chevron camp, near the airstrip, at Stokes Point and near Pelican Island on the western side of Bandicoot Bay (DEC 2006).	
Dampier Region (Northern Pilbara to Karratha) and Dampier Archipelago)	Cetaceans	Humpback whales (*Megaptera novaeangliae)*: Biologically Important Area Migration for humpback whales. Females occasionally give birth in the waters of the Dampier Archipelago,	Adult humpback whales and their young frequent the Archipelago on their southern migrations in early spring, and the Mermaid Sound (area of water between the western coastline of the Burrup Peninsula to the east of the Dampier Port, and Dampier Archipelago	Humpback whale northern migration past Pilbara occurs June and July while southern migration occurs in early spring.

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		although the main calving area is further north (CALM 2005)	to the west) is a significant resting area for females with calves (MMPATF 2021; CALM 2005; CALM 1990).	
		Humpback dolphins (*Sousa sahulensis*): The Australian humpback dolphin exhibit relatively small home ranges (<300 km2) and high site fidelity (Hanf et al. 2016).	Humpback dolphins inhabit shallow, coastal waters; typically, within 20 km of land and in water depths of less than 20 m (Parra and Jedensjö 2013; Hanf et al. 2015; Hanf et al. 2021; Hunt et al. 2017). In the Pilbara, they have been recorded up to 50 km from the mainland, but possibly associated with offshore islands (Hanf et al. 2015; Hanf et al. 2021).	Humpback dolphins may be present throughout the year.
		Indo-Pacific bottlenose dolphins (*Tursiops aduncus*) have been recorded throughout nearshore waters of the region (Hanf et al 2016; Allen et al. 2012; Hanf et al. 2021).		Indo-Pacific bottlenose dolphins may be present throughout the year.
	Dugong	Current knowledge on the size of the population of the Dampier Archipelago/ Cape Preston area for dugongs (*Dugong dugon*) is limited (MMPATF 2021).	Small numbers of dugongs have been sighted in shallow, warm waters in bays and between islands, including at East Lewis Island, Cape Preston, Regnard Bay, Nickol Bay and west of Keast Island (MMPATF 2021; CALM 2005). Dugongs have a strong association with seagrass habitat. Seagrass beds are found throughout Nickol Bay and around many of the islands (Worley Parsons 2009).	May be present throughout the year.
	Birds	Many of the islands are important seabird nesting sites. The Dampier Archipelago has been recognised to have Biologically Important Areas (BIAs) based on breeding for the wedge-tailed shearwater (*Ardenna pacifica*), roseate tern (*Sterna dougallii*) and Australian fairy tern (*Sternula nereis*). Important feeding and resting area for migratory shorebirds, utilising many beaches and mud flats (CALM 1990).	Angel Island: shorebird sightings: Bar-tailed godwit (*Limosa lapponica*), Ruddy turnstone (*Arenaria interpres*), Whimbrel (*Numenius phaeopus*). Brigadier Island: Shorebird sightings: Whimbrel (*Numenius phaeopus*). Cohen Island: Shorebird sightings: Ruddy turnstone (*Arenaria interpres*), Grey-tailed tattler (*Tringa brevipes*). Seabird nesting: Wedge-tailed shearwater (*Ardenna pacifica*), Caspian tern .(*Hydroprogne caspia*)	Australian fairy tern breeding: August-November (CALM 1990) Wedge-tailed shearwater breeding: October – April (CALM 1990; Nicholson 2002) Caspian tern .(breeding: July – October (CALM 1990) Roseate tern breeding: August – December (Higgins and Davies 1996

Location	Receptor	Background	Key locations	Seasonality
			Collier Rocks: Seabird nesting: Wedge-tailed shearwater (*Ardenna pacifica*). Conzinc Island: shorebird sightings: Grey-tailed tattler (*Tringa brevipes*) Seabird nesting: Wedge-tailed shearwater (*Ardenna pacifica*), Caspian tern (*Hydroprogne caspia*) Delambre Island: Seabird nesting: Wedge-tailed shearwater (*Ardenna pacifica*) Dolphin Island: shorebird sightings: Red-necked stint (*Calidris ruficollis*), Grey plover (*Pluvialis squatarola*), Grey-tailed tattler (*Tringa brevipes*) Elphick Nob: Seabird nesting: Australian fairy tern (*Sternula nereis*), Wedge-tailed shearwater (*Ardenna pacifica*). Egret Island: Seabird nesting: Caspian tern (*Hydroprogne caspia*) Enderby Island: shorebird sightings: Sharp-tailed sandpiper (*Calidris acuminata*), Oriental plover (*Charadrius veredus*), Whimbrel (*Numenius phaeopus*), Grey-tailed tattler (*Tringa brevipes*). Seabird nesting: Caspian tern .(*Hydroprogne caspia*) Gidley Island: Shorebird sightings: Whimbrel (*Numenius phaeopus*). Goodwyn Island: Shorebird sightings: Grey-tailed tattler (*Tringa brevipes*) Seabird nesting: Australian fairy tern (*Sternula nereis*), Wedge-tailed shearwater (*Ardenna pacifica*), Roseate tern (*Sterna dougallii*). Hauy Island: Seabird nesting: Wedge-tailed shearwater (*Ardenna pacifica*) Keast Island: Seabird nesting: Caspian tern .(*Hydroprogne caspia*), Australian Peican (*Pelecanus conspicillatus*)	

Location	Receptor	Background	Key locations	Seasonality
			Kendrew Island: Seabird nesting: Australian fairy tern (*Sternula nereis*), Wedge-tailed shearwater (*Ardenna pacifica*) Lady Nora Island: Shorebird sightings: Oriental plover (*Charadrius veredus*), Whimbrel (*Numenius phaeopus*) Seabird nesting: Wedge-tailed shearwater (*Ardenna pacifica*), Caspian tern (*Hydroprogne caspia*) Legendre Island: Whimbrel (*Numenius phaeopus*), Grey-tailed tattler (*Tringa brevipes*) Seabird nesting: Wedge-tailed shearwater (*Ardenna pacifica*) Malus Island: Shorebird sightings: Grey-tailed tattler (*Tringa brevipes*) Seabird nesting: Wedge-tailed shearwater (*Ardenna pacifica*) Nelson Rocks: Shorebird sightings: Whimbrel (*Numenius phaeopus*) Roly Rocks: Seabird nesting: Wedge-tailed shearwater (*Ardenna pacifica*) Rosemary Island: Shorebird sightings: Red necked stint (*Calidris ruficollis*) Seabird nesting: Caspian tern (*Hydroprogne caspia*) (CALM 2005; Higgins and Davies 1996)	
	Turtle	The waters of the Dampier Archipelago are used for breeding while the sandy beaches are regularly used for nesting by green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*) and flatback turtles (*Natator depressus*), and occasionally by loggerhead turtles (*Caretta caretta*) (CALM 2005). Leather back turtles have been recorded in waters of the Dampier Archipelago, however, do not nest in this area.	Flatback turtle: There are significant rookeries centred on Dampier Archipelago (DoEE 2017; Limpus 2007). Delambre Island, Enderby Island, Hauy Island, Keast Island and Legendre Island have records of moderate nesting (Pendoley 2019). Delmbre Island has been recognised as the largest flatback turtle rookery in Australia with an estimated 3500 nesting females per year (Pendoley 2019).	The flatback turtle nesting during the summer months (October to March) with peak nesting in November to January (DoEE 2017; CALM 2005; CALM 1990). The green turtle nesting during the summer months (November – March) with peak nesting between December to February (DoEE 2017; CALM 2005; CALM 1990). The hawksbill turtle nesting during the summer months (October – February) with peak nesting in October to January,

Location	Receptor	Background	Key locations	Seasonality
			Green turtle: some the nesting sites have been identified as principal near-coastal rookeries for the species (DoEE 2017; Waayers et al. 2014). Angel Island, Cohen Island, Delambre Island, Dolphin Island, Eaglehawk Island, Enderby Island, Goodwyn Island, Hauy Island, Keast Island, Lady Nora Island, Legendre Island, Malus Island, Rosemary Island, and West Lewis Island have records nesting for this species (Pendoley 2019). Hawksbill nesting in WA is centred on the Pilbara (Dampier Archipelago) (Whiting et al. 2018; Waayers et al. 2014; Limpus 2002). Rosemary Island is considered a significant breeding area, supporting the most significant hawksbill turtle rookery in the Western Australian region and one of the largest in the Indian Ocean; tens to hundreds of animals nest on the island annually, more than any other Western Australian rookery, with approximately 1000 nesting females nesting per year (Pendoley Environmental 2019; DoEE 2017; DSWEPC 2012d). Angel Island, Delambre Island, Dolphin Island, Eaglehawk Island, Enderby Island, Goodwyn Island, Malus Island and Rosemary Island have records of moderate nesting (Pendoley 2019).	however, are known to nest all year round in the region (DoEE 2017; DSEWPC 2012b; CALM 2005; Prince 1993; CALM 1990).
	Coral	Live coral cover can vary greatly from reef to reef, as indicated by contrasting covers of 10 to 60% on Sailfish Reef and Hamersley Shoal, respectively (CALM 2005).	High coral diversity is found on the seaward slopes of Delambre Island, Hamersley Shoal, Sailfish Reef, Kendrew Island and north-west Enderby Island (CALM 2005).	
	Mangroves	Six species of mangrove are found within the Dampier Archipelago/Cape Preston region: the white mangrove (*Avicennia marina*), red mangrove (*Rhizophora stylosa*), club mangrove (*Aegialitis annulata*), ribbed-fruit orange mangrove (*Brugiera exaristrata*), yellow- leaf spurred mangrove (*Ceriops tagal*) and	Most mangals occur along the mainland coast on the tidal flats at Regnard Bay, the Maitland River mouth, King Bay and Nickol Bay. Well-developed communities also occur in some of the sheltered bays on the islands, for example at West Intercourse Island, in Searipple Passage	

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		river mangrove (*Aegiceras cornculatum*) (CALM 2005).	and the southern shores of West Lewis and East Lewis islands (CALM 2005). The mangrove communities at the Fortescue River delta, Cape Preston area, West Intercourse Island, Enderby Island, Searipple Passage/Conzinc Bay and Dixon Island have been assessed by Semeniuk (1997) as having international significance from a biodiversity and ecological basis (CALM 2005).	
	Seagrass	Seagrasses occur sparsely, in low diversity and low abundance, on shallow, unconsolidated sediments of sand and muddy sand (Jones 2004).	The most significant areas of seagrass are found between Keast and Legendre islands and between West Intercourse Island and Cape Preston (CALM 2005).	
Exmouth Gulf	Salt flats- extensive and significant.		Flats extend ~1,026km^2 from Locker Point to Sandalwood Peninsula, and range from the 4.5-13km wide (Brunskill et al. 2001; D.C. Blandford and Associates Pty Ltd and Oceanica Consulting Pty Ltd 2005).	
	Blue-green algal mats		Extensive blue-green algal mats (cyanobacterial mats) occupy the high intertidal zone along the eastern (~85km^2) and southern margins (~20km^2) of Exmouth Gulf (Sutton and Shaw, 2021).	
	Salt marshes		Saltmarshes (namely samphire) occur extensively along the eastern intertidal margin of Exmouth Gulf, and also along the southern and western margins (Fitzpatrick et al. 2019). They also often line tidal creeks along with mangroves (Oceanica 2006).	
	Mangroves		Mangroves are extensive from Bay of Rest and Gales Bay to all along the eastern margin of Exmouth Gulf (Humphreys et al. 2005; Lyne et al. 2006; Oceanica 2006; EPA 2008; Fitzpatrick et al. 2019).	

Location	Receptor	Background	Key locations	Seasonality
	Reef flats and oyster beds		Low relief subtidal reef is extensive around Bundegi and North West Cape across to Muiron Islands (Bancroft and Sheridan 2000; Beckley and Lombard 2012; van Keulen and Langdon 2011). It is likely that subtidal reef flats are found around many of the islands, such as Eva and Fly Islands, which have shallow reef flats off the northern edges (Dee et al. 2020). Oyster beds are present on intertidal pavements around Heron Point (Fitzpatrick et al. 2019).	
	Macroalgae and turf algae		Macroalgae beds are a common vegetated habitat across Exmouth Gulf, occurring along the central, eastern, southern, and western margins, as well as around many of the islands to the north of Exmouth Gulf (Cassata and Collins 2004; Lyne et al. 2006; Cassata and Collins 2008; van Keulen and Langdon 2011; McLean et al. 2016; BMT 2020).	
	Seagrass		Seagrass meadows have been known to occur along the eastern, southern and western margins of Exmouth Gulf, and around islands such as Muiron Islands, Burnside Island and Tent Island (Hutchins et al. 1996; RPS Bowman Bishaw Gorham 2004; Lyne et al. 2006; Oceanica 2006; Vanderklift et al. 2016). Coverage estimates for seagrasses are variable across Exmouth Gulf, noting that the extent and abundance of seagrass meadows across the whole Gulf has not been comprehensively mapped (Sutton and Shaw, 2021).	
	Corals		Soft and hard coral communities are spread around the coastal margins of Exmouth Gulf, as well as around islands inside and outside Exmouth Gulf (Lyne et al. 2006; Babcock et al. 2008b; Twiggs	

Location	Receptor	Background	Key locations	Seasonality
			and Collins 2010; 360 Environmental 2017). Mainly distributed along the southern and eastern margins of Exmouth Gulf (Irvine and Salgado Kent 2019).	
	Turtles		Mainly distributed along the southern and eastern margins of Exmouth Gulf (Irvine and Salgado Kent 2019).	Observed within the gulf year-round
	Marine mammals	Exmouth Gulf is included in the Ningaloo Reef to Montebello Islands Important Marine Mammal Area, assigned by the IUCN Marine Mammal Protected Areas Task Force (IUCN-MMPATF 2021). The qualifying species include the dugong (*Dugong dugon*), Australian humpback dolphin (*Sousa sahulensis*) and humpback whale (*Megaptera novaeangliae*). Humpback whale (*Megaptera novaeangliae*) resting and nursing area		Humpback whale: June through to the end of October
	Dugong	Strong evidence of population connectivity between Shark Bay and Exmouth Gulf (Gales et al. 2004).	Mainly observed in shallow waters (<100m) in Exmouth Gulf and around the North West Cape (Jenner and Jenner 2005, Sleeman et al. 2007; RPS 2010)	Dugongs were reported to be more frequent in Exmouth Gulf in August (RPS 2010).
	Birds	Identified as an internationally important shorebird area (Weller et al. 2020).	Exmouth Gulf Mangroves is an Important Bird Area (IBA) and a Key Biodiversity Area (Dutson et al. 2009; Key Biodiversity Areas Partnership 2020). It extends 70 km from Giralia Bay to Turbridgi Point. The three bird species triggering the KBA criteria include the dusky gerygone (*Gerygone tenebrosa*), pied oystercatcher (*Haematopus longirostris*) and grey-tailed tattler (*Tringa brevipes*) (Key Biodiversity Areas Partnership 2020). The entire Exmouth Gulf coastline, islands (in particular Sunday Island and Muiron Islands), and the coastline from North West Cape to Point Billie are identified as an internationally important	Juvenile shorebirds can be found year-round. Adults usually between August and April.

Location	Receptor	Background	Key locations	Seasonality
			shorebird area (Weller et al. 2020). Exmouth Gulf and islands meet the 'species criteria' for International Significance (supporting >1% of the flyway population) for grey-tailed tattler, eastern curlew (*Numenius madagascariensis*) and ruddy turnstone (*Arenaria interpres*) (Onton et al. 2013; Weller et al. 2020).	
Lowendal Islands	Birds	Nesting area for seabirds.	Abutilon, Beacon, Bridled, Parakeelya, and Varanus islands	Seabird nesting all year, peak Oct – Jan. Pied cormorant (*Phalacrocorax varius*) nests in winter (Nicholson 2002). Wedge-tailed shearwater (*Ardenna pacifica*) and Bridled tern (*Onychoprion anaethetus*) nest in Summer (Nicholson 2002). Silver gull (*Larus novaehollandiae*) nests in summer and Autumn (Nicholson 2002). Crested tern (*Thalasseus bergii*), Lesser crested tern (*Thalasseus bengalensis*) and Roseate tern (*Sterna dougallii*) nest in Autumn (Nicholson 2002).
	Turtle	Green (*Chelonia mydas*), flatback (*Natator depressus*), hawksbill (*Eretmochelys imbricata*), loggerhead (*Caretta caretta*) and leatherback (*Dermochelys coriacea*) turtles (DEC 2006).	All beaches on Beacon, Bridled, Varanus, Abutilon, Parakeelya Islands Significant hawksbill nesting on Varanus Island (DSEWPC 2012a). Hawksbill foraging around the Lowendal Island group (DSEWPC 2012a).	Hawksbill nesting in spring and early summer (peak October) with a 20 km internesting buffer. Flatback nesting peak late December – early January with a 20 km internesting buffer (DSEWPC 2012a).
	Cetaceans	Whale species that may occasionally visit include the humpback whale (*Megaptera novaeangliae*), short-finned pilot whale (*Globicephala macrorhynchus)*, false killer whale (*Pseudorca crassidens*), killer whale (*Orcinus orca*), minke whale (*Balaenoptera acutorostrata*), Bryde's whale (*Balaenoptera edeni*), sei whale (*Balaenoptera borealis*), pygmy blue whale (*Balaenoptera musculus brevicauda*), fin whale (*Balaenoptera physalus*), melon-headed whale		

Location	Receptor	Background	Key locations	Seasonality
		(*Peponocephala electra*), sperm whale (*Physeter macrocephalus*) and the blue whale (*Balaenoptera musculus musculus*). Of these, only the humpback whale is a regular visitor to the area (DEC 2006).		
	Dugong	The seagrass beds around the Lowendal Islands are thought to provide a valuable food source for dugong (*Dugong dugon*) (DEC 2006).		
	Mangroves	Mangroves occupy less than 0.1% of the coastline (DEC 2006).		
Montebello Islands	Birds	Twenty-six species of seabirds and waders, including migratory waders, are known in the Montebello Islands Marine Area. Migratory and threatened seabirds – Significant nesting, foraging and resting areas (Burbidge et al. 2000). At least 61 islands in the Montebello group are used by nesting seabirds (DEC 2006). Waterbirds- Historically moderately common: pied cormorant (*Phalacrocarax varius*), Australian pelican (*Pelecanus conspicillatus*), Historically common: eastern reef egret (*Egretta sacra*), osprey (*Pandion haliaetus*) Shorebirds- Historically moderately common: whimbrel (*Numenius phaeopus*), greenshank (*Tringa nebularia*), common sandpiper (*Actitis hypoleucos*), ruddy turnstone (*Arenaria interpres*), red-necked stint (*Calidris ruficollis*) Historically common: bar-tailed godwit (*Limosa lappanica*), grey-tailed tattler (*Heteroscelus brevipes*), beach stone-	Wedge-tailed shearwater (*Puffinus pacificus*) significant breeding historically reported on Ah Chong, Gossypium, Brooke, Flag, Gardenia and South East Islands. Silver gull (*Larus novaehollandiae*) breeding historically reported on Brooke and South East. Caspian tern (*Sterna caspia*) common breeding resident historically on Ah Chong, Alpha, Bluebell, Dandelion, Flag, Foxglove, Islet to south of Hermite, Ivy, Kunzea, Marri Islands, Primrose, Renewal and Trimouille. Roseate tern (*Sterna dougallii*) significant historical breeding historically reported on Dahlia, Dandelion, Pimelia, Myoporum, Gannet, Fig Islands and Bloodwood. Fairy tern (*Sterna nereis*) historical breeding on Fairy Tern Island and Hibbertia. Crested tern (*Sterna bergii*) significant historical breeding on Daisy, Epsilon and Flag (Burbidge et al. 2000)..	Wedge-tailed shearwater and bridled tern nest in summer (Nicholson 2002). Silver gull nest in summer and Autumn (Nicholson 2002). Caspian tern nest in autumn and winter (Nicholson 2002). Crested tern, lesser crested tern, roseate tern and sooty tern nest in Autumn (Nicholson 2002). Fairy tern nest in winter and spring (Nicholson 2002).

Location	Receptor	Background	Key locations	Seasonality
		curlew (*Esacus neglectus*), pied oystercatcher (*Haematopus ostralegus*), sooty oystercatcher (*Haematos fuliginosus*) Burbidge et al. 2000).		
	Turtle	Loggerhead (*Caretta caretta*) and green (*Chelonia mydas*) (significant rookeries); hawksbill (*Eretmochelys imbracata*), flatback (*Natator depressus*) turtles (Burbidge et al. 2000) Flatback are common in the waters surrounding the Montebello Islands (Burbidge et al. 2000) and nesting occurs for the following species (Commonwealth of Australia, 2017): • Green turtle • Flatback • Hawksbill	Hawksbill- Ah Chong Island, South East Island, Trimouille and elsewhere.	Green turtle- major nesting Nov – Mar (peak: Dec-May) on locations with sandy beaches (recovery plan) Flatback- minor nesting occurs Oct-Mar (peak: Nov-Jan) Hawksbill- major nesting occurs all year (peak Oct-Jan)
	Cetaceans	Whale species that may occasionally visit include the humpback whale (*Megaptera novaeangliae*), short-finned pilot whale (*Globicephala macrorhynchus*), false killer whale (*Pseudorca crassidens*), killer whale (Orcinus orca), minke whale (*Balaenoptera acutorostrata*), Bryde's whale (*Balaenoptera edeni*), sei whale (*Balaenoptera borealis*), pygmy blue whale (*Balaenoptera musculus brevicauda*), fin whale (*Balaenoptera physalus*), melon-headed whale (*Peponocephala electra*), sperm whale (*Physeter macrocephalus*) and the blue whale (*Balaenoptera musculus musculus*). (DEC 2006). Pygmy blue whale (*Balaenoptera musculus brevicauda*) and humpback whale (*Megaptera novaeangliae*) migration area Humpback dolphins (*Sousa sahulensis*) thought to be present year round in the area (Raudino et al. 2018)	An area of sheltered water to the west of Trimouille Island is used as a resting area for female humpback whales and their young calves during their southerly migration (DEC 2006).	

Location	Receptor	Background	Key locations	Seasonality
	Dugong	Dugong (*Dugong dugon*) significant sightings (Bancroft et al. 2000)		
Muiron Islands	Birds	Nesting area for seabirds Wedge-tailed shearwater (*Ardenna pacifica*) nesting colony, birds forage at sea in large aggregations. Crested tern (*Thalasseus bergii*) nesting colony (Department of Parks and Wildlife, 2014) Identified as an internationally important shorebird area (Weller et al. 2020).		Wedge-tailed shearwater are believed to stay in the area year-round, but undertake significant flights away from the islands around May.Returning around June, they nest in burrows on both islands spending several months preparing and re-excavating the burrows. At about 1m long and not very deep, the burrows are subject to collapse by foot traffic. A single egg is laid around October and the chicks hatch in January (DPaW 2015).
	Turtle	Major loggerhead turtle (*Caretta caretta*) nesting site, significant green turtle (*Chelonia mydas*) nesting site, low density hawksbill turtle (*Eretmochelys imbricata*) nesting site, occasional flatback turtle (*Natator depressus*) presence		Loggerhead turtle peak nesting: November to January (Waayers 2010). Green turtle peak nesting December to January (Waayers 2010).
Ningaloo	Mangroves	Mangroves are not extensive.	On the east side of the Cape Range peninsula, a fringing mangal of Avicennia marina occurs to the south of Cape Murat, between Bundegi Reef and Exmouth. On the west side of the Peninsula, mangals occur at Mangrove Bay (A*. marina*, *Rhizophora stylosa* and *Bruguiera exaristata*), Low Point (*Avicennia marina*) and Yardie Creek (*A. marina* and *R. stylosa*)	
	Manta rays			Ningaloo Reef is considered an important area for Manta Rays in autumn and winter (Preen et al. 1997).
	Whale sharks	Whale Sharks aggregate in the waters of the Ningaloo Marine Park, frequently close to the Ningaloo Reef front. The aggregations coincides with the period when the Leeuwin Current is strongest. (Sleeman et al. 2010).		Peak visibility April to July (noting that whale sharks may be present throughout the year)

Location	Receptor	Background	Key locations	Seasonality
		The whale sharks that visit Ningaloo are mostly immature males (Sequerira et al. 2016).		
	Turtle	Four species of turtle nest in Ningaloo: Green turtle (*Chelonia mydas*), Flatback turtle (*Natator depressus*), Hawksbill turtle (*Eretmochelys imbricata*), Loggerhead turtle (*Caretta caretta*)	The most concentrated area of green turtle nesting is along the northern beaches and Muiron Islands, while loggerhead nesting is concentrated along beaches further south (Bungelup, Jane's Bay, Gnaraloo) and on South Muiron Island (Whiting 2016)	Main nesting: Hawksbill July-Mar Green Sept-Mar Flatback Sept-Mar Loggerhead Sept-Mar
	Marine mammals	Two species of dolphins are resident at Ningaloo, the Indo-Pacific bottlenose dolphin (*Tursiops aduncus*) and the Australian humpback dolphin (*Sousa sahulensis*) (Allen et al. 2012, Jefferson & Rosenbaum 2014). Humpback whales (*Megaptera novaeangliae*) and pygmy blue whales (*Balaenoptera musculus brevicauda*) migrate past Ningaloo each year on their way to breeding grounds further north, and back again (Jenner et al. 2001; Double et al. 2014). (Note: an increasing number of humpback calves are being born at or near Ningaloo each year (Irvine et al. 2018). The waters off Ningaloo are a possible foraging BIA for pygmy blue whales (Thums et al. 2022). Killer whales (*Orcinus orca*) prey on humpback whale calves and are regularly present during the southern migration of humpback whales each year (Pitman et al. 2014).	Indo-Pacific bottlenose dolphins have been found to be primarily associated with the 20m contour and the Muiron Islands (Hanf, 2015). A relatively dense population of have been observed around the North West Cape, suggesting that this region is of high importance to this species (Haughey et al. 2020) Humpback dolphins tend to be associated with intertidal and shallow coastal waters, as well as offshore islands (Hanf, 2015). Dugong mostly inhabit the shallow 90-5 m) waters fringing the coast and offshore islands, occurring in close conjunction with the seagrass and algae beds on which they feed.	Humpback whales: June through to the end of October Pygmy blue whales: April to June
	Birds	Identified as an internationally important shorebird area (Weller et al. 2020). Approximately 30 bird species listed under (JAMBA), China–Australia Migratory Bird Agreement (CAMBA) and/or Republic of Korea- Australia	Significant seabird rookeries include Cape Farquhar, Pelican Point, Point Maud and Winderabandi Point (Shore of Exmouth et al. 1999).	Juvenile shorebirds can be found year-round. Adults shorebirds usually between August and April.

Location	Receptor	Background	Key locations	Seasonality
		Migratory Bird Agreement (ROKAMBA) have been recorded in the Cape Range National Park (DEC 2010). Habitats including the shallow sandy intertidal beaches and rocky shorelines of the Ningaloo coast are important for seabirds and waders to breed, rest and feed (Shire of Exmouth et al. 1999).		
Onslow / Pilbara Mainland Coast and nearshore islands	Sediment	The Department of Environment and Conservaton (DEC) investigated background contaminants in Sediments of the Pilbara in 2005 (DEC 2006). Sediment samples were collected from coastal waters at Port Hedland, Dampier Archipelago, Onslow, Ashburton River Mouth and Exmouth Gulf. Samples were analysed for TBT, PAHs, TPH, BTEXN, organochlorin pesticides, PCBs, total metals and metalloids. Background sediment quality was found to be high. Total arsenic were found in high concentrations in one site off Onslow (considered natural and likely to be related to geology of the region.		
	Mangroves	Mangroves in the area form small but sometimes complex communities in embayments and on the sheltered shores of many offshore islands.	Juvenile green turtles are known to forage on mangroves and have been recorded in both Urala Creek North and Urala Creek South (AECOM 2022).	
	Turtle	Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia 2017) has listed critical nesting habitat in this area for Green turtle (*Chelonia mydas*), Flatback turtle (*Natator depressus*), Hawksbill turtle (*Eretmochelys imbricata*) and Loggerhead turtle (*Caretta caretta*). Flatback BIA for nesting and internesting (DCCEEW 2023). Internesting BIA for green and loggerhead turtle (DCCEEW 2023).	Thevenard Island is an important nesting area (Commonwealth of Australia 2017).	Nesting and hatching takes place between October and April. Flatback turtle nesting in the Ashburton area occurs between October and February, with peak nesting activity in December (Imbricata 2013).

Location	Receptor	Background	Key locations	Seasonality
	Marine mammals	Key species (O2 Marine, 2021) : humpback whale (*Megaptera novaeangliae*), dugong (*Dugong dugon*), Australian humpback dolphin (*Sousa sahulensis*), Indo-Pacific bottlenose dolphin (*Tursiops aduncus*). Dugongs are resident in coastal waters of the Pilbara coast and are sighted year-round, having a strong association with seagrass habitat. BIAs (DCCEEW 2023): Humpback whale: migration and resting. Pygmy blue whale: distribution.		
	Birds	Key species (O2 Marine, 2021): Australian fairy tern (*Sternula nereis*), bar-tailed godwit- critically endangered (L*imosa lapponica menzbieri*), curlew sandpiper - critically endangered (*Calidris ferruginea*), eastern curlew- critically endangered (*Numenius madagascariensis*) Breeding and foraging BIA of Wedge-tailed shearwater (DCCEEW 2023).		Juvenile shorebirds can be found year-round. Adults shorebirds usually between August and April.

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APPENDIX C BASELINE DATA SOURCES

Table A-1: Baseline data sources

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
Water quality	Chevron (2019) Wheatstone Effluent Quality Validation Report, Rev 0-20200909 (ABU200900381)	Chevron	Onslow area
	Chevron (2022) MEQMP Compliance report and data (ABU221200858)	Chevron	Barrow Island
	Chevron (2022) Wheatstone Platform Environmental Monitoring Program – draft report. 60672341 Wheatstone 5 Yearly Monitoring Technical Report-Rev A	Chevron	Wheatstone Platform
	Chevron (2018) Wheatstone Platform Waste Water Discharges Model Verification Report (ABU190601699)	Chevron	Wheatstone Platform
	Chevron (2022) Gorgon Backfill Fields Benthic Survey 2022 (ABU230100068)	Chevron	Gorgon Backfill Fields
	Pilbara Ports Authority (2019) Marine Environmental Quality Program	Pilbara Ports Authority	Dampier Dampier Archipelago Port Hedland
	O_2 Marine (2020) Mardie Project- Marine Water Quality. Prepared for Mardie Minerals Pty Ltd. Report Number R190056	O_2 Marine	Mardie
Sediment quality	Chevron (2019) Wheatstone LNG Project Mangrove Monitoring Program 2019 (ABU200800053)	Chevron	Onslow
	Chevron (2022) MEQMP 2022 Compliance report and data (ABU221200858)	Chevron	Barrow Island
	Chevron (2022) Wheatstone Platform Environmental Monitoring Program - DRAFT REPORT 60672341, Wheatstone Platform 5 Yearly Monitoring Technical Report-Rev A	Chevron	Wheatstone Platform
	Chevron (2022) Gorgon Backfill Fields Benthic Survey 2022 (ABU230100068)	Chevron	Gorgon Backfill Fields
	Pilbara Ports Authority (2019) Marine Environmental Quality Program	Pilbara Ports Authority	Dampier Dampier Archipelago Port Hedland
	O2 Marine (2019). Mardie project- Sediment Sampling and Analysis Plan Results. Prepared for Mardie Minerals Pty Ltd. Report Number R190033	O_2 Marine	Mardie

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	O2 Marine and Teal Solutions (2019). Port Hedland Spoilbank Marina Sediment Sampling and Analysis Plan Implementation Report. Prepared for the Department of Transport. Report Number R190209	O_2 Marine	Port Hedland
	Jones R, Wakeford M, Currey-Randall L, Miller K, Tonin H (2021) Drill cuttings and drilling fluids (muds) transport, fate and effects near a coral reef mesophotic zone. Marine Pollution Bulletin 172, 112717	AIMS	Glomar Shoal Rankin Bank
	O2 Marine (2021) Ashburton Infrastructure Project Sediment Sampling and Analysis Plan, Fremantle, WA. Prepared for Mineral Resource Limited	O_2 Marine	Ashburton Onslow area
	Advisian (2019) Scarborough Sediment Sampling and Analysis Plan Implementation Report. Prepared for Woodside	Woodside	Dampier
	Woodside (ongoing unpublished data) Chemical and Ecological Monitoring of Mermaid Sound	Woodside	Burrup Peninsula Dampier
Intertidal and coastal habitats	Chevron (2019) Wheatstone LNG Project Mangrove Monitoring Program 2019 (ABU200800053)	Chevron	Onslow
	DBCA (long term-monitoring) Ningaloo Reef Program	DBCA	Ningaloo
	360 Environmental (2017) Learmonth Habitat Surveys. Prepared for Subsea 7	Subsea 7	Exmouth Gulf
	Woodside (ongoing unpublished data) Chemical and Ecological Monitoring of Mermaid Sound	Woodside	Burrup Peninsula Dampier
	AECOM (2022) Assessment of Benthic Communities and Habitats Ashburton Salt Project. Prepared for K + S Australian Pty Ltd. Doc No. 60692048_4.	K + S Australian Pty Ltd	Ashburton Onslow area
	Reef R and Lovelock C (2019). Characteristics of landward expansion of mangrove forests with sea level rise. Geophysical Research Abstracts 21(1), 1.	Monash University	Exmouth Gulf
	DBCA (2019) Ecological monitoring in the Shark Bay marine reserves, DBCA, Perth.	DBCA	Shark Bay
	Sutton AL and Shaw LL (2020) A snapshot of Marine Research in Shark Bay (Gathaagudu): Literature Review and Metadata Collection (1949-2020). West Australian Marine Science Institution, 180.	WAMSI	Shark Bay
	Sutton AL and Shaw JL (2021) Cumulative Pressures on the Distinctive Values of Exmouth Gulf. First draft report to the Department of Water and Environmental Regulation by the Western Australian Marine Science Institution, Perth, Western Australia. 272 pages.	WAMSI	Exmouth Gulf

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	DBCA (2023) DBCA Annual Report 2022–23, Department of Biodiversity, Conservation and Attractions, Perth. Primary productivity and energy transfer between marine ecosystems (SP 2020-002)	DBCA	Dampier Archipelago
	Astron Environmental Services (2021) Varanus and Bridled Islands Mangrove Monitoring – Annual Report 2020, unpublished report to Santos WA Energy Limited	Santos Limited	Varanus Island Bridled Island
	Ground-truthing satellite imagery that is utilised to monitor mangrove extent/density at Montebello Islands	DBCA	Montebello Islands
	Mardie Project - Off Set Plan	WAMSI	Pilbara Coast Gnoorea Yammadery Onslow Area Mainland Coast Giralia Bay
Benthic habitat	Chevron (2019) Jansz-Io Subsea Compression Benthic Video Footage Review (G7-NT-REPX0000239)	Chevron	Jannsz-Io Field
	Chevron (2022) WHS Platform Environmental Monitoring Program - DRAFT REPORT 60672341, Wheatstone Platform 5 Yearly Monitoring Technical Report-RevA	Chevron	Wheatstone Platform
	Chevron (2022) Gorgon Backfill Fields Benthic Survey (ABU230100068)	Chevron	Gorgon Backfill Fields
	Chevron (2023) Thevenard Island Retirement Project Heavy Lift Vessel Anchor Spread Benthic Habitat Mapping- Survey Report	Chevron	Thevenard Island
	DBCA (long term-monitoring) Ningaloo Reef Program	DBCA	Ningaloo
	Wahab MA, Radford B, Cappo M, Colquhoun J, Stowar M, Depczynski M, Miller K, Heyward A (2018) Biodiversity and spatial patterns of benthic habitat and associated demersal fish communities at two tropical submerged reef ecosystems. Coral Reefs, 37, 327-343, 10.1007/s00338-017-1655-9	AIMS	Glomar Shoal Rankin Bank
	O2 Marine (2019). Mardie project- Sediment Sampling and Analysis Plan Results. Prepared for Mardie Minerals Pty Ltd. Report Number R190033	O_2 Marine	Mardie
	O2 Marine (2019). Mardie Project - Subtidal Benthic Communities and Habitat Baseline Assessment. Prepared for Mardie Minerals Pty Ltd. Report Number R190045.	O_2 Marine	Mardie
	Jones R, Wakeford M, Currey-Randall L, Miller K, Tonin H (2021) Drill cuttings and drilling fluids (muds) transport, fate and effects near a coral reef mesophotic zone. Marine Pollution Bulletin 172, 112717	AIMS	Glomar Shoal Rankin Bank

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	O2 Marine (2021) Benthic Communities and Habitat Ashburton Infrastructure Project, Fremantle, WA. Prepared for Mineral Resources Limited	O_2 Marine	Ashburton Onslow area
	O2 Marine (2021). Onslow Seawater Desalination Plant. Benthic Communities and Habitat. Report No. R200065. Prepared for the Water Corporation.	O_2 Marine	Onslow area
	360 Environmental (2017) Learmonth Habitat Surveys. Prepared for Subsea 7	Subsea 7	Exmouth Gulf
	Advisian (2019) Dampier Archipelago Commonwealth Waters Marine Benthic Habitat Survey. Prepared for Woodside Energy Ltd	Woodside	Dampier Archipelago
	MScience (2019) Scarborough Trunkline Marine Environmental Studies- Pre-dredging Coral Habitat Assessment. Report to Advisian	Advisian	Dampier Archipelago Dampier Angle Island Burrup Peninsula Conzinc Island Gidley Island Intercourse Island Malus Island Middle Island
	Woodside (ongoing unpublished data) Chemical and Ecological Monitoring of Mermaid Sound	Woodside	Burrup Peninsula Dampier
	AECOM (2022) Assessment of Benthic Communities and Habitats Ashburton Salt Project. Prepared for K + S Australian Pty Ltd. Doc No. 60692048_4.	K + S Australian Pty Ltd	Ashburton Onslow area
	O2 Marine and Teal Solutions (2019) Port Hedland Spoilbank Marina Sediment Sampling and Analysis Plan Implementation Report. Prepared for the Department of Transport. Report Number R190209	O_2 Marine	Port Hedland
	BMT (2020) Technical Note. Learmonth Benthic Habitat Survey. Prepared for MBS Environmental	BMT	Exmouth Gulf
	Advisian (2019) Scarborough Offshore Benthic Marine Habitat Assessment. Prepared for Woodside	Woodside	Scarborough permit area WA-1-R
	Advisian (2019) Montebello Marine Park Benthic Habitat Survey ROV Analysis of the Scarborough Pipeline Route. Prepared for Woodside	Woodside	Montebello Australian Marine Park
	Moustaka M, Mohring M, Holmes T, Evans R , Thomson D, Nutt C, Stoddart J, Wilson S (2019) Cross-shelf Heterogeneity of Coral Assemblages in Northwest Australia, Diversity, vol. 11, 15pp.	DBCA Marine Science	Dampier Archipelago Regnard Island

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Eaglehawk Island Dockrell Reef Enderby Island Goodwyn Island Malus Island Conzinc Island Gidley Island Hammersley Shoal Legendre Island Delambre Island
	Thompson DP, Babcock RC, Evans RD, Feng M, Moustaka M, Orr M, Slawinski D, Wilson S, Hoey A (2021) Coral larval recruitment in north-western Australia predicted by regional and local conditions. Marine Environmental Research 168: 105318	CSIRO	Dampier Archipelago Regnard Island Eaglehawk Island Dockrell Reef Enderby Island Goodwyn Island Malus Island Conzinc Island Gidley Island Hammersley Shoal Legendre Island Delambre Island
	Adam A., Thomas L, Underwood J, Gilmour J, Richards Z (2022) Population connectivity and genetic offset in the spawning coral *Acropora digitifera* in Western Australia. Molecular Ecology.	Curtin University	Ashmore Reef Lalang-garram Marine Park Reefs Beagle Reef Adele Island Clerke Reef Mermaid Reef Imperieuse Reef Ningaloo Station Gnaraloo Quobba

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Doropoulos C, Gomez-Lemos LA, Salee K, McLaughlin MJ, Tebben J, Van Koningsveld M, Feng M, Babock R (2021). Limitations to coral recovery along an environmental stress gradient. Ecological Applications. 2022; 32:e2558.	CSIRO	Exmouth Gulf Exmouth Ningaloo Coral Bay
	Edgeloe JM, Severn-Ellis AA, Bayer PE, Mehravi S, Breed MF, Krauss SL, Batley J, Kendrick GA, Sinclair EA. 2022 Extensive polyploid clonality was a successful strategy for seagrass to expand into a newly submerged environment. Proc. R. Soc. B20220538.https://doi.org/10.1098/rspb.2022.0538	UWA	Shark Bay
	McLean D and Birt M. (2021) Enhanced ROV survey of tropical fish and benthic communities associated with shallow oil and gas platforms. Research Square	AIMS	Varanus Island
	Sutton AL and Shaw LL (2020) A snapshot of Marine Research in Shark Bay (Gathaagudu): Literature Review and Metadata Collection (1949-2020). West Australian Marine Science Institution, 180.	WAMSI	Shark Bay
	Sutton AL and Shaw JL (2021) Cumulative Pressures on the Distinctive Values of Exmouth Gulf. First draft report to the Department of Water and Environmental Regulation by the Western Australian Marine Science Institution, Perth, Western Australia. 272 pages.	WAMSI	Exmouth Gulf
	DBCA (2023), Biodiversity and Conservation Science Annual Report 2022–23, DBCA, Perth. Primary productivity and energy transfer between marine ecosystems (SP 2020-002)	DBCA	Dampier Archipelago
	DBCA (2023), Biodiversity and Conservation Science Annual Report 2022–23, DBCA, Perth. Understanding the key ecosystem services provided by the seagrass meadows of Western Australia (SP 2018-136)	DBCA	Shark Bay
	National Reef Monitoring Network	The IMOS National Reef Monitoring Network sub-Facility	Houtman Abrolhos Islands Ningaloo Coast World Heritage Area Exmouth Gulf Dampier Archipelago Island Group Barrow Island Montebello Islands Group Ashmore Reef Cartier Island Darwin Harbour Arafura Arnhem

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Marmion Rottnest Island Geographe Bay
	Ningaloo Outlook	CSIRO	Ningaloo World Heritage Area
	Gilmour JP, Cook KL, Ryan NM, Puotinen ML, Green, RH, Shedrawi G, Hobbs J-P A, Thompson, DP, Badcock, R, Buckee J, Foster T, Richards ZT, Wilson SK, Barnes PB, Coutts TB, Radford BT, Piggott CH, Depczynski M, Evans SN, Schoepf V, Evans RD, Halford AR, Nutt CD, Bancroft KP, Heyward AJ, Oades D (2019) The state of Western Australia's coral reefs. Coral Reefs https://doi.org/10.1007/s00338-019-01795-8	AIMS	Western Australia Cocos Keeling Islands Ashmore Reef Scott Reef Rowley Shoals Montebello Islands Group Barrow Island Ningaloo Reef Shark Bay
	Evans RD, Wilson SK, Fisher R, Ryan NM, Babcock R, Blakeway D, Bond T, Dorji P, Dufois F, Fearns P, Lowe RJ, Stoddart J, Thomson DP (2020) Early recovery dynamics of turbid coral reefs after recurring bleeching events. Journal of Environmental Management 268 110666	DBCA	West Pilbara
	Helmholz P, Bassett T, Boyle L, Browne N, Parnum I, Moustaka M, Evans R (2024) Evaluating Linear Coral Growth Estimation Using Photogrammetry and Alternative Point Cloud Comparison Method. The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XLVIII-2-2024 ISPRS TC II Mid-term Symposium “The Role of Photogrammetry for a Sustainable World”, 11–14 June 2024, Las Vegas, Nevada, USA	Curtin University	Enderby Island, Dampier Archipelago
	Moustaka M, Evans RD, Kendrick GA, Hyndes GA, Cuttler MVW, Bassett TJ, O’Leary MJ, Wilson SK (2024) Local habitat composition and complexity outweigh seascape effects on fish distribution across a tropical seascape. Landsc Ecol 39:28 https://doi.org/10.1007/s10980-024-01814-2	DBCA	Dampier Archipelago
	Travaglione N, Evans R, Moustaka M, Cuttler M, Thompson DP, Tweedy J, Wilson (2023) Scleractininan corals rely on heterotrophy in highly turbid environments. Coral Reefs https://doi.org/10.1007/s00338-023-02407-2	AIMS	Dampier Archipelago
Marine fish and elasmobranchs	Chevron (2019) Jansz-Io Subsea Compression Benthic Video Footage Review (G7-NT-REPX0000239)	Chevron	Jansz-Io field
	Chevron (2021) Wheatstone Sawfish Progress Report	Chevron	Onslow area

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Chevron (2022) Gorgon Backfill Fields Benthic Survey 2022 (ABU230100068)	Chevron	Gorgon Backfill Fields
	DBCA (long term-monitoring) Ningaloo Reef Program	DBCA	Ningaloo
	Wahab MAA, Radford B, Cappo M, Colquhoun J, Stowar M, Depczynski M, Miller K, Heyward A (2018) Biodiversity and spatial patterns of benthic habitat and associated demersal fish communities at two tropical submerged reef ecosystems Coral Reefs, 37, 327-343, 10.1007/s00338-017-1655-9	AIMS	Glomar Shoal Rankin Bank
	Jones R, Wakeford M, Currey-Randall L, Miller K, Tonin H (2021) Drill cuttings and drilling fluids (muds) transport, fate and effects near a coral reef mesophotic zone. Marine Pollution Bulletin 172, 112717	AIMS	Glomar Shoal Rankin Bank
	Morgan D, Lear K, Norman B (2020) Sawfish surveys Urala Creek, Exmouth Gulf, February 2019. Report to AECOM. Centre for Sustainable Aquatic Ecosystems, Harry Butler Institute, Murdoch University, Perth, Western Australia	Murdoch University	Ashburton Exmouth Gulf
	Schramm KD, Marnane MJ, Elsdon TS, Jones CM, Saunders BJ, Newman SJ, Harvey ES (2021) Fish associations with shallow water subsea pipelines compared to surrounding reef and soft sediment habitats. Sci Rep 11, 6238 . https://doi.org/10.1038/s41598-021-85396-y	Curtin University	Thevenard Island
	Galaiduk R, Radford B, Case M, Bond T, Taylor M, Cooper T, Smith L and McLean D (2022) Regional patterns in demersal fish assemblages among subsea pipelines and natural habitats across north-west Australia. Front. Mar. Sci. 9:979987. doi: 10.3389/fmars.2022.979987	AIMS	Rankin Bank Glomar Shoal Thevenard Island
	Currey-Randall LM, Galaiduk R, Stowar M, Vaughan BI, Miller KJ (2021) Mesophotic fish communities of the ancient coastline in Western Australia. PLoS ONE 16(4): e0250427. https://doi. org/10.1371/journal.pone.0250427	AIMS	Locations associated with the ancient coastline KEF at depths greater than 125 m
	McLean D and Birt M. (2021) Enhanced ROV survey of tropical fish and benthic communities associated with shallow oil and gas platforms. Research Square	AIMS	Varanus Island
	McLean DL, Vaughan BI, Malseed BE, Taylor MD (2020) Fish-habitat associations on a subsea pipeline within an Australian Marine Park, Marine Environmental Research 123, 104813	AIMS	Montebello Australian Marine Park
	Sutton AL and Shaw LL (2020) A snapshot of Marine Research in Shark Bay (Gathaagudu): Literature Review and Metadata Collection (1949-2020). West Australian Marine Science Institution, 180.	WAMSI	Shark Bay
	Sutton AL and Shaw JL (2021) Cumulative Pressures on the Distinctive Values of Exmouth Gulf. First draft report to the Department of Water and	WAMSI	Exmouth Gulf

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Environmental Regulation by the Western Australian Marine Science Institution, Perth, Western Australia. 272 pages.		
	DBCA (2023), Biodiversity and Conservation Science Annual Report 2022–23, Department of Biodiversity, Conservation and Attractions, Perth. Benefits of marine parks for marine fishes in a changing climate (SP 2021-040)	DBCA	WA State Marine Parks
	DBCA (2023), Biodiversity and Conservation Science Annual Report 2022–23, Department of Biodiversity, Conservation and Attractions, Perth. Do marine reserves adequately represent high diversity cryptobenthic fish assemblages in a changing climate? (SP 2019-031)	DBCA	Ningaloo
	National Reef Monitoring Network	The IMOS National Reef Monitoring Network sub-Facility	Houtman Abrolhos Islands Ningaloo Coast World Heritage Area Exmouth Gulf Dampier Archipelago Island Group Barrow Island Montebello Islands Group Ashmore Reef Cartier Island Darwin Harbour Arafura Arnhem Marmion Rottnest Island Geographe Bay
	Ningaloo Outlook	CSIRO	Ningaloo Coast World Heritage Area
	Lear KO, Ebner BC, Fazeldean T, Bateman RL, Morgan DL (2024) Effects of coastal development on sawfish movements and the need for marine animal crossing solutions. Conservation Biology, e14263. https://doi.org/10.1111/cobi.14263	Murdoch University	Onslow Area
	Heupel M, Simpfendorfer C, Chin A, Appleyard S, Barton D, Green M, Johnson G, McAuley R and White W (2020) Examination of connectivity of hammerhead sharks in northern Australia. Report to the National Environmental Science Program, Marine Biodiversity Hub. Australian Institute of Marine Science.	AIMS	Emouth Gulf Broome
	Moustaka M, Evans RD, Kendrick GA, Hyndes GA, Cuttler MVW, Bassett TJ, O'Leary MJ, Wilson SK (2024) Local habitat composition and complexity	DBCA	Dampier Archipelago

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	outweigh seascape effects on fish distribution across a tropical seascape. Landsc Ecol 39:28 https://doi.org/10.1007/s10980-024-01814-2		
	Tebbett SB, Bellwood DR, Bassett T, Cuttler MVW, Moustaka M, Wilson SK, Yan HF, Evans RD (2023) The limited role of herbivorous fishes and turf-based trophic pathways in the functioning of turbid coral reefs. Rev Fish Biol Fisheries https://doi.org/10.1007/s11160-023-09823-1	Curtin University	Dampier Archipelago
Fisheries	State of the Fisheries Report (Western Australia)	DPIRD	WA's major commercial and recreational fisheries
	DPIRD (2020). Western Australian Marine Stewardship Council Report Series No. 16: Ecological Risk Assessment of the Shark Bay Invertebrate Fisheries. DPIRD, Western Australia.	DPIRD	Shark Bay
	Bartes S and Braccini JM (2021) Potential expansion in the spatial distribution of subtropical and temperate west Australian sharks. Journal of Fish Biology. doi:10.1111/jfb.14822	DPIRD	Fisheries included: Bigeye sixgill (*Hexanchus nakamurai*) Tiger shark (*Galeocerdo cuvier*) Spinner shark (*Carcarhinus brevipinna*) Scalloped hammerhead (*Sphyrna lewini*) Broadnose sevengill sharks (*Notorhyncus cepedianus*) Southern sawsharks (*Pristiophorus nudipinnis*)
	Langlois TJ, Wakefield CB, Harvey ES, Boddington DK and Newman SJ (2021). Does the benthic biota or fish assemblage within a large targeted fisheries closure differ to surrounding areas after 12 years of protection in tropical northwestern Australia? Marine Environmental Research 170: 105403.	DPIRD	Fishery: Pilbara demersal scalefish fisheries
	Yeoh D, Johnston D and Harris D (2021) Squid and cuttlefish resources of Western Australia. Fisheries Research Report No. 314 Department of Primary Industries and Regional Development, Western Australia. 101pp	DPIRD	Squid and cuttlefish
	DPIRD (2020) Western Australian Marine Stewardship Council Report Series No. 17: Ecological Risk Assessment of the Exmouth Gulf Prawn Managed Fishery. DPIRD, Western Australia.	DPIRD	Exmouth Gulf
	Ryan KL, Lai EKM, Smallwood CB (2022) Boat-based recreational fishing in Western Australia 2020/21. Fisheries Research Report No. 327 Department of Primary Industries and Regional Development, Western Australia. 221pp.	DPIRD	

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Sutton AL and Shaw LL (2020) A snapshot of Marine Research in Shark Bay (Gathaagudu): Literature Review and Metadata Collection (1949-2020). West Australian Marine Science Institution, 180.	WAMSI	Shark Bay
Reptiles	Chevron (2022) Gorgon Gas Development - Marine Turtle Monitoring Program 2021/22: Barrow Island and Mundabullangana ABU220800133	Chevron	Barrow Island Mundabullangana
	Wilson P, Thums M, Pattiaratchi C, Whiting S, Pendoley K, Ferreira L, Meekan M (2019) High predation of marine turtle hatchlings near a coastal jetty. Biological Conservation, 236	UWA/DBCA	Thevenard Island
	Rob D, Barnes P, Whiting S, Fossette S, Tucker T and Mongan T (2019) Turtle activity and nesting on the Muiron Islands and Ningaloo Coast: Final Report 2018, Ningaloo Turtle Program. Report prepared for Woodside Energy Limited. Department of Biodiversity, Conservation and Attractions, Exmouth, pp.51.	DBCA	Cape Range National Park North West Cape Muiron Islands North Murion Island South Murion Island Sunday Island Bungelup
	Tucker T, Whiting S, Fossette S, Rob D, Barnes P (2020). Inter-nesting and migrations by marine turtles of the Muiron Islands and Ningaloo Coast. Final Report. Prepared for Woodside Energy Limited. Department of Biodiversity, Conservation and Attractions, Perth. pp. 1-93	DBCA	Muiron Islands North Murion Island South Murion Island North West Cape Cape Range National Park Bungelup
	Ferreira LC, Thums M, Fossette S, Wilson P, Shimada T, Tucker A, Pendoley K, Waayers D. Guinea ML, Loewenthal G, King J, Speirs M, Rob D, Whiting SD (2020) Multiple satellite tracking datasets inform green turtle conservation at a regional scale. Diversity and Distribution 27: 249-266	AIMS	Rosemary Island Legendre Island Middle Passage Island Barrow Island Muiron Islands Ningaloo Coast World Heritage Area Montebello Islands Group Lacepede Islands Maret Island Scott Reef
	Fossette S, Loewenthal G, Peel LR, Vitenbergs A, Hamel MA, Douglas C, Tucker AD, Mayer F, Whiting SD (2021) Using Aerial Photogrammetry to	DBCA	Y Island Locker Island

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Assess Stock-Wide Marine Turtle Nesting Distribution, Abundance and Cumulative Exposure to Industrial Activity. Remote Sensing, 13, 1116.		Onslow Area Mainland Coast Ashburton Island Thevenard Island Barrow Island Long Island Dampier Mainland Coast Rosemary Island West Mid Intercourse Island East Lewis Island Legendre Island Hauy Island Delambre Island Karratha Downes Island Bedout Island Port Hedland Mainland Coast Mundabullangana Cape Lambert Exmouth Gulf
	Pendoley Environmental (2018). Marine turtle survey of Mardie Salt Project Area - December 2017. January 2018. Prepared for Phoenix Environmental	Pendoley Environmental	Mardie
	Pendoley Environmental (2019). Mardie Salt Project: Marine turtle monitoring program 2018/2019. April 2019. Prepared for BCI Minerals Ltd.	Pendoley Environmental	Mardie Angle Island Long Island Middle Island Round Island Sholl Island
	Ningaloo Turtle Program	DBCA	North West Cape Cape Range National Park Bungelup
	Rosemary Island Turtle Monitoring Program	DBCA	Rosemary Island
	West Pilbara Turtle Program	DBCA	Karratha Cleaverville

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Wickham
	North West Shelf Flatback Turtle Monitoring Program	DBCA	Thevenard Island Delambre Island Karratha Port Hedland Mainland Coast Eighty Mile Beach Echo Beach Cable Beach Cape Domett
	Care for Headland Turtle Program	Care for Hedland	Port Hedland area
	Dirk Hartog Island Loggerhead Monitoring	DBCA	Dirk Hartog Island
	AECOM (2022) Marine Fauna Impact Assessment Ashburton Salt Project. Doc No. 60597242_3	AECOM	Ashburton Locker Island
	Keesing, J.K. (Ed.) (2019). Benthic habitats and biodiversity of the Dampier and Montebello Australian Marine Parks. Report for the Director of National Parks. CSIRO, Australia	CSIRO	Dampier Marine Park Montebello Australian Marine Park
	Gammon M, Whiting S, Fossette S (2023) Vulnerability of sea turtle nesting sites to erosion and inundation: A decision support framework to maximize conservation. Ecosphere, 14(6), e4529. https://doi.org/10.1002/ecs2.4529	UWA/DBCA	Y Island Locker Island Onslow Area Mainland Coast Ashburton Island Thevenard Island Barrow Island Long Island Dampier Mainland Coast Rosemary Island West Mid Intercourse Island East Lewis Island Legendre Island Hauy Island Delambre Island Karratha Downes Island Bedout Island

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Port Hedland Mainland Coast Mundabullangana Cape Lambert
	FitzSimmons N N, Pittard SD, McIntyre N, Jensen MP, Guinea M, Hamann M, Kennett R, et al. (2020). Phylogeography, Genetic Stocks, and Conservation Implications for an Australian Endemic Marine Turtle. Aquatic Conservation 30 (3): 440–60. https://doi.org/10.1002/aqc.3270.	Griffith University/DBCA	Barrow Island Delambre Island Mundabullangana Port Hedland Mainland Coast Eighty Mile Beach Echo Beach Cape Domett
	Thums M, Udyawer V, Galaiduk R, Ferreira L, Streten C, Radford B (2021) Using Marine Turtles to Identify Habitat and Assess Connectivity of the North and North-West Marine Park Networks and Sea Country: Exploration Study of Data and Partnerships. Report prepared for Parks Australia. Australian Institute of Marine Science, Perth. 48pp.	AIMS	Miaboolya Beach Quobba Shark Bay Ningaloo Coast World Heritage Area Muiron Islands Barrow Island Great Sandy Island Eighty Mile Beach Scott Reef Kimberley Roebuck Bay Joseph Bonaparte Gulf Lalang-garram Marine Park Reefs Oceanic Shoals Thevenard Island Echo Beach Montebello Islands Group Camden Sound Horizontal Falls
	Sutton AL and Shaw LL (2020) A snapshot of Marine Research in Shark Bay (Gathaagudu): Literature Review and Metadata Collection (1949-2020). West Australian Marine Science Institution, 180.	WAMSI	Shark Bay
	Sutton AL and Shaw JL (2021) Cumulative Pressures on the Distinctive Values of Exmouth Gulf. First draft report to the Department of Water and	WAMSI	Exmouth Gulf

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Environmental Regulation by the Western Australian Marine Science Institution, Perth, Western Australia. 272 pages.		
	Fossette S, Ferreira L C, Whiting SD, King J, Pendoley K, Shimada T, Speirs M, Tucker A D, Wilson P, Thums M (2021) Movements and distribution of hawksbill turtles in the Eastern Indian Ocean. Global Ecology and Conservation, 29, e01713. https://doi.org/10.1016/j.gecco.2021.e01713	DBCA	Beacon Island Delambre Island Rosemary Island Varanus Island Montebello Islands Group
	Pillans RD, Whiting S, Tucker T, Vanderklift MA (2022) Fine-scale movement and habitat use of juvenile, subadult, and adult green turtles (*Chelonia mydas*) in a foraging ground at Ningaloo Reef, Australia. Aquatic Conservation: Marine and Freshwater Ecosystems 32 1323-1340	CSIRO	Ningaloo
	Ferreira LC, Thums M, Whiting S, Meekan M, Andrews-Goff V, Attard CRM, Bilgmann K, Davenport A, Double M, Falchi F, Guinea M, Hickey SM, Jenner C, Jenner M, Loewenthal G, McFarlane G, Möller LM, Norman B, Peel L, Pendoley K, Radford B, Reynolds S, Rossendell J, Tucker A, Waayers D, Whittock P, Wilson P and Fossette S (2023) Exposure of marine megafauna to cumulative anthropogenic threats in north-west Australia. Front. Ecol. Evol. 11:1229803. doi: 10.3389/fevo.2023.1229803	AIMS	Pilbara Coast Kimberley Northern Territory coastline
	Ningaloo Outlook	CSIRO	Ningaloo Coast World Heritage Area
	Lambourne RN (2019) Classifying the diving behaviour of flatback turtles (Natator depressus) from multi-sensor tags. Honours thesis, Murdoch University	Murdoch University	Thevenard Island
	Udyawer V, D'Anastasi B, McAuley R, Heupel M (2016) Exploring the status of Western Australia's sea snakes. National Environmental Science Programme	AIMS	Shark Bay Ningaloo Coast World Heritage Area Port Hedland Rowley Shoals Oceanic Shoals
	Santos Vanranus Islant Turtle Monitoring Program	Santos Limited	Varanus Island
	Bayliss P, Raudino H, Hutton M, Murray K, Waples K and Strydom S (2019) Modelling the spatial relationship between dugon (Dugong dugon) and their seagrass habitat in Shark Bay Marine Park before and after the marine heatwave of 2010/11. Department of Agriculture, Water and the Environment Final Report 2.	CSIRO DBCA	Shark Bay Ningaloo Coast World Heritage Area Exmouth Gulf
	Thums Michele, Rossendell Jason, Fisher Rebecca, Guinea Michael L. (2020) Nesting ecology of flatback sea turtles Natator depressus from	AIMS	Delambre Island

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Delambre Island, Western Australia. Marine and Freshwater Research 71, 443-451.		
	chneider L, Tucker AD, Vincent K, Fossette S, Young EJ and Whiting SD (2022) First Assessment of Mercury (Hg) Concentrations in Skin and Carapace of Flatback Turtles (Natator depressus) (Garman) From Western Australia. Front. Environ. Sci. 10:843855. doi: 10.3389/fenvs.2022.843855	DBCA	Thevenard Island Eighty Mile Beach
	Gammon M, Whiting S, Fossette S (2023) Vulnerability of sea turtle nesting sites to erosion and inundation: a decision support framework to maximize conservation. Ecosphere 14: e4529	UWA DBCA	Pilbara southern islands Pilbara northern islands Onslow area Thevenard Island Barrow Island Montebello Islands Dampier Archipelago Karratha Mundabullangana Cemetery Beach
Megafauna (whale shark, dugong and cetaceans)	Chevron (2019) Soundscape monitoring at JIC site (G1-NT-REPX0000361)	Chevron	Barrow Island
	Chevron (2023) Soundscape Monitoring at the JIC Site 2021-2023	Chevron	Barrow Island
	Raudino HC, Hunt TN, Waples KA (2018) Records of Australian humpback dolphins (*Sousa sahulensis*) from an offshore island group in Western Australia. Marine Biodiversity Records 11:14	DBCA	Montebello Islands
	Raudino HC, Douglas CR, Waples KA (2018) How many dolphins live near a coastal development? Regional Studies in Marine Science 19: 25-32	DBCA	Onslow Area Thevenard Island
	Sprogis K and Parra G (2022) Coastal dolphin and marine megafauna in Exmouth Gulf, Western Australia: informing conservation management actions in an area under increasing human pressure. Wildlife Research, 50(6): 435-450	UWA	Exmouth Gulf
	Wild S, Krutzen M, Rankin M, Hoppitt W, Gerber L, Allen S (2019) Long-term decline in survival and reproduction of dolphins following a marine heatwave. Current Biology 29, R225-R240	University of Leeds	Shark Bay
	Thums M, Ferreira LC, Jenner C, Jenner M, Harris D, Davenport A, Andrews-Goff V, Double M, Moller L, Attard CRM, Bilgmann K, Thomson PG, McCauley R (2022) Pygmy blue whale movement, distribution and important areas in the Eastern Indian Ocean. Global Ecology and Conservation 35 e02054	AIMS	Western Australia

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	ECOCEAN Whale Shark Photo-Identification Library	Ecocean	Ningaloo
	AIMS (2021) Individual haplotyping of whale sharks from seawater environmental DNA.	AIMS	Ningaloo
	Lester E, Meekan MG, Barnes P, Raudino H, Rob D, Waples K, Speed CW (2020) Multi-year patterns in scarring, survival and residency of whale sharks in Ningaloo Marine Park, Western Australia. Mar Ecol Prog Ser 634:115-125.	UWA	Ningaloo
	Irvine L and Salgado Kent C (2018) The distribution and relative abundance of marine mega-fauna, with a focus on humpback whales (*Megaptera novaeangliae*), in Exmouth Gulf, Western Australia.	Oceans Blueprint	Exmouth Gulf
	NESP MaC Project 3.10 - A partnership approach to filling key knowledge gaps on dugongs in northern Australia using novel technologies, 2023 -2026 (JCU, CDU, DBCA)	AIMS	Exmouth Gulf Ningaloo Shark Bay
	AIMS research on whale sharks	AIMS	Ningaloo
	Sprogis KR, Sutton AL, Jenner MN, McCauley RD, Jenner KCS (2022) Occurrence of cetaceans and seabirds along the Indian Ocean 110 E meridian from temperate to tropcial waters. Deep-Sea Research II 205. 105184	Centre for Whale Research/UWA	Indian Ocean 110 E meridian from temperate to tropcial waters
	Haughey R, Hunt TN, Hanf D, Passadore C, Baring R and Parra GJ (2021) Distribution and Habitat Preferences of Indo-Pacific Bottlenose Dolphins (*Tursiops aduncus*) Inhabiting Coastal Waters With Mixed Levels of Protection. Front. Mar. Sci. 8:617518. doi: 10.3389/fmars.2021.617518	Flinders University	North West Cape Exmouth Gulf Ningaloo
	Cleguer C, Kelly N, Tyne J, Wieser M, Peel D and Hodgson A (2021) A Novel Method for Using Small Unoccupied Aerial Vehicles to Survey Wildlife Species and Model Their Density Distribution. Front. Mar. Sci. 8:640338. doi: 10.3389/fmars.2021.640338	Murdoch University	Exmouth Gulf
	Sutton AL and Shaw LL (2020) A snapshot of Marine Research in Shark Bay (Gathaagudu): Literature Review and Metadata Collection (1949-2020). West Australian Marine Science Institution, 180.	WAMSI	Shark Bay
	Sutton AL and Shaw JL (2021) Cumulative Pressures on the Distinctive Values of Exmouth Gulf. First draft report to the Department of Water and Environmental Regulation by the Western Australian Marine Science Institution, Perth, Western Australia. 272 pages.	WAMSI	Exmouth Gulf
	Raudino HC, Bouchet PJ, Douglas C, Douglas R, Waples K (2023) Aerial abundance estimates for two sympatric dolphin species at a regional scale using distance sampling and density surface modelling Front. Ecol. Evol. 10:1086686. doi: 10.3389/fevo.2022.1086686	DBCA	Exmouth Gulf Onslow Area Ashburton

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Dampier Area Dampier Archipelago Karratha Porth Hedland Area Eighty Mile Beach Southern Pilbara Islands Northern Pilbara Islands Great Sandy Island
	Lester E, Canon T, Arujo G (2023) Whale sharks (*Rhincodon typus*) feed on baitfish with other predators at Ningaloo Reef. Pacific Conservation Biology 29 86-87	DBCA	Coral Bay Ningaloo
	Palmer C, Martien KK, Raudino H, Robertson KM, Withers A, Withers E, Risk R, Cooper D, D'Cruz E, Jungine E, Barrow D, Cuff N, Lane A, Keynes D, Waples K, Malpartida A and Banks S (2023) Evidence of resident coastal population(s) of false killer whales (*Pseudorca crassidens*) in northern Australian waters. Front. Mar. Sci. 9:1067660. doi: 10.3389/fmars.2022.1067660	Charles Darwin University	Exmouth Gulf Pilbara Coast Islands Southern Pilbara Islands and Coast Eighty Mile Beach Broome Lalang-garram Marine Park Reefs Darwin Harbour Tiwi Islands Groote Archipelago
	Ferreira LC, Thums M, Whiting S, Meekan M, Andrews-Goff V, Attard CRM, Bilgmann K, Davenport A, Double M, Falchi F, Guinea M, Hickey SM, Jenner C, Jenner M, Loewenthal G, McFarlane G, Möller LM, Norman B, Peel L, Pendoley K, Radford B, Reynolds S, Rossendell J, Tucker A, Waayers D, Whittock P, Wilson P and Fossette S (2023) Exposure of marine megafauna to cumulative anthropogenic threats in north-west Australia. Front. Ecol. Evol. 11:1229803. doi: 10.3389/fevo.2023.1229803	AIMS	Shark Bay Ningaloo Coast World Heritage Area Kimberley
	Ningaloo Outlook (Whale Sharks)	CSIRO	Ningaloo Coast World Heritage Area
	Mann J, Foroughirad V, McEntee MHF, Miketa ML, Evans TC, Karniski C, Krzyszczyk E, Patterson EM, Strohman JC and Wallen MM (2021) Elevated Calf Mortality and Long-Term Responses of Wild Bottlenose Dolphins to Extreme Climate	Georgetown University	Shark Bay
	Jarolimek CV, King J J, Apte SC., Hall J, Gautam A, Gillmore M, Doyle C (2023) A review of inorganic contaminants in Australian marine mammals, birds and turtles. Environmental Chemistry 20, 147-170. https://doi.org/10.1071/EN23057	CSIRO	Australia wide

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	Bayliss P, Raudino H, Hutton M, Murray K, Waples K and Strydom S (2019) Modelling the spatial relationship between dugong (Dugong dugon) and their seagrass habitat in Shark Bay Marine Park before and after the marine heatwave of 2010/11. Department of Agriculture, Water and the Environment Final Report 2.	CSIRO DBCA	Shark Bay Ningaloo Reef Exmouth Gulf
	Brown AM, Allen SJ, Kelly N, Hodgson A (2022) Using Unoccupied Aerial Vehicles to estimate availability and group size error for aerial surveys of coastal dolphins. Remote Sensing in Ecology and Conservation. doi: 10.1002/rse2.313	Murdoch University	Dampier Archipelago North West Cape
Seabirds and shorebirds	Chevron Env-Gor-Seabird Monitoring Report 2021/22 J01209 (ABU220500068)	Chevron	Ah Chong Island (Montebello group) Double Island North Double Island South Parakeelya Island Barrow Island Group
	Dunlop JN. and Greenwell C (2021) Seasonal movements and metapopulation structure of the Australian fairy tern in Western Australia. Pacific Conservation Biology, 27, 47-60	Conservation Council of Western Australia	Stewart Island Fortescue Island Mardie Island Regnard Island Scholl Island Shark Bay Exmouth Gulf Somerville Island Tent Island Hope Point Houtman Abrolhos Islands Ningaloo Coast
	Weller D, Kidd L, Lee C, Klose S, Jaensch R, Driessen J (2020) Directory of Important Habitat for Migratory Shorebirds in Australia. Prepared for Australian Government Department of Agriculture, Water and the Environment by BirdLife Australia, Melbourne	Birdlife Australia	Barrow Island Carnarvon Coral Bay Exmouth Gulf Houtman Abrolhos Islands Karratha Ningaloo Onslow Area Port Hedland

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
			Adele Island Lacepede Islands Dampier Peninsula
	Australia's National Shorebird Monitoring Program https://awsg.org.au/about-us/shorebirds-2020/	Birdlife Australia	Dampier Port Hedland Shark Bay Eighty Mile Beach Barrow Island Exmouth Gulf Ningaloo Reef Ningaloo Roebuck Bay
	Birdata: https://birdata.birdlife.org.au/	Birdlife Australia	Western Australia
	eBird: https://ebird.org/hotspots?hs=L5713406&yr=all&m=	eBird	Western Australia
	Astron (2020) Thevenard Island Retirement Project Terrestrial Ecological Monitoring Report June 2020. Prepared for Chevron	Chevron	Thevenard Island
	Biota (2022) Ashburton Salt Project Migratory Shorebird Assessment. Prepared for K + S Salt Australia	for K + S Salt Australia	Ashburton Exmouth Gulf
	Cannell B, Hamilton S, Driessen J (2019) Wedge- tailed shearwater foraging behaviour in the Exmouth region. Report for Woodside Energy Ltd. University of Western Australia and Birdlife Australia.	UWA	Muiron Islands
	Sutton AL and Shaw LL (2020) A snapshot of Marine Research in Shark Bay (Gathaagudu): Literature Review and Metadata Collection (1949-2020). West Australian Marine Science Institution, 180.	WAMSI	Shark Bay
	Sutton AL and Shaw JL (2021) Cumulative Pressures on the Distinctive Values of Exmouth Gulf. First draft report to the Department of Water and Environmental Regulation by the Western Australian Marine Science Institution, Perth, Western Australia. 272 pages.	WAMSI	Exmouth Gulf
	Woodside Case Study: Ningaloo Region Migratory Shorebirds of Exmouth Gulf (Birdlife)	Birdlife Australia Woodside	Exmouth Gulf
	Pendoley Environmental Pty Ltd (2022) Dampier Archipelago Seabird and Shorebird Rapid Assessment. Prepared for Woodside Energy Group Limited	Woodside	Dampier Archipelago

Receptor	Existing baseline monitoring	Source / Data Custodian	Spatial extent
	DBCA shorebird surveys of Montebello Islands and Bedout Island in 2017 and 2018 mentioned in: Australian National Report to the 19th JAMBA, 13th CAMBA and 6th ROKAMBA Consultative Meetings, Commonwealth of Australia 2018	DBCA	Bedout Island Montebello Islands
	Pendoley Environmental Pty Ltd (2021) Varanus and Airlie Islands Shearwater Monitoring Annual Report. Prepared for Santos Limited	Santos	Varanus Island Airlie Island
	Bancroft W and Bamford M (2018) ANSIA Stage 2 Fauna Assessment	MJ and AR Bramford Consulting Ecologists	Pilbara- Southern Pilbara Islands and Coast
	Phoenix Environmental Sciences (2023) Long-term migratory shorebird monitoring program for the Optimised Mardie Project. Prepared for Mardie Minerals Pty Ltd	Phoenix Consultants	Mardie
	Lavers JL, Humphreys-Williams E, Crameri NJ, Bond AL (2020) Trace ekement concentrations feathers from three seabird species breeding in the Timor Sea. Marine Pollution Bulletin 151. 110876	University of Tasmania	Bedout Island

APPENDIX D OSM SERVICES PROVIDER CALL OFF ORDER FORM

Oil Spill Response

Operational and Scientific Monitoring (OSM) Services Call-Out Order Form

Please do not hesitate in contacting the Duty Manager at the earliest opportunity in the event of an incident or potential incident. Please ensure you telephone the Duty Manager before e-mailing or faxing this completed form

Oil Spill Response Limited's safety policy requires us to work closely with the mobilising party to ensure all aspects of safety and security are addressed for our personnel.

To	Duty Manager
OSRL Base	Southampton, UK Loyang, Singapore Fort Lauderdale, USA
Telephone	+65 6266 1566
Emergency Fax	+65 6266 2312
Email	dutymanagers@oilspillresponse.com, osm@oilspillresponse.com

Details of Authorised Contact				
Mobilising Company				
Name of Person Authorising OSRL				
Position of Authorising Representative				
Direct Phone Number	Country Code	+	Number	
Email Address				

Operational Monitoring service to be activated (X)		**Scientific Monitoring service to be activated (X)**	
OM1 Hydrocarbon Properties and Weathering Behaviour at Sea		**SM1** Water Quality Impact Assessment	
OM2 Water Quality Assessment		**SM2** Sediment Quality Impact Assessment	
OM3 Sediment Quality Assessment		**SM3** Intertidal and Coastal Habitat Assessment	
OM4a Surface Chemical Dispersant Effectiveness and Fate Assessment		**SM4** Seabirds and Shorebirds	
OM4b Subsea Dispersant Injection Monitoring		**SM5** Marine Mega-fauna Assessment	
OM5 Marine Fauna Surveillance		**SM6** Benthic Habitat Assessment	
OM6 Shoreline Clean-up Assessment		**SM7** Marine Fish and Elasmobranch Assemblages Assessment	
		SM8 Fisheries Impact Assessment	
		SM9 Heritage Features Assessment	
		SM10 Social Impact Assessment	

Location of Port of Staging/ Departure – Port (X)		Additional Information
Ashburton		
Barrow Island		
Broome		
Cape Preston		
Dampier		
Darwin		
Derby		
Exmouth		
Onslow		
Port Hedland		
Port Walcott		
Varanus Island		
Wyndham		
Yampi Sound		

Location of Port of Staging/ Departure – Airport (X)		Additional Information
Barrow Island		
Broome		
Cape Preston		
Darwin		
Derby		
Karratha		
Learmonth		
Lombardina		
Onslow		
Pardoo		
Perth		
Port Hedland		
Roebourne		
Wallal Downs		

Request for OSM position to IMT/EMT (X)		IMT/EMT Address
OSM Implementation Lead		
OSM Field Operations Manager		
SM Coordinator		
OM Coordinator		

Invoice Address if available	
Purchase Order Number	

I, the above-named Authorising Representative for the Mobilising Company, approve activation of Oil Spill Response Limited and its resources for OSM Services under the terms of the SUPPLEMENTARY SERVICE AGREEMENT FOR OPERATIONAL AND SCIENTIFIC MONITORING (OSM) SERVICES Agreement in place between the above stated Company and Oil Spill Response PTY Limited.

Signature:		Date / Time (UTC+8):		

Please telephone the Duty Manager to confirm receipt the completed form after sending this completed form.