Greater Western Flank Phase 2 Geotechnical Investigation Environment Plan Summary

Developments Division
Rev 0
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TABLE OF CONTENTS

List of Tables

List of Figures

1. INTRODUCTION

Woodside Energy Ltd (Woodside), as Titleholder, under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (referred to as the Environment Regulations), proposes to undertake a geotechnical investigation using penetration testing and piston push sampling for the project known as Greater Western Flank Phase Two (GWF-2) Geotechnical Investigation, and hereafter, referred to as the Petroleum Activities Program.

This Environment Plan (EP) Summary has been prepared as part of the requirements under the Environment Regulations, as administered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA). This document summarises the GWF-2 Geotechnical Investigation Environment Plan, accepted by NOPSEMA under Regulation 10A of the Environment Regulations.

2. LOCATION OF THE ACTIVITY

The Petroleum Activities Program is located in retention lease WA-51-R in Commonwealth waters approximately 135 km north-west of Dampier (**Figure 2.1**). The submerged shoals of Rankin Bank lie within the northern half of WA-51-R, approximately 2 km north-west of the Operational Area, with other sensitive environment receptors including the Montebello Commonwealth Marine Reserve (Multiple Use Zone) approximately 16 km south of the Operational Area (described in **Section 4.2**). The closest landfall to the Petroleum Activities Program is the Lowendal Islands, approximately 57 km to the south at their closest point to the Operational Area.

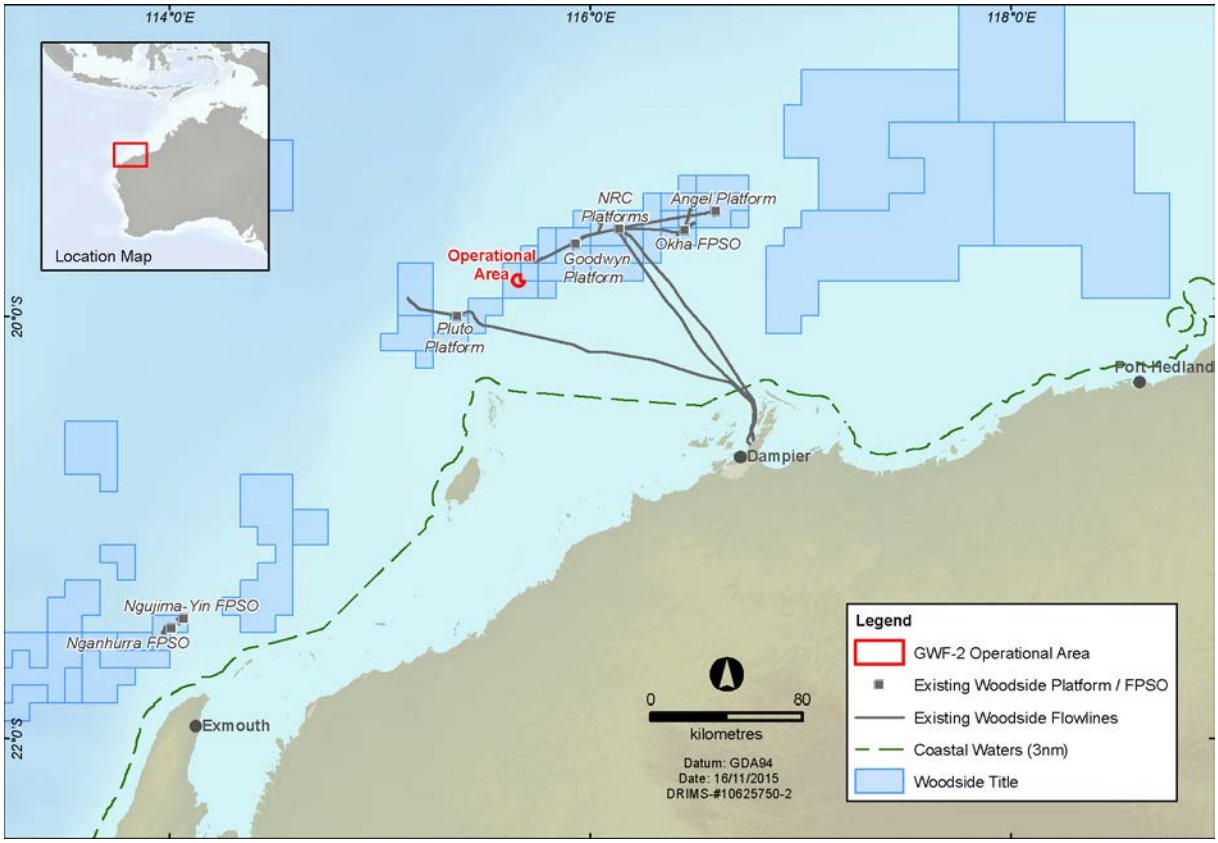

Figure 2.1: Location of the proposed Petroleum Activities Program

The area in which the Petroleum Activities Program will occur is defined by the Operational Area, which encompasses a radius of 3000 m from the proposed Lady Nora Pemberton (LNA) pipeline end terminations (PLET) location, within WA-51-R (excluding where the radius intercepts the adjacent Woodside permit WA-24-L). The 3000 m Operational Area allows for geotechnical investigation and vessel mobility around the area. Vessels supporting the petroleum activity operating outside the

Operational Area (e.g. transiting to and from port) are subject to all applicable maritime regulations and other requirements and are not managed by this EP.

The Operational Area ranges in water depth from 65 – 95 m. The approximate location details for the Petroleum Activities Program are provided in **Table 2.1.**

Table 2.1 Approximate location details for the Petroleum Activities Program

Activity	Water Depth (approx. m LAT)	Easting (GDA94 Zone 50)	Northing (GDA94 Zone 50)	Production Licence
Operational area centre location (LPA PLET location)				
GWF-2 geotechnical investigation	65 – 95 m	359,399.60 mE	7,806,346.87 mN	WA-51-R

Note: LAT = lowest astronomical tide; GDA94 = Geocentric Datum of Australia 1994

3. DESCRIPTION OF THE ACTIVITY

Woodside proposes to undertake a geotechnical survey (investigation) to confirm the seabed type in the proposed GWF-2 pipeline location, and confirm the depth of overlaying sediment is suitable for installation of skirted foundation structures.

The geotechnical survey will be performed using standard industry equipment and will consist of *in situ* testing and the recovery of sediment and rock samples at locations within the Operational Area to ground truth the geophysical data and provide geotechnical data for engineering design. The survey will involve *in situ* penetration testing to depths of between 1 and 3 m below the seabed and sediment sampling to depths between 1 and 3 m below the seabed.

Penetration testing involves pushing a penetrometer (probe) into the seabed at a constant rate and continuously measuring resistance, friction and water pressure. The cone penetration test (CPT) is the most frequently performed penetration test. In suitable seabed sediments, the cone penetrometer can be replaced with a Ball penetrometer or T-bar penetrometer to continuously measure resistance, friction and water pressure during both the push-in and pull-out phases of the test. On reaching the required final penetration depth, all equipment is withdrawn from the seabed. A small hole will remain in the seabed, which will eventually collapse and infill with the movement of surface sediments in ocean current. The hole will be proportional to the geometry of the penetrometer used, and may include:

- Cone penetrometers: Approximately 25 – 40 mm (diameter).
- T-bar penetrometers: Approximately 40 mm (nominal diameter) and 250 mm (length).
- Ball penetrometers: Approximately 56.4 mm to 133mm diameter.

Sediment sampling will be conducted using either piston or push sampling. Piston and push sampling involves penetrating the seabed with a steel sample tube to recover soil samples for geotechnical analysis. The leading edge of the sample tube is tapered to minimise sample and seabed disturbance. On reaching the required penetration depth, all equipment is withdrawn from the seabed. A small hole will remain in the seabed, which will eventually collapse and infill. Typically the hole left in the seabed will be proportional to the geometry of sample tube. Samples are typically in the order of 72 – 85 mm in diameter and 1 – 3 m in length. Piston samplers capable of obtaining samples 105 mm in diameter and 25 m in length are also common.

3.1 Timing of the activities

The proposed Petroleum Activities Program is expected to take less than one month (including mobilisation, demobilisation and contingency) to complete. The timing and duration of these activities is subject to change due to project schedule requirements, vessel availability, unforeseen circumstances and weather.

4. DESCRIPTION OF THE EXISTING ENVIRONMENT

There are no environmental values and sensitivities (protected areas or KEFs) located within the Operational Area.

4.1 Physical

The Operational Area is located in Commonwealth waters within the North West Shelf (NWS) Province, in water depths of approximately 65 - 95 m.

The NWS Province is part of the wider North West Marine Region (NWMR), as defined under the Integrated Marine and Coastal Regionalisation of Australia (IMCRA v4.0). The NWS Province encompasses the continental shelf between North West Cape and Cape Bougainville, and varies in width from approximately 50 km at Exmouth Gulf to greater than 250 km off Cape Leveque and includes water depths of 0 to 200 m.

The climate within the NWS Province is tropical monsoon, exhibiting a hot, wet summer season from October to April and a milder, dry winter season between May and September. Rainfall predominantly occurs during the wet season (summer), with highest rains observed during late summer, often associated with the passage of tropical low pressure systems and cyclones. Rainfall outside this period is typically low. There are often distinct transition periods between the summer and winter regimes, which are characterised by periods of relatively low winds.

The large-scale ocean circulation of the NWS Province is primarily influenced by the Indonesian Throughflow (ITF) and the Leeuwin Current. The ITF and the Leeuwin Current are strongest during late summer and winter with flow reversals occurring when associated with strong south-westerly winds. These flow reversal events may be associated with weak, shelf upwellings. Tides in the region are semi-diurnal and have a pronounced spring-neap cycle, with tidal currents flooding towards the south-east and ebbing towards the north-west.

The bathymetry of the NWS Province gradually slopes from the coastline to the shelf break at the edge of the NWMR and includes water depths of 0 m to 200 m. The NWS Province includes a number of seafloor features including submerged banks and shoals, and morphologically distinct valley features. The general bathymetry of the Operational Area indicates a gradual gradient with water depth increasing from the northern to southern extent of the Operational Area. Seabed topography is more complex in the northern extent of the Operational Area. The seabed in the area is characterised by low relief, dominated by sandy patches or sandy veneer over consolidated limestone substrate. Patches of exposed, low relief rocky reef occur within, although are not common. The seabed comprises mostly homogeneous soft sediments with little or no hard substrate.

Across the NWS region, the occurrence of an undulating cemented surface, expressed at the seabed as a series of ridges interspersed with sediment ponds infilling hollows and troughs, is related to an ancient sub-aerially exposed land surface and coastline (beach and dune deposits). Other coastal features including sand bars and river outlets are also present in this region, complicating the geology and geological sequence adjacent (seaward) to the area of ridges. A Key Ecological Feature (KEF) known as the Ancient Coastline is situated approximately 10 km north-east of the Operational Area.

The submerged shoals of Rankin Bank and Glomar Shoals are the nearest, complex bathymetry features to the Operational Area boundary (2 km and 115 km, respectively). Rankin Bank rises from the continental shelf in water depths of approximately 80 m, except for the north-eastern margin of the bank where it rises steeply from 120 m. The shoal comprises several highly complex and rugose peaks and plateaus, reaching approximately 20 – 40 m below the surface. Of these peaks, there are three major shallow sedimentary banks (approximately 18 m – 30 m) that are separated by deeper water (50 m).

4.2 Biological

The offshore environment of the NWS Province contains environmental assets (such as habitat and species) of high value or sensitivity including Commonwealth marine waters, as well as the wider regional context including coastal waters and habitats of the Montebello/Barrow/Lowendal Island Group. Furthermore, the region is noted for resident, temporary or migratory marine life including *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) species, including marine mammals, turtles and birds. Many sensitive receptor locations are protected as part of Commonwealth

and State managed areas including the 2012 proclaimed network of North West Marine Bioregion Commonwealth Marine Reserves.

The nearest sensitive habitat to the Operational Area is Rankin Bank, located approximately 2 km away (**Figure 4.1**). Values and sensitivities of the established marine protected areas and other sensitive areas in the wider regional setting are listed in **Table 4.1**.

Table 4.1 Summary of Established and Proposed Marine Protected Areas (MPAs) and other sensitive locations (including KEFs) in the region relating to the Operational Area.

	Closest Point from Operational Area over water (km)	IUCN Protected Area Category
Nearest habitat of significant conservation value		
Rankin Bank (50 m bathymetric contour)	2	N/A
Commonwealth Marine Reserves (CMR)		
Montebello CMR	16	VI – Multiple Use Zone
State Marine Parks, Nature Reserves and Management Areas		
Established		
No Marine Parks or Nature Reserves within Operational Area or wider region.		
Proposed		
No Marine Parks or Nature Reserves within Operational Area or wider region.		
Key Ecological Features (KEFs)		
Ancient Coastline at 125 m depth contour	10	N/A
Continental Slope Demersal Fish Communities	27	N/A

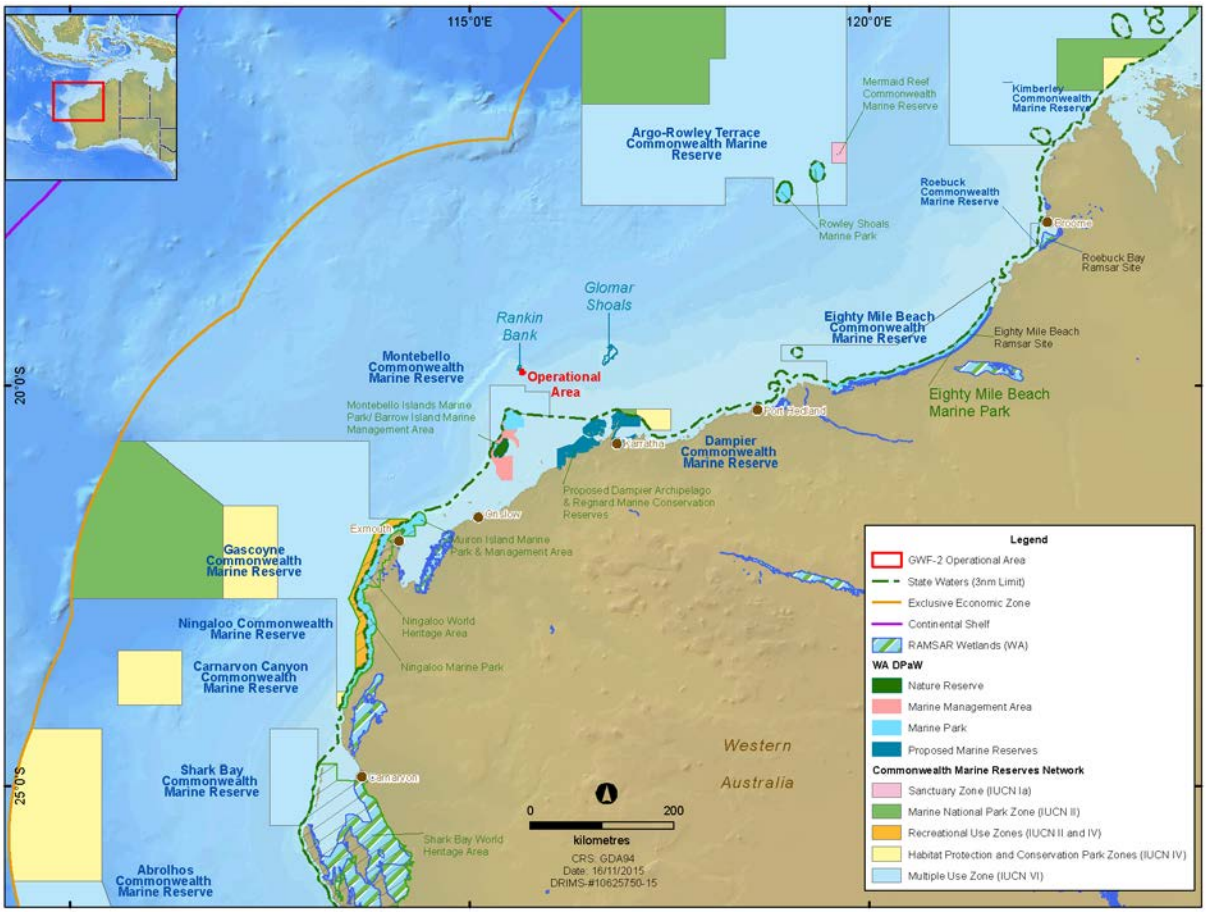

Figure 4.1 Established and proposed Commonwealth and State marine protected areas

Habitats

No Critical Habitats or Threatened Ecological Communities (TECs), as listed under the EPBC Act, are known to occur within the Operational Area.

Benthic Habitats in the Operational Area

Sea floor communities in deeper shelf waters receive insufficient light to sustain ecologically sensitive primary producers such as seagrasses, macroalgae or reef building corals. Given the water depths of the Operational Area (approximately 65 m – 95 m), these benthic primary producer groups will not occur in the area.

Benthic infauna within the Operational Area supports a highly diverse invertebrate faunal composition, dominated by burrowing polychaete worms and crustaceans. Similarly, infauna communities around the Goodwyn A facility located approximately 32 km from the Operational Area, has revealed infauna communities that are in low abundance, highly variable and diverse. Polychaetes and crustaceans were identified as dominating the infauna composition and being associated with soft, unconsolidated sediment.

Benthic communities associated with hard substrate within the Operational Area comprise mostly sparse and medium density filter feeder communities, including bryozoans, sponges, gorgonians and hydroids. The pavement underlying the consolidated substrate provides additional complexity to the seabed habitat associated with the occurrence of filter feeders within the Operational Area closest to Rankin Bank. These areas of hard substrate were interspersed with sand which had little or no filter feeders. Patches of exposed, low relief rocky reef with medium density filter feeders also occurred, although were not considered to be common.

Habitats in the Wider Region

The wider region, including Rankin Bank and Montebello/Barrow/Lowendal Islands Group, comprise important benthic primary producer habitats such as coral reefs, seagrass and macroalgal, and mangroves. Rankin Bank is the nearest coral reef habitat, located approximately 2 km from the Operational Area.

Within the NWS Province, filter feeders at Rankin Bank make up minor components of the benthic communities, with sponges being among the most abundant filter feeders. Benthic communities at Rankin Bank are similar to those recorded at other shoals in the NWS region and other regions of the NWMR.

A seabed survey conducted in the NWS Province along the export pipeline route from the Angel platform to the North Rankin A platform identified polychaetes and crustaceans as dominating the infauna communities. These results supported the findings of other NWS sampling programs which indicated a widespread and well represented infauna assemblage along the continental shelf and upper slopes. Additionally, it is expected that these infauna communities will be widely represented within the wider region.

Fish Populations

Fish species in the NWMR (including the Operational Area and NWS Province) comprise small and large pelagic fish as well as demersal species. Large pelagic fish in the NWMR include commercially targeted species such as mackerel, wahoo, tuna, swordfish and marlin. Demersal fish species in the region also include commercially important species such as grouper, cod and snapper. Fish species richness has been shown to correlate with habitat complexity, with more complex habitat supporting greater species richness and abundance than bare areas.

Within the NWS region Rankin Bank and Glomar Shoals, 2 km and 115 km from the Operational Area, are the closest areas identified as supporting high demersal fish richness and abundance despite their isolated locations. Additionally the Continental Slope Demersal Fish Communities KEF was identified to be 27 km from the Operational Area and is identified as one of the most diverse slope assemblages in Australian waters. Within the wider region, key demersal fish biodiversity areas are likely to occur in other complex habitats (e.g. coral reefs), and therefore likely include the Montebello/Barrow/Lowendal Islands.

Protected species

A total of 57 EPBC Act listed marine species were identified as potentially occurring within the Operational Area. Of those listed, 12 are considered threatened marine species and 18 migratory species under the EPBC Act.

Operational Area

Pygmy blue whales (*Balaenoptera musculus brevicauda*) migrate along the 500 m to 1000 m depth contour on the edge of the continental slope, transiting waters to the west of the Operational Area between mid-April to early August. This migration corridor has been defined by the Department of the Environment (DoE) as a biologically important area (BIA) for the species, and is located approximately 28 km west of the Operational Area at its closest point. No known aggregations of pygmy blue whales for feeding, breeding, resting or migration overlap the Operational Area; however, it is acknowledged that DoE have identified that pygmy blue whale 'distribution' overlaps with the Operational Area.

Transitory humpback whales (*Megaptera novaeangliae*) may traverse the Operational Area between June and October, during both their northern and southern migrations. The migration corridor for humpback whales has been defined as a BIA by the DoE, however a review of the Conservation Values Atlas confirmed that the BIA lies outside the Operational Area. The Operational Area is not located in or adjacent to any known critical habitat areas for this protected migratory whale species. Observed whales are most likely to be transiting between the known aggregation areas of Camden Sound (approximately 610 km north-east) and Exmouth Gulf (approximately 270 km south-west), rather than feeding, resting or breeding.

There is the potential for five species of marine turtle (listed as threatened and migratory) to occur within the Operational Area. These are the loggerhead turtle (*Caretta caretta*), green turtle (*Chelonia mydas*), leatherback turtle (*Dermochelys coriacea*), hawksbill turtle (*Eretmochelys imbricata*) and the flatback turtle (*Natator depressus*). There is no emergent habitat within the Operational Area, and therefore nesting aggregations of marine turtles would not be expected. It is possible that marine

turtles may forage in the waters of Rankin Bank, given its relatively shallow depth and suitable foraging habitat. A flatback turtle internesting BIA extends for 80 km from the nesting beaches on the northern end of the Montebello Islands during summer which overlaps with part of the Operational Area. The BIA is considered very conservative, as it is based on the maximum range of the internesting females. However, many turtles are likely to remain near to their nesting beaches, and as they leave beaches they typically spread out and consequently, density decreases rapidly with increasing distance from a nesting beach. Although turtle species have the potential to be found in the Operational Area, the distance offshore, depth range or offshore waters of the Operational Area and absence of potential nesting and foraging sites indicates that individual turtles are not expected to be encountered in the Operational Area in high densities.

Whale sharks (*Rhincodon typus*) are likely to traverse the Operational Area during their migrations to and from Ningaloo Reef and may potentially carry out opportunistic feeding. The DoE has defined a BIA for foraging whale sharks (post aggregation at Ningaloo) centred on the 200 m isobath from July to November. This area extends northward from the Ningaloo aggregation area and intersects the Operational Area. Whale shark presence within the Operational Area would likely be of a relatively short duration and not of significant numbers given the main aggregations are recorded in coastal waters, particularly the Ningaloo Reef edge.

The Operational Area may be occasionally visited by migratory and oceanic birds but does not contain any emergent land that could be utilised as roosting or nesting habitat and contains no known critical habitats (including feeding) for any species. The DoE has defined a BIA for the migratory wedge-tailed shearwater during its breeding period between August and April, which overlaps with the Operational Area; however this species was not identified as potentially occurring within the Operational Area based on the PMST search. The southern giant-petrel (*Macronectes giganteus*) was identified as potentially occurring within the Operational Area. Migratory shorebirds may be present in, or fly through the region between July and December and again between March and April as they complete migrations between Australia and offshore locations.

Wider Region

Five other cetaceans, including Antarctic minke whales (*Balaenoptera bonaerensis*), Bryde's whales (*Balaenoptera edeni*), sperm whales (*Physeter macrocephalus*), killer whales (*Orcinus orca*) and spotted bottlenose dolphins (*Tursiops aduncus*) may infrequently transit through the Operational Area; however, the Operational Area is unlikely to represent important habitat for these species.

Four marine turtle species (green, loggerhead, flatback and hawksbill turtles) have significant nesting rookeries on beaches along the mainland coast and islands in the NWS Province, including the Montebello/Barrow/Lowendal Islands Group.

The short-nosed seasnake (*Aipysurus apraefrontalis*), is found in the area and is endemic to WA waters. The nearby Rankin Bank provides habitat that may be suitable for seasnakes. It is considered that seasnake sightings will be infrequent and likely comprise a few individuals within the Operational Area. Although seasnakes have the potential to be found in the Operational Area, the distance offshore, depth range of offshore waters of the Operational Area and absence of potential foraging sites indicates that seasnakes are not expected to be encountered in the Operational Area in high densities.

Five other shark/ray species, including the grey nurse shark (*Carcharius taurus*), great white shark (*Carcharodon carcharias*), shortfin mako (*Isurus oxyrinchus*), longfin mako (*Isurus paucus*) and giant manta ray (*Manta birostris*) may be present within the Operational Area for short durations when individuals transit the area; however, the Operational Area is unlikely to represent important habitat for these species.

4.3 Socio-Economic and Cultural

There are no known sites of Indigenous or European cultural or heritage significance, or historic shipwrecks, within the vicinity of the Operational Area.

A number of Commonwealth and State fisheries are located within, adjacent to, or in the region of the Operational Area. None of these fisheries have significant catches within or adjacent to the Operational Area.

Commonwealth fisheries operating within or adjacent to the Operational Area include the North West Slope Trawl Fishery, Western Tuna and Billfish Fishery, Southern Bluefin Tuna Fishery and the Western Skipjack Tuna Fishery. The majority of fishing effort for these fisheries occurs outside of the Operational Area.

State fisheries that may operate within or adjacent to the Operational Area include the West Australian Mackerel Fishery, North Coast Demersal Fishery (Pilbara Trawl, Trap and Line Fisheries) and the Onslow Prawn Fishery.

There are no aquaculture activities within or adjacent to the Operational Area.

There are no designated traditional, or customary, fisheries recorded within or adjacent to the Operational Area as these are typically restricted to shallow coastal waters and/or areas with structure such as reef. However, it is recognised that Barrow Island, Montebello Islands, Dampier Peninsula, Exmouth and Ningaloo Reef and the adjacent foreshores have a long history of occupancy by Indigenous communities. Areas that are covered by registered native title claims are likely to practice indigenous fishing techniques at various sections of the Western Australia coast line.

No known tourism activities take place specifically within or adjacent to the Operational Area; however, the wider regional context includes recreational beaches, tourist spots and recreational fishing. The Montebello Islands are the closest location for tourism to the Operational Area with some charter boat operators taking visitors to these remote islands as well as occasionally conducting day trips to Rankin Bank.

There is no significant commercial shipping activity within the Operational Area or wider region. The closest marine fairway lies approximately 40 km north-east of the Operational Area.

The Operational Area is located within an area of established oil and gas operations with additional infrastructure in the broader NWMR. There are no existing oil and gas facilities within or adjacent to the Operational Area.

There are no designated defence practice areas in the offshore marine waters of the Operational Area or the wider region.

5. ENVIRONMENTAL IMPACTS AND RISKS

5.1 Risk Identification and Evaluation

Woodside undertook an environmental risk assessment to identify the potential environmental impacts and risks associated with the proposed Petroleum Activities Program, and the control measures to manage the identified environmental impacts and risks to as low as reasonably practicable (ALARP) and an acceptable level. This risk assessment and evaluation was undertaken using Woodside's Risk Management Framework.

The key steps of Woodside's Risk Management Framework are shown in **Figure 5-1**. A summary of each step and how it is applied to the proposed Petroleum Activities Program is provided below.

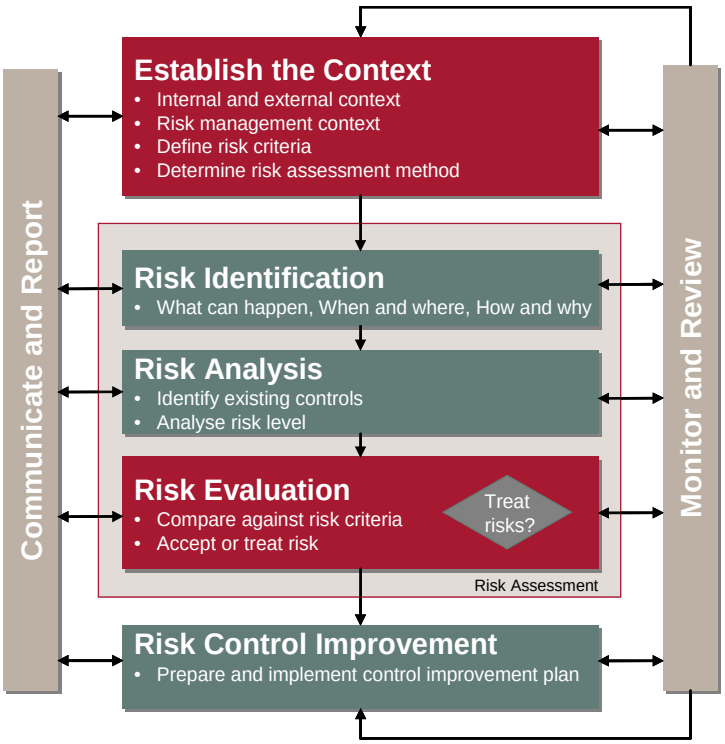

Figure 5.1: Key steps in Woodside's Risk Management Framework

1. Establish the Context

The objective of a risk assessment is to assess identified risks and apply appropriate control measures to eliminate, control or mitigate the risk to ALARP and to determine if the risk is acceptable.

Hazard identification workshops aligned with NOPSEMA's Hazard Identification Guidance Note (N-04300-GN0107) were undertaken by multidisciplinary teams made up of relevant personnel with sufficient breadth of knowledge, training and experience to reasonably assure that risks and associated impacts were identified and assessed.

2. Risk Identification

The risk assessment workshop for the proposed Petroleum Activities Program was used to identify risks with the potential to harm the environment. Risks were identified for both planned (routine and non-routine) and unplanned (accidents/incidents) activities.

3. Risk Analysis (Decision Support Framework)

Risk analysis further develops the understanding of a risk by defining the impacts and assessing the appropriate controls. Risk analysis for the proposed Program considered previous risk assessments for the facility, review of relevant studies, review of past performance, external stakeholder consultation feedback and review of the existing environment.

To support the risk assessment process, Woodside applied the United Kingdom Offshore Operators Association (1999) Industry Guidelines on a Framework for Risk Related Decision Support (HS006) during the workshops to determine the level of supporting evidence that may be required to draw sound conclusions regarding risk level and whether the risk is acceptable and ALARP.

This is to ensure:

- Activities do not pose an unacceptable environmental risk;
- Appropriate focus is placed on activities where the risk is anticipated to be tolerable and demonstrated to be ALARP; and

- Appropriate effort is applied to the management of risks based on the uncertainty of the risk, the complexity and risk rating.

Identification of control measures

Woodside applies a hierarchy of control measures when considering Good Practice and Professional Judgement. The hierarchy of control is applied in order of importance as follows; elimination, substitution, engineering control measures, administrative control measures and mitigation of consequences/impacts.

Risk rating process

The risk rating process is undertaken to assign a level of risk to each impact measured in terms of consequence and likelihood. The assigned risk level is the residual risk (i.e. risk with controls in place) and is therefore undertaken following the identification of the decision type and appropriate control measures.

The Consequence Level is selected by determining the worst case credible outcomes associated with the selected event assuming some controls (prevention and mitigation) have failed. Where more than one impact applies (e.g. environmental and legal/compliance), the consequence level for the highest severity impact is selected. The Likelihood Level is selected by determining the description that best fits the chance of the selected consequence actually occurring, assuming reasonable effectiveness of the prevention and mitigation controls.

The Environmental Hazard Identification (ENVID) for the Petroleum Activities Program identified 13 sources of environmental risk. These risks are divided into two broad categories: planned (routine and non-routine); and unplanned (accidents/incidents) activities. The 13 sources of environmental risk comprised seven planned and five unplanned sources of risk.

Generally, the sources of risk from planned activities present a lower environmental consequence compared to the potential impact from unplanned accident or incident events. The EP contains a variety of mitigation and control measures which ensure potential impacts and risks will be reduced to ALARP and will be of an acceptable level. A summary of the key environmental risks and control measures have been presented in **Appendix A**.

4. Risk evaluation

Environmental risks, as opposed to safety risks, cover a wider range of issues, differing species, persistence, reversibility, resilience, cumulative effects and variability in severity. The degree of environmental risk and the corresponding threshold for whether a risk/impact has been reduced to ALARP and is acceptable has been adapted to include principles of ecological sustainability (given as an objective in the Environment Regulations and defined in the EPBC Act), the Precautionary Principle and the corresponding environmental risk threshold decision-making principles are used to determine acceptability.

Demonstration of ALARP

In accordance with Regulation 10A(b) of the Environment Regulations, Woodside demonstrates risks are reduced to ALARP where:

The residual risk is low:

- Good industry practice or comparable standards have been applied to control the risk, because any further effort towards risk reduction is not reasonably practicable without sacrifices grossly disproportionate to the benefit gained.

The residual risk is medium or high:

- Good industry practice is applied for the situation/risk
- Alternatives have been identified and the control measures selected reduce the risks and impacts to ALARP. This may require assessment of Woodside and industry benchmarking, review of local and international codes and standards, consultation with stakeholders etc.

Demonstration of acceptability

In accordance with Regulation 10A(c) of the Environmental Regulations, Woodside applies the following process to demonstrate acceptability:

- Low residual risks are 'Broadly Acceptable', if they meet legislative requirements, industry codes and standards, regulator expectations, Woodside Standards and industry guidelines.
- Medium and High residual risks are 'Acceptable' if ALARP can be demonstrated using good industry practice and risk based analysis, if legislative requirements are met and societal concerns are accounted for and the alternative control measures are grossly disproportionate to the benefit gained.

  In undertaking this process for medium and high residual risks, Woodside evaluates the following criteria:

  - Principles of Ecological Sustainable Development (ESD) as defined under the EPBC Act
  - Internal context - the proposed controls and residual risk level are consistent with Woodside policies, procedures and standards
  - External context – consideration of the environment consequence and stakeholder expectations
  - Other requirements – the proposed controls and residual risk level are consistent with national and international standards, laws and policies.
- Severe residual risks are 'Intolerable' and therefore unacceptable. These risks require further investigation and mitigation to reduce the risk to a lower and more acceptable level. If after further investigation the risk remains in the severe category, the risk requires appropriate business sign-off to accept the risk.

5.2 Planned (routine and non-routine) activities

The sources of environmental risk identified for the proposed Petroleum Activities Program relate to those activities which are planned and either undertaken on a routine or non-routine basis. These sources of risk include:

- Proximity of project vessels causing interference with or displacement to third party vessels (commercial shipping and fishing)
- Disturbance to seabed from survey activities
- Generation of noise from project vessels during normal operations
- Internal combustion engines on project vessels
- Routine discharge of sewage, grey water and putrescible wastes to the marine environment
- Routine discharge of deck and bilge water to marine environment
- Routine discharge of cooling water or brine to the marine environment.

5.3 Unplanned (Accidents/Incidents) Activities

During the risk assessment process a number of potential environmental impacts which may occur from unplanned activities were also identified. These sources of risk range from small scale chemical spills with a low environmental consequence to large scale hydrocarbon spill events with high environmental consequence. These sources of risk include:

- Loss of hydrocarbons to marine environment due to a vessel collision in a breach of fuel tank
- Minor deck spills including small hydraulic fluid releases
- Accidental loss of hazardous or non-hazardous wastes to the marine environment (excludes sewage, grey water, putrescible waste and bilge water)
- Accidental collision between project vessels and marine fauna
- Dropped objects overboard

- Introduction of invasive marine species (IMS).

6. ONGOING MONITORING OF ENVIRONMENTAL PERFORMANCE

The Petroleum Activities Program will be managed in compliance with GWF-2 Geotechnical Investigation Environment Plan (EP) accepted by NOPSEMA under the Environment Regulations, other relevant environmental legislation and Woodside's Management System (e.g. Woodside Environment Policy).

The objective of the EP is to identify, mitigate and manage potentially adverse environmental impacts associated with the Petroleum Activities Program, during both planned and unplanned operations, to ALARP and an acceptable level.

For each environmental aspect (risk), and associated environmental impacts (identified and assessed in the Environmental Risk Assessment of the EP) a specific environmental performance outcome, environmental performance standards and measurement criteria have been developed. The performance standards are control measures (available in **Appendix A**) that will be implemented to achieve the environmental performance outcomes. The specific measurement criteria provide the evidence base to demonstrate that the performance standards (control measures) and outcomes are achieved.

The implementation strategy detailed in the EP identifies the roles/responsibilities and training/competency requirements for all personnel (Woodside and its contractors) in relation to implementing controls, managing non-conformance, emergency response and meeting monitoring, auditing, and reporting requirements during the activity.

Woodside and its Contractors undertake a program of periodic monitoring during the proposed Petroleum Activities Program, starting at mobilisation of each activity and continuing through the duration of each activity until activity completion. This information is collected using appropriate tools and systems, based on the environmental performance outcomes, performance standards and measurement criteria in the EP. The tools and systems collect, as a minimum, the data (evidence) referred to in the measurement criteria. The collection of this data (and assessment against the measurement criteria) forms part of the permanent record of compliance maintained by Woodside and the basis for demonstrating that the environmental performance outcomes and standards are met, which is then summarised in a series of routine reporting documents.

Monitoring of environmental performance is undertaken as part of the following:

- Environmental Performance Report will be submitted to NOPSEMA within 3 months of the activity completion to assess and confirm compliance with the accepted environmental performance objectives, standards and measurement criteria outlined in the EP
- Activity based inspections undertaken by Woodside's environment function to review compliance against the EP, verify effectiveness of the EP implementation strategy and to review environmental performance
- Environmental performance is also monitored daily via daily progress reports during the proposed Program; and
- Senior management regularly monitors and reviews environmental performance via a monthly report which detail environmental performance and compliance with Woodside standards.

Woodside employees and Contractors are required to report all environmental incidents and non-conformance with environmental performance outcomes and standards in the EP. Incidents will be reported using an Incident and Hazard Report Form, which includes details of the event, immediate action taken to control the situation, and corrective actions to prevent reoccurrence. An internal computerised database is used for the recording and reporting of these incidents. Incident corrective actions are monitored to ensure they are closed out in a timely manner.

The EP is supported by an assessment of the environmental impacts and risks associated with potential hydrocarbon spill scenarios and hydrocarbon spill preparedness and response measures in relation to the risk assessment and the identified hydrocarbon spill scenarios. A summary of Woodside's response arrangements in the oil pollution emergency plan is provided in **Appendix B**.

6.1 Environment Plan Revisions

Revision of the EP will be undertaken in accordance with the requirements outlined in Regulations 17, Regulation 18 and Regulation 19 of the Environment Regulations. Woodside will submit a proposed revision of the Greater Western Flank Phase 2 Geotechnical Investigation Environment Plan to NOPSEMA including as a result of the following:

- When any significant modification or new stage of the activity that is not provided for in the EP is proposed
- Before, or as soon as practicable after, the occurrence of any significant new or significant increase in environmental risk or impact not provided for in the EP
- As requested by NOPSEMA.

7. CONSULTATION

Woodside conducted a stakeholder assessment and engaged with relevant stakeholders to inform decision-making and planning for the proposed GWF-2 Development in accordance with the requirements of Regulation 11A and 14(9) of the Environment Regulations.

Woodside believes that stakeholder consultation undertaken for the GWF-2 Phase 2 Tie-back Environment Plan provides sufficient and suitable information about stakeholder concerns and issues related to petroleum activities in this area such that it can be used to satisfy stakeholder consultation requirements for this environment plan. The reasons for this are:

- The operational area for the proposed GWF-2 Geotechnical Survey falls entirely within the GWF-2 Development operational area;
- The scale and duration of activities and potential environmental risks associated with the proposed GWF-2 Geotechnical Survey are significantly less than for the proposed GWF-2 Development;
- No significant concerns were raised by stakeholders during consultation undertaken for the proposed GWF-2 Development EP;
- No significant additional environmental considerations have been identified that were not already considered for the GWF-2 Development EP;
- Woodside will continue to accept feedback from all stakeholders and will notify relevant stakeholders ahead of the GWF-2 Geotechnical Survey commencing.

As such, the following stakeholder consultation section replicates that provided in the GWF-2 Phase 2 Tie-back EP.

7.1 Engagement Activities

For the purposes of the EP and consistent with Section 11A of the Environment Regulations, Woodside considers relevant stakeholders as those that undertake normal business or lifestyle activities in the vicinity of the Petroleum Activity Program (or their nominated representative) or have a State or Commonwealth regulatory role.

Woodside also made available advice about the Petroleum Activities Program to other stakeholders who have previously expressed an interest in being kept informed about Woodside's activities in the region.

Woodside provided information about the Petroleum Activities Program to the following stakeholders:

Stakeholder
Department of Industry
Department of Mines and Petroleum
Australian Maritime Safety Authority
Australian Fisheries Management Authority

Department of Fisheries (Western Australia)
Commonwealth fisheries - Southern Bluefin Tuna - Western Tuna and Billfish - Western Skipjack - North West Slope Trawl Fishery
Western Australian Fisheries - West Australian Mackerel Fishery - North Coast Demersal Fishery (Pilbara Trawl, Trap and Line Fisheries) - Onslow Prawn Fishery - Northern Demersal Fishery
Department of Transport (Western Australia)
Department of Defence – Defence Property Services Group
Australian Hydrographic Office
Australian Maritime Safety Authority (marine pollution)
Department of the Environment
Department of Parks and Wildlife
Australian Customs Service – Border Protection Command
Commonwealth Fisheries Association
Western Australian Fishing Industry Council
Pearl Producers Association
Recfishwest
World Wide Fund for Nature
Australian Conservation Foundation
Wilderness Society
International Fund for Animal Welfare
Australian Petroleum Production & Exploration Association
North West Shelf Project participants: - BHP Billiton Petroleum - BP - Shell - MIMI - Chevron.

Woodside received feedback on the proposed Petroleum Activities Program from a range of stakeholders, including government agencies and commercial fishing organisations. Issues of interest or concern included the location of the proposed activities across commercial fishing areas. A summary of feedback and Woodside‘s response is presented in **Appendix C.**

7.2 Ongoing consultation

A consultation fact sheet was sent electronically to all stakeholders identified through the stakeholder assessment process prior to lodgement of the EP with NOPSEMA for assessment and acceptance. This advice was supported by engagement with potentially affected stakeholders. Consultation activities for the proposed Petroleum Activities Program build upon Woodside’s extensive and ongoing stakeholder consultation for offshore petroleum activities in this area.

Woodside considered this feedback in its development of control measures specific to the proposed Petroleum Activities Program.

Feedback received through community engagement and consultation will be captured in Woodside’s stakeholder database and actioned where appropriate through the proposed Petroleum Activities Program Project Manager. Implementation of ongoing engagement and consultation activities for the proposed Petroleum Activities Program will be undertaken by Woodside Corporate Affairs consistent with Woodside’s External Stakeholder Engagement Operating Standard.

8. TITLEHOLDER NOMINATED LIAISON PERSON

For further information about this activity, please contact:

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APPENDIX A: ENVIRONMENTAL IMPACTS AND RISKS

	Source of Risk (Hazard)	Potential Environmental Impact	Residual Risk	Control Mitigation Measures
Planned (routine and non-routine) Activities				
1	Proximity of project vessels to third party vessels (commercial shipping and fishing) and shipping fairway	Temporary, localised interference with or displacement of other sea users (e.g. fishing and shipping)	Low	Vessels compliant with Marine Order 30 (Prevention of Collisions) 2009 (as determined through vessel contracting requirements outlined in Woodside Marine Operating Standard (Woodside Doc No. WM6070SV7193964): • adhere to steering and sailing rules including maintaining look-outs (e.g. visual, hearing, radar etc.), proceeding at safe speeds, assessing risk of collision and taking action to avoid collision (monitoring radar) • adhere to navigation light display requirements, including visibility, light position/shape appropriate to activity • adhere to navigation noise signals as required. Vessels compliant with Marine Order 21 (Safety of navigation and emergency procedures) 2012: • adherence to minimum safe manning levels • maintenance of navigation equipment in efficient working order (compass/radar) • navigational systems and equipment required are those specified in Regulation 19 of Chapter V of SOLAS • AIS installed as required by vessel class in accordance with Regulation 19 of Chapter V of SOLAS. Notify Australian Hydrographic Service (AHS) to generate Maritime Safety Information Notifications (MSIN) and Notice to Mariners (NTM) – navigation warning. AMSA RCC is notified of the Petroleum Activities Program. Send consultation Fact Sheet to State and Commonwealth fisheries.
2	Disturbance to seabed from activities including: • Geotechnical surveys such as penetration testing and piston push sampling.	Temporary and localised disturbance to sparse filter feeder communities associated with the	Low	Geotechnical survey activities are not to be undertaken outside of the Operational Area.

	Source of Risk (Hazard)	Potential Environmental Impact	Residual Risk	Control Mitigation Measures
		hard substrate during geotechnical operations		
3	Generation of noise from project vessels during normal operations	Temporary and minor behavioural disturbance (e.g. avoidance or attraction) to fauna, including protected species	Low	Woodside will comply with *EPBC Regulations 2000 – Part 8 Division 8.1* Interacting with cetaceans: Project vessels will not travel greater than 6 knots within 300 m of a whale (caution zone) and not approach closer than 100 m from a whale; and a vessel will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the exception of animals bow riding). The above requirements provided to the vessel masters. The above requirement will also be implemented for marine turtles and whale sharks. Interaction between survey vessels and cetaceans (whales and dolphins), within the Operational Area will be consistent with *EPBC Regulations 2000 – Part 8 Division 8.1 (Regulation 8.06) – Interacting with calves*, which requires • survey vessel will not approach closer than 300 m to a calf (whale or dolphin) (the caution zone) • If a calf appears in the caution zone, then: o the vessel must be immediately stopped; and o must either ▪ turn off the vessel's engines; or ▪ disengage the gears; or ▪ withdraw the vessel from the caution zone at a constant speed of less than 6 knots. Geotechnical survey activities are not to be undertaken outside of the Operational Area.
4	Internal combustion engines on projectvessels	Reduced local air quality from atmospheric emissions	Low	Compliance with Marine Order 97 (marine pollution prevention – air pollution) vessels have : • a valid IAPP Certificate,

	Source of Risk (Hazard)	Potential Environmental Impact	Residual Risk	Control Mitigation Measures
				• a SEEMP, where required by class • use of low sulphur fuel when available.
5	Routine discharge of sewage, grey water and putrescible wastes to the marine environment from project vessel	Localised and temporary eutrophication of the water column and localised and temporary adverse effect to marine biota in the water column only (e.g. plankton)	Low	Compliance with MARPOL73/78 Annex IV, Marine Order 96 (Pollution prevention – sewage), as required by vessel class: • a valid International Sewage Pollution Prevention (ISPP) Certificate • sewage treatment plant • sewage commuting and disinfecting system • sewage holding tank Compliance with MARPOL73/78 Annex IV, Marine Order 95 (pollution prevention – garbage), as required by vessel class: • Putrescible waste and food scraps are passed through a macerator so that it is capable of passing through a screen with no opening wider than 25 mm Vessel sewerage system shall be capable of servicing the full complement of crew on board the vessel and holding tanks shall be sized appropriately to contain all generated waste (black and grey water) for the necessary duration prior to planned and acceptable discharge operations. Bilge water contaminated with hydrocarbons must be contained and disposed of onshore, except if the oil content of the effluent without dilution does not exceed 15 ppm or an I International Maritime Organisation approved oil/water separator (as required by vessel class) is used to treat the bilge water.
6	Routine discharge of deck and bilge water to marine environment from project vessel	Localised and temporary effects to water quality and marine biota in the water column only (e.g. plankton)	Low	
7	Routine discharge of cooling water or brine to the marine environment from project vessel	Localised and temporary effects to water quality and water column marine biota	Low	
Unplanned (accidents or incidents) Activities				
8	Loss of hydrocarbons to marine environment due to a vessel collision (e.g. other marine users)	Minor and temporary disruption to protected species such as oiling of marine mammals, reptiles and seabirds.	Medium	Compliance with Marine Order 30 (Prevention of Collisions) 2009 and Compliance with Marine Order 21(Safety of navigation and emergency procedures) 2012 (as described in row 1).

	Source of Risk (Hazard)	Potential Environmental Impact	Residual Risk	Control Mitigation Measures
		Minor and/or temporary contamination of water which may lead to toxic effects on marine biota in the water column in offshore waters and sessile benthos in the shallow sub-tidal and intertidal zone of the coral reefs		Notify AHS to generate Maritime Safety Information Notifications (MSIN) and Notice to Mariners (NTM) – navigation warning . Send consultation fact sheet to State and Commonwealth fisheries. AMSA RCC is notified of planned activities. See Appendix B for controls for spill response activities.
9	Accidental discharge of other hydrocarbons / chemicals from vessel deck activities and equipment (e.g. cranes)	Localised and minor temporary effects to sediment and water quality and marine biota in the water column in offshore waters	Low	Compliance with Marine Order 91 (Marine pollution prevention – oil) 2006. Compliance with Woodside's Environmental Performance Standard Procedure; Storage (WEL Doc No. WM0000PG9905409): Chemicals will be stored safely and handled to prevent the release to the marine environment. Any hydrocarbon storage above deck must be designed and maintained to have at least one barrier (i.e. form of bunding) to contain and prevent deck spills entering the marine environment. This can include containment lips on deck (primary bunding) and/or secondary containment measures (bunding, containment pallet, transport packs, absorbent pad barriers) in place. Spill response bins/kits are maintained and located in close proximity to hydrocarbon storage areas and vessel deck equipment / bunkering areas for use to contain and recover deck spills. Selection and approval of chemicals is as per Woodside Environment Procedure Offshore Chemical Assessment (WEL Doc No: A1000PH9105410). Chemicals that are on the Cefas Offshore Chemical Notification Scheme (OCNS) Ranked List of Notified Chemicals and have OCNS Hazard Quotient Gold, Silver, E and D and have no OCNS substitution warning do not require further assessment and included onto the Chemical Selection List (WEL Doc No: DC0000PH9673510). All chemicals that are not on the CEFAS OCNS Ranked List of Notified Chemicals and all CEFAS OCNS listed chemicals which have a CEFAS OCNS

	Source of Risk (Hazard)	Potential Environmental Impact	Residual Risk	Control Mitigation Measures
				substitution warning, a OCNS product warning or are OCNS Hazard Quotient white, blue, orange, purple, A, B or C require further assessment and an ALARP Chemical Justification for use prior to inclusion on the Chemical Selection List (DC0000PH9673510). Equipment located on deck utilising hydrocarbons (e.g. cranes, winches or other hydraulic equipment) will be maintained to reduce risk of loss of hydrocarbon containment to the marine environment.
10	Accidental loss of solid hazardous or non-hazardous wastes to the marine environment	Pollution and contamination of the marine environment and secondary impacts to marine fauna (e.g. ingestion, entanglement)	Low	Comply with Marine Order 95 (as described in row 5) Compliance with Marine Order 94 (pollution prevention – packaged harmful substances), as required by vessel class: no disposal overboard. The Contractor Waste Management Plan is consistent with the *Woodside D&C Waste Management Plan Dampier, Broome and Darwin* (WEL Doc No. DC0000AH2745333). Equipment and materials dropped to the marine environment are recovered where safe and practicable to do so.
11	Transport of invasive marine species (IMS)	Introduction and establishment of IMS in Operational Area and Rankin Bank and change in community structure / displacement of native marine species	Medium	Adherence to the Woodside Energy *Limited Invasive Marine Species Management Plan* (WEL Doc No. A3000AH4345570). • Woodside's IMS risk assessment process will be applied to vessels and submersible equipment planning to enter and operate within nearshore waters around Australia. • Based on the outcomes of each IMS risk assessment, management measures commensurate with the risk will be implemented to minimise the likelihood of new IMS being introduced, or established IMS being spread within Australian waters. Implementation of the GWF-2 Invasive Marine Species Management Plan (WEL Doc. No. A1806AH10300140). The GWF-2 IMS Management Plan aims to mitigate IMS risks specifically to Rankin Bank, and includes the following

	Source of Risk (Hazard)	Potential Environmental Impact	Residual Risk	Control Mitigation Measures
				measures: • No anchoring or vessel residence of more than 12 consecutive hours is permitted over Rankin Bank (defined as waters shallower than the 50 m contour) • IMS Risk Assessment of vessels entering the 12 nautical mile IMS Management Area around Rankin Bank.
12	Accidental collision between project vessels and threatened and migratory marine fauna.	Injury or fatality of an individual or a number of fauna (including listed threatened or migratory species)	Low	Woodside will comply with *EPBC Regulations 2000 – Part 8 Division 8.1* (as described in row 3, including for turtles and whale sharks where applicable). All vessel strike incidents with cetaceans are reported in the National Ship Strike Database as outlined in the Conservation Management Plan for the Blue Whale—A Recovery Plan under the EPBC Act 1999, Commonwealth of Australia, 2015
13	Dropped objects overboard	Localised short-term disturbance of benthic habitat localised to the dropped object. Pollution and contamination of the marine environment and secondary impacts to marine fauna (e.g. ingestion, entanglement, toxicity)	Low	Safe Work Procedures developed and followed on project vessels to prevent objects being dropped. Equipment and materials dropped to the marine environment are recovered where safe and practicable to do so. Personnel will be trained with regard to the prevention of dropped objects during relevant meetings and the appropriate inductions.

APPENDIX B: SUMMARY OF RESPONSE ARRANGEMENTS FROM OIL POLLUTION EMERGENCY PLAN

Woodside's Oil Spill Planning Arrangements

The key response planning scenarios associated with the Petroleum Activities Program are vessel based spills. Therefore, upon notification from the Vessel Master, AMSA will assume the role as Control Agency under the conditions of the National Plan for Maritime Environmental Emergencies. If requested by AMSA, Woodside can provide support to a spill response, based on the capabilities detailed below:

Woodside Corporate Oil Spill Emergency Arrangements (Australia)

This document outlines the emergency and crisis management incident command structure (ICS) and Woodside's response arrangements to competently respond to and escalate an hydrocarbon spill event. The document interfaces externally with Commonwealth, State and industry response plans and internally with Woodside's ICS.

Woodside's Oil Pollution Emergency Arrangements (Australia) details the following support arrangements:

- Master services agreement with Australian Marine Oil Spill Centre (AMOSC) for the supply of experienced personnel and equipment;
- Participating membership with Oil Spill Resources Limited (OSRL), which allows access to OSRL's international holding of response equipment and response capabilities, including incident management expertise and specialist personnel;
- Other support services such as 24/7 hydrocarbon spill trajectory modelling and satellite monitoring services as well as 'on-call' aerial, marine, logistics and waste management support.
- Mutual Aid Agreements with other oil and gas operators in the region for the provision of assistance in an hydrocarbon spill response.

Greater Western Flank Phase 2 Geotechnical Investigation Oil Pollution First Strike Plan

The GWF-2 Geotechnical Investigation Oil Pollution First Strike Plan is an activity specific document which provides details on the tasks required to mobilise a first strike response for the first 24 hours of a hydrocarbon (oil) spill event. These tasks include key response actions and regulatory notifications. The intent of the document is to provide immediate hydrocarbon spill response guidance to the Incident Management Team until a full Incident Action Plan specific to the hydrocarbon spill event is developed.

The project vessel will have Ship Oil Pollution Emergency Plans (SOPEPs) in accordance with the requirements of MARPOL 73/78 Annex I. These plans outline responsibilities, specify procedures and identify resources available in the event of a hydrocarbon or chemical spill from vessel activities. The Oil Pollution First Strike Plan is intended to work in conjunction with the SOPEPs.

Woodside's hydrocarbon spill arrangements are tested by conducting periodic exercises in which the project vessels respond to incidents and emergencies. These exercises are conducted to test the response arrangements outlined in the GWF-2 Geotechnical Investigation Oil Pollution First Strike Plan and to ensure that staff are familiar with spill response procedures, in particular, individual roles and responsibilities and reporting requirements.

Oil Spill Preparedness and Response Mitigation for GWF-2 Geotechnical Investigation

Woodside has developed an hydrocarbon spill preparedness and response position in order to demonstrate that risks and impacts associated with loss of hydrocarbons from the Petroleum Activities Program can be mitigated and managed to as low as reasonably practicable (ALARP) and be of an acceptable level.

Woodside's response approach is intended to ensure that the level of preparedness would be in place to support AMSA, if requested, with the timely implementation of the range of identified feasible responses:

1. Monitor and Evaluate - To gain an understanding of the spill event, its movement and to direct mitigation activities to the optimal locations, the following operational monitoring programs are available for implementation:

- Predictive modelling of hydrocarbons to assess resources at risk;
- Surveillance and reconnaissance to detect hydrocarbons and resources at risk;
- Monitoring of hydrocarbon presence, properties, behaviour and weathering in water;

2. Oiled Wildlife Response – Staging sites will be established for vessel based oiled wildlife response teams. Once recovered to a staging site, wildlife will be transported to the designated oiled wildlife facility for stabilisation and treatment.
3. Waste Management – The objectives of Woodside's waste management response are:
    - To mobilise waste storage and transport resources on day one of a potential hydrocarbon spill event to support containment and recovery and shoreline protection responses; and
    - Arrange for sufficient waste storage, handling, transport and disposal capability to support continuous response operations.

To achieve these objectives, Woodside has access to Veolia's waste management facilities as well as waste storage equipment from AMOSC, AMSA and OSRL.

A summary of the control mitigation measures for risk associated with response activities is provided in Table 8.1.

Table 8.1 GWF-2 Geotechnical Investigation control mitigation measures for potential environmental impacts associated with response activities

	Source of Risk / Response Activity	Potential Environmental Impact	Control Mitigation Measures
1	Monitor and evaluate (Operational Monitoring)	Air and noise emissions Vessel operational discharges, presence and anchoring Proximity to other vessels (shipping and fisheries) Lighting for night work/ navigational safety Invasive Marine Species (IMS) Collisions with marine fauna	Potential impacts of the response activities will be monitored and reported back for input into the daily planning and operational Net Environmental Benefit (NEBA) process. Operational NEBAs will be undertaken to determine if there is net environmental benefit to continuing the response activity.
2	Oiled wildlife response	Air and noise emissions Vessel operational discharges and anchoring Proximity to other vessels (shipping and fisheries) IMS Capturing and transporting wildlife Stabilisation Cleaning and rinsing (including post-cleaning stabilisation) Rehabilitation (diet quality, cage sizes etc.) Release Waste generation/ disposal Lighting for night work/ navigational safety Collisions with marine fauna	The Operational and Scientific Monitoring Plan outlines the programs that will apply during wildlife response. Potential impacts of the response activities will be monitored and reported back for input into the daily planning and operational NEBA process. Operational NEBAs will be undertaken to determine if there is net environmental benefit to continuing the response activity. Implementation in accordance with the primary, secondary and tertiary response strategies outlined in the Pilbara Regional OWROP. Waste management contract for safe disposal of carcasses after necessary autopsies.
3	Waste management	Air and noise emissions Waste generation/ disposal	Waste management contractor has identified relevant legislation, conventions and standards that must be

	Source of Risk / Response Activity	Potential Environmental Impact	Control Mitigation Measures
			complied with and has established its own management systems certified in accordance with the following standards: • AS/NZS 4801 OHS Management System • ISO 14001 Environmental Management System • ISO 9001 Quality Management System. The plan includes a regular review of available resources. Where waste management activities are conducted in environmentally sensitive locations, the impact of the activities will be monitored and appropriate controls implemented based on regular NEBAs.

APPENDIX C: SUMMARY OF STAKEHOLDER FEEDBACK AND WOODSIDE'S RESPONSE

Stakeholder	Summary of Stakeholder Feedback	Woodside assessment of feedback	Woodside Response
AMSA (maritime safety)	AMSA acknowledged by email on 27 January 2015 that it had received advice about Woodside's petroleum activities. Woodside had identified that the Operational Area overlaps a promulgated shipping fairway and proposed well sites would be located very close to or within the shipping fairway. AMSA have requested the Rescue Coordination Centre is contacted before any operations commence with information about the vessels, area of operation and the activity's start/end dates so an Auscoast warning can be broadcast. Additionally, the Australian Hydrographic Service must be contacted no less than 2 working weeks before commencing operations for the promulgation of related Notices to Mariners. AMSA have also requested to be contacted at the conclusion of the activity to comment on the operations and the interaction with commercial shipping at the time of the survey (ie any lessons learned with regard to the amount and type of vessels sighted in the area of operations).	Woodside acknowledges the Department's response. AMSA data is consistent with Woodside's assessment of commercial shipping in the region. Section 5.6.1of the EP details the risk assessment for the physical presence of activity related rigs and support vessels and interactions with other users in the area including shipping. This section outlines the performance standards and measurement criteria including all notification requirements identified by AMSA. Woodside notes AHS communications advice and timing, which has been included in the appropriate performance standard and measurement criteria. Woodside is also committed to sharing lessons learned and will contact AMSA Nautical Advice at the conclusion of the activity, or sooner, should there be opportunities to improve the way the activity is conducted or if there are lessons that could be shared with other operators.	Woodside acknowledged receipt of feedback provided by AMSA and held two telephone meetings to discuss the issue, which included discussion of other instances where similar activities had been successfully undertaken within or near a shipping fairway. Additional correspondence was provided by AMSA on 27 February relating to advice provided to Woodside on a previous activity conducted within a shipping fairway.
Australian Hydrographic Service	Australian Hydrographic Service acknowledged by email on 16 February 2015. Activities noted.	Australian Hydrographic Service are responsible for issuing Notices to Mariners. In accordance with feedback provided by AMSA, Woodside will contact the Australian Hydrographic Service at least two weeks before the commencement of operations, and as appropriate through the course of the activity, so that Notices to Mariners can be issued.	No immediate action required. Australian Hydrographic Service to be contacted no less than 2 working weeks before commencing operations, and as appropriate through the course of the activity, for the promulgation of Notices to Mariners

Stakeholder	Summary of Stakeholder Feedback	Woodside assessment of feedback	Woodside Response
Western Australian Department of Transport (DoT)	DoT acknowledged by email on 17 February 2015. Activities noted.	Woodside acknowledges the Department's response.	No immediate action required. Woodside maintains a regular dialogue with the Department of Transport to advise and seek input on planned and upcoming activities. Woodside will provide the Department of Transport with further information about the activity, such as vessel information and start dates when confirmed, ahead of the activity commencing.
	DoT acknowledged receipt of the First Strike Plan for the Greater Western Flank Phase 2 Tieback on 25 August 2015 and confirmed that all references to DoT notifications are appropriate and that the document will be kept on their records. DoT requested that they be sent any significant updates that you make to this document.	Woodside maintains a regular dialogue with DoT. Provision of the draft Pollution First Strike Plan for the Greater Western Flank Phase 2 Tieback follows on from previous discussions that outlined that the Activity First Strike Plan and associated response plans are based on hydrocarbon spill modelling which has been used as a guide to define feasible response strategies. The Activity First Strike Plan aligns with response strategies discussed in a meeting with DoT on Wednesday 25 March 2015. This first strike plan was provided as part of preparations for the submission of the Environment Plan for this activity which is supported by our Oil Pollution Emergency Arrangements (Australia), for which WA DoT is on our controlled document distribution list.	No immediate action required. Any significant updates to the document to be provided to DoT.
Department of Mines and Petroleum	DMP acknowledged receipt of information on 20 February 2015, that the activity will be assessed by NOPSEMA and that no further information is required at this stage. DMP requested to be kept informed on the progress of the development.	Woodside acknowledges the Department's response. Woodside concurs with Department's view on activity assessment.	No immediate required. Notifications to be provided in accordance with regulation 30 of the OPGGSER.

Stakeholder	Summary of Stakeholder Feedback	Woodside assessment of feedback	Woodside Response
Australian Fisheries Management Authority (AFMA)	AFMA acknowledged receipt of information on 19 February 2015 and recommended consulting with fishers in the area as per guidance provided on AFMA's website.	Woodside acknowledges AFMA's feedback and has provided information on the proposed activity to fishers in the area in accordance with AFMA's guidance.	No further action required.