Gorgon and Jansz-Io Drilling, Completion and Well Maintenance Program

Environment Plan Summary

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Gorgon and Jansz-Io Drilling, Completion and Well Maintenance Program
Environment Plan Summary

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Approvals

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1.0 Introduction

1.1 Purpose

The Gorgon and Jansz-Io Drilling, Completion and Well Maintenance Program – Environment Plan Summary summarises the Gorgon and Jansz-Io Drilling, Completion and Well Maintenance Program Environment Plan (the Plan) accepted by the National Offshore Petroleum Safety Environment Management Authority (NOPSEMA) on 30th December 2015. This Summary has been prepared in accordance with Regulation 11(3) and 11(4) of the Offshore Petroleum Greenhouse Gas and Storage (Environment) Regulations 2009 (OPGGS(E)R).

1.2 Scope

The scope of the Plan and this Summary includes drilling, completion and well maintenance activities (the petroleum activities) undertaken by Chevron Australia with either a Mobile Offshore Drilling Unit or well intervention vessel within a 500 m exclusion zone at well locations within the Gorgon and Jansz-Io Gas Fields, or any potential relief well locations.

1.3 Location

The Jansz–Io gas fields are located within production licenses WA-36-L, WA-39-L and WA-40-L approximately 200 km off the north-west coast of Western Australia in water depths of approximately 1,350 m (Figure 1-1).

The Gorgon Gas fields are located within production licences WA-37-L and WA-38-L approximately 130 km off the north-west coast of Western Australia, and 65 km north-west of Barrow Island.

1.4 Timeframes

The Gorgon Gas Development has an anticipated life span of approximately 40 years.

The Plan covers petroleum activities within both the Gorgon and Jansz-Io Fields for a period of 5 years. At the end of this period, a revision of the Plan will be submitted to the Regulator for reassessment in accordance with Regulation 19 of the OPGGS(E)R.

Specifically, the maximum duration (in whole years) of drilling activities:

- Infill drilling – 2 years of 5 year EP duration;
- Exploration and appraisal activities – 1 year of 5 year EP duration;
- Well maintenance (scheduled or non-scheduled) – 1 year of 5 year EP duration; and
- Plug and Abandonment of existing wells – 1 year of 5 year EP duration.

Once on location, individual drilling or well intervention activities are expected to take between 30 to 60 days to complete, at which time the MODU would move location or be demobilised from the field.

1.5 Nominated Titleholder Details

Chevron Australia Pty Ltd (Chevron Australia) is the proponent (appointed Titleholder) and the person taking the action for the Gorgon Gas Development within the petroleum titles and on behalf of the joint venture titleholders. Details for Chevron Australia's nominated titleholder are included in Table 1-1.

Table 1-1: Nominated Titleholder Contact Details

Company Name	Chevron Australia Pty Ltd
Business Address	250 St Georges Terrace, Perth, WA, 6000
Contact Person	Eric Wagner
Telephone Number	+61 8 9216 4000
Email Address	austdrillingops@chevron.com

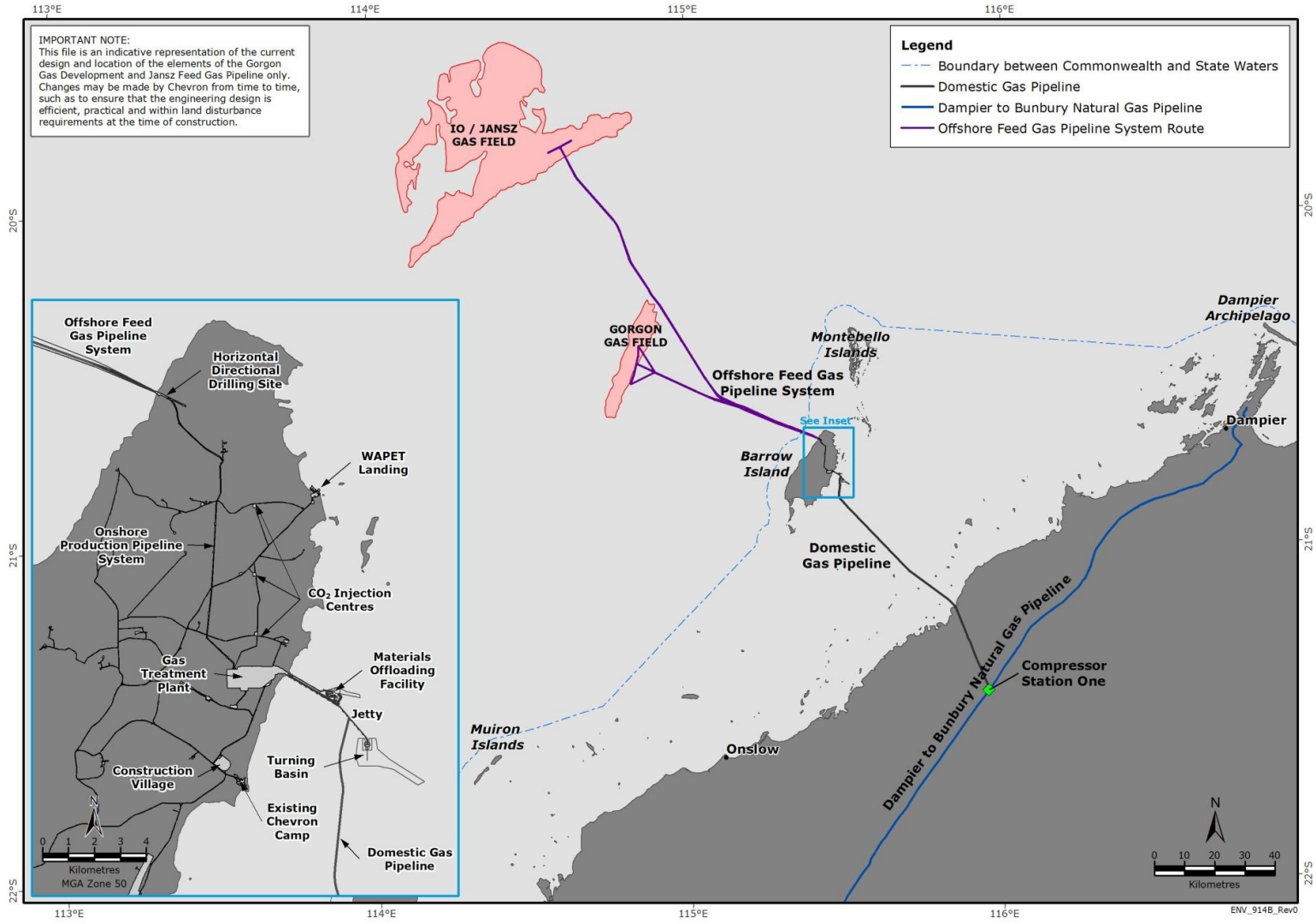

Figure 1-1: Overview of Petroleum Activity Location

2.0 Description of the Petroleum Activity

As part of the Gorgon Gas Development, Chevron Australia is operating a number of production wells within both the Gorgon and Jansz-Io gas Fields. The wells are to supply gas to the liquefied natural gas (LNG) processing and distribution plant located on Barrow Island.

In addition to the maintenance of production wells within the Gorgon and Jansz-Io permit areas (drilled and completed under currently accepted EPs), further wells may be drilled under the Plan to facilitate Gorgon Gas Development expansion.

Chevron Australia is also responsible for well plug and abandonment (P&A) activities carried out within the Gorgon and Jansz-Io permit areas.

2.1 Drilling

Proposed drilling activities covered within the scope of the Plan include wells drilled and/or completed within Production Licences WA-36-L, WA-37-L, WA-38-L, WA-39-L and WA-40-L. Drilling activities include:

- Infill drilling - potential re-drill and sidetracks, and additional production well development. Currently there are 12 additional production wells scheduled within the Gorgon Field and five additional production wells scheduled within the Jansz-Io Fields.
- Exploration and appraisal activities – currently a single exploration well is scheduled.

2.1.1 Drilling Summary

During the program, activities may be undertaken using a semi-submersible drill rig or drill ship, collectively known as a Mobile Offshore Drilling Unit (MODU), or well intervention vessel. The water depths associated with the Gorgon and Jansz-Io gas Fields preclude the use of a jack-up drilling MODU.

Tasks associated with drilling wells include:

- Rig mobilisation and Positioning;

  Prior to undertaking drilling activities, a MODU is required to mobilise above the well location. A MODU may be towed to location via anchor handling, tug and supply vessels (AHTS) or be self-propelled. Once on the well location, the MODU or well intervention vessel may be anchored or dynamically positioned prior to undertaking well operations. On location, the MODU or well intervention vessel has minimal movement capability and subsequently has right-of-way over other vessels.

- Riserless Drilling;

  The top hole section of the well is drilled using seawater and gel sweeps. Depending on the formation, seawater / gel sweeps and weighted fluid (water-based) are used to drill and displace subsequent sections of the well when drilling riserless. The cuttings generated and fluids used whilst drilling riserless are circulated up to seabed level where they are discharged.

  The seawater/high viscosity sweeps (bentonite) mixture is inert and non-toxic. Water-based fluid (WBF) is comprised of a mixture of low toxicity products that may include potassium chloride or sodium bromide, and additional chemical additives to suite wellbore conditions.

  Once the top-hole section is drilled, a conductor casing is run and cemented back to the seabed to stabilise the casing within the open hole.

- Drilling with Returns;

  Once casing is cemented into place within the upper well sections, a blow-out preventer (BOP) stack is run with a marine riser, and pressure tested. Once the

BOP and riser are installed, drilling continues with either WBF or a non-aqueous drilling fluid (NADF). NADF comprises a linear alpha olefin base fluid or a fluid blend. According to the Department of Mines & Petroleum's (DMP) toxicity ratings system (DoIR 2006), the components of the proposed NADF are non-toxic to almost non-toxic to tested species and are biodegradable.

- Cementing operations;

  On completion of the upper hole sections, casing is inserted and the annulus between the casing and the hole sealed with cement. For the conductor and surface casing, enough cement is pumped to allow for variations in hole diameter that occur through the drilling process (e.g. open hole excess).

  The engineering Class G or Class G 'blends' cement is used in all cementing operations. Class G cement is used in petroleum well cementing operations as it provides superior performance over a wider temperature range and at greater depths than regular cement.

- BOP Installation and function testing;

  A BOP will be used for the program to provide an additional barrier to prevent the loss of well control. Once installed, regular function and pressure tests are undertaken. Function testing is undertaken by activating the hydraulic control system aboard the MODU to pressurise the rams within the BOP stack.

  Water-soluble low-toxicity hydraulic control fluids are used and discharged whilst installing and function testing the BOP.

- Logging and Vertical seismic profiling;

  Logging suites include a Vertical Seismic Profile (VSP) of the wells. The VSP acoustic source consists of a 750 cubic inch three air-gun array. The air-gun array will generate acoustic pulses by using either nitrogen gas or compressed air at approximately 1800 psi pressure. Shooting time interval can vary depending on the survey types. Total survey times are likely to range from 12 to 48 hours inclusive of operational shut downs and moving between locations.

- Well completions;

  To facilitate the controlled flow of the reservoir hydrocarbons to surface via the well bore, the wells may be either perforated or gravel-packed.

- Well Clean-up and Testing;

  Wells are subject to a clean-up and flow-back at the end of the completions phase i.e., flared. Typically well flow clean-up should take less than 24 hours per well.

2.2 Drilling-related Operations

Drilling-related operations include:

- Well maintenance – scheduled workovers (planned well intervention including routine in-well surveillance and non-critical maintenance) – total planned operations for all production wells not anticipated to take longer than 12 months combined over 5 year period;
- Well maintenance – non-scheduled workovers (unplanned well intervention including well integrity loss, equipment failure, critical well component replacement or repair);
- Well testing & flow backs – flowing wells following drilling activities – not currently scheduled but potential for ad-hoc short-duration well flow activities; and
- Plug and Abandonment of existing wells – currently 2 wells identified for P&A.

2.2.1 Support Operations

MODU operations are supported by dedicated anchor handling, tug and supply vessels (AHTS), with a single vessel remaining on location at all times. All vessels operate out of the Port of Dampier.

AHTS are used primarily to tow the MODU between well sites (if not self-propelled), assist in mooring (running anchors if required), delivering supplies and providing operational support, but may also provide spill response support as well as search and rescue functions, if required.

In addition to the AHTS, the MODU is serviced by helicopters based on Barrow Island. Helicopter flight frequency is on average five times per week whilst the MODU is on location and is primarily used for passenger transfers/crew changes and minor supplies. All crew changes for the MODU are conducted by helicopter.

3.0 Description of the Environment

The environment that may be affected (EMBA) by the petroleum activity inclusive of potential emergency conditions has been identified by compiling a composite of worst-case surface, entrained and dissolved outputs from spill modelling (from both the Gorgon-3C well site and the Jansz-Io well site) at the low environmental impact thresholds, across all three seasons (Summer, Winter & Transitional). A probability of direct exposure to each of these thresholds ranges from 0-100% based upon the simulation run within the spill modelling, and therefore identifies the full range of likelihoods of environmental exposure to moderate hydrocarbon thresholds.

To enable an appropriately detailed description of the EMBA under emergency conditions in accordance with regulation 13(2)(a), the EMBA has been categorised into specific locations according to:

a) ecosystems and their constituent parts, including people and communities; and

b) natural and physical resources; and

c) the qualities and characteristics of locations, places and areas; and

d) the heritage value of places; and includes

e) the social, economic and cultural features of the matters mentioned in paragraphs (a), (b), (c) and (d).

Based upon ecological and environmental characteristics the following locations have been identified within the geographical extent of the EMBA:

- The offshore permit area (Petroleum Leases WA-36-L,WA-37-L, WA-38-L, WA-39-L and WA-40-L - affected by planned petroleum activities) – and surrounding offshore environment - including southern Group Islands*;
- Shark Bay World Heritage Area (Including Dirk Hartog Island, Dorre Island and Bernier Island);
- Barrow and Montebello Islands;
- Ningaloo Marine Park (including Southern Ningaloo Coast and Murion Island Management Area); and
- Abrolhos Island.

*Southern Group (includes Thevenard Island, Serrurier Island, Bessier Island, Peak Island, Tent Island and the Rivoli Islands)

Table 3-1 summarises the particular and collective values and sensitivities associated within the environment that may be affected (EMBA), which takes into account sensitivities protected under the EPBC Act and their biologically important areas (BIAs).

Table 3-1: Particular values and sensitivities that occur within the EMBA

Value	Status	Description
Marine Values		
Marine Mammals	EPBC Protected	Several species of cetacean are known to occur within the waters of the North-west Shelf Province Bioregion, including: • Blue Whale (Balaenoptera musculus) • Humpback Whale (Megaptera novaeangliae) • Antarctic Minke Whale (Balaenoptera bonaerensis) • Bryde's Whale (Balaenoptera edeni) • Killer Whale (Orcinus orca) • Sperm Whale (Physeter macrocephalus) • Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) (Tursiops aduncus)
Migratory route for marine mammals	BIA	• Humpback Whale migration route is a Biologically Important Area (BIA) which traverses the EMBA with usage seasonally high. • The Pygmy Blue Whale migration (BIA) also traverses the EMBA.
Foraging and inter-nesting marine turtles	EPBC Protected	A number of marine reptiles, including sea snakes and marine turtles, occur in the waters of the North-west Shelf Province Bioregion, and may occur within the permit areas (most likely Gorgon being within 100m – 200m bathymetry) and surrounding offshore environment. Five Threatened and Migratory species of marine turtle were identified for the Gorgon permit area and surrounding offshore environment including: • Green (Chelonia mydas), • Leatherback (Dermochelys coriacea), • Hawksbill (Eretmochelys imbricata), • Flatback (Natator depressus) and • Loggerhead (Caretta caretta), • All of which are listed as Threatened and Migratory under the EPBC Act.
	BIA	• There are many areas within the EMBA identified as foraging and interesting habitat for marine turtles. These are generally adjacent to identified breeding areas.
Marine Avifauna	EPBC Protected	Marine avifauna having the potential to occur within the permit areas and surrounding offshore environment: the • Southern Giant Petrel (Macronectes giganteus)

Value	Status	Description
Foraging areas for marine avifauna	BIA	• Several BIAs for foraging seabirds, including fairy tern, lesser crested tern, roseate tern, wedge-tailed shearwater overlap the EMBA.
Migratory Sharks	EPBC Protected	Migratory sharks as having the potential to occur within the permit areas (most likely Gorgon being within 100m – 200m bathymetry) and surrounding offshore environment: • Whale Shark (Rhincodon typus) • Shortfin Mako (Isurus oxyrinchus) • Longfin Mako (Isurus paucus)
Whale shark aggregation	BIA	• A BIA providing habitat suitable to support Whale Shark foraging has been indicated Northward from the Ningaloo Marine Park along the 200-m isobath. Ningaloo Marine Park is noted internationally for the annual aggregation of Whale Sharks.
Fish diversity	N/A	• A number of fish including sharks, billfish, tuna, deep goatfish, deep lizardfish, ponyfish, deep threadfin bream, and adult trevally are found in the waters of the North-west Shelf
Gascoyne Commonwealth marine reserve	CMR	Provides foraging area for threatened and / or migratory marine fauna including seabirds, marine turtles (hawksbill and flatback turtles, and whale sharks. Provides connectivity between the inshore waters of the existing Ningaloo Commonwealth marine park and the deeper waters of the area
Subtidal Values		
Coral and reef communities	World Heritage	• The most significant coral reefs around Barrow Island are Biggada Reef on the west coast, Dugong Reef and Batman Reef off the south-east coast, and reefs along the edge of the Lowendal Shelf on the east side of Barrow Island. • The Ningaloo reef is one of the largest and structurally complex fringing reefs in the world and is located within the EMBA. • Coral communities also occur on the eastern shores of Bernier, Dorre and Dirk Hartog Islands due to shelter, and water with relatively small salinity and temperature fluctuations.
Sea grass meadows	BIA	• The largest reported seagrass meadows in the world are located in the Shark Bay Heritage area. These provide important habitat and nursery areas for fish and invertebrates. Dugongs and green turtles also feed on certain species of seagrass
Key Ecological Features (KEFs)	BIA	A KEF is a value as it is a feature that may attract faunal assemblages resulting in significantly higher diversity and abundance than is elsewhere. KEFs within the EMBA include: • Exmouth Plateau

Value	Status	Description
		• Continental slope demersal fish communities • Ancient coastline at 125 m depth contour • Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula • Commonwealth Waters adjacent to Ningaloo Reef
Shoreline Values		
Nesting marine turtles	BIA	• Several species of Marine turtles including the green, hawksbill, loggerhead and flatback; use the sandy beaches in the region for breeding and nesting, including the Barrow and Montebello Islands, the Ningaloo Coast and the Muiron Islands.
Staging and nesting marine avifauna	BIA	• Important rookeries for a diverse number of marine and migratory bird species are present within the EMBA. • The largest breeding colony of Roseate Terns in WA is located on the Montebello Islands.
Mangroves		• Mangroves in the Montebello Islands are recognised as 'regionally significant' and globally unique due to their location in lagoonal systems on oceanic islands. • The area of mangal communities comprise less than 0.1% (33.4 ha) of the Ningaloo Marine Park area, but are considered to represent a unique community within the Ningaloo reef system.
Sea lion	EPBC Protected	• A colony of Australian sea lions lives and breeds on the Abrolhos's shorelines.
Socio-economic Values		
Commercial and recreational fishing	N/A	• Permits for several State and Commonwealth fisheries, and recreational fishing activities, overlap the EMBA.
Petroleum activities	N/A	• The petroleum industry has developed major production operations on Thevenard, Airlie, Barrow, and Varanus Islands, and also offshore surface production facilities located within the North-west Marine Region (i.e. Woollybutt FPSO and Pluto LNG offshore platform).
Marine-based tourism and recreation	N/A	• Ningaloo reef and the Muiron islands offer a wide variety of wildlife in a very natural setting of land and seascapes, which are a major drawcard for the region's nature-based tourism.
Ningaloo Coast	World Heritage	• Ningaloo Coast is classified as a World Heritage Area.
Shipping	N/A	• Blue water cargo and several other commercial vessels traverse the Gorgon permit areas with vessel traffic predominantly associated with movements between Indonesia and central-to-southern Western Australian waters.

Value	Status	Description
Defence activities	N/A	• The Learmonth military restricted airspace area overlaps the Gorgon permit areas.

4.0 Environmental Impacts and Risks

In accordance with Regulation 13(5) and 13(6) of the OPGGS(E)R, an environmental risk assessment was undertaken to evaluate significant impacts and risks arising from operational activities, unplanned events (emergency events), and event response activities.

An environmental risk assessment workshop was undertaken to evaluate impacts and risks arising from the petroleum activities described in Section 2.0. The risk assessment also considered emergency events related to spills and spill response activities. Control measures were identified during the Environmental Risk Workshop to ensure identified risks were reduced to As Low As Reasonably Practicable (ALARP) and an acceptable level.

The environmental impact identification and risk assessment process comprised the following components:

- Identification and description of petroleum activities and emergency conditions;
- Identification of particular environmental values and sensitivities within the EMBA;
- Identification of relevant environmental aspects;
- Identification of relevant hazards;
- Evaluation of the potential consequences to the identified values and sensitivities without controls;
- Identification of control measures to reduce the potential likelihood of the consequence occurring and evaluation if control measures can be practicably implemented or not;
- Evaluation of the likelihood of the consequence occurring with planned and confirmed safeguards in place;
- Quantification of the risk ranking with controls in place;
- Determination of whether the potential environmental impacts and risks are ALARP after considering the effectiveness of the identified controls; and
- Determination of whether the potential environmental impacts and risks are acceptable.

4.1 Determination of ALARP

Control measures were identified for each hazard with the aim of eliminating the hazard, or minimising the risk to ALARP. Chevron Australia's hierarchy of control was used to determine the control measures that could be practicably implemented and those that could not. According to a hierarchy of controls, defined control measures either:

- **Eliminate** the hazard;
- **Substitute** for a safer method;
- **Engineer** to change design / physical barrier or isolate impact;
- **Administrative** – establish a procedure, training or instruction.

Where demonstrated that the 'cost' of implementing further control measures is disproportionate to the benefit gained, the control measure will not be implemented, and the risk is considered ALARP. 'Cost' includes financial cost, time or duration, effort, occupational health and safety risks, or environmental impacts associated with implementing the control.

4.2 Risk Acceptance Criteria

In accordance with Chevron Australia's risk prioritisation matrix, Chevron has determined that risk rankings of four or fewer are too significant to proceed without the implementation of additional control measures to reduce the likelihood of the consequence occurring, and thus reduce the risk ranking. A risk level of five is acceptable only if it can be demonstrated that the risk has been reduced to ALARP and Chevron Australia management approval has been granted.

The environmental impacts and risks associated with implementing the Petroleum Activity described in the Plan were determined to be acceptable if:

- Performance Outcomes do not compromise the principles of Ecologically Sustainable Development as defined within Section 3A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act); and
- Performance Standards align with Chevron corporate and industry standards; and
- Residual risks to particular values and sensitivities are inherently low (6-10) and have been reduced to ALARP; and
- Control Measures have been established to ensure performance outcomes are achievable.

A summary of the environmental risks and impacts and controls in place to manage the activity is detailed in Table 4-1.

Table 4-1: Hazards, Potential Environmental Consequences and Control Measures

Source of Risk (Hazards)	Potential Environmental Impacts	Control Measures
MODU Mobilisation & Positioning		
Introduction of Invasive Marine Pests	Impacts to marine values Ecological degradation	Ballast water is managed in accordance with Australian Quarantine and Inspection Service (AQIS) Australian Ballast Water Management Requirements
Interaction with Shipping and Commercial Fishing	Impacts to socio-economic values Disruption to shipping / commercial fishing	Implement a 500m exclusion zone around the MODU via: • 500 m exclusion procedure; • AMSA notification system; • Support vessels intervention; and • Implementing the Stakeholder Engagement Plan.
		Disruption to commercial fisheries during MODU mobilisation and positioning shall be controlled by implementing the Stakeholder Engagement Plan
Physical disturbance to Seabed Values	Impacts to seabed values Physically altered soft substrate communities	Implement a Project Anchoring Plan inclusive of: • Anchor specifications to maximise effectiveness; • Anchor placement to maintain position; and • Anchor chain tension management to reduce anchor drag.
Marine Fauna Interaction	Impacts to marine values Fauna injury / behavioural disturbance	Implement a Project MODU transit procedure
		Implementing measures consistent with Part 8 of the EPBC Regulations
Drilling Riserless, WBF (including brines) and Cuttings Handling and Disposal		
Physical disturbance (smothering) of benthic habitat	Impacts to seabed values	All water based fluid (WBF) chemicals will be assessed and deemed acceptable prior to use in accordance with the Chevron Australia Environmental Chemical Assessment Process
Acute or chronic effects to benthic habitats Acute or chronic effects to pelagic marine fauna.	Impacts to seabed values Impacts to marine values	Weekly Health Environment and Safety (HES) inspections
Drilling with Returns, NADF and Cuttings Handling and Disposal		
Physical disturbance (smothering) of benthic habitat	Impacts to seabed values	All planned chemical discharges shall be assessed and deemed acceptable prior to use in accordance with the Chevron Australia Drilling and Completion (D&C) Environmental Chemical Assessment Process
Acute / chronic exposure from altering chemical composition of		Verification of Non Aqueous Drilling Fluid (NADF) products aboard the MODU having been assessed and reconciled against Project Chemical Register
	Impacts to seabed values	Verifying discharges of displaced well fluids and tank wash contain ≤1% hydrocarbon concentrations

Source of Risk (Hazards)	Potential Environmental Impacts	Control Measures
benthos. Acute or chronic effects to pelagic marine fauna.	Impacts to marine values	Verifying treated cuttings have ≤10% Synthetics on Cuttings (SOC) averaged over the well sections drilled with NADF
		A member of the rig crew will be tasked with monitoring solids control equipment whilst drilling with NADF. Monitoring shall include: • Functioning of equipment (i.e., checks for mechanical failures); and • Optimisation opportunities based upon SOC test results as provided by the Compliance Engineer, including appropriate shaker screen size and centrifuge speed for cut formation.
		A member of the rig crew will be tasked with implementing remedial actions to optimise the efficiency of solids control equipment whilst drilling with NADF. Remedial actions may include: • Servicing of equipment to repair mechanical failures; and/or • Altering shaker screen size and/or centrifuge speed to optimise residual NADF recovery from drill cuttings.
		Development and implementation of detailed drilling procedures
		Recovered NADF and NADF chemicals are to be recycled or sent to shore for treatment and disposal.
		Contracts for procurement of Barite will include limits in accordance with established industry practices, for the concentration of mercury and cadmium.
Cementing Operations		
Physical disturbance of seabed habitats and communities & Acute or chronic health effects on marine fauna through changes to sediment and water quality	Impacts to seabed values Physically altered soft substrate communities & Impacts to marine values Fauna injury / behavioural disturbance	All planned chemical discharges shall be assessed and deemed acceptable prior to use in accordance with the Chevron Australia D&C Environmental Chemical Assessment Process
		Verification of cementing products aboard the MODU having been assessed and reconciled against Project Chemical Register
		Detailed cementing procedures manage cement excess used and discharged
		No surface or seabed discharge of unmixed cement
BOP or EDP/LRP Function Testing, Hydrate Management, Well Suspension and Subsea Tree Installation and Testing		
Acute or chronic health effects on marine fauna through changes to sediment and	Impacts to marine values Fauna injury / behavioural disturbance	Drilling procedures specify well locations, design and volumes of WBF to be used during top-hole drilling
		All chemicals will be assessed and deemed acceptable prior to use in accordance with the Chevron Australia Environmental Chemical Assessment Process

Source of Risk (Hazards)	Potential Environmental Impacts	Control Measures
water quality		Weekly HES inspections on the Rig
Logging (Vertical Seismic Profiling)		
Noise resulting from Vertical Seismic Profiling (VSP) has the potential to result in disturbance, injury, or casualty to marine fauna	Impacts to marine values Fauna injury / behavioural disturbance	Injury to marine mammals whilst acquiring VSP data shall be prevented by implementing EPBC Act Policy Statement 2.1 – Interaction between Offshore Seismic Exploration and Whales – Part A Standard Management Procedure inclusive of Marine Mammal Observer(s) present during operations
Well Completions and Wellbore Clean-up (Wellbore Fluids)		
Physical alterations (settlement of proppant and filtration media) on seabed Acute or chronic health effects on marine fauna through changes to sediment and water quality	Impacts to marine values Fauna injury / behavioural disturbance	All planned chemical discharges shall be assessed and deemed acceptable prior to chemicals being discharged, in accordance with the Chevron Australia D&C Environmental Chemical Assessment Process
		Weekly HES inspections on the Rig
		Verify discharges of completion fluids and proppant ≤1% hydrocarbon concentrations.
		Verify discharges of diatomaceous earth filtration media ≤50% sheen coverage via static sheen test of samples taken
		Develop and implement detailed drilling procedures
Drill Stem Testing (DST) / Wellbore Clean-up (Hydrocarbons)		
The Gorgon and Jansz-Io permit areas are located at least 65 km away from the closest identified light sensitive receptor (Barrow Island). Due to distance from light-sensitive receptors, light impact is not considered a risk for the program		
Typically well testing and clean-up of formation hydrocarbon is planned to be undertaken over a 12-24 hour period per well, commencing in daylight but possibly continuing into the night. The targeted hydrocarbons within the Gorgon and Jansz-Io Fields are expected to flare with little to no residual drop-out. There are no impacts to identified values & sensitivities within the project area associated with wellbore clean-up.		
Well Abandonment		
No additional environmental impacts or risks to identified values and sensitivities associated with well abandonment of either production or exploration wells were identified. Where well abandonment is required, it will be conducted in accordance with the relevant Environmental Performance Outcomes, Performance Standards, and Measurement Criteria documented throughout the EP.		
Well Intervention		
No additional environmental impacts or risks associated with well intervention were identified. Where well intervention is required it will be conducted in accordance with the relevant Environmental Performance Outcomes, Performance Standards, and Measurement Criteria documented throughout the EP.		

Source of Risk (Hazards)	Potential Environmental Impacts	Control Measures
Support Operations		
Acute or chronic health effects on marine fauna through changes to water quality	Impacts to marine values Fauna injury / behavioural disturbance	Discharge of oily water shall be controlled by limiting oily water discharge to ≤15ppm hydrocarbon content via on board oily water separator(s)
		Discharge of oily water quality shall be controlled by monitoring oily water discharge to ≤15ppm via on board monitoring equipment
		Discharge of putrescible waste shall be controlled by macerating galley waste to ≤25 mm prior to discharge via on-board food macerator
		Sewage discharge shall be controlled by treating sewage (black water) via a treatment plant prior to discharge
Non-Emergency Spills - Single Point Failure		
Acute or chronic health effects on marine fauna through changes to water quality	Impacts to marine values Fauna injury / behavioural disturbance	Implement a permit system to control the isolation of overboard drainage aboard the MODU where there is potential for unplanned discharge of hazardous chemicals
		Store hydrocarbons and hazardous liquids within secondary containment or purpose-built bulk tanks aboard the MODU
		Maintain chemical spill kits aboard the MODU
		Maintain hydraulic hoses in accordance with the rig maintenance system
		Undertake oil spill training exercises in accordance with MODU Operator's emergency response exercise program
		Lock out overboard discharge points aboard the MODU
		Implementing overboard discharge procedure aboard the MODU
		Maintain marine riser slip joint packers in accordance with MODU Operator's rig maintenance system.
		Monitor NADF fluid loss via mud pit reconciliation & recording NADF fluid usage
Non-Emergency Spills - Transfer Operations		
Acute or chronic health effects on marine fauna through changes to water quality	Impacts to marine values Fauna injury / behavioural disturbance	Implement bulk fluid transfers in accordance with MODU Operator's bulk fluid transfer procedures including: • Rig to vessel communication protocols; • Transfer hose pressure testing; • Continuous visual monitoring; and • Tank volume monitoring.
		Implement Chevron's Offshore Drilling Fluid Guidelines inclusive of intake valve alignment and overboard

Source of Risk (Hazards)	Potential Environmental Impacts	Control Measures
		discharge point inspections
		Maintain bulk fluid transfer hoses in accordance with the rig maintenance system
Non-Emergency Spills – Slip Joint or Marine Riser		
Acute or chronic health effects on marine fauna through changes to water quality	Impacts to marine values Fauna injury / behavioural disturbance	Maintain telescopic slip joint and marine riser seals in accordance with the rig maintenance system as detailed within the NOPSEMA accepted MODU-specific Safety Case
Emergency Condition – Vessel Condition		
Acute or chronic health effects resulting from hydrocarbon exposure	Impacts to marine values Impacts to socioeconomic values	Implement the MODU Safety Management System including: • Maintenance of a 500m exclusion zone inclusive of support vessels; • Implementation of vessel approach procedures; • Maintaining communication protocols with the support vessel; and • Operational navigational equipment aboard he MODU.
		Implement the Oil Pollution Emergency Plan (OPEP) in the event of a vessel collision event
		Test preparedness to respond to a spill in accordance with the Plan
		Implement the Operation and Scientific Monitoring Program in the event of a vessel collision event
Emergency Condition – Loss of Well Control		
Acute or chronic health effects resulting from hydrocarbon exposure	Impacts to marine values Impacts to seabed values Impacts to socioeconomic values Impacts to shoreline values	Complete well proposal and formation evaluation program prior to finalising well locations
		Undertake well design and construction in accordance with the Well Construction, Chevron Project Development and Execution Process
		Design the wells in accordance with Chevron Global Standard Operating Procedures - Technical and Process Standards
		Operate the wells in accordance with NOPSEMA accepted Gorgon Project: Well Operations Management Plan – Producing Phase
		Maintain safety critical well control equipment in accordance with the MODU Operator Safety Management System as detailed within the NOPSEMA accepted MODU-specific Safety Case
		Implement the ABU Source Control Contingency Plan in the event of a loss of well control

Source of Risk (Hazards)	Potential Environmental Impacts	Control Measures
		Implement the ABU Capping Stack and Subsea First Response Toolkit Logistics and Mobilisation Plan where deploying a capping stack is required
		Implement the Gorgon and Jansz-Io Drilling, Completion and Well Maintenance OPEP in the event of a loss of well control event
		Test response preparedness will be tested in accordance with the Plan
		Implement the Operation and Scientific Monitoring Program in the event of a loss of well control
		Implement the Subsea Dispersant Monitoring Plan (API Technical Report 1152) where subsea dispersant injection activities are required to determine response effectiveness and potential environmental effects.
Source Control		
Acute or chronic health effects resulting from chemical dispersant application	Impacts to marine values Impacts to socioeconomic values	Implement the Operation and Scientific Monitoring Program whilst responding to a loss of well control to determine potential environmental effects.
		Implement the Subsea Dispersant Monitoring Plan (API Technical Report 1152) where subsea dispersant injection activities are required to determine response effectiveness and potential environmental effects.
		Subsea dispersant injection will be terminated in accordance with Termination criteria detailed within the program OPEP.
		Chevron Australia will only use dispersants listed in AMSA's National Plan Register of approved Oil Spill Control Agents (OSCA) (or grandfathered stock).
Shoreline Protection		
Physical disturbance of shoreline habitats and communities resulting from deployment of protection equipment	Impacts to shoreline values Fauna injury / behavioural disturbance	A net environmental benefit analysis (NEBA) will be undertaken prior to anchoring booms in nearshore/intertidal areas
Shoreline Clean-up		
Physical disturbance of shoreline habitats and communities resulting from deployment of clean-up	Impacts to shoreline values Fauna injury / behavioural disturbance	Only tracks pre-identified access tracks will be used to access impacted shorelines, through clear marking of tracks and briefing of personnel on use of the tracks
		A net environmental benefit analysis (NEBA) will be undertaken prior to undertaking shoreline clean-up activities
		Where directed by NEBA, fauna and/or nests will be

Source of Risk (Hazards)	Potential Environmental Impacts	Control Measures
equipment		relocated from the shoreline before and during (as required) clean-up activities
		Shoreline clean-up activities implemented in accordance with the shoreline clean-up implementation guide as per the project OPEP
Oiled Wildlife		
Acute or chronic health effects resulting from physical & chemical cleaning of oiled wildlife	Impacts to shoreline & marine values Fauna injury / behavioural disturbance	All personnel handling oiled wildlife will have specific oiled wildlife response training, or be supervised by a trained oil wildlife responder.
		Oiled wildlife response shall be undertaken in accordance with the Western Australian Oiled Wildlife Response Plan (the WAOWRP).
		A net environmental benefit analysis (NEBA) will be undertaken prior to handling oiled fauna
Monitoring, Evaluation & Surveillance		
Physical disturbance of marine & shoreline habitats and communities resulting from acquiring data	Impacts to shoreline & marine values Fauna injury / behavioural disturbance	All personnel undertaking monitoring, evaluation & surveillance activities will be made aware of potential impact to EPBC listed fauna within monitoring areas
		A net environmental benefit analysis (NEBA) will be undertaken prior to undertaking monitoring, evaluation & surveillance activities
Waste		
Physical disturbance of shoreline habitats and communities resulting from collection & removal of waste	Impacts to shoreline & marine values Fauna injury / behavioural disturbance	All personnel undertaking waste management activities will be made aware of potential impact to EPBC listed fauna within clean-up areas
		A net environmental benefit analysis (NEBA) will be undertaken prior to undertaking waste management activities

5.0 Management Approach

The implementation strategy in the Plan identifies the systems, practices, and procedures used to ensure the environmental impacts and risks of the activities are continuously reduced to ALARP and the environmental performance outcomes and standards are met.

5.1 Operational Excellence Management System

The implementation strategy of the Plan is based upon Chevron Australia's Operational Excellence Management System (OEMS), which is aligned with ISO 14001:2004.

The OEMS is a comprehensive management framework that supports the corporate commitment to protect the safety and health of people and the environment. A summary of the OEMS elements considered integral to managing the potential impacts, risks and assessing environmental performance are summarised in Table 5-1.

Table 5-1: Summary of OEMS Elements

OEMS Element	Effectiveness in reducing environmental impacts and risks to ALARP & to an acceptable level
Facilities Design & Construction	The purpose of the Upstream & Gas Facilities Design and Construction Standard is to ensure consistent, complete and accurate incorporation of applicable Operational Excellence requirements into the design, construction, commissioning (or decommissioning) and transition to operations of new or modified facilities.
Safe Operations	The objective of the Competency Development process is to provide a consistent and structured approach to building individual competency and overall organisational capability that will enable the ABU to achieve its business objectives.
Management of Change	The purpose of the Management of Change for Facilities and Operations Process is to manage changes to facilities, operations, procedures and products to prevent incidents, support reliable and efficient operations, and to keep unacceptable risks from being introduced into our business.
Incident Investigation	The purpose of this element document details Chevron Australia's process for reporting and investigating incidents (including near misses) to reduce or eliminate root causes and prevent future incidents.
	This document assists Chevron Australia's employees, contractors, and subcontractors with understanding the incident notification and reporting requirements to external government and regulatory agencies under potentially applicable legislation. This document is not a substitute for the Plan, but provides high-level guidance for Chevron Australia employees.
	Chevron's electronic database for internal reporting of incidents and storing incident investigations.
Community & Stakeholder Engagement	As part of Chevron's OEMS, the aim of the Community and Stakeholder Engagement Process is to systematically identify stakeholders and plan and execute engagement to foster mutual understanding, dialogue and trust.
Emergency Management	Provide organisational structures, management processes and tools necessary to respond to emergencies and to prevent or mitigate emergency and/or crisis situations; respond to incidents in a safe, rapid and effective fashion; and, restore or resume affected operations of strategic importance to Global Upstream.

	The purpose of this document is to outline a training plan that will support the development of the Australasia Strategic Business Unit's (ABU's) capability and awareness to support current operations and construction phases. Emergency Management training is governed by the Chevron Global Upstream Operational Excellence Emergency Management Process.
Compliance Assurance	This document outlines the internal compliance requirements for both employees and contractors. Chevron Australia will undertake a compliance assurance program to ensure compliance with the Plan, in accordance with the ABU Compliance Assurance Process. This will primarily be achieved through site inspections, Contractor compliance audits, and internal audits against the requirements in the Plan EP.

5.2 Environment Performance Monitoring

Chevron Australia will undertake regular HES inspections aboard the MODUs. Actions are to be developed to address non-conformances identified from these inspections and are to be tracked to closure in the MODU's Corrective Action Register.

Audits against the commitments made within this EP shall be scheduled on a six-monthly basis. Some flexibility shall be afforded to ensure audits can be conducted when operations aboard the MODU allow. The duration between internal audits shall not exceed eight months.

Audits against the emergency response arrangements detailed within the OPEP shall be scheduled on an annual basis.

Audit actions are tracked via a Chevron-wide electronic database. The database allows notifications and follow-up emails to be sent to the responsible person for timely closure of audit actions.

5.3 Managing Change

Chevron's Management of Change process will be followed to document and assess potential changes to the program, including additional permit locations and wells to be drilled under the EP. These changes will be assessed to determine if there is potential for any new or increased environmental impact or risk not already provided for in the EP. If these changes do not trigger Regulation 17 of the OPGGS (E) Regulations, as detailed below, the EP shall be revised internally.

In accordance with Regulation 17 of the OPGGS (E) Regulations 2009, a revision of this plan results in submission of the amended EP to NOPSEMA prior to:

- the commencement of any new activity, or any significant modification to, change, or new stage of an existing activity, not provided for in the EP; or
- a change in instrument holder for, or Titleholder of, the activity; or
- the occurrence of a significant new environmental impact or risk, or significant increase in an existing environmental impact or risk, not provided for in the EP; or
- the occurrence of a series of new environmental impacts or risks, or a series of increases in existing environmental impacts or risks, which, taken together, amount to the occurrence of a significant new environmental impact or risk, or a significant increase in an existing environmental impact or risk, not provided for in the EP.

5.4 Environment Plan Review

Chevron Australia will review the Plan within one year of the commencement of activities and then annually thereafter until completion of the program. The review will include an evaluation of environmental performance, including audit results and the remedial actions implemented to prevent recurrence.

In addition to the Plan, Chevron Australia will review the OPEP within one year of the commencement of activities and then annually thereafter until completion of the program. Additionally, a review of the OPEP will be undertaken following:

- an emergency condition;
- the identification of additional response strategies to emergency conditions; or
- The identification of deficiencies within the Plan or OPEP following the review of emergency response exercises.

The results of these reviews and any recommended improvements, including feedback from NOPSEMA, are to be incorporated into EPs for future operations. In accordance with the Regulations, Chevron Australia will also submit a proposed revision of these Plans every five years.

6.0 Oil Pollution Emergency Plan

An Oil Pollution Emergency Plan (OPEP) has been developed to address the specific response measures and procedures that would be implemented to minimise the impact of an oil spill from a petroleum activity associated with the Plan.

The objectives of this Plan are to:

- Clearly define the emergency oil spill response arrangements and capabilities for the Gorgon and Jansz-Io Drilling, Completion and Well Maintenance Program;
- Provide Chevron Australia Emergency Management Team (EMT) with guidance to ensure the timely implementation of pre-defined emergency response options;
- Detail the arrangements and capabilities in place to monitor, evaluate and survey oil pollution to inform response options; and
- Outline the arrangements and capability that will be in place for monitoring the effectiveness of response options and ensuring that the environmental performance outcomes as detailed within the Plan are met.

The following spill response strategies are applicable for potential hydrocarbon spill events related to the Gorgon and Jansz-Io Drilling, Completion and Well Maintenance Program:

Source Control

Source control (SC) is the primary response option for drilling related emergency spills scenarios. Source control involves physically or mechanically control. For the purposes of a drilling campaign, source control applies to both condensate spills in the event of a loss of well control (SC-LOWC) and diesel spills in the event of a vessel collision (SC-Vessel). Source control with the use of subsea equipment is collectively described as subsea well intervention (SSWI). In the event of either source control option for a loss of well control event, subsea dispersant injection may be used. Given that subsea dispersant application is a component of a source control response, it is included as a source control response activity.

SC-LOWC options include:

1) Capping the well at source where possible followed by the drilling of a relief well to achieve a final well kill at depth. Capping the well may be achieved in one of two ways:

   a) Utilizing a standard subsea BOP stack run on riser to connect to either the wellhead (after removal of the existing BOP stack) or the existing BOP stack (after disconnecting the existing Lower Marine Riser Package). The use of Ported Riser Flow Diverter Joints prevents hydrocarbons from flowing up the riser to surface.

   b) Utilizing a dedicated capping stack.

2) Where capping is not possible, a dynamic kill of the well is achieved by either bull heading through the existing wellbore or through the drilling of a relief well(s).

3) Capturing the flow of hydrocarbon from the well at the wellhead using top hats or riser insertion tubes and diverting the hydrocarbon to a temporary processing facility on a surface vessel for capture and / or flaring. This is known as containment.

Monitor, Evaluate and Surveillance (MES)

Oil spill monitoring, evaluation, and surveillance (MES) is important for anticipating resources at risk of exposure, directing response resources, and evaluating effectiveness. Accurate, timely, and ongoing information about a spill's location, extent,

and movement is critical to spill response decision-making and provides ground-truthing of spill trajectory modelling.

MES should be conducted throughout the response duration, along with other response options. MES of an oil spill helps determine whether further action is required, and informs the NEBA decision-making process for protection prioritisation of sensitive receptors, and to continually assess the effectiveness of those spill response options.

MES tactics may include one or more of the following:

- Fate and Weathering Modelling (FM) – uses computer modelling and computational techniques to estimate the weathering of an oil spill
- Trajectory Modelling (TM) – uses computer models and computational techniques to estimate the speed and direction of movement, weathering spread patterns, and impacts of an oil spill
- Tracking Buoy Deployment (TB) – uses a buoy deployed to the water surface to track the movement of an oil slick
- Visual Observation (from aircraft and/or vessels) (VO) –trained observers use standard references to characterise oil slicks as observed from aircraft or vessels. Visual observation is the most common surveillance and reconnaissance tactic
- Remote Sensing (RS) – uses remote sensing technologies to identify oil slicks.

Shoreline Protection

Shoreline protection (SP) involves several pre-emptive protective booming tactics that aim to protect sensitive receptors from a spill.

Chevron Australia has developed several Tactical Response Guidelines (TRGs) for sites of high environmental and/or socioeconomic sensitivity and vulnerability to oil spills; these TRGs include shoreline protection tactics. TRGs have been developed for 11 priority sites on Barrow Island and eight sites on the WA mainland and North West Shelf islands.

The TRGs provide ORTs with response options and tactics that may suit that particular location under typical conditions. The suggested tactics are flexible and may be modified to meet the actual circumstances of an incident. Note: In the event of a spill, not all TRGs will be implemented; those sites most at risk will be identified through a NEBA process and prioritised accordingly.

Typical tactics used for pre-impact shoreline protection and TRG implementation include:

- Shoreline Containment (SC) – uses fixed booming tactics to corral and concentrate oil for recovery
- Exclusion Booming (Ex) – uses a boom as a barrier to exclude spilt oil from specific areas
- Diversion Booming (DV) – uses a boom to divert the flow of oil to a specific site where it can be recovered
- Deflection Booming (DF) –uses a boom to redirect the flow of oil away from an area
- Berms (Bunds), Dams, and Dikes (Bdd) – uses embankments and other physical barriers to exclude oil from sensitive areas and sometimes to concentrate it for recovery
- Shoreside Recovery (SR) – uses skimming systems to remove pooled oil from the shoreline to reduce impacts to sensitive receptors

- Passive Recovery (PR) – uses absorbent materials to collect oil and remove it from the environment. As a pre-impact tactic, absorbents are deployed ahead of the oil to prevent it from contacting sensitive receptors
- Free-oil Recovery (FoR) – uses marine skimming systems to remove oil from the water surface before it reaches the shoreline
- Non-oiled Debris Removal (DR) – removes debris from the shoreline to reduce potential contamination and reduce the waste stream.

Shoreline Clean up

Shoreline clean-up is used to assess the extent and severity of shoreline oiling and apply clean-up tactics to remove as much oil as practicable. Shoreline clean-up occurs after impact but aims to reduce the overall adverse impacts from a spill by removing oil from contaminated shorelines to prevent its remobilisation and/or prevent cross-contamination (e.g. foraging fauna).

Shoreline clean-up and treatment is an iterative process that requires systematic surveying of impacted areas before, during, and after clean-up. Shoreline surveys must be conducted systematically because they are crucial components of effective decision-making. Repeated surveys are needed to monitor the effectiveness and effects of ongoing treatment methods (i.e. changes in shoreline oiling conditions, as well as natural recovery), so that the need for changes in methodology, additional treatment, or constraints can be evaluated.

Tactics may be used alone or in combination to clean up oiled shorelines, including:

- Shoreline Assessment (SA) – uses the Oiled Shoreline Assessment (OSA) process (refer to Operational Monitoring Section of the OSMP (Ref. 6) to evaluate shoreline segments, establish clean-up priorities, and identify suitable tactics. Typically, this should be the first step in any shoreline clean-up response
- Natural Recovery (NR)–oiled shorelines are left untreated; the oil naturally degrades over time
- Manual and Mechanical Removal (NMR)– removes oil and contaminated materials using machinery, hand tools, or a combination of both
- Washing, Flooding, and Flushing (WFF)– uses water, steam, or sand to flush oil from impacted shoreline areas
- Sediment Reworking and Surf Washing (SRSW)– uses various methods to accelerate natural degradation of oil by manipulating the sediment.

Oiled Wildlife Response

A series of Oiled Wildlife Response Plans (prepared by AMOSC and DPaW) provide the minimum standard required for an OWR in WA. These plans apply to both Commonwealth and State Waters and to both DPaW and petroleum titleholders.

The Western Australian Oiled Wildlife Response Plan (WAOWRP) (DPaW & AMOSC, 2014), shall be adopted by Chevron Australia to guide oiled wildlife response (if implemented) during a LOWC for this Program.

Waste Management

Waste management (to manage the collection, storage, transportation, recovery and/or disposal of liquid and solid wastes) is a critical support function during a spill response.

Waste management requirements and tactics differ depending on the particular parameters of an incident resulting in an oil spill and the response options and tactics deployed. For this reason, an incident-specific Waste Management Plan will be prepared in the event of an oil spill using the Oil Spill Response Waste Management Plan (WMP) Template.

Chevron Australia undertakes emergency response exercises to ensure emergency response preparedness. A minimum of one test for each of the exercise levels identified in Table 6-1 below will be undertaken.

Table 6-1: Exercise Levels

Exercise Levels	Details
Level 1	Focus is on the On-Site Response Team (ORT)
Level 2	Includes the ORT and/or the Installation Emergency Management (Level 2) Team (Installation EMT)
Level 3	Can include the ORT, the Installation (Level 2) EMT and the Perth-based EMT. They may also include the Crisis Management Team and third parties

7.0 Stakeholder Consultation Plan

Chevron Australia prepared a Stakeholder Consultation Plan specific for this petroleum activity. The Stakeholder Consultation Plan describes:

- Stakeholder identification and analysis;
- Stakeholder engagement log, including information provided to stakeholders and Chevron Australia responses as well as ongoing consultation requirements; and
- Includes the full text of consultation.

7.1 Identified Stakeholders

Relevant stakeholders were identified through a stakeholder analysis process to ensure persons or organisations that may potentially be affected by the implementation of the petroleum activity were consulted. A summary of all the stakeholders consulted during the development of the plan is included in Table 7-1.

Table 7-1: Stakeholders Engaged for Gorgon and Jansz-Io Drilling, Completion and Well Maintenance Program

Emergency Response	
National	**Western Australia**
• AECOM • Apache Energy Ltd • Australian Marine Oil Centre (AMOSC) • Environmental Resources Management (ERM) • Intertek Geotek • Jacobs Group (Australia) Pty Ltd (formerly SKM) • Oil Spill Response Limited (OSRL) • ToxFree	• Department of Transport (DoT)
Oil / Gas Titleholders	
• Apache Energy Ltd • KUFPEC • Vermilion Energy	• Woodside Burrup Pty Ltd • Hess Exploration Australia Pty Ltd • Finder Exploration Pty Ltd
Fisheries agencies / associations	
National	**Western Australia**
• Australian Fisheries Management Authority (AFMA) • Australian Southern Bluefin Tuna Industry Association • Commonwealth Fisheries Association (CFA)	• Department of Fisheries, Western Australia • Pearl Producers Association (PPA) • Western Australian Fishing Industry Council (WAFIC) • Aquarium Specimen Collector's Association of WA • Professional Specimen Shell Fishermen's Association
Commercial Fisheries	
Commonwealth Managed	**Western Australia State Managed**
• North West Slope Trawl Fishery[1] • Western Skipjack Tuna Fishery[1]	• Pearl Oyster Managed Fishery[1] • Pilbara Line Fishery[1]

• Western Tuna and Billfish Fishery[1]	• Pilbara Trap Managed Fishery[1] • Pilbara Fish Trawl Interim Managed Fishery[1] • Mackerel Managed Fishery[1] • Marine Aquarium Fish[1] • Onslow Prawn[1] • Specimen Shell[1]
Recreational Fisheries	
Western Australia • Marine Tourism WA (formerly Charter Boat Owners and Operators Association) • Apache Charters • Blue Juice Charters • Coral Bay Discoveries (Mahi Mahi Charters) • Exmouth Deep Sea Fishing • Heron Charters • Pelican Charters	• Point Samson Charters • Montebello Island Safaris • Top Gun Charters (Exmouth) • RecFishWest • Exmouth Game Fishing Club • Nickol Bay Sport Fishing Club • Onslow Visitor Centre • Port Hedland Game Fishing Club
Government	
National • Australian Hydrographic Service (AHS) • Australian Maritime Safety Authority (AMSA) • Department of Broadband, Communication and the Digital Economy (DBCDE) • Australian Department of Defence[1] • Department of the Environment (DotE) • NOPSEMA	**Western Australia** • Department of Mines and Petroleum (DMP) • Department of Parks and Wildlife (DPAW) • Department of Environment Regulation (DER) • DoT[1] • Pilbara Ports

[1.] Multiple persons or organisations contacted for the identified stakeholder.

7.2 Consultation Undertaken

Queries and concerns raised by stakeholders during the consultation period are summarised in Table 7-3.

7.3 Ongoing Consultation

The Stakeholder Consultation Plan covers both initial and ongoing stakeholder engagement throughout the duration of the project. Chevron Australia will maintain communications with identified stakeholders as required.

Relevant stakeholders will have the ability to engage with Chevron Australia Pty Ltd and advise on how they may be affected by the activity detailed within this public summary.

Should any additional queries, objections or claims be raised by relevant stakeholders, Chevron Australia will systematically assess and address these communications should they arise and respond accordingly.

Chevron Australia's contact details for ongoing stakeholder engagement are detailed in Table 7-2 below.

Table 7-2: Ongoing Stakeholder Contact Details

Email Address	epinfoaus@chevron.com

Table 7-3: Stakeholder Consultation – Key Issues Raised

Stakeholder	Issue Raised	Assessment of Merit	Chevron Response
Emergency Response			
AMOSC	When consulted on the current status of their response capability, AMOSC advised that their capability should be confirmed using online sources for members. AMOSC also suggested to provide them with visibility of the OPEP.	AMOSCs advice is considered reasonable and the OPEP has been updated to reflect online information available to AMOSC members.	Chevron confirmed that AMOSC capability will be checked using online resources. Chevron will provide a copy of the OPEP to AMOSC.
Oil / Gas Titleholders			
Vermillion	Sought confirmation of any activity in their permit area WA-14-L.	Request not considered relevant to this EP and the drilling, completion and well maintenance activities, which would occur within Chevron Titles only.	Chevron followed up with response relevant to Jansz pipeline operational activities; covered within the Gorgon and Jansz–Io Feed Gas Pipeline and Wells Commissioning and Operations Environment Plan (G1-NT-PLNX0001176).
Fisheries agencies / associations			
AFMA	Requested continuing contact with the Fisheries involved.	Request considered reasonable for those fisheries potentially affected by drilling, completion and well maintenance activities.	Chevron to continue ongoing consultations with fisheries as agreed with individuals and organisations. Note, agreed consultations are detailed within the Stakeholder Consultation Plan.
WA DoF	WA DoF requested to be notified of new activities a minimum of three months prior to the commencement of any new activity.	Drilling, completion and well maintenance activities within the Gorgon Gas development are not considered to be new activities; DoFs request is not considered to be relevant to the petroleum activities covered within the plan.	The fact sheet and map were developed by Chevron Australia Pty Ltd (Chevron) to be inclusive of activities being undertaken during the operations phase, and covered by environment plans. Significant modifications to the activity or new stage of the activity not covered within the environment plan will be assessed in accordance with the Regulations to determine whether new or increased environmental impacts or risks exist and whether further consultation, revision and/or resubmission is required. Chevron notes the Departments request to be notified a minimum of three months prior to the commencement of new activities. Any objections or claims raised in relation to the activity will be dealt with appropriately and in accordance with the Regulations.
	WA DoF advised of eight (8) specific fisheries with interests existing in close proximity to the activities covered under the plan. The DoF also advised chevron should maintain ongoing consultation with WAFIC and RecFishWest.	The information provided by the department was in alignment with the stakeholders contacted as part of the stakeholder engagement process undertaken by Chevron Australia for this EP.	The following commercial fisheries (State and Commonwealth) and fisheries stakeholders have been contacted, contact being license holder direct (agreed engagement): Western Tuna and Billfish Western Skipjack Tuna North West Slope Trawl Mackerel Marine Aquarium Fish Specimen Shell Onslow Prawn Pilbara Trap Pearl Oyster and aquaculture (via the Pearl Producers Association) Pilbara Line Pilbara Trawl – included in consultation, note no active trawl fishing in any areas of the Gorgon region The above stakeholders have received the Fact Sheet outlining the overall project and will be advised of the commencement of key phases of the activity and rig move notices, and any relevant exclusion zone information. Information will also be made available via Notice to Mariners.
	DoF advised that Customary, recreational and charter fishing may also occur within the proposed area of activities.	Customary fishing – Chevron has consulted with aboriginal stakeholder groups, and understands that there is no customary fishing in	Customary fishing – Chevron has consulted with aboriginal stakeholder groups, and understands that there is no customary fishing in the proposed area of activities. Customary fishing in the wider region is typically limited to recreational fishing from the beaches or in near shore areas up to a couple of kilometres

		the proposed area of activities. Recreational fishing – Chevron has consulted with RecFishWest and fishing clubs in the area (agreed engagement). Charter fishing - Chevron has consulted Marine Tourism WA (on-sends to its member base) multiple charter fishing companies.	from the mainland. Recreational fishing – Chevron has consulted with RecFishWest and fishing clubs in the area (agreed engagement) - Exmouth Game Fishing Club, Nickol Bay Sport Fishing Club, Onslow Visitor Centre and Port Hedland Game Fishing Club. Charter fishing - Chevron has consulted Marine Tourism WA (on-sends to its member base) as well as Apache Charters, Blue Juice Charters, Coral Bay Discoveries, Heron Charters, Montebello Island Safaris, Pelican Charters, Point Samson Charters and Top Gun Charters. The above customary, recreational and charter fishing stakeholders have received the Fact Sheet outlining the overall project Recreational and Charter fishing stakeholders will be advised of the commencement of key phases of the activity and rig move notices, and any relevant exclusion zone information. Information will also be made available via Notice to Mariners.
	WA DoF requested to be contacted in the event of a spill or discharge of any pollutant into the environment within 24h of Chevron reporting the incident to the appropriate authority. In the event of an spill or discharge of any pollutant into the environment. The Department requests that its spill response officer is contacted by phone (0430 070 159) and by email (environment@fish.wa.gov.au) within 24 hours of Chevron reporting the incident to the appropriate authority	Pollution incidents arising from the activities described within this EP are to be reported in accordance with the OPGGS(E)R. Where a spill to the environment may have a moderate to significant environmental impact, relevant agencies and response groups are to be contacted.	The request from the Department has been noted and Chevron can confirm that the Department of Fisheries is listed in the Chevron Emergency Management Team contact list and reflects the contact details provided by the Department.
	WA DoF requested a more detailed description of the expected discharge of “biodegradable fluids” during commissioning and operations phases, and to advise of any known impacts these fluids might have on fish, fish habitat and/or fishery operations	Drilling, completion and well maintenance activities will result in discharges to the marine environment. Such discharges are not unique within the North West shelf, and are commonplace within other marine regions of the world such as the North Sea and Gulf of Mexico where oil and gas operations and fisheries operations co-exist. In keeping with industry best practice in the regions of the world, Chevron Australia implements a chemical environmental risk assessment process to ensure impacts and risks associated with discharges of chemicals are reduced to levels that are ALARP and acceptable.	The fluids to be discharged during commissioning and operations are yet to be fully confirmed. However, discharges during commissioning and operation activities will occur in water depths greater than 1300m and will typically be small in volume. As discharges will originate from infrastructure on the sea floor, dispersion/dilution associated with sea floor currents and other natural weathering processes are expected to significantly limit the extent of potential exposure. As there are no known fish habitats in this area, exposure to transient fish species, including those targeted by commercial fishing operations, is expected to be negligible.
	When developing the Pollution Emergency Plans (PEPs), the Department requests that Chevron collects baseline marine data to compare against any post-spill monitoring to determine the nature and extent of any impacts. This data should be made available to the Department on request.	Chevron Australia considers the request to be reasonable. Baseline data is available for the area and processes are in place to allow the collection of further baseline data should it be required to support any spill response monitoring and assessment.	Chevron has an activity and scenario-specific OPEP and an Oil Spill Monitoring Program (OSMP) as part of each EP. These documents are subject to DMP and NOPSEMA assessment. The OSMP includes a range of spill impact monitoring techniques, including, where practicable, the use of pre-impact baseline data and spatial reference/control site comparisons. It also outlines the baseline data which Chevron may use for comparison in the event of a spill from this activity.
	Spawning grounds and nursery areas for key fish species are particularly vulnerable to the impact of spills. The Department requests that specific strategies are developed in the Environment Plan and/or PEPs to mitigate these risks.	Considered to be a reasonable request; prioritisation of particular environmental receptors is already a key component of Chevron Australia’s spill response / monitoring strategies	Chevron has prepared the EPs in order to; describe the activity; describe the environment to identify the environmental values and sensitivities in the area that may potentially be affected and; identify mitigation measures to reduce risks to ALARP. This includes the assessment of potential receptors, including fish species and spawning grounds. The EP and OPEP outline strategies to mitigate impacts and reduce identified risks to ALARP.
	The department highlighted biosecurity measures and reporting requirements for the presence of any marine pest or disease, and that information be forwarded directly to vessel operators associated with the project.	Drilling, completion and well maintenance activities covered under the plan will occur within commonwealth waters; all applicable quarantine management processes for these activities will be adhered to and additional measures implemented where they reduce the risk of introducing marine pests and diseases to ALARP and acceptable levels	The EP specifies controls to minimize the risk of translocating pests and diseases into or within WA waters for vessels associated with the petroleum activity and within the operational area. Examples of controls include the requirement for vessels associated with the petroleum activity to be AQIS compliant; and that vessels entering the Marine Quarantine Zone surrounding BWI are compliant with the approved Gorgon Quarantine Management System (QMS) which was developed in consultation with an independent Quarantine Expert Panel, of which the Department is a member. The confirmed introduction or spread of marine pests is identified as a reportable incident to be notified verbally and in writing to NOPSEMA and DMP.

			Vessel operators associated with the activities described in the EPs will be required to comply with, the quarantine requirements of the EPs.
	WA DoF requested that all potential impacts and risks to fisheries, fish and fish habitat described in this letter are acknowledged in the final Environment Plan, and strategies undertaken by Chevron to mitigate or minimise these impacts are defined.	The impacts and risks of the activities described within the EP are risk assessed. The consultations undertaken as part of the EP are considered within the risk assessment process. All impacts and risks identified as part of the risk assessment process are managed to ALARP and acceptable levels.	Chevron confirms that potential impacts and risks resulting from the activities described in the EPs, including to fisheries, fish and fish habitat, have been evaluated and mitigation measures developed as necessary to reduce these risks to ALARP.
	WA DoF noted their advice was valid for six (6) months and requested Chevron to provide regular updates on activities that have the potential to impact the aquatic environment.	Accepted that the DoF specify a validity to the advice provided and agreed that regular consultations to be undertaken in alignment with the stakeholder Engagement Plan for the EP.	Significant modification to the activity or a new stage of the activity not covered within the environment plans will be assessed in accordance with the Regulations to determine whether new or increased environmental impacts or risks exist and whether further consultation, revision and/or resubmission is required. Chevron will consult with the Department as required through this process. EPs will be reviewed and/or updated in accordance with the frequency stipulated in the Regulations (every 5 years) or where new or increased environmental impact or risk is identified.
WAFIC	No reply to initial engagement which included fact sheet / maps and summary information of activities during the operations phase.	Previous agreed engagement with WAFIC is to provide a summary of feedback from commercial fisheries sector and WA fisheries.	Summary of engagements to be sent to WAFIC
Commercial Fisheries			
Western Wild Fisheries	Western Wild Fisheries indicated concern regarding exclusion zones associated with: temporary drilling activities; permanent infrastructure; and increased offshore activity They suggested that these will effectively restrict (for instance, limit, curb, hamper, impede, inhibit) Western Wild Fisheries fishing activities.	Research and assessment undertaken as part of the EP indicated that fishing activity levels were low within the areas Chevron proposed to be working. In addition, any impediments to fishing vessels through physical presence of MODUs / vessels and associated exclusion zones, would be local to a very small area of ocean relative to the area available to the particular type of fishing activities.	Chevron responded to Western Wild Fisheries during 2013 noting that the comments would be considered as part of the development of the EP: Gorgon Gas Development Drilling and Completion Program.
Recreational Fisheries			
No issues raised			
Government			
Department of Broadband, Communication and the Digital Economy (DBCDE)	No comment on this activity but noted Trident had proposed submarine cable work in future.	Considered to be relevant information for future operations	The DBCDE information regarding proposed new submarine cable has been distributed to relevant persons within Chevron Australia.
Department of Mines and Petroleum (DMP)	DMP acknowledged that the environment plan was being updated for operations and also requested to be kept informed of additional drilling activities within the Gorgon and Jansz-Io production licences in accordance with the OPGGS (E) regulations and DMPs consultation guidance note.	Considered reasonable to inform DMP in line with the OPGGS(E)R and DMPs consultation guidance note.	Confirmed that DMP will be notified of additional drilling activities within the Gorgon and Jansz-Io production licences in accordance with the OPGGS(E)R and DMPs consultation guidance note. Specifically, the DMP will be notified in accordance with Regulation 30 of the OPGGS(E)R, and a summary of the activity as detailed within the DMP consultation guidelines, and agreed with the DMP.
Pilbara Port Authority	Email acknowledged, requested amendment to contact	Considered reasonable	Contacts amended
DotE	Agreed consultation with DotE is to provide abridged plan to allow review against EPBC Act conditions relevant to the described petroleum activities.	This approach was agreed with DotE via telephone during July 2014.	Chevron Australia to provide DotE with abridged plan covering relevant EPBC Act conditions for the described petroleum activities.

8.0 Acronyms and Abbreviations

Table 8-1 defines the acronyms and abbreviations used in this document.

Table 8-1: Acronyms and Abbreviations

Acronym / Abbreviation	Definition
ABUs	Australasia Strategic Business Units
AFMA	Australian Fisheries Management Authority
AHS	Australian Hydrographic Service
AHTS	anchor handling, tug and supply vessels
ALARP	As Low As Reasonably Practicable
AMOSC	Australian Marine Oil Centre
AMSA	Australian Maritime Safety Authority
AQIS	Australian Quarantine and Inspection Service
BIA	Biologically Important Area
CFA	Commonwealth Fisheries Association
Chevron Australia	Chevron Australia Pty Ltd
CMR	Commonwealth Marine Reserve
D&C	Drilling and Completion
DBCDE	Department of Broadband, Communication and the Digital Economy
DER	Department of Environment Regulation
DMP	Department of Mines and Petroleum
DoT	Department of Transport
DotE	Department of the Environment
DPAW	Department of Parks and Wildlife
EMBA	environment that may be affected
EMT	Emergency Management Team
EP	Environment Plan
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ERM	Environmental Resources Management
HES	Health Environment and Safety
KEFs	Key Ecological Features
LNG	liquefied natural gas
MODU	Mobile Offshore Drilling Unit
NADF	Non Aqueous Drilling Fluid
NOPSEMA	National Offshore Petroleum Safety Environment Management Authority
OEMS	Operational Excellence Management System
OPEP	Oil Pollution and Emergency Plan

Acronym / Abbreviation	Definition
OPGGS(E)R	Offshore Petroleum Greenhouse Gas and Storage (Environment) Regulations 2009
ORT	On-Site Response Team
OSRL	Oil Spill Response Limited
P&A	well plug and abandonment
PPA	Pearl Producers Association
SOC	Synthetics on Cuttings
the petroleum activities	drilling, completion and well maintenance activities
the Plan	Gorgon and Jansz-Io Drilling, Completion and Well Maintenance Program Environment Plan
VSP	Vertical Seismic Profiling
WAFIC	Western Australian Fishing Industry Council
WBF	Water Based Fluids