Wheatstone Project

Summary Environment Plan – Rock Blanket Installation

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WHEATSTONE PROJECT
Summary Environment Plan – Rock Blanket Installation

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1.0 INTRODUCTION

The Summary Environment Plan – Rock Blanket Installation (this Plan) summarises the Wheatstone Project Installation Environment Plan – Rock Blanket Installation (the EP) (Document Number WS2-1665-HES-PLN-CVX-000-00001-000). The EP was accepted by the National Offshore Petroleum Safety Environment Management Authority (NOPSEMA) on 6 January 2014.

This Plan has been prepared in accordance with *OPGGS(E)R, Division 2.2, Regulation 11(8).*

1.1 Location

The activities will be performed at the location of the Wheatstone Platform (WP), as represented in Figure 1-1. The WP is located at Easting 330 860.000 m and Northing 795 520.000 m (UTM Zone 50). These coordinates are based on the Geodetic Datum of Australia (GDA94).

1.2 Timeframe

The activities are scheduled to commence in Quarter 1 2014 for a duration of between 14 and 21 days. Activities may potentially be conducted 24 hours per day. The timing and duration is indicative, and may be subject to potential delays caused by weather events, vessel availability and other unforseen factors.

1.3 Operator Details

Chevron Australia Pty Ltd (Chevron) is the Operator of the Wheatstone Liquefied Natural Gas Project. The Joint Venture Participants in the Wheatstone Project are Australian subsidiaries of Chevron, Apache Corporation, Kuwait Foreign Petroleum Exploration Company, Shell, Kyushu Electric Power Company and PE Wheatstone Pty Ltd (part owned by TEPCO).

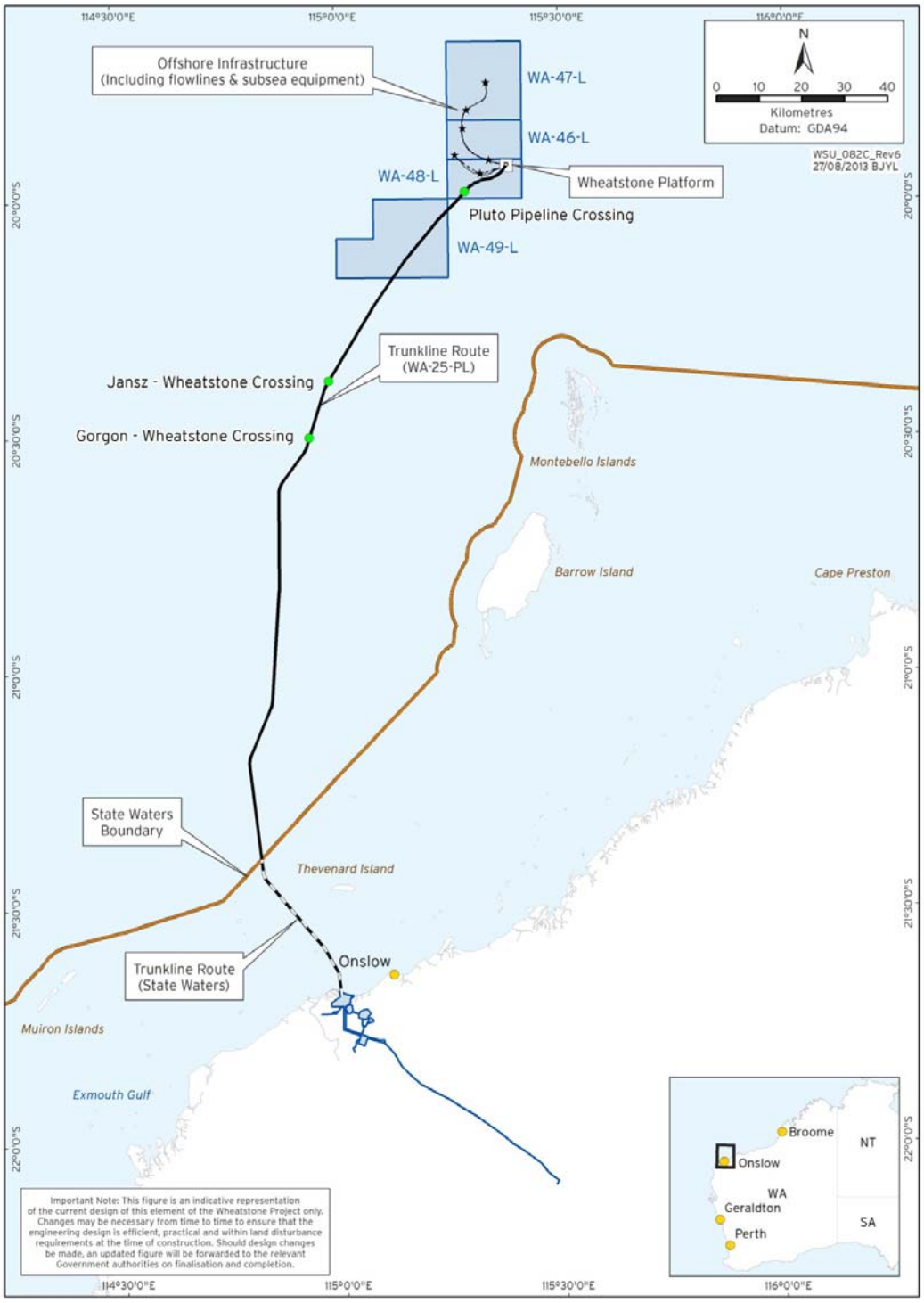

Figure 1-1: Location of Proposed Wheatstone Project Infrastructure

2.0 ACTIVITY DESCRIPTION

2.1 Planned Activity Summary

The following activities are associated with the Plan:

- Pre-installation survey
- Preparatory operations for rock blanket installation
- Installation of rock blanket
- Post installation of rock blanket protection.

Up to two vessels are likely to be used to complete the rock blanket installation activities. A single vessel will be used for surveying, preparatory works and rock placement activities. This is a specialised rock placement vessel with a remotely operated vehicle (ROV) fall pipe (hereafter referred to as the fall pipe vessel or FPV). No anchors will be used during the installation of the rock blanketBunkering in Commonwealth Waters is not planned for this scope of work.

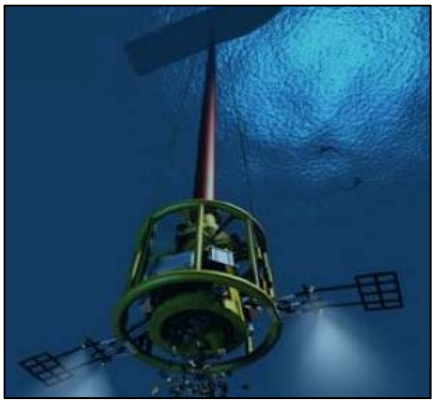

Figure 2-1: Integrated ROV Fall Pipe System

2.1.1 Pre-Installation Survey

A seabed survey of the operational area will be undertaken by the FPV using survey equipment integrated within the ROV fall pipe. Multi beam echo sounding (MBES) and visual aids will be used to measure the existing seabed bathymetry and identify the presence of debris.

This non-intrusive survey approach will serve the dual purpose of confirming if any changes in seabed profile have taken place since a preceding survey undertaken in 2011 and to provide the basis for the construction of the rock blanket to specification.

2.1.2 Preparatory Operations

Depending on the results of the pre-installation survey, some preparatory operations may be required using the FPV. No changes to the seabed profile are anticipated however, if any increased accumulations of surface sediment are identified and are deemed to be detrimental to the mechanical performance of the rock blanket foundation, such accumulations will be removed. Removal of such accumulations will be undertaken using a mass flow excavation tool integrated within the fall pipe system of the rock placement vessel that will effectively

blow away the loose sediment using water pressure. In the unlikely event that any foreign debris of significant size is noted within the rock blanket footprint, measures will be undertaken to move the debris from the footprint to the nearby seabed area (adjacent to the footprint) utilising the vessel's ROV.

2.1.3 Installation of Rock Blanket

The rock blanket will be constructed using a carefully graded crushed metamorphic or igneous rock with a mean particle size of approximately 40 mm, ranging from approximately 5 mm to 90 mm. The placement of approximately 35 000 tonnes of crushed rock will be required. The rock placement is undertaken through a motion compensated fall pipe system that integrates a built in ROV for accurate placement of rock and includes a full suite of survey equipment including a multi beam scanner.

The rock blanket surface will be constructed to a maximum water depth of approximately 70 m Lowest Astronomical Tide (LAT) over the plan area approximately 135 m by 107 m. A perimeter shoulder around the rock blanket will be constructed at a gradient of 1:3 to meet the natural seabed, resulting in a total overall footprint of approximately 140 m x 110 m.

The outlet of the fall pipe will be positioned approximately three metres above the seabed surface and the rock will be laid in carefully controlled parallel runs as the vessel moves at a controlled speed (<1 knot). The rock blanket will be gradually built up to the required level, with control surveys undertaken in between these runs, undertaken using the MBES survey equipment integrated in the fall pipe ROV. A final survey will be undertaken by the FPV at the end of construction. The FPV will require approximately three loads of rock and will therefore be required to travel to and from the nominated port to collect the cargo.

2.1.4 Post Installation Rock Blanket Protection Activities

The time between completion of the rock blanket installation and arrival of the Steel Gravity Structure at the WP site could be approximately five months. If considered necessary, a guard vessel will be stationed in the area during this period.

2.2 Emergency Condition Summary

The credible hydrocarbon and chemical spill scenarios associated with the activity were identified and assessed and are as follows:

- Hydraulic fluid and chemical spills due to single point failure
- Vessel collision resulting in rupture of a fuel tank and loss of fuel (heavy fuel oil (HFO) or marine diesel oil (MDO)) to the marine environment.

Modelling of these scenarios determined the environment that may be affected (EMBA) in the event of an unplanned emergency condition.

3.0 DESCRIPTION OF THE ENVIRONMENT

This section describes the environmental that may be affected by the rock blanket installation (including in the event of an emergency).

3.1 Physical Environment

The region is largely characterised by an arid, subtropical climate. Daily temperatures range from 20 °C to 34 °C between the months of October and March in summer, and 15 °C to 26 °C between May and August in winter. The transitional season occurs in April and September. During summer, prevailing winds are from the north-west and south-west, typically varying between 10–13 ms^{-1}. During winter months, north-easterly to south-easterly winds average between 6–8 ms^{-1} (Chevron, 2010d). The cyclone season runs from Mid-December to April, peaking in February and March (Bureau of Meteorology 2012).

Waters in the region show temporal and spatial variation in water temperature, with a mean sea surface temperature in open shelf waters around 29.3 °C in March dropping to 24 °C in August. Nearshore temperatures in semi-enclosed waters of the North West Shelf may fluctuate through a higher range from 19-30.4 °C (Chevron, 2010). Tides in the region are semi-diurnal with a spring tide range of 1.9 m.

The large-scale currents predominantly flow southwest through the region influenced by the Indonesian Throughflow and Leeuwin Current (Buchan 1998). Below the surface currents, there are a number of subsurface currents, the most important of which are the Leeuwin Undercurrent and the West Australian Current. Surface currents on the North West Shelf are largely dominated by moderate to strong east-west surface current patterns from tidal variations.

Offshore waters are characterised by a relatively clear water column. In shallower, nearshore waters turbid conditions are usually the result of tidal, wave action or current- induced re-suspension of sediments and from episodic runoff of adjoining rivers. Turbidity levels >80 NTU have been recorded during cyclonic activity.

The cyclone season runs from Mid-December to April, peaking in February and March (Bureau of Meteorology 2012). Cyclonic events can deliver up to 300 mm of rainfall. On average about five tropical cyclones pass through the warm ocean waters off the north-west coast annually (Bureau of Meteorology 2012).

3.2 Ecological and Socio-economic Environment

Environment Protection and Biodiversity Conservation (EPBC) Act listed ‘threatened’ and ‘migratory’ fauna are known to occur within the EMBA including marine turtles, marine mammals, marine seabirds and migratory shorebirds. For the purposes of this document, regionally important ecological and socio-economic / heritage features within the EMBA have been summarised within Table 1.

Table 1: Areas of conservation significance and key ecological features which occur within the EMBA

Zone	Recognised Conservation Areas within EMBA	Key Ecological Features, Values & Sensitivities
Gascoyne and Carnarvon Canyon Area	Commonwealth: ♦ Gascoyne Commonwealth Marine Reserve ♦ Carnarvon Canyon Commonwealth Marine Reserve ♦ Marine National Park Zone (IUCN II) ♦ Habitat Protection Zone (IUCN IV) ♦ Multiple Use Zone (IUCN VI)	• Canyons on the slope between the Cuvier Abyssal Plain and the Cape Range Peninsula (enhanced productivity, aggregations of marine life and unique sea floor feature) • Exmouth Plateau (unique sea-floor feature associated with internal wave generation) • Continental slope demersal fish communities (high species diversity and endemism - the most diverse slope bioregion in Australia with over 500 species found with over 64 of those species occurring nowhere else) • Area provides important migratory habitat for both the northern and southern migratory routes of the humpback whale. Usage level is seasonally high (Listed species) • Loggerhead and Hawksbill turtle geographic distributions marginally overlap this Area • The Area provides important foraging and breeding grounds that are highly utilised by a diverse number of marine and migratory bird species • One listed heritage site within the Area • 17 shipwrecks recorded in the Area • Commonwealth managed fisheries include Western Deep Water Trawl, Southern Bluefin Tuna, Western Tuna and Billfish, and Western Skip Jack Tuna • State managed fisheries include Exmouth Gulf and Onslow Prawn Managed Fishery (OPMF), North Coast Demersal Fisheries, West Coast Deep Sea Crustacean, Mackeral Managed Fishery, Pearl Oyster Managed Fishery, Specimen Shell and Marine Aquarium Managed Fishery, and Beche-de-mer Fishery.
Ningaloo Area	International: ♦ Ningaloo Coast World Heritage Area Commonwealth: ♦ Ningaloo Marine Park (Commonwealth Waters) ♦ Marine National Park Zone (IUCN II) ♦ Recreational Zone (IUCN IV) State: ♦ Ningaloo Marine Park ♦ Muiron Islands Marine Management	• Commonwealth waters adjacent to Ningaloo Reef • Ningaloo Reef is the largest fringing barrier coral reef, and the second largest coral reef system in Australia. The Ningaloo Coast and Muiron Islands encompass a series of interconnected habitats, from the continental shelf and slope communities of the Commonwealth Waters to the reef and onshore ecosystems of Ningaloo Reef • Limited mangrove communities occur in the northern half of the Ningaloo Marine Park with three species of mangroves identified within the Park • Turtle nesting habitat with high utilization of beaches with high dune height with major turtle rookeries along the Ningaloo and Jurabi coast • Area provides foraging, breeding, calving and nursing habitat in the shallow protected lagoonal environments fringing the coast and the offshore islands, though not sighted in the comparatively large or dense concentrations seen in the Exmouth Gulf or Shark Bay Areas

Zone	Recognised Conservation Areas within EMBA	Key Ecological Features, Values & Sensitivities
	Area ♦ Cape Range National Park ♦ Jurabi and Bundegi Coastal Parks ♦ Bundera Sinkhole ♦ Cape Range Subterranean Waterways	• Area provides important migratory habitat for both the northern and southern migratory routes of the humpback whale. Usage level is seasonally high. (Listed species) • Loggerhead, Green, Hawksbill, Flatback, Leatherback and Olive Ridley turtles may all be present in this area • Whale sharks aggregate in the waters of the Ningaloo Marine Park, frequently close to the Ningaloo Reef front, both in the lagoon and outside it (Listed species) • The Muiron Islands are significant feeding areas for many species of seabirds and shorebirds, and are important nesting sites for the Wedge-tailed Shearwater. Migratory species that are most abundant in summer and autumn include the Wedge-tailed Shearwater and nine other migratory bird species that are protected under the China–Australia Migratory Bird Agreement (CAMBA) and Japan–Australia Migratory Bird Agreement (JAMBA) • Tourism and recreation is a major component of the local economy with Ningaloo Marine Park and adjoin Cape Range National Park being a key tourist destination of local, state, national and international significance. • Infrastructure includes the harbour at Exmouth Tantabiddi. • 60 listed heritage sites, one site in close proximity to the EMBA Zone. • 39 shipwrecks recorded in the Area. • Commonwealth managed fisheries include Western Deep Water Trawl, Southern Bluefin Tuna, Western Tuna and Billfish, and Western Skip Jack Tuna • State managed fisheries include OPMF, North Coast Demersal Fisheries, West Coast Deep Sea Crustacean, Mackeral Managed Fishery, Pearl Oyster Managed Fishery, Specimen Shell and Marine Aquarium Managed Fishery, and Beche-de-mer Fishery.
Exmouth Gulf	Commonwealth: ♦ Exmouth Gulf East Wetlands ♦ Learmouth Air Weapons Range Saline Coastal Flats	• This area falls within the North-West Marine Bioregion and is defined by the breeding, calving and foraging grounds of the Dugong defined in the SEWPaC (now known as DoE) National Conservation Atlas and includes the bordering intertidal zones. It excludes the area defined as “Ningaloo”. • Provincial Bioregions intercepting the Area include the Northwest Integrated Marine and Coastal Regionalisation of Australia Province. • Meso-scale bioregions intercepting the Area include Pilbara (offshore) and Pilbara (nearshore). • The western shore comprises dune-backed beaches and supports hard corals south of North West Cape to the Bay of Rest. Inter-tidal and sub-tidal fringing coral communities and patch reefs are found around the islands of the Exmouth Gulf. • Seagrass habitats within Exmouth Gulf are typically composed of Halophila spp. similar

Zone	Recognised Conservation Areas within EMBA	Key Ecological Features, Values & Sensitivities
		to the nearshore west-Pilbara, as well as broad-leaved species such as Cymodocea serrulata and Syringodium isoetifolium. Seagrass meadows in the Area provide key habitat for foraging, breeding, calving and nursing dugongs. Utilisation level is high and year round. • This Area possesses regionally significant mangroves outside designated industrial areas. Commercial fisheries for prawns in the Area rely upon the distinctive eastern and southern mangals of the area . • High density important turtle nesting habitat in the Area, with major rookeries along the Ningaloo and Jurabi coast. Loggerhead, Green, Hawksbill, and Flatback may all be present in this area. • Area provides important migratory habitat for both the northern and southern migratory routes of the humpback whale. Usage level is seasonally high. (Listed species) • Aquaculture, pearl hatcheries in Exmouth supply to pearl farms in Exmouth Gulf and Montebello Islands • 11 listed heritage sites, two sites in close proximity to the EMBA Zone. • Three shipwrecks recorded in the Area. • Commonwealth managed fisheries Southern Bluefin Tuna, Western Tuna and Billfish, and Western Skip Jack Tuna State managed fisheries include Exmouth Gulf Prawn Managed Fishery and OPMF, North Coast Demersal Fisheries, West Coast Deep Sea Crustacean, Mackeral Managed Fishery, Pearl Oyster Managed Fishery, Specimen Shell and Marine Aquarium Managed Fishery, and Beche-de-mer Fishery
Pilbara Coast Area	State: ♦ Part of the Greater Sandy Islands Nature Reserve	• This Area possesses regionally significant mangroves both inside and outside industrial areas and associated port areas • There are extensive areas of salt marsh along the Pilbara coastline from Exmouth Gulf northward where they typically occupy the upper intertidal zone, often mixed with scattered mangroves and also terrestrial vegetation on supratidal ‘islets’. There are no areas of salt marsh listed as significant components of the Pilbara shoreline other than a general recognition of these habitats as benthic primary producer habitat • Turtle nesting, internesting and foraging habitat with high utilization of beaches with high dune height • Area provides important migratory habitat for both the northern and southern migratory routes of the humpback whale. Usage level is seasonally high. (Listed species) • Loggerhead, Green, Hawksbill, Flatback and Leatherback turtles may all be present in this area

Zone	Recognised Conservation Areas within EMBA	Key Ecological Features, Values & Sensitivities
		• The Area provides important foraging and breeding grounds that are highly utilised by a small number of marine and migratory bird species • The North West Coast, including Onslow, the Mackerel Islands, Dampier and the Dampier Archipelago, Karratha, and the Burrup Peninsula, are key coastal tourism areas. • Ports and associated infrastructure at Onslow, Thevanard Island and Airlie Island. • The North West Coast, including Onslow, the Mackerel Islands, Dampier and the Dampier Archipelago, Karratha, and the Burrup Peninsula, are key coastal tourism areas • 99 listed heritage sites, 29 sites in close proximity to the EMBA Zone. • Three shipwrecks recorded in the Area. • Commonwealth managed fisheries Southern Bluefin Tuna, Western Tuna and Billfish, and Western Skip Jack Tuna • State managed fisheries include OPMF, North Coast Demersal Fisheries, West Coast Deep Sea Crustacean, Mackeral Managed Fishery, Pearl Oyster Managed Fishery, Specimen Shell and Marine Aquarium Managed Fishery, and Beche-de-mer Fishery.
Barrow and Montebello Islands Area	Commonwealth: ♦ Montebello Commonwealth Marine Reserve ♦ Multiple Use Zone (IUCN VI) State: ♦ Montebello Islands Marine Park ♦ Barrow Island Marine Park ♦ Barrow Island Marine Management Area ♦ Lowendal Islands Nature Reserve	• Ancient Coastline is represented in this reserve • Macroalgae meadows are a dominant feature of the sub-tidal habitats in this area and are most commonly found on shallow limestone pavement in depths of 5 to 10m. It is estimated that macroalgae meadows make up 40% of the benthic habitats of the Montebello/Barrow Islands Marine Conservation Reserve and make the major contribution to primary production • This Area possesses regionally significant mangroves. Six species of mangrove are found in the reserves, with the Montebello Islands' mangrove communities considered globally unique as they occur in lagoons of offshore islands • Significant turtle nesting habitat particularly at sandy beaches on Varanus Island, Lowendal Island Group and Barrow Island • Dugongs are frequently recorded in the shallow, warm waters in the vicinity of the Montebello Islands, Lowendal Islands and Barrow Shoals, where they feed on seagrass meadows and algae, though not in the comparatively large or dense concentrations seen further south in the Exmouth Gulf and Shark Bay Areas • Area provides important migratory habitat for both the northern and southern migratory routes of the humpback whale. Usage level is seasonally high. Female humpback whales and their calves use the sheltered water to the west of Trimouille Island in the Montebello group as a resting area during their southerly migration to feeding grounds

Zone	Recognised Conservation Areas within EMBA	Key Ecological Features, Values & Sensitivities
		in Antarctica (Listed species) • Several dolphin species have resident populations within the Barrow Island area including bottlenose and Indo-pacific humpbacked dolphin (Listed species) • Loggerhead, Green, Hawksbill and Flatback turtles may all be present in this area • Whale sharks have been recorded foraging seasonally in the area, however not at significant densities. (Listed species) • The Montebello/Lowendal/Barrow Island region has significant rookeries for 15 seabird species, including the largest breeding colony of Roseate Terns in WA, located on the Montebello Islands • Ports and associated infrastructure at Barrow Island and Varanus Island. • The pearling industry is present in the sheltered waters of the Montebello and Lowendal Islands • The Area is becoming an important location for the nature-based tourism industry, though visitation levels have historically been low • 19 listed heritage sites • Two shipwrecks recorded in the Area • Commonwealth managed fisheries Southern Bluefin Tuna, Western Tuna and Billfish, and Western Skip Jack Tuna • State managed fisheries include OPMF, North Coast Demersal Fisheries, West Coast Deep Sea Crustacean, Mackeral Managed Fishery, Pearl Oyster Managed Fishery, Specimen Shell and Marine Aquarium Managed Fishery, and Beche-de-mer Fishery.
Dampier Archipelago Area	Commonwealth: ♦ Dampier Commonwealth Marine Reserve ♦ Marine National Park Zone (IUCN II) ♦ Special Purpose Zone (IUCN VI) State: ♦ Dampier Archipelago Marine Park (proposed) ♦ Dampier Archipelago Island Reserves ♦ Part of the Greater Sandy Islands Nature Reserve	• Extensive macroalgal and seagrass communities occur within the proposed reserves in this Area. Macroalgae dominate submerged limestone reefs and also grow on stable rubble and boulder surfaces in the Dampier Archipelago/Cape Preston region • This Area possesses regionally significant mangroves both inside and outside industrial areas and associated port areas. There are six species of mangrove found in the proposed reserves and extensive mangrove communities line over 50% of the mainland shore. Many of these communities are considered to be of international significance • The intertidal sand and mudflat communities of the proposed reserves are primary producers and have an abundance of invertebrate life, which provides a valuable food source for shorebirds • Low level numbers of dugongs have been recorded in the Dampier Archipelago / Cape Preston region. Particularly in the shallow, warm waters in bays and between islands, including at East Lewis Island, Cape Preston, Regnard Bay, Nickol Bay and west of

Zone	Recognised Conservation Areas within EMBA	Key Ecological Features, Values & Sensitivities
		Keast Island • The Area provides important migratory habitat for both the northern and southern migratory routes of the humpback whale. Usage level is seasonally high. Females occasionally give birth in the waters of the Dampier Archipelago, although the main calving area is further north. Adult humpback whales and their young also frequent the Archipelago on their southern migrations in early spring, and Mermaid Sound is a significant resting area for females with their calves (Listed species) • Loggerhead, Green, Hawksbill, Flatback and Leatherback turtles may all be present in this area • The Area provides very important foraging and breeding habitat for a high diversity of birds, including a significant abundance of migratory and breeding seabirds. The small islands and islets such as Goodwyn Island, Keast Island and Nelson Rocks provide important undisturbed nesting and refuge sites and Keast Island provides one of the few nesting sites for pelicans in Western Australia • Ports and associated infrastructure at Dampier and Cape Lambert • Local tour operators offer tours to several historical locations in the Dampier Archipelago Area and Point Samson offers safe harbor for recreational vessels • 2721 listed heritage sites, 47 sites in close proximity to the EMBA Zone. • Three shipwrecks are recorded in the Area • Commonwealth managed fisheries Southern Bluefin Tuna, Western Tuna and Billfish, and Western Skip Jack Tuna • State managed fisheries include OPMF, North Coast Demersal Fisheries, West Coast Deep Sea Crustacean, Mackeral Managed Fishery, Pearl Oyster Managed Fishery, Specimen Shell and Marine Aquarium Managed Fishery, and Beche-de-mer Fishery.
Offshore Area	No recognised conservation areas within this zone	• Glomar Shoals situated at shelf depths of 33-77 m and Rankin Bank at shelf depths of 20 m (although not a Key Ecological Feature) – associated high biological diversity and productivity, aggregations of marine life • Ancient coastline at 125m depth contour • The Area contains a large ridgeline approximately 11 km long. Surveys of the ridgeline indicated sparse to occasional coverage of a diverse range of benthic sessile invertebrates including sea fans and whips and sponges • Area provides important migratory habitat for both the northern and southern migratory routes of the humpback whale. Usage level is seasonally high. (Listed species) • Loggerhead, Green, Hawksbill, Flatback and Leatherback turtles geographic distributions overlap this area

Zone	Recognised Conservation Areas within EMBA	Key Ecological Features, Values & Sensitivities
		• Whale sharks have been recorded foraging seasonally in the area, however not at significant densities. (Listed species) • The Area provides important foraging and breeding habitat that is highly utilised by various marine and migratory seabirds. Of particular note is the White-Tailed Tropic Bird which is only recorded in two locations in Western Australia • Nine shipwrecks are recorded in the Area. • Commonwealth managed fisheries include North West Slope Trawl, Western Deep Water Trawl, Southern Bluefin Tuna, Western Tuna and Billfish, and Western Skip Jack Tuna • State managed fisheries include OPMF, North Coast Demersal Fisheries, West Coast Deep Sea Crustacean, Mackeral Managed Fishery, Pearl Oyster Managed Fishery, Specimen Shell and Marine Aquarium Managed Fishery, and Beche-de-mer Fishery.
Argo- Rowley Terrace Area	Commonwealth: ♦ Argo-Rowley Terrace Marine Reserve ♦ Mermaid Reef Commonwealth Marine Reserve ♦ Marine National Park Zone (IUCN II) ♦ Multiple Use Zone (IUCN VI) State: ♦ Rowley Shoals Marine Park	• Canyons linking the Argo Abyssal Plain with the Scott Plateau (unique seafloor feature with enhanced productivity and feeding aggregations of species) • Mermaid Reef and the Commonwealth waters surrounding Rowley Shoals (an area of high biodiversity with enhanced productivity and feeding and breeding aggregations) • Intertidal coral reef communities are a major feature of the Rowley Shoals Marine Park • Loggerhead, Green and Hawksbill turtles may be present in this area • Area provides important habitat for sharks, which are found in abundance around the Rowley Shoals relative to other areas in the region • A wide range of seabirds have been observed at the Rowley Shoals. Bedwell and Cunningham Islands are recognised as important resting places for northern migrants en route to and from Australia as large flocks of unidentified waders have been seen at the Rowley Shoals • Four shipwrecks are recorded in this Area. • Commonwealth managed fisheries Southern Bluefin Tuna, Western Tuna and Billfish, and Western Skip Jack Tuna. • State managed fisheries include OPMF, North Coast Demersal Fisheries, West Coast Deep Sea Crustacean, Mackeral Managed Fishery, Pearl Oyster Managed Fishery, Specimen Shell and Marine Aquarium Managed Fishery, and Beche-de-mer Fishery.

4.0 MAJOR ENVIRONMENTAL HAZARDS AND CONTROLS

All aspects of the activity have been subjected to a comprehensive impact and risk assessment to understand the potential environmental risks associated with the activity and ensure risks are reduced to as low as reasonably practicable and are of an acceptable level. The risk assessment was undertaken in alignment with the processes outlined in Australian Standard/New Zealand Standard (AS/NZS) ISO 31000:2009 Risk Management and HB 203:2012 Managing Environment-Related Risk, using the Chevron Integrated Risk Prioritization Matrix.

The following environmental hazards have been identified and assessed for this activity:

- Physical Presence
- Seabed Disturbance
- Light Emissions
- Noise
- Atmospheric Emissions
- Introduced Marine Pests
- Hazardous and Non-Hazardous Solid Waste
- Hazardous and Non-Hazardous Liquid Waste
- Hydrualic Fluid and Chemical Spills
- Vessel Collision – Loss of Containment of HFO and MDO

To ensure the potential environmental impacts identified through the risk assessment are managed appropriately, Chevron has developed a range of performance standards (controls) that will be implemented throughout the course of the rock blanket installation. A summary of some of the major environmental hazards and controls are detailed in Table 2.

Table 2: Summary of Major Hazards, Potential Environmental Impacts and Controls

Sources of Risk (Hazards)	Potential Environmental Impacts	Controls
Physical presence of infrastructure and vessel movements	♦ Potential disruption / disturbance to commercial fishing operators or commercial shipping vessels ♦ Collision with marine fauna (including cetaceans, whale sharks, turtles) resulting in injury or death.	♦ A 24-hour visual, radio and radar watch will be maintained for vessels in the vicinity of the operational area in accordance with Standards of Training, Certification, and Watchkeeping (STCW95). ♦ Minimum lighting required for safety and navigational purposes will be operational, in accordance with the Navigation Act 2012 (Marine Orders Part 30 [Prevention of Collisions]). ♦ Vessel presence and rock blanket installation activities will be notified to AMSA (Commonwealth Waters) as applicable to enable a Notice to Mariners (or similar instrument) to be issued. ♦ Australian Hydrographic Service (AHS) informed of locations of the rock blanket to advise other stakeholders. ♦ Prepare and implement a Simultaneous Operations (SIMOPs) plan when vessels are working within 500 m of each other in the operational area. ♦ All vessels will have a trained observer (trained in marine fauna observation) on duty during daylight hours ♦ Vessels will establish an approach zone, inside which a speed limit of 5 knots and restrictions on navigation paths, will be enforced, in accordance with the Conservation Significant Marine Fauna Interaction Management Plan (CSMFIMP)
Seabed disturbance	♦ Direct disturbance to locally or regionally significant habitat and indirect disturbance to habitat through sediment dispersion and smothering of the benthic habitat.	♦ Dynamic Posotioning (DP)/GPS, ROV and mass flow excavator will be fully functional during rock blanket placement to ensure rock blanket is laid within the designated rock footprint placement area according to design drawings; and to guide the mass flow excavation tool for correct positioning for debris movement. ♦ Mass flow excavator, crane and ROV operators are trained to enable accurate placement of rock during rock placement.

Sources of Risk (Hazards)	Potential Environmental Impacts	Controls
Introduced marine pests (IMP)	♦ Introduction of IMP to the operational area	♦ If mobilising from International waters, vessels will have Department of Agriculture, Fisheries and Forestry (DAFF) clearance to operate in Australian waters, will submit a Quarantine Pre-Arrival Report (QPAR) to DAFF prior to entry ♦ All vessels to maintain a current anti-fouling coating that complies with the requirements of Annex 1 of the International Convention on the Control of Harmful Anti-Fouling Systems on Ships ♦ All vessels, as required by the Introduced Marine Pest Risk Assessment Procedure (IMPRAP), will have completed a vessel risk assessment as per the IMPRAP ♦ All high risk vessels (as assigned through the IMPRAP) will be inspected by a Department of Fisheries officer (or suitably qualified IMP expert approved by Department of Fisheries (DoF) ♦ All required vessels will implement the DAFF Australian Ballast Water Management Requirements
Solid waste	♦ Temporary and localised reduction in water quality associated with increase in nutrients	♦ Food waste will be discharged to the ocean beyond 12 nm from land in accordance with MARPOL, Annex V ♦ Vessels > 100 T (or certified for > 15 persons on-board) will have a Waste Management Plan, in accordance with MARPOL 73/78 ♦ Waste either incinerated or appropriately disposed of at a licensed onshore facility if disposed of in Australia
Liquid Waste	♦ Temporary and localised reduction in water quality	♦ Waste management and housekeeping requirements are communicated to all personnel during inductions. ♦ Offshore discharge of sewage in accordance with MARPOL Annex IV ♦ Oily bilge water will be disposed at an onshore licensed facility or discharged in accordance with MARPOL 73/78, Annex I ♦ Spill kits will be provided on all vessels and maintained and personnel will be trained in their use
Hydrualic Fluid and Chemical Spills	♦ Temporary and localised reduction in water quality	♦ Hoses and equipment will be maintained in accordance with the preventative maintenance schedule. ♦ Any loss of containment of hydraulic fluid from hydraulic equipment/machinery will be detected by pressure compensators and alarms and all activities will be halted on

Sources of Risk (Hazards)	Potential Environmental Impacts	Controls
		alarm signal. ♦ Hazardous materials will be stored/ contained in secondary containment and in accordance with Material Safety Data Sheets ♦ Spill kits will be provided on all vessels and personnel will be trained in their use and maintenance.
Vessel Collision – Loss of Containment of HFO and MDO	♦ Impact to socio-economic and ecological receptors including sub-tidal habitats, shorelines and marine fauna	♦ Vessels will be fitted with functional DP systems. Should DP systems be lost, where necessary or in the event of an emergency, an anchor will be lowered to prevent floundering ; and if possible, power will be restored to thrusters allowing for free mobilisation. ♦ Vessel presence and rock blanket installation activities notified to the AMSA (Commonwealth Waters) prior to activities commencing in the operational area to enable a Notice to Mariners (or similar instrument) to be issued. ♦ Minimum lighting required for safety and navigational purposes, in accordance with the *Navigation Act 2012* (Marine Orders Part 30 [Prevention of Collisions]), is on-board and operational, and certified. ♦ A 24 hour visual, radio and radar watch will be maintained for vessels in the vicinity of the operational area in accordance with Standards of Training, Certification and Watchkeeping (STCW95). ♦ Vessel master qualified to required STCW requirement.

5.0 MANAGEMENT APPROACH

The implementation strategy identifies the systems, practices and procedures to be used to ensure the environmental impacts and risks of the activities are reduced to ALARP and are acceptable, and the environmental performance objectives and standards are met. The implementation strategy is split between planned operational activities and unplanned event response, enabling roles and responsibilities to be clearly defined and to provide a clear chain of command for both.

The implementation strategy is to be enacted in accordance with Chevron Australia's Operational Excellence Management System. Chevron's Operational Excellence Management System is aligned to ISO 14001:2004 and key components of the management system are described in the subsections below.

5.1 Roles and Responsibilities

Accountabilities and responsibilities are defined for personnel involved in the projects implementation for both planned activities and emergency conditions.

5.2 Training and Competency

All personnel are required to attend environmental inductions and training relevant to their role for the activities. Training and induction programs facilitate the understanding personnel have of their environmental responsibilities, and increase their awareness of the management and protection measures required to reduce potential impacts on the environment. In addition to project training, personnel will also receive spill response training.

5.3 Monitoring and Reporting

The implementation strategy outlines the requirements for the following:

- marine fauna observations
- oil spill monitoring plan
- emissions and discharges, and
- routine external reporting and non-routine reporting (including internal incident reporting and investigations and external incident and near misses reporting).

5.4 Compliance assurance

A multi-tiered environmental compliance assurance program will be implemented for the duration of the activities described in the detailed Plan, including tools, processes and procedures to deliver and verify compliance with the EP. Assurance activities will include both Chevron-led and contractor-led audits and inspections. Chevron-led audits and inspections will be undertaken as required and in accordance with Chevron's ABU Compliance Assurance Process and the Health, Environment and Safety Audit Schedule for the Project.

5.5 Documentation and Records

Chevron Australia's ABU Operational Excellence Management System (OEMS) has dedicated information management tools and processes to ensure critical information is developed, accessible and maintained by the workforce. Wheatstone documentation shall be managed in accordance with this Process, and specifically via the Project's Document Management System. Accordingly, all documentation and records demonstrating compliance against environmental performance objectives and standards will be effectively maintained and retained for the life of the Project and not less than five years.

5.6 Environment Plan Review

Chevron's Management of Change process will be followed to document and assess the impact of any changes to the activities described in the EP. These changes will be addressed to determine if there is potential for any new or increased environmental impact or risk not already provided for in the EP. Where required the EP will be re-submitted to NOPSEMA for approval in accordance with Regulation 17 of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (OPGGS(E)R).

6.0 CONSULTATION

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

- stakeholder identification and analysis
- communication engagement plan, comprising the level and trigger of engagement, type of engagement, and frequency
- stakeholder engagement log, including any issues raised and Chevron responses
- full text of consultation.

6.1 Stakeholder Identification and Analysis

Relevant stakeholders have been identified through a stakeholder analysis process to ensure persons or organisations that may potentially be affected by the overall Wheatstone Platform and associated activities including rock blanket installation work have been consulted. Stakeholders were identified by reviewing:

- social / commercial receptors within the EMBA
- historical consultation undertaken for Chevron
- applicable legislation to identify regulatory agencies and
- Relevant agencies or organizations which may be involved in the event of a spill.

6.2 Communication Engagement Plan

Once the stakeholder analysis was completed, a Communication Engagement Plan was developed to determine the following, for each stakeholder:

- the level of engagement required
- the type of engagement required
- when engagement would be undertaken and
- the frequency of communication.

The Communication Engagement Plan covers both initial and ongoing stakeholder engagement for both planned activities and emergency conditions. Chevron will maintain communications with identified stakeholders as required ensuring they are informed of any aspects of the rock blanket installation activity that may potentially affect their respective interests within the area.

7.0 CONTACT DETAILS

Further information associated with the proposed activities may be obtained from:

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