DEVELOPMENT DRILLING CAMPAIGN
WA-50-L Environment Plan Summary

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1 INTRODUCTION

INPEX Operations Australia Pty Ltd. (INPEX), as operator on behalf of its joint venture partners, will be drilling 20 development wells within the production licence area WA-50-L in Commonwealth waters offshore of north-west Australia (the project). These development wells comprise the INPEX Ichthys Development Drilling Campaign (drilling campaign).

The drilling campaign will be conducted in accordance with the INPEX Development Drilling Campaign Environment Plan (EP) that has been prepared to comply with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (OPGGS (E) Regulations). The EP has been accepted by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

This document (EP Summary) provides an overview of the key elements of the EP, consistent with the requirements of Regulation 11 (7) and (8) of the OPGGS (E) Regulations.

2 LOCATION AND TIMING OF THE ACTIVITY

The project area is located in production licence area WA-50-L in Commonwealth waters, approximately 230 km north-west of the Kimberley coastline, at its closest point (Figure 1).The closest major town is Derby, located approximately 390 km south of the southern boundary of the project area. Coordinates of the provisional production wells are provided in Table 1. Provisional well drill centres are shown in Figure 1.

Drilling operations are anticipated to commence in the third quarter of 2014. Development drilling is expected to be completed within three to four years of commencement. Drilling of each well (including moving the mobile offshore drilling unit (MODU) between wells, anchoring and well testing) is expected to take up to approximately 90 days to complete.

3 DESCRIPTION OF ACTIVITY

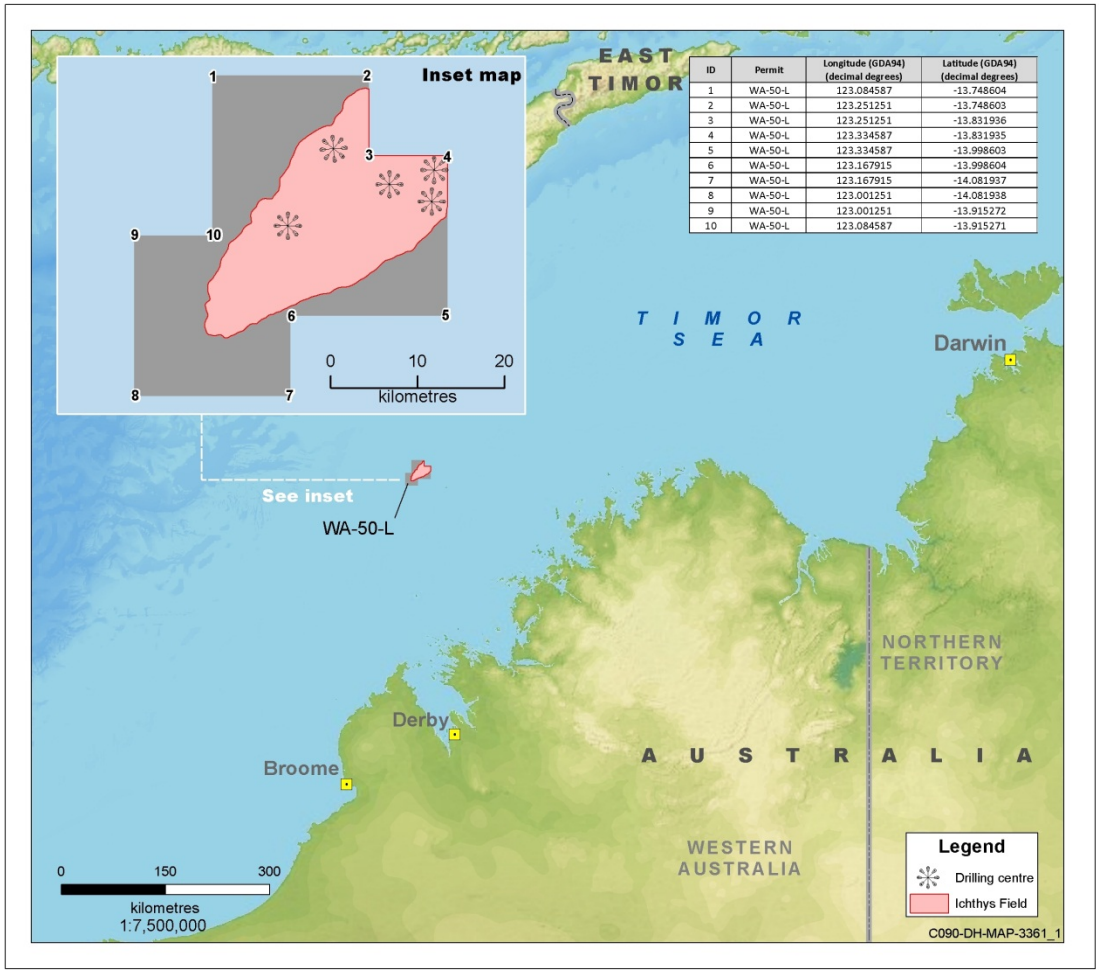
The development wells will be drilled and tested using a semi-submersible MODU which will be anchored to the seabed using eight anchors. The MODU will be supported by two anchor handling supply vessels (AHSVs) and one platform supply vessel (PSV). A 500 m exclusion zone will be maintained around the MODU to control activities and reduce the risk of marine collisions.

The wells will be drilled in phases using water based mud (WBM) in upper sections of wells and synthetic-based mud (SBM) systems in lower sections.

Drilling of each development well will include the following steps:

1) Drilling of conductor hole using seawater and high viscosity sweeps
2) Cementing of steel casings to line hole
3) Installation of blowout preventer (BOP) on the well head
4) Capture and recirculation of drilling fluids and drilled cuttings will be transferred from the bore, back to the MODU, via a marine riser, as a closed system
5) Subsequent drilling of bottom of hole sections to target depth
6) Installation and cementing of steel casing
7) Lower completion installed complete with swell packers and inflow control devices
8) Intermediate completion installed to carry and support deep-set barrier
9) Upper completions installed using 7” production tubing
10) Installation of a contingency ported seating nipple
11) Installation of subsea infrastructure including ‘christmas tree, safety valves and a ‘choke’ valve
12) Function testing of subsea ‘christmas tree’ valves.

The well drilling sequence assumes drilling of a well in each drill centre (Figure 1), whereby, the first well will be drilled from top to bottom for early data collection, followed by a batch drill complete sequence for the second, third and fourth wells. Therefore, eight infield rig moves are assumed in this drilling campaign.



ID	Permit	Longitude (GDA94) (decimal degrees)	Latitude (GDA94) (decimal degrees)
1	WA-50-L	123.084587	-13.748604
2	WA-50-L	123.251251	-13.748603
3	WA-50-L	123.251251	-13.831936
4	WA-50-L	123.334587	-13.831935
5	WA-50-L	123.334587	-13.998603
6	WA-50-L	123.167915	-13.998604
7	WA-50-L	123.167915	-14.081937
8	WA-50-L	123.001251	-14.081938
9	WA-50-L	123.001251	-13.915272
10	WA-50-L	123.084587	-13.915271

Figure 1: Location map of planned activity

Table 1: Coordinates of proposed development well locations

Drilling order	Well name	Drill centre	Latitude GDA94*	Longitude GDA94*	Proposed well total depth (mLAT MD)
1	BDC-1B-01	B_DC1B	13°50'48"S	123°19'13"E	4324
2	BDC-1A-01	B_DC1A	13°51'43"S	123°16'23"E	4337
3	BDC-1C-01	B_DC1C	13°52'45"S	123°19'05"E	4486
4	BDC-4-01	B_DC4	13°54'17"S	123°09'54"E	4262
5	BDC-1B-02	B_DC1B	13°50'50"S	123°19'14"E	4293
6	BDC-1B-03	B_DC1B	13°50'48"S	123°19'13"E	5344
7	BDC-1B-04	B_DC1B	13°50'50"S	123°19'13"E	5629
8	BDC-1C-02	B_DC1C	13°51'41"S	123°16'22"E	4363
9	BDC-1C-03	B_DC1C	13°51'41"S	123°16'22"E	6037
10	BDC-1C-04	B_DC1C	13°51'43"S	123°16'23" E	6566
11	BDC-1A-02	B_DC1A	13°52'46"S	123°19'03"E	6515
12	BDC-1A-03	B_DC1A	13°52'45"S	123°19'04"E	4336
13	BDC-1A-04	B_DC1A	13°52'47"S	123°19'03"E	4744
14	BDC-4-02	B_DC4	13°49'29" S	123°12'49"E	4641
15	BDC-4-03	B_DC4	13°49'28" S	123°12'47"E	4325
16	BDC-4-04	B_DC4	13°49'29"S	123°12'47"E	5186
17	BDC-5-01	B_DC5	13°49'29"S	123°12'49"E	4203
18	BDC-5-02	B_DC5	13°50'48"S	123°19'13"E	5060
19	BDC-5-03	B_DC5	13°51'43"S	123°16'23"E	6242
20	BDC-5-04	B_DC5	13°52'45"S	123°19'05"E	6052

4 DESCRIPTION OF THE ENVIRONMENT

4.1 Physical environment

The project area lies in the North West Marine (NWM) Region, specifically within the Timor Province bioregion. The climate in the project area is monsoonal with two distinct seasons; summer (October to February) and winter (May to June). Air temperatures in the project area remain warm throughout the year with means and maximums ranging from 26–30°C and 32–35°C respectively (INPEX 2010). Peak rainfall occurs from December to March.

Water depths within the drilling areas range from approximately 235 m to 275 m. The seabed within the drilling area is expected to be generally flat and devoid of any significant bathymetric features.

The primary ocean current is the Indonesian Throughflow, which drives cooler oceanic water southerly direction. Regional surface currents show a strong tidal influence with a net westward drift during the monsoon season and a new eastward drift during the dry season.

4.2 Biological environment

The seabed at the project area is well below the photic zone and consequently, no benthic macrophytes are expected to be present. Surveys indicate that the sediments of the project area are expected to range from bare substrate to soft sandy silts and support benthic invertebrate species dominated by polychaetes and crustaceans.

A search of the Commonwealth Protected Matters Database has identified 13 Threatened species and 73 listed Migratory/Marine species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) that may occur in low abundance within, or transit through, a 10 km radius of the project area. These species include cetaceans, dolphins, sea snakes, turtles, dugongs, seabirds and migratory shorebirds (Table 2).

No known critical habitats, including breeding grounds or sensitive habitat environments for any of the species outlined in Table 2 are known to exist within, or adjacent to, the project area. No known migration pathways pass through the Project area, and the project area is distant from cetacean and marine turtle aggregation areas.

There are no conservation areas within, or adjacent to the project area. The nearest conservation area is the Kimberley Commonwealth Marine Reserve, located approximately 107 km south-east of the project area.

A search of the DOE's Conservation Values Atlas (DSEWPaC 2013a) identified four key ecological features (KEFs) which occur near the development drilling area of interest:

- Ashmore Reef and Cartier Island and surrounding Commonwealth waters (approximately 176 km and 159 km north of WA-50-L respectively)
- Seringapatam Reef (approximately 128 km west of WA-50-L and Commonwealth waters in the Scott Reef complex (approximately 135 km west of WA-50-L)

- Continental slope demersal fish communities (approximately 12 km from the centre of WA-50-L)
- Ancient coastline at 125 m depth contour (approximately 35 km south-east of the centre of WA-50-L)

Table 2: EPBC Act listed species that may occur within or adjacent to the project area

Scientific name	Common name	Threatened status	Migratory status	Listed marine species
Birds				
Anous tenuirostris melanops	Australian lesser noddy	Vulnerable	–	X
Anous minutus	Black noddy	–	–	X
Anous stolidus	Common noddy	–	X	X
Calonectris leucomelas	Streaked shearwater	–	X	X
Fregata ariel	Lesser frigatebird	–	X	X
Fregata minor	Great frigatebird	–	X	X
Phaethon lepturus	White-tailed tropicbird	–	X	X
Phaethon rubicauda	Red-tailed tropicbird	–	–	X
Puffinus pacificus	Wedge-tailed shearwater	–	X	X
Sterna albifrons	Little tern	–	X	X
Thalasseus bengalensis	Lesser crested tern	–	X	X
Hydroprogne caspia	Caspian tern	–	X	X

Scientific name	Common name	Threatened status	Migratory status	Listed marine species
Sula dactylatra	Masked booby	–	X	X
Sula leucogaster	Brown booby	–	X	X
Sula sula	Red-footed booby	–	X	X
Reptiles				
Aipysurus apraefrontalis (also named *Smithohydrophis apraefrontalis*)	Short-nosed sea snake	Critically Endangered	–	X
Aipysurus foliosquama	Leaf-scaled sea snake	Critically Endangered	–	X
Caretta caretta	Loggerhead turtle	Endangered	X	X
Chelonia mydas	Green turtle	Vulnerable	X	X
Dermochelys coriacea	Leatherback turtle	Endangered	X	X
Eretmochelys imbricata	Hawksbill turtle	Vulnerable	X	X
Lepidochelys olivacea	Olive ridley turtle	Endangered	X	X
Natator depressus	Flatback turtle	Vulnerable	X	X
Crocodylus porosus	Saltwater crocodile	–	X	X

Scientific name	Common name	Threatened status	Migratory status	Listed marine species
Various sea snakes	Various sea snakes	–	–	15 listed
Mammals				
Balaenoptera musculus brevicauda	Pygmy blue whale	Endangered	X	Cetacean
Megaptera novaeangliae	Humpback whale	Vulnerable	X	Cetacean
Balaenoptera bonaerensis	Antarctic minke whale	–	X	Cetacean
Balaenoptera edeni	Bryde's whale	–	X	Cetacean
Feresa attenuata	Pygmy killer whale	–	X	Cetacean
Globicephala macrorhynchus	Short-finned pilot whale	–	X	Cetacean
Kogia breviceps	Pygmy sperm whale	–	X	Cetacean
Kogia sima	Dwarf sperm whale	–	X	Cetacean
Mesoplodon densirostris	Dense-beaked whale	–	X	Cetacean
Orcinus orca	Killer whale	–	X	Cetacean
Peponocephala electra	Melon-headed whale	–	X	Cetacean
Physeter macrocephalus	Sperm whale	–	X	Cetacean

Scientific name	Common name	Threatened status	Migratory status	Listed marine species
Pseudorca crassidens	False killer whale	–	X	Cetacean
Ziphius cavirostris	Cuvier's beaked whale	–	–	Cetacean
Dugong dugon	Dugong	–	X	X
Delphinus delphis	Common dolphin	–	X	Cetacean
Grampus griseus	Risso's dolphin	–	X	Cetacean
Lagenodelphis hosei	Fraser's dolphin	–	X	Cetacean
Stenella attenuata	Spotted dolphin, pantropical spotted dolphin	–	X	Cetacean
Stenella coeruleoalba	Striped dolphin	–	X	Cetacean
Stenella longirostris	Long-snouted spinner dolphin	–	X	Cetacean
Steno bredanensis	Rough-toothed dolphin	–	X	Cetacean
Tursiops aduncus	Indo-Pacific bottlenose dolphin (Arafura/Timor seas populations)	–	X	Cetacean
Tursiops truncatus s. str.	Bottlenose dolphin	–	–	Cetacean
Fish				

Scientific name	Common name	Threatened status	Migratory status	Listed marine species
Rhincodon typus	Whale shark	Vulnerable	X	–
Pristis zijsron	Green sawfish	Vulnerable	–	–
Isurus oxyrinchus	Shortfin mako	–	X	–
Isurus paucus	Longfin mako	–	X	–
Other				
Various pipefish, pipehorse, seahorse	Various pipefish, pipehorse, seahorse	–	–	32 listed

4.3 Socio-economic environment

The project area is not located in, or immediately adjacent to, any national heritage, world heritage, wetland of international importance, Commonwealth marine reserve, maritime heritage or indigenous heritage places.

Traditional Indonesian fishing, under the memorandum of understanding (MoU) signed by Indonesia and Australia in 1974, may occur in the project area, however, the area traditionally fished does not directly overlap with the project area.

One Commonwealth-managed commercial fishery and three State-managed commercial fisheries overlap the project area and include:

- The North West Slope Trawl Fishery (NWSTF).
- The Northern Shark Fisheries including the West Australian North Coast Shark Fishery (WANCSF) and the Joint Authority Northern Shark Fishery (JANSF).
- The Mackerel Managed Fishery
- The Northern Demersal Scalefish Fishery.

While these fisheries overlap the project area, no concerns were raised by the Australian Fisheries Management Authority (AFMA) or individual stakeholders during stakeholder consultation.

The project area is located in deeper, offshore waters that are not expected to be accessed for tourism activities including recreational fishing and boating, and charter boat operations, which are typicaly centered around nearshore waters, islands and coastal areas.

Although there are no oil and gas production facilities currently in operation within the Browse Basin, the region is subject to considerable exploration activity. Shell is in the process of constructing a floating liquefied natural gas (FLNG) facility (Prelude) which will be located to the north east of the project area within the Browse Basin. Additionally, the Browse Joint Venture proposes to commercialise three fields, Brecknock, Calliance and Torosa, as part of the Browse FLNG Development in the vicinity of Scott Reef.

The closest major commercial port to the project area is Broome, approximately 450 km south south west of the project area. No shipping routes traverse the project area, with the main shipping channel located to the north-west of the project area.

The Royal Australian Air Force (RAAF) Base Curtin air to air weapons range training area is located approximately 100 km south west of the project area. Helicopter transfer of personnel between Broome and the project area would always comply with any restrictions of movement in airspace. Helicopter transfer will be re-routed to avoid the restricted area when necessary and therefore, there will be no interaction with RAAF activities.

5 MAJOR ENVIRONMENTAL HAZARDS AND CONTROLS

INPEX has a risk management process to ensure that activities are undertaken so that risk is managed to 'As Low as Reasonable Practicable' (ALARP) levels. The risk assessment has been undertaken for all activities within the project area, in accordance with the procedures outlined in the Australian and New Zealand Standards AS/NZS ISO 31000:2009 (Risk Management – Principles and Guidelines) and HB 203:2012 (Managing Environment – Related Risk). The process is documented at various levels throughout the organisation and is supported by risk management standards, procedures and tools.

The key environmental hazards and control measures to be applied to the project are provided in Appendix A. These are consistent with INPEX's corporate and project-specific objectives, standards and measurement criteria. All control measures associated with the hazards will be used to reduce environmental risk to ALARP and all risks will be of an acceptable level.

6 MANAGEMENT APPROACH

The Project will be managed in compliance with the Development Drilling Campaign WA-50-L EP accepted by NOPSEMA under the Environment Regulations, other relevant environmental legislation and the INPEX Environment Policy.

The implementation strategy will be undertaken in accordance with the INPEX Health Safety and Environment – Management System, which provides a foundation of standards, procedures and tools that support the implementation of the EP in accordance with Regulation 14 of the OPGGS (E) Regulations.

The key components of implementation of the EP are:

- Policy: provides a statement of INPEX's Environment Policy which sets the framework for the INPEX HSE-MS under which the Project will be managed to ensure that the environmental impacts and risks of the Project area continuously reduced to ALARP.
- Plan: specific INPEX standards and guidelines to be used to ensure the Project will be managed such that risks are ALARP.
- Do: details roles and responsibilities, training and competency measures, INPEX emergency response framework including incident management, references to the INPEX OSCP (C020-AD-PLN-00003) and contractor SOPEP, cyclone response and emergency response training which in turn provides for the maintenance for the INPEX OSCP and contractor SOPEP, and provides details on INPEX document control procedures.
- Check: monitoring, audit and management of non-conformance of INPEX environmental performance and the implementation strategy.
- Act: management review of the Project's environmental performance and the implementation strategy.

7 CONSULTATION

INPEX has utilised well-developed stakeholder engagement procedures in order to consult in an appropriate manner with a variety of stakeholders relevant to the project. The engagement planning process included the following tasks:

- convene stakeholder identification and classification workshop
- compile list of stakeholders
- rate stakeholder levels of interest and expectations
- rate stakeholder levels of influence
- determine appropriate method of stakeholder engagement
- finalise and approve stakeholder register.

INPEX has utilised this process to engage with relevant stakeholders that have an interest in or the potential to be impacted by the project. Stakeholder groups include commercial fisheries and their associations, recreational fishing associations, Commonwealth and State Government departments, industry and business and environmental groups. All stakeholders have been informed of the exclusion zone applied around the MODU and have been provided a map with details of the coordinates of the project area.

To date, consulted stakeholders have not raised concerns with regards to the project.

8 CONTACT DETAILS

The main point of contact for further information regarding this EP or the project is:

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APPENDIX A: ENVIRONMENTAL HAZARDS AND CONTROL MEASURES

Source of risk (hazard)	Potential environmental impact	Control/ mitigation measures
Physical presence		
Physical presence of MODU, supply vessels and helicopters.	Interference with and/or exclusion of other commercial/ recreational users. Damage or loss of equipment. Loss of access within safety exclusion zone.	• Maintenance of a 500 m petroleum safety zone around the MODU (as required under the OPGGS Act) • MODU safety case (or revision) stipulates only support vessels enter the 500 m zone upon receiving approval from the OIM (or appropriate delegate). • A company standby vessel will be on location and radar will be used to warn any vessels should they come within the exclusion zone. • A stakeholder engagement procedure will be implemented. • Notifyication of relevant commercial fisheries management agencies, fishing industry bodies and individual companies of drilling activity details four weeks before commencement. • Adherence to standard maritime safety or navigation procedures, as per relevant *Navigation Act 2012* Marine Orders and IFC Environment, Health and Safety Guidelines. • All flights are required to be conducted under instrument flight rules (IFR) which require pilots filing a flight plan using the national aeronautical information processing system (NAIPS)
Anchoring of MODU and temporary mooring for supply vessels.	Temporary physical scarring of benthic habitats.	• Prepare a Rig Move and Positioning Plan prior to activity commencement. • Site survey carried out so that positioning of anchors avoids environmental sensitivities.
Introduction of invasive marine species (IMS).	Reduction in species biodiversity of surrounding environment. Displacement of native marine species. Socio-economic impacts.	• Pre mobilisation risk assessment. • Adherence to all Australian legislation and current guidance from Department of Agriculture, Fisheries and Forestry (DAFF) and WA DoF associated with quarantine matters. • Management measures commensurate with the risk, such as inspections and movement restrictions. • Maintenance of a biofouling record book and ballast water exchange book. • Vessels (of appropriate class) will have current International Anti-Fouling Systems (IAFS) Certificate.
Interference/ collision with marine fauna during vessel movements.	Marine fauna behavioural change. Injury or death from vessel strike.	• Vessels will comply with EPBC Regulations 2000 – Part 8 • Implement the INPEX Marine Megafauna Interaction and Observation Procedure. • Crew briefings • Bridge crew trained in marine mammal and marine turtle identification.
Accidental loss of equipment overboard from MODU.	Temporary localised damage/ disturbance of benthic habitats.	• Promotion of good housekeeping practices (clean work areas). • Risk assessments including measures to reduce the likelihood of dropped objects conducted for any working at heights or over water. • Certified lifting equipment and use of working at heights tools to prevent dropped objects. • Post-well ROV survey carried out. • Retrieval of any dropped objects, where safe and feasible.
Well abandonment	Temporary localised damage/ disturbance of benthic habitats.	• Implement the INPEX Well Construction and Integrity Standard and drilling campaign Well Operations Management Plan. • Post-well ROV survey carried out.
Discharges: planned		
Cooling water discharge.	Localised increase in ambient sea water temperature. Reduction of water quality.	• Adhere to IFC and World Bank Effluent Emission Standards for all discharges of cooling water. • Release of cooling water will be above sea level to enable effective cooling, aeration and dispersion. • Biocide concentrations monitored to ensure they are kept at minimum dosage required to maintain system integrity. • Implement the INPEX Offshore Development Drilling Liquid Discharge Management Plan.

Source of risk (hazard)	Potential environmental impact	Control/ mitigation measures
Treated sewage, grey water and putrescible waste discharge.	Reduction in water quality.	• Implement the relevant regulations and operational controls which will be in line with MARPOL 73/78 Annex IV, Marine Orders – Part 96: Marine Pollution Prevention – Sewage, Marine Orders - Part 95: Marine Pollution Prevention – Garbage, MARPOL 73/78 Annex V (garbage) as enacted in the Protection of the Sea (Prevention of Pollution from Ships) Act 1983 – Part IIIB (as appropriate to vessel class), IFC Environmental, Health and Safety Guidelines. • Implement the INPEX Offshore Development Drilling Liquid Discharge Management Plan.
Drainage overboard of treated bilge and treated and untreated deck drainage.	Temporary and localised reduction in water quality.	• Liquids with oil-in-water content exceeding 15 ppm will be contained and disposed of onshore. • Liquids from drains will be discharged only if the oil-in-water content does not exceed 15 ppm. • Adhere to Marine Orders – Part 91: Marine Pollution Prevention – Oil; and Marine Orders – Part 94: Marine Pollution Prevention – Packaged Harmful Substances, as appropriate to vessel class. • MODU and vessels will have current MARPOL compliant ship oil pollution emergency plan (SOPEP). • Implement INPEX Offshore Development Drilling Liquid Discharge Management Plan.
Disposal of drill fluids and drill cuttings (residual SBM on drill cuttings and WBM).	Increased water turbidity. Smothering of benthic fauna. Temporary and localised reduction in water quality.	• CHARM and OCNS rating as selection criteria in the selection of WBM and SBM drilling fluids. • Discharges of SBM drill cuttings in accordance with the WA DMP Petroleum Guidelines: Drilling Fluids Management. • Appropriate method of cuttings disposal established prior to commencing drilling activities. • No planned discharge of whole SBM drilling fluids offshore. • Discharge of fluids (WBM only) and cuttings will be near the sea surface to enhance dispersion through the water column. • Adhere to IFC recommendations regarding the discharge of drilling fluids and cuttings. • Bunkering procedures for SBM transfers will be prepared and implemented. • Implement INPEX Offshore Development Drilling Liquid Discharge Management Plan.
Discharge of cementing fluids and additives.	Increased water turbidity. Smothering of benthic fauna. Temporary and localised reduction in water quality.	• Material safety data sheet (MSDS) will be available on board. • Implement the INPEX Offshore Development Drilling Liquid Discharge Management Plan. • ROV survey to monitor for cement breaking seabed. • Maintain records of cement volumes discharged.
BOP and subsea control fluid discharge	Low toxicity BOP and subsea control fluid selected to minimise impacts to the marine	• Use BOP and subsea control fluids with an OCNS ranking of D or E. • Adhere to INPEX Offshore Development Drilling Liquid Discharge Management Plan.
Brine discharge from reverse osmosis RO plant onboard the MODU.	Temporary and localised reduction in water quality.	• Adhere to the IFC Environmental, Health and Safety Guidelines. • Adhere to the INPEX Offshore Development Drilling Liquid Discharge Management Plan.
Well completion fluids.	Temporary and localised reduction in water quality.	• Adhere to the IFC Environmental, Health and Safety Guidelines. • Completion fluids selected in line with INPEX Chemicals Guideline and INPEX Chemical Selection Assessment and Approval Procedure. • Adhere to the INPEX Offshore Development Drilling Liquid Discharge Management Plan.
Waste		

Source of risk (hazard)	Potential environmental impact	Control/ mitigation measures
Improper management of non hazardous waste.	Localised decline in water quality. Injury or death of marine biota (ingestion, or entanglement with litter).	• Compliance with the Protection of the Sea (Prevention of Pollution from Ships) Act 1983 – Parts IIIA and IIIC • Compliance with MARPOL 73/78 Annex V: Marine Orders – Part 95: Marine Pollution Prevention – Garbage (as appropriate to vessel class). • Compliance with IFC Environmental, Health and Safety Guidelines. • Maintain a garbage disposal record book in accordance with MARPOL 73/78, Annex V, Regulation 9. • INPEX Offshore Development Drilling Waste Management Plan and INPEX Offshore Development Drilling Liquid Discharge Management Plan.
Improper management of hazardous waste.	Pollution or contamination of the environment. Temporary and localised reduction in water quality.	• Compliance with the Protection of the Sea (Prevention of Pollution from Ships) Act 1983 – Parts IIIA and IIIC, Marine Orders – Part 94: Marine Pollution Prevention – Packaged Harmful Substances (as appropriate to vessel class), MARPOL 73/78 and IFC Environmental, Health and Safety Guidelines • Ahere to the INPEX Offshore Development Drilling Waste Management Plan and INPEX Offshore Development Drilling Liquid Discharge Management Plan. • Discharge or disposal of hazardous waste overboard to sea is prohibited. • Maintain records of hazardous waste types and volumes.
Emissions: planned		
Atmospheric emissions combustion of fuel, flaring or incineration of waste.	Reduction in localised air quality. Contribution to global greenhouse gas emissions.	• Low sulfur diesel (with sulfur content <0.01% m/m) will be used • Compliance with MARPOL 73/78 (Annex VI Regulations for the Prevention of Air Pollution from Ships) requirements as defined in Marine Orders – Part 97:Marine Pollution Prevention – Air Pollution, Annex VI), • All power generation equipment will be maintained and operated in accordance with manufacturers' specifications. • Adhere to IFC Environmental, Health and Safety Guidelines for atmospheric emissions from flaring. • Adhere to INPEX Atmospheric Emissions Standard.
Light emissions from MODU, support vessels and the well test and clean-up flaring activities.	Attraction, disorientation or repulsion of migratory seabirds, fish and marine turtles.	• Flaring will be intermittent. • Lighting will be kept at the lowest acceptable level for safe operating. • HSE inspection of the MODU includes consideration of lighting in terms of safe working conditions and minimising impact on marine fauna.
Noise emissions: general drilling operations.	Behavioural change and increased stress levels to marine fauna.	• Operations to be undertaken in accordance with EPBC Regulations 2000 – Part 8, Division 1. • Implement the INPEX Marine Megafauna Interaction and Observation Procedure.
Noise emissions: Vertical Seismic Profiling (VSP)	Behavioural change and increased stress levels to marine fauna.	• VSP operations will be undertaken in accordance with EPBC Act Policy Statement 2.1. • Implement the INPEX Marine Megafauna Interaction and Observation Procedure.
Discharges to the marine environment: unplanned		
Spill of diesel or SBM during transfer operations.	Temporary and localised reduction in water quality. Potential oiling of marine wildlife.	• Strict adherence to refuelling and transfer procedures. • Refuelling operation will be undertaken in daylight hours. • Aherence to MODU and vessel's SOPEP. • Monitor prevailing and forecast weather conditions. • Implement NOPSEMA approved Oil Spill Contingency Plan (OSCP). • Incorporate INPEX Chemical Selection Assessment and Approval Procedure.
Vessel collision, resulting in diesel.	Temporary and localised reduction in water quality.	• A 'Notice to Mariners' issued through the Australian Maritime Safety Authority

Source of risk (hazard)	Potential environmental impact	Control/ mitigation measures
	Potential oiling of marine wildlife.	• Consult with AMSA, AMOSC and Oil Spill Response Limited (OSRL). • Standby vessel will be on location. • MODU and anchor handling supply vessels (AHSVs) Shipboard Oil Pollution Emergency Plans (SOPEP).
Loss of well containment/blow out	Toxic effects to marine biota. Hydrocarbon contact with marine wildlife. Hydrocarbon contact with coastlines, islands and shoals.	• Strict adherence to NOPSEMA accepted Well Operations Management Plan (WOMP), drilling programme and INPEX Well Control Manual. • MODU and vessels will hold SOPEP • OSCP implemented which: - activates initial on-site response to spills to ocean - identifies available response equipment - provides ongoing support and response to spills to the marine environment • Implementation of preventative barriers • Personnel appropriately trained in spill response • Preventative Maintenance Systems. • Well design integrity is aligned with industry and global standards. • Installation of a robust BOP.
Inappropriate spill response strategies.	Toxic effects to marine biota. Hydrocarbon contact with marine wildlife. Hydrocarbon contact with coastlines, islands and shoals.	• Comply with the INPEX Emergency Management Manual and INPEX Emergency and Crisis Management Standard. • Implement the INPEX development drilling first response action plan. • Conduct response operations in accordance with INPEX Development Drilling OSCP.
Emissions: unplanned		
Unplanned venting of gas during drilling.	Reduction in localised air quality. Contribution to global greenhouse gas emissions.	• Implement the well test procedure. • Inspection and testing of well testing equipment will verify iappropriateness, including capabilities relating to avoidance of unplanned venting of gas.
Dropout of hydrocarbons to the marine environment while flaring due to non combustion of hydrocarbons.	Reduction in localised air quality. Contribution to global greenhouse gas emissions.	• Implement the well test procedure. • Inspection and testing of well testing equipment to verify it is appropriate including capabilities relating to prevention of drop out of hydrocarbons. • Use of high efficiency burner for the flare. • Preventive maintenance to ensure that all flaring equipment is maintained and operated in accordance with manufacturer's specifications. • Compliance with the IFC Environmental, Health and Safety Guidelines specific to flaring.
Implementation strategy administration		
Failure to execute the implementation strategy and performance objectives, standards and measurement	Environmental impacts dependent on the nature of the non conformance action or incident.	• Comply with INPEX HSE-MS Requirements, the INPEX HSE Performance Measurement and Reporting Standard and the INPEX Incident Reporting, Recording and Investigation Standard (C075-AH-STD-0006). • Comply with the INPEX HSE Training and Competency Standard to ensure personnel are competent. • Significant changes are managed in accordance with the INPEX Ichthys Project Management of Change

Source of risk (hazard)	Potential environmental impact	Control/ mitigation measures
criteria.		Procedure.
Poor environmental awareness.	Environmental impacts dependent on the nature of the non conformance action or incident.	• Environmental inductions provided to all employees.
Failure to undertake scheduled audits, inspections, monitoring and review of environmental performance.	Environmental impacts dependent on the nature of the non-conformance action or incident.	• Adhere to the INPEX HSE Audit, Inspection, Monitoring and Review Standard and the INPEX Ichthys Project Action Tracking System Procedure.