Exploration Permit WA-481-P
Site Survey Environment Plan Summary

MAO-DRL-PN-0005-087

TABLE OF CONTENTS

1 INTRODUCTION

Murphy Australia WA-481-P Oil (Murphy), a subsidiary of Murphy Oil Corporation, on behalf of its joint venture partners Kufpec (Perth) Pty Ltd and Samsung Oil and Gas Australia Pty Ltd, proposes to undertake a geophysical site survey in advance of a drilling campaign within the offshore petroleum exploration licence area WA-481-P.

Murphy Australia WA-481-P Oil (Murphy) received acceptance in part for the WA-481-P Exploration Drilling Environment Plan (EP) for the site survey only on 2nd July 2014 submitted under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (OPGGS (E) Regulations) under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGS Act) (Cmlth). This EP summary has been prepared as per the requirements of Regulation 11 (7) and (8) of the referenced OPGGS(E) Regulations.

The planned drilling activity commencing in early 2015 is the subject of a separate EP submitted to NOPSEMA.

The site survey commences when a dedicated survey vessel arrives at the first location within the permit area and carries out survey activities (towed streamer or seabed sampling). When the vessel has finished surveying it will depart the permit area, signalling the end of the survey activities. There is no overlap in time with drilling activities.

2 DESCRIPTION OF THE ACTION

2.1 Activity Description

A vessel based geophysical site survey will be carried out to acquire sufficient data to allow detection of any seabed impediments or possible hazards (natural or man-made) at the seabed or in the shallow sub-surface to safely position a mobile offshore drilling unit (MODU). Such hazards are items of debris, unexploded ordnances (UXO), and geomorphological features of the seabed. The site survey vessel has not yet been selected, however it will be required to comply with the accepted EP.

Survey operations will be conducted by a dedicated vessel for 3-5 days at each of six locations (to provide alternatives for the three planned wells). Each site survey will cover a box 3 kilometres by 3 kilometres, and may involve both towing a streamer and stationary seabed sampling. The streamer operations include shallow seismic to investigate shallow gas and shallow pressure hazards. The stationary sampling would include such geo-technical processes as Cone Penetration Testing, Vibra-core – up to approximately 6 metres depth, box coring and grab sampling. These tests are only to provide assurance for MODU anchoring.

Equipment will most likely consist of a Multibeam Echosounder, Singlebeam Echosounder and Sidescan Sonar to investigate seabed features, and potentially a Sub-bottom Profiler to investigate shallow geological conditions.

The individual objectives will be to:

- collect sufficient seabed and shallow geological data to allow robust planning;
- identify seabed morphological features and any hazards that may impact the location of the MODU;
- acquire accurate bathymetric data to develop robust seabed depth maps and determine seabed slopes;
- develop an understanding of the seabed character, the mechanical properties of the sediments or consolidated rocks and heterogeneities thereof to facilitate the placement of the MODU;
- develop an understanding of the likely geological conditions that will be encountered within the shallow subsurface;
- map any amplitude anomalies within the subsurface that may represent shallow gas or other shallow geohazards within the geophysical site survey area that could pose a risk during drilling.

2.2 Locality and Co-ordinates

The site survey locations are situated in Commonwealth waters, within the petroleum exploration licence area WA-481-P. Figure 2-1indicates the proposed outer boundaries of the locations for the Activity. These boundaries are based on a review of previous seismic data. The northern area is located within the Abrolhos Commonwealth Marine Reserve. Co-ordinates for these two polygons are provided in Table 2-1.

Table 2-1: Coordinates of northern and southern area polygons

Latitude	Longitude
northern area	
-29.011	114.274
-29.067	114.289
-29.122	114.297
-29.178	114.29
-29.176	114.261
-29.099	114.241
-29.013	114.253
southern area	
-29.829	114.42
-29.733	114.331
-29.559	114.26
-29.55	114.294
-29.541	114.327
-29.627	114.362
-29.751	114.433
-29.797	114.49
-29.837	114.531
-29.869	114.531
-29.885	114.497
-29.861	114.45

2.3 Schedule

Survey operations will be conducted within a window of an earliest start date of July 15th and a latest finish of November 15th 2014. Murphy's intention is to mobilise the survey vessel in the earliest possible part of this window. The duration is expected to be approximately 35 days.

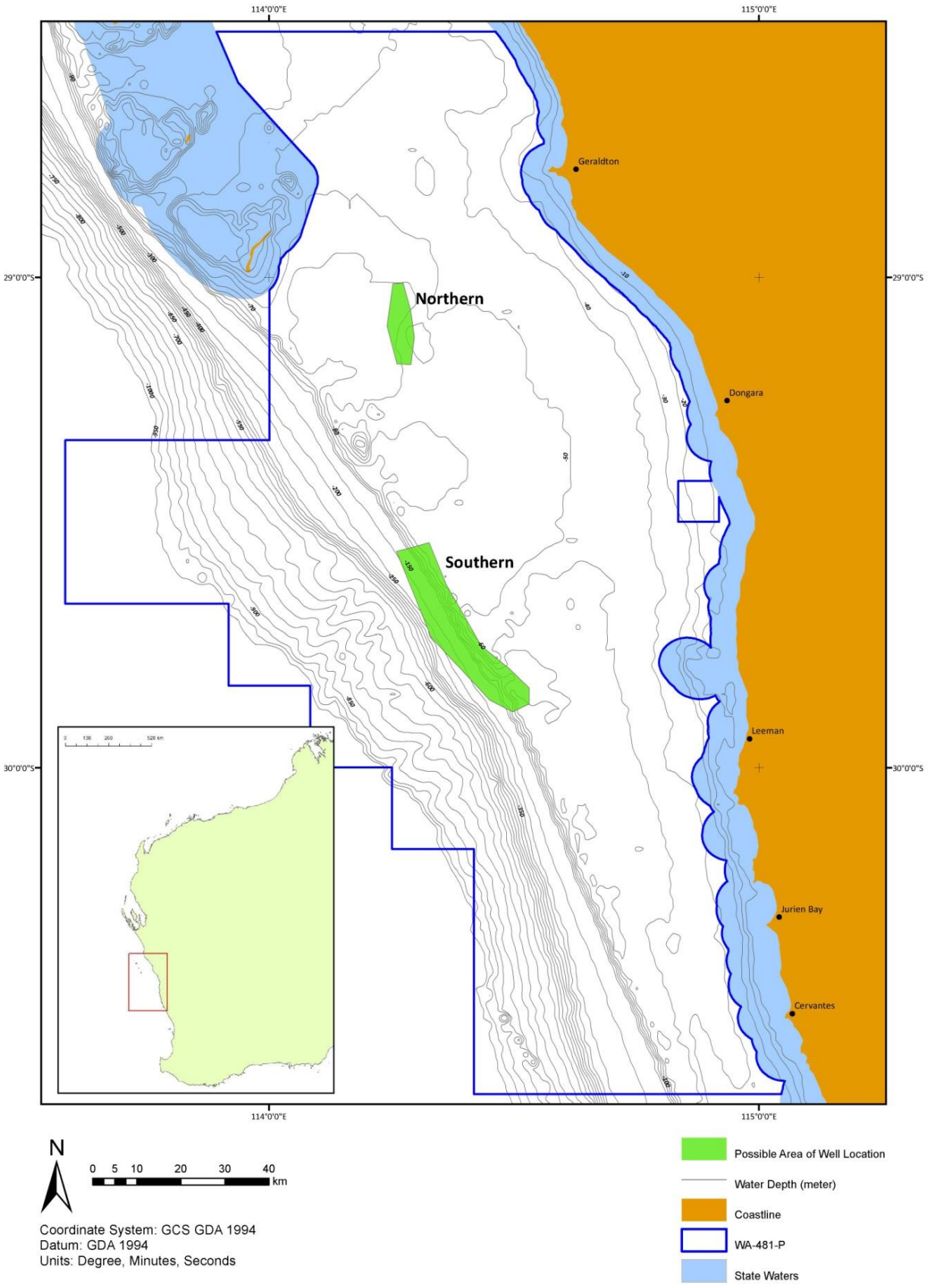

Figure 2-1: Schematic diagram to show the northern area polygon and the southern area polygon within permit area WA-481-P

3 DESCRIPTION OF THE RECEIVING ENVIRONMENT

3.1 Regional Setting

The proposed Activity will be undertaken in the southwest marine region within the Perth Basin. Hotspots for biodiversity in the South West Marine Region include the Houtman Abrolhos Islands in which species of rare and endangered status frequent.

The Abrolhos Commonwealth Marine Reserve spans approximately 230,000 ha comprising islands, the ocean and seabed below (Heritage Council, 2012). The Houtman Abrolhos Islands are an important breeding site for seabirds, with extensive foraging grounds in Commonwealth waters. The islands and surrounding reefs are renowned for their high levels of endemism and biodiversity and are also important in geological terms. Their high level of biodiversity is attributed to the mix of tropical and sub-tropical marine life with temperate species carried into the area by the southward flowing Leeuwin Current.

3.2 Physical Environment

The northern Perth Basin has a Mediterranean Climate, with warm dry summers and cooler, wet winters. Mean temperatures range from 8 °C to 19.5 °C in July (winter) and from 19.1 °C to 32.4 °C in February (summer). The northern Perth Basin exhibits a windy climate. During summer a high pressure ridge lies to the south, causing persistent winds from the southeast or southwest, at speeds exceeding 15 m/s almost half the time. During autumn and winter, the ridge moves northwards, increasing the atmospheric pressure resulting in highly variable winds. Winter tends to produce both the strongest gales and the most frequent periods of calm (Pearce 1997).

In addition to this seasonal wind climate, there is a daily pattern of land breezes in the morning, followed by the onset of south-westerly sea breezes in the afternoon. This pattern is caused by temperature differences between the land and the ocean; it is not as strong in the Houtman Abrolhos islands as on the mainland, but is present nonetheless (Pearce, 1997). During winter, extra-tropical cyclones sometimes pass south of Geraldton, generating winter gales with gusts of up to 35 metres per second. During these events, the wind direction is initially from the northwest, gradually backing around to southerly as the cyclone passes through the area (Pearce 1997).

The northern Perth Basin lies in the path of the Leeuwin Current, which draws warm, low-salinity water of tropical origin southwards along the coast of Western Australia. This current flows all year round, but is strongest during the southern hemisphere winter. In general, the Leeuwin Current runs along the shelf break. It meanders, however, sometimes passing well out to sea, and sometimes closer to the shelf. Although the direction of the Leeuwin Current is predominantly southerly, Shark Bay and the Houtman Abrolhos together act as a topographical trigger for the forming of eddies, so the northern area can experience currents from any direction, even when the Leeuwin Current is flowing strongly (McClathie *et al*., 2006). The operational area varies in water depths from 50 m to approximately 350 m, with the majority of the area in less than 80 m of water.

3.3 Ecological Environment

3.3.1 *Benthic Habitats*

Within the operational area the sediments are medium to coarse grained sands interspersed between limestone reefs and the adjacent terrestrial coastal geology is composed of reworked sands of marine and aeolian origin. The four main nearshore habitats found near the operational area are limestone reef with algae, reef walls and caves, seagrass meadows and bare sand (Morrison *et al*., 2006). The nearshore areas in the Jurien region are known to contain seagrass meadows that are comprised of a variety of species and are found in varying densities. The Houtman Abrolhos Islands, located adjacent to the operational area, compared with other reefs of a similar latitude, have a high diversity of hermatypic coral (Crossland *et al*., 1984). Other faunal groups are composed of mixed southern temperate, west-coast endemic and northern tropical species. Fleshy macroalgae form a major component of the benthic communities of the reefs. The high energy outer reef slopes support rich and dense macrophyte communities characterised by large brown algae including kelp, mixed with fleshy red and green algae. Seasonally changing macroalgae communities dominate many protected reef areas within lagoons (Crossland *et al.,* 1984).

3.3.2 *Marine Fauna*

An EPBC Act Protected Matters Database search was conducted to identify Threatened species and communities occurring in the operational area. There are no listed threatened communities or recorded sensitive environments within the proposed drilling locations, within the South West Marine Region (DSEWPaC, 2013a).

There are 25 threatened species and/or 32 migratory species listed on the EPBC Act Protected Matters Database (search conducted on 27/06/2013 for the northern area, and 27/09/2013 for the southern area) which may occur within the proposed locations. It should be noted that some migratory species are also listed as threatened.

The majority of the marine species identified are likely to transit through the region, and it is unlikely that the proposed drilling locations support habitats critical to the survival of these species. There are no known nesting and breeding areas for these listed species within the vicinity of the proposed drilling locations. In addition to those species listed as threatened or migratory, a further 50 species were also listed as marine species.

3.4 Socioeconomic Environment

Permit area WA-481-P is situated in the offshore portion of the northern Perth Basin. Hydrocarbons have been produced from this offshore part of the basin since 2006, from the Cliff Head oil field. Medium levels of shipping are expected to occur close to the proposed Activity due to adjacent ports (e.g. Geraldton) and shipping channels.

The main west coast shipping route passes through WA-481-P and there will be traffic entering the area to access Geraldton Port and Port Denison directly. However, consultation with AMSA indicates that the proposed drilling locations are in between two lanes of higher activity.

Tourism operations occur in the Abrolhos Islands and Jurien Bay Marine Park. The Houtman Abrolhos Islands are an A-Class Reserve managed by the Department of Fisheries for the conservation of flora and fauna, for tourism and for purposes associated with fishing and aquaculture industries. The waters around the islands have special status as a Fish Habitat Protection Area for the conservation of fish, fish breeding areas and associated aquatic ecosystem and are popular for aquatic tourism and recreational activities. Tourism at the Abrolhos Islands includes scuba diving, fishing and sightseeing activities. These activities are mainly confined within the more sheltered waters of the islands and the site survey will not extend into the islands where tourism activities occur.

A valuable and diverse commercial fishing industry is supported by offshore and coastal waters in the North West Bioregion, mainly dominated by the West Coast fisheries. The major fisheries in the region target finfish, large pelagic fish species and crustaceans (rock lobster) (AFMA, 2011). There are 4 commercial fisheries that may operate within the permit area and 13 State fisheries.

There are no National Heritage Places within the proposed survey area. There are no World Heritage Properties in or adjacent to the proposed WA-481-P survey area. No indigenous heritage or non-indigenous values have been identified in the permit area.

A number of State and Commonwealth protected areas are overlapped, or in close proximity, to the operational area. These include; the Abrolhos Commonwealth Marine Reserve (CMR), the Abrolhos A-Class Nature Reserve, the Abrolhos State Fish Habitat Protection Area, the Jurien Bay CMR and the Jurien Bay State Marine Park.

4 MAJOR ENVIRONMENTAL HAZARDS AND CONTROLS

An Environmental Risk Assessment (ERA) has been undertaken to understand and manage the environmental risks associated with the activity to a level that minimises impacts on the environment and meets the objectives of the survey.

The ERA methodology applied is consistent with the Australian/New Zealand Standard AS/NZS ISO 31000:2009 Risk Management and Handbook 203:2006 Environmental risk management – Principles and process. The risk assessment has been undertaken to identify the sources of risk (events) and potential environmental impacts associated with the activity and to assign a level of significance or risk to each impact. This subsequently assists in prioritising mitigation measures to ensure that the environmental impacts are managed to as low as reasonably practicable (ALARP).

Table 4-1 provides a summary of potential environmental impacts that could be expected from the activity for planned activities and unplanned events. It lists the activities that might give rise to environmental impacts and the subsequent controls and measures which eliminate or ensure the environmental risk is reduced to ALARP.

Table 4-1: Summary of potential impacts and the mitigation and management measures implemented during the site survey

Event	Potential environmental impact	Mitigation and management measures
Planned Events		
Light generation from vessel	Disturbance to behaviour/physiology of marine mammals Disturbance to behaviour/physiology of marine turtles Disturbance to behaviour/physiology of marine birds	• Lighting on vessel and for navigation/safety purposes only (some projected light onto waters); • Vessels will adhere to lighting and safety requirements as per the Navigation Act 2012 implemented by AMSA Marine Orders Part 30 and 21; • The vessels will have NOPSEMA accepted Safety Cases, including lighting limitations
Vessel Collisions during transit between well locations and during drilling activity	Injury or death to marine fauna (cetaceans) Injury or death to other marine fauna (e.g. marine turtles, seabirds etc.)	• Watch maintained at all times during vessel movements • Adherence to Part 8 of EPBC Regulations (Vessels) which includes: A vessel must not: ○ Travel at greater than 6 knots within 300 m (caution zone) of a cetacean / whale shark known to be in the area; ○ Approach closer than 100 m of a cetacean / whale shark known to be in the area; ○ Change course or speed suddenly if a dolphin approaches the vessel or comes within 100 m • Crew will participate in environmental induction to ensure EPBC regulations and reporting requirements are understood • Any vessel interactions with marine fauna will be recorded and reported to DoE
Noise generation from vessels	Adverse disturbance / alarm behaviour and/or physiological damage to marine mammals	• Unless an action is reasonably necessary to prevent a risk to human health or to deal with an emergency, helicopters will operate in accordance with Part 8 of EPBC Regulations (Aircraft). In particular:

Event	Potential environmental impact	Mitigation and management measures
		○must not operate at a height lower than 1,650 feet (500 m) or within a horizontal radius of 500 metres of a cetacean; ○must not allow the aircraft to approach a cetacean from head on; and ○must not land the aircraft on water so that the aircraft comes within a 500 m radius of the cetacean (if the aircraft can land on water). • Adherence to Part 8 of the EPBC regulation (2000) (Vessels). This includes vessel standoff distances and/or speed restrictions to reduce sound exposure levels to cetaceans and whale sharks. A vessel must not: ○Travel at greater than 6 knots within 300 m (caution zone) of a cetacean or whale shark known to be in the area; ○Approach closer than 100 m of a cetacean or whale shark known to be in the area; ○Change course or speed suddenly if a dolphin approaches the vessel or comes within 100 m • Site survey activities will implement mitigation measures outlined in EPBC Act Policy Statement 2.1 Part A (DEWHA, 2008b) as appropriate for the activity including: ○Precaution zones will be implemented (Observation (3+km), Low Power (1 km) and Shut down (500m)) ○Pre-start up visual observation of precaution zones (>30 mins before soft start) ○site survey will not commence if cetaceans are within low power or shut-down zone ○Visual observations by trained crew maintained continuously from pre-starts to end of survey

Event	Potential environmental impact	Mitigation and management measures
		• Site survey will be shut down if cetacean enters shut-down zone • Relevant crew members are briefed on EPBC Act Policy Statement requirements • Soft start, start-up delay, operations and stop work procedures • Night time and low visibility procedures • Equipment will be appropriately maintained and selected to minimise noise emissions • Crew will participate in environmental induction to ensure DEH guidelines and reporting requirements are understood • Any vessel interactions with marine fauna will be recorded and reported to DoE
Dropped objects	Physical disturbance to seabed	• Lifting equipment certified and tested • No anchoring of vessels within operational area • All personnel will receive an environmental induction detailing environmental sensitivities, which will also include reinforcement of “no objects overboard”. • Immediate recording and reporting of any dropped objects. • Dropped objects large enough to be a danger to navigation or fishing vessels using the area will be retrieved - if items cannot be recovered, the item location will be recorded for retrieval during any future decommissioning activities • Vessel procedures for managing and maintaining lifting equipment and carrying out lifting operations

Discharge of ballast water from vessels (and/or bio-fouling of hulls)	Introduction and/or spread of invasive marine species (and potential displacement/impact to native species)	• Requirements of the Department of Agriculture, Fisheries and Forestry (DAFF) Australian Ballast Water Management:
		  ○ Mandatory ballast exchange in deep water where sediment is not visible;
		  ○ Tank flooding and flushing at least three times during the exchange process; and

Event	Potential environmental impact	Mitigation and management measures
		○ Documentation of all ballast exchange activities (including DAFF clearances). • Ballast Management Plans will be compliant with Australian Ballast Water Management Requirements (e.g. ballast changes in open ocean >200m deep) • National biofouling management guidance for the petroleum production and exploration industry is adhered to with records of hull inspection/cleaning, application of anti-foulant coatings (where applicable) – hull will be cleaned if deemed necessary • For international vessels, the vessel will carry a current Statement of Compliance for International Anti-fouling Inspection Systems and will be assessed for bio-fouling risk prior to entry into Australian waters in accordance with the National Biofouling Management Guidance to the Petroleum Production and Exploration Industry with any required corrective actions such as inspection, cleaning and coating reapplication undertaken as appropriate. • Vessel anti-foulant systems are maintained in compliance with International Convention on the Control of Harmful Anti-fouling Systems on Ships • A biofouling vessel risk assessment (VRASS) is completed prior to mobilisation to Australia as defined within the National Biofouling Management Guidance for the Petroleum Production and Exploration Industry (Commonwealth of Australia, 2008) • If vessels are mobilized from international waters, vessel hulls will be inspected prior to leaving the international port and cleaned if necessary. • Vessels will be sourced and work routinely from local ports (Geraldton and Port Denison) where possible. However it is possible that vessels may be sourced from Dampier or Singapore. • There will be neither hull cleaning nor ballast water discharge in the operational area • Where applicable, the vessel will leave its last international port of call prior to direct transit to the operational area within seven days of the last anti-foulant

Event	Potential environmental impact	Mitigation and management measures
		coating application or IMS inspection. • FishWatch will be contacted by phone (1800 815 507) and email (biosecurity@fish.wa.gov.au) should any known or suspected introduced aquatic pests be observed
Emissions of exhaust gases and particulate matter from fossil fuel combustion	Contribution of greenhouse gas (CO_2) to climate change; localised acidification of atmosphere (oxides of sulphur and nitrogen); haze (oxides of nitrogen) and potential human health impacts from particulates. Physiological effects on marine birds	• Compliance with MARPOL 73/78 Annex VI (as implemented in Commonwealth waters by the Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983 (PSPPS Act); and Marine Orders - Part 97: Marine pollution prevention - air pollution) • use of marine gas oil (diesel) and not intermediate or heavy fuel oil; • emissions managed by the implementation of a preventative maintenance system (PMS) on vessels to ensure optimal efficiency; • No incineration will occur in the operational area;
Discharge of greywater/sewage and /or putrescibles within legal limits (e.g. <25mm maceration)	Reduction in water quality with potential impacts to marine fauna and benthic habitat	• Compliance with MARPOL 73/78 and Protection of the Sea (Prevention of Pollution from Ships) Act 1983 • MARPOL 73/78 Annex I (Oil), Annex II (Noxious Liquid Substance) requirements including: • High standards of waste management maintained in all areas including: ○ No free litter; ○ All dedicated waste containers to have lids secured; ○ No free liquids to be left unattended in temporary handling receptacles; ○ Decanted materials stored in labelled containers; and ○ Waste materials segregated and stored in nominated containers. Bunding (temporary or permanent) is provided for those areas/activities where there is an increased risk of oil/chemical spill and spill clean-up equipment (e.g. absorbents, containers) is maintained in accessible locations; • In the event of a chemical or oil spill, absorbents are used to remove spill material prior to any washing activities;
Discharge of greywater/sewage and /or putrescibles outside legal limits (e.g. >25mm maceration)		
Discharge of deck drainage and treated oily water (bilge water) within legal limits (<15ppm oil in water)		
Discharge of deck drainage and treated oily water (bilge water) outside legal limits		

Event	Potential environmental impact	Mitigation and management measures
(>15ppm oil in water)		• Absorbent material, used for clean-up, is containerised and sent to shore as hazardous waste; • Material Safety Data Sheets are available for all chemicals used on vessels; • Chemicals used are assessed for environmental impact prior to purchase (e.g. fully biodegradable detergent, rated Gold/Silver/D/E if planned to be discharged to the marine environment). • Engines will be maintained in accordance with PMS to ensure no faults which could lead to leaks. • Equipment and machinery spaces are fully contained and have dedicated drains leading to the bilge water system for oily waste products; • Oily water treatment systems are maintained and calibrated in accordance with manufacturer's specifications to ensure oil content of water discharged is not >15 ppm
Interference with other sea/airspace users	Impact to fishing activities (including fish take, damage to equipment etc.) from timing/location; Temporary navigation hazard; Impact to tourism activities from timing/location; Coordination of activity around DOD activities - potential conflict with defence activities	• Adherence to the requirements of the Navigation Act 2012, and specifically Marine Orders - Part 30: Prevention of collisions • AMSA RCC notified of operational area, activity and duration prior to mobilisation; • Consultation undertaken as required by Regulation 11 of the OPGGSER • early and extensive consultation underway with relevant bodies to identify potential concerns and resolve issues which have merit; • Marine Operations Adviser (the MOA) appointed to provide ongoing dialogue and interface throughout the survey • Work with local stakeholders to define corridors for vessels involved in the activity to minimise disruption to the fishing industry; • community information sessions to raise awareness; • notices to mariners to be issued; • Regular updates on activity via a dedicated website • if aviation activities are required within restricted airspace, Murphy will inform Joint Airspace Control Cell (JACC)14 days prior to the activity

Event	Potential environmental impact	Mitigation and management measures
Accidental/Non-routine events		
Accidental loss of containment of diesel from vessel fuel tanks due to vessel-vessel collision within operational area.	Reduction in water quality Toxic effects to marine habitat and fauna	• Vessels navigation and communication systems (to SOLAS/Class/AMSA Regulations) are regularly maintained and tested in accordance with PMS. • Adherence to the requirements of the International Regulations for Preventing Collisions at Sea 1983 • The support and site survey vessels have an implemented and tested SOPEP • Hydrocarbons located above deck will be stored with some form of secondary containment to contain leaks or spills e.g. bund, containment pallet, transport packs etc. • Consultation with other sea users and pre-notification to mariners (i.e. Notices to Mariners via the Australian Hydrographic Service (AHS) and RCC of AMSA) • Vessel Master to monitor meteorological forecasts as and when required • All vessels under control of qualified vessel master, crew and lookouts • OSCP to manage spill impacts
Accidental loss of containment of diesel during refuelling	Reduction in water quality Toxic effects to marine habitat and fauna	• No refuelling will take place during the site survey
Accidental loss of containment: deck spills of oil, lubricants, detergents and chemicals to sea.	Reduction in water quality Toxic effects to marine habitat and fauna	• As required by MARPOL, any machinery space bilge water to be discharged overboard is routed to a MARPOL approved oily water separator before disposal • Bunded areas/ Chemical storage areas and dedicated deck drainage systems • Onboard Spill Kits (containing as a minimum absorbency pads and booms, granules) located in close proximity to hydrocarbon storage areas for prompt response in the event of a spill or leak. The kits will be checked for their adequacy and replenished as necessary prior to the commencement of activities and on a regular basis thereafter. Identified personnel will be trained

Event	Potential environmental impact	Mitigation and management measures
		in use of this equipment. • Vessel SOPEPs • Pre-mobilisation audit of contractor procedures • PMS ensures primary containment and integrity of hazardous systems and hoses are optimal • Incident reports completed to ensure corrective measures can be implemented

Accidental release of solid or hazardous wastes overboard	Reduction in water quality.
	Possible toxic effects to marine habitat and fauna. Potential ingestion or entanglement and physiological harm to fauna.
		• In accordance with MARPOL 73/78 Annex V
		  ○ Garbage offshore will be disposed of in accordance with MARPOL compliant Garbage Management Plan
		  ○ Garbage management plans will be in place on board vessels
		  ○ No overboard discharge of plastics or plastic products of any kind from vessels
		• Incinerators not utilized in operational area
		• All solid wastes containerised and backloaded for onshore disposal – No overboard discharge of domestic wastes (i.e. cans, glass, paper or other wastes from living areas) and no maintenance wastes (i.e. paint sweepings, rags, deck sweepings, oil soaks, machinery deposits, will be disposed of overboard) from vessels
		• Fixed and portable waste storage receptacles with secure lids to prevent waste blowing overboard
		• Bunding for hazardous liquids
		• Hazardous waste materials (such as paint, medical waste, batteries and aerosol cans) are segregated, labelled and transferred to a licensed carrier for appropriate disposal onshore
		• Waste categorised and reused or recycled where practicable
		• Non-hazardous combustible waste and oil residues may be stored for disposal onshore. Disposal of any oil sludges/slops in port, must be recorded in the vessel Oil Record Book (a requirement under MARPOL 73/78).
		• Vessel waste log in place to record quantities of waste transported to shore

Event	Potential environmental impact	Mitigation and management measures
		• Any waste accidentally discharged overboard will be recorded and reported
Oil Spill response strategies	Disturbance to marine fauna and flora from increased vessel movements, inappropriate response implementation	• Activation of the Vessel SOPEP Plan • Implementation of the NATPLAN (by AMSA) and the MOSCP (by the DoT) prioritising strategies for managing Type II hydrocarbons in open sea, inshore and near shore locations and shore line responses for different shoreline types • DoT consulted to ensure agreement in place for SOPEP interfaces with WestPlan-MOP and DoT MOSCP • AMSA consulted to ensure agreement in place for SOPEP interfaces with NATPLAN; • AMSA/DoT consulted to ensure arrangements are in place to cover gaps in WestPlan and NATPLAN. • Management of wastes in compliance with the NATPLAN document Management and Disposal of Oil Spill Debris • Monitoring of the spill, response strategy and environment (baseline and impacts) by the Combat Agency as required. • Notification and engagement/liaison with stakeholders identified in the EP • AMSA and DoT both notified immediately in the event of any oil or diesel spills to sea to ensure prompt and appropriate mobilisation of respective response plans. Implementation of SOPEP, AMSA NATPLAN, WestPlan MOP and DoT MOSCP in the event of a spill will be assessed to ensure effectiveness • NOPSEMA notified as soon as possible but within two (2) hours of becoming aware of the incident

5 MANAGEMENT APPROACH

The survey will be managed in compliance with the EP accepted by NOPSEMA under the OPGGS(E) Regulations, other relevant environmental legislation and Murphy's corporate policies for example, Murphy Oil Corporation Environmental Health and Safety Policy. The objective of the EP is to ensure that potential adverse impacts on the environment associated with the survey, during both routine and non-routine operations, are identified, and will be reduced to ALARP and will be of an acceptable level.

The EP includes specific performance objectives and standards, and identifies the key controls and mitigation measures to be implemented to achieve the performance objectives. These various commitments are communicated to all personnel involved in the survey. The implementation strategy detailed in the EP identifies the roles/responsibilities and competency/training requirements for all personnel (Murphy and contractors) in relation to implementing controls, managing non-conformance, emergency response and meeting reporting requirements during the activity.

The EP also details the types of auditing that will be undertaken and the reporting requirements for environmental incidents, and reporting for overall compliance of the survey. The vessel master(s) will be responsible for the day-to-day operation of the survey vessel, including any potential emergency situation. In the event of a fuel or oil spill to sea, the vessel Shipboard Oil Pollution Emergency Plan (SOPEP) will be activated. For larger spills, the WA State and Commonwealth oil spill plans and activity specific OSCP will be activated as appropriate.

6 CONSULTATION

A letter was issued to all relevant stakeholders (16/5/14) to inform them of the site survey and possible dates. Stakeholders have been informed of the activity during meetings taking place throughout the planning of the campaign. To date, no objection or significant concern has been raised in relation to the proposed Activity and Murphy do not expect any concerns to be raised but will address all stakeholder issues which may arise.

Consultation regarding the Activity commenced in July 2013, however Murphy have been in contact with stakeholders since September 2012 as a result of the previously completed seismic survey. To date Murphy has consulted more than 40 organisations and over 200 individuals. Organisations were contacted if it was considered possible that their functions, interests or activities might be affected by the Activity. Potential organisations were identified through:

- Discussion with other oil and gas operators with experience in the area, including ROC Oil who operate the nearby Cliff Head installation and who have conducted seismic surveys and drilling activities which had potential to impact the same organisations,
- Research by, and a workshop with a specialist public relations consultant with experience of working on projects in the area, and,
- Murphy's own in-house environmental and operations personnel who have experience both of operating in the Perth Basin and of consultation in relation to other EPs.

7 CONTACT DETAILS

Mr Ted Kirkbride
HSE Manager - Australia
London House
216 St Georges Terrace
Perth, WA
6000

Telephone: +61 8 6313 5237
Fax: +61 8 6313 5201
Email: ted.kirkbride@murphyoilcorp.com

8 REFERENCES

AFMA (Australian Fisheries Management Authority) 2011. Annual Report 10/11. Australian Government, Canberra, Australia

Crossland, C. J., Hatcher, B. G., Atkinson, M. J., Smith, S. V. (1984) Dissolved nutrients of a high-latitude coral reef, Houtman Abrolhos Islands, Western Australia. Marine Ecology Progress Series 14: 159 – 163.

DoRET (2011) Geological Information Release Area W11-18, Abrolhos Sub basin, Perth Basin, Western Australia. Department of Resources, Energy and Tourism.

DSEWPaC (2013a) – EPBC Online Protected Matters Database accessed on 18/6/13 at http://www.environment.gov.au/epbc/pmst/index.html

Heritage Council (2012) Houtman Abrolhos Islands downloaded on 26th September 2012 at http://inherit.stateheritage.wa.gov.au/Public/Inventory/Details/5325b296-4aeb-430f-ac73-7c49c8d90ee5

McClathie, S., Middleton, J., Pattiaratchi, C., Currie, D., Kendrick, G. (2006) The South-west marine region: Ecosystems and key species groups. Department of the Environment and Water Resources.

Morrison, S., Storrie, A. and Morrison, P. (2006) The Turquoise Coast. Department of Conservation and Land Management.

Pearce, A. F. (1997). The Leeuwin Current and the Houtman Abrolhos Islands, Western Australia. In Wells, F. E. The Marine Flora and Fauna of the Houtman Abrolhos Islands, Western Australia. 1. Perth: Western Australian Museum. pp. 11–46.