

Summary of Impacts and Risks for Beach OGV Drilling Program



Aspect - Planned	Relevant Activities	Potential Impact	Summary of Beach Control Measures
Light emission	Drill rig and support vessels	<p>Drilling rig and vessels lighting is required for navigational and safety purposes.</p> <p>Artificial light may attract light sensitive species such as shorebirds, seabirds, and turtles.</p>	<ul style="list-style-type: none"> • Drill rig and vessel and drill rig lighting complies with Australian Maritime Safety Authority (AMSA) Marine Orders Part 30 (Prevention of Collisions). • Beach Seabird Lighting Management Plan is implemented on the drill rig and vessels and details: <ul style="list-style-type: none"> ○ Non-essential lights are turned off when not in use. ○ Lighting is directed onto work areas. ○ Window screens or blinds are closed at night. ○ Crew environmental induction covers handling and reporting requirements for grounded or injured birds.
Seabed disturbance	Drill rig and support vessels	<p>Temporary and localised seabed disturbance with associated loss of benthic habitat or disturbance to cultural or heritage feature may occur from:</p> <ul style="list-style-type: none"> • Drill rig anchoring • Drilling cuttings and cement discharges 	<ul style="list-style-type: none"> • Assessment of the seabed to identify and avoid, where possible, any key environmental, heritage or cultural features. • Drill rig anchoring procedures. • Vessels use dynamic positioning rather than anchor. • Beach Chemical Management Plan requires that drill fluids, cement and grout are selected to ensure the lowest toxicity, most biodegradable and least accumulative products selected which meet the technical requirements of the application.
Underwater sound	Drill rig, support vessels and helicopters	<p>Temporary disturbance to marine fauna may occur from underwater sound emissions from:</p> <ul style="list-style-type: none"> • Vessel engines and thrusters • Helicopters 	<ul style="list-style-type: none"> • Engines and thrusters are maintained in accordance with manufacturer's instructions via the Planned Maintenance System to ensure they are operating efficiently. • Vessel and helicopters comply with the EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans which details minimum separation distances.

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		<ul style="list-style-type: none"> • Drill rig engines and drilling equipment 	<ul style="list-style-type: none"> • Beach Whale Management Procedure is implemented on vessels and drill rig and requires: <ul style="list-style-type: none"> ○ Pre-activity survey undertaken for 30 min to identify whales that maybe within the activity area affected by underwater sound. ○ If a whale is sighted, the activity will not commence until no whales have been observed within the activity area affected by underwater sound for 30 minutes or whales have been observed leaving this area. ○ Once the activity has commenced observations are undertaken within the activity area affected by underwater sound. If a whale is sighted within this area the following will occur: <ul style="list-style-type: none"> ▪ If the vessel can do so it will move away from the whale and maintain a minimum separation distance equal to the activity area affected by underwater sound. ▪ If the vessel cannot move away from the whale, it will reduce thrusters if safe to do so. The activity will cease as soon as it is safe, and the vessel will move out of the activity area affected by underwater sound. ▪ For drilling where the drill rig cannot move away, once drilling has reached a safe point it will not restart until no whales have been observed within the activity area affected by underwater sound for 30 minutes or whales have been observed leaving this area. • Vessels have a dedicated MMO with experience in whale observation, distance estimation and reporting to implement the Beach Whale Management Procedure, for activities undertaken over a period greater than 24 hours. • In addition, vessel crew who act as Officer of the Watch receive training from the MMO in whale observation and distance estimation to assist the MMO during daylight hours. • For activities greater than 5 consecutive days at sea an additional dedicated MMO trained in whale observation, distance estimation and reporting are onboard the vessel to support the experienced MMO. • For activities that are undertaken over a period less than 24 hours the vessel Officer of the Watch undertake whale observations. They are trained in the Beach Whale Management Procedure, whale observation and distance estimation.

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Physical presence	Drill rig and support vessels	The physical presence of Petroleum Safety Zones, pre-laid anchors, vessels and drills rigs can result in the displacement of other marine users and snagging of fishing equipment.	<ul style="list-style-type: none"> • Consultation with relevant person that may be affected by the activity is undertaken as part of developing the environment plan and is ongoing prior to and during the activity to avoid or limit any displacement. • Petroleum Safety Zones, administered by NOPSEMA under the OPGGS Act, are clearly marked on navigational charts. • Beach's Fair Ocean Access Procedure details the process whereby a commercial fisher can claim compensation for an economic loss associated with Beach's offshore activities where impacts cannot be avoided. • Vessels and drill rigs comply with: <ul style="list-style-type: none"> ○ AMSA MO 30: Prevention of collisions requires that onboard navigation, radar equipment, and lighting meets the International Rules for Preventing Collisions at Sea (COLREGs) and industry standards. ○ AMSA MO 27: Safety of navigation and radio equipment gives effect to SOLAS regulations regarding radiocommunication and safety of navigation and provides for navigation safety measures and equipment and radio equipment requirements. • Pre-laid anchors are equipped with a surface buoy with a navigation light to ensure any marine users know of their presence. • The position of the pre-laid anchor buoys are monitored to ensure that the buoys and anchor chains remain in place. • The Australian Hydrographic Office is notified of the activity at least three weeks prior to commencement to enable the promulgation of Notice to Mariners and AusCoast navigational warnings.
Marine discharges	Drill rig and support vessels	Drill rig and vessels discharge cooling water, brine, bilge water, deck drainage, putrescible waste, sewage, and grey water. Marine discharges can result in changes in water quality such as increased temperature, salinity, nutrients, chemicals, and hydrocarbons.	<ul style="list-style-type: none"> • Drill rig and vessels comply with Protection of the Sea (Prevention of Pollution from Ships) Act 1983 which gives effect to MARPOL Annex IV relating to discharge of noxious liquid substances, sewage, and putrescible waste. • Equipment to treat marine discharges are maintained in accordance with manufacturer's instructions via the Planned Maintenance System to ensure they are operating efficiently. • Oil contaminated water is treated via a MARPOL (or equivalent) approved oily water separator and only discharge if oil content less than 15 ppm.

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			<ul style="list-style-type: none"> • Sewage discharged at sea is treated via a MARPOL (or equivalent) approved sewage treatment system. • Food waste only discharged when macerated to ≤ 25 mm and at distance greater than 3 nm from land. • Beach Chemical Management Plan requires that any chemicals within marine discharges are selected to ensure the lowest toxicity, most biodegradable and least accumulative products selected which meet the technical requirements of the application.
Drilling discharges	Drill rig P&A	<p>During drilling discharges such as blow out preventer hydraulic fluids, drill fluids and cuttings and cement can result in localised changes in water and sediment quality.</p> <p>A small amount of metal shavings may be discharged during the well head cutting for the P&A campaign.</p>	<ul style="list-style-type: none"> • Drill rig blow out preventer function and pressure testing is a safety requirement and is undertaken in accordance with manufacturer's specifications and in alignment with Drilling Contractors Preventative Maintenance System. • Beach Chemical Management Plan requires that any chemicals within drilling discharges are selected to ensure the lowest toxicity, most biodegradable and least accumulative products selected which meet the technical requirements of the application. • Non water-based fluids and cuttings are circulated to the drill rig for treatment via the solids control equipment prior to discharge. • Cementing procedures are implemented to minimise the amount of cement discharged to the marine environment, including the minimisation of excess cement discharge upon completion of the drilling program.
Atmospheric emissions	Drilling P&A	<p>Combustion of marine diesel oil (MDO) from the vessel and drill rig engines, generators and deck equipment, waste incineration and flaring well test fluids may cause a localised and temporary decrease in air quality and add greenhouses gas (GHG) into the atmosphere.</p>	<ul style="list-style-type: none"> • Drill rig and vessels comply with Marine Orders – Part 97: Marine Pollution Prevention – Air Pollution (appropriate to vessel class) for emissions from combustion of fuel including: <ul style="list-style-type: none"> ○ hold a valid International Air Pollution Prevention certificate and a current international energy efficiency certificate. ○ have a Ship Energy Efficiency Management Plan to reduce emissions. ○ engine NOx emission levels comply with Regulation 13 of MARPOL 73/78 Annex VI. ○ low-sulphur (<0.5% m/m) diesel used. • Combustion equipment maintained in accordance with manufacturer's instructions via the Planned Maintenance System to ensure they are operating efficiently.

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			<ul style="list-style-type: none"> Waste incineration is managed in accordance with MARPOL and AMSA Marine Orders. For well test flaring the minimum volume of hydrocarbons is used and flared via an efficient test flare burner head.

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Introduction and establishment of invasive marine species (IMS)	Drill rig and support vessels	<p>The introduction of IMS may occur as a result of discharge of drill rig and vessel ballast water containing foreign species or translocation of foreign species through biofouling on hulls, niches or in-water equipment.</p> <p>The potential impacts of marine pest introduction include:</p> <ul style="list-style-type: none"> Change in native marine species diversity and abundance. Change in commercial fish stocks and associated socio-economic effects. Changes to conservation values of protected areas. 	<ul style="list-style-type: none"> Prior to the initial mobilisation for an activity by a vessel, drill rig or submersible equipment, Beach shall undertake a domestic IMS biofouling risk assessment to: <ul style="list-style-type: none"> Validate compliance with regulatory requirements (Commonwealth and State) in relation to biosecurity. Identify the potential IMS risk profile. Identify potentially deficiency of IMS controls and additional controls to manage IMS risk profile at low. Prevent the translocation and potential establishment of IMS into non-affected environments. Suspected or confirmed IMS introduction are reported to Agriculture Victoria.
Vessel collision or disturbance of fauna	Support vessels	<p>Vessels have the potential for collision with marine mammals which may cause injury or death.</p> <p>Marine fauna entanglement in drill rig anchor chains is not identified as a risk due to the thick chain links.</p>	<ul style="list-style-type: none"> Vessels comply with the EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans which details minimum separation distances. Vessels have a dedicated MMO with experience in whale observation, distance estimation and reporting to implement the Beach Whale Management Procedure, for activities undertaken over a period greater than 24 hours. In addition, vessel crew who act as Officer of the Watch receive training from the MMO in whale observation and distance estimation to assist the MMO during daylight hours.

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			<ul style="list-style-type: none"> • For activities greater than 5 consecutive days at sea an additional dedicated MMO trained in whale observation, distance estimation and reporting is onboard the vessel to support the experienced MMO. • For activities that are undertaken over a period less than 24 hours the vessel Officer of the Watch undertake whale observations. They are trained in the Beach Whale Management Procedure, whale observation and distance estimation. • Vessel strike causing injury to, or death of a cetacean is reported to the Department of Climate Change, Energy, the Environment and Water.
Accidental discharge materials and waste	Drill rig and support vessels	<p>The handling and storage of materials and waste on board a vessel or drill rig has the potential to result in accidental overboard release creating marine debris.</p>	<ul style="list-style-type: none"> • Waste is managed in accordance with the Garbage Management Plan. • Waste with potential to be windblown shall be stored in covered containers. • Solid waste that is accidentally discharged overboard is recovered if reasonably practicable. • Crane handling and transfer procedures implemented to avoid objects being dropped overboard. • Lifting gear is maintained in accordance with the Preventative Maintenance System and inspected regularly to ensure they are operating efficiently.
Minor spills	Drill rig and support vessels	<p>Minor spill from vessels and drill rig can occur from</p> <ul style="list-style-type: none"> • use, handling and transfer of hydrocarbons and chemicals • hydraulic line failure from equipment • bunkering of material between the drill rig and support vessel <p>A minor spill would be limited to a localised and temporary change in water quality and the potential change to fauna behaviour within surface waters affected by the spill, such as avoidance.</p>	<ul style="list-style-type: none"> • Bunkering is undertaken in accordance with Drilling Contractor bunkering procedures which include: <ul style="list-style-type: none"> ○ Bunkering operation supervised at all times by trained and experienced personnel. ○ Hoses have dry-break couplings and floats. ○ Transfer equipment (hoses, pumps) maintained in accordance with manufacturer's instructions via the rig and vessel Planned Maintenance System and inspected prior to use. ○ Tanks have level indicators and level alarms. ○ Communications (visual and audio) between vessel and drill rig tested prior to commencing bunkering. • Materials and equipment that have the potential to spill onto decks or marine environment are stored within a contained area. • The following plans are implemented in the event of a spill:

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Loss of containment – marine diesel oil (MDO)	Support vessels	MDO is used in offshore vessels. A collision between a Beach contracted vessel and third-party vessel has the potential to result in a spill of fuel. Causes of a vessel collision may include mechanical failure, loss of dynamic positioning, navigational error or foundering due to weather.	<ul style="list-style-type: none"> ○ Shipboard Marine Pollution Emergency Plan (SMPEP) or Shipboard Oil Pollution Emergency Plan (SOPEP) (according to class). ○ Beach Offshore Victoria Oil Pollution Emergency Plan (OPEP). Project-specific Operational and Scientific Monitoring Program (OSMP). <hr/> <ul style="list-style-type: none"> ● Vessel collisions are avoided by: <ul style="list-style-type: none"> ○ Consultation with relevant person that may be affected by the activity is undertaken as part of developing the environment plan and is ongoing prior to and during the activity to ensure they know where activity vessels are and how to contact. ○ The Australian Hydrographic Office is notified of the activity at least three weeks prior to commencement to enable the promulgation of Notice to Mariners and AusCoast navigational warnings. ○ Vessels comply with: <ul style="list-style-type: none"> ▪ AMSA MO 30: Prevention of collisions requires that onboard navigation, radar equipment, and lighting meets the International Rules for Preventing Collisions at Sea (COLREGs) and industry standards. ▪ AMSA MO 27: Safety of navigation and radio equipment gives effect to SOLAS regulations regarding radiocommunication and safety of navigation and provides for navigation safety measures and equipment and radio equipment requirements. ▪ AMSA MO 21: Safety and emergency arrangements gives effect to SOLAS regulations dealing with life-saving appliances and arrangements, safety of navigation and special measures to enhance maritime safety. ● Vessels have an automatic identification system (AIS) transceiver enabling them to receive the data broadcasted by surrounding vessels. ● Vessels contracted to conduct activities only carry marine diesel. ● The following plans are implemented in the event of a spill:

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			<ul style="list-style-type: none"> ○ Shipboard Marine Pollution Emergency Plan (SMPEP) or Shipboard Oil Pollution Emergency Plan (SOPEP) (according to class). ○ Beach Offshore Victoria Oil Pollution Emergency Plan (OPEP). ○ Project-specific Operational and Scientific Monitoring Program (OSMP).
Loss of containment – Condensate	Drill rig	<p>A loss of containment resulting in a spill of condensate could occur from:</p> <ul style="list-style-type: none"> • loss of well control while drilling or P&A 	<ul style="list-style-type: none"> • Part 5 of the Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011 set out the requirements for WOMPs. Producing, suspended and wells being drilled must have a NOPSEMA accepted WOMP detailing: <ul style="list-style-type: none"> ○ identify the risks to well integrity. ○ describe how the risks are controlled. ○ describe the management system in place to ensure the controls are effectively and consistently applied. ○ describe the design, construction, operations, management and monitoring of the wells showing how risks to well integrity is reduced to ALARP. • Whilst drilling the drill rig blow out preventer is routinely function and pressure tested in accordance with manufacturer’s specifications and in alignment with drill rig’s Preventative Maintenance System. • Beach emergency response capability to implement timely source control in the case of a loss of well integrity is maintained in accordance with well-specific Source Control Contingency Plan (SCCP) and Relief Well Plan (RWP). • The following plans are implemented in the event of a spill: <ul style="list-style-type: none"> ○ NOPSEMA accepted Beach Offshore Victoria Oil Pollution Emergency Plan (OPEP). ○ NOPSEMA accepted Project-specific Operational and Scientific Monitoring Program (OSMP).
Hydrocarbon spill response activities	Spill response	Spill response strategies may be accompanied by a range of environmental and socio-economic impacts.	<p>Preparedness measures:</p> <ul style="list-style-type: none"> • Beach undertakes a spill response drill prior to an activity commencing to test internal and external spill response arrangements and capability.

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			<ul style="list-style-type: none"> • Beach maintains a current contract with Australian Marine Oil Spill Centre (AMOSC) for access to spill response resources and personnel. • Beach maintains access to spill response capabilities (including capable personnel and equipment) to implement well-specific Source Control Contingency Plan (SCCP) and Relief Well Plan. <p>Response measures:</p> <ul style="list-style-type: none"> • NOPSEMA accepted Beach Offshore Victoria Oil Pollution Emergency Plan (OPEP) details: <ul style="list-style-type: none"> ○ Notification and reporting requirements. ○ Priority protection areas. ○ Response strategies including resources and equipment required. ○ Response actions and responsibilities. ○ Environmental monitoring requirements as per the NOPSEMA accepted Project-specific Operational and Scientific Monitoring Program (OSMP). • Implementation of response strategies is undertaken in consultation with/or under direction of the Commonwealth and/or State Control Agency.