

Summary of Impacts and Risks for Beach Offshore Victorian Activities for 2023 and 2024



Table covers the Otway Operations including new Thylacine wells and inspection, maintenance, and repair programs.

Aspect - Planned	Relevant Activities	Potential Impact	Summary of Beach Control Measures
Light emission	Operations Inspection, maintenance, and repair programs	Vessel and Thylacine-A Wellhead Platform lighting is required for navigational and safety purposes. Artificial light may attract light sensitive species such as shorebirds, seabirds, and turtles.	<ul style="list-style-type: none"> Thylacine-A Wellhead Platform navigation lighting complies with Sections 2.1 and 2.2 of the Recommendation O-139 on The Marking of Man-Made Offshore Structures (IALA, Ed 2, 2013). Vessel lighting complies with Australian Maritime Safety Authority (AMSA) Marine Orders Part 30 (Prevention of Collisions). Beach Seabird Lighting Management Plan is implemented on 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	Operations Inspection, maintenance, and repair programs	Localised seabed disturbance with associated loss of benthic habitat or disturbance to cultural or heritage feature may occur from: <ul style="list-style-type: none"> Permanent placement of subsea infrastructure on the seabed Temporary set-down of equipment on the seabed Sediment displacement for inspection, maintenance, or repair of subsea infrastructure Use of grout and/or cement for stabilisation of subsea infrastructure 	<ul style="list-style-type: none"> Seabed surveys, consisting of echo sounder, side scan sonar, sub bottom profiler and magnetometer, to identify and avoid, where possible, any key environmental, heritage or cultural features. Vessels use dynamic positioning rather than anchor. Beach Chemical Management Plan requires that 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	Operations Inspection, maintenance, and repair programs	Temporary disturbance to marine fauna may occur from underwater sound emissions from: <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 Environment Protection and Biodiversity Conservation (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"> • Subsea infrastructure maintenance and repair equipment 	<ul style="list-style-type: none"> • Beach Whale Management Procedure is implemented on vessels 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. • Vessels have a dedicated marine mammal observer (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.
Physical presence	Operations	The physical presence of offshore infrastructure, Petroleum Safety Zones (PSZ), and vessels can result in the	<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.

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	Inspection, maintenance, and repair programs	displacement of other marine users and snagging of fishing equipment.	<ul style="list-style-type: none"> • PSZs, administrated by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage (OPGGGS) 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. • Thylacine-A Wellhead Platform navigation lighting complies with Sections 2.1 and 2.2 of the Recommendation O-139 on The Marking of Man-Made Offshore Structures (IALA, Ed 2, 2013). • 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 International Convention for the Safety of Life at Sea (SOLAS) regulations regarding radiocommunication and safety of navigation and provides for navigation safety measures and equipment and radio equipment requirements. • 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	Inspection, maintenance, and repair programs	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"> • 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. • 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.

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Operations discharges	Operations Inspection, maintenance, and repair programs	<p>During operations and inspection, maintenance, and repair programs, planned marine discharges include:</p> <ul style="list-style-type: none"> • Hydraulic control fluid discharged during subsea well valve actuation. • Fugitive discharge of hydraulic fluid through the hydraulic control system. • Hydraulic control fluid discharge during maintenance and repair of subsea infrastructure (e.g. replacement of hydraulic fluid lead. • Dye discharged during activities such as leak testing. • Chemicals used to remove marine debris. • Monoethylene glycol (MEG) discharge during well choke replacement activities. 	<ul style="list-style-type: none"> • Beach Chemical Management Plan ensures that any chemicals within marine discharges are selected with the lowest toxicity, most biodegradable and least accumulative products that meet the technical requirements of the application. • Beach Chemical Management Plan ensures that chemicals that may be discharged to the marine environment are selected with the lowest toxicity, most biodegradable and least accumulative products that meet the technical requirements of the application. • The hydraulic power unit on Thylacine-A Wellhead Platform provides control of Thylacine and Geographe subsea wells. It monitors system pressure and hydraulic fluid inventory and is inspected and maintained in accordance with the Planned Maintenance System.
Atmospheric emissions	Inspection, maintenance, and repair programs	<p>Combustion of marine diesel oil (MDO) from vessel engines, generators and deck equipment 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"> • 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.

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Atmospheric emissions	Operations	<p>Combustion of gas or diesel in generators and venting of fuel gas on the Thylacine-A Wellhead Platform may cause a localised and temporary decrease in air quality and add greenhouses gas (GHG) to the atmosphere.</p> <p>GHG emissions associated with the production, transport and use of offshore operations hydrocarbon products add GHG to the atmosphere.</p>	<ul style="list-style-type: none"> • Combustion equipment maintained in accordance with manufacturer's instructions via the Planned Maintenance System to ensure they are operating efficiently. • Beach via its Sustainability Reporting has committed to: <ul style="list-style-type: none"> ○ net zero Scope 1 and 2 emissions by 2050. ○ reduce emissions intensity by 35% from its entire portfolio by 2030 • Beach GHG Management Plan sets out the requirements for: <ul style="list-style-type: none"> ○ Monitoring of Scope 1, Scope 2 and Scope 3 GHG emissions. ○ Methodology used to determine yearly indirect emissions estimates generated by the production, transport, and use of the hydrocarbon products from Offshore Operations. ○ A program to monitor indirect (Scope 3) GHG emissions by: <ul style="list-style-type: none"> ▪ Monitoring GHG emission reduction commitments of customers. ▪ Working with Beach customers to explore GHG emission reduction opportunities. ○ Review of the GHG Management Plan to assess its effectiveness by comparison of Scope 1 and 2 emissions against targets and Scope 3 against predictions in the EP. ○ Maintaining a record of opportunities related to reductions of fuel, flare and venting Scope 1 emissions. ○ Establishing a leak detection and repair program at each facility documenting the scope, methodology, frequency, and repair guidance. ○ Assessment criteria to be used to assess merits of emissions reduction opportunities and decision making criteria for adoption. • Thylacine-A Wellhead Platform generators use gas though diesel may be used during non-routine activities. • Venting is required on the Thylacine-A Wellhead Platform to prevent over pressurisation of the process system and is undertaken as per the Thylacine-A Wellhead Platform Safety Case accepted by NOPSEMA.

Summary of Impacts and Risks for Beach Offshore Victorian Activities for 2023 and 2024



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			<ul style="list-style-type: none"> Beach are required to annually report their direct GHG emissions (Scope 1 and 2) as per the National Greenhouse and Energy Reporting Scheme (NGERS) regulatory requirements.
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Introduction and establishment of invasive marine species (IMS)	Inspection, maintenance, and repair programs	<p>The introduction of IMS may occur as a result from discharge of 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 or submersible equipment, Beach completes 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	Operations Inspection, maintenance, and repair programs	<p>Vessels have the potential for collision with marine mammals which may cause injury or death.</p> <p>The Thylacine-A Wellhead Platform has a bird deterrent system which disturbs birds from roosting.</p>	<ul style="list-style-type: none"> Operators of the bird deterrent systems are trained and follow standard operating systems. Vessel 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.

Summary of Impacts and Risks for Beach Offshore Victorian Activities for 2023 and 2024



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			<ul style="list-style-type: none"> • 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 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	Operations Inspection, maintenance, and repair programs	<p>The handling and storage of materials and waste on board a vessel or Thylacine-A Wellhead Platform has the potential to result in accidental overboard release creating marine debris.</p> <p>Grit may be used to remove paint or debris from the Thylacine-A Wellhead Platform during maintenance. Though containment is used to recover grit and debris, unplanned discharges may occur.</p>	<ul style="list-style-type: none"> • Waste is managed in accordance with the Garbage Management Plan. • Waste with potential to be windblown is stored in covered containers. • Solid waste that is accidentally discharged overboard is recovered if reasonably practicable. • Grit blasting on the Thylacine-A Wellhead Platform uses containment and recovery to minimise losses to the ocean.
Minor spills	Operations Inspection, maintenance, and repair programs	<p>Minor spill from vessels and the Thylacine-A Wellhead Platform can occur from</p> <ul style="list-style-type: none"> • use, handling and transfer of hydrocarbons and chemicals • hydraulic line failure from equipment <p>A minor spill would be limited to a localised and temporary change in water quality and the potential change to fauna</p>	<ul style="list-style-type: none"> • 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: <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). <p>Project-specific Operational and Scientific Monitoring Program (OSMP).</p>

Summary of Impacts and Risks for Beach Offshore Victorian Activities for 2023 and 2024



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		behaviour within surface waters affected by the spill, such as avoidance.	
Loss of containment – marine diesel oil (MDO)	Inspection, maintenance, and repair programs	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"> • 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. ○ PSZs, administrated by NOPSEMA under the OPGGS Act, are clearly marked on navigational charts. ○ 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. ○ The Thylacine-A Wellhead Platform is provided with navigational lights, radar beacon (RACON) and foghorn in accordance with International Association of Lighthouse Authorities (IALA) requirements. ○ 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.

Summary of Impacts and Risks for Beach Offshore Victorian Activities for 2023 and 2024



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			<ul style="list-style-type: none"> ▪ 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: <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 – MEG pipeline	Operations	<p>The MEG pipeline, from the Otway Gas Plant to the Thylacine-A Wellhead Platform is a closed system; however, loss of containment could occur as a result of:</p> <ul style="list-style-type: none"> • equipment damage • loss of pipeline integrity <p>This could result in a localised and temporary change in water quality.</p>	<ul style="list-style-type: none"> • The OPGGS (Safety) Regulations 2009 set out the requirements for safety cases. The Thylacine-A Wellhead Platform and Otway Pipeline System Safety Cases demonstrate how the risks to the integrity of the MEG system are reduced to as low as reasonably practicable (ALARP). The safety cases: <ul style="list-style-type: none"> ○ identify the hazards and risks. ○ describe how the hazards and risks are controlled. ○ describe the management system in place to ensure the controls are effectively and consistently applied. ○ describe the operation, monitoring, inspection and maintenance of the MEG system. ○ describe the leak detection, and emergency shutdown and isolations systems to reduce the extent of loss of containment of MEG.
Loss of containment – Condensate	Operations	<p>A loss of containment resulting in a spill of condensate could occur from:</p> <ul style="list-style-type: none"> • well or pipeline damage • loss of well or pipeline integrity 	<ul style="list-style-type: none"> • PSZs, administrated by NOPSEMA under the OPGGS Act, are specified areas surrounding petroleum wells, structures or equipment which vessels or classes of vessel are prohibited from entering or being present in. Otway Pipeline System, Thylacine-A Wellhead Platform and Geographe and

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			<p>Thylacine subsea infrastructure PSZs are clearly marked on navigational charts.</p> <ul style="list-style-type: none"> • Part 5 of the OPGGS (Resource Management and Administration) Regulations 2011 set out the requirements for WOMPs. Producing and suspended well have a NOPSEMA accepted Well Operations Management Plan (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. • The Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009 set out the requirements for safety cases. The Thylacine-A Wellhead Platform and Otway Pipeline System Safety Cases demonstrate how the risks to the integrity of the Thylacine-A Wellhead Platform, pipeline and subsea facilities are reduced to ALARP. The safety cases: <ul style="list-style-type: none"> ○ identify the hazards and risks. ○ describe how the hazards and risks are controlled. ○ describe the management system in place to ensure the controls are effectively and consistently applied. ○ describe the operation, monitoring, inspection and maintenance of the Thylacine-A Wellhead Platform, pipeline and subsea facilities. ○ Describe the leak detection, and emergency shutdown and isolations systems to reduce the extent of loss of containment of hydrocarbons in the event of a loss of containment of the Thylacine-A Wellhead Platform, pipeline or subsea facilities. • 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:

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			<ul style="list-style-type: none"> ○ NOPSEMA accepted Beach Offshore Victoria OPEP. ○ NOPSEMA accepted Project-specific OSMP.
Hydrocarbon spill response activities	Operations Inspection, maintenance, and repair programs	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 exercise prior to an activity commencing to test internal and external spill response arrangements and capability. • Beach maintains a current contract with Australian Marine Oil Spill Centre (AMOSOC) for access to spill response resources and personnel. • Beach maintains access to spill response capabilities (including capable personnel and equipment) to implement well-specific SCCP) and RWP. <p>Response measures:</p> <ul style="list-style-type: none"> • NOPSEMA accepted Beach Offshore Victoria 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 OSMP. • Implementation of response strategies is undertaken in consultation with/or under direction of the Commonwealth and/or State Control Agency.