

Offshore Gas Victoria Project

Drilling activities



Thylacine Platform with drill rig in background

Drilling activities | November 2023

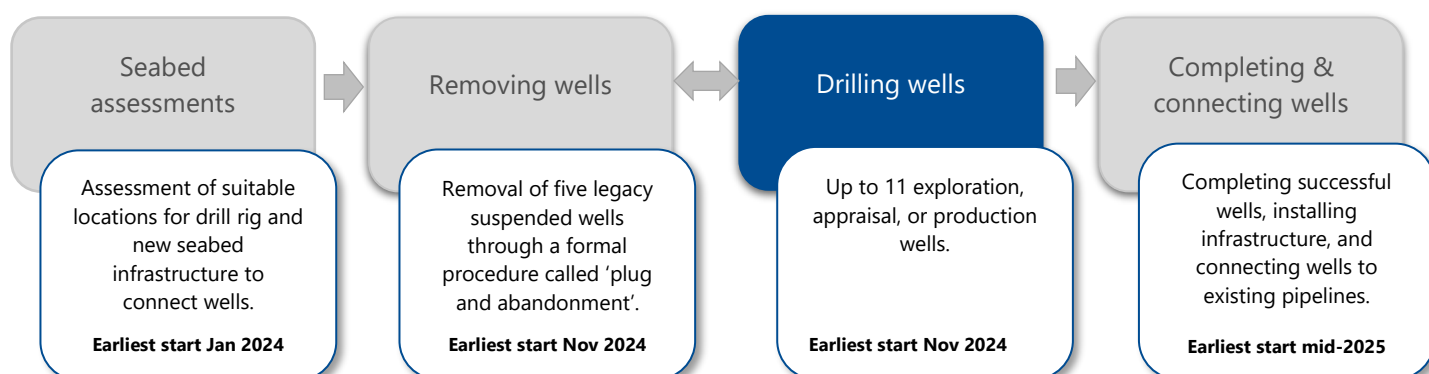
Project overview

Beach Energy (Beach) supplies natural gas for the ongoing needs of Victorian homes, business and industry, through production at the Otway Gas Plant near Port Campbell and the Lang Lang Gas Plant, 80kms south-east of Melbourne CBD.

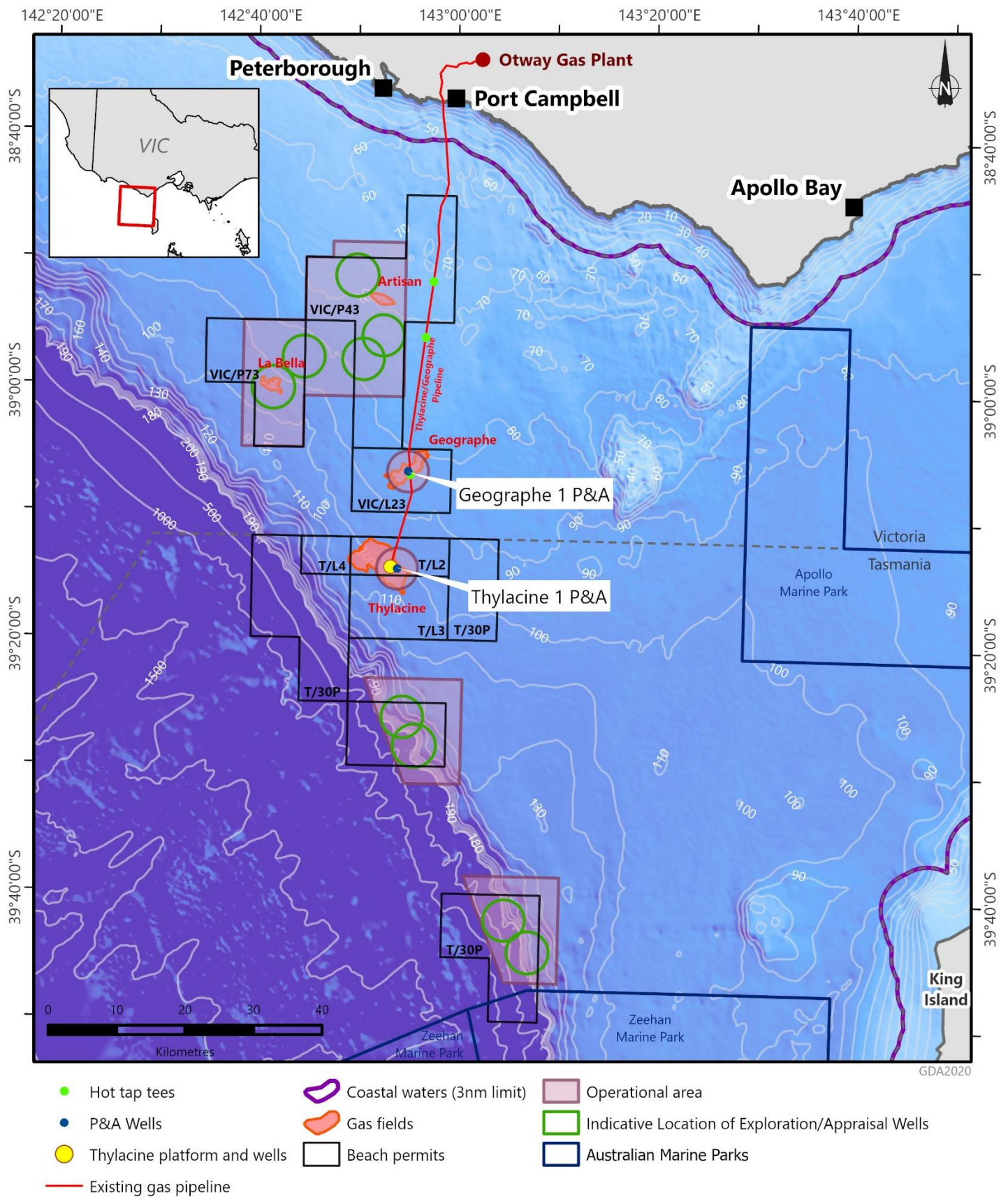
Beach successfully drilled one exploration well and six production wells in the Otway Basin offshore Commonwealth permits over the past four years. Four production wells have been connected and are now producing gas for the east coast market, with two remaining wells still to be connected.

Beach is continuing its commitment to supply natural gas to the east coast domestic market and has commenced planning for the *Offshore Gas Victoria (OGV) Project* to deliver the next phases of exploration and development.

The OGV Project is planning activities across several phases and remains subject to a final investment decision. As planning progresses, project timings and final scope will be confirmed and updated in our communications. This information sheet focuses on drilling activities.



Otway Basin activity location map

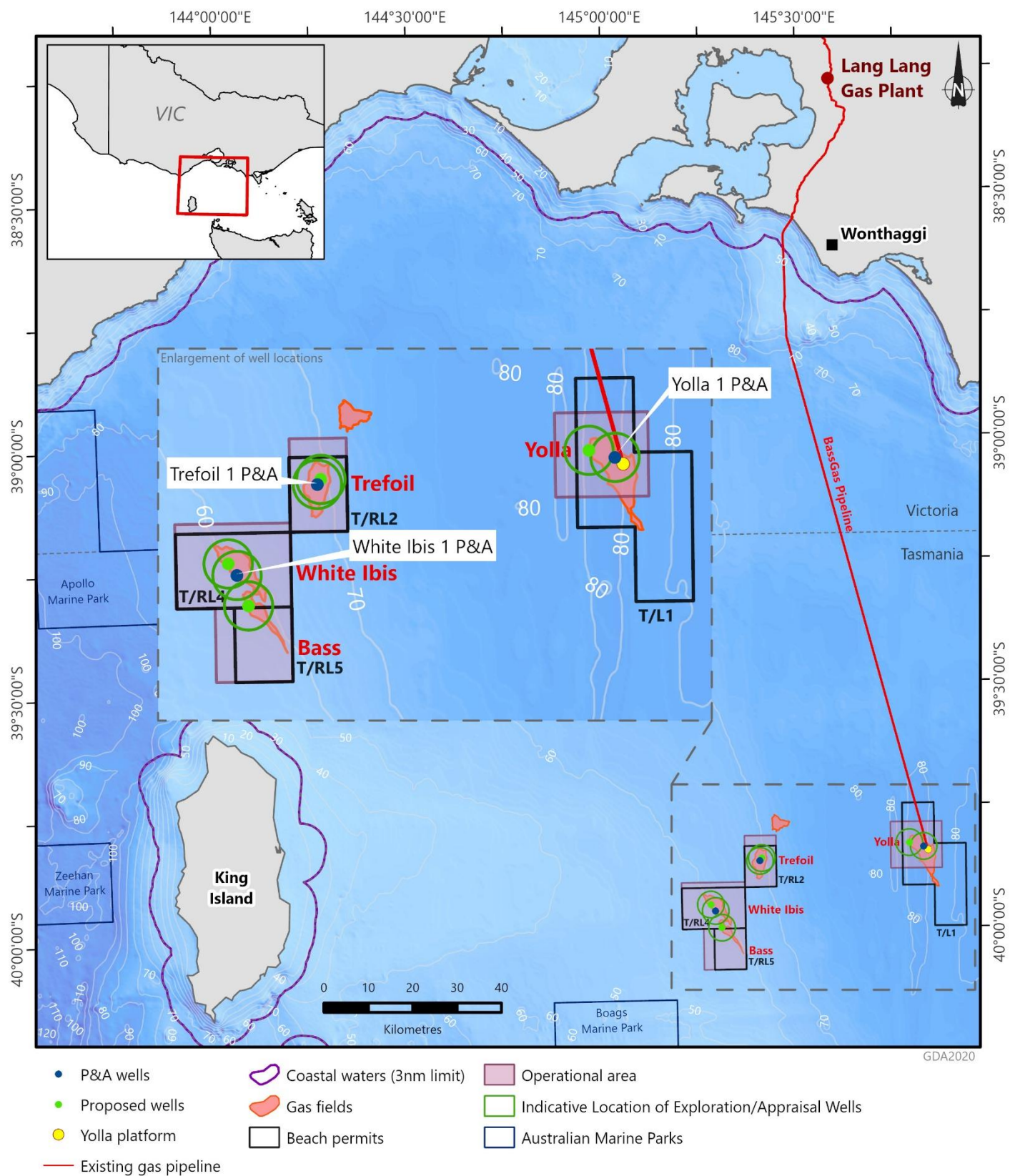


21/12/2023

This map is provided as a general reference only and is not intended to be used for any other purpose.
No warranty is provided in relation to the accuracy of the information contained in this map.

OT23-0049_R7

Bass Basin activity location map



21/12/2023

This map is provided as a general reference only and is not intended to be used for any other purpose. No warranty is provided in relation to the accuracy of the information contained in this map.

OT23-0049A_R5

Project timing

Preliminary activities would start from January 2024 with seabed assessments to determine suitable drilling and infrastructure locations. Subject to internal and external approvals, plug and abandonment (P&A) of suspended legacy wells and drilling of new wells would commence from November 2024.

Each well would take between 25 to 50 days to drill depending on whether the well is viable and will be developed for production. Each P&A well would take approximately 15 days. The entire drilling program may take up to three years, depending on number of wells.

The final scope of activities, including number of wells, and the timing of activities will be subject to final investment decision, regulatory approvals, and the availability of the drilling rig after it completes programs of works for other companies. Beach will provide a detailed activity schedule prior to commencement.

Project locations

The OGV Project includes both the Otway and Bass offshore basins. In the Otway Basin two legacy wells would be P&A and up to six wells would be drilled. In the Bass Basin three legacy wells would be P&A and up to five wells would be drilled. All new wells would be within existing permits and the indicative well locations are shown in the maps on pages 2 and 3. The exact number of wells and their locations and the equipment to tie back to the existing pipelines are to be determined and will be communicated in further updates.

Environment protection regulations

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), regulates activities in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations (2009)* (Environment Regulations). The OGV Project will require Environment Plans (EPs) to be accepted by NOPSEMA before commencement of activities. EPs will be prepared for different activity phases, including one EP covering drilling and P&A activities.

EPs must include a description of the existing environment, the proposed activities, an evaluation of the impacts and risks, environmental performance outcomes and controls, implementation strategy, and reporting requirements. They must also demonstrate that consultations with relevant persons whose functions, interests or activities may be affected by the

activities in the EP ('relevant persons'), have been carried out in accordance with the regulations.

For successful gas wells that would be developed for production, an Offshore Project Proposal (OPP) will be required and will undergo a public consultation phase. Once an OPP is accepted, further EPs will be required for construction activities and commissioning the new wells.

Further information and consultation

This information sheet has been prepared to inform *Relevant Persons* whose functions, interests or activities may be affected by the activities to be carried out under the Environment Plan (EP) being prepared for the OGV Project drilling activities.

Consultation is an important part of developing EPs as its purpose is to ensure that potential impacts have been identified and appropriate measures adopted because of the consultations.

Please contact us if you would like further information, have any questions, or feedback, or wish to consult with us about how this project may impact your functions, interests, or activities.

Beach will consider all feedback, including any concerns or objections and will explore measures to reduce any impacts and risks.

Relevant persons may request that the information they provide not be published, and it will be identified as sensitive information and not published in the EP.

If there is someone you believe may be affected by the proposed activities, please have them contact us.

P: 1800 797011

E: community@beachenergy.com.au

beachenergy.com



Environment description

EPs will include a detailed description of the existing environment in the immediate operational area and in the broader emergency planning area where there is a variety of marine fauna, including the presence of:

- Blue, humpback and fin whales, particularly during the summer months.
- Southern right and minke whales, particularly during the winter months.
- Common dolphins and shark species throughout the year.
- New Zealand and Australian fur seals throughout the year.
- Migratory birds.

There will be no drilling within marine parks. However, within the broader emergency planning area, there are National Marine Parks and State Marine Protected areas (see map).

Socio-economic and cultural values and sensitivities within the activity and emergency planning areas include:

- Commonwealth managed fisheries, including southern and eastern scalefish and shark, and southern squid jig fishery.
- Victorian managed fisheries, including rock lobster and giant crab.
- Commercial shipping activity.
- Sea Country cultural values and sensitivities held by First Nation peoples.
- Shipwrecks, primarily in close shoreline proximity.
- Recreational fishing.
- Recreational diving focussed on shipwrecks and reefs close to the shoreline.
- Significant tourism features and activities associated with the Great Ocean Road, Twelve Apostles and Bay of Islands Coastal Park.

Impacts, performance outcomes and controls

Beach recognises the environmental, cultural, heritage, social and economic values in our activity and planning areas.

We have a proud track record for safety and environmental performance, adhering to performance measures set out in EPs and Safety Cases accepted by regulators.

EPs will detail potential impacts on the environment, and provide performance outcomes and standards, and control measures to reduce and manage environmental impacts and potential risks to ALARP

and acceptable levels, and follows the principles of ecologically sustainable development. ALARP stands for 'As Low As Reasonably Practicable'. It is an assessment principle commonly used in the oil and gas industry to assess and reduce potential impacts and risks that cannot be eliminated. For information on how NOPSEMA assesses ALARP see: [ALARP Guidance Note \(nopsema.gov.au\)](https://www.nopsema.gov.au/ALARP-Guidance-Note).

A summary of the key impacts, mitigations and management plans can be found [here](#).

Marine mammal protection

EPs will set out detailed control measures that are consistent with marine mammal management plans that have been produced by the Federal Government under the *Environment Protection and Biodiversity Conservation (EPBC) Regulations (2000)*.

These control measures are based on the avoidance of collision or entanglement of marine mammals, reducing vessel speeds, and minimising any anchor lines. The control measures also focus on the reduction of marine noise from vessel and drilling rig activities, so any noise produced does not impact the behaviour of a protected marine mammal.

Dedicated Marine Mammal Observers will be deployed on vessels to advise vessel captains and the drilling rig of protected marine mammals near our activities.

All whale sightings will be recorded along with the actions taken to avoid potential impacts.

Commercial fishing control measures

The project activities would occur among commercial Commonwealth and State fisheries, which cover vast areas. The drilling activities require access to relatively small areas for short periods of time. EPs will set out detailed assessment of fisheries and fishing activity that may overlap the project activities.

Beach will consult with commercial fishers on arrangements to ensure each other's operational plans are understood, helping to minimise any impacts to fishing activities and to OGV Project.

Beach will provide regular updates on its operations to fishing associations throughout the duration of the activities.

Beach has a *Fair Ocean Access* procedure, which sets out Beach's commitment to consultation, minimising impacts of its activities, the circumstances in which a fisher may claim compensation, the evidence required and the claim process.

Recognising cultural values and sensitivities

The project operations would occur in the Sea Country adjacent to coastal First Nations groups including: Eastern Maar Aboriginal Corporation; Gunditj Mirring Traditional Owner Corporation; Wadawurrung Traditional Owners Corporation; Bunurong Land Council Aboriginal Corporation; Gunaikurnai Aboriginal Land Council Tasmania; Flinders Island Aboriginal Association; and Tasmanian Aboriginal Centre.

Beach is consulting with these groups to identify cultural values of Sea Country so that they can be assessed for any potential impacts and control measures that may be required in the preparation of the drilling EP (and other EPs).

In addition to cultural values identified through consultation, Beach has engaged a suitably qualified maritime archaeologist who will assess data gathered in the seabed assessment surveys. For any identified cultural landscape values and sensitivities within the activity area an underwater cultural landscape management plan will be developed.

Operating safely

At Beach, safety takes precedence in everything we do. The drilling rig would have a dedicated Safety Case that must be accepted by NOPSEMA. Marine vessels and the drilling rig contracted by Beach will operate in accordance with Australian Maritime Standards, regulated by the Australian Maritime Safety Authority (AMSA). This includes adherence to the following protocols at sea:

- Notifications to the Australian Hydrographic Office before mobilising to the operational area, moving to different drilling locations, and when demobilising.
- Communication with other vessels and marine users will occur using standard maritime protocols.
- Safe operating distances will be maintained around all vessels and the drilling rig at all times.
- Compliance to Navigational Safety requirements, including lighting and Automatic Identification System.

Exclusion zones

When the drilling rig is on a well location, all vessels are required to be abide by a 2-kilometre radius cautionary zone around the drilling rig. The cautionary zone is to allow for anchors, mooring chains, and wire to be placed within the operational area during the drilling program. Exact locations of

mooring chains and anchors would be made available before the start of drilling each well.

There will also be a Petroleum Safety Zone (PSZ) of 500 metres around the drilling rig during operations and for each well before and after drilling. Beach will communicate new PSZs created for wells and equipment to marine users as part of its ongoing consultation. PSZs are administered by NOPSEMA under Section 616 of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGGS Act). PSZs extend for a radius of up to 500 metres and are gazetted around wells, structures, and equipment.

Entry into PSZs is prohibited to all except those vessels authorised to do so by NOPSEMA (as detailed in the gazetted notice) or exempt under Section 615 of the OPGGS Act. PSZs are shown as a 'Restricted Area' on navigation charts.

Emergency planning

When conducting any offshore activity, there is an extremely unlikely risk of release of hydrocarbon (which is primarily gas) from a well during drilling or from marine vessel fuel in the event of an accident.

Beach standard operating procedures include emergency response plans, which are included in EPs. Preparing emergency response plans involves modelling of all possible hydrocarbon releases in the local area using a worst-case scenario, assuming no control measures are in place. The modelling calculates the transport, spreading, entrainment and evaporation over time, using data on the prevailing metocean conditions (wind, wave, and climate), the volume released, and the physical and chemical properties of the hydrocarbons.

The modelling determines the full extent of the 'Environment that may be affected' known as the EMBA. EPs must describe the EMBA and include an assessment of the likelihood and consequences of any hydrocarbon release, which must be reduced to ALARP through a range of control measures and include detailed response plans.

An emergency response plan describes the arrangements that must be in place for responding to and monitoring any release of hydrocarbon and include:

- 24/7 on-call team for rapid response clean-up actions, including mobilisation of personnel and equipment.
- 24/7 on-call team for modelling and monitoring of a hydrocarbon release to inform

response activities, and monitoring of effectiveness of response activities.

- Control measures necessary for ensuring rapid response and maintenance of capabilities (personnel and equipment).

These arrangements are based on the worse case event associated with the proposed activities to ensure that Beach has the appropriate level of response arrangements and capability.

Beach maintains a current contract with Australian Marine Oil Spill Centre (AMOSC) based in Geelong for access to spill response resources and personnel. In Victoria, the Department of Transport is the control agency for marine pollution emergencies. Beach also conducts exercises to test the emergency response plans and identify any issues and improvements before, and during operations.

For more information on hydrocarbon release modelling and why it is required for the preparation of EPs, [click here to watch a video](#) on the NOPSEMA website.

Offshore drilling approach

Depending on the size and geological structure of hydrocarbon reservoirs, the sequence of drilling often involves:

1. an exploration well into a prospective hydrocarbon reservoir identified in a previous seismic survey.
2. an appraisal well to establish the size of the reservoir.
3. then completing a well to become a production well that would be tied back to a platform and / or pipeline.

Beach's program of work would be optimised in well design and equipment so that exploration and appraisal wells would be drilled to the same specifications as a production well. By taking this approach, if the wells are assessed as viable for production, at the end of drilling they would be completed ready for connection. If they are assessed as unviable, they would immediately undergo the formal P&A process.

This approach will reduce the number of drilling activities and the time taken to explore, appraise and convert a well through to production, thereby also reducing environmental impacts from the activities.

Key steps in the drilling program

The approach to drilling is summarised in the following key steps (*see diagram over page*).

- Using an approved shipping route specialist anchor handling vessels (AHSVs) will manoeuvre the drilling rig into place.
- Mooring equipment will be pre-laid by the AHSVs and the rig will be connected at sites determined as suitable by the seabed assessments.
- Conductor and surface hole sections will be drilled and cased, then a marine riser and Blow-out Preventer (BOP) installed.
- The well would then be drilled to reach the gas reservoir beneath the seabed.
- The rig would be moved from one well to the next, repeating the anchoring and drilling process.

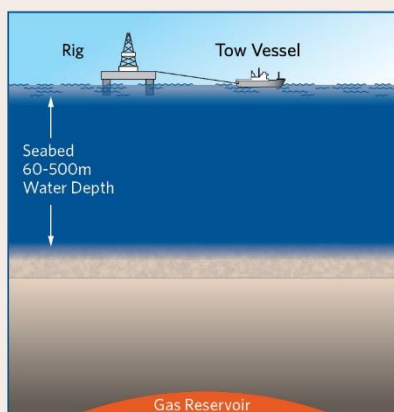


Drilling methodology

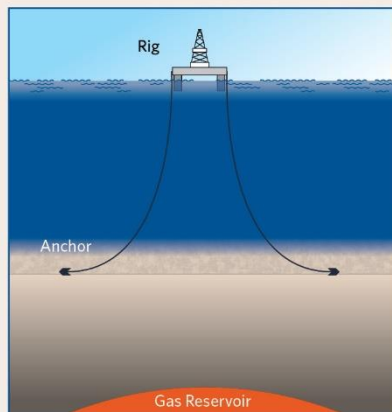
Beach would use the Transocean Equinox, which is a modern semi-submersible drilling rig designed for harsh weather and sea conditions. It can operate in waters up to 500m deep, drill for gas at up to 8,500m deep and accommodate 130 crew.

This type of drilling rig is commonly used for operations on the Norwegian Continental Shelf. Its design incorporates the latest technologies that mechanise hazardous operations enhancing the safety of personnel, improves fuel efficiency and utilises emissions reduction and monitoring systems.

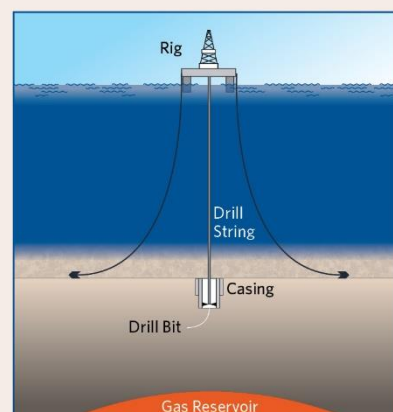
The rig is equipped with a marine riser and Blow Out Preventer (BOP) which is a highly specialised valve unit weighing approximately 244 tonnes and measuring 14 metres high. A BOP is used in all drilling operations however the offshore rig BOP is more robust with 100% duplication of functionality.



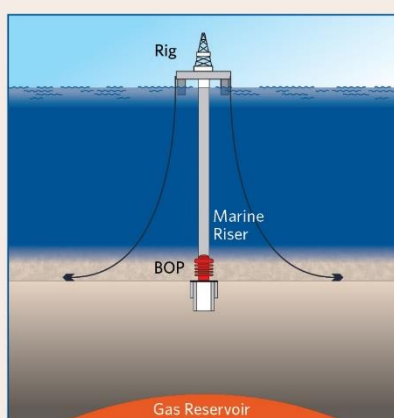
1 Rig towed to site



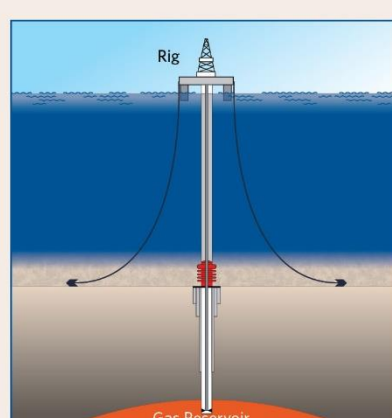
2 Anchors laid on seabed (Drilled and cased)



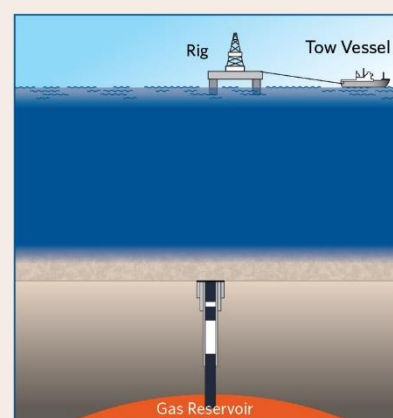
3 Surface hole constructed (drilled and cased)



4 Marine Riser and Blow Out Preventers (BOP) run to seabed



5 Drill and construct well to gas reservoir



6 Well suspended or abandoned and rig towed away

The BOP is used to shut-in and seal off a well in the event of an unplanned pressure build up or 'kick'. Beach engineers use a rigorous process for the design of construction and operation of wells which, when combined with the rig contractor procedures and BOP equipment, ensures:

- well integrity throughout the drilling process and, in the case of production wells throughout the well lifecycle.
- ongoing personnel safety.
- prevention of any environmental incidents.

The drilling process would run over several stages starting with a top-hole section of approximately 36-inches in diameter, then reducing in diameter to consecutively smaller sizes until the well reaches the final target depth. For each section, a casing (steel pipe) would be placed in the hole and cemented in place, then a smaller drill bit would be run through the casing to drill a smaller hole to the next target depth and the process repeated to reach the final depth. This is usually several kilometres below the seabed.

Drilling muds

Beach OGV Project drilling operations would use only water-based fluids called 'muds' to lubricate and stabilise the wellbores in each section and remove drilling cuttings. Drill cuttings are rock chips from the sedimentary layers that emerge from the drilling process and would range from very fine to coarse in size.

Water based muds are recycled as much as possible during the drilling process. The cuttings would be processed on the drilling rig before they are discharged overboard, where they will settle rapidly on the seafloor around the well site. This is standard industry practice in Australia.

Marine mammals and fish may transit through these areas but will usually avoid the temporary disturbance. Any exposure to suspended sediment before it settles on the seabed will be highly localised and temporary due to high dilution and fast dispersal in the water column.

Production well connections

When the production wells have been completed, they would be connected to seabed infrastructure and the existing offshore to onshore pipeline.

Some seabed infrastructure for tying in the new wells is already in place and connected to the existing pipelines.

Additional infrastructure for any new production wells would also be installed to tie-in to the existing pipeline. New infrastructure would typically include:

- Diving Integration Skid, which is a module that is installed on the seabed by divers from a dive support vessel and connected to an existing pipeline connection (hot tap) or offshore platform, ready for later connection of flowlines from the wells.
- Flowlines and various subsea connection modules to connect the production wells to the existing platform and pipeline.
- Electrical and hydraulic controls within cables that enable remote monitoring and control of the production wells.
- Concrete mattresses will be installed over the flowlines and/or umbilicals for stabilisation and protection as required.

A construction support vessel using an ROV would install the equipment and commission the production wells after they are connected.

Plug and abandonment process

If a well is commercially unviable and for the removal of existing suspended wells a formal plug and abandonment process would be carried out. Beach engineers design the well abandonment in compliance with the Norwegian Norsok and Oil and Gas UK standards industry best practice and guidelines, for example the Oil and Energy UK (OEUK) guidelines; standards that are recognised by NOPSEMA as current industry best.

Multiple cement plugs would be installed within the well to permanently seal the well and isolate any productive or water bearing formations reservoirs or hydrocarbon bearing zones.

An additional cement plug would be installed at the seabed and all casings will be cut and recovered from at least 2 metres below the mudline to ensure that the seabed is returned to the same condition as it was prior to drilling operations commencing.