

Trefoil Project

Seabed Assessment



Project Update | April 2020

Project overview

Beach Energy is planning further development of the Bass offshore natural gas reserves within existing Commonwealth offshore exploration permits and production licenses.

Beach extracts natural gas from the Yolla field via wells on the Yolla platform, transporting it to shore via a 147 km subsea pipeline. There, it joins the 32 km gas pipeline to the Lang Lang Gas Plant in Victoria. Once processed natural gas is supplied to the east coast domestic gas market.

About Beach

Beach Energy is an ASX listed oil and gas, exploration and production company headquartered in Adelaide. It has operated and non-operated, onshore and offshore, oil and gas production from five production basins across Australia and New Zealand and is a key supplier of domestic natural gas to Australia. Beach Energy is the operating partner of the BassGas joint venture which also includes AWE Limited and Prize Petroleum International Pte Ltd.

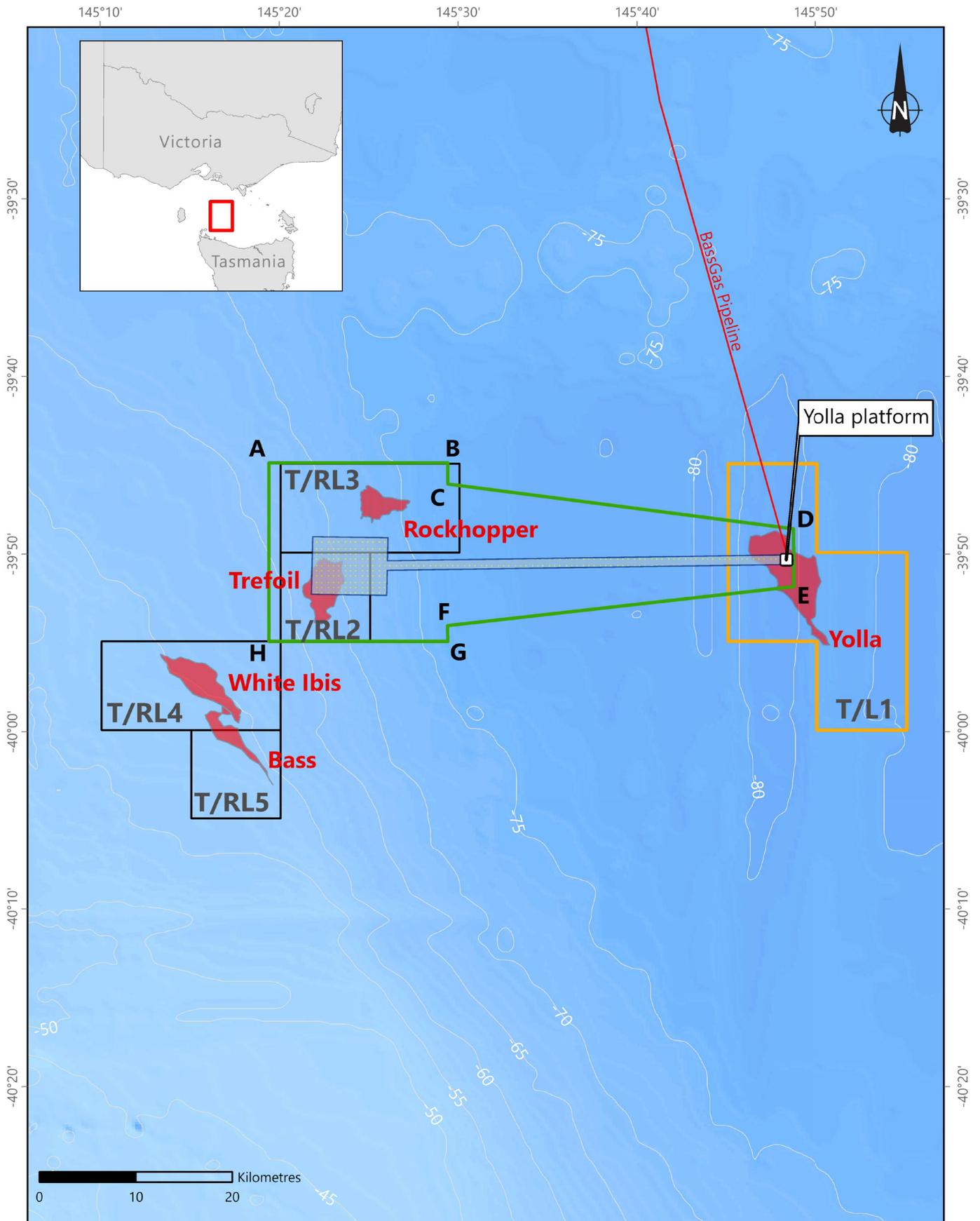
To ensure ongoing supply of domestic gas to the market Beach is proposing to undertake further development in the Trefoil field and exploration and possible development within the Rockhopper and White Ibis fields (See map overleaf).

Activities will include:

- Seabed assessments to determine the suitability of the seabed for drilling operations and installation of infrastructure to connect new production wells to the existing Yolla platform
- Drilling of offshore production wells
- Installation of infrastructure to tie-in the new production wells to the existing Yolla platform
- Potential additional exploration activities within the White Ibis field.

At this stage planning has only been undertaken for the Trefoil seabed assessments and is the focus of this information sheet.

Trefoil Seabed Assessment Location



There is no warranty that this map is free from errors or omissions. Coordinates: WGS 84

Legend

- Yolla platform
- Gas pipeline
- Gas field
- Preliminary Trefoil seabed assessment area
- Beach operated permits
- Trefoil seabed assessment operational area
- Beach non-operated permits
- A-H** Coordinate reference locations

Locations

All activities will take place in Commonwealth waters approximately 90 km from the Victorian coast and Tasmanian coast.

The map above shows the location of the existing BassGas infrastructure, fields, and proposed seabed assessment location.

The seabed assessment will cover a 6 km x 6 km area over the Trefoil and Rockhopper permits and a 40 km x 1 km corridor between the Trefoil and Rockhopper permits and the Yolla platform.

The location of the seabed assessment area shown in the map above may change but will be within the operational area shown on the map.

Coordinates of the operational area are provided in the table below.

Map Reference	Longitude	Latitude
A	145° 19.43' E	39° 44.87' S
B	145° 29.42' E	39° 44.86' S
C	145° 29.42' E	39° 46.06' S
D	145° 48.74' E	39° 48.58' S
E	145° 48.76' E	39° 51.83' S
F	145° 29.40' E	39° 54.03' S
G	145° 29.42' E	39° 54.91' S
H	145° 19.43' E	39° 54.91' S

Timing

The seabed assessment consists of two elements, a geophysical survey which will take up 25 days and a geotechnical survey which will take up to 55 days. The surveys will be undertaken between February 2020 and December 2021 depending on vessel availability and approval timings.

Start dates and durations will be provided to relevant stakeholders after completion of planning and regulatory approvals. Exact timings will also depend on fair sea state conditions. Stakeholders will be provided with specific locations and timings a minimum of one month prior to the commencement of the activity.

Project Environment Approvals

Beach is required to submit an Offshore Project Proposal (OPP) to the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) for the development wells and subsea infrastructure to tie the wells back to the Yolla platform.

The OPP process involves NOPSEMA's assessment of the potential environmental impacts and risks of the activities conducted over the life of the project.

The process includes a public comment period prior to approval and requires Beach to ensure environmental impacts and risks will be managed to acceptable levels. Following approval, Beach is then required to develop Environment Plans for specific activities which will be submitted to NOPSEMA for assessment before each activity can commence.

Stakeholders can review and provide comment on the OPP once NOPSEMA has determined the OPP is suitable for publication. Following the public comment period, Beach must prepare a consultation report and the final OPP for assessment by NOPSEMA.

Guidance on the OPP and public comment process is available on the NOPSEMA website www.nopsema.gov.au/environmental-management/offshore-project-proposals/

Beach will undertake further consultation with stakeholders as part of developing the OPP for any future BassGas development.

Environmental, Heritage, Social and Economic Values within the project area

Beach recognises the environmental, heritage, social and economic values in the areas in which we operate.

The environment within the project area is characterised by:

- Water depths ranging from 64 - 82 metres
- Seabed consists of sparsely scattered clumps of solitary sponges, sea cucumbers, sea squirts and snails.

A variety of marine fauna occur in the project area including the potential presence of:

- Blue, humpback and fin whales, particularly during the summer months
- Southern right and minke whales, particularly during the winter months
- Common dolphin and shark species throughout the year
- New Zealand and Australian fur seals throughout the year
- Loggerhead, green and leatherback turtles throughout the year.

Economic values within the project area are:

- Commercial fishing activity
- Commercial shipping activity.

No social or heritage values were identified in the project area including State or Australian Marine Parks.

Seabed Assessment Activities

The seabed assessment activities will involve geotechnical and geophysical investigations from a survey vessels consisting of:

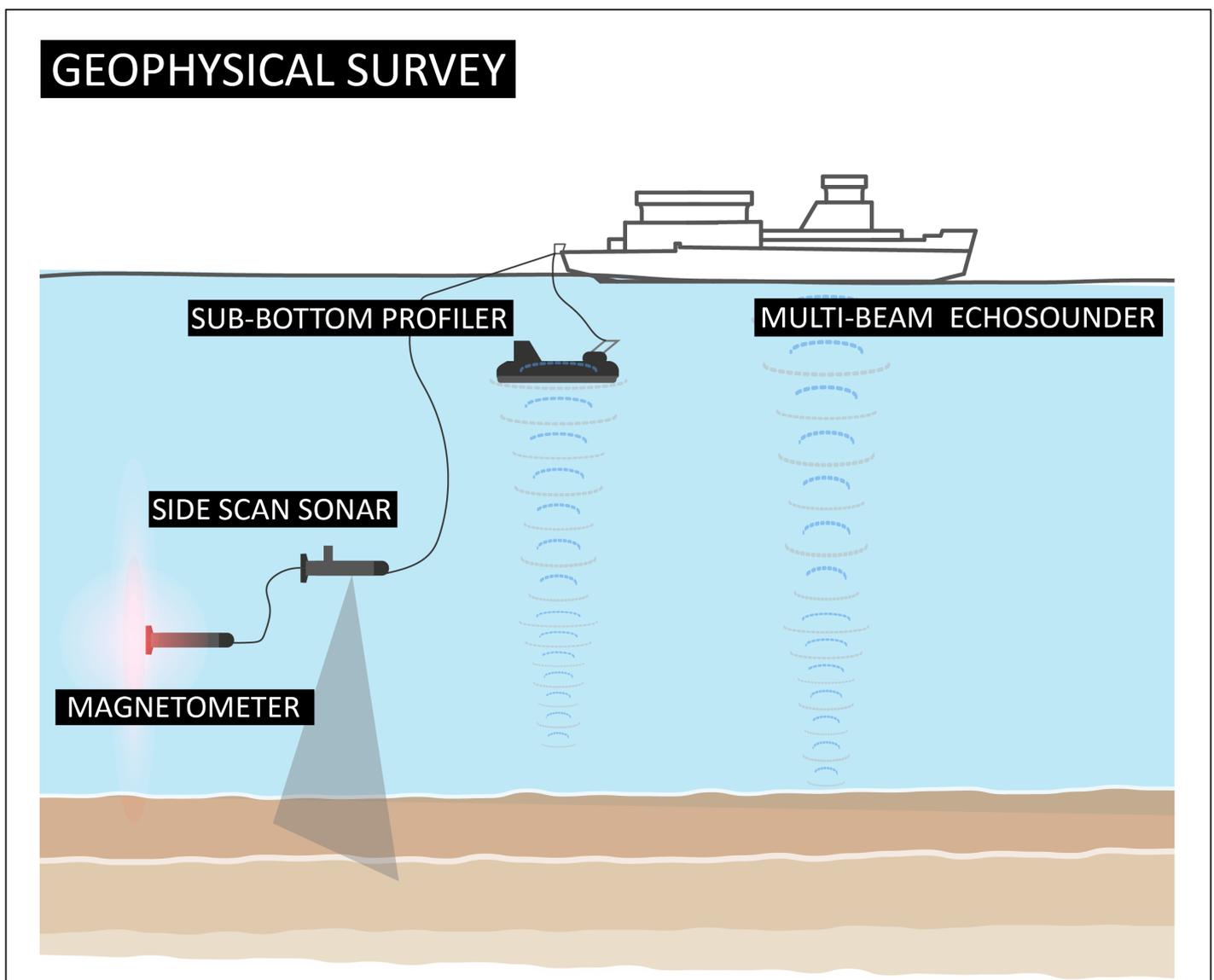
- **Geophysical survey program, including:**

- o Echo sounder for measuring water depths
- o Multibeam echosounder for bathymetry mapping
- o Side-scan sonar for identifying seabed features
- o Magnetometer to detect metallic objects on or below the seabed
- o Velocity profiler to determine speed of sound in water
- o Sub-bottom profiler (SBP) to identify shallow formation structures below seafloor.

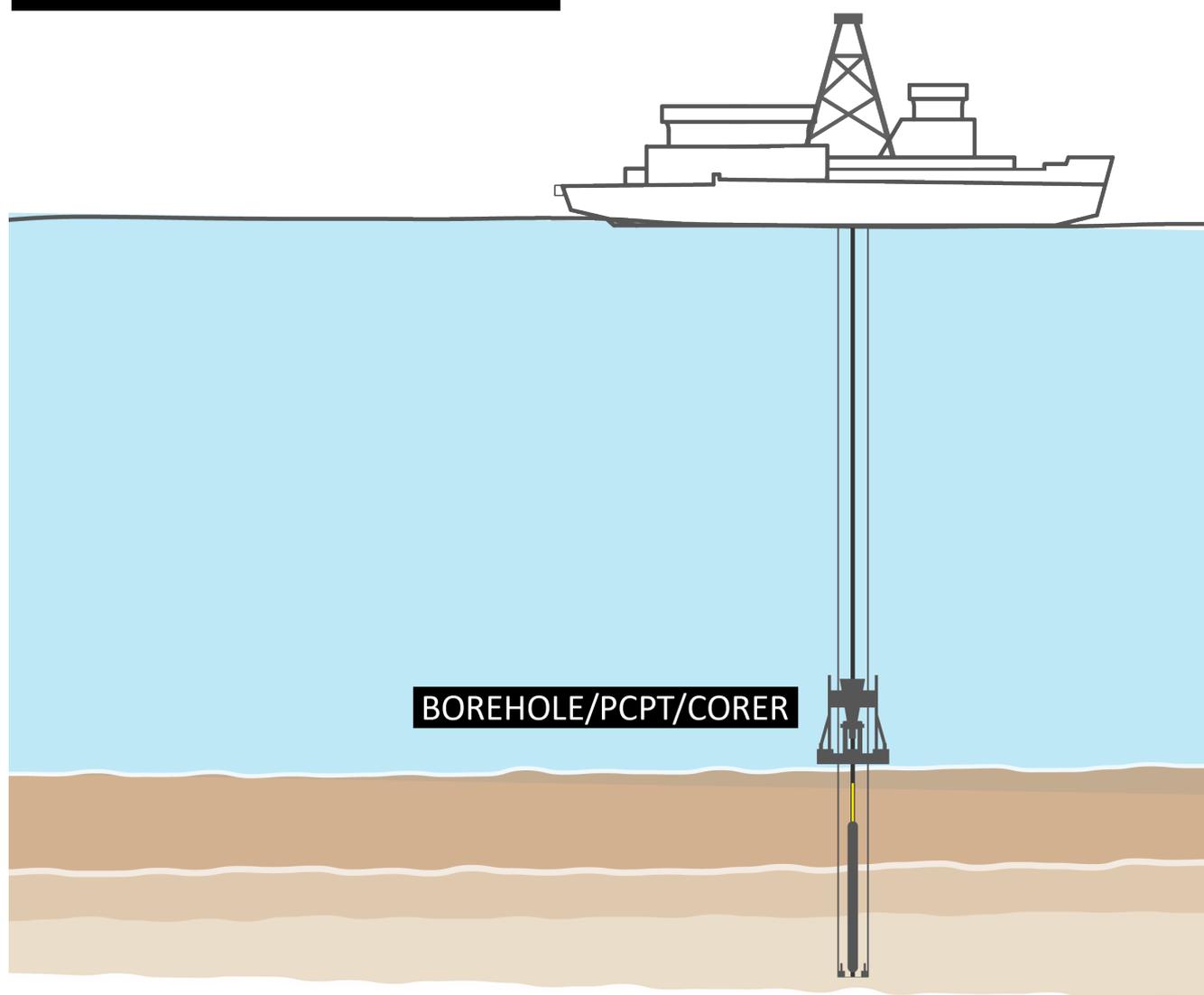
- **Geotechnical survey program, including:**

- o Piezocone penetration test (PCPT) to a maximum of 60 metres to measure the resistance of the seabed to continuous penetration
- o Sample borehole drilled to a maximum depth of 150 metres using seawater or bentonite
- o Core samples to a depth of 4 m for geological analysis.

The geotechnical survey will use a vessel that has drilling capability and therefore the geophysical survey may be undertaken by a different vessel to the geotechnical survey. The diagrams below show the common setup for the geophysical and geotechnical surveys.



GEOTECHNICAL SURVEY



Questions and Answers

Why are you undertaking the seabed assessment?

The seabed assessment is being undertaken to obtain detailed information on the bathymetry, seabed features and shallow geology at potential well locations and between the well locations and the Yolla platform. This information will be used to determine future drilling and infrastructure locations for the Bass Development.

What approvals are required before you can commence the seabed assessment?

An Environment Plan is required to be submitted to the National Offshore Petroleum Safety and Environment Authority (NOPSEMA) for approval under the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (the Regulations).

The contents of an Environment Plan are set out in the Regulations and must include a description of the existing environment and the proposed activity, an evaluation of the impacts and risks associated with the activities, environmental performance outcomes and standards, implementation strategy, and reporting requirements.

The Environment Plan is made public on submission to NOPSEMA. If you would like to be notified of when the Environment Plan is published on the NOPSEMA website, you can register your interest on the NOPSEMA website at www.info.nopsema.gov.au/home/open_for_comment

Will the activities affect rock lobsters and scallops?

Sound from the seabed assessment equipment are of low intensity and based on modelling for higher intensity sound sources, sound levels will not reach the impact level referred to in the Day et al Report¹ at the seafloor and therefore impacts to scallops and rock lobsters are not predicted.

What will happen to any discharges from the borehole drilling?

Seawater and/or bentonite will be used to lubricate the drill bit and stabilise the borehole, as well as remove seabed material produced through drilling, called cuttings. As the fluids and cuttings come out of the borehole they will be deposited onto the seabed. Bentonite is an inert material that is classed as posing little or no risk to the environment.

Will the site assessments impact upon commercial fishing?

The seabed assessment area is located within existing designated Commonwealth and State fisheries. Engagement with fisheries has identified a low level of activity in the area. Each fishery covers a vast area, whereas the seabed assessments will only require access to a relatively small area for a period of up to 80 days.

Beach is committed to minimising the impact of its activities and will consult with commercial fishers on arrangements to ensure each other's operational plans are understood, helping to minimise any impacts to fishing activities.

How will you reduce the risk of collision with other vessels?

Survey vessels will operate in accordance with Australian Maritime Standards and ensure safe operations by:

- Having operational and navigation lighting
- Maintaining a 24-hour visual, radio and radar watch for other vessels
- Pre-survey start notifications
- Text messaging of vessel location, where requested.

Will an exclusion zone exist?

Exclusion zones will not be in place during the seabed assessment and normal navigational requirements will be followed.

To avoid entanglement and safety risks, fishing nets, lines or pots should not be placed in the seabed assessment area for the period of the seabed assessment.

Will the activities affect whales and dolphins?

Based on the low intensity of sound generated from the equipment any impact to whales and dolphins will be low and temporary based on the short duration of the seabed assessment. Shutdown and exclusions zones will be used to manage any impacts to whales that may be in the area during the seabed assessment. Avoidance of whales and dolphins will be undertaken in accordance with the EPBC Regulations (2000) including adherence to distance and speed requirements.

When will drilling occur?

Drilling is currently planned for late 2022 and stakeholders will be kept informed about the proposed drilling and development as Beach progresses further planning. Beach is required to prepare a drilling Environment Plan and Well Operations Management Plan for submission and acceptance by NOPSEMA. Stakeholders will be consulted as part of the development of the Environment Plan.

¹ Day, R.D., McCauley, R.M. Fitzgibbon, Q.P., Hartmann, K., Semmens, J.M., Institute for Marine and Antarctic Studies, 2016, Assessing the impact of marine seismic surveys on southeast Australian scallop and lobster fisheries, University of Tasmania, Hobart, October. CC BY 3.0.

Consultation

Beach values stakeholder consultation and feedback. The purpose of consultation is to understand how different stakeholders' functions, interests and activities may be affected by the seabed assessments, drilling program and development activities.

Beach will consider all feedback, including any concerns and objections. Measures will be explored to reduce any impacts and risks, and responses will be provided to stakeholders.

All stakeholder feedback, records of consultation, copies of correspondence, including emails will be considered alongside technical and environmental assessments as the Offshore Project Proposal and Environment Plans are prepared for submission, and will be communicated to NOPSEMA as required by legislation.



Lang Lang Gas Plant, Victoria

Contact us

 1800 797 011

 community@beachenergy.com.au

beachenergy.com.au

