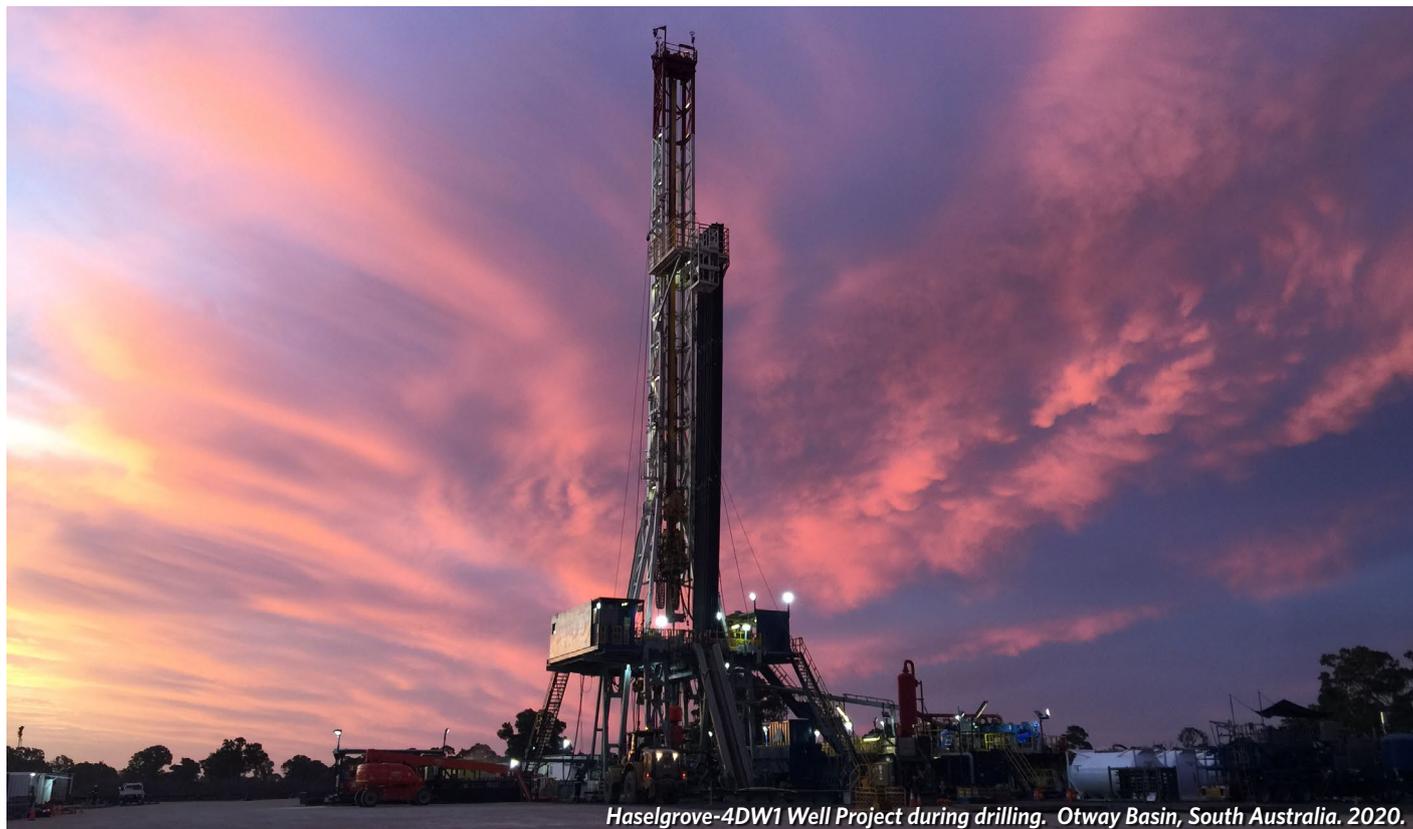




Enterprise Project

beach



Haselgrove-4DW1 Well Project during drilling. Otway Basin, South Australia. 2020.

Project update | May 2020

Project overview

The Enterprise Project is a program to develop additional offshore natural gas reservoirs in the Victorian Otway Basin. The potential reservoirs are located offshore, up to 3 nautical miles (5.55 km) from the coastline, while the well site will be located onshore near Port Campbell.

Initially, a single exploration well will be constructed using 'extended reach drilling'. This is the same method used for the successful Halladale and Speculant wells completed nearby at Nirranda South, Victoria in 2016.

Should the Enterprise exploration well find commercially successful gas reserves, it will be converted to a production well to flow the raw gas for processing at the nearby Otway Gas Plant and supply to the Australian domestic gas market. A further two wells may be drilled at the same site over the following years should the first exploration well be commercially successful.

Key Project timings

The Enterprise project commenced site preparation works in January 2020. The project will run over phases with different levels of activity, vehicle movements and people on site. The busiest phase will be during drilling which will start after July 2020, with the exact date to be confirmed. Timings for each activity phase will depend on weather windows and availability of contractors. Approximate durations are estimated below:

Establish drill site:	Completed
Mobilise drill rig:	1 month
Drill first exploration well:	2-3 months
Demobilise rig:	1 month
Well clean-up and test:	1.5 months
<i>If well is commercially successful:</i>	
Construct well head facilities:	4-10 months
Pipeline construction & tie-in works:	6-15 months



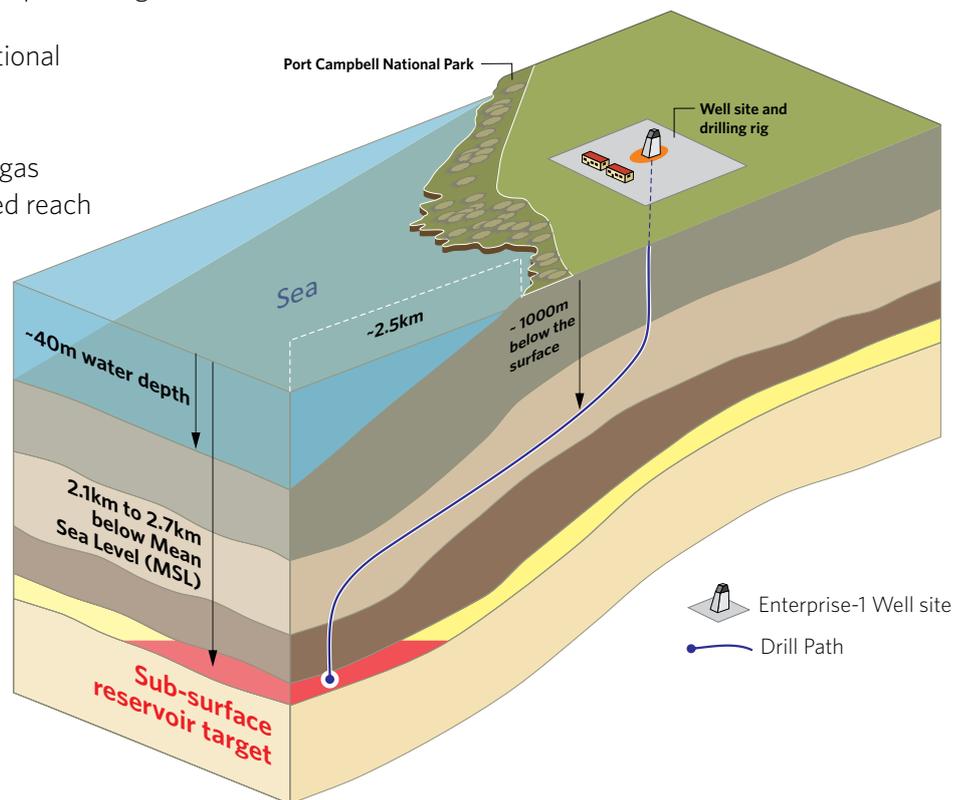
Map showing vicinity of onshore project area, adjacent offshore exploration permit VIC/P42(V).

Extended reach drilling

To access the offshore natural gas reservoir from an onshore well site, 'extended reach drilling' will be used (see diagram). This proven technology is safe, efficient and has minimal environmental impact. It involves drilling up to 2700m below the surface, while using directional drilling techniques to steer the well offshore, reaching a total drilling distance of approximately 3.5 km to the potential gas reservoirs under the seabed.

The Enterprise Project will use conventional natural gas drilling and will not involve hydraulic fracturing (or 'fracking'). The Victorian moratorium on onshore gas development does not include extended reach drilling from onshore to offshore conventional gas reservoirs.

Diagram showing extended reach drilling method from onshore drill site to sub-surface gas reservoir.



Safety and the environment

For Beach Energy, the safety of our people and the local environment are the highest priorities for our operations and projects. Beach operates within a highly regulated industry and must meet stringent environmental and safety standards.

A comprehensive Operations Plan for the Enterprise-1 well has been accepted by the Regulator. It is an all-encompassing document which outlines environment, resource and safety management risks and mitigation plans.

Traditional Custodians

Beach would like to respectfully acknowledge the Eastern Maar Peoples, the Traditional Custodians of the land on which the Enterprise Project will be located. Beach respects their historical and ongoing connection to country through cultural and spiritual sites, language and ceremony, and would like to pay our respect to their Elders past, present and emerging.

“Eastern Maar” is a name adopted by the people who identify as Maar, Eastern Gunditjmara, Tjap Wurrung, Peek Whurrung, Kirrae Whurrung, Kuurn Kopan Noot and/or Yarro waetch (Tooram Tribe) amongst others.

Community consultation

Beach is committed to working with the local community, ensuring people are informed of proposed operations and can ask questions or raise issues about its projects if required. Stakeholder consultation is an important part of preparing the Environment Management Plan as it helps identify local issues and concerns and ensures our planning manages potential impacts. Beach has been engaging with local landholders and community members and is always keen to hear from any community members who would like further information or have any questions about this project.

The Regulator was provided a report on all consultations with stakeholders in the course of developing the approved environment plans.

Supporting the community

Beach is committed to supporting the communities in which we operate and where our people live too. We focus on partnerships and programs that build sustainable and resilient communities.

In 2020 Beach is proudly supporting:

- Timboon Recreation Reserve - three year partnership for much needed refurbishments, starting with the complete renovation of the change rooms to bring them up to standard for womens' and mens' sports
- CFA Port Campbell - funding which enabled the purchase of a new light attack vehicle with support from the Victorian Emergency Services Equipment Fund
- Port Campbell Play Space - significant grant which enabled the complete redevelopment of the town's multi-use open space into a vibrant sea-side theme
- Port Campbell Surf Life Saving Club - three year corporate partnership to support purchase of a new surf boat, the Nippers program and training equipment
- Heytesbury and District LandCare Network - three year program to fund the Community Coastal Wattle Blitz program in the Bay of Islands Coastal Park

Contact us

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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 to the Australian east coast gas market.

beachenergy.com.au



Questions and Answers

Why are you drilling onshore to offshore?

Drilling from onshore to offshore has a number of advantages over offshore drilling. Most significantly, onshore drilling will be less impacted by changing weather conditions and therefore presents less risks and less potential environmental impacts.

Are you experienced in this type of drilling?

Yes, Beach has over 50 years' experience in drilling complex, high integrity wells including directional drilling. For the Enterprise-1 well, Beach has engaged the same drilling contractor and the same drill rig that Beach used recently on two previous wells in South Australia and Western Australia. Beach has a team of highly skilled gas industry professionals with extensive industry experience to deliver this project.

What approvals are required before you can drill?

The *Victorian Petroleum Act 1998* requires a Petroleum Special Drilling Authority to be signed by the Victorian Government Minister for Resources to enable drilling from outside of the offshore permit area. This was granted by the Minister on 9 July 2019. In addition, Beach is required to obtain approvals under both the *Petroleum Act 1998* and the *Offshore Petroleum Greenhouse Gas Storage Act 2006*. This requires the development of an Operations Plan for the Enterprise-1 well, which has been accepted by Earth Resources Regulation within the Department of Jobs, Precincts and Regions (DJPR). The Operations Plan includes: Environment Management Plan; Well Operations Management Plan; and Health and Safety Plan.

Other assessments, approvals and licences are in place, including: Environment Protection and Biodiversity Conservation (EPBC) Act; drilling under the surface of the Port Campbell National Park (National Parks Act); Marine and Coastal Act consent, native title and cultural heritage; flora and fauna management; bush fire safety; and traffic management, among others.

What's in the Environment Management Plan?

The Environment Management Plan includes an environmental impact assessment covering cultural heritage; flora and fauna; landscape; surface and ground-water; geotechnical; air quality; noise; community impacts and consultation. In preparation for the Environment Management Plan, a risk assessment was undertaken to ensure that measures are in place to minimise potential impacts to as low as reasonably practicable.

What about the Victorian Government's Moratorium on onshore gas development?

Drilling from onshore to develop an offshore conventional gas reservoir is not part of the Victorian moratorium.

Will you be hydraulic fracturing ('fracking')?

No. The Enterprise-1 well will target a conventional natural gas reservoir and will not involve the use of hydraulic fracturing. Once the well reaches its target destination in the reservoir, the gas will freely flow from the porous Waarre sandstone formations where it has accumulated naturally over millions of years.

Why are you applying to the Victorian Government for consent to drill in a National Park?

The drilling activity will go under the surface of the Port Campbell National Park at depths greater than 1000 meters. By law the Park extends to the centre of the earth, therefore Ministerial consent is required. However, it is not expected to have any impact on the surface flora and fauna, nor on geological stability within the park.

Will drilling under the coast line damage the cliffs?

No. Drilling will occur at a great distance below the coast line. Initially the well will be drilled vertically, then gradually decline up to 2.7km below the seabed toward the offshore down-hole target. Seismic survey data collected for this project has enabled us to analyse the geological structures of both the seabed and coastal subsurface in significant detail. And, the advanced technology used for guiding the drill direction will ensure a great accuracy in reaching the target. Three similar wells have been successfully completed nearby at Nirranda South, without any impacts.

Will the drilling impact aquifers?

No. Proven drilling technologies will be used to ensure sensitive zones, such as aquifers, are protected. The staged installation of casing and cement in the well bore and the selection and effective use of drilling fluids will ensure that aquifers are isolated before the remainder of the well is drilled. The cemented casings will ensure separation of the drilling activity from water tables and will maintain the separation of aquifers. The concrete mix and setting will be scientifically tested to ensure rigid specifications are met and reported to the regulatory authorities. This is the same approach for the previous three wells constructed nearby at Nirranda South.

What happens when the gas has been depleted?

The Waarre geological formation in the Otway basin is made up of porous sand stone sediments which contain gas created from organic matter over millions of years. The gas is contained in the reservoir by a dense cap rock structure. When a well is created, the gas flows freely. When the gas is depleted, those structures remain in place. A useful analogy is seawater draining through the sands on a beach front. The beach stays in place when the water recedes.

How long will the project take?

Preparation of the well site and drilling the initial exploration well is expected to take up to 9 months. If the well is commercially successful a master valve will be installed and the well suspended whilst the well site facilities are designed, planned, then installed over a 4 to 6 month period, after all approvals are received. Construction of a pipeline from the well site to the Otway Gas Plant would also be required and this would take 6-15 months after all approvals are received. If further wells are to be drilled, they would be done over the following 3 to 5 years. Planned dates and activity durations can change due to: internal project approvals; regulatory approvals; weather conditions; contractor availability; and technical challenges that may arise through the project.

Will it run day and night?

Site preparation works will be done during daylight hours only. The drilling phase of the project will be 24/7, as the method requires continuous drilling once it has started. Lighting will be minimised to the extent that is possible, given safety requirements on site.

Will the site impact livestock?

The drill site will be fenced off to ensure livestock cannot wander onto the site. A livestock impact study was completed for the previous Halladale and Speculant well construction in Nirranda South and found that the cattle quickly habituated to the drilling activities and there were no quantifiable impacts identified.

Is there a fire or spill risk on the site?

All drilling projects have risks, however these risks are closely managed. The regulatory approvals process requires all possible risks to be identified, quantified, and have mitigation and management plans in place to ensure risks are reduced to an acceptable level. The local CFA brigades will continue to be consulted and updated on safety plans.

Will locals and tourists see the drill rig from the Great Ocean Road?

Yes. The drill rig will be around 55 metres high so it will be very visible during the drilling phase, especially at night due to safety lighting requirements. The drill site location has been chosen to reach the offshore target, so it will be reasonably close to the Great Ocean Road. We will continue to communicate with landholders, the broader community and tourism operators and explain that the drilling is a temporary activity.

Will there be seismic testing on this project?

Yes. A common technique called 'Vertical Seismic Profiling' (VSP) will be used to evaluate the well during drilling operations. A high-resolution image of the geology of the well will be produced to enable the well data to be matched to existing seismic data so the target location can be verified, and the gas reservoir further assessed. VSP works by generating a seismic energy source to travel to geophone receivers within the well, which will record the data for assessment. Various technology options are being reviewed and further information will be provided before the activity goes ahead.

Will the project be noisy?

Yes, but only in the immediate area, and only during the site establishment and drilling phases. In addition to the distance from the gas reservoir and other technical constraints, the site has been selected to minimise unavoidable construction and drilling noise during the initial project phases. And nearby landholders have been consulted to discuss any impacts and how best to manage these. Once the drilling has been completed and site commissioned for production (if exploration is commercially successful), the production well heads will not be noisy. A noise study has been carried out at the Halladale and Speculant production well site and confirmed that operational noise does not exceed guideline noise levels near the well site.

Will there be a visible flare?

Yes, if the exploration well proves commercially viable, flaring will be required. Over a period of approximately one-week, there will be several flaring events of between 4 to 9 hours. Flaring is an ordinary part of the drilling process and is required to remove final drilling fluids and importantly, to measure production and pressure information to assess the exploration well. There will be community consultation to give advanced notice.

Will there be any road closures?

No, the drill site will be on private land accessed from public roads. Curfews for heavy haulage loads will be observed whilst school buses are operating. A traffic management plan will set out traffic routes and safety conditions as there will be a large number of escorted heavy haulage loads required to bring the drill rig and equipment to site. During this time, there may be traffic delays. But timings will be planned to minimise impacts and there will be community consultation to give advanced notice.

How many people will be working at the site?

This will vary over the different project phases. The busiest time is during drilling when there will be between 70 and 120 people on site at different stages. All staff and contractors entering the site must undergo mandatory training which will include safety, environment, and community considerations.

Where will those people stay?

A small supervisor crew will be on site 24/7 at a 'mini-camp'. The main drilling crew will stay at a temporary accommodation camp, established at a separate site nearby. This will allow the drilling crew to work in shifts. Other workers and contractors will travel to site on a work needs basis and will arrange local accommodation as required.

What will be evident once the drilling is complete?

If the exploration well proves commercially successful, a production wellhead facility will be established, which is subject to a separate regulatory approvals process.

This will include a wellhead, pipes, valves, monitoring equipment, safety equipment, and small buildings such as a communications room about the size of a standard shipping container, and a small equipment room. The well site will be operated and monitored from the Otway Gas Plant Control Room which operates 24/7.

A formal maintenance program will be implemented, requiring visits to the site from time to time by staff from the Otway Gas Plant.

Will you be constructing a new pipeline?

If the exploration well proves commercially successful, the gas will need to be transported through a new underground pipeline to be constructed from the wellhead to the Otway Gas Plant for processing. A comprehensive consultation process with landholders would be undertaken in advance of any pipeline planning, regulatory approval and construction.

What if you don't find enough gas?

If the exploration well proves commercially unsuccessful, the well would be 'plugged and abandoned' which is an industry term describing the decommissioning of the well. This would involve isolating zones using cement plugs within the well bore to prevent possible exposure to water producing zones and surface leakage of water. And all surface facilities would be removed. The abandonment program would be provided to the regulator for assessment and approval. The well site would be fully remediated and returned to the landholder.

How will you rehabilitate the site?

Once all drilling has been completed, all gas from the reservoir has been depleted and the wells decommissioned, the site will be rehabilitated in line with the agreement with the landholder.

How will you consult with the community?

We meet face to face with landholders, nearby neighbours and representatives of the Eastern Maar People (the Traditional Custodians), to explain the project and work with them to identify the best way to manage any impacts. We also consult directly with regulators, relevant government departments and agencies, and local government.

For our local communities, we consult with community representatives, provide briefings at community group meetings, run community drop-in information sessions, email and post out information. All questions, feedback or concerns are considered and responded to.

Before, during and after key project phases, we provide updates, including advanced notice of heavy vehicle movements and flaring.