Collaborative Research Project

Trial of emerging seismic survey technologies and research on fishery impacts

Information Sheet | September 2021

Introduction

In partnership with leading Australian research institutions and fisheries organisations, Beach Energy is planning a collaborative research project (CRP) in relation to marine seismic surveys. The project will trial emerging seismic survey technologies, while also researching the potential impacts to scallop and lobster. The objective of the CRP is to establish whether the emerging technologies are effective in mapping geological structures beneath the seabed and at the same time, reduce potential impacts to marine species.

Background

Beach Energy is planning to undertake a three-dimensional marine seismic survey (the Prion Survey) to map the geology beneath the seabed, enabling the assessment of natural gas reservoirs (see map). The Prion Survey will operate under an Environment Plan (EP) that has been accepted by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

In preparation of the EP, Beach has consulted with stakeholders including scallop industry associations, fishery authorities, and research institutions. Consultation has led to identification of research projects that aim to scientifically validate Beach's underwater sound impact assessments for the EP, build upon scientific knowledge on impacts of seismic surveys, and test emerging technologies.

Research partners

Institute of Marine and Antarctic Studies (IMAS)
IMAS is an internationally recognised centre of excellence at the University of Tasmania and is the principal organisation leading the marine species research in this CRP. IMAS has studied scallop and lobster for over twenty years and has previously published research on the impacts of seismic surveys on scallop and lobster.

Curtin University of Technology (Curtin)
Curtin University of Technology has significant experience in modelling, researching and publishing outcomes of marine sound studies. Curtin will participate as a co-investigator with IMAS, undertake the sound monitoring and has contributed funding.

Fisheries Research and Development Corporation (FRDC)
FRDC is a co-funded partnership between the Australian Government and the fishing and aquaculture sectors. FRDC plans and invests in fisheries research and development (R&D) activities in Australia and provides leadership and coordination of the monitoring, evaluation and reporting on R&D activities. IMAS has applied to FRDC for funding for this CRP.

Department of Primary Industries, Parks, Water and Environment, Tasmania (DPIPWE)

The Sustainable Marine Research Collaboration Agreement (SMRCA) is a collaborative agreement between the Tasmanian State Government (DPIPWE) and the University of Tasmania. SMRCA provides leadership, strategic direction and funding of collaborative marine research projects. DPIPWE are providing funding support for this CRP, via the SMRCA.

Bass Strait Scallop Industry Association (BSSIA)
BSSIA represents commercial scallop fishers licenced to fish in the Commonwealth Bass Strait Central Zone Scallop Fishery. BSSIA introduced Beach to IMAS to progress this CRP. Beach will continue to consult with BSSIA on this CRP.

Emerging technologies

New sound sources for seismic surveys have been tested in lakes and water tanks and demonstrated lower peak sound pressure levels than conventional technologies. However, there is little field trial data from these technologies in open oceanic waters. Beach is aiming to close this research gap.

The new technologies to be trialled are:

- **eSource™** uses specialised equipment that gradually releases air bubbles at a predetermined rate to create sound waves with reduced high frequency components, that are believed to have the most potential for disturbing marine life.
- **Distributed source** activates frequent air bubbles in a random pattern, with much lower sound pressure and peak amplitude levels than conventional technologies.

The new technologies will be trialled on the eastern boundary of the Prion Survey (see map) and will take up to four days. The data obtained from the trial will be compared to the conventional seismic method used for the Prion Survey to establish its effectiveness.

Scallop and lobster research

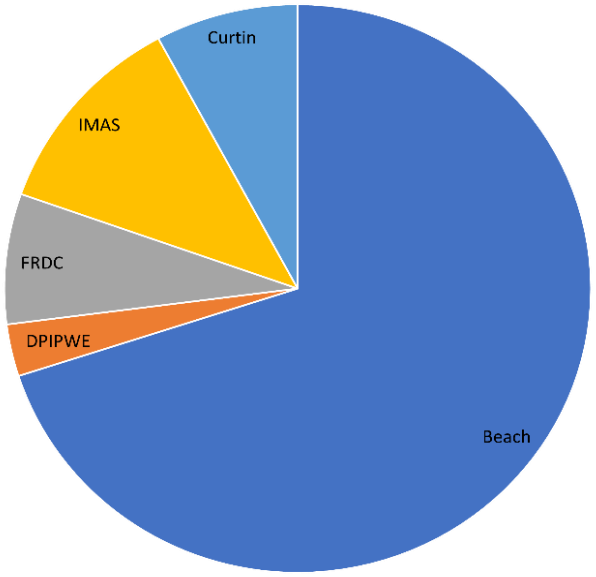
Scallop and lobster will be placed in separate cages on the seabed at different locations within the test area, and at a 'control' area that is not exposed to any seismic sound. The animals will be acclimatised to the environment for two days before the start of the Prion Survey and trials. Sound monitoring equipment will be placed on the seabed at the same locations of the animals in the cages, to enable verification of sound exposure levels.

After the Prion Survey and trials are completed, the animals will be retrieved, some will be studied immediately on return to the IMAS laboratories, and other specimens will be held in purpose-built tanks for further studies at 3 months and at 6 months. IMAS will compare the differences between the condition of the scallop and lobster exposed to different source technologies to the control group not exposed at all and study the condition of the animals over the different time periods. IMAS will prepare a research paper that will be peer-reviewed before open publication.

The Prion Survey will not operate over southern rock lobster habitat and fishing areas. However, Beach was supportive of IMAS' recommendation to extend the research program to include lobster, to build the scientific knowledge of potential impacts on this species.

Funding

The total project value is over $3.37m, with the cost of the emerging technology trials and support vessels being met by Beach, along with a substantial contribution to the lobster and scallop research. DPIPWE has also made a financial contribution to the lobster and scallop research. The financial contributions from Beach and DPIPWE, along with considerable in-kind labour and equipment support from IMAS and Curtin, enabled IMAS to prepare an application to FRDC for endorsement and funding. FRDC has approved the application and will also contribute funding. The share of contributions to the total project value are shown in the chart below.



Timing

The trial of emerging technologies and marine species research will align with the end of the Prion Survey when the appropriate vessels and equipment will be available. The Prion Survey is planned to commence in October or November 2021, subject to vessel availability and weather conditions.

Safety and environment

The marine research to be carried out by IMAS will be done in accordance with the University of Tasmania's research and animal ethics standards.

The trial of the emerging seismic source technologies to be undertaken by Beach will be carried out in accordance with the safety and environment protection procedures in the Prion Survey EP.

Other research

The Prion Survey overlaps the designated Bass Strait Central Zone Scallop Fishery. Data and reports from the Australian Fisheries Management Authority show very little scallop fishing has occurred in the Prion Survey area. However significant beds are known to exist adjacent to the southwest corner of the Prion Survey area.

Beach has therefore commissioned additional research to gain a better understanding of the scallop biomass within the southern section of the survey area in depths known to be commercially fished. Once identified these known scallop beds will be monitored by a Before, After Control and Impact (BACI) experiment designed to measure impacts to scallops after the Prion Survey.

Beach has also carried out underwater sound and particle motion (vibration) modelling for the Prion Survey and assessed the potential impacts as minor. However, given commercial scallop fisher concerns with the modelled impact assessment, Beach will undertake underwater sound and particle motion validation monitoring against the sound modelling for the Prion Survey.

Beach will share all survey, assessment and research outcomes with the scallop fishers and industry associations. Should any fisher experience an economic loss due to Beach's project, they may claim compensation from Beach, in accordance with Beach's *Fair Ocean Access Procedure*.

We welcome your questions and feedback

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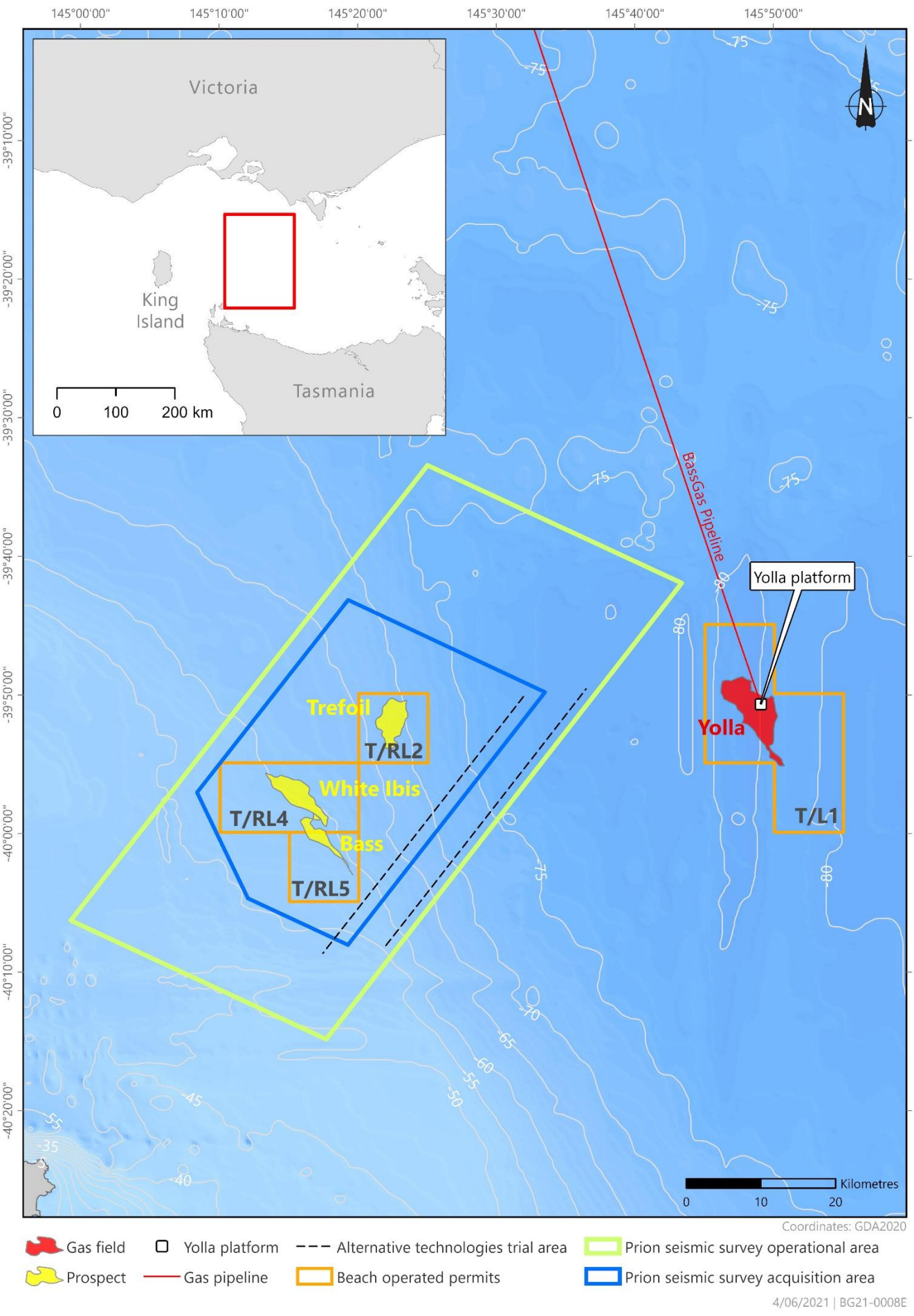
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Gas pipeline
Alternative technologies trial area
Beach operated permits
Prion seismic survey operational area
Prion seismic survey acquisition area
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