*Petrel Sub-Basin South-West 3D Marine Seismic Survey*

Key matters report

# Purpose of this report

NOPSEMA has accepted the Petrel Sub-Basin South-West 3D Marine Seismic Survey Environment Plan (the EP) submitted by Santos Offshore Pty Ltd (the titleholder, hereafter ‘Santos’) for a seismic survey activity in the Petrel sub-basin within the period(s) 1 December 2021 and 31 March 2022 or between 1 December 2022 and 31 March 2023.

As required by the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (the Environment Regulations), the public was provided with an opportunity to comment on the EP. There were no public comments received during the public comment period.

Following the public comment period, the titleholder submitted the EP for assessment by NOPSEMA on 12 July 2021. NOPSEMA has since completed its assessment of the EP and has determined that it is satisfied that the EP meets the criteria for acceptance[[1]](#footnote-1) on 6 January 2022.

This report explains how NOPSEMA took into account key matters raised by stakeholders in making its decision. This report also contains other key matters that may be of interest to the public.

This report accompanies the accepted Petrel Sub-Basin South-West 3D Marine Seismic Survey Environment Plan (Revision 3) submitted by Santos Offshore Pty Ltd, which is available on the NOPSEMA website and should be referred to for further information.

## Information relevant to NOPSEMA’s decision:

In making the decision to accept this EP, NOPSEMA took into account:

* the Environment Regulations;
* NOPSEMA Assessment Policy (PL0050), Environment Plan Assessment Policy (PL1347) and Environment Plan Decision Making Guidelines (GL1721);
* Petrel Sub-Basin South-West 3D Marine Seismic Survey Environment Plan;
* the information raised by relevant persons, government departments and agencies that is relevant to making a decision; and
* relevant plans of management and threatened species recovery plans developed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and relevant guidance published by the Department of Agriculture, Water and the Environment.

# Next steps

Responsibility for the ongoing environmental performance of the seismic survey activity remains, at all times, with Santos.

NOPSEMA has legislated responsibilities to inspect and investigate offshore petroleum and greenhouse gas storage activities, and to enforce compliance with environmental law. These functions will be applied to this activity in accordance with NOPSEMA’s policies.

# Sensitive Information

Sensitive information received during the public comment period, such as the names and contact details of commenters and specific information identified by the commenter or relevant person as ‘sensitive’, is not published in this report. Sensitive information is contained in a sensitive information part of the EP which has been considered by NOPSEMA during its assessment process.

# Further information

If you would like further information about the activity, please contact the titleholder’s nominated liaison person specified in the EP and on NOPSEMA’s webpage for the Petrel Sub-Basin South-West 3D Marine Seismic Survey.

If you would like to be notified of regulatory information on the activity, such as start and end dates and enforcement actions (if any), please subscribe to updates from the [Underway Offshore page](https://info.nopsema.gov.au/environment_plans/563/show_public) on NOPSEMA’s website.

How NOPSEMA has taken into account key matters raised during relevant persons consultation in the assessment and decision-making process for the Petrel Sub-Basin South-West 3D Marine Seismic Survey Environment Plan

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| # | Matter | Titleholder response | NOPSEMA’s assessment and decision |
| 1 | ***There was concern from relevant persons that the survey may impact on fish spawning and behaviour, and consequently result in unacceptable impacts to the sustainability of commercial fish stocks and catchability of target species.*** | In preparing the Petrel Sub-Basin South-West 3D Marine Seismic Survey (Petrel 3D MSS) Environment Plan (EP), Santos undertook relevant persons consultation with commercial fishing representatives, including the Western Australian Fishing Industry Council (WAFIC) and the Northern Prawn Fishery. Santos evaluated the objections and claims raised by relevant persons and provided a response to the relevant persons addressing the objections and claims raised. At the request of the Northern Prawn Fishery, Santos has committed to acquiring the Petrel 3D MSS during the seasonal prawn fishing closure to minimise impacts of displacement to license holders of this fishery.  Santos evaluated the potential impact of the survey on the catchability of key species and spawning success of key commercial species. This evaluation was informed by relevant scientific literature and understanding about the level of overlap between the proposed survey and the spawning range of key commercial species. Santos concluded that impacts would be limited to short term behavioural disturbance of some adult fish/prawns, with behaviour and spawning predicted to return to normal within days to weeks. The titleholder predicted that the survey will not have a measurable effect on spawning or recruitment success. Reasons for this conclusion include the ‘high fecundity and broadcast spawning characteristics of key demersal and pelagic fish species in the region, which provide for genetic connectivity of the stocks over extensive areas’ and ‘adult stocks comprise fish that are recruited over many years and are unlikely to be affected by seasonal disturbances, even at a regional scale’.  Santos has committed to undertake seismic acquisition so that ‘*Commercial fishing licence holders are no worse off as a result of the seismic survey*’ (EPO-3), and there is *‘No serious or irreversible impacts to listed marine fish (including sharks) due to noise associated with the operation of seismic source, consistent with the MNES Significant Impact Guideline 1.1*’ (EPO-6) or *‘No serious or irreversible impact to the sustainability of indicator commercial fish stocks for the following commercial fisheries due to noise associated with the operation of the seismic source:*   * *Commonwealth Northern Prawn Fishery (NPF);* * *WA Northern Demersal Scalefish Managed Fishery (NDSMF);* * *WA Mackerel Managed Fishery (MMF)’.* (EPO 13).   The EPOs will be achieved through implementing control measures including:   * Concurrent operations planning with relevant commercial fishers (CM-6) * Commercial fishery payment claims (CM-7) * Implementation of EPBC Policy Statement 2.1 (Part A):   + pre start-up visual observation   + Soft start procedures   + Start-up delay procedure   + Operations procedure   + Shut-down procedure Night-time and low visibility procedures (CM-12). | NOPSEMA acknowledges the potential for the Petrel 3D MSS, if not appropriately managed, to have unacceptable impacts on commercial fisheries by displacing fishers and adversely affecting spawning.  In making a decision regarding this matter, NOPSEMA took into account relevant information including the EP, relevant scientific literature, views expressed by relevant persons, and NOPSEMA’s Decision Making Guidelines (GL1721).  NOPSEMA required that Santos conduct a robust, qualitative and quantitative assessment of the potential for impacts to the sustainability of commercial fish stocks, and the catchability of target species. This assessment considered impacts of the proposed Petrel 3D MSS as well the potential impacts when the proposed activity is considered in conjunction with other past and concurrent seismic surveys, and nearby activities. NOPSEMA also required Santos to demonstrate that the potential impacts to both spawning and catchability of key species would be of an acceptable level, with no serious or long-term effects to populations.  In addition, NOPSEMA required Santos to consider how the design of the survey would reduce impacts to the environment. In response, Santos removed one of the proposed survey areas, Area C, from the scope of the activity (i.e. Area C that was shown in Revision 0 of the EP that was published for public comment). This step reduces the spatial extent and duration of the survey.  NOPSEMA is reasonably satisfied that given the relatively limited spatio-temporal overlap of the proposed survey with the spawning range of key commercial species, both in isolation and in combination with other surveys, impacts will be limited to short-term, recoverable disturbance of adult fish and prawns. As the key species are highly fecund and spawn repeatedly over the season, recoverable disturbance is not likely to translate into measurable effects on spawning or recruitment success, and effects are unlikely to extend over human generational timescales. In addition, NOPSEMA considers that with the Santos commercial fisheries payment claim protocol in place, commercial fishers will be fairly compensated for any demonstrable loss of catch should behavioural disturbance result in a reduction in catchability.  NOPSEMA has concluded after taking into consideration Santos’ evaluation of impacts, recent published literature, and the control measures in place that impacts of the activity will be reduced to ALARP and will not result in unacceptable impacts to commercial fishers or stock levels. |
| 2 | ***There would be unacceptable impacts to marine turtles due to the overlap of the seismic acquisition area with the foraging biologically important area (BIA) for four species of marine turtle.*** | Santos undertook an assessment of the predicted underwater noise impacts of the survey on marine turtles utilising the foraging BIA that overlaps the operational area. This was informed by underwater acoustic modelling, content from the Marine bioregional plan for the North-west Marine Region, and peer reviewed scientific literature.  Santos has committed to ensuring that the activity is conducted such that there is ‘*No injury to turtles due to noise associated with the operation of seismic sources*’ (EPO-11) and that and to ‘*Undertake seismic acquisition in a manner consistent with the Recovery Plan for Marine Turtles in Australia 2017-2027’* (EPO-12).  The EPOs will be achieved through implementing control measures including:   * Shut down procedures for turtles (CM-17) * Santos will not acquire any seismic surveys within the internesting BIA for flatback turtles during the nesting season (peak June to September) (CM-18). * Night time and low visibility procedures for turtles (CM-23) * Adaptive management procedures for marine turtles: Adaptive management of operations near the carbonate bank and terrace system of the Sahul Shelf KEF and pinnacles of the Bonaparte Basin KEF (CM-24). | NOPSEMA acknowledges the potential for the activity, if not appropriately managed, to have unacceptable impacts to marine turtles foraging within the relevant foraging BIA shown on the [National Conservation Values Atlas](https://www.awe.gov.au/environment/marine/marine-bioregional-plans/conservation-values-atlas).  In making a decision regarding this matter, NOPSEMA took into account relevant information including the EP, relevant scientific literature, views expressed by relevant persons, NOPSEMA’s Decision Making Guidelines (GL1721), the Marine bioregional plan for the North-west marine Region, the Recovery Plan for Marine Turtles in Australia (2017-2027) and the National Conservation Values Atlas.  During the course of the assessment, NOPSEMA required Santos to evaluate:   * uncertainties in habitat use and response to anthropogenic noise by marine turtles; * adoption of adaptive management measures to provide additional protection to marine turtles at night; and * the relative importance of different parts of the foraging BIA based on the presence of KEFs, water depths, and other features that may make some areas more likely to be suitable for foraging.   This resulted in Santos committing to the implementation of adaptive management measures applicable to areas of the foraging BIA that may support foraging habitat marine turtles. These measures include adaptive management measures for marine turtles near the carbonate banks and terrace system KEF such that if there are three or more shut-downs for marine turtles within 24 hours, no operation of the seismic source will take place within 5 km of the KEF for a period of 24 hours from the last shut down.  NOPSEMA is satisfied that with the proposed control measures in place, uncertainty associated with predictions of turtle presence will be monitored and managed so that there is confidence marine turtle biologically important behaviours within the defined foraging BIA can continue. Consequently, NOPSEMA has concluded that the activity will not result in unacceptable impacts to marine turtles. |
| 3. | ***There would be unacceptable impacts to marine mammals as a result of the seismic survey*** | Santos undertook a comprehensive assessment of the potential impacts to marine mammals that may be present within and in close proximity to the operational area. This was informed by underwater acoustic modelling, content from the Marine bioregional plan for the North-west Marine Region, and peer reviewed literature.  Santos identified that the nearest marine mammal BIA was for the snubfin dolphin, and located approximately 21 km from the operational area, and 32 km from the full fold acquisition area. Historic acoustic recordings also indicated potential year-round presence of Omura’s whales within the operational area.  Santos provided a detailed evaluation of the received noise levels within the snubfin dolphin BIA and concluded that received noise levels within the hearing range of snubfin dolphins would not be at levels that would disrupt key life stages. To further reduce the potential for any disturbance to critical behaviours, Santos has committed to change the orientation of sail lines to minimise noise attenuation into the BIA.  Santos will ensure that the activity is conducted such that:   * ‘*Seismic activities are undertaken in a manner that prevents disruption to sensitive lifestages and displacement of Australian snubfin dolphins from the foraging/ resting/ calving/ breeding BIA*’ (EPO-10). * There is ‘*No injury to cetaceans due to noise associated with the operation of seismic sources*’ (EPO-8). * ‘*Seismic activities are undertaken in a manner that prevents injury and interference to Omura’s whales*’ (EPO-9).   These EPOs will be achieved through the implementing control measures including:   * No operation of the seismic source south-west of the Active Source Zone within the Operational Area to ensure no disturbance to key life stages in the snubfin dolphin foraging/resting/calving/breeding BIA (CM-16). * Confirm sail line orientation to prevent disruption to sensitive lifestages in the snubfin dolphin foraging/resting/calving/ breeding BIA (CM-22). * Implementation of control measures consistent with EPBC Policy Statement 2.1 Part B: Use of 2 MFOs (MMOs) on board the seismic survey vessel. At least one MFO will have >12 months experience in Australian waters (Part B.1) (CM-15). * Implementation of EPBC Policy Statement 2.1 (partial part B.6 – adaptive management): Adaptive management measures for Omura’s whales (CM-21). | NOPSEMA acknowledges the potential for the activity, if not appropriately managed, to have unacceptable impacts to marine mammals within the area, particularly snubfin dolphins and Omura’s whales which may undertake biologically important behaviours in the vicinity the Petrel 3D MSS.  In making a decision regarding this matter, NOPSEMA took into account relevant information including the EP, relevant scientific literature, views expressed by relevant persons, NOPSEMA’s Decision Making Guidelines (GL1721), and the Marine bioregional plan for the North-west marine Region.  During the course of the assessment, NOPSEMA required Santos to consider:   * uncertainties in habitat use and likely presence of Omura’s whales within operational area; and * levels of noise that may attenuate into the snubfin dolphin BIA.   This resulted in Santos committing to the implementation of a number of control measures which if implemented consistent with the relevant environmental performance standards will further reduce potential impacts to marine mammals. These included the control measures CM-15, CM-16, CM-21 and CM-22 (referenced in more detail in the centre column of this report).  NOPSEMA is satisfied that with the proposed control measures in place, uncertainties in the predictions of impacts are able to be managed appropriately, impacts to marine mammals will be limited to short-term disturbance of transient individuals, and that the survey will not result in disruption to biologically important behaviours. Consequently, NOPSEMA has concluded that the activity will not result in unacceptable impacts to marine mammals. |

1. Environment Regulations, Regulation 10A Criteria for acceptance of environment plan [↑](#footnote-ref-1)