

NOPSEMA Investigation – Schlumberger Australia Pty Ltd Otway Basin 2D Marine Seismic Survey

Investigation details

Activity:	Otway Basin 2D Marine Seismic Survey
Titleholder:	Schlumberger Australia Pty Ltd
Date investigation commenced:	17 June 2021
Lead Investigator:	[REDACTED]
Investigation team:	[REDACTED]
Investigation number:	IVT10524

Report distribution

Position	Company
Records management	NOPSEMA
	DAWE

Revision status

Rev	Date	Description	Prepared by	Reviewed by
A	31-01-22	Internal draft	[REDACTED]	[REDACTED]
B	7-Feb-22	Draft for discussion DAWE	[REDACTED]	[REDACTED]
0	8	Interim Report	[REDACTED]	

Table of contents

Investigation details	1
Report distribution	1
Revision status.....	1
Table of contents.....	2
Background.....	3
Level 3 Investigation Scope	4
Background to support interpretation of conclusions and reasons.....	6
Conclusion and reasons for those conclusions.....	8
Inspector's Recommendations.....	20
Abbreviations.....	20

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Background

On 28 November 2019, Schlumberger Australia Pty Ltd (SLB) were granted, upon their application, three “Petroleum Special Prospecting Authorities” under sub-section 235(a) of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGs Act), by a delegate of the National Offshore Petroleum Titles Administrator. Each Petroleum Special Prospecting Authority (title) covered geographical areas, known as “blocks”, in the offshore areas of the States of South Australia, Tasmania and Victoria.

There are several key environmental sensitivities within the title areas, including “biologically important areas” (BIAs) for foraging of blue whales. BIAs are spatially defined areas that are particularly important for the conservation of protected species and where aggregations of individuals of a species are known to display biologically important behaviour such as breeding, foraging, resting or migration (Blue whale conservation management plan, Commonwealth of Australia, 2015).

On 11 November 2019, a delegate of NOPSEMA, gave SLB notice of their decision to accept SLB’s environment plan (EP) for the Otway Basin 2D Marine Seismic Survey (activity) under sub-regulation 11(1)(c) of the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Environment Regulations). The decision to accept this EP was subject to limitations that prevented seismic activity (i.e., discharging of airguns) within the BIAs for the Pygmy Blue Whale (PBW) and required measures to be implemented to limit anthropogenic noise in these BIAs (Figure 1).

A pre-survey compliance monitoring inspection of the Otway 2D MSS was undertaken by NOPSEMA in December 2019. During this inspection, inspectors concluded substantial improvements would be needed to ensure that the limitation imposed on the acceptance of the EP would be met and issued recommendations to SLB in a formal inspection report. SLB provided responses to these recommendations in the form of additional control measures and the implementation of these control measures was also the subject of this investigation.

SLB conducted the activity between 15 January 2020 and 10 April 2020 and provided NOPSEMA with an environmental performance report and a marine mammal monitoring report to detail their environmental performance for the activity as required by Regulation 26C. The reports included an outline of the marine mammal detections (by marine mammal observers and passive acoustic monitoring) during the survey as well as the mitigation measures that were implemented in response to these detections.

Regulation 25A of the Environment Regulations provides that the operation of an EP ends (i.e. is no longer in force) when a titleholder notifies NOPSEMA that the relevant activity authorised by the EP has ended, and NOPSEMA accepts the notification. SLB submitted regulation 25A notice on 30 November 2020 and given the current state of this investigation, it yet to accept the notification.

In response to the submission of SLB’s 25A notice, NOPSEMA wrote to SLB on 1 March 2021 requesting further information and clarification in relation to compliance with the EP.

¹ Seiche Environmental – Marine Mammal Monitoring Report – Seabird 2D Seismic Survey – Otway Bason, Australia (12 May 2020).

[REDACTED]

Ordinarily, NOPSEMA would be able to exercise the environmental management inspection / investigation powers under schedule 2A of the OPGGS Act to conduct an inspection of SLB's regulated business premises. However, the Petroleum Special Prospecting Authority issued to SLB expired on 26 May 2020, meaning that, from 27 May 2020, SLB ceased to be "the registered holder of a petroleum title", within the meaning of clause 2 of schedule 2A of the OPGGS Act. Consequently, NOPSEMA obtained a monitoring warrant issued under sub-section 32(2) of the *Regulatory Powers (Standard Provisions) Act 2014* (RP Act) on 25 May 2021.

During the investigation, NOPSEMA CEO appointed Geoscience Australia (GA) and National Offshore Petroleum Titles Administrator (NOPTA) technical staff as 'NOPSEMA Inspectors' under the OPGGS Act to analyse navigational files and map spatial data collected under warrant. NOPTA provided the final spatial information needed to complete the Level 3 investigation on 7 Jan 2022.

Level 3 Investigation Scope

NOPSEMA initiated a level 3 investigation to:

1. Ascertain in detail the areas where seismic acquisition took place consistent with requirements of the in-force EP, NOPSEMA's imposed conditions and limitations and other legislative requirements;
2. Understand the actions taken undertaken by SLB in response to the high abundance of PBWs within and adjacent to the acquisition area and whether these actions were appropriate;
3. Determine whether the actions taken in response to NOPSEMA's recommendations from inspection 2101 were implemented effectively; and
4. Discern whether the survey was implemented in a manner that was not inconsistent with the blue whale Conservation Management Plan (CMP), a recovery plan under the EPBC Act.

Investigation execution:

Following the issue of the Investigation Brief to SLB on 10 June 2021, an investigation commenced led by [REDACTED] and supported by [REDACTED] (NOPSEMA Inspectors) on 17 June 2021. Technical support was provided by NOPSEMA Environment Officer, [REDACTED]

NOPSEMA inspectors collected, and reviewed information obtained under the warrant including:

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

Data was provided voluntarily by SLB to the NOPSEMA inspectors after the expiry of the monitoring warrant on 25 August 2021. This data was collected on:

- [REDACTED]

All evidence collected under warrant can be located in the SLB investigation file in NOPSEMA's Objective system.

NOPSEMA Inspectors, with support of internal technical expertise, have analysed the evidentiary material collected and have made a series of conclusions which are detailed below. NOPSEMA Inspector's recommendations, a summary of findings to support the conclusions and recommended lines of further investigative inquiry are also provided below.

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Background to support interpretation of conclusions and reasons

A BIA buffer was established around the BIA as an area where additional management measures based on a 'higher likelihood of observing the whales during the foraging season'. Specific control measures were in place that related to the BIA buffer including EPSs135, 564 and 108 (see section 2 of this report).

Permanent threshold shift (PTS) and temporary threshold shift (TTS) are considered to be injury associated with certain doses of noise which vary between taxa. For cetaceans, behavioural disturbance thresholds are a proxy for displacement of blue whales from foraging areas. Thresholds for TTS and behavioural disturbance in low frequency cetaceans have been used to predict the distances at which noise levels may injure or displace whales from foraging (refer to [Guidance on Key Terms of the Blue whale CMP](#) and [Blue Whale CMP FAQs](#)). The shutdown zone for blue whales and southern right whales was 10km within the BIA buffer zone.

The EP predicted that by utilising the 7 km TTS threshold distance from the initial Sound Transmission Loss Modelling (STLM) for the inshore parts of the Operational Area, and applying the extensive suite of control measures detailed within Section 3.4.7.3 of the EP no blue whale will be exposed to TTS levels within the blue whale BIA (EP, p403).

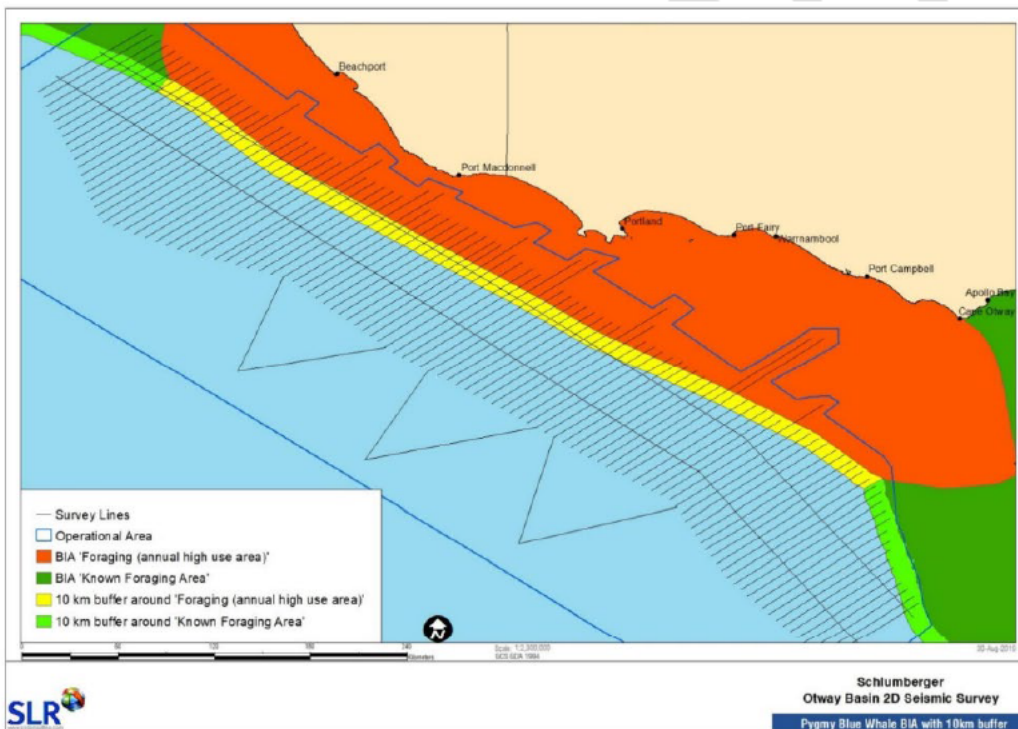


Figure 1 – Map extracted from accepted EP showing the proposed seismic lines with ingress into the BIAs for blue whales. On the basis that SLB was unable to demonstrate that the underwater noise impacts of the survey could be managed to acceptable levels in the BIA, NOPSEMA imposed a condition excluding the discharge of seismic airguns inside the BIA. The map also illustrates the 10km behavioural disturbance buffer within which additional control measures were required in order to provide confidence that blue whales would not be injured or displaced while foraging.

A 10 km Observation zone for pygmy blue whales and southern right whales required a shut-down if these species were detected. Within a 4 km zone, any whale species detected required a shut-down.

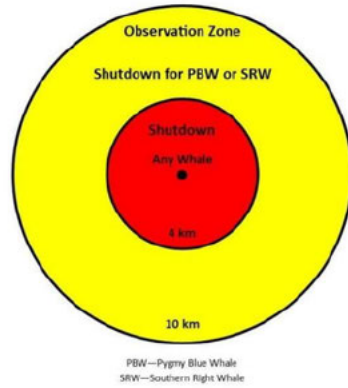


Figure 7 Inside the 10 km buffer zone

For operations outside of the buffer zone, the Observation zone was 3 km. If a pygmy blue whale or a southern right whale were detected in that zone, acquisition was shut-down. Within the 2 km zone, any whale species required a shut-down.

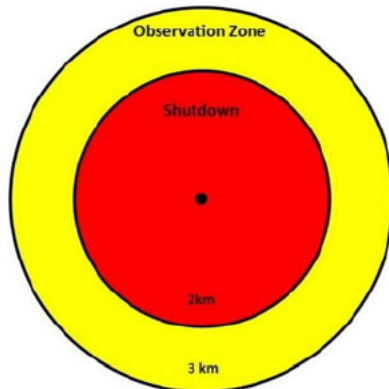


Figure 8 Outside the BIA and 10 km buffer zone

Figure 2 – Shut down and observation zones for the Otway 2D MSS showing that a 10km shutdown was required for blue whales within the BIA buffer to prevent displacement from foraging.

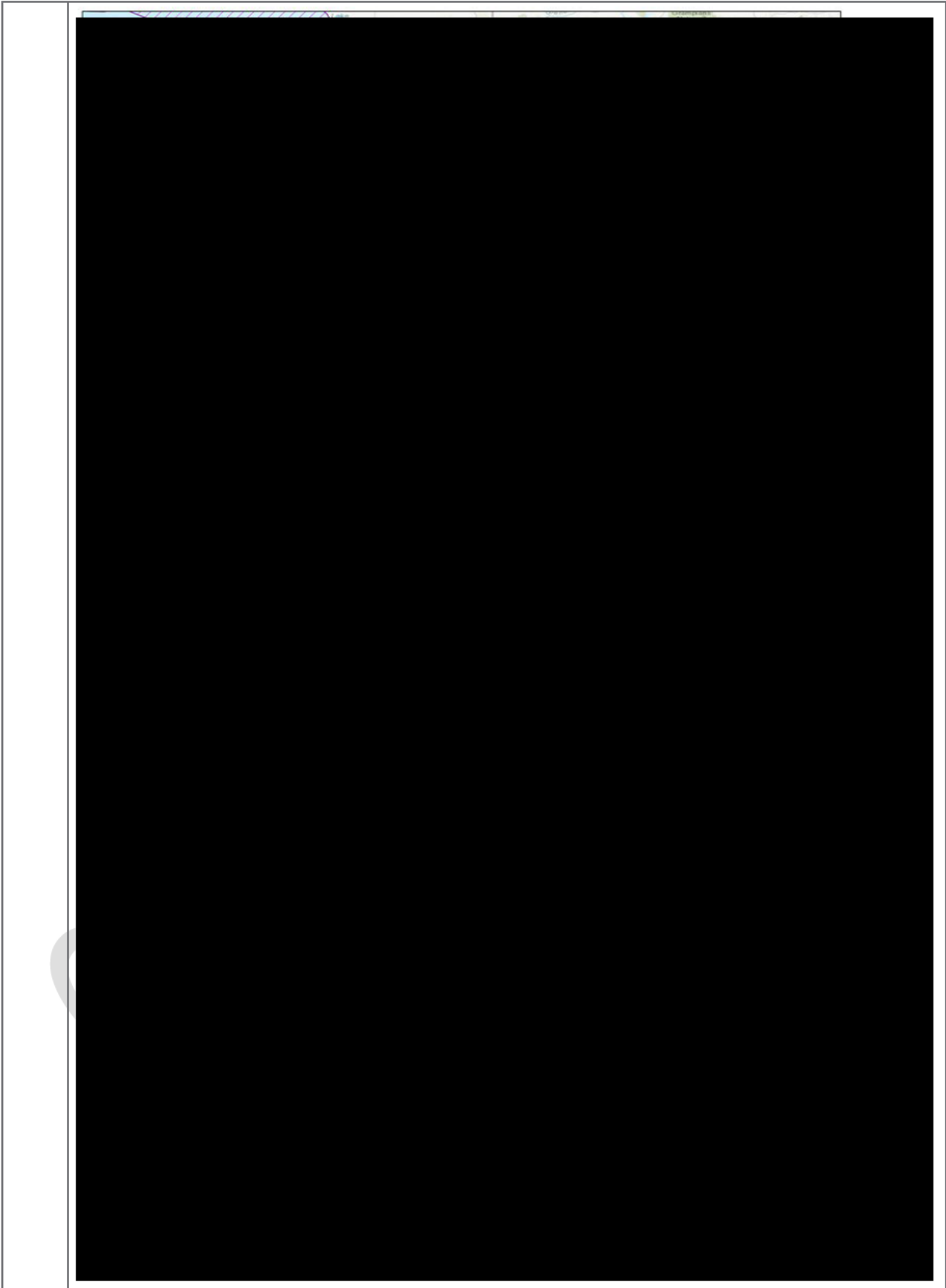
Conclusion and reasons for those conclusions

1	<p>Requirement – Limitation imposed on acceptance of EP:</p> <p>[Redacted]</p>
1.1	<p><u>Conclusion</u></p> <p>[Redacted]</p> <p>[Redacted]</p>
1.2	<p><u>Reasons for conclusion</u></p> <p>[Redacted]</p> <p>[Redacted]</p> <ul style="list-style-type: none"> ■ [Redacted] ■ [Redacted] ■ [Redacted] ■ [Redacted] <p>[Redacted]</p> <ul style="list-style-type: none"> ■ [Redacted]

² Zones of injury and displacement have been based on STLM modelling undertaken specific to the survey based on a seabed composition analysed specific to the shelf slope setting where the defined BIAs are located. (Appendix A, in force EP).



	[Redacted]
■	[Redacted]
■	[Redacted]
■	[Redacted]
■	[Redacted]
■	[Redacted]
■	[Redacted]





1.3	<p><u>Recommended lines of inquiry for L4 investigation</u></p> <ul style="list-style-type: none">• • • Whether necessary shutdowns and re-start procedures were implemented correctly i.e., any whale within 10km of the seismic vessel should have triggered an airgun shutdown inside the BIA buffer.• Whether the support vessel operated ahead of or at the tail of the seismic vessels in order to detect whales within the BIA and BIA buffer.
2	<p><u>Requirements – In force EP Environmental Performance Standards (EPS)</u></p> <ul style="list-style-type: none">• <i>EPS 135 in the in force EP requires: No seismic operations will occur in the Bonney Upwelling Zone, blue whale BIA and 10 km behavioural disturbance buffer during the month of February.</i>



	<p>[REDACTED]</p> <ul style="list-style-type: none"> • <i>EPS 41: When the streamer and acoustic array are deployed, the seismic vessel will comply with the EPBC Policy Statement 2.1 (Part A) to reduce any potential for interactions with marine mammals.</i> • <i>EPS 108: At night or other times of low-visibility (i.e., observations cannot extend to 3+ km from the acoustic source, or the 10 km observation zone when the acoustic source is active within the blue whale BIA and 10 km buffer), start-up may commence according to the A3.2 Soft-start procedure:</i> <ul style="list-style-type: none"> - <i>Provided that there have not been ≥3 whale instigated shut-down situations during the preceding 24-hour period; or</i> - <i>If operations were not previously underway during the preceding 24 hours, the vessel has been in the vicinity (~10 km) of the proposed start-up position for at least two hours (with good visibility conditions) within the preceding 24-hour period and no whales were sighted.</i>
2.1	<p><u>Conclusion</u></p> <p>NOPSEMA Inspectors suspect a breach of Regulation 7(1)(a) by undertaking the activity in a manner that is contrary to the EP. Based on the sample of evidence examined by inspectors, the above EPSs have not been complied with.</p>
2.2	<p>The reasons to support conclusion</p> <p>[REDACTED]</p> <ul style="list-style-type: none"> • [REDACTED]



	<p>[Redacted]</p> <ul style="list-style-type: none"> █ [Redacted] █ [Redacted] █ [Redacted]
2.3	<p><u>Recommended lines of inquiry for L4 investigation</u></p> <ul style="list-style-type: none"> • [Redacted] • The implementation of EPSs that relate to whale observation, shut down and re-start procedures noting that only a sample of these were examined during this L3 investigation.
3	<p><u>Requirement</u></p> <p>Reg 8(1) Operations must not continue if new or increased environmental risk identified (1) A titleholder commits an offence if: (a) the titleholder undertakes an activity i) after the occurrence of: any significant new environmental impact or risk arising from the activity; or any significant increase in an existing environmental impact or risk arising from the activity; and (b) the new impact or risk, or increase in the impact or risk, is not provided for in the environment plan in force for the activity.</p>
3.1	<p><u>Conclusion</u></p> <p>[Redacted]</p>



3.2	<p>The reasons to support conclusion</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p>
3.3	<p><u>Recommended lines of inquiry for L4 investigation</u></p>



	<p>• [Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted] t.</p>
<p>4</p>	<p>Requirement</p> <p><u>Titleholder response to</u> [Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p>
<p>4.1</p>	<p>Conclusion</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p>



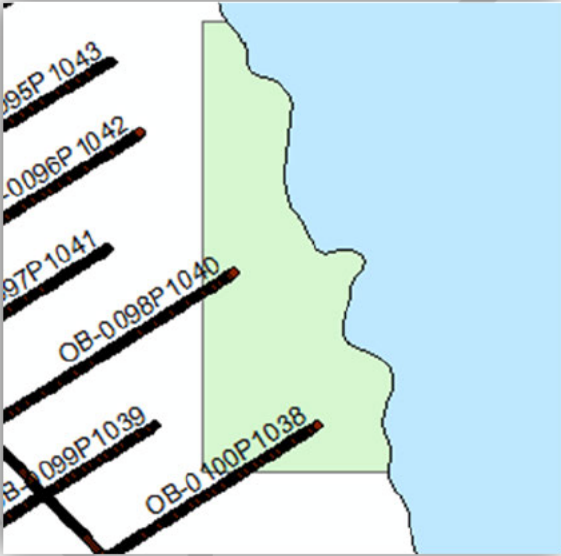
	<p>[Redacted]</p>
4.2	<p>Reasons for conclusion</p> <ul style="list-style-type: none">• [Redacted]■ [Redacted]■ [Redacted] <p>[Redacted]</p>
4.3	<p><u>Recommended lines of inquiry for L4 investigation</u></p> <ul style="list-style-type: none">• [Redacted]■ [Redacted]■ [Redacted]



	<ul style="list-style-type: none"> • [REDACTED]
5	Potential contravention of the EPBC Regulations 2000
5.1	<p><u>Requirements</u></p> <p>EPBC Regulation 8.05 of the EPBC Regulations 2000 requires that a vessel must:</p> <ul style="list-style-type: none"> • Maintain a caution zone of 150 metres for a dolphin and 300m for a whale • Operate the vessel of a constant speed of less than 6 knots • Make sure that the vessel does not approach closer than 50 m to a dolphin or 100m to a whale • Make sure that the vessel does not restrict the path of the cetacean • Make sure the vessel is not used to pursue the cetacean. <p>EPBC Regulation 8.06 of the EPBC Regulations requires that a vessel must:</p> <ul style="list-style-type: none"> • If a calf appears within an area that means the vessel is then within the caution zone of the calf, the person: <ul style="list-style-type: none"> • must immediately stop the vessel; and • must: (i) turn off the vessel's engines; or (ii) disengage the gears; or (iii) withdraw the vessel from the caution zone at a constant speed of less than 6 knots. <p>Section 229B of the EPBC Act</p> <p>The Australian Whale Sanctuary was established in 2000 to help protect whales, dolphins and porpoises within the Commonwealth marine area. It includes all marine areas beyond the Coastal Waters of each state (beyond 3 NM) out to the edge of Australia's EEZ (to 200 NM).</p> <p>(1) A person is guilty of an offence if: (a) the person takes, trades, keeps, moves or interferes with a cetacean; and (b) the cetacean is in: (i) the Australian Whale Sanctuary (but not the coastal waters, or a part of the coastal waters, of a State or the Northern Territory for which a declaration under section 228 is in force); or (ii) waters beyond the outer limits of the Australian Whale Sanctuary.</p>
5.2	<p><u>Conclusion</u></p> <p>[REDACTED]</p>



5.3	<p><u>Reasons to support conclusion</u></p> <p>NOPSEMA inspectors examined the evidentiary information collected during the inspection and made the following finding:</p> <ul style="list-style-type: none">• [Redacted]■ [Redacted]■ [Redacted]■ [Redacted] <p>[Redacted]</p>
5.5	<p><u>Recommended lines of inquiry for L4 investigation</u></p> <ul style="list-style-type: none">• [Redacted]■ [Redacted]
6	<p><u>Section 242 OPGGS Act</u></p>

	<p>A petroleum access authority authorises the registered holder, in accordance with the conditions (if any) to which the authority is subject, to carry on, in the authority area, the operations specified in the authority.</p>
<p>6.1</p>	<p><u>Conclusion</u> SLB undertook a petroleum activity in title T-49P without obtaining a petroleum access authority from NOPTA.</p>
<p>6.2</p>	<p>Reasons to support conclusions</p> <ul style="list-style-type: none"> • There are two lines which crossed into permit T/49P: OB-0098P1040 and OB-0100P1038, and LINE OB-0098P1040. • There are 77 shots which are with the T/49P permit. • The SP ranges are 9862-9786. • The length of the line in title is ~1.9km. • In the image below the shot-points highlighted in blue have no pressure values recorded.  <p>Figure 6 - 77 full pressure airgun shot points were recorded inside T-49P confirming that full acquisition took place in another title without an access authority (Figure 6).</p>
<p>6.3</p>	<p><u>Recommended lines of inquiry for L4 investigation</u></p> <ul style="list-style-type: none"> • Liaison with NOPTA to determine whether NOPTA would like to be involved in the investigation (noting NOPSEMA inspector appointments are still in place).

Inspectors Recommendations

- Escalate to a Level 4 Investigation to ascertain the full extent of the offences and degree of culpability (if civil or criminal prosecution is potentially warranted).
- Utilise information sharing provisions (section 695X OPGGS Act) to share a copy of the interim investigation report and associated evidence with DAWE for consideration in context of potential EPBC Act/EPBC Regulation contraventions.

Abbreviations

BIA	Biologically important area defined in Blue whale CMP and National Conservation Values Atlas
CMP	Conservation management plan
EP	In force environment plan
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
EPBC Regulations	Environmental Protection and Biodiversity Conservation Regulations 2002
MFO	Marine fauna observer
MOC	Management of change process
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOPTA	National Offshore Petroleum Titles Administrator
OPGGS Act	Offshore Petroleum and Greenhouse Gas Storage Act 2006
OPGGS(E) Regulations	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009
PAM	Passive acoustic monitoring
PBW	Pygmy blue whale
PTS	Permanent threshold shift



RON	Representative of NOPSEMA
RP Act	Regulatory Powers (Standard Provisions) Act 2014
SLB	Schlumberger Australia Pty Ltd
TTS	Temporary threshold shift

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