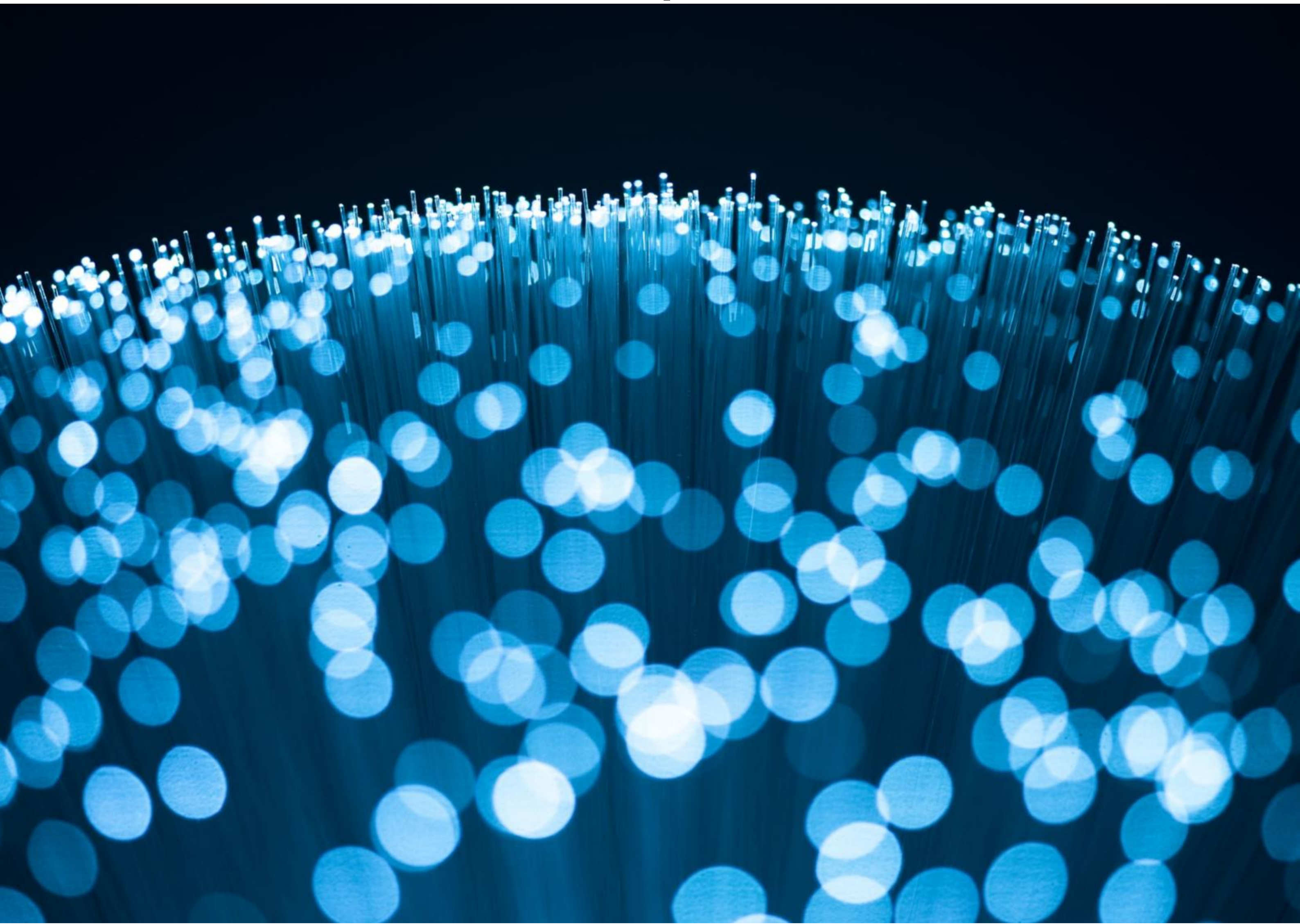
Subsea Telecommunications Cable Installation

EIS Scoping Report

Perch Pty Ltd

01 April 2025

→ **The Power of Commitment**



Project name	Subsea Cable Permitting					
Document title	Subsea Telecommunications Cable Installation | EIS Scoping Report					
Project number	12613495					
File name	12613495-Pech-Cable Installation-New South Wales Scoping Report					

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S3	Rev A	A Weatherall T Holmes	S Pearce J El Khoury		K Panayotou		19/11/24
S3	Rev B	A Weatherall T Holmes	J El Khoury		K Panayotou	*On file	01/03/25
S3	Rev 0	A Weatherall T Holmes	J El Khoury		K Panayotou	*On file	01/04/25

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Abbreviations and glossary of terms

Term	Definition
ACMA	Australia Communications and Media Authority
AMSIS	Australian Maritime Spatial Information System
DCCEEW (Cth)	Commonwealth Department of Climate Change, Energy, the Environment and Water
DCCEEW (NSW)	NSW Department of Climate Change, Energy, the Environment and Water
DPI	Department of Primary Industries
DPHI	Department of Planning, Housing and Infrastructure
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
kW	Kilowatts
LGA	Local Government Area
LALC	Local Aboriginal Land Council
NSW	New South Wales
Punch out point	The area where the drill emerges from underground is termed as the ‘punch out point’.
ROV	Remote Operated Vehicle
SEARs	Secretaries Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SSI	State Significant Infrastructure
SSD	State Significant Development
SSPZ	Southern Sydney Cable Protection Zone
SLSC	Surf Life Saving Club
Tbps	One terabit (one trillion) bits per second
US	United States of America

1. Introduction

1.1 Overview

Google's Global Network Infrastructure Group (Google) is proposing to build fibre optic subsea telecommunications cables as part of the Pacific Connect Initiative. The Pacific Connect Initiative includes two new submarine telecommunications cables known as the Tabua Cable (landing in Queensland and New South Wales (NSW)) and the Honomoana Cable (landing in NSW and Victoria). The cables would connect Australia to the United States of America (US), Fiji, French Polynesia, and New Zealand. Within NSW, the Honomoana and Tabua cables are proposed to land at Maroubra Beach in Sydney. Google would be undertaking the works within NSW waters via their registered licence carrier company Perch Infrastructure Pty Ltd (Perch). Perch would be used as the proponent for the NSW landing and is referenced as such throughout the document.

Traditionally, within NSW subsea cables typically land in the Northern or Southern Sydney Cable Protection Zones that are established under the Commonwealth *Telecommunications Act 1997*. However, congestion in these areas has required telecommunication providers to seek alternative sites and Maroubra Beach, Sydney, NSW has been identified as the preferred landing location.

The project, subject of this scoping report, comprises the installation of two submarine cables from two cable conduits 'punch out points' located approximately 1 kilometre offshore. From the punch out points, the cables would either be buried below the seabed or laid on the seabed (or a combination of these) out to the NSW 3 nautical mile (5.56 kilometre) coastal waters limit. The project's location is shown in Figure 1.1 and Figure 2.1.

1.2 Project background

Perch has engaged SubCom LLC (SubCom) to design, manufacture and install these cables. SubCom has in turn engaged GHD to support stakeholder engagement, environmental assessment and approvals for the cable landings within Australia.

1.2.1 Marine route survey

A marine route survey is currently being undertaken in Australian waters to assess the viability and safety of the cable routes. The marine route survey would aim to collect data to inform cable route design, identify potential obstacles or hazards, and assess the impact on alignment, installation, and future maintenance.

The marine route survey would include geophysical and geotechnical surveys to help understand seabed conditions and inform the final submarine cable alignment. The survey findings would be used to guide decisions related to cable armour, installation method and route refinements for the project.

Marine route survey is scheduled to occur in first quarter of 2025 in NSW coastal waters.

1.2.2 Other development related to the project

The assessment scope of this project is limited to the cable installation from the punch out points offshore to the 3 nautical mile (nm) limit which marks the boundary between Commonwealth and NSW State jurisdiction. The cable installation works to be assessed under this scope also includes the pulling of the subsea cable to the beach manhole (BMH).

All onshore components and drilling activities were approved with development consent from Randwick City Council and Crown Lands in 2024, with a target completion date of March 2025.

The cable installation within Commonwealth waters from the 3 nm limit would fall under Federal jurisdiction and therefore forms part of a separate environmental assessment process under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). In addition, activities associated with the installation of the cable between the punch out points to the BMH, from where it would be connected to the terrestrial telecommunications network, fall under the Commonwealth *Telecommunications Act 1997*.

An overview of the submarine telecommunications network on the east coast of Australia is shown in Figure 1.1.

1.3 The proponent

The proponent for the project is Perch. Details are provided in Table 1.1.

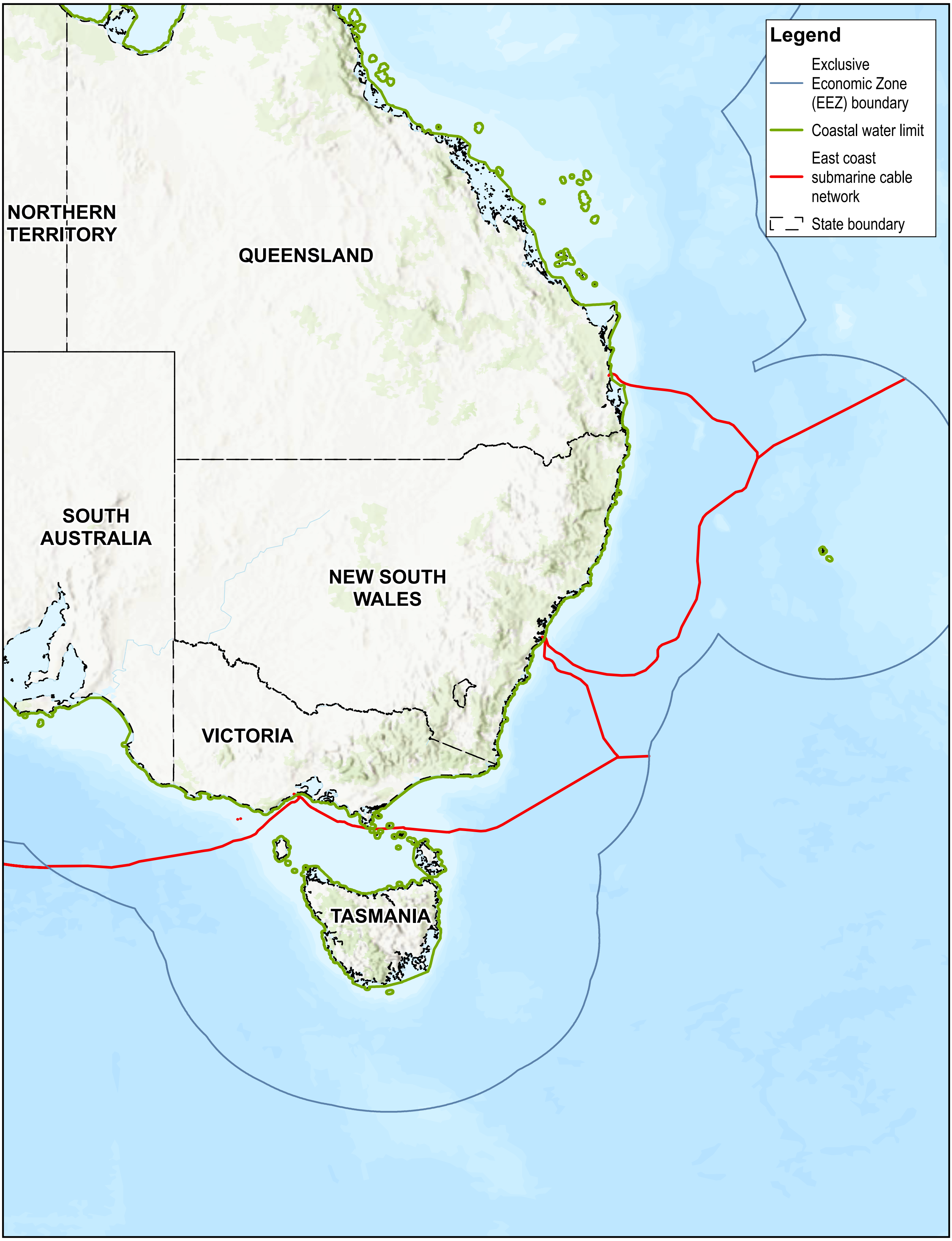
Table 1.1 Proponent details

Proponent	Perch Infrastructure Pty Ltd
Project Proponent Address	Level 18, 420 George Street Sydney, NSW 2000, Australia
Business ABN	24 672 742 166
Contact Name	Steven Lay
Phone Number	+61 2 9566 6585
Email	perchinfra@google.com

1.4 Purpose of this report

This report has been prepared to support an application to the NSW Department of Planning, House and Infrastructure (DPHI) to request Secretary's environmental assessment requirements (SEARs) and has been developed in accordance with the *State significant development guidelines – preparing a scoping report* (DPHI, 2022). It includes an outline of the strategic context, description of the project, the statutory context, stakeholder engagement completed to date, proposed ongoing engagement, preliminary identification of relevant environmental matters, potential impacts and the proposed scope of the assessment to be undertaken in an Environmental Impact Statement (EIS).

The EIS would be prepared in accordance with the requirements of the SEARs, the *Environmental Planning and Assessment Act 1979* (EP&A Act), Environmental Planning and Assessment Regulation 2021 and EPBC Act.



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Perch Pty Ltd
Subsea Telecommunications
Cable Installation

Regional context

Project No. 12613495
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FIGURE 1.1

Data source: World Topographic Map - labeless: Esri, TomTom, Garmin, FAO, NOAA, USGS
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2. Strategic context

The demand for digital connectivity has increased dramatically, driven by the increased reliance on online services such as healthcare, education, remote work, and e-commerce. This trend, accelerated by a global pandemic, continues to grow with advancements in artificial intelligence, cloud computing, and other data-intensive technologies, placing greater pressure on global digital infrastructure. Subsea telecommunications cables are key enablers of global digital connectivity, carrying over 95% of internet traffic.

In response to these demands, the Pacific Connect initiative would deliver two new transpacific subsea cables, Honomoana and Tabua, designed to enhance network reliability, capacity and resilience across the Pacific (Australia Pacific Islands Business Council, 2023). Developed in collaboration with partners including Fiji International Telecommunications, the Office of Posts and Telecommunications of French Polynesia, APTelecom, and Vocus Group, these cables would connect Australia, Fiji, French Polynesia and the US. The initiative aims to reduce latency, improve connectivity, and provide redundancy in a region vulnerable to natural disasters, with physically diverse landing stations and interlink cables to ensure uninterrupted service.

Separately, the Quad (Australia, Japan, the US and India) have committed to strengthening connectivity and resilience in the Indo-Pacific region through strategic investments (Prime Minister of Australia, 2024). This broader geopolitical effort underscores the importance of secure, reliable digital infrastructure to support regional stability and development.

This investment in digital infrastructure would improve data security, resilience, capacity and efficiency to meet Australia’s current and future needs.

2.1 National context

2.1.1 Telecommunications Act 1997

Australia established telecommunications Protection Zones in Sydney and Perth (Northern Sydney Protection Zone, Southern Sydney Protection Zone and Perth Protection Zone), under the *Telecommunications Act 1997* to protect critical subsea cables by restricting potentially damaging marine activities, such as fishing and anchoring, around cable routes (Australian Government, 2024). This measure is crucial for maintaining operational resilience.

However, due to existing congestion in the Northern and Southern Sydney Protection Zones, this project would be located approximately 2 kilometres south of the Southern Sydney Protection Zone. It is important to note that a permit to install the submarine cables in a non-protection zone would be required under the *Telecommunications Act 1997*.

There are currently twelve (12) submarine cables landing in Sydney - Southern Cross Cable Network, AJC, APNG-2, Gondwana-1, Telstra Endeavour, PPC-1, Tasman Global Access, Hawaiki Cable, Indigo Central, Coral Sea Cable System (CS^2), JGA South and Southern Cross NEXT.

2.1.2 Security of Critical Infrastructure Act 2018

Subsea cables are recognised as critical infrastructure under the *Security of Critical Infrastructure Act 2018*. The Act defines critical infrastructure as ‘physical facilities, supply chains, information technologies and communication networks, which if destroyed, degraded or rendered unavailable for an extended period, would significantly impact the social or economic wellbeing of the nation, or affect Australia’s ability to conduct national defence and ensure national security’ (Department of Home Affairs, 2018).

The project would enhance Australia’s security of critical telecommunications infrastructure.

2.1.3 Department of Foreign Affairs and Trade - Cable Connectivity and Resilience Centre

The Cable Connectivity and Resilience Centre is an Australian Government initiative supporting the development and management of undersea cables across the Indo-Pacific, in partnership with governments and industry

(DFAT, 2024). It is Australia's contribution to the Quad Partnership for Cable Connectivity and Resilience, announced at the Quad Leaders' Summit in May 2023. As undersea cables carry over 95% of international data traffic, the project is essential to meet growing demands and enable reliable connectivity across the region (DFAT, 2024).

2.1.4 International Collaboration through Mini-lateral Agreements

Australia engages in collaborative efforts with partners like the US and regional actors to ensure resilient and secure subsea infrastructure, aligning with foreign policy and economic objectives, particularly in light of geostrategic shifts in the Indo-Pacific.

Google's Pacific Connect initiative would focus on collaboration with partners such as Fiji, French Polynesia, APTelecom, and Vocus (Quigley, 2023). The initiative exemplifies international cooperation through mini-lateral agreements to secure and enhance subsea infrastructure.

The project aligns with Australia's foreign policy objectives, addressing geostrategic shifts in the Indo-Pacific by fostering economic growth, reducing latency and building disaster-resilient digital infrastructure.

2.2 NSW policies

2.2.1 Critical Infrastructure Resilience Strategy

The NSW Critical Infrastructure Resilience Strategy ensures essential infrastructure can withstand disruptions and recover quickly, with a focus on resistance, reliability, redundancy and recovery (Department of Justice, 2018). The strategy highlights the role of communities in maintaining resilience, aligning with the need for robust telecommunications, including subsea cables, to support digital infrastructure and connectivity in New South Wales.

The project would improve resilience of the submarine telecommunications network in NSW.

2.2.2 Spatial Digital Twin and Connectivity Initiatives

NSW leverages spatial data and digital planning to enhance infrastructure coordination, ensuring resilient systems and improved connectivity (NSW Government, 2024). These initiatives indirectly support subsea cable projects by enabling more efficient management of infrastructure and boosting data capacity across networks.

The NSW Independent Bushfire Inquiry on the 2019/2020 bushfires reinforced the need for telecommunications and utility infrastructure data, particularly spatial data that could inform risk and resilience decisions in the location and protection of essential utilities infrastructure in emergency situations (NSW Government, 2024).

The project would enhance data connectivity and reliability thereby allowing NSW to secure crucial telecommunications infrastructure in response to future natural disaster events.

2.2.3 Government Cyber Security Policy (2023-2024)

This policy safeguards critical infrastructure from cyber threats, aligning with efforts to protect communication networks like subsea cables (Department of Customer Service, 2023). As subsea cables carry over 95% of global data traffic, securing them is essential for NSW's digital resilience and connectivity objectives.

The project would improve connectivity and resilience of the critical submarine cable network in NSW and improve cyber security.

2.2.4 State Infrastructure Strategy 2012-2032

The State Infrastructure Strategy (NSW Government 2018) is a 20-year infrastructure investment plan for the NSW Government that aims to place strategic fit and economic merit at the centre of investment decisions. The strategy focusses on investment in road, rail, ports, telecommunication, water, schools, hospitals, sports arenas and other local infrastructure as a means of achieving economic growth and improving living standards.

The project would provide for investment in the NSW telecommunications network contributing to economic growth and productivity.

2.2.5 NSW 2040 Economic Blueprint

The NSW Economic Blueprint outlines a strategic vision to enhance the state's economic resilience, foster innovation, and build long-term prosperity. It focuses on key areas such as infrastructure development, technology and innovation, sustainability, and global trade. As part of this vision, major projects and investments are prioritised to strengthen the state's position as an economic hub in Australia and the Asia-Pacific region.

The project is an important infrastructure investment that aligns closely with the NSW Economic Blueprint. Submarine cables are the backbone of global internet connectivity and play a crucial role in supporting the growth of digital economies. The project would enhance NSW’s global connectivity by providing high-capacity, low-latency data transmission links between Australia and international markets, particularly in Asia. This aligns with the economic blueprint’s goal of improving connectivity to support global trade and investment.

2.2.6 Greater Sydney Regional Plan 2018

The Greater Sydney Regional Plan (Greater Sydney Commission, 2018) as part of the broader NSW Government's strategy for metropolitan and regional development, outlines a vision for Sydney’s future, focusing on improving urban infrastructure, enhancing liveability, and ensuring sustainable growth across the Greater Sydney region. The plan is designed to address Sydney's challenges, such as rapid population growth, housing affordability, transportation congestion, and environmental sustainability, while also leveraging the city's strengths in areas like finance, technology, education, and tourism.

The project would contribute to the goals and priorities laid out in the Sydney Regional Plan, particularly in areas related to global connectivity, digital infrastructure, economic diversification, and innovation.

2.3 Site setting

The project would be located in coastal waters between approximately 1 and 5.5 kilometres (3 nautical mile limit) offshore of Maroubra Beach, Sydney, NSW. The project’s location is shown in Figure 2.1.

2.3.1 Bathymetry and seabed profile

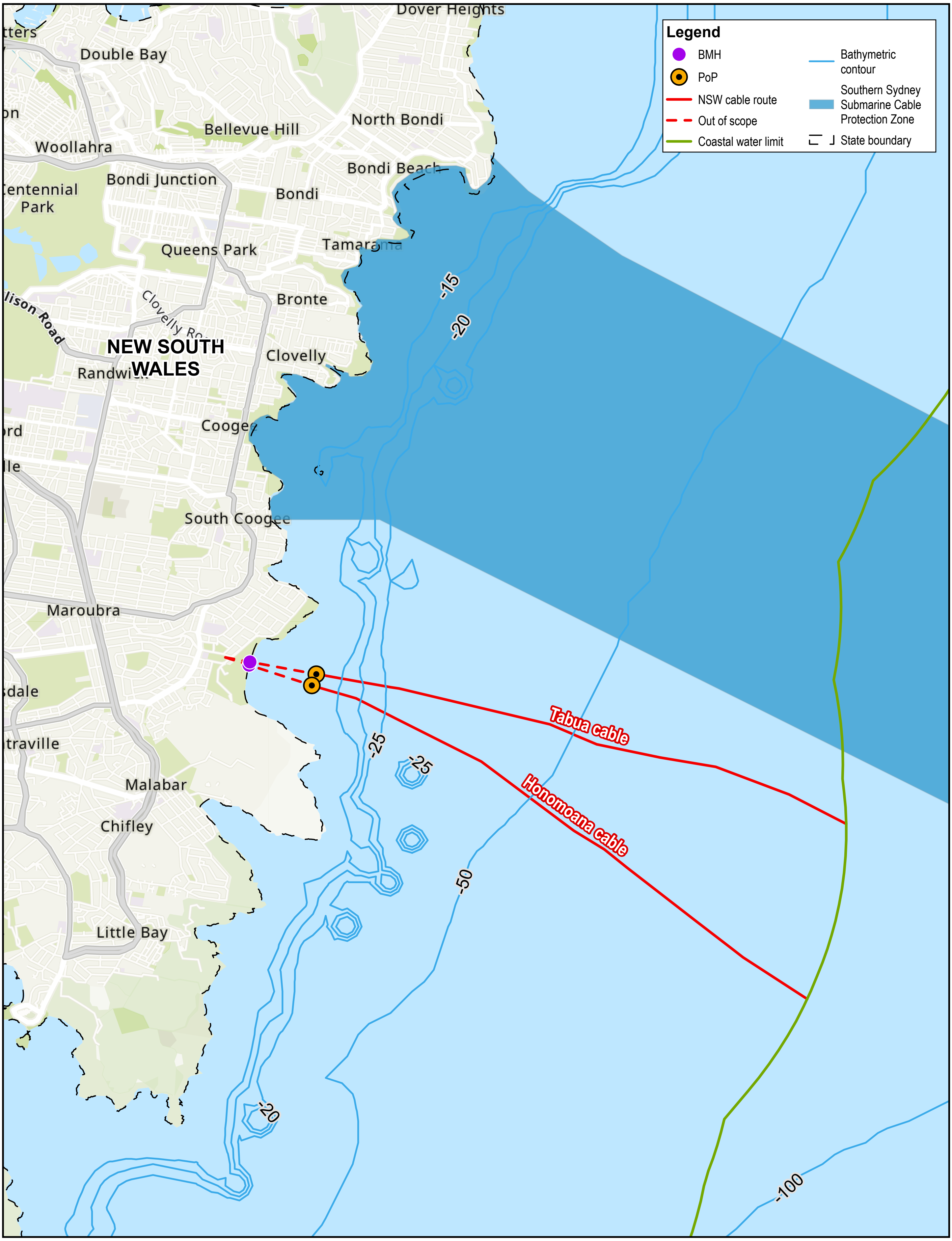
NSW Lidar Bathymetric mapping offshore from Maroubra reveals that the seabed gradually descends at around a 2% gradient from the coast to an approximate mapped depth of 100 metres, at the 3 nautical mile limit boundary (SEED, 2024), refer to Figure 2.1.

The nearshore area is characterised by a gently sloping beach foreshore transitioning into subtidal sand habitats. Marine sediment habitat consists of shallow soft sediments transitioning to deeper soft sediments further offshore with isolated deep reef outcrops (Seabed habitat mapping NSW, 2010), refer to Figure 6.1.

2.3.2 Property

The project would be wholly contained offshore of Maroubra Beach to the 3 nautical mile limit which is mapped entirely as Crown land. A Crown lease would be required to construct, operate and maintain telecommunication infrastructure within Crown land. The project would occur wholly within the NSW State jurisdiction.

The project route would be partially located within the Botany Bay Port Limit (AMSIS, 2024).



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GHD

Perch Pty Ltd
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Project location

Project No. 12613495
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FIGURE 2.1

Data source: World Topographic Map: Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS. Created by: cbataller

2.3.3 Cable protection zones

The Southern Sydney Cable Protection Zone (SSPZ) is located approximately 2 kilometres north of the project location as shown in Figure 2.1. The SSPZ extends 30 nautical miles (55 kilometres) offshore from Tamarama and Clovelly beaches to the depth of 2,000 metres (ACMA, 2024). Six telecommunications cables are located within this zone and converge on land at either Tamarama, Coogee or Clovelly beach.

It is important to note, Perch is liaising with the Australian Communications and Media Authority (ACMA) to consider an extension of the SSPZ in accordance with Section 3A of the *Telecommunication Act 1997* and ‘Guide – declaring a submarine cable protection zone’. The proposed extension of the SSPZ may cover portions of the Tabua and Honomoana cables within NSW coastal waters.

2.3.4 Protected areas

There are three aquatic reserves and one surfing reserve within 10 kilometres of the project (refer to Figure 2.2) which are:

– Maroubra Beach National Surfing Reserve covering the coastal waters from Maroubra Beach to the edge of the surf zone
– Cape Banks Aquatic Reserve, located 4 kilometres to the south
– Bronte-Coogee Aquatic Reserve, located 4 kilometres to the north
– Towra Point Aquatic Reserve located 9 kilometres to the southwest in Botany Bay.

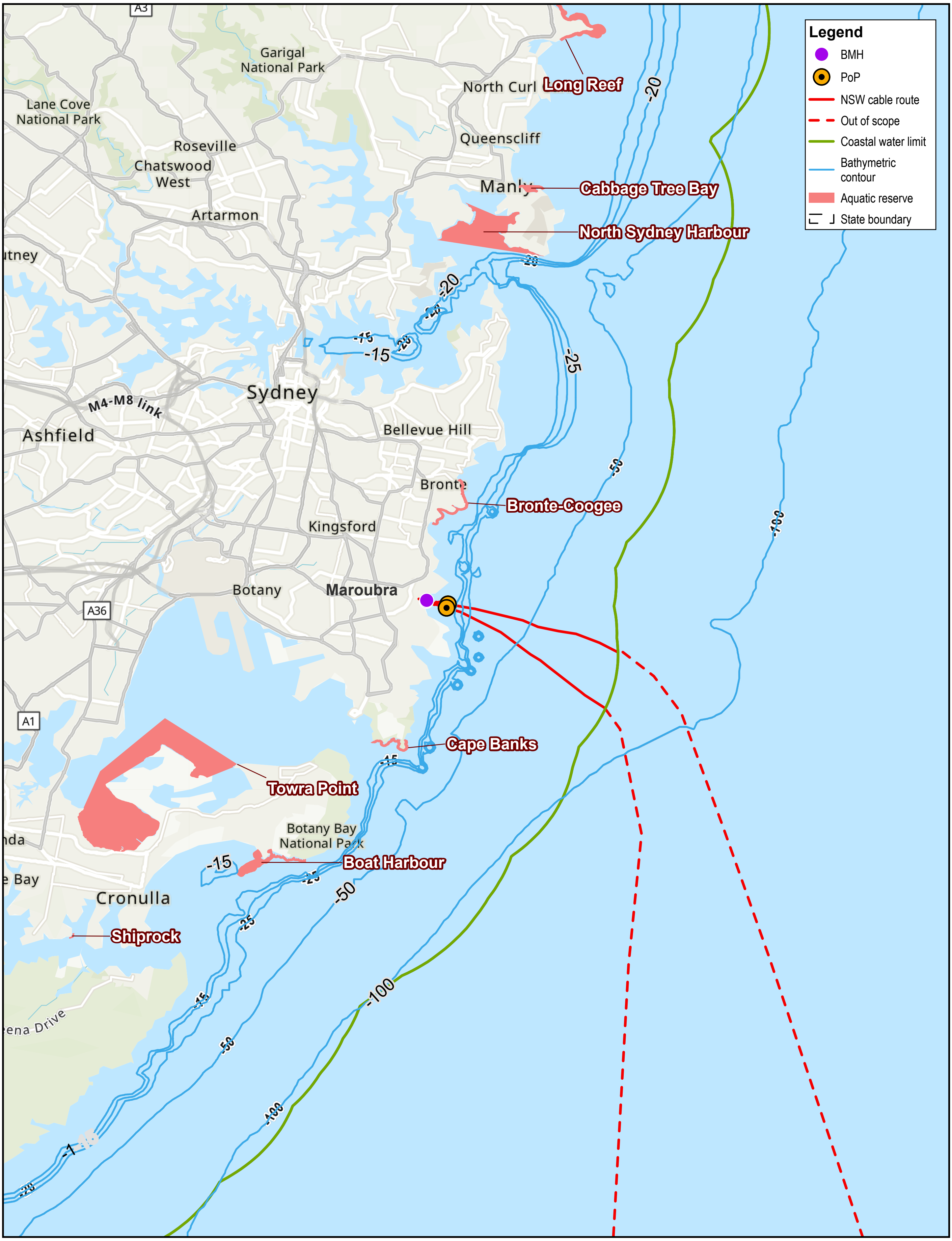
There are no State marine parks or Australian marine parks within 10 kilometres of the project.

There is a critical habitat for Grey Nurse Sharks (*Carcharias taurus*) at Magic Point just south of Maroubra approximately 350 metres south of the project route. Grey Nurse Sharks are listed as a Critically Endangered species under the *Fisheries Management Act 1994*, refer to Figure 6.1.

2.3.5 State fisheries and shipping

Ocean hauling, ocean trap and line, ocean trawling, estuary prawn trawling and estuary general fishing activities are permitted to occur within NSW State waters and may occur or transit through nearshore areas in proximity to the project (NSW DPI, 2024).

Commercial shipping lanes between Sydney – Melbourne the US and New Zealand are located off the eastern coast of NSW in proximity to the project. According to the Australian Maritime Spatial Information System (AMSIS) database, vessel movement intensity is moderate in comparison to harbour entrances (Botany and Sydney) north and south of the project route (AMSIS, 2024).



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Perch Pty Ltd
Subsea Telecommunications
Cable Installation

NSW marine protected areas

Project No. 12613495
Revision No. E
Date 26/02/2025

FIGURE 2.2

Data source: World Topographic Map: Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS
World Ocean Base: NIWA, GeosciencesAustralia, Esri, Garmin, NaturalVue
12613495 Bathymetric contour: . Created by: cbataller

3. Project description

3.1 Overview

The project, subject of this scoping report, comprises installation of two submarine cables from two cable conduits ‘punch out points’ located approximately 1 kilometre offshore. From the punch out points, the cables would either be buried below the seabed or laid on the seabed (or a combination of these) out to the NSW 3 nautical mile (5.56 kilometre) coastal waters limit.

3.1.1 Key project characteristics

The key project characteristics are summarised in Table 3.1.

Table 3.1 Key project characteristics

Project element	Description
Operational infrastructure	Two submarine cables extending from two punch out points to the 3 nautical mile limit. Subject to further design refinement and investigations the submarine cables would have a diameter of either: – 17 millimetres (mm) (Lightweight) – 28.9 mm (Light wire armour) – 35.99 mm (Double Armour).
Construction activities	The cables would be installed via a cable laying vessel located off the coast. Potential cable installation methods include: – Burial by ploughing – Cable lay on seabed surface – Pulling of the subsea cable to the beach manhole (BMH). Where burial by ploughing is undertaken, this is preceded by a pre-lay grapnel run to clear debris from the cable route. For the purposes of this scoping report, burial by ploughing has been used for the assessment as this method is likely to have the greater potential impact when compared to surface lay method.
Data capacity (per cable)	Tabua: The Tabua system would have 16 fibre pairs and each fibre pair would have a minimum design capacity of approximately 17 terabits per second (Tbps) using current technology. Honomoana: The Honomoana system would have 16 fibre pairs each fibre pair would have a minimum design capacity of approximately 16.2 Tbps using current technology.
Estimated employment	The project is estimated to require 100 full-time employees during construction, who would be sourced locally and internationally. Further to construction completion, employment would be limited to maintenance crew in the event of a failure to the subsea cable.
Estimated volume of seabed disturbance	Burial by ploughing would disturb approximately up to 1,500 cubic metres of seabed for each cable, totalling an approximate disturbance volume of up to 3,000 cubic metres for both cables.

3.1.2 Capital investment value

The capital investment value of the project within NSW coastal waters is about $3.7 million USD ($5.8 million AUD). The estimate would continue to be refined during the EIS preparation phase.

3.2 Cable design

The proposed cables consist of optical fibre subsea cables, designed to accommodate multiple fibre pairs, which are housed in a jelly-filled Polybutylene Terephthalate plastic tube, surrounded by one to two layers of steel wires that form a protective vault against pressure and external contact, and also provide tensile strength. The vault is then enclosed in a hermetically sealed copper tube and insulated with a layer of medium-density or high-density polyethylene to form the basic deep-sea light cables. The outer polyethylene coating provides high voltage electrical insulation, as well as abrasion protection. Whenever possible, the raw materials selected are of the same type as those used in previous generations of coaxial and optical fibre cables, which have demonstrated more than 25 years of reliability.

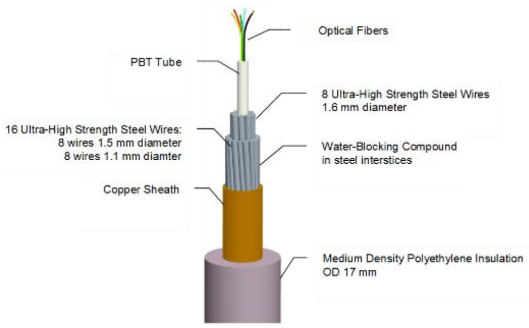
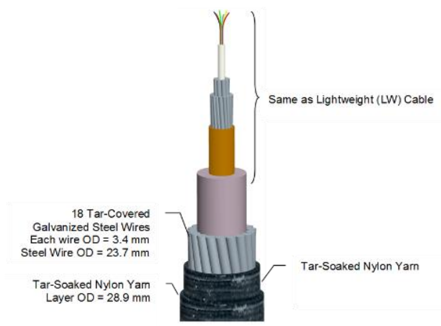
The main design function of a cable is to protect the optical fibre transmission path over the entire service life of the system, including laying, burial, and recovery operations. A secondary function is that its metallic elements are used either to feed an electric current to the repeaters or to monitor on a permanent basis the status of the transmission system and to localise cables breaks. For shallow water applications, external layers of steel armour wires are added to suit route conditions and installation methods and afford greater protection to the cables from potential contact impact. The cable design ensures that negligible strain and ultra-low pressure are applied to the fibres in normal operation. Even if the cables breaks, high strain on the fibres and seawater ingress are limited to a short length, so that the bulk of the cables would remain serviceable. These high performances are made possible by virtue of a cables structure that isolates fibres from mechanical stresses under normal operation conditions. This is achieved with a unique design in which fibres lay freely in a steel tube.

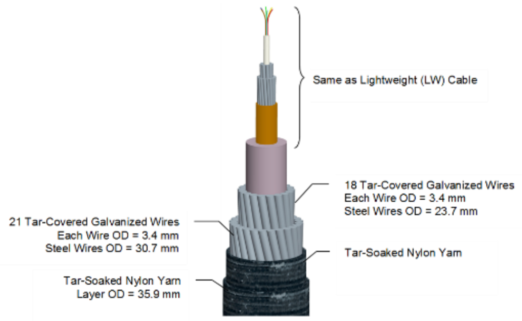
Even in the most adverse conditions such as cable recovery, cables are dimensioned so that stress applied to the fibres never reaches critical levels. Cable design prevents any fibre break that would be caused by ageing stress during the design life of the system.

Maximum protection is typically provided where necessary in the shallow inshore waters through a combination of armouring and burying of the cables. Lightweight cables are reserved for areas of deep seabed with calm conditions, though additional protection is recommended if the seabed is rough, steep or if significant bottom currents exist.

There are three variations of SubCom SL17 marine fibre optic cables to be used during installation in Australian waters. The variations comprise lightweight, Light wire armour and Double armour. Cable options proposed for the project are described in Table 3.2.

Table 3.2 Cable types and their applications

Cable type	Typical applications	Features	Design specification
Light weight – 17mm diameter	Benign, sandy bottom with no abrasive surfaces. Typically used in deep waters (1,000- 8,000 m) where human impact is minimal.	Core cables with polyethylene insulation for electrical installation but no additional external protection.	
Light wire armour – 28.9 mm diameter	In area where burial is specified and possible or there is a low risk to surface laid cables. Typically used in areas of continental shelf and slope, maximum depth of 2,000 m.	Armour wire layer (galvanised steel) applied to the LW cables	

Cable type	Typical applications	Features	Design specification
Double armour – 35.99 mm diameter	Suitable for very rocky terrain or high risk of trawler damage where burial is poor or not possible. Typically used near shore, maximum depth of 600 m.	Two armour wire layers (galvanised steel) applied to the LW cables.	

3.3 Cable installation method

The cable installation method could vary along the cable routes and is highly dependent on the nature of the seabed and water depth. Burial from the punch out point up to a 1,000 metre water depth is normally recommended, to mitigate risk from interactions with other users, such as dragging anchors. The maximum seabed depth for the project route within NSW waters is anticipated to be approximately 100 metres, For the purposes of the scoping report, it is assumed that ploughing would be required for the entire route from the punch out point to the 3 nautical mile limit. Once survey is completed and depending on seabed conditions, the cable installation methods would be refined to confirm the installation methods. The following sections provide an overview of the work associated with cable installation.

3.3.1 Pre-lay grapnel run

Prior to laying of the cables, a pre-lay grapnel run would be undertaken in all areas where planned cable ploughing would occur. This is a clearance activity to remove debris on the seabed such as abandoned fishing nets, hawsers and wires that would interfere with effective installation of the cables. This process also enables any disused cables to be removed from the project route. Where feasible, a third-party vessel (local) would be contracted to do this work to allow for schedule flexibility.

The cable laying vessel would lower a grapnel to the seabed and proceed to tow the grapnel across the seabed along the project route.

Should the first pass encounter any type of debris, two additional parallel passes, on either side of the centre line, would be made. The impact area of each pass would be approximately 0.75 metres, with typical spacing up to 150 metres apart. As the grapnel is pulled across the seabed, typical blade seabed penetration of up to 400 millimetres is achieved, depending on seabed composition.

The grapnel activity would not be conducted in hard bottom areas and would avoid existing functional cables. Debris recovered to the cable ship during these operations would be disposed of appropriately onshore upon completion of the operation. Figure 3.1 provides an example of the different grapnel tools that may be used.

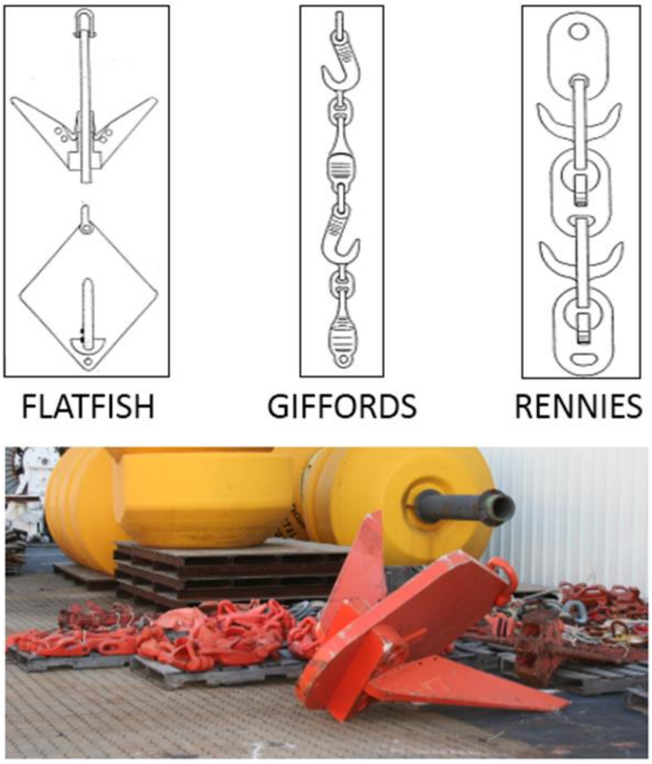


Figure 3.1 Pre-lay grapnel equipment (SubCom, 2024)

3.3.2 Burial by ploughing

Burial by ploughing is the preferred method of cable installation in shallow waters (<1,000 metres deep) where the seabed composition consists primarily of sand and loose sediments, which allows for easier penetration and displacement during the ploughing process.

The loose nature of sandy substrates minimises resistance, facilitating rapid installation and reducing the likelihood of damage to the cables. The pliability of the sand allows the cables to settle securely without the risk of significant shifting or exposure due to environmental forces such as currents or wave action.

The sea plough is a burial tool resembling a large sled, approximately 5 to 6 metres wide, attached to the cable laying vessel with a tow wire. It allows for mechanical burial of the cables to a desired depth by creating a furrow approximately 0.75 metres wide and feeding the cables to the bottom of the furrow. As the plough is pulled forward by the cable laying vessel, the cable lies in the bottom of the furrow and is backfilled via the movement of sediment on the seabed as the plough is towed across the seabed. Typical operational plough speeds are less than 1 knot, depending on the stiffness of the seabed and other factors such as sea state, weather and ocean current speed. Refer to Figure 3.2 for a schematic of the seabed ploughing process.

Computerised modelling and tracking from the cable laying vessel are used to control position and tension of the cables during laying activities, as well as correct for external factors such as wind and ocean currents. Information such as the planned cable routes, bathymetry, the ship heading, position and speed, cable characteristics and layout speed are integrated into the software to optimise real-time monitoring of the cable installation. Use of the cable lay software during installation reduces the likelihood of unwanted cable suspensions and assists in accurately placing the cable along the planned route.

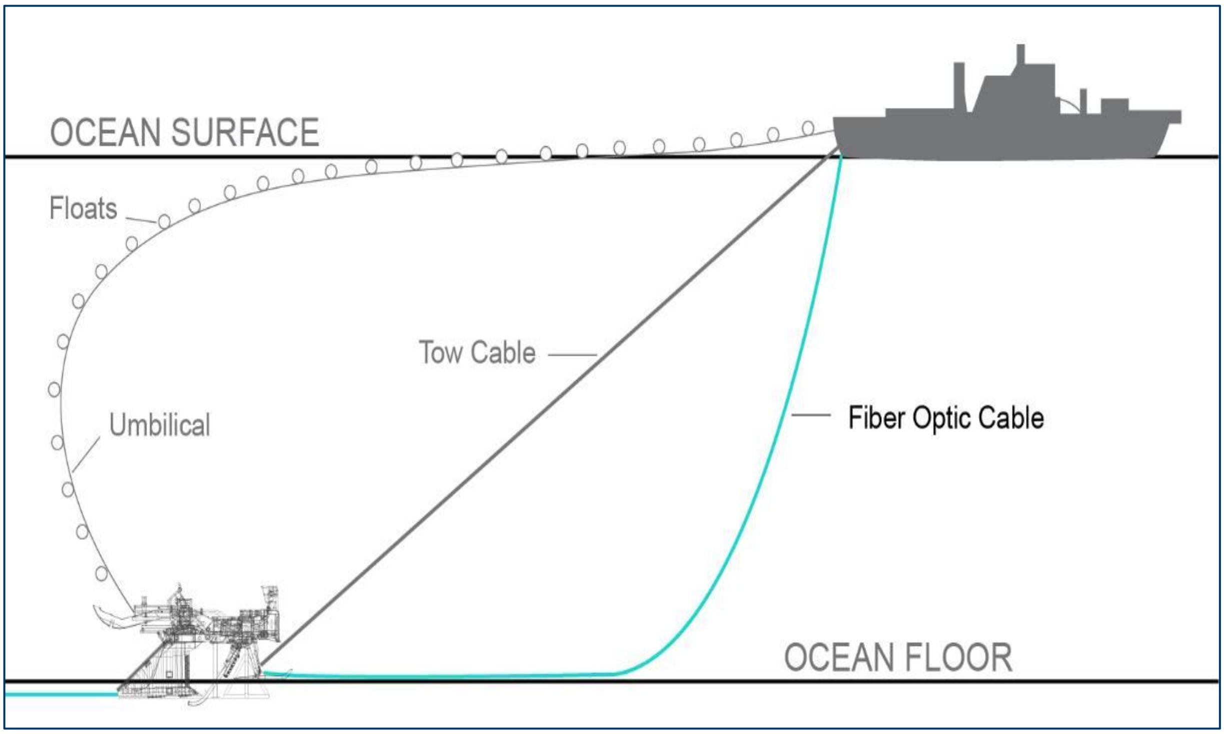


Figure 3.2 ***Burial by ploughing example (SubCom, 2024)***

3.3.3 Cable surface lay

A technique of cable installation called surface laying is typically undertaken in water depths of greater than 1,000 metres. Surface laying involves accurately placing the cable on the seabed under a known tension. This cable installation technique is undertaken in areas where there is little risk of external interaction with the cable and where the cable would be beyond the reach of fishing or anchoring activities. Surface laying can be used in areas of exposed bedrock, where cable burial is not possible.

Cable laying vessel speeds using surface laying are in the region of 6 to 10 knots per hour, depending on local conditions.

3.3.4 Post lay inspection and burial

Following the completion of the main lay, a remote operated vehicle (ROV) would be piloted along the cable routes to inspect the buried cables. Where plough burial is not possible as part of the main lay cable installation (e.g. crossings of other in-service cables) or where the cable plough could not achieve the target depth due to bottom conditions or technical issues, the subsea cables may be surface laid by the cable ship and subsequently buried during the post lay inspection and burial (PLIB).

PLIB is conducted using a hand held jetting tool through a diver jetting process that fluidizes the sediment and the cable is placed in the trench they produce. The process produces some localised turbidity and disruption of the macro and micro flora and fauna that live within the sediments. The trench fills over the cable at varying rates, depending on local currents, sediment characteristics, and movement of sediments.

The diver jetting process is a common burial method utilised by the submarine cable industry to protect cables in nearshore environments. Diver jetting allows for accurate and careful positioning of the cable to ensure it is protected and placed in the correct position. Suspended seafloor sediments are expected to be temporary and localised to the area along the cable route. Sediments would settle back to the seafloor once the diver jetting operation is complete.

If required, the PLIB would be undertaken by an ROV, deployed and operated from the cable ship or support vessel via a control umbilical. The ROV uses a seawater jetting tool directed into the seabed to agitate the seabed. The weight of the cable allows it to be buried to the required depth. The ROV jetting system slowly moves along the seabed on the required cable track forming a trench into which the cable is buried. No seabed materials would be introduced or removed from the project area.

The PLIB can take place any time after the initial marine installation is completed.

3.3.5 Cable pulling and landing connection

To facilitate the landing of cables and their connection to the telecommunications network, the project would utilise an existing Beach Manhole (BMH) and subsea conduits installed via Horizontal Directional Drilling (HDD) as part of a separate approval obtained from Randwick Council. The cables would be pulled through to the BMH through the two conduits bypassing sensitive nearshore environments and minimising interaction with beach users.

Under this scenario, the cables are typically floated from the cable vessel to the conduits. A shallow-water or cable ship would be stationed offshore near the conduit’s minimum working depth. A messenger line would be passed to shore, and a winch near the beach manhole would pull the cable through the trench and into the BMH. A dive support vessel may be deployed over the conduit to assist with removing cable floats from the cable within 10 to 20 metres of the conduit, ensuring a smooth transition as the cable enters the conduit.

The installation process may cause temporary, localised disruption to onshore recreational activities for up to one day. However, after installation, beachgoers are generally unaffected, and any areas disturbed during the beach landing would be restored to their original condition, ensuring minimal impact on the environment and user experience.

3.4 Cable laying vessel

The cable laying would be undertaken by one of SubCom’s Reliance Class vessels, part of a fleet of six. These vessels have a maximum length of 140 metres and are specifically designed and constructed for cable installation and maintenance. They are fitted with a cable burial sea plough, a cable maintenance ROV and satellite communications broadband connectivity. The vessels have a total engine power capacity of 9,950 kilowatts (kW) and are equipped with International Maritime Organisation (IMO) Class 2 dynamic positioning systems.

Currently, the installation plan designates the SubCom Resolute (IMO: 9242340) to undertake installation activities. This is subject to change based on scheduling and weather conditions.

Throughout the majority of cable installation process, the main-lay vessel would be travelling from 1 to 5 knots (9.26 km/h) in open ocean waters although speeds would vary depending on weather, seabed depth and location. No anchoring is required during the cable installation process. Refer to Figure 3.3 for a description of the vessel dimensions and key specifications.

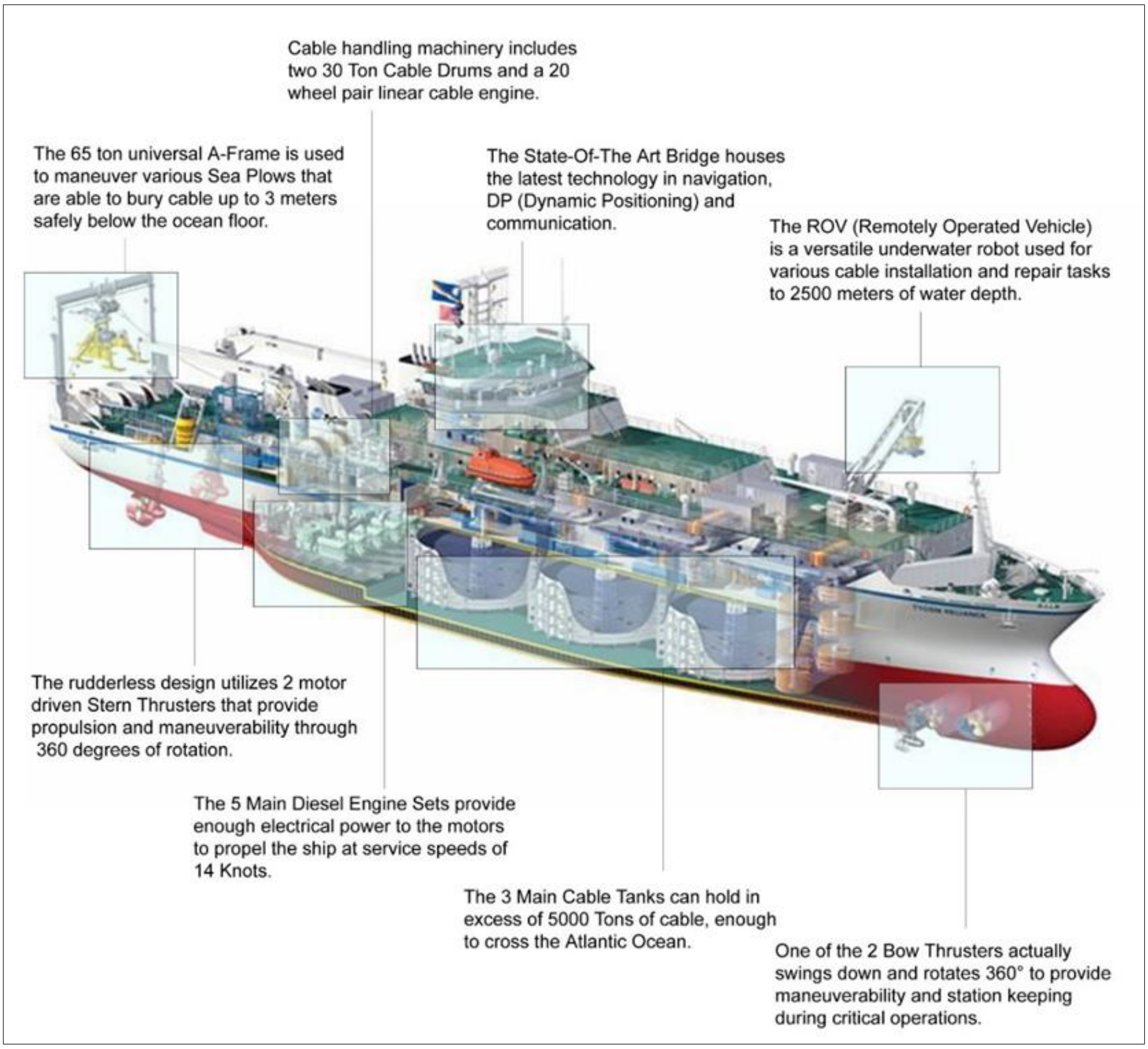


Figure 3.3 SubCom Reliance Class cable installation vessel (SubCom, 2024)

3.5 Project timing

Construction of the project is estimated to take approximately 20 days (10 days per segment) within NSW coastal waters and estimated to commence in December 2025. Pulling of the cable through the BMH would occur subsequently. Construction would adhere to the standard hours for onshore and offshore activities.

3.6 Operation, maintenance and decommissioning

3.6.1 Cable life

A typical design life for a submarine cable is 25 years. The likelihood of damage to the cables is considered to be very low as a result of using design solutions, installation methods and route selection to mitigate risk of interference.

3.6.2 Maintenance

During operation, no maintenance works are expected to be required. However, if maintenance is necessary (due to cable damage or failure), the cables may need to be retrieved from the sea floor. The recovery would involve the use of similar equipment used for installation to retrieve the cables and carry out repairs. The cables could be recovered using either a specially designed grapnel or an ROV depending on its depth and position. The most appropriate method would be selected with regard to the marine environment, ground conditions and nature of the damage at the time of maintenance.

3.6.3 Decommissioning

The cable system is being developed for a projected 25-year operational lifetime, however, at this time it is unknown exactly how long the cables would be in use as the cables are expected to exceed their projected lifetime. At the time of cable retirement, a decommissioning review would be considered with regard to the legislative requirements and industry practices as well as leading industry methods and relevant environmental requirements.

Options upon retirement include leaving the cable in place (as is currently practiced in Australian waters), or removal and salvage. Any future decision on retirement and decommissioning would depend on the existing conditions and requirements at that time.

3.7 Alternatives considered

3.7.1 Project route

Site visits were conducted to identify suitable landing locations for the cables landing in NSW.

A desktop assessment was undertaken with a focus on coastal processes, marine ecology and other considerations (heritage, fisheries, offshore owners, etc) to identify potential routes that align with favourable geological conditions and avoid known sensitive areas.

The assessment was supported by stakeholder engagement which aided in identifying the preferred cable routes options. Stakeholder engagement throughout the initial planning and approvals process has also shaped the approvals pathway and the deconfliction of areas of sensitivity (refer to section 5). The installation activities have been assessed against coastal and maritime processes, marine ecological factors, and site-specific constraints.

Two initial route options were evaluated: one through the Southern Sydney Cable Protection Zone and another via Maroubra. Following desktop assessments and stakeholder consultations, the Maroubra route was identified as the preferred option. Given the increasing congestion in Sydney’s protection zones, routing the cable outside of these areas would alleviate pressure, prevent network overcrowding, and enhance overall system resilience. While most existing cables land within Sydney's protection zones, an alternative route landing at Maroubra offers operational redundancy and address the growing demands for connectivity.

Previous projects in Sydney's protection zones have demonstrated minimal environmental impact when accompanied by appropriate management measures. Similarly, this project is designed to minimise ecological disturbance and avoid disruptions to maritime activities through proactive engagement and user notifications (refer to section 5).

3.7.2 Do nothing alternative

The do-nothing alternative essentially means not proceeding with the project. This option would have several consequences, primarily revolving around missed opportunities for enhancing connectivity, addressing capacity constraints, and improving the resilience of digital infrastructure.

Failure to address growing demand for connectivity: One of the primary drivers behind the need for additional submarine cables is the rapidly increasing demand for data. As Australia’s digital economy continues to grow, including sectors like fintech, e-commerce, cloud computing, and digital services, the existing telecommunications infrastructure is under increasing strain and unable to support future capacity requirements. Not proceeding with the project would lead to network congestion, slower internet speeds, and less reliable connections, ultimately hindering businesses, consumers, and industries that rely on digital services.

Loss of global competitiveness: The current infrastructure is becoming less capable of supporting Australia’s role as a key digital player in the Asia-Pacific region. Without the new cables, Australia risks falling behind in the global digital economy. Connectivity with international markets is crucial, and a lack of additional capacity would constrain Australia's ability to compete in international markets, which are a rapidly growing for digital and tech-related businesses.

Limited network resilience: Existing submarine cable systems, particularly those in Sydney’s protection zones, are already facing congestion. Some existing cables are nearing the end of their operational life. The do-nothing alternative would prevent the creation of operational redundancy in the telecommunications network, which is critical to avoiding service disruptions in case of failures or capacity overloads in existing systems. Without the additional cables, Australia's telecommunications infrastructure would be more vulnerable to disruption, particularly in the event of faults in existing cable systems.

Reach: These cables would provide enhanced connectivity to other Pacific nations including Fiji, French Polynesia, and New Zealand, which are historically underserved with fewer international connectivity options.

4. Statutory context

The key requirements of the EP&A Act and the Environmental Planning and Assessment Regulation 2021 in relation to the approval and assessment of the project are summarised in Table 4.1.

Table 4.1 Statutory context

<table>
<tr><th>Legislation</th><th>Assessment</th></tr>
<tr><td>Power to grant consent</td><td>Section 5.2 of the EP&A Act provides that a State Environmental Planning Policy (SEPP) may declare any development, or any class or description of development, to be State Significant Infrastructure (SSI). The project is deemed SSI in accordance with section 2.13 (b) of the State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP), as the project is classified under Schedule 3 - Submarine telecommunications cables.

In accordance with section 5.14 of the EP&A Act, the approval authority for SSI is the Minister for Planning.</td></tr>
<tr><td>Permissibility</td><td>The permanent infrastructure associated with the project would be located in NSW coastal waters and would not be within the boundaries of any local environmental plan, therefore no land zoning applies.

Pursuant to Division 21, section 2.142 of State Environmental Planning Policy (Transport and Infrastructure) 2021 (Transport and Infrastructure SEPP), submarine telecommunications cables are classified as development permitted without consent as follows:

Development for the purpose of submarine telecommunication cables (and any attached devices) laid on or under the seabed beneath the coastal waters of the State and below the mean high water mark, being cables used for communications between Australia and other countries, may be carried out by any person without consent on any land.

The Planning Systems SEPP designates such projects as SSI requiring the preparation of an Environmental Impact Statement (EIS).</td></tr>
<tr><td>Other approvals</td><td><u>Consistent approvals</u>

Any authorisations under certain legislation, identified in Section 5.24 of the EP&A Act, cannot be refused if it is necessary for carrying out an approved SSI project and is to be substantially consistent with the SSI approval. In relation to the project, these authorisations could include:
– An aquaculture permit under section 144 of the Fisheries Management Act 1994
– An environment protection licence under Chapter 3 of the Protection of the Environment Operations Act 1997.
– A consent under section 138 of the Roads Act 1993
– A licence under the Pipelines Act 1967.

<u>Approvals not required</u>

An authorisation under certain other legislation, identified in section 5.23 of the EP&A Act, is not required for approved SSI:
– A permit under Section 201, 205 or 219 of the Fisheries Management Act 1994 as confirmed by DPI fisheries in a letter response dated 19 November 2024.
– An approval under Part 4, or an excavation permit under section 139, of the Heritage Act 1977
– An Aboriginal heritage impact permit under Section 90 of the National Parks and Wildlife Act 1974
– A water use approval under Section 89, a water management work approval under Section 90 or an activity approval (other than an aquifer interference approval) under Section 91 of the Water Management Act 2000.</td></tr>
<tr><td>Pre-conditions to exercising the power to grant approval</td><td><u>Biodiversity Conservation Act 2016</u>

Under section 2.4 of the Biodiversity Conservation Act 2016 (BC Act) it is an offence to damage the habitat of a threatened species or threatened ecological community, as listed in Schedule 1 and 2 of the Act. Part 7, Division 2, section 7.9 of the BC Act specifies the requirements for biodiversity assessment for approval of SSI.
– Development that is likely to significantly affect threatened species is required to be accompanied by a biodiversity development assessment in the form of Biodiversity Development Assessment Report (BDAR). The project would be located wholly within the</td></tr>
</table>

Legislation	Assessment
	marine environment therefore a BDAR would not be suitable for this project as no terrestrial species or native terrestrial vegetation would be impacted.
Other NSW legislation	
Coastal Management Act 2016 State Environmental Planning Policy (Resilience and Hazards) 2021	The objectives of the coastal management areas mapped under this Act and State Environmental Planning Policy (Resilience and Hazards) 2021 would be considered in the EIS for the project.
Crown Land Management Act 2016	Consultation with Crown Lands has confirmed that seabed disturbance and occupation require a lease based on the area of occupation and current market rate of 'land & seabed' occupied. Seabed disturbance on Crown Land would require a Crown Lands license.
Ports and Maritime Administration Act 1995	A Seabed Disturbance Permit would be obtained from the Port Botany Harbour Master for installation activities occurring within the Port Botany Port Limits.
Fisheries Management Act 1994	Under Part 7A - Threatened species conservation: a critical habitat declaration for grey nurse sharks exists at Magic Point (Maroubra). Activities in this vicinity need to be managed to ensure no adverse impacts to the critical habitat. A Part 7 Fisheries Permit is not required due to exemptions in the provisions of the EP&A Act under the SSI process. A marine assessment report would be prepared to assess any potential impacts to threatened marine species and marine vegetation and pending the outcomes of that assessment, a Significant Impact Assessment or Species Impact Statement would be prepared if there was found to be a material and significant impact on marine values listed under EPBC Act or *Fisheries Management Act 1994*.
Marine Estate Management Act 2014	As discussed in section 2.3.4, no marine parks or marine reserves are located in the immediate vicinity of the project.
Commonwealth legislation	
Environment Protection and Biodiversity Conservation Act 1999	In accordance with EPBC Act, proposed actions with the potential to significantly impact matters protected by the EPBC Act must be referred to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW (Cth)) to determine whether they are controlled actions and require approval from the Australian Minister for the Environment. The following matters are defined as protected matters by Part 3 of the EPBC Act: – Matters of national environmental significance – The environment of Commonwealth land – The environment in general if they are being carried out by a Commonwealth Government agency. The Pacific Connect Initiative, including the project, would be referred to DCCEEW (Cth) to determine if the cable installation activities would have a significant impact under the EPBC Act. The application is currently in process and is expected to be lodged early 2025. **<u>Commonwealth Marine Parks Approval</u>** Parks Australia are part of the DCCEEW (Cth) and are charged with management of the Commonwealth national parks, Australian National Botanic Gardens, and Australian marine parks under the EPBC Act. There are no Australian marine parks near the project.
Native Title Act 1993	A review of the National Native Title Tribunal Register did not identify any Native Title determinations within the area surrounding the project. However, the EIS would confirm whether any Crown land is subject to a native title claim.
Underwater Cultural Heritage Act 2018	The Act establishes protected zones, usually an area of approximately 200 hectares, to protect underwater heritage. The project route would not intersect any protected zones however this would be assessed as part of the EIS. A detailed assessment would be undertaken to inform whether approvals are required for heritage matters under the *Underwater Cultural Heritage Act 2018.* It is unlikely that approvals would be required.
Telecommunications Act 1997	Installation of fibre optic subsea cables falls under the *Telecommunications Act 1997.* This Act regulates the service provision to consumers by telecommunications carriers. Under Schedule 3A

Legislation	Assessment
Commonwealth Telecommunications (Low-impact Facilities Determination 2018)	of the Act, and in accordance with the Australian Communications and Media Authority (ACMA), deployment of submarine cables requires an EA to be undertaken and that all required approvals/notifications for the project are obtained prior to cable installation. Schedule 3A to the Act regulates the installation of submarine cables that are to be connected within Australia. Carriers, who intend to install submarine cables in certain Australian waters, must apply for a permit to do so from the ACMA. A permit to install the submarine cables in a non-protection zone would be required.

5. Engagement

5.1 Engagement approach

The project team is committed to engaging with communities and other stakeholders through the life of the project. The aim is to build trusted and beneficial relationships with the communities where they work. The project team recognises the vital role that landowners and stakeholders have as we plan and deliver upgrades to our network.

The International Association of Public Participation (IAP2) has been chosen as the best-practice approach to community engagement and our engagement approach is guided by the IAP2 public participation spectrum. The spectrum is an internationally recognised tool for planning public participation in infrastructure projects.

The engagement approach for the Pacific Connect Initiative is detailed in a Communication Plan. This would be adopted, as relevant, to inform the engagement for the project as described in this scoping report.

5.2 Engagement to date

A range of stakeholders have been identified. Stakeholder engagement activities undertaken to date for the project, and feedback received at the time of preparation of this scoping report, is summarised in Table 5.1. Initial engagement was undertaken in relation to the marine route survey and is ongoing in relation to the proposed cable installation (the project). Activities have included:

- Project announcements and updates via media releases, through website and via social media
- Formal project briefings with government agencies
- Targeted communications with key stakeholders including engagement letters, project briefings and meetings, email correspondence and telephone contact.

Feedback received from the engagement to date has been used to inform the marine route survey, select the preferred route and identify appropriate assessment approaches and mitigation measures.

Table 5.1 Stakeholder engagement summary

Stakeholder	Responsibility	Outcome
Commonwealth		
Department of Climate Change, Energy, the Environment and Water (DCCEEW (Cth))	Administrator of the EPBC Act	EPBC referral submitted for assessment of marine route survey under the EPBC Act
DCCEEW (Cth) - Parks Australia	Administrator of the EPBC Act	Commercial research licence for the marine route survey to be submitted to Parks Australia
DCCEEW (Cth) – Offshore Renewable Branch	Responsible for developing legal frameworks for the offshore renewables industry, running public consultations on proposed offshore areas and developing industry growth strategies.	The Offshore Branch raised concerns about the proposed Cable Protection Zone overlapping with the Illawarra Offshore Wind Declared Area. Examples of successful coexistence between cables and offshore wind projects were discussed. ACMA noted that coexistence provisions are already included in protection zone declarations. Alignment between the Offshore Electricity Infrastructure Act 2021 and ACMA zoning would be required to avoid conflicts in this case.
Australian Communications and Media Authority (ACMA)	Administrator of the Telecommunications Act 1997	A Non Protection Zone permit would be required to install outside of the Southern Sydney Protection Zone.

Stakeholder	Responsibility	Outcome
Australian Fisheries Management Authority (AFMA)	Responsible for the efficient management and sustainable use of Commonwealth fish resources on behalf of the Australian community	No specific comments at this stage. AFMA encouraged to directly engage with relevant industry associations and relevant state/territory fisheries jurisdiction to understand any impacts on activities/fisheries
Australian Maritime Safety Authority	Responsible for maritime safety	Engagement in progress
Australian Hydrographic Office	Responsible for maritime safety	Engagement in progress
Commonwealth Fisheries Association	Represents the interests of commercial fishing operators in negotiations with government agencies and stakeholders to develop fisheries policies and regulations.	Engagement in progress
Department of Defence	Administrator of offshore military training areas	No concerns in regard to proposed activities. Schedule to be provided with Defence prior to commencement of works to deconflict with planned military exercise.
National Indigenous Australians Agency (NIAA)	Develops and implements policies and programs to improve outcomes for Indigenous Australians	Engagement with Traditional Owners and First Nations stakeholders is recommended, allowing sufficient time to assess potential impacts. Engagement would cover environmental, cultural, social, and economic interests, and continue throughout the project's development, construction, operation, and decommissioning. Reference to the DCCEEW (Cth) Interim Guidance on Engaging with First Nations People and Communities, as well as the Clean Energy Agreement Making on First Nations Land for best practices should be undertaken throughout the project lifespan.
National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) - Offshore Infrastructure regulator (OIR)	Regulates offshore petroleum activities to ensure safety, environmental protection, and compliance with regulations, including assessment and approval of exploration and production operations.	Engagement was undertaken in relevance to Declared Area OEI-02-2024 offshore Illawarra. At the time of writing this report no feasibility licences within the area have been granted. Respective licence holders would be engaged with as the project evolves.
New South Wales		
Department of Climate Change, Energy the Environment and Water (DCCEEW (NSW)) (Environment and Heritage)	Manages environmental policies and programs to address climate change, energy, environment, and water issues	Engagement in progress
Department of Planning, Housing and Infrastructure (DPHI) (Crown Lands)	Manages and administers Crown lands including leases, licenses, and land use planning.	Engagement in progress

Stakeholder	Responsibility	Outcome
Department of Planning, Housing and Infrastructure (DPHI) (Planning)	Develops and implements planning policies and regulations to guide sustainable development and land use	A meeting was held with DPHI on 19 November 2024 to discuss the project and to provide an overview of the scope and any potential environmental risks. No major issues were raised with DPHI to discuss internally timing/methodology of lodgement of scoping report. An additional meeting was undertaken with DPHI on the 26 February 2025 to discuss timing of lodgement of the scoping report. No concerns were raised.
Department of Primary Industries (Fishing and Aquaculture)	Regulates and manages fishing and aquaculture activities to ensure sustainability and compliance with regulations.	DPI noted in a letter dated 19 November that the cable installation activities identified would not trigger s201 and s205 permits as an SSI approvals process is being undertaken. They further noted that DPHI will consult with DPIRD Fisheries as part of the SSI approvals process.
Maritime Infrastructure Delivery Office (MIDO) of Transport for NSW	Oversees the delivery of maritime infrastructure projects, including ports, wharves, and ferry terminals.	Engagement in progress
Aboriginal Land Council	Represents the interests of Aboriginal people, including land rights and cultural heritage preservation	Engagement in progress
Randwick City Council	Manages local government services and infrastructure in the Randwick area, including planning, environmental management, and community services.	No objections to the project as the extent of the work does not fall on Council land.
NSW National Parks and Wildlife Service	Manages and conserves national parks, reserves, and wildlife, including biodiversity conservation and visitor management.	Engagement in progress
New South Wales Port Authority	Manages ports and harbors, including shipping, maritime safety, and environmental management.	No concerns were raised regarding project activities. A ‘seabed disturbance’ permit will be required for all installation activities within the Port Botany Bay Limit. The Authority also requested an operational plan, a marine traffic management plan, a map of the cable installation location, and a risk register to be provided prior to commencement.
Maroubra Surf Life Saving Club	Provides beach safety services	Engagement in progress

5.3 Ongoing engagement

The project team is committed to ongoing engagement on the project so that it is robust, transparent and effective. Engagement would continue on specific issues and opportunities relevant to the project to inform the preparation of the EIS, as well as engagement regarding the project more broadly. The objectives of this phase would be to:

– Demonstrate commitment to improved community and stakeholder engagement to ensure a transparent, respectful and effective process
– Provide clear and timely information on the EIS and relevant technical reports
– Provide an opportunity for community members and stakeholders to meet the project team
– Meaningful engagement through the creation of an open and safe channel for community and stakeholders to raise questions and concerns

– Provide an opportunity for community members and stakeholders attending in-person events to provide feedback on the project and the engagement to date.

A range of engagement mechanisms and activities may be used including:

– One-to-one meetings
– Stakeholder briefings
– Stakeholder and community group presentations and briefings
– Project toll-free community information number
– Proponent email address
– GHD's Community Engagement Email - cominput@ghd.com
– Project webpage
– Communications materials (newsletters, letters and factsheets)
– Media and advertisements
– Social media.

All stakeholder engagement would continue to be collected in the project teams Stakeholder Engagement database. Comments and feedback received on the project would be reviewed and given appropriate consideration in the design of the project and in the EIS, with the aim to avoid, minimise and mitigate environmental, community and social impacts where possible.

6. Proposed assessment of impacts

The identification of issues to be addressed in the EIS has been undertaken through a risk-based approach in accordance with the *State Significant Development Guidelines – Preparing a Scoping Report* (DPE, 2022). This process involved reviewing previous reports, and desktop searches of proprietary environmental databases to identify key issues and sensitive areas.

A summary of the key environmental matters identified during the risk assessment is provided in section 6.1 through section 6.9.

A Scoping Summary Table is provided in Appendix A. The intent of the discussion is to demonstrate an understanding of the matters and the need for further environmental assessment and mitigation measures for these matters.

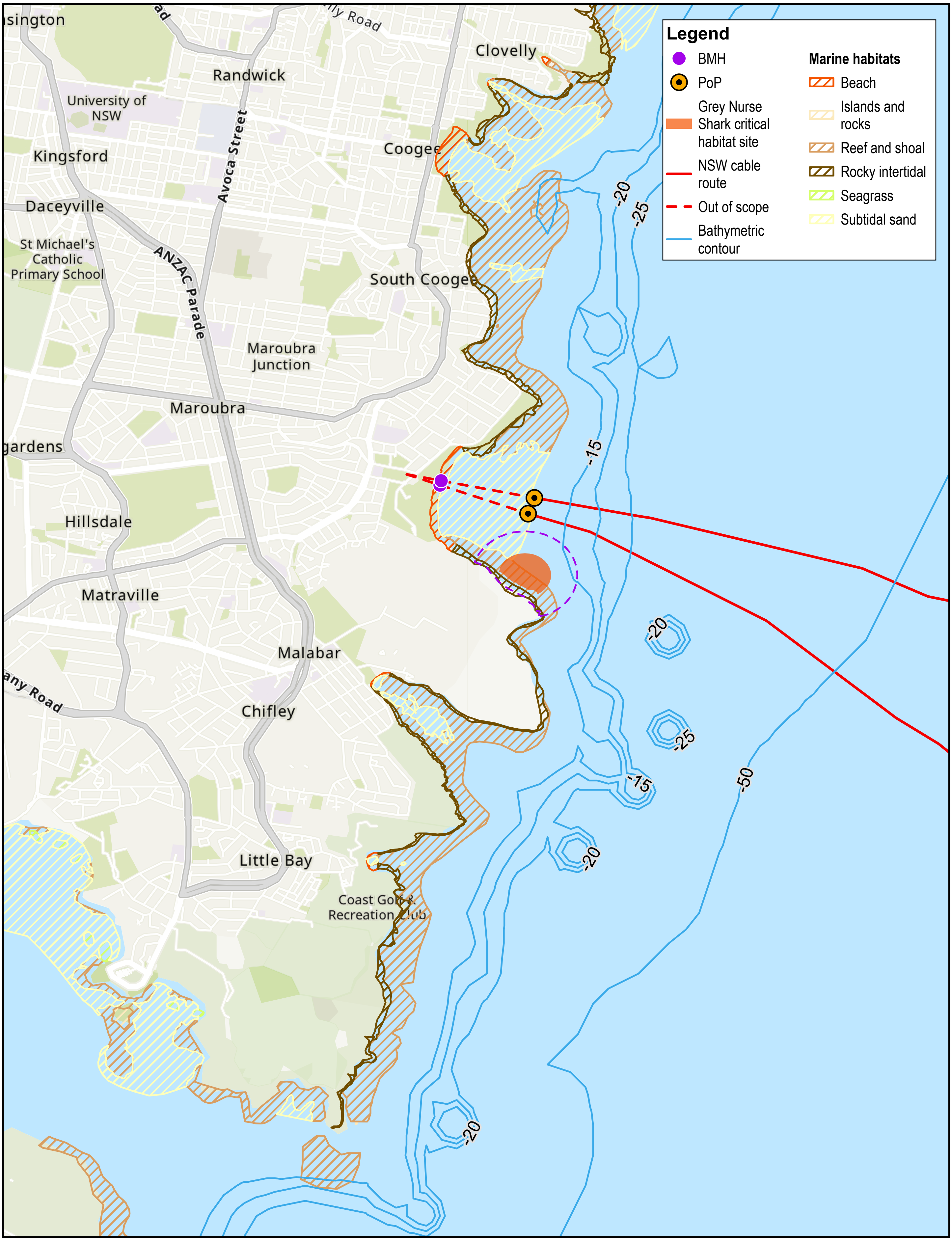
A referral under the EPBC Act for the submarine cables within Australian waters, including the project, is currently being prepared and is expected to be lodged early 2025. The assessment approach would be refined subject to the outcome of the referral.

6.1 Biodiversity

6.1.1 Existing environment

The nearshore coastal environment around the project predominantly features extensive sandy habitats, characterised by soft sediments typical of surf zones along the coastline, with fine unconsolidated clastic sediments to depths of about 100 metres. Intertidal and subtidal rocky reefs are located north and south of the project around Mistral Point and Malabar Headland, (refer to Figure 6.1).

The reefs are known to support diverse macroalgae such as *Ecklonia radiata* and potential habitat for seagrass species such as *Posidonia australis, Halophila ovalis,* and *Zostera muelleri* which are mapped in Botany Bay. However, no mapping for those species formally exists on the project route. Seagrass species such as *Posidonia australis*, *Halophila ovalis*, and *Zostera muelleri* are protected in NSW, with *Posidonia australis* Seagrass listed as Endangered under the *Fisheries Management Act 1994.* Habitat for these species are not mapped within the cable routes; however, isolated patches may occur near rocky reefs, (refer to Figure 6.1).



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GHD

Perch Pty Ltd - Subsea Telecommunications Cable Installation

Marine habitat features and critical habitat in proximity to the project

Project No. 12613495
Revision No. E
Date 26/02/2025

FIGURE 6.1

Data source: World Topographic Map: Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS. Created by: cbataller

Critical habitat

There is a critical habitat for the grey nurse shark (*Carcharias taurus*) at Magic Point, approximately 350 metres south of the project, positioned around 33° 57.359' S and 151° 15.864' E, with a 200-metre buffer zone. The location of the critical habitat zone is shown in Figure 6.1.

The grey nurse shark is classified as Critically Endangered under the EPBC Act and *Fisheries Management Act 1994*, and its population is protected by a National Recovery Plan for the grey nurse shark (DCCEEW, 2014) that outlines the necessary research and management actions for its long-term conservation and recovery. The species travels hundreds of kilometres between aggregation sites in short periods of time, returning to the same sites in consecutive years.

In NSW, the species occupies a limited number of coastal locations for feeding, mating, and pupping, known as 'aggregation' sites. The larger and more significant aggregation sites are designated as 'critical habitat,' essential for the species' survival (DCCEEW 2014).

Fisheries

The project is located within a commercial fishing zone where ocean hauling, ocean trap and line, ocean trawling, estuary prawn trawling and estuary general fishing activities are permitted to occur. Ten species of importance to commercial marine fishing in NSW may be found in the area (DPI, 2008).

Threatened species

A desktop review undertaken on the Protected Matters Search Tool using a 5 kilometre buffer around the cable routes on 18 November 2024 identified 95 marine species and terrestrial species listed under the BC Act, *Fisheries Management Act 1994* (NSW) and EPBC Act. This included:

– 23 cetaceans
– 3 marine sharks and rays
– 4 marine reptiles
– 5 additional marine mammals
– 10 marine bird species
– 50 other terrestrial species.

Of those marine species listed, 13 are listed as migratory.

A list of the marine species and their likelihood of occurrence of species/habitat presence along the cable route is provided in Appendix B. As the project does not include any permanent infrastructure on the majority of the terrestrial species (apart from selected marine bird species) have been excluded from the assessment in Appendix B.

Invasive marine species

Thirteen invasive marine species have the potential to occur within NSW waters in proximity to the project. This includes species of bivalve molluscs, crustaceans, finfish, gastropods/snails, seaweeds and other marine pests (DPI, 2023).

6.1.2 Potential impacts

The following potential impacts to marine biodiversity have been identified:

– Disturbance to benthic habitats, rocky reefs and submarine outcrops may occur during cable installation. Habitat disturbance associated with cable maintenance activities may occur if unplanned maintenance is required.
– Marine fauna collisions or entanglement may occur during the cable installation process. However, the likelihood of such incidents is low for cable laying vessels, as they operate at slow speeds.
– Pest introduction and proliferation may unintentionally introduce invasive marine species. These species can be transported via external biological fouling on vessel hulls, seawater pipes (e.g., cooling systems),

submersible marine instruments and through ballast water exchange, facilitating their spread in the project area.

- The project could potentially impact nearby grey nurse shark breeding zones by disturbing sensitive benthic habitats, generating noise and vibrations that may displace sharks, and introducing risks of collision or entanglement, although these risks are considered low due to the disturbance footprint and temporary nature of the works involved.
- Artificial light emissions may be generated through the use of lighting on the vessel and equipment for cable installation operations during the daytime and vessel navigation at night. There is potential to impact to seabirds, marine turtles, cetaceans, fish, and other pelagic species that may be sensitive to artificial light.

As the project route is wholly within the marine environment and would not intersect coastal reef habitat, impacts to onshore biodiversity are unlikely to occur.

6.1.3 Assessment approach

A marine assessment report would be prepared for the EIS. The assessment would identify potential impacts to threatened marine species, populations and communities and their habitats as a result of the project in accordance with the *Fisheries Management Act 1994* and EPBC Act.

6.2 Aboriginal heritage

6.2.1 Existing environment

A desktop assessment of Aboriginal heritage databases was undertaken for the preliminary project route in December 2023 and again using the preferred project route in October 2024. The following sources were searched on 22 October 2024 and used to inform the desktop assessment:

- Australasian Underwater Cultural Heritage Database
- Aboriginal Heritage Information Management System (AHIMS)
- Aboriginal Heritage inquiry System
- National Native Title Tribunal
- Engagement with respective stakeholders (refer to section 5).

A desktop search undertaken using the online Aboriginal Heritage Information Management System (AHIMS) (NSW Government 2024) revealed that there are three Aboriginal heritage sites and no Aboriginal places within proximity of the cable route. All three of the Aboriginal heritage sites are land-based and do not overlap with the cable routes or existing infrastructure where the cables are proposed to connect.

The Aboriginal Heritage inquiry System and the National Native Title Tribunal were reviewed for the presence of Native Title determinations or applications applicable to the project route. The project would not intersect any Native Titles.

Consultation undertaken to date has not indicated any concerns with Aboriginal Groups with regard to underwater heritage sites.

6.2.2 Potential impacts

All items of Aboriginal heritage within the vicinity of the project route are land based and would therefore not be impacted. While no Aboriginal heritage items have been identified within the cable route areas, there remains a possibility that submerged cultural sites or objects of Aboriginal significance could be present along the cable routes.

6.2.3 Assessment approach

An underwater cultural heritage assessment would be prepared for the EIS. The assessment would be undertaken in accordance with the *Guidelines for Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters* (DCCEEW, 2024). The assessment would identify potential impacts to Aboriginal cultural heritage as a result of the project in accordance with the *National Parks and Wildlife Act 1974, Native Title Act 1993* and EPBC Act. Information gained from the marine route surveys would be used to reconstruct submerged landscapes, along with community consultation, to aid in assessing and predicting the location and distribution of Aboriginal underwater cultural heritage.

6.3 Historic heritage

6.3.1 Existing environment

A desktop assessment of historic heritage databases was undertaken for the preliminary project route in December 2023 and again using the preferred project route in October 2024. The following sources were searched on 22 October 2024 and used to inform the desktop assessment:

- Australasian Underwater Cultural Heritage Database
- Australian Heritage Database
- NSW State Heritage Register database
- Engagement with respective stakeholders (see section 5).

According to the Maritime Heritage Database, 1 known maritime cultural heritage item is found within 500 metres of the project route, identified as the Hereward Shipwreck, refer to Figure 6.2.

The Australian Heritage Database identified seven areas listed on the Commonwealth Heritage Register located within proximity to the project route however are all land based and therefore would not interact with the project.

A review of the NSW State Heritage Register identified the presence of 3 State heritage listed items and 12 locally listed heritage items in proximity to the project route however are all land based and therefore would not interact with the project.

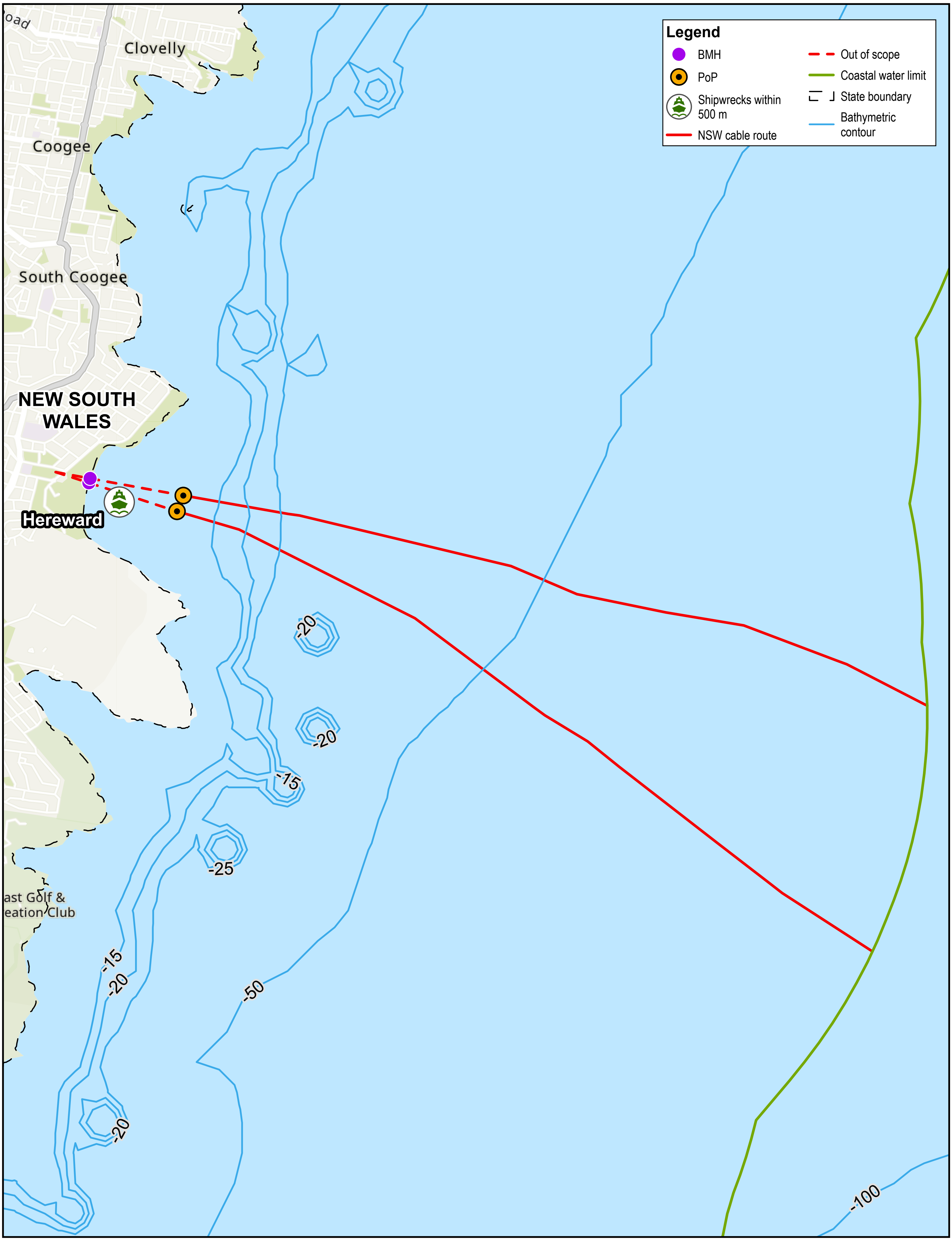
6.3.2 Potential impacts

Several underwater maritime cultural heritage items were identified under the Australasian Underwater Cultural Heritage Database in proximity to the project route, identified as protected shipwrecks.

6.3.3 Assessment approach

An underwater archaeology assessment would be prepared for the EIS. The assessment would be undertaken in accordance with the *Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters Guidelines on the application of the Underwater Cultural Heritage Act 2018* (DCCEEW 2024). The assessment would identify potential impacts to historic heritage as a result of the project in accordance with the *Underwater Cultural Heritage Act 2018, Heritage Act 1977* and EPBC Act.

Geophysical surveys conducted as part of the marine route survey would assist in identifying these areas. If any unknown maritime cultural heritage is discovered, it would be reported to the relevant heritage authority and assessed by a qualified maritime archaeologist. If necessary, the project route would be adjusted to avoid any heritage items and any potential impacts to these items would be assessed as part of the underwater archaeology assessment.



Paper Size ISO A4

0 0.5 1

Kilometers

Horizontal Datum: GDA2020
Grid: GDA2020

N

GHD

Perch Pty Ltd - Subsea Telecommunications Cable Installation

Known maritime cultural heritage items in proximity to the project

Project No. 12613495
Revision No. D
Date 26/02/2025

FIGURE 6.2

Data source: World Topographic Map: Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS. Created by: cbataller

6.4 Underwater noise

6.4.1 Existing environment

Typical background noise emissions on the surface would be attributed to vessel movements between ports or fishing grounds. A search on the AMSIS map viewer undertaken on 8 November 2024 demonstrates the project route would intersect a primary commercial shipping route between domestic ports and international destinations.

Recreational and commercial fishing activity may also generate variable levels of underwater noise however this is unlikely to be for a sustained period at any given location. The subsea environment where cable installation would occur is expected to have a low level of background noise due to the lack of artificial noise emitting objects.

6.4.2 Potential impacts

Underwater noise generated during the installation of submarine cables can be categorised into two primary source types:

– underwater noise resulting from disturbance to the seabed from specialised equipment
– underwater noise generated from vessel movement.

Both sources contribute to the acoustic environment of the installation area, and each has its own set of characteristics and potential impacts on marine fauna.

Disturbance to the seabed and benthic habitats may occur during the submarine cable installation. Acoustically sensitive marine fauna such as cetaceans (whales, dolphins) and seals are known to be vulnerable to physiological impacts and behavioural changes when exposed to anthropogenic sounds.

Noise-emitting equipment used in seabed excavation includes Remote Operated Vehicles (ROVs) and ploughs, however, the noise emissions of these sources are often masked by noise from the cable laying vessel and dynamic positioning systems (Johannson and Andersson, 2012). The dynamic positioning systems (Nedwell et al, 2003), which helps maintain vessel stability and position during cable laying, adds an additional high-frequency noise source to the cable laying vessel noise that produces noise in the lower frequencies (mainly propeller cavitation and engine/machinery noise). This type of noise is of relevance for species such as cetaceans (whales, dolphins) and seals, who are known to rely on echolocation for communication and navigation.

6.4.3 Assessment approach

A qualitative desktop underwater noise assessment would be prepared for the EIS. Guidance would be taken from the SA Underwater Piling and Dredging Noise Guidelines (SA DIT, 2023) which references the following documents to derive assessment criteria (injury/hearing loss and behavioural response) for marine mammals, fishes and sea turtles:

– Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects (Southall, 2019)
– Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI (Popper, 2014).

The assessment would identify potential acoustic impacts on marine fauna in accordance with the *Fisheries Management Act 1994* and EPBC Act.

6.5 Marine water quality

6.5.1 Existing environment

The offshore environment in relation to the project is influenced by a number of oceanographic features. Seasonally, the southward flowing eastern Australian current brings warm water to the region, particularly in summer months (Ridgway, 2007). Summer upwelling events take place along the Sydney coastline, bringing nutrient rich waters to the area. The interactions between these two oceanographic processes add to the dynamics of the region, increasing productivity and diversity of marine fauna.

According to the NSW State of the Beaches Report 2023-2024 (DCCEEW, 2024), Maroubra Beach has received a Good – Very Good rating for water quality as recently as April 2024. The Beach Suitability Grade of Very Good indicates microbial water quality is considered suitable for swimming almost all of the time, with few potential sources of faecal contamination. This is considered the best representation of water quality data available in proximity to the project.

The project route is characterised by sands and muds (DCCEEW 2009). Offshore soft sediment habitats support sparsely distributed infaunal and epifaunal invertebrates, as well as benthic-demersal fishes, molluscs and crustaceans (DCCEEW 2009). Tides are typically semi-diurnal such that there are two high and two low tides each day. Tidal planes derived from long-term records at Botany Bay, Sydney were extracted from the Australian Tide Table (Australian Hydrographic Office 2023), indicates a maximum water level fluctuation of 1.5 metres between high and low tide.

During storm events, long waves with periods exceeding 25 seconds may emerge due to wave grouping. Whilst these waves generally do not substantially affect coastal processes, they can influence the motion of vessels and barges off the coast of Sydney. The NSW coast in proximity to the project is subject to a moderate wave climate predominantly from the south to south-east. Previous studies have found an average offshore significant wave height between 1.5 to 1.6 metres and average peak period of 9.4 to 9.7 seconds (Lord and Kulmar 2000).

6.5.2 Potential impacts

Ploughing or cable laying on the seabed can resuspend sediments and increase turbidity in the water column. Higher turbidity can reduce light penetration, affecting photosynthetic organisms such as plankton, seagrasses, and corals. Sediment plumes can also smother benthic organisms, clog gills of marine species, and degrade water quality. Ploughing and backfilling of the seabed during pre-grapnel run and cable installation would be localised to a small footprint with suspended sediment likely to settle relatively quickly as the works progress along the project route.

6.5.3 Assessment approach

A qualitative desktop marine water quality assessment would be prepared for the EIS. The assessment would be undertaken with reference to the *Australian and New Zealand guidelines for fresh and marine water quality* (ANZECC & ARMCANZ 2000).

6.6 Contamination

6.6.1 Existing environment

A review of the relevant regulatory databases was undertaken on 8 November 2024 which included:

- The Environmental Protection Agency (EPA) notices under the *Contaminated Land Management Act 1997*
- Department of Defence, Australian Government in relation to Unexploded Ordnance
- NSW EPA and Defence PFAS (per- and polyfluoroalkyl substances) Management Program
- Universal Business Directories.

The searches indicate a low likelihood of contamination in coastal waters within the project route due to the lack of industrial sites or point sources of contamination in proximity to nearshore environment.

Nine instances of known sea dumping are identified offshore of the NSW coast (Australian Department of Defence, 2003) however all sites are located outside of the project route, with the nearest dumping site approximately 3 kilometres to the south east of the project route.

Four chemical munitions dump sites are located offshore of NSW (Australian Department of Defence, 2018), however would not intersect the project route, with the nearest munitions dump site would be located approximately 60 kilometres east of the project route.

No listed contaminated sites were identified within 2 kilometres of the project route.

6.6.2 Potential impacts

The project has the potential to interact with previously unrecorded contamination sources. Disturbing the seabed may release contaminants (e.g., heavy metals, petroleum products, or other toxic substances) that have accumulated in the sediment. This could pose a risk to marine organisms that ingest or come into contact with these materials.

There is also potential for leaching of heavy metals from lightweight and heavy armored submarine cables into the marine environment over time. The asphalt coating used on armored submarine cables has a low water solubility and is inert and non-toxic in the aquatic environment. These characteristics are well supported by a study and test plan conducted by the American Petroleum Institute for the 'asphalt category' the results of which are reported in the U.S. Environmental Protection Agency's Chemical Right-to-Know HPV Challenge Program website (USEPA 2001).

Conclusions of this test study include:

– **Stability in Water** - Hydrolysis of an organic chemical is the transformation process in which a water molecule or hydroxide ion reacts to form a new carbon oxygen bond. Materials in the asphalt category are not subject to hydrolysis as they lack listed reactive groups.
– **Absence of Toxicity to Aquatic Plants and Invertebrates -** Asphalt and vacuum residue are not expected to cause acute or chronic toxicity to aquatic organisms due to the extremely low water solubility of these materials. This is supported by aquatic toxicity data from other petroleum products having similar types of hydrocarbon constituents.

6.6.3 Assessment approach

A qualitative desktop marine contamination assessment would be prepared for the EIS. The assessment would be undertaken with reference to the *Contaminated Sites: Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997* (EPA, 2015), *Consultants Reporting on Contaminated Land – Contaminated Land Guidelines* (EPA 2020) and Natio*nal Environmental Protection (Assessment of Site Contamination) Measure 1999 (amended 2013)*.

Manufacturer design documentation for the chosen cable design would be provided in the EIS, including an assessment of the potential for contaminant leaching into the marine environment.

6.7 Social

A scoping of social impacts has been prepared in accordance with the *Social Impact Assessment Guideline* for State significant projects (DPHI, 2021). In accordance with these guidelines, Social Impact Assessment (SIA) scoping is undertaken early in project development and involves:

– establishing the social locality to understand the communities likely to be affected by the project
– an initial evaluation of the social baseline of the social locality
– an initial evaluation of social impacts and benefits
– consideration and articulation of any project refinements.

This process is assisted by applying the SIA worksheet provided by DPHI. The following section provides an overview of the existing environment and outcomes of the initial evaluation of potential social impacts and benefits.

6.7.1 Existing environment

A preliminary social locality was identified based on the location of the project, understanding of the project construction and operation, and the communities most likely to experience impacts or benefits as a result of the project, outlined in Table 6.1.

Table 6.1 Preliminary social locality study area

Study area	Interaction with project	Area (ABS Statistical area)
Local	The project infrastructure is located offshore from Maroubra Beach, which is located in the suburb of Maroubra. There is potential for people who are connected to or use Maroubra Beach and the offshore area to experience social impacts and benefits during construction and operation.	Maroubra Suburb and Locality (SAL)
Regional	Maroubra is located in Randwick Local Government Area (LGA). Communities across the LGA may experience social impacts and benefits during construction and operation of the project.	Randwick LGA

Permanent elements of the project would be located offshore from the beachside suburb of Maroubra in Randwick LGA, located in the south-eastern suburbs of Sydney. The Gadigal and Bidjigal people are the Traditional Custodians of the Maroubra area (Randwick City Council, 2024). The area is located offshore from the boundaries of the La Perouse Local Aboriginal Land Council (LALC). According to the LALC website, the La Perouse area is home to the longest functioning and only discreet Aboriginal community in Sydney (La Perouse LALC, 2024).

Maroubra Beach is considered one of Sydney's most popular surf beaches, with the Maroubra Beach National Surfing Reserve being the first declared surfing reserve in Australia (Randwick City Council, 2024). The reserve extends from the shoreline out to the end of the surf zone. The beach is patrolled daily by two main surf lifesaving clubs: Maroubra Surf Life Saving Club (SLSC) and South Maroubra SLSC. The beach is used by various sporting clubs and groups including Little Nippers, a surf lifesaving junior development club. Rock fishing and recreational fishing is permitted from Maroubra Beach.

The suburb of Maroubra is characterised by low to medium density residential dwellings. Land use is predominantly urban residential, with public parks, reserves, beaches and local residential centres. In 2021, the population of Maroubra was 30,722 people (ABS, 2022). Maroubra is bounded by South Coogee in the north, the suburb of Malabar, including the Anzac Rifle Range, and Malabar Headland National Park to the south, and Bunnerong Road to the west. These are popular destinations among visitors and residents, offering a range of recreational activities including bushwalking, swimming, surfing, water sports, fishing, paddleboarding and other recreational activities (NSW National Parks and Wildlife, 2024).

At the time of the 2021 Census, residents of the local and regional study area were characterised by the following:

– A median age of 39 years in Maroubra, which was similar to Randwick LGA (37 years).
– There was a slightly higher proportion of people over the age of 65 years in Maroubra (17.9%) compared to Randwick LGA (15.7%).
– A culturally diverse population, with a higher proportion of people born in non-main English-speaking countries in Maroubra (31.6%) compared to Randwick LGA (26.4%).
– The top three languages used at home other than English in Maroubra were Greek (4.3%), Mandarin (3.9%) and Cantonese (3.7). This was higher than in Randwick LGA, where the top three languages were Mandarin (3.7%), Greek (3.0%) and Cantonese (2.3%). There was a less mobile population in Maroubra compared to Randwick LGA, with more residents living at the same address as five years ago.
– Maroubra and Randwick LGA both have higher levels of socio-economic advantage (ABS, 2022a).

6.7.2 Initial evaluation of social impacts and benefits

The potential social impacts and benefits that may result from construction and operation of the project have been identified through a review of the information presenting in this scoping report, a desktop review and understanding of the social locality, and based on previous professional experience undertaking social impact assessment for state significant projects in NSW. The potential social impacts have been evaluated according to the characteristics of magnitude as defined in DPHI's SIA Guideline. The outcomes of the social impact scoping process are summarised below.

The initial evaluation found that the majority of impacts resulting from construction and installation activities would occur in the marine environment. Any impacts that occur on land where the project connects with existing infrastructure, have been assessed in a Statement of Environmental Effects granted by Randwick Council in 2024. Social impacts which occur due to these activities would be considered as cumulative social impacts.

The presence of installation vessels in the coastal waters at Maroubra Beach may disrupt regular use and enjoyment of the offshore area for users such as recreational boating and commercial fishing. While this disruption would be temporary, some community members may be concerned about perceived or actual impacts to the marine environment, particularly due to the environmental and recreational values held by local communities. Local Aboriginal stakeholders, particularly traditional custodians, may be concerned about potential impacts to underwater cultural heritage or intangible cultural values associated with the marine environment.

There may be potential for skilled and unskilled residents in Maroubra or the Randwick LGA to benefit from a small number of construction employment opportunities. Local and regional businesses may also benefit from procurement opportunities, while some local businesses (e.g. food and beverage outlets in Maroubra) may also benefit from construction workers spending wages. These benefits are expected to be minimal.

6.7.3 Assessment approach

The outcomes of the SIA scoping exercise indicate that the potential social impacts and benefits that may occur during construction and operation would require a minor level of assessment in the EIS. This assessment is likely to include:

– A desktop review of relevant secondary data sources including population and economic data and research.
– Targeted consultation with relevant local stakeholders such as Randwick City Council, Maroubra Surf Life Saving Club, and La Perouse Local Aboriginal Land Council.
– EIS communication and engagement activities would also be a key input to the assessment to consider any concerns that may be raised by key stakeholders and the broader community.

The initial scoping of social impacts did not identify opportunities for project refinement in response to the preliminary impact evaluation.

6.8 Other matters

An assessment of other environmental matters for those environmental aspects that, based on existing information and the description of the project, would require limited or no further assessment in the EIS.

6.8.1 Seabed and bathymetry

Existing environment

The project route would commence offshore of Maroubra Beach in water depths ranging from 20 metres to 100 metres. A nearshore bathymetry map of the project route is provided in Figure 2.1. The bathymetry within the project area reaches an approximate 100 metre depth over 6 kilometres perpendicular to the shore, or a 2% gradient.

The marine environment at 0 to 25 metres depth, is mostly composed of fine to medium sand with shells and the sand quickly gives way to exposed reef rocks. Sandy channels are also present and composed of sand, mud and shells. In water depths between 25 to 70 metres, elongated bodies of sand and shelly sands are present and sharp crested mega ripples are common but generally of low amplitude and wavelength. Within the mid-shelf zone (70 to 150 metre water depth) the sediment is composed of fine sand and silts.

Sediment transport

Fluid flows in the nearshore may be directed offshore, onshore or alongshore, dependent on the direction of wind or tide propagation. Loss of sediment from this area occurs when sediment is moved onshore by waves, moved seaward in rip currents, or entrained by wave stirring and carried seaward by returning bottom flows. Due to the embayed nature of Maroubra beach, alongshore sand transport is cumulatively hindered (DPHI 2020) therefore sediment is predominately transported in an on-offshore direction downslope to relatively deep waters.

Under extreme storm wave events, large waves create strong currents near the seabed in the nearshore area. These currents have the potential to mobilise sediment. Beyond this, sediment mobilisation from currents is generally expected to only be minimal in water depths greater than 20 metres.

Potential impacts

Subject to selection of the cable installation method, the project would involve up to 3,000 cubic metres of seabed disturbance which would temporarily alter the seabed profile. This may lead to localised destabilisation of sediments, potentially increasing the risk of seabed erosion and altering currents in the area.

Assessment approach

Due to the depth and scale of the marine sediment excavation proposed, the project is unlikely to result in any notable change to seabed bathymetry or natural sediment transportation. No further assessment is considered to be required.

6.8.2 Conflict with other water users

Existing environment

The waters offshore of Maroubra are actively utilised by a range of water users, including recreational and commercial fishers, as well as commercial shipping traffic. This area is an important part of the broader marine ecosystem, supporting both marine industries and leisure activities. The area is frequently used for recreational pursuits such as boating, fishing, and surfing, as well as for commercial fishing. Additionally, the waters are part of critical shipping routes for domestic and international freight, facilitating the movement of goods to and from ports in Sydney and further afield.

Potential impacts

The cable routes are a planned alignment which would cross waters utilised for both recreational and commercial fishing as well as commercial shipping between domestic and international ports. There is potential that fishing activities would be temporarily disrupted during installation and fishing apparatus could be damaged upon catching onto equipment. While the proposed cable routes are not directly within primary shipping lanes, the installation process could temporarily restrict certain areas of the offshore waters, creating potential disruptions for commercial shipping traffic. However, no significant impacts are expected.

Assessment approach

Interference with other water users would be assessed as part of the social impact assessment to be prepared in support of the EIS. Offshore stakeholders were informed of the project during the marine route survey phase and were liaised to deconflict the route where needed. The same approach would be undertaken for the cable installation phase.

6.9 Cumulative impacts

A search of the DPHI Major Projects database was undertaken in October 2024 to identify SSD and SSI projects within the vicinity of the project that may be relevant for the EIS cumulative impact assessment. No projects were identified that may result in cumulative impacts. A review of the major projects portal would be undertaken as part of the EIS.

The project may generate cumulative impacts with regard to the relevant environmental matters described in this scoping report. The EIS would include consideration of cumulative impacts, and these would be summarised in accordance with the *Cumulative Impacts Assessment Guidelines for State Significant Projects* (DPHI, 2022b).

The cumulative impact assessment component would:

– Take into consideration past, present and reasonably foreseeable planned developments that are relevant due to their proximity and/or potential to interact with the identified project impacts

- Assess cumulative impacts to with regard to relevant environmental matters including potential conflict with other submarine telecommunications cables.
- Document how cumulative impacts have been considered and, to the fullest extent possible, the project's relative contribution to those cumulative impacts.

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Appendices

Appendix A

Scoping Report Summary Table

Table A.1 Scoping summary table

Level of assessment	Matter	Cumulative impact assessment?	Engagement	Relevant government plans, policies and guidelines	Scoping report reference
Detailed	Biodiversity	Yes	General	*Fisheries Management Act 1994,* EPBC Act	Section 6.1
Detailed	Aboriginal cultural heritage	Yes	Specific	Guidelines for Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters	Section 6.2
Detailed	Historic heritage	Yes	Specific	Guidelines for Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters	Section 6.3
Standard	Social	Yes	Specific	Social Impact Assessment Guideline	Section 6.7
Standard	Amenity – Underwater noise and vibration	Yes	Specific	– Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects (Southall, 2019) – Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI (Popper, 2014).	Section 6.4
Standard	Water	No	General	Australian and New Zealand guidelines for fresh and marine water quality (ANZECC & ARMCANZ 2000)	Section 6.5
Standard	Marine contamination	No	General	NSW EPA (2015) Contaminated Sites: Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997. NSW EPA (2020) Consultants Reporting on Contaminated Land – Contaminated Land Guidelines. National Environmental Protection (Assessment of Site Contamination) Measure 1999 (amended 2013).	Section 6.6
Standard	Marine users	No	Standard	A basic desktop assessment of marine traffic would be undertaken. Marine traffic impacts would be assessed as part of stakeholder consultation and social impact assessment.	Section 6.7
No further assessment	Property	No	General	N/A	N/A
No further assessment	Air	No	General	N/A	N/A
No further assessment	Amenity – visual	No	General	N/A	N/A
No further assessment	Built environment	No	General	N/A	N/A

Appendix B

Threatened species likelihood of occurrence

B-1 Threatened species likelihood of occurrence

Species		Conservation Status			PMST Migratory status	PMST likelihood	Habitat requirements	Likelihood of Occurrence
Scientific name	Common name	EPBC Act	Fisheries Management Act	Biodiversity Conservation Act				
Marine mammals								
Mesoplodon grayi	Gray's Beaked Whale, Scamperdown Whale	-	-	-	**-**	**May occur**	The Gray's beaked whale has a circumpolar southern hemisphere distribution and is relatively common along the southern Australian coasts (Australian Museum, 2024).	**May occur**
Mesoplodon densirostris	Blainville's Beaked Whale, Dense-beaked Whale	-	-	-	**-**	**May occur**	They inhabit waters 500-1000 m deep and feed on squid and deep-sea fish. They are found in tropical and temperate waters globally and are found along the NSW coast (Australian Museum, 2024).	**May occur**
Mesoplodon bowdoini	Andrew's Beaked Whale	-	-	-	**Migratory**	**May occur**	They are found in the temperate waters of the southern hemisphere and likely lives in deeper water far from land as it is rarely spotted from the coast. They generally inhabit southern waters and are rarely seen far up north (Australian Museum, 2024).	**May occur**
Kogia sima	Dwarf Sperm Whale	-	-	-	**-**	**May occur**	The Dwarf Sperm Whale primarily lives over the continental shelf and slope and can be found in the tropical and temperate coasts of all oceans (DCCEEW, 2024).	**May occur**
Berardius arnuxii	Arnoux's Beaked Whale	-	-	-	**-**	**May occur**	Found only in the Southern Hemisphere, Amoux's Beaked Whale has a circumpolar distribution and inhabits deep, subpolar waters with cool	**May occur**

Species		Conservation Status			PMST Migratory status	PMST likelihood	Habitat requirements	Likelihood of Occurrence
Scientific name	Common name	EPBC Act	Fisheries Management Act	Biodiversity Conservation Act				
							temperatures (Australian Museum, 2024).	
Peponocephala electra	Melon-headed Whale	-	-	-	**-**	**May occur**	The Melon-headed whale is found in deep, warm tropical and subtropical oceanic waters and are primarily found around the equator from the continental shelf seawards (Arumster, 2009)	**May occur**
Balaenoptera edeni	Bryde's Whale	-	-	-	**Migratory**	**May occur**	The Bryde's Whale is mostly found in tropical and subtropical regions. They migrate towards the equator in winter due to their preference for warm water. They are a coastal and pelagic species that dive up to 300 m deep (O'Grady, 2024).	**May occur**
Lissodelphis peronii	Southern Right Whale Dolphin	-	-	-	**Migratory**	**May occur**	The Southern Right Whale Dolphin lives in deep, cool offshore waters that are between 8 to 19 degrees Celsius. They often dive to depths of up to 200 m when feeding (Stanley and Podzikowski, 2024).	**May occur**
Lagenorhynchus obscurus	Dusky dolphin	-	-	-	**Migratory**	**May occur**	Dusky Dolphins are found in warm to cool temperate waters and are generally coastal (Yu, 2024).	**May occur**
Orcinus orca	Killer Whale, Orca	-	-	-	**Migratory**	**Likely to occur**	They are found in all oceans of the world but prefer colder waters, Orcas will migrate when food becomes scarce, but weather and water temperature does not appear to be a primary driving force for migration (Burnett, 2024).	**Likely to occur**

Species		Conservation Status			PMST Migratory status	PMST likelihood	Habitat requirements	Likelihood of Occurrence
Scientific name	**Common name**	**EPBC Act**	**Fisheries Management Act**	**Biodiversity Conservation Act**				
Delphinus delphis	Common Dolphin, Short-beaked Common Dolphin	-	-	-	**-**	**May occur**	They are fond of coastal waters but are also found out at sea. They generally prefer temperatures warmer than 10 degrees Celsius (Alspaugh, 2024).	**Likely to occur**
Feresa attenuata	Pygmy Killer Whale	-	-	-	**-**	**May occur**	They generally occupy warm, deep waters but have also been spotted near shallow oceanic islands. They have been recorded at depths of up to 2500 m (Starjnskii, 2024).	**May occur**
Stenella longirostris	Long-snouted Spinner Dolphin	-	-	-	**-**	**May occur**	They are found throughout tropical and subtropical regions and prefer warn surface waters. Some populations rest in shallow coastal waters during the day and stay in coral atolls and bays (Mac, 2024).	**May occur**
Globicephala macrorhynchus	Short-finned Pilot Whale	-	-	-	**-**	**May occur**	They are found in deep open waters and coastal areas. They prefer tropical and subtropical waters and are found in depths up to 600 m (Dombrowski, 2024).	**May occur**
Grampus griseus	Risso's Dolphin, Grampus	-	-	-	**-**	**May occur**	They are pelagic and prefer habitat on steep slopes. They are often near the edges of continental shelves and their range depth is 400 to 1200 m (Hans, 2024).	**May occur**
Globicephala melas	Long-finned Pilot Whale	-	-	-	**-**	**May occur**	Their range depth is 30 to 1800 m, they prefer cooler waters and are absent from equatorial regions and their distribution around the northern and southern hemisphere’s (Preston, 2024).	**May occur**

Species		Conservation Status			PMST Migratory status	PMST likelihood	Habitat requirements	Likelihood of Occurrence
Scientific name	Common name	EPBC Act	Fisheries Management Act	Biodiversity Conservation Act				
Mesoplodon layardii	Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale	-	-	-	**-**	**May occur**	They tend to live in cold temperate waters in the southern hemisphere and most sightings have been around Australia and New Zealand. They are found in deep oceanic waters and their range depth is up to 2000 m (Flohr, 2024).	**May occur**
Tursiops aduncus	Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin	-	-	-	**-**	**Likely to occur**	They tend to live in shallow water near the shore at depths of less than 300 m and their habitat is estuarine (Daz, 2024).	**Likely to occur**
Stenella coeruleoalba	Striped Dolphin, Euphrosyne Dolphin	-	-	-	**-**	**May occur**	Their habitat is warm-temperate and tropical seas, and they tend to avoid sea surface temperatures of anything less than 20 degrees Celsius (Savage, 2024).	**May occur**
Mesoplodon mirus	True's Beaked Whale	-	-	-	**-**	**May occur**	They are found in cool, temperate, deep oceanic waters (Australian Museum, 2024).	**May occur**
Ziphius cavirostris	Cuvier's Beaked Whale, Goose-beaked Whale	-	-	-	**-**	**May occur**	They are deep divers and live in waters beyond 1000 m deep (Lundrigan and Myers, 2024).	**Unlikely to occur**
Kogia breviceps	Pygmy Sperm Whale	-	-	-	**-**	**May occur**	They prefer warm, tropical waters and migrate to cooler, more temperate waters in the summer months (Lundrigan and Myers, 2024).	**May occur**

Species		Conservation Status			PMST Migratory status	PMST likelihood	Habitat requirements	Likelihood of Occurrence
Scientific name	Common name	EPBC Act	Fisheries Management Act	Biodiversity Conservation Act				
Physeter macrocephalus	Sperm Whale	-	-	-	**Migratory**	**May occur**	Sperm whales prefer deep waters of all oceans and are most commonly found in waters at least 1000 meters deep with cold-water upwellings (Ballenger, 2024).	**May occur**
Stenella attenuata	Spotted Dolphin, Pantropical Spotted Dolphin	-	-	-	**-**	**May occur**	They live in tropical and subtropical areas of the ocean (Riseman, 2024).	**May occur**
Tursiops truncatus s. str.	Bottlenose Dolphin	-	-	-	**-**	**May occur**	They generally are found everywhere except polar waters. They migrate seasonally and prefer warmer waters (Jenkins, 2024).	**May occur**
Steno bredanensis	Rough-toothed Dolphin	-	-	-	**-**	**May occur**	They are generally found in deep ocean waters, preferring water depths of greater than 1500 m. They prefer sea surface temperatures of 25 degrees during the warm season (Greenwood, 2024).	**May occur**
Balaenoptera acutorostrata	Minke Whale	-	-	-	**-**	**May occur**	They can be found in marine waters from polar to tropical regions, generally within 160 km of pack ice (Dscoteaux, 2024).	**May occur**
Megaptera novaeangliae	Humpback Whale	-	-	-	**Migratory**	**Known to occur**	The Hump-back whale lives in polar and tropical waters (Kurlansky, 2024).	**Likely to occur**
Eubalaena australis	Southern Right Whale	Vulnerable	Not listed	Not listed	**Migratory**	**Known to occur**	The Southern Right Whale occurs along the NSW coast from June to August as it migrates south to north to breed in warmer waters. They	**Likely to occur**

Species		Conservation Status			PMST Migratory status	PMST likelihood	Habitat requirements	Likelihood of Occurrence
Scientific name	Common name	EPBC Act	Fisheries Management Act	Biodiversity Conservation Act				
							can dive to depths up to 300 m when foraging (Australian Museum, 2024).	
Balaenoptera musculus	Blue whale	Endangered	Not listed	Endangered	**-**	**Likely to occur**	Found along the NSW coastline during migration periods (DCCEEW 2024). Blue whales migrate from the north to the south from June to November. It is generally around the end of June/early July where many blue whales are found along the NSW coast. Blue whales generally feed at depths of less than 100 m for up to 20 minutes, with the highest dive depth for blue whales recorded at 315 meters (NSW National Parks and Wildlife Service, 2024); (WWF, 2024).	**Likely to occur**
Caperea marginata	Pygmy Right Whale	-	-	-	**Migratory**	**May occur**	The Pygmy Right Whale lives in cold ocean waters surrounding Antarctica (Cover, 2024).	**Likely to occur**
Balaenoptera physalus	Fin Whale	Vulnerable	N/A	Not listed	**Migratory**	**Likely to occur**	Fin Whales have two migration pathways; they migrate from the Pacific sector of Antarctica to the east coast of Australia and from the Indian sector of Antarctica to the west coast of Australia. The Fin Whale can dive up to 200 m (Meghan et al., 2022).	**Likely to occur**
Balaenoptera borealis	Sei Whale	Vulnerable	Not listed	Not listed	**Migratory**	**Likely to occur**	Sei Whales can be found on the NSW coast during migration periods, particularly in late June where the highest numbers of Sei Whales can be found, Sei Whales rarely dive deeper than 300 m. (Australian	**Likely to occur**

Species		Conservation Status			PMST Migratory status	PMST likelihood	Habitat requirements	Likelihood of Occurrence
Scientific name	Common name	EPBC Act	Fisheries Management Act	Biodiversity Conservation Act				
							Government, 2024); (DCCEEW 2024).	
Marine fish								
Eastern Gemfish	Rexea solandri (eastern Australian population)	Conservation Dependent	Not listed	Not listed	-	**May occur**	The Eastern Gemfish is found in temperate marine waters in Australia. It is found at depths of between 100 and 800 m (Australian Museum, 2021).	**May occur**
Hippocampus whitei	White's Seahorse	Endangered	Endangered	Endangered	-	**Known to occur**	White's Seahorse favors shallow estuarine habitats and is most abundant in Port Stephens, Sydney Harbor and Port Hacking. They are generally found at depths of less than 10 m but can be found at depths of up to 18 m (Department of Primary Industries, NSW Government 2019).	**Likely to occur**
Seriolella brama	Blue Warehou	Conservation Dependent	Not listed	Not listed	-	**Known to occur**	Blue Warehou are bentho-pelagic and inhabit continental shelf waters. Adults can be found at depths from 50-300 m. As they are schooling fish, they usually aggregate by the seabed. Juveniles also often school close to the surface in estuaries (AFMA, 2024).	**Likely to occur**
Rhincodon typus	Whale Shark	Vulnerable	N/A	Not listed	-	**May occur**	Whale sharks generally inhabit tropical ocean but often migrate down to the NSW coast where they have been found to occur (NSW Government, 2024).	**May occur**
Epinephelus daemelii	Black Rockcod	Vulnerable	Not listed	Not listed	-	**Likely to occur**	They are a reef dwelling specie that are found in warm temperature and subtropical waters (NSW Government, 2015).	**Likely to occur**

Species		Conservation Status			PMST Migratory status	PMST likelihood	Habitat requirements	Likelihood of Occurrence
Scientific name	**Common name**	**EPBC Act**	**Fisheries Management Act**	**Biodiversity Conservation Act**				
Sharks and Rays								
Sphyrna lewini	Scalloped Hammerhead	Conservation Dependent	Endangered	Endangered	-	**Likely to occur**	Adult Scalloped Hammerheads inhabit deep waters (up to at least 275 m) which are adjacent to continental shelves while Juveniles are found closer to shore in nurseries (NSW Department of Primary Industries, 2012).	**Likely to occur**
Galeorhinus galeus	School Shark	Conservation Dependent	Not listed	Endangered	-	**May occur**	A migratory species, school sharks migrate up to 1400 km along the southern coast of Australia. Found at a depth of up to 800 m, the school shark is a temperate species found on the continental shelf. They are demersal and inhabit the waters just above the seafloor. Juvenile School Sharks often occupy shallower waters which they use as nurseries during spring and summer (ALA 2024; AFMA 2024).	**May occur**
Carcharodon carcharias	White Shark	Vulnerable	Vulnerable	Not listed	-	**Known to occur**	The White Shark swims along the warm East Australian Current that flows down the NSW Coast. The white shark can dive up to 1200 m (Australian Museum, 2024); (NSW Government, 2024).	**Likely to occur**
Carcharias taurus (east coast population)	Grey nurse shark	Critically Endangered	Critically Endangered	Not listed	-	**Known to occur**	Grey nurse sharks generally occupy shallow inshore waters. They prefer sandy-bottom gutters and rocky caves (DCCEEW, 2024).	**Likely to occur**
Marine reptiles								
Natator depressus	Flatback Turtle	Vulnerable	Not listed	Not listed	-	**Known to occur**	Flatback turtles prefer shallow inshore waters and bays with	**Likely to occur**

Species		Conservation Status			PMST Migratory status	PMST likelihood	Habitat requirements	Likelihood of Occurrence
Scientific name	Common name	EPBC Act	Fisheries Management Act	Biodiversity Conservation Act				
							soft bottom seabed away from reefs (DCCEEW, 2024).	
Chelonia mydas	Green Turtle	Vulnerable	N/A	Vulnerable	**-**	**Known to occur**	The Green Turtle is ocean dwelling and spends most of its time at sea but occurs commonly on the NSW coast where it lays its eggs along its range (NSW Government, 2019).	**Likely to occur**
Caretta caretta	Loggerhead Turtle	Endangered	Not listed	Endangered	**-**	**Known to occur**	Loggerhead turtles forage in deep water. They are found in tropical and temperature waters off the Australian coast. Female loggerheads come to shore to lay eggs on beaches (NSW Government, 2018).	**Likely to occur**
Corals								
Dendronephthya australis	Cauliflower Soft Coral	Endangered	N/A	Endangered	**-**	**Known to occur**	Cauliflower soft coral is a temperate soft coral species endemic to eastern Australia. They are found in estuarine environments in NSW at depths of between 1 to 15 m and occasionally occurs offshore at depths of up to 30 m. (NSW Government, 2024).	**Likely to occur**
Terrestrial marine birds								
Calidris ferruginea	Curlew Sandpiper	Critically Endangered	N/A	Threatened	-	Known to Occur	The Curlew Sandpiper is distributed along the entire NSW Coastline and sometimes in the freshwater wetlands of the Murray Darling Basin. It generally occupies sheltered coasts like estuarine habitats and forages in shallow water (NSW Government, 2024)	Likely to occur
Numenius madagascariensis	Eastern Curlew, Far	Critically Endangered	N/A	Not listed	-	Known to occur	The Eastern Curlew are found on the coast and rarely found	Likely to occur

Species		Conservation Status			PMST Migratory status	PMST likelihood	Habitat requirements	Likelihood of Occurrence
Scientific name	Common name	EPBC Act	Fisheries Management Act	Biodiversity Conservation Act				
	Eastern Curlew						inland. They occupy the entire NSW coast but particularly coastal lakes, inlets and bays as well as estuarine habitats. They forage on the edge of shallow water (NSW Government, 2024).	
Diomedea sanfordi	Northern Royal Albatross	Endangered	N/A	Not listed	-	May occur	They nest on islands off the Chatham islands. They primarily forage inshore and offshore waters over the continental shelf in NSW (NSW Government, 2024).	May occur
Limosa lapponica baueri	Nunivak Bar-tailed Godwit	Endangered	N/A	Not listed	-	Known to occur	Found mainly in coastal habitats such as intertidal sandflats, estuaries and mudflats, the migratory species undertakes a nonstop flight from the arctic to the southern hemisphere.	Likely to occur
Calidris tenuirostris	Great Knot	Vulnerable	N/A	Threatened	Migratory	Known to occur	They migrate to Australia each year in late August to early September. Great Knots mostly occur within coastal habitats that are sheltered and contain large intertidal mudflats and sandflats (NSW Government, 2024	Likely to occur
Gallinago hardwickii	Latham's Snipe	Vulnerable	N/A	Vulnerable	-	Known to occur	The Latham's snipe is found in freshwater wetlands on or near the coast. They are found among dense vegetation in sedges, grasses and reeds (Birdlife Australia, 2024).	Likely to occur
Macronectes giganteus	Southern Giant-Petrel, Southern Giant Petrel	Endangered	N/A	Endangered	-	May occur	The species nests in small colonies in open vegetation in summer amongst open vegetation in Antarctic islands and commonly visits the NSW	May occur

Species		Conservation Status			PMST Migratory status	PMST likelihood	Habitat requirements	Likelihood of Occurrence
Scientific name	Common name	EPBC Act	Fisheries Management Act	Biodiversity Conservation Act				
							coast (NSW Government, 2024).	
Hirundapus caudacutus	White-throated Needletail	Vulnerable	N/A	Vulnerable	Migratory	Known to occur	A migratory species, the white-throated needletail is ariel and flies over a wide variety of habitats but is more common in coastal areas rather than inland (NSW Government, 2023).	Likely to occur
Sternula nereis nereis	Australian Fairy Tern	Vulnerable	N/A	Not listed		Known to occur	The Australian Fairy Tern nests on Sandy beaches (NSW Government, 2024).	Likely to occur