



# Subsea Telecommunication Cable Installation

## Marine Native Vegetation Clearance Permit: Supporting Information

SubCom LLC

26 January 2026

→ The Power of Commitment



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# 1. Introduction

## 1.1 Project background

Google's Global Network Infrastructure group is proposing to install fibre optic subsea telecommunications cables as a part of the [Australia Connect](#) and Africa Connect Initiatives, aimed at enhancing digital connectivity across Australia, Indo-Pacific and Africa regions. This investment in digital infrastructure will improve data security, resilience, capacity and efficiency to meet requirements in Australia now and into the future.

These subsea cable systems consist of:

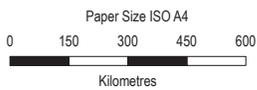
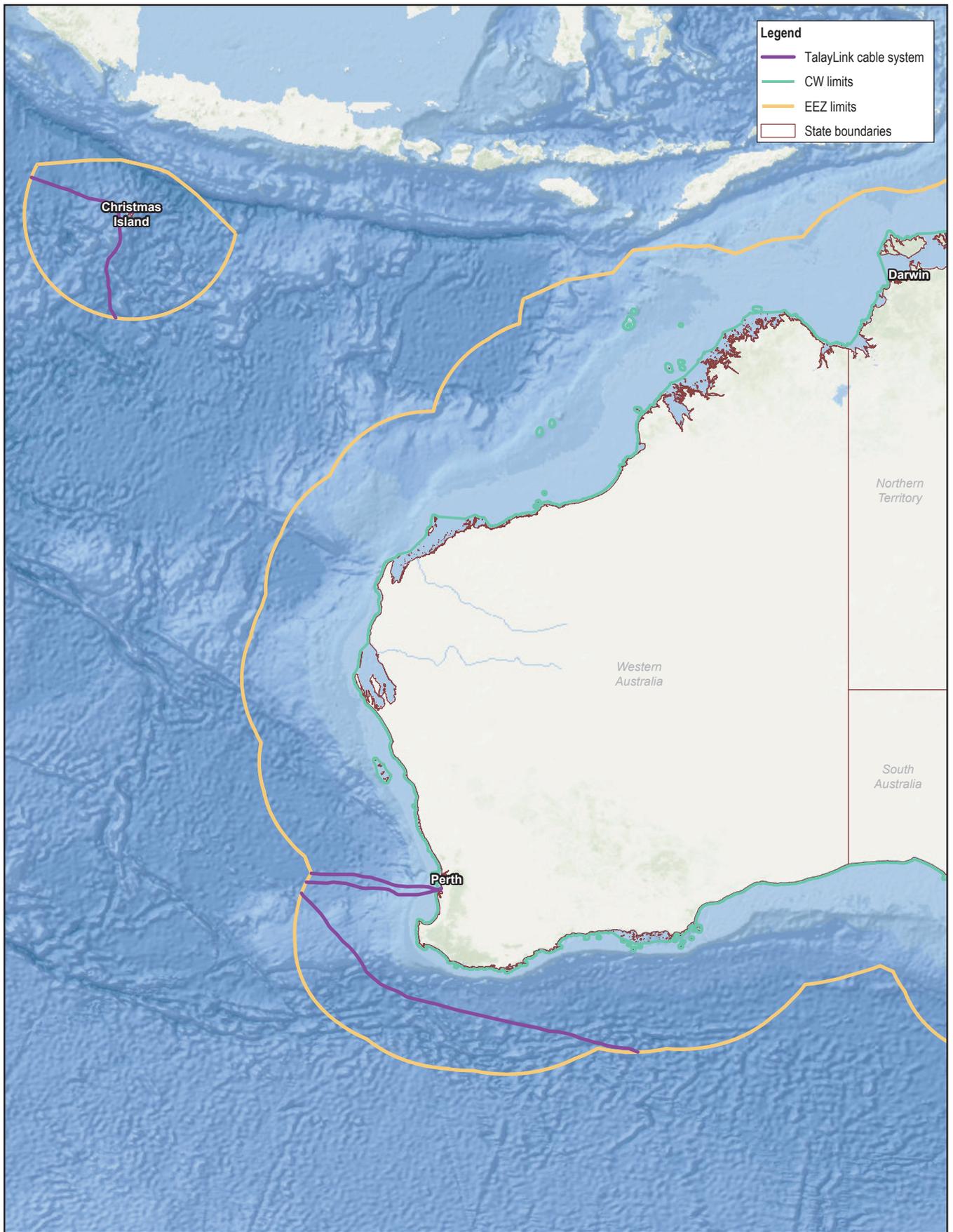
- [TalayLink](#) Cable System: connecting Torquay (Victoria), Madora Bay (Western Australia [WA]), and Christmas Island (Indian Ocean Territories) (Figure 1.1), and
- [Umoja](#) Cable System: connecting Madora Bay to South Africa (Figure 1.2).

In WA waters, the project is situated off the coast of Madora Bay within the Peel Region Scheme, specifically within the Waterways Reserve (1983) and extends from existing cable conduits ('pop out points' (PoP)) to the boundary of the Commonwealth waters (Project Area; Figure 1.3). Madora Bay is a coastal suburb in the City of Mandurah, approximately 65 km south of Perth. The 'Project' comprises all activities related to the subsea cable installation within WA State waters, involving the installation of subsea cables from existing cable conduits ('pop out points' (PoP)) up to the boundary of the Commonwealth waters. From the PoP, the cables are intended to be buried, or surface laid where burial is not possible.

Google will be undertaking the works within WA coastal waters via their registered licence carrier company Perch Infrastructure Pty Ltd (Perch). Perch is therefore considered the proponent of the proposed activities described in this document. Perch engaged SubCom LLC (SubCom) to design, manufacture and install these cables and is therefore considered the 'applicant' for this application. In turn, SubCom engaged GHD to support stakeholder engagement, environmental assessment and permitting for the cable landings within Australia.

A geophysical and geotechnical marine route survey (MRS) was completed in July 2024 along the extent of the TalayLink and Umoja cable systems to the extent of Commonwealth waters to confirm suitability of the location and collect seabed condition data. The project as a whole (comprising all the linked cable systems across Australia) was referred to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (2025/10313) and was determined 'Not a Controlled Action' on 23 November 2025.

Furthermore, through engagement with the Department of Water and Environmental Regulation (DWER) and the EPA, a referral under Part IV of the *Environmental Protection Act 1986* (EP Act) was not considered required for the project, as the nature of the impacts were not expected to be significant. However, a Native Vegetation Clearing Permit (NVCP) under Part V of the EP Act was considered required for clearing of marine native vegetation within WA State Waters.



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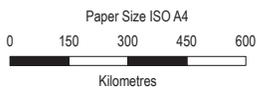
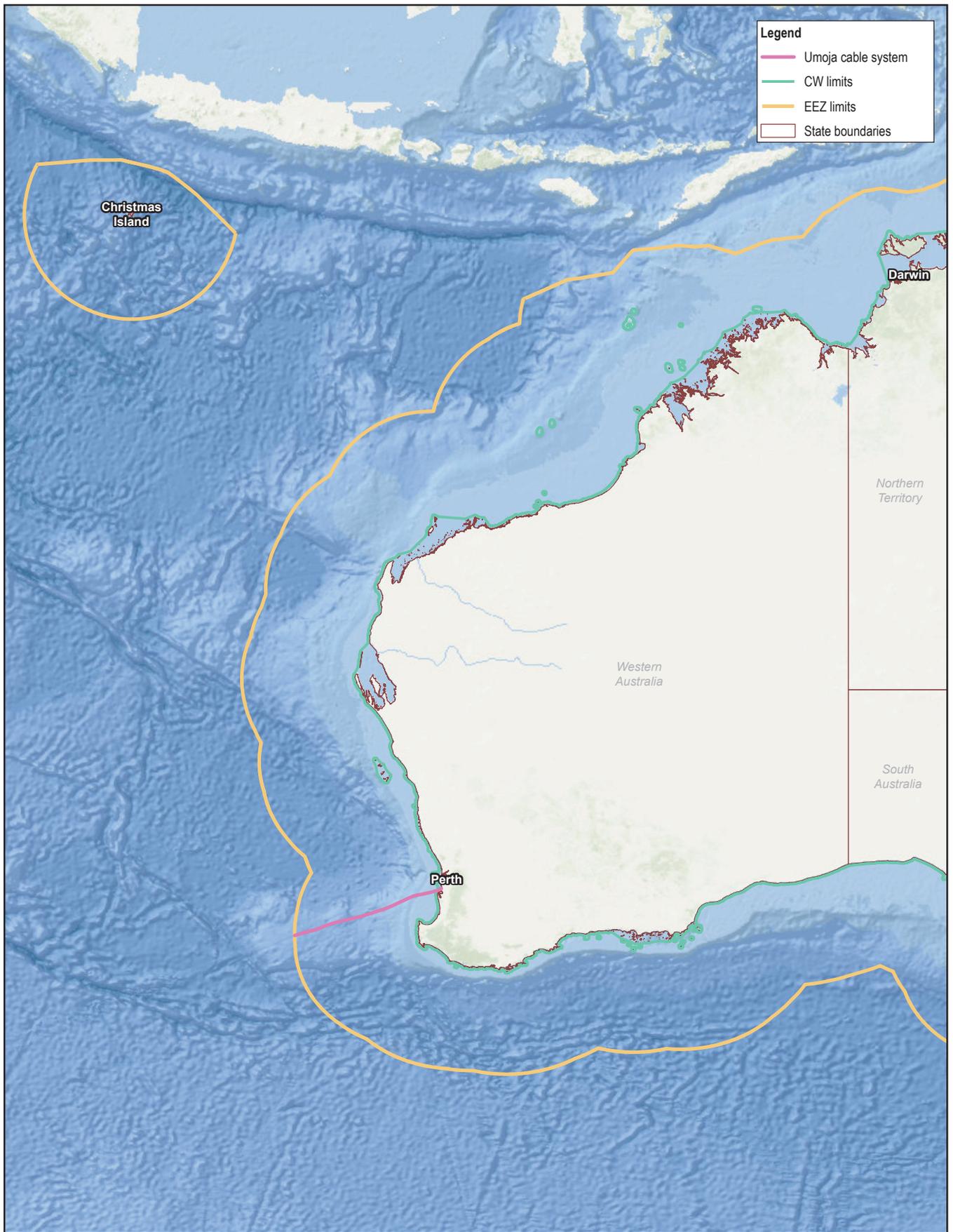


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Overview of the TalayLink cable system

FIGURE 1.1



Horizontal Datum: GDA2020  
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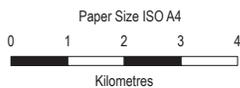
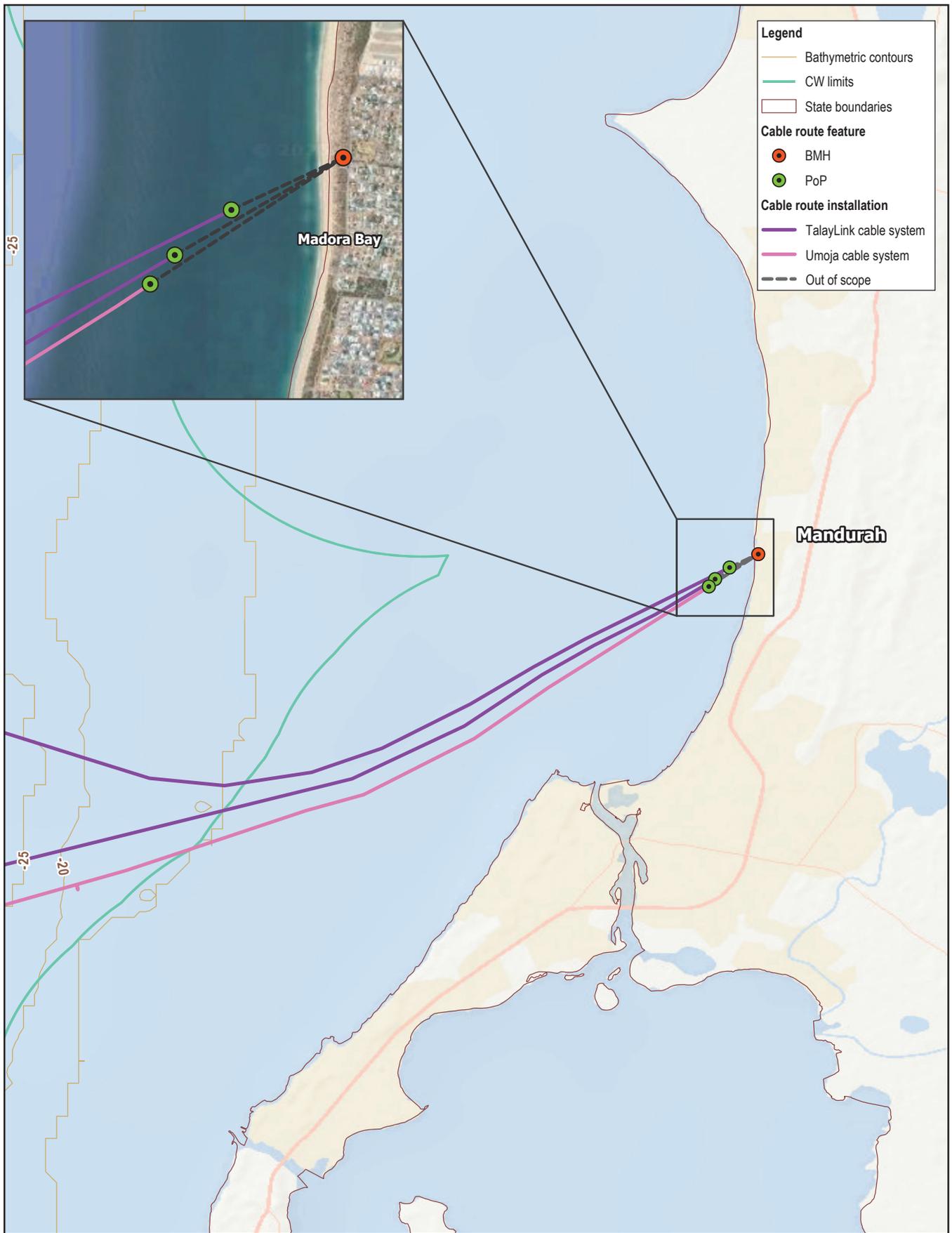


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Overview of the Umoja cable system

**FIGURE 1.2**



Horizontal Datum: GDA2020  
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TalayLink and Umoja - Madora Bay

FIGURE 1.3

## 1.2 Purpose and scope

The primary purpose of this Supporting Information Report is to assess the potential environmental impacts of the TalayLink and Umoja cable systems that may cause disturbance to, or require clearing of, marine vegetation within WA State waters and inform an application for a NVCP under Part V of the *Environmental Protection Act 1986* (EP Act).

The secondary purpose of this report is to report on the potential impacts on marine fauna from the proposed activities, in particular from installation vessels and underwater noise.

This report includes:

- A summary of the regulatory context (Section 2)
- A summary of stakeholder engagement undertaken (Section 3)
- A description of the proposed cable installation activities (Section 4)
- A description of the environmental context (Section 5)
- A description of impacts assessed, including:
  - An estimate of the area of marine native vegetation that would be cleared from the proposed activities (Section 6.1).
  - A description of the potential impacts to marine fauna as a result of the activities (Section 0)

## 1.3 Assumptions and limitations

This report: has been prepared by GHD for SubCom LLC and may only be used and relied on by SubCom LLC for the purpose agreed between GHD and SubCom LLC as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than SubCom LLC arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section 1.3 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by SubCom and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

## 2. Regulatory context

### 2.1 Primary environmental approvals

#### 2.1.1 *Environmental Protection and Biodiversity Conservation Act 1999*

The EPBC Act is the primary piece of environmental legislation in Australia. The EPBC Act provides a framework for protecting and managing Matters of National Environmental Significance, including threatened species and ecological communities, as well as other matters (e.g. World and National heritage properties and places).

The EPBC Act establishes a national system for assessing and approving activities that may have a significant impact on the environment, such as mining, agriculture, and development projects. The EPBC Act is enforced by the Australian Government and requires the involvement of relevant stakeholders, including Indigenous communities, in decision-making processes.

An Environment Assessment Report for subsea cable installation was prepared and an EPBC referral (2025/10313) and was determined 'Not a Controlled Action' on 23 November 2025 for the subsea cable installation activities. The supporting documentation for this referral provides an assessment of the impacts associated with the construction and operation of the entire cable route within the EEZ, including within WA state waters (GHD, 2025a).

#### 2.1.2 *Environment Protection Act 1986*

A Preliminary Environmental Impact Assessment (PEIA) was developed for the project (GHD, 2025b), taking into account EPA guidelines and addressing the environmental factors relevant to the proposed cable installation activities within state waters off Madora Bay. This assessment provided a substantiated rationale for not referring the activities to the WA EPA under Part IV of the EP Act, on the basis that no significant environmental impacts were anticipated. Through engagement with the WA EPA, it was determined that no Referral was required under Part IV of the EP Act (see Section 4.5 for record of engagement).

## 2.2 Secondary permits and approvals

A summary of secondary permits and approvals relevant to the Project and their status is provided in Table 2.1.

Table 2.1 Relevant secondary permits and approvals

Legislation	Permit	Regulator	Status at time of writing
<i>Environment Protection and Biodiversity Conservation (EPBC) Act 1999</i>	Structures and Works Licences for the Park Networks being traversed	DCCEEW, Parks Australia	In progress. Application was submitted 04/12/2025
<i>Telecommunications Act 1997</i> <i>Australian Communications and Media Authority Act 2005</i>	Non Protection Zone permit	Australian Communications and Media Authority	Application for Umoja cable system was granted 12/01/2026. Application for the TalayLink cable systems was granted 19/01/2026
<i>Planning and Development Act 2005</i>	Development Application	Department of Planning, Lands and Heritage (DPLH)	In progress. Application sent to City of Mandurah on 23/12/25 and accepted on 6/1/26. DPLH provided acceptance letter on 08/01/2026 (Appendix B)
<i>Land Administration Act 1997</i>	Land Tenure Agreement	DPLH	This will be proponent led and will be facilitated once the cable has been installed to provide the 'as-built' coordinates to fulfill the Easement requirements
<i>Environment Protection Act 1986 (Part V)</i>	Native Vegetation Clearing Permit	Department of Water and Environmental Regulation (DWER)	In progress.

### 3. Stakeholder engagement

Engaging with relevant stakeholders is a key component of any infrastructure project. Irrespective of jurisdictional requirements, a stakeholder engagement program across a range of agencies was undertaken to understand any perceived conflicts regarding offshore activities with the cable installation. Initial engagement commenced during the initial Marine Route Survey at the end of 2023.

A complete list of State regulatory stakeholders and community groups have been consulted in regard to the cable installation and is presented in Table 3.1.

Table 3.1 Community and stakeholder engagement summary

Agency	Summary of outcome
Department of Biodiversity, Conservation and Attractions (DBCA)	<p>31 January 2024 – letter and email sent for MRS activities</p> <p>Letter response dated 22 February 2024 and no concerns relative to MRS were raised.</p> <p>16 December 2024 – letter and email sent for cable installation activities</p> <p>Letter response dated 12 December 2024 highlighted that the cable route does not intersect lands or waters managed under the Conservation and Land Management (CALM) Act. However, if the route may impact threatened or specially protected species, authorisation under Section 40 of the BC Act may be required.</p>
Department of Energy, Mines, Industry Regulation and Safety (DEMIRS)	<p>31 January 2024 – letter and email sent for MRS activities</p> <p>No response received</p> <p>16 December 2024 – letter and email sent for cable installation activities</p> <p>Letter response dated 10 January 2025 states that no additional mining or petroleum approvals are required by DEMIRS. However, engagement with the Resource Tenure Division is recommended if the cable installation intersects any mining, petroleum, or geothermal tenure onshore or within State waters.</p>
Department of Planning, Lands and Heritage (DPLH)	<p>31 January 2024 – letter and email sent for MRS activities</p> <p>Response received on 05 March 2024 and no concerns relative to MRS were raised.</p> <p>16 December 2024– letter and email sent</p> <p>25 February 2025 – meeting held with Lands Department (Planning and Heritage an apology) concluding that no permits or approvals would be required for the works associated with this project. An easement would be required by the proponent once the cable system is built.</p> <p>13 March 2025 and 6 May 2025 – follow up email sent to DPLH (Planning) to facilitate advice and meeting</p> <p>24 November 2025 – Planning Development Application sent to DPLH for Land Owners Signature.</p> <p>23 December 2025 – Development Application sent to City of Mandurah</p> <p>6 January 2026 – Confirmation from City of Mandurah of acceptance of application</p> <p>Written assurance from DPLH that a Development Approval is in the process of being granted is referenced in Appendix B</p>
Department of Primary Industries and Regional Development (DPIRD)	<p>31 January 2024 – letter and email sent for MRS activities</p> <p>No response received</p> <p>16 December 2024– letter and email sent for cable installation activities</p> <p>DPIRD does not object to the cable route but advises that active commercial fishing operations, fishing gear, and recreational lobster or octopus pots may be present. Interference with fishing gear is an offence under Section 172 of the <i>Fish Resources Management Act 1994</i>, with penalties applicable. Engagement with fishing peak bodies, including the Western Australian Fishing Industry, is recommended.</p> <p>Engagement is in progress.</p>
Environmental Protection Authority	<p>31 January 2024 – letter and email sent for MRS activities</p> <p>No response received</p> <p>16 December 2024– letter and email sent for cable installation activities</p> <p>The EPA requires that proposals, when referred, are identified in their entirety. Further information on the full scope of the proposal is required by DWER / EPA. A copy of the</p>

Agency	Summary of outcome
	<p>self-assessment of the potential impacts of the proposal, if already completed, should be submitted to the EPA.</p> <p>21 October 2025 – A copy of the preliminary environmental impact assessment was provided to the EPA concluding that the project is not expected to result in significant impacts to the environment and therefore a referral under Part IV of the <i>Environmental Protection Act 1986</i> is not required.</p> <p>29 October 2025 – Response from the EPA concluded that a referral under Part V is not required. However, for the portion of the cable intersecting patches of marine vegetation a Native Vegetation Clearing Permit under Part V will be required.</p>
Department of Water and Environment Regulation	<p>29 October 2025 – email sent requesting a meeting to discuss Native Vegetation Clearing Permit requirements with the Native Vegetation Regulation Branch within DWER</p> <p>11 November 2025 – meeting held confirming the key considerations to include in the application. DWER requested that the supporting documentation include details on extent of the marine vegetation to be cleared as part of cable installation activities, marine route survey results and measures being undertaken to avoid impacts, particularly on marine fauna.</p>
Department of Transport Western Australia	<p>31 January 2024 – letter and email sent for MRS activities</p> <p>Letter response dated 12 February 2024 highlighting that DoT will issue a Temporary Notice to Mariners (TNTM) advising skippers of the schedule of works.</p> <p>16 December 2024– letter and email sent for cable installation activities</p> <p>No response received, a notification to the DoT will occur for cable installation activities.</p>
City of Mandurah	<p>31 January 2024 – letter and email sent for MRS activities</p> <p>No response received.</p> <p>16 December 2024– letter and email sent for cable installation activities</p> <p>15 January 2025 – meeting held confirming the City of Mandurah will act as the central point of contact for the project, primarily supporting onshore works and community communications if needed. Initial discussions clarified jurisdictional boundaries and permitting expectations between onshore construction and marine works. No concerns raised specific to project activities.</p>
South West Aboriginal Land and Sea Council	<p>31 January 2024 – letter and email sent for MRS activities</p> <p>No response received.</p> <p>17 December 2024 – letter and email sent</p> <p>No response received. On-going engagement being done directly through GKBAC.</p>
Gnaala Karla Booja Aboriginal Corporation (GKBAC)	<p>Engagement currently being undertaken through an implemented Traditional Owner Engagement Management Plan and is in progress.</p> <p>Meeting to introduce project and team on 28 May 2025, which discussed:</p> <ul style="list-style-type: none"> <li>– GKB's interest in the project's potential impacts on fish species and other marine life and request for any available environmental or marine reports relevant to these impacts.</li> <li>– Concerns about potential impacts on underwater archaeology, with a request for ongoing engagement on this topic and the request for follow-up communication to confirm expectations regarding heritage involvement and monitoring.</li> </ul>
Western Australian Fishing Industry Council (WAFIC)	<p>31 January 2024 – letter and email sent for MRS activities</p> <p>No response received</p> <p>16 December 2024– letter and email sent for cable installation activities</p> <p>Queries raised on if cables pose a risk to commercial fishing operations, particularly regarding snagging. Further information on management and mitigation measures will be provided to WAFIC at the point of referral.</p> <p>Engagement in progress.</p>
Recfishwest	<p>31 January 2024 – letter and email sent for MRS activities</p> <p>Response received on 07 February 2024 highlighting notification process of project works.</p> <p>16 December 2024– letter and email sent for cable installation activities</p> <p>Engagement in progress in 2025</p>

Agency	Summary of outcome
Western Rock Lobster	<p>31 January 2024 – letter and email sent for MRS activities</p> <p>Engagement in progress</p> <p>24 July 2025 – Call to discuss key concerns and feedback.</p> <p>31 July 2025 – Follow up call to discuss key concerns and feedback. Additional maps requested and advised of industry forum in September. Discussion clarified installation techniques and key timings for fishing activities in the area. Key concerns regarding timing (busiest period is November to end of February) and exclusion zones.</p>
Mandurah Surf Life Saving Club	<p>31 January 2024 – letter and email sent for MRS activities</p> <p>No response received</p> <p>17 December 2024 – letter and email sent</p> <p>No response received</p>

## 4. Cable installation methods

Three sections of cables will be installed in State Waters from the existing cable conduits ('pop out points' (PoP)) up to the boundary of the Commonwealth waters. The total length of each cable will be as follows:

- TalayLink 1 cable: 14.33 km
- TalayLink 2 cable: 12.07 km
- Umoja cable: 11.71 km

The cable installation method will vary along the cable routes, depending on the seabed conditions and water depth. The cable will be buried throughout state waters, except where seabed conditions are unsuitable. The cable will be protected with double armour for all three cable systems out to the State waters limit. The following sections detail the stages of cable installation which may result in impacts to marine vegetation.

### 4.1 Pre-lay grapnel run (PLGR)

Prior to laying of the cable, a Pre-Lay Grapnel Run (PLGR) will be undertaken along all three cable routes. This is a clearance activity to remove unwanted debris on the seabed such as abandoned fishing nets, hawsers, wires, etc. that would interfere with effective burial of the cable. This process also enables any disused cables to be removed from the proposed alignment.

The cable ship will lower a suitable grapnel to the seabed which will be towed at a speed of less than 1 knot along the proposed cable route. Should the first pass encounter any type of debris that would prevent the cable from being installed, up to two additional parallel passes within 150 m either side of the first pass will be made. The grapnel will result in clearing of the seabed along each cable route with a width of up to 0.75 m, with spacing up to 150 m between passes. As the grapnel is pulled across the seabed, typical blade seabed penetration of up to 40 cm is achieved, depending on seabed composition. Seabed clearing (direct impact) is restricted to a width of 0.75 m along the pass. The grapnel activity will not be conducted in hard bottom areas and will avoid existing buried cables, where known. Debris recovered to the cable ship during these operations will be disposed of appropriately onshore upon completion of the operation.

Prior to undertaking any route clearance activities, fisheries and community engagement will be undertaken to minimise the potential impact and interaction with fishing equipment (such as cray pots), interference with fishing activities, and recreational boating in the area.

Figure 4.1 provides examples of the different grapnel tools which may be used for this activity.

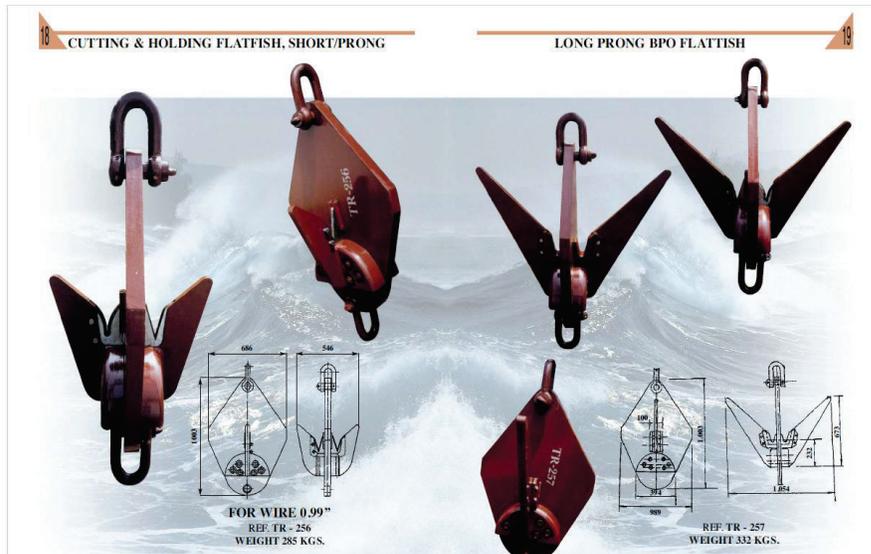


Figure 4.1 Pre-lay grapnel and cable recovery equipment (Subcom, 2024)

## 4.2 Pre-laid shore end (PLSE) installation

Pre-laid shore end (PLSE) installation methods are typically employed in nearshore environments characterised by long, shallow, and relatively flat seabeds, where sensitive marine habitats are present or where sea conditions limit conventional landing methods. These conditions are similar to those at Madora Bay, WA.

Prior to the landing of the cable and after the cable conduit PoP is located and exposed (as needed), a sinking rope line will be placed by a dive support vessel along the cable route starting from the PoP up to the PLSE vessel stand-off position. The sinking line will be equipped with tags every 25 m reporting the kilometre point (KP). This will be deployed by utilising a marine Global Positioning System (GPS) unit to follow the centreline of the cable route.

A diver will commence swimming along the cable route up to the end of the PLSE position, following the sinking line and recording the route and the tags to ensure that the seabed is ready to accommodate the cable system.

The shore end operation involves floating the cable bight to the beach using buoys and support boats, then pulling the cable through the cable duct using an onshore winch. Divers assist in guiding the cable into the duct and removing floats as needed. Once the cable is landed, post-lay diver video inspection is conducted, and articulated pipes are installed over the cable for mechanical protection, as needed.

The offshore end of the PLSE is marked with a buoy and GPS coordinates to enable retrieval by the cable installation vessel in water depths greater than 10 m. Recovery may be conducted using divers or grappling equipment, depending on site conditions. Once retrieved, the shore end is brought onboard for jointing with the main system cable.

A subsea jet trencher will then be used to bury the cable from PoP to the extent of PLSE operations as seen in Figure 4.2. The trencher is propelled by the resultant jet reaction force of the water jets mounted on the frame. The trencher measures 7.0 m × 3.5 m × 1.3 m (L×W×H) with the jetting swords fully retracted. This will create a trench with a maximum clearance width of 0.75 m based on conservative estimates. However, the subsea jet trencher will follow the line of the PLGR (Section 4.1) and therefore no additional direct seabed disturbance will result from the trencher. However, depending on the sediment type and environmental conditions at the jetting location, dispersion distances will vary with clay sediments tending to disperse further than sandy sediments which settle closer to the trench (Sinclair et al. 2023). The resulting trench may have an average width of up to 5 m of dispersing sediments (Carter et al. 2009, Kraus and Carter 2018).

Where feasible, the cable will be installed via PLSE operations out to the WA State water limits. Beyond WA State water limits, the cable is intended to be buried by ploughing.

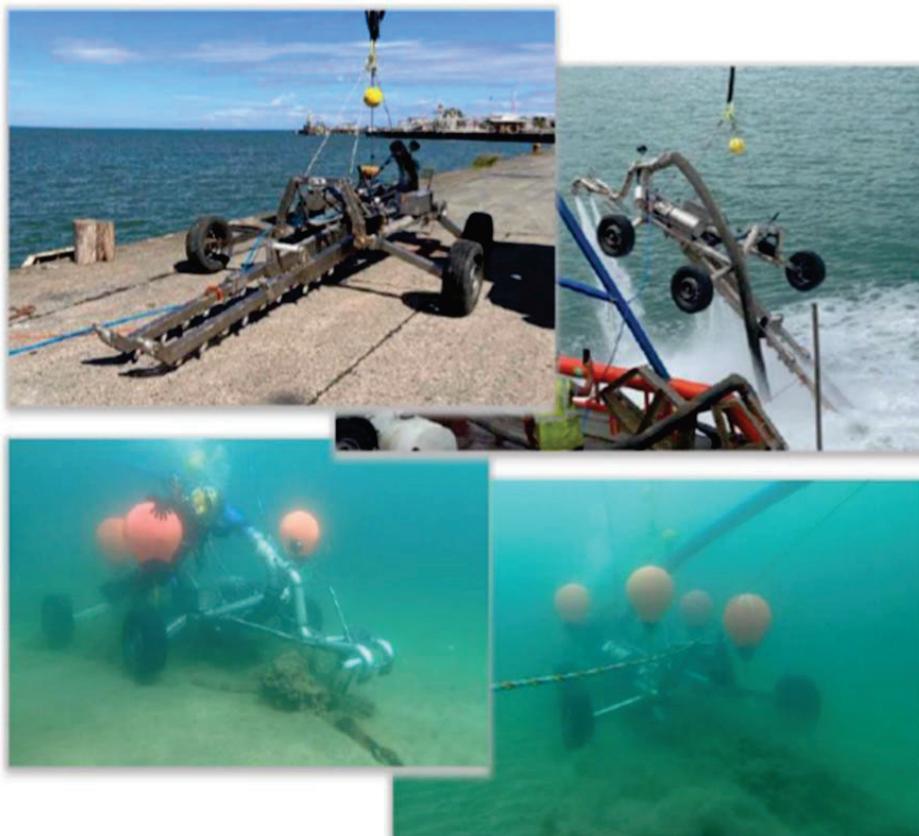


Figure 4.2 Subsea jet trencher example (Subcom, 2025)

## 4.3 Cable surface lay

Surface laying is a cable installation technique typically undertaken in water depths of greater than 1,000 m but is also employed in areas of exposed bedrock, where cable burial is not possible. Surface laying involves accurately placing the cable on the seabed under a known tension, but with no direct burial of the cable into the seabed.

Cable deployment speeds using surface laying are in the region of 6 to 8 knots per hour, depending on local conditions.

Where cable burial is not feasible, the cable will be laid on the seabed within WA coastal waters. As the cable diameter is less than 35.9 mm, impacts to marine vegetation where the cable is laid will be minimal.

## 4.4 Post-lay inspection and burial operations

The Post Lay Inspection and Burial (PLIB) is the final stage of subsea cable installation and will be completed using a Remotely Operated Vehicle (ROV). The ROV is deployed from the vessel (refer Figure 4.3) and will be in autonomous propulsion either on its track or free swimming, depending on the seabed and currents. The ROV will inspect whether the cable has been buried to the required depth and specifications. In areas where the cable could not be buried via PLSE installation, an ROV will be used to bury the cable to the required depth. This includes areas such as cable and pipeline crossings, splice locations, or branching units in buried areas. Alternatively, where areas of hard substrate or rocky debris have been identified through the MRS or during burial operations, cable surface lay will be the likely installation method for these areas.

For water jetting, the ROV will create a narrow (0.5 to 0.75 m wide) temporary trench. This temporary trench will backfill as the fluidised seabed settles.



Figure 4.3 Example of ROV (SubCom, 2022)

## 4.5 Installation vessels, equipment and timing

The following vessels will be required:

- Offshore Supplier vessel to conduct PLSE cable laying operations (37.6 m)
- Support vessels for PLSE operations, where needed (approximately 18 m)

The proposed cable installation activities will also require:

- Remotely Operated Vehicle (ROV)
- A subsea jet trencher (7.0 m × 3.5 m × 1.3 m (L×W×H))
- Grapple tools

The proposed activities are likely to take around 31 days to complete and will be completed in Q1 2026.

## 5. Environment

The following sections summarises the existing and relevant environment relevant to the proposed activities focusing on marine benthic habitats and fauna with a potential to occur. It takes into consideration results of the desktop background information, previous assessment and results of marine surveys including:

- A PEIA (GHD, 2025b) completed in October 2025 that assessed environmental factors (in line with EPA guidelines) relevant to the proposed cable installation activities within state waters off Madora Bay. The assessment provided a substantiated rationale for not referring the activities to the WA EPA under Part IV of the EP Act, on the basis that no significant environmental impacts were anticipated.
- An EPBC Act referral and supporting documents (Section 1.1) that assessed the impacts associated with the construction and operation of the entire cable route within the EEZ, including within WA state waters (GHD, 2025a). The EPBC Act referral and supporting documents are available at [Referral summary · EPBC Act Public Portal](#).
- A geophysical and geotechnical marine route survey (MRS) completed in July 2024 to confirm the suitability of the location and collect seabed condition data to inform cable segment design, identify potential obstacles or hazards, and assess their impact on alignment, installation, and future maintenance. The survey findings have been used to guide decisions related to cable armour, burial and route adjustments. Detailed results of the MRS survey are provided in Appendix A and relevant information is summarised in the following sections.

### 5.1 Physical environment

The marine environment near Madora Bay is relatively shallow and gently sloping, consistent with the broader nearshore bathymetry of the Mandurah region (Ramm, 2020). The area is characterised by sloping sandy and coarse-grained beaches with presence of active dunes. The geomorphic features consist of mainly continental shelf with ridges and reefs extending up to 100 km wide, a slope marked with subsea, and a well-developed continental rise connecting to the abysmal plain.

Topography near the coast consists of limestone reefs located within 5 m of the sea surface which help to shelter the coast from wave energy, consequently forming cusped forelands, inlet beaches, and embayments (Semeniuk, 1996). Across the shelf within state waters, the sediment distribution includes rocky seabed with seagrass and sponges and rippled sand with calcareous algae found in certain areas.

Desktop studies and data collected during the MRS reveal that the geomorphologic and bathymetric environment of the cable routes has water depths ranging from approximately 0.5 m Lowest Astronomical Tide (LAT) to 15 m LAT within state waters.

The results of the MRS show that the nearshore physical environment quickly transitions from sand in the intertidal zone at approximately 2 m LAT into a thin band of subcrop hardground in the subtidal parallel to the coast at 0.3 – 0.4 km from the beach manhole (BMH) site. The Umoja cable system has an area of hardground substrate from approximately 0.4 km to 1.75 km along the cable route before becoming dominated by sand. A similar hardground substrate is located in the TalayLink cable systems area from approximately 0.4 km to 1.25 km, with an area of undulating exposed hardground and sand veneer found at approximately 0.75 km. From approximately 1.5 to 8 km along the cable routes, the seabed is mostly sandy through the nearshore and mid-shelf areas with sections of exposed hardground and consolidated subcrop. Further offshore, hardground becomes the dominant substrate with pockets of subcrop and sand, continuing as such beyond 10 km out to the State waters limit (3 nm). Patches of marine vegetation were identified to occur along the cable routes interspersed with sand between 4 km and 7 km as further discussed in Section 5.2.

Three major artificial reefs are located near the proposed cable routes, namely:

- Mandurah Artificial Reef (approximately 10 km offshore)
- Bight Reef (approximately 1 km offshore)
- James Service Reef (approximately 7.5 km offshore)

James Service Reef lies approximately 3 km north of the cable systems, while Mandurah Reef is positioned between the two TalayLink cables, around 1 km from each route. The proposed cables route pass through Bight Reef.

## 5.2 Benthic communities and habitats

The benthos offshore of Mandurah is characterised by numerous limestone reefs located within 5 m of the sea surface which help to shelter the coast from wave energy, consequently forming cusped forelands, inlet beaches, and embayments. Within state waters, the shelf consists of rocky seabed and subtidal rocky reefs dominated by macroalgae, interspersed with seagrass and soft sediments that support a wide variety of sponges, corals, echinoderms, molluscs and crustaceans (Philips et al. 1997; DAL Science and engineering 2004; Semeniuk, 1996). A Bivariate Probability Seagrass dataset on Seamap Australia also indicates a high probability of seagrass presence off the coast of Madora Bay, albeit with low confidence in the model prediction (Monk et al., 2024).

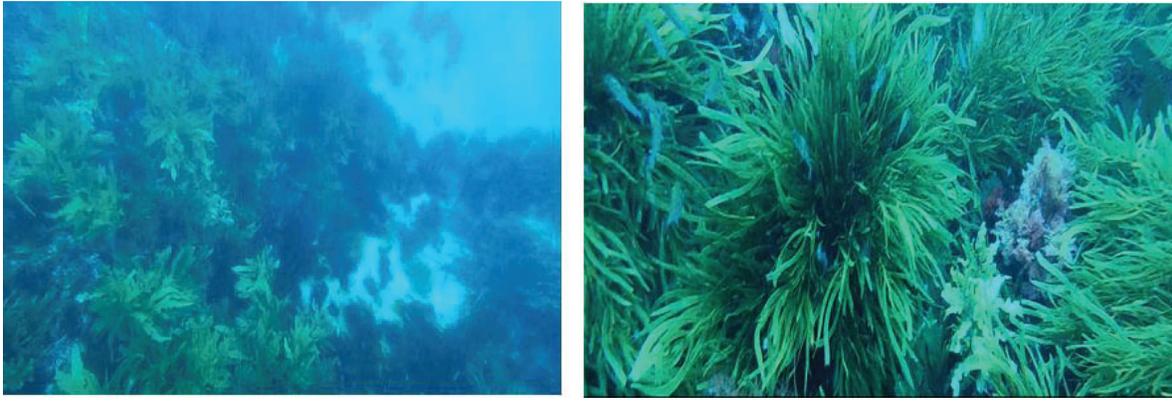
The MRS results seem to validate this literature, as areas of marine vegetation interspersed with the rocky reefs and soft sediment were identified along the cable routes (Figure 5.1). While not quantifying or identifying the type and density of marine vegetation recorded during the MRS (as this was not the purpose of the survey), the MRS charts identified the presence of marine vegetation as ‘seaweed beds over hardground’, ‘seaweed beds over subcrop hardground’ and ‘seaweed beds over 0.5 – 2 m sand’ on MRS charts provided in Appendix B. The areas of marine vegetation within the MRS survey areas have been consolidated in Figure 5.2, Figure 5.3 and Figure 5.4, and types of BCH are summarised in Table 5.1.

**Table 5.1** BCH area within the MRS survey area

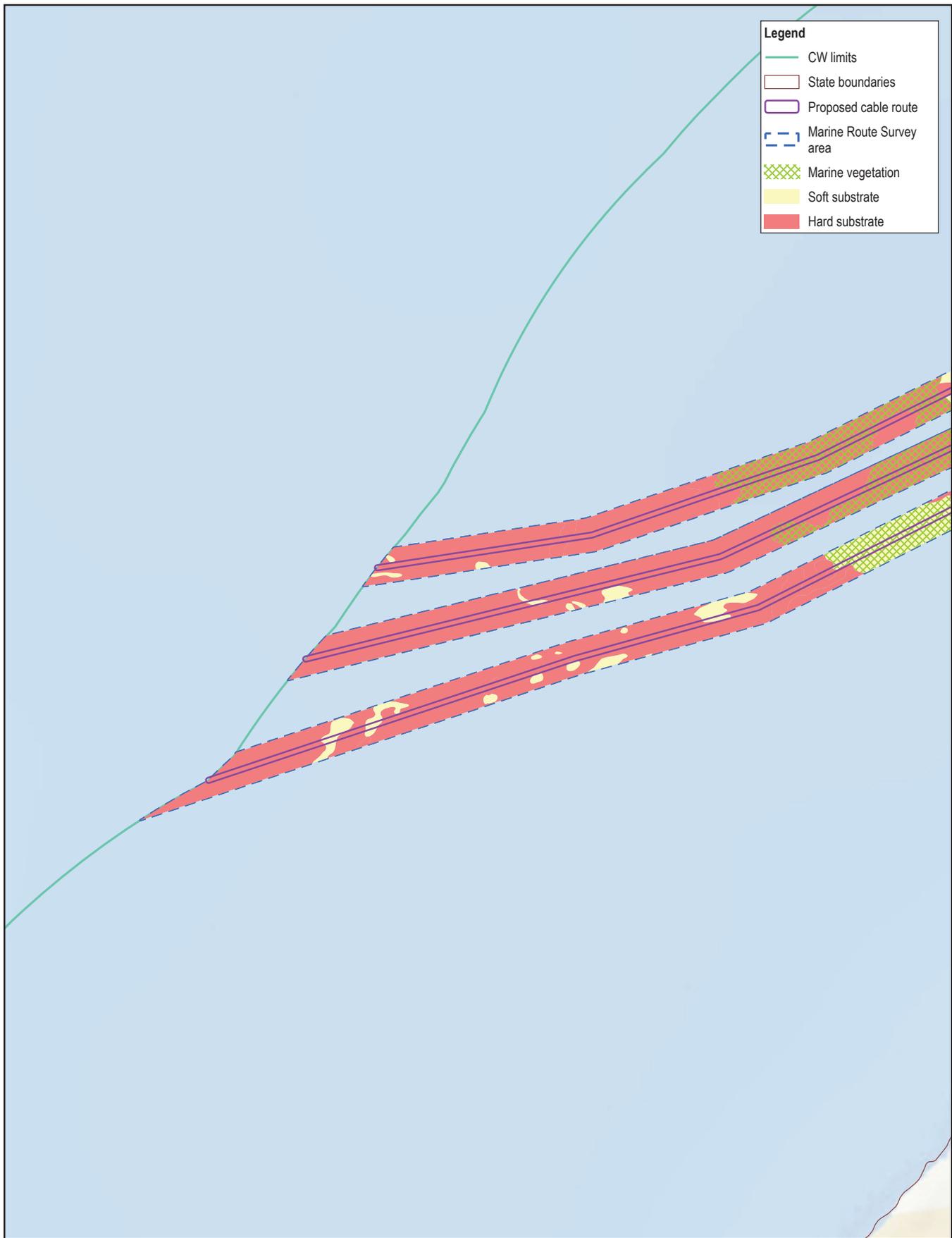
BCH Type	Area (ha)	% (of total MRS survey area)
Hard substrate (bare)	168	13.39
Soft substrate (bare)	537	42.79
Reef on hard substrate	243	19.36
Vegetation on hard substrate	89	7.09
Vegetation on subcropping hard ground	14	1.12
Vegetation on soft substrate	176	14.02
<b>TOTAL</b>	<b>1255</b>	-

As shown on all three figures, a portion of the marine vegetation (total 7.09%) is present on areas of hardground, where the cable will be required to be surface laid and therefore clearing is not required. Depending on the depth of the subcrop, the cable may either be buried or surface laid where subcropping hard ground has been identified. In the western portion of the MRS (Figure 5.2), all the marine vegetation identified along the TalayLink cable routes was found on hardground, while the Umoja survey identified a patch of vegetation over soft substrate, which is therefore likely to be cleared.

Vegetation along the central and eastern portions of the MRS (Figure 5.3 and Figure 5.4) was identified overlaying both hardground and soft ground areas along all three routes, with two large distinct areas of marine vegetation on soft ground intersecting with all three cable routes between approximately 3.5km - 6.5km from the PoP. In the nearshore area, one small area of marine vegetation was identified overlying soft ground approximately 1km from the coast along the southernmost MRS route. This area falls outside of the proposed cable routes.

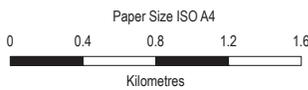


*Figure 5.1 Still images of marine vegetation captured during the MRS (S32 30.1832, E115 41.3444)*



**Legend**

- CW limits
- State boundaries
- Proposed cable route
- Marine Route Survey area
- Marine vegetation
- Soft substrate
- Hard substrate



Horizontal Datum: GDA2020  
Grid: GDA2020

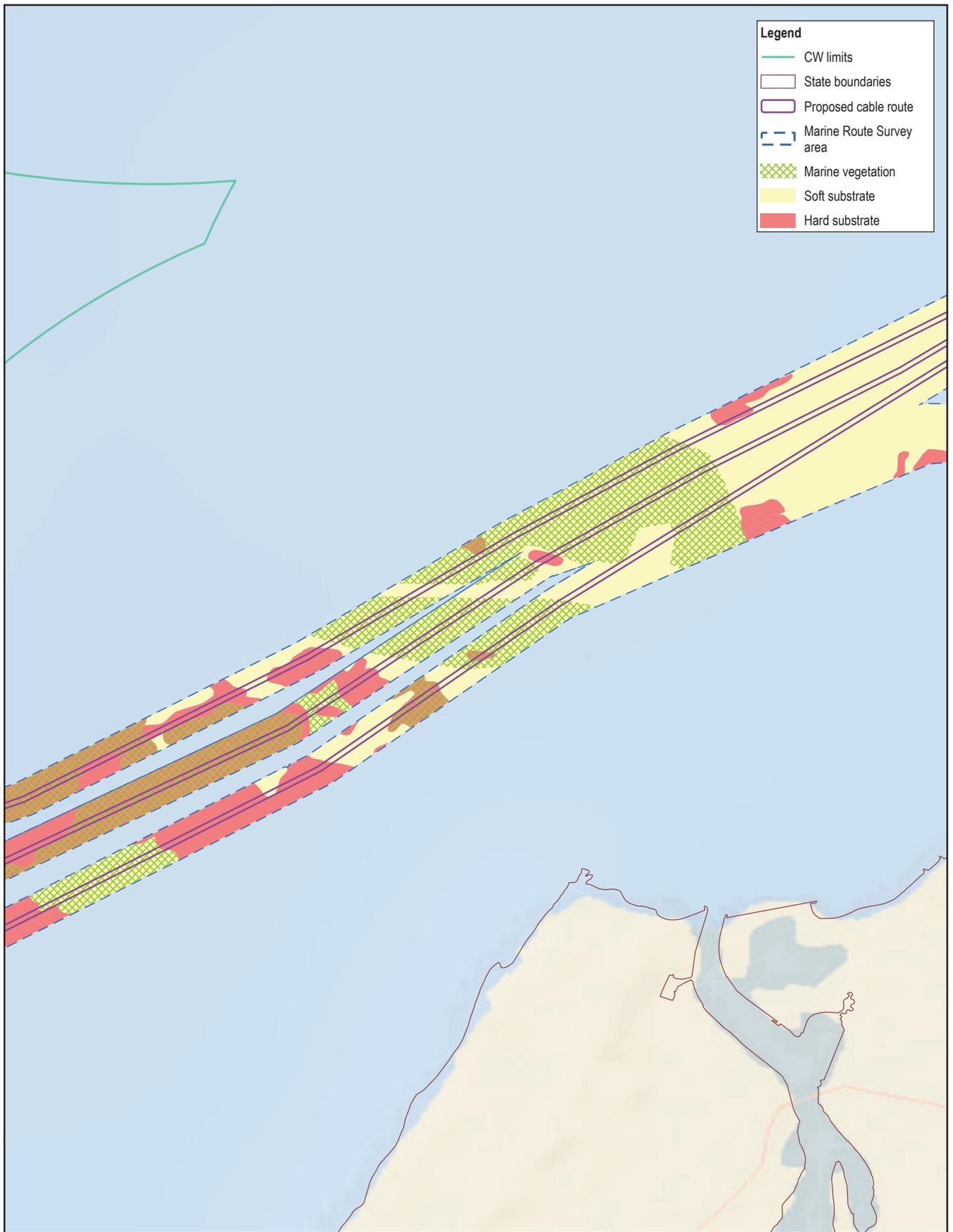


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Native Vegetation Clearance Permit

**TalayLink and Umoja -  
Marine Vegetation**

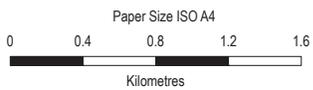
Project No. **12613495**  
Revision No. **B**  
Date **28/01/2026**

**FIGURE 5.2**



**Legend**

- CW limits
- State boundaries
- Proposed cable route
- Marine Route Survey area
- Marine vegetation
- Soft substrate
- Hard substrate



Horizontal Datum: GDA2020  
Grid: GDA2020

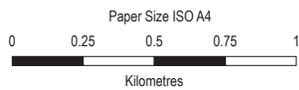
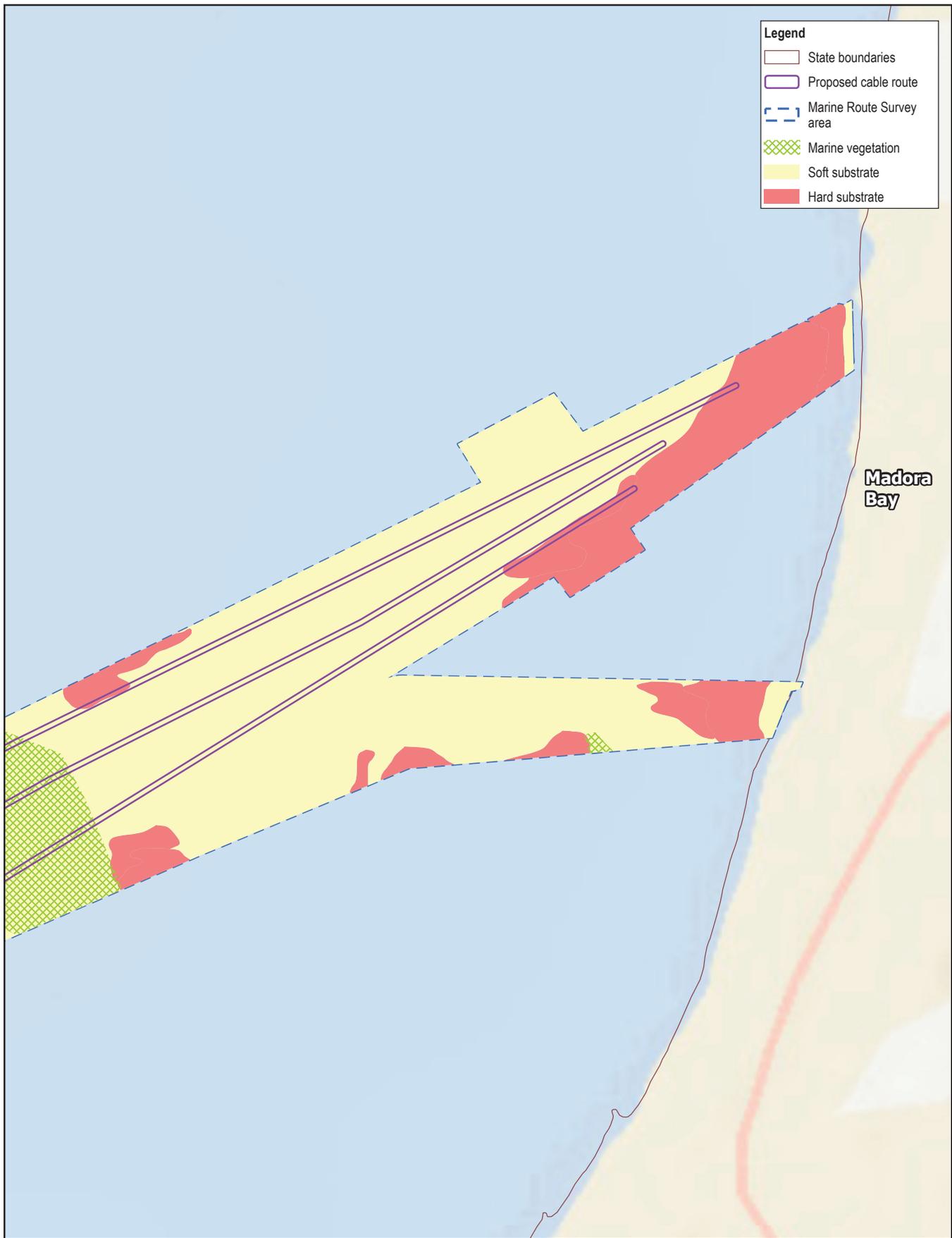


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**TalayLink and Umoja -  
Marine Vegetation**

Project No. **12613495**  
Revision No. **B**  
Date **28/01/2026**

**FIGURE 5.3**



Horizontal Datum: GDA2020  
Grid: GDA2020



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Subcom Subsea Cable Permitting  
Native Vegetation Clearance Permit

TalayLink and Umoja -  
Marine Vegetation

Project No. 12613495  
Revision No. A  
Date 23/12/2025

**FIGURE 5.2**

## 5.3 Marine fauna

A desktop search using the EPBC Act Protected Matters Search Tool (PMST) (Department of Climate Change, Energy, the Environment and Water [DCCEEW] 2025) was undertaken as part of the EPBC referral and PEIA and identified a total of 117 threatened marine fauna as having the potential to occur along the cable route and within a 10 km buffer. This included:

- 67 bird species,
- 13 mammal species,
- 32 fish species and
- Five reptile species.

An additional 13 Biologically Important Areas (BIAs) for marine fauna were mapped to occur.

Further details on specific species with a potential to occur can be found in the EPBC referral and supporting documents (<https://epbcpublicportal.environment.gov.au/all-referrals/project-referral-summary/?id=66b32c99-5ce6-ee11-904c-6045bde6b2ee>).

## 6. Impact assessment

### 6.1 Marine native vegetation clearing

Table 6.1 summarises the best case and worst case extent of marine native vegetation clearing that may be required. These calculations are based on:

- Best case scenario: A single PLGR per cable with a clearance width of 0.75 m across soft sediment habitat
- Worst case scenario (WCS): Three PLGRs per cable (each within 150 m of each other) to account for sections that need to be rerouted due to unforeseen barriers with a clearance width of 0.75m over soft sediment for each PLGR run.

As the cable width is 35.9 mm and will be laid on hard substrata including rocky outcrops, minimal impacts to marine vegetation on hard substrata are anticipated.

The best case scenario area for clearing (single PLGR) was calculated using the total of all areas where vegetated soft sediment intersected with the proposed cable route. As it is unknown where additional PLGRs (if required) would be at this stage, the WCS was calculated by multiplying the single PLGR by three. This approach is considered conservative, as it is highly unlikely that three runs would be needed per cable route.

The expected area of marine vegetation to be cleared on soft sediments (including vegetation overlaying sub crop hard ground<sup>1</sup>) as a result of cable installation is likely to be between **0.66 ha** (best case scenario) and **1.97 ha** (WCS). This amount of clearing is small relative to the total area of marine vegetation mapped within the MRS survey area (between **0.19% and 0.58%** of the total vegetation in the MRS area) and smaller still at a local and regional level considering the habitat types are well represented locally and regionally (Table 6.1).

Table 6.1 Summary of cable installation disturbance footprints intersecting marine vegetation

Cable system	Total length intersecting marine vegetation (km)	Max. area of marine vegetation to be cleared for single PLGR (ha)	Single route PLGR as a % of total vegetation in whole MRS area	Maximum area of marine vegetation to be cleared in WCS (ha) (3 PLGRs)	WCS (3 PLGRs) as a % of total vegetation in whole MRS area
TalayLink 1	1.34	0.27	0.080%	0.81	0.24%
TalayLink 2	2.23	0.19	0.055%	0.56	0.17%
Umoja	2.63	0.20	0.58%	0.59	0.17%

<sup>1</sup> Subcrop hard ground is included in clearing calculations, as it is not known what depth the hard sub crop is and thus the overlying soft sediments may be subject to the PLGR

Cable system	Total length intersecting marine vegetation (km)	Max. area of marine vegetation to be cleared for single PLGR (ha)	Single route PLGR as a % of total vegetation in whole MRS area	Maximum area of marine vegetation to be cleared in WCS (ha) (3 PLGRs)	WCS (3 PLGRs) as a % of total vegetation in whole MRS area
TOTAL	6.19	0.66	0.19%	1.97	0.58%

It is recognised that further indirect disturbance of a 5 metre width centred on the trench may result from the jet trenching due to suspension and deposition of sediment, which may impact habitat adjacent to the trench. However, this disturbance as well as the direct removal of marine vegetation during the trenching are expected to be temporary and re-colonisation of disturbed areas from adjacent habitats is expected to occur relatively quickly. These impacts are considered within the EPBC Act referral and PEIA (GHD, 2025b) for the project.

## 6.2 Marine fauna impact assessment

An impact assessment for listed marine fauna and other protected matters was undertaken as a part of the EPBC Act referral and the PEIA. Whilst some of the listed species are likely to occur within the project area, the impacts from the project activities will generally be indirect and are unlikely to cause significant impacts to these species.

The potential impacts to marine fauna and proposed management measures to mitigate impacts are summarised in Table 6.2 and detailed assessments can be found in the EPBC referral documents

(<https://epbcpublicportal.environment.gov.au/all-referrals/project-referral-summary/?id=b532fd88-ca9d-f011-bbd2-002248115f4f>).

Given the scale and nature of the cable construction within State waters (installation is expected to occur within 31 days, from an installation vessel travelling at an average of 6-8 knots, depending on local conditions) and operation (either buried or on the surface), potential impacts on threatened fauna and flora species and marine fauna in general along the cable routes are not expected to be significant.

Table 6.2 Potential impacts and mitigation measures for marine fauna relevant to the scope of works

Activity	Potential impacts	Relevant management controls	Environmental outcomes
Seabed disturbance	Disturbance to the seafloor and benthic habitats may occur. Potential impacts and mitigation measures for coastal environment during the subsea cable installation, which generally involves pre-lay grapnel run, surface laying, plough burial, post-lay inspection and shore end installation along the route. Marine route survey results were used to inform the cable route to best avoid areas of sensitivity.	<ul style="list-style-type: none"> <li>No anchoring of the vessel is planned during cable lay operations. Vessels may only drop anchor during port calls or other standby periods, in dedicated mooring areas, if required.</li> <li>The cable laying route in deep waters will be positioned to avoid underwater features such as rocky reefs, other cables (as far as practicable), or debris.</li> <li>The need for pinning of the articulated pipe may need to be considered in order to avoid lateral movement of the pipe over the reef area.</li> <li>Ecologically sensitive areas identified from a review of benthic survey data and desktop assessments will be avoided if possible.</li> </ul>	<p><b>Impacts considered to be as low as reasonably practicable.</b></p> <p>Cable installation activities are expected to disturb the seabed and benthic habitats along the route.</p> <p>Disturbance is expected to be minor, temporary, and limited to the cable route, with negligible effects on suspended sediment.</p> <p>Environmental risks will be confined to the immediate area around the cable and are expected to be short-term, posing a low risk to existing species.</p>
Underwater noise emissions	Underwater noise emissions generated by vessels and other equipment during subsea cable installation are anticipated to be similar to those from other marine vessels routinely	<ul style="list-style-type: none"> <li>A trained crew member will act as a Marine Megafauna Observer during cable installation operations particularly when program overlaps with peak whale migration season.</li> </ul>	<p><b>Impacts are considered to be as low as reasonable possible with the implementation of industry standards requirements and</b></p>

Activity	Potential impacts	Relevant management controls	Environmental outcomes
	<p>transiting the area, such as commercial shipping.</p> <p>While noise emissions from the installation equipment may pose a risk to acoustically sensitive species in close proximity, the likelihood of significant adverse impacts remains low given the temporary and localised nature of the activity.</p> <p>Behavioural impacts (e.g. avoidance patterns and swimming movements away from the area) are the most probable form of impact to marine fauna as a result of anthropogenic noise generated by this activity, particularly for sensitive species such as cetaceans. Vessel and cable installation noise is anticipated to only induce temporary and localised behavioural impact if species are encountered, with affected marine species expected to adopt normal behavioural patterns within a short time frame in the open waters along the cable route.</p> <p>Underwater noise and vessel disturbance will be temporary at any given location because the vessel will be constantly moving along a pre-determined route. Exposure duration for individual fauna will therefore be limited.</p>	<ul style="list-style-type: none"> <li>– Vessel machinery will be maintained in accordance with the manufacturers specifications to reduce noise emissions.</li> <li>– The interaction of all vessels with cetaceans, pinnipeds and whale sharks will be compliant with Part 8 of the EPBC Regulations (2000). The Australian Guidelines for Whale and Dolphin Watching for sea-faring activities will be implemented across the entire project.</li> </ul>	<p><b>considering type of equipment and short duration of the proposed activity.</b></p>
Artificial light emissions	<p>Artificial light from the cable installation vessel may disrupt the normal behaviour of birds, turtles, fish and other pelagic species in locality if night works are required.</p>	<ul style="list-style-type: none"> <li>– Lighting on vessel decks will be managed to reduce direct light spill in accordance with vessel safety and navigation standards</li> </ul>	<p><b>Impacts are considered to be as low as reasonable possible with the implementation of industry standards requirements and considering type of equipment and short duration of the proposed activity.</b></p>
Planned discharges	<p>Discharges to the surrounding marine environment from sewage and food waste, brine, cooling water and deck drainage will result in a reduction in surface water quality in the vicinity.</p>	<ul style="list-style-type: none"> <li>– Compliance with relevant State legislations and Commonwealth pollution regulations.</li> <li>– Adherence to vessel waste management best practices.</li> </ul>	<p><b>Impacts are considered to be as low as reasonable possible with the implementation of industry standards requirements.</b></p>
Marine fauna collisions or entanglement	<p>There is potential for collision to occur between marine fauna and vessels associated with the installation. However, likelihood of marine fauna collisions or entanglement is very low for a cable laying vessel due to the</p>	<ul style="list-style-type: none"> <li>– A trained crew member will act as a Marine Megafauna Observer during cable installation operations particularly when program overlaps with peak whale migration season.</li> <li>– Operations of vessels adhere to Part 8 of the EPBC Regulations</li> </ul>	<p><b>Potential risks associated with collision and interference are considered to be as low as reasonably practicable with implementation of</b></p>

Activity	Potential impacts	Relevant management controls	Environmental outcomes
	slow speed of the vessel during cable laying operations.	(Interacting with Cetaceans and Whale Watching). <ul style="list-style-type: none"> <li>– The Australian Guidelines for Whale and Dolphin Watching for sea-faring activities will be implemented across the project including no-go and caution zones.</li> </ul>	<b>industry standard requirements.</b>
Pest introduction and proliferation	<p>Ecosystems, fisheries, aquaculture and other industries are potentially at risk from the impacts of Introduced Marine Pests (IMPs). Effects of IMPs may include depletion of viable fishing areas and fisheries, out-competing of native flora and fauna and decrease vessel and infrastructure performance and increased maintenance costs.</p> <p>Shallow water environments are the predominant preferred habitat for the successful introduction of most known marine pests. As the location of the cable laying activities include shallow coastal waters, there is potential that an IMP would be able to adapt and develop a successful translocation to the areas within the cable route or surrounding region. However, with the adherence of vessels to biofouling regulations, the chance of a successful translocation for IMPs is considered unlikely.</p>	<ul style="list-style-type: none"> <li>– Vessels should be sourced locally wherever possible.</li> <li>– International vessels arriving in Australia, as well as domestically sourced vessels, should adhere to Australian quarantine requirements</li> <li>– Management of ballast water must follow Australian Quarantine and Inspection Service guidelines and compliance requirements.</li> </ul>	<b>The risk associated with the introduction of IMPs is considered as low as reasonably practicable with the adoption of industry standard management controls.</b>
Accidental release of solid waste	Accidental spillage of material and incorrectly disposed items may cause unintentional release to the environment. This may cause entanglement or ingestion by fauna particularly prevalent for seabirds and marine turtles.	<ul style="list-style-type: none"> <li>– Waste containment facilities will be managed to avoid overflow or accidental release.</li> <li>– All wastes will be managed in accordance with Regulation 9 of MARPOL Annex V.</li> <li>– Hazardous wastes will be retained onboard within a secondary containment area.</li> <li>– All recyclables and general wastes will be appropriately stored for disposal at a regulated waste facility.</li> <li>– Solid non-biodegradable and hazardous waste will be appropriately stored for disposal at a suitable waste facility.</li> </ul>	<b>The risk associated with unplanned releases of waste material is considered as low as reasonably practicable given the adoption of the industry standard management controls.</b>
Dropped objects	Damage to benthic habitats can occur due to an object being dropped overboard (e.g., equipment falling from vessel deck). Marine organisms associated with the affected benthic habitat within the	<ul style="list-style-type: none"> <li>– All equipment on the vessels will be securely fastened during mobilisation/demobilisation</li> <li>– Lifting is to be carried out by competent personnel using</li> </ul>	<b>The risk associated with dropped objects is considered to be as low as reasonably possible with the adoption of industry accepted</b>

Activity	Potential impacts	Relevant management controls	Environmental outcomes
	dropped object's footprint may also be harmed.	equipment that is suitable, certified and maintained <ul style="list-style-type: none"> <li>– Waste management controls are to remain effective to reduce risk of release of wastes that could be ingested or cause entanglement</li> <li>– During the activities, detailed records of equipment lost overboard or dropped will be maintained and reviews will be undertaken to reflect on methods to mitigate repetition of the incident</li> </ul>	<b>controls and procedures.</b>

## 7. Conclusions

A worst case **1.41 ha** of marine vegetation may need to be temporarily cleared and require a NVCP. This accounts for less than **11%** of marine vegetation in the locality. The expected area of marine vegetation to be cleared is expected to be much smaller as the requirement for multiple PGLR runs per cable is unlikely and marine vegetation, in particular seagrass, is unlikely to be present in all cable sections. Considering marine vegetation is likely to regrow over time following the installation, the impacts are not considered significant.

Impacts to marine fauna and other environmental matters considered are not expected to be significant given the scale and nature of the cable construction. Potential impacts are intended to be avoided, minimised and mitigated through standard industry management measures.

## 8. References

- Carruher, T. J., Dennison, W. C., Kendrick, G. A., Waycott, M., Walker, D. I., & Cambridge, M. L. (2007). Seagrasses of south–west Australia: A conceptual synthesis of the world's most diverse and extensive seagrass meadows. *Journal of Experimental Marine Biology and Ecology*, 21-45.
- City of Mandurah. (2022). Northern Beaches Coastal Hazard Risk Management and Adaptation Plan (CHRMAP). <https://www.mandurah.wa.gov.au/council/documents/environment/coastal-hazard-risk-management-and-adaptation-plan-northern-beaches>
- DAL Science and Engineering. (2004). Benthic habitat mapping of the Eastern Shelf of Cockburn Sound. Prepared for Cockburn Sound Management Council by DAL Science
- GHD. (2025a). Subsea Fibre Optic Data Cable System - Cable Installation - Australia West. Environmental Assessment Report. Report for Perch Infrastructure Pty Ltd.
- GHD. (2025b). Subsea Telecommunications Cable Installation - Preliminary EIA for Cable Installation in WA State Waters. Report for Perch Infrastructure Pty Ltd.
- Huisman, J.M., Sim, C.S., Walker, D.I., 1999. A collection of deepwater marine plants from Rottnest Island. In: Wells, F.E., Walker, D.I. (Eds.), *The Seagrass Flora and Fauna of Rottnest Island*. Perth Western Australian Museum, pp. 409–421.
- Kendrick, G.A., Eckersley, J., Walker, D.I., 1999. Landscape scale changes in seagrass distribution over time: a case study from Success Bank, Western Australia. *Aquatic Botany* 65 (1-4), 293–309.
- Kendrick, G.A., Hegge, B.J., Wyllie, A., Davidson, A., Lord, D.A., 2000. Changes in seagrass cover on Success and Parmelia Banks, Western Australia between 1965 and 1995. *Estuarine, Coastal and Shelf Science* 50 (3), 341–353.
- Kendrick, G.A., Aylward, M.J., Hegge, B.J., Cambridge, M.L., Hillman, K., Wyllie, A., Lord, D.A., 2002. Changes in seagrass coverage in Cockburn Sound, Western Australia between 1967 and 1999. *Aquatic Botany* 73 (1), 75–87
- Kirkman, H. (1998). Pilot Experiments on Planting Seedlings and Small Seagrass Propagules in Western Australia. *Marine Pollution Bulletin*, 8-12.
- Monk, J., T. Langlois, C. Spencer, E. Woolley, B. Gibbons, A. Bastiaansen, J. Hulls, G. Grammer, K. Hayes, P. Dunstan, S. Colbung, R. Reynolds, D. Guilfoyle, J. Lavers, I. W. Webb, W. Webb, N. Barrett, V. Lucieer, et al. 2024.
- Phillips, J. C., Kendrick, G. A., and Laver, P. S. (1997). A test of a functional group approach to detecting shifts in macroalgal communities along a disturbance gradient. *Marine Ecology Progress Series*, 153, 125-138. <http://www.jstor.org/stable/24857880>
- Ramm, L. (2020). Characteristics of the fish fauna of the Mandurah artificial reef. College of Science, Health, Engineering & Education, of Murdoch University.
- Semeniuk, V., 1996. An early Holocene record of rising sea level along a bathymetrically complex coast in southwestern Australia. *Marine Geology*, 131 (3-4), 177-193
- Visit Mandurah. (2025). Peel Produce Market. Retrieved May 27, 2025, from <https://visitmandurah.com/event/peel-produce-market-dawesville/>

# Appendices

# **Appendix A**

**Marine Route Survey charts**

**ROUTE SURVEY**  
 This drawing shows the proposed route for the cable installation. The route is shown in red and yellow. The route starts at the cable plant and runs along the coast. The route is shown in red and yellow. The route starts at the cable plant and runs along the coast. The route is shown in red and yellow. The route starts at the cable plant and runs along the coast.

**BATHYMETRY**  
 Bathymetry contours are shown in blue. The contours indicate the depth of the water. The contours are shown in blue. The contours indicate the depth of the water. The contours are shown in blue. The contours indicate the depth of the water.

**GEOMORPHOLOGY**  
 Geomorphology features are shown in green. The features include dunes, sandbars, and other coastal features. The features are shown in green. The features include dunes, sandbars, and other coastal features. The features are shown in green. The features include dunes, sandbars, and other coastal features.

**CABLE INSTALLATION**  
 Cable installation details are shown in red and yellow. The details include cable type, depth, and other installation parameters. The details are shown in red and yellow. The details include cable type, depth, and other installation parameters. The details are shown in red and yellow. The details include cable type, depth, and other installation parameters.

**SURVEY NOTES**  
 Survey notes provide additional information about the survey. The notes include details about the survey method, equipment, and other relevant information. The notes include details about the survey method, equipment, and other relevant information. The notes include details about the survey method, equipment, and other relevant information.

**INSTALLATION NOTES**  
 Installation notes provide additional information about the cable installation. The notes include details about the installation method, equipment, and other relevant information. The notes include details about the installation method, equipment, and other relevant information. The notes include details about the installation method, equipment, and other relevant information.

**GEOMETRIC PARAMETERS**  
 Geometric parameters define the shape and size of the cable installation. The parameters include cable length, depth, and other geometric details. The parameters include cable length, depth, and other geometric details. The parameters include cable length, depth, and other geometric details.

**KEY MAP**  
 The key map shows the location of the cable installation within the larger geographic context. The key map includes a grid and other geographic features. The key map includes a grid and other geographic features. The key map includes a grid and other geographic features.

**TRIAL SCALE 1:5000**

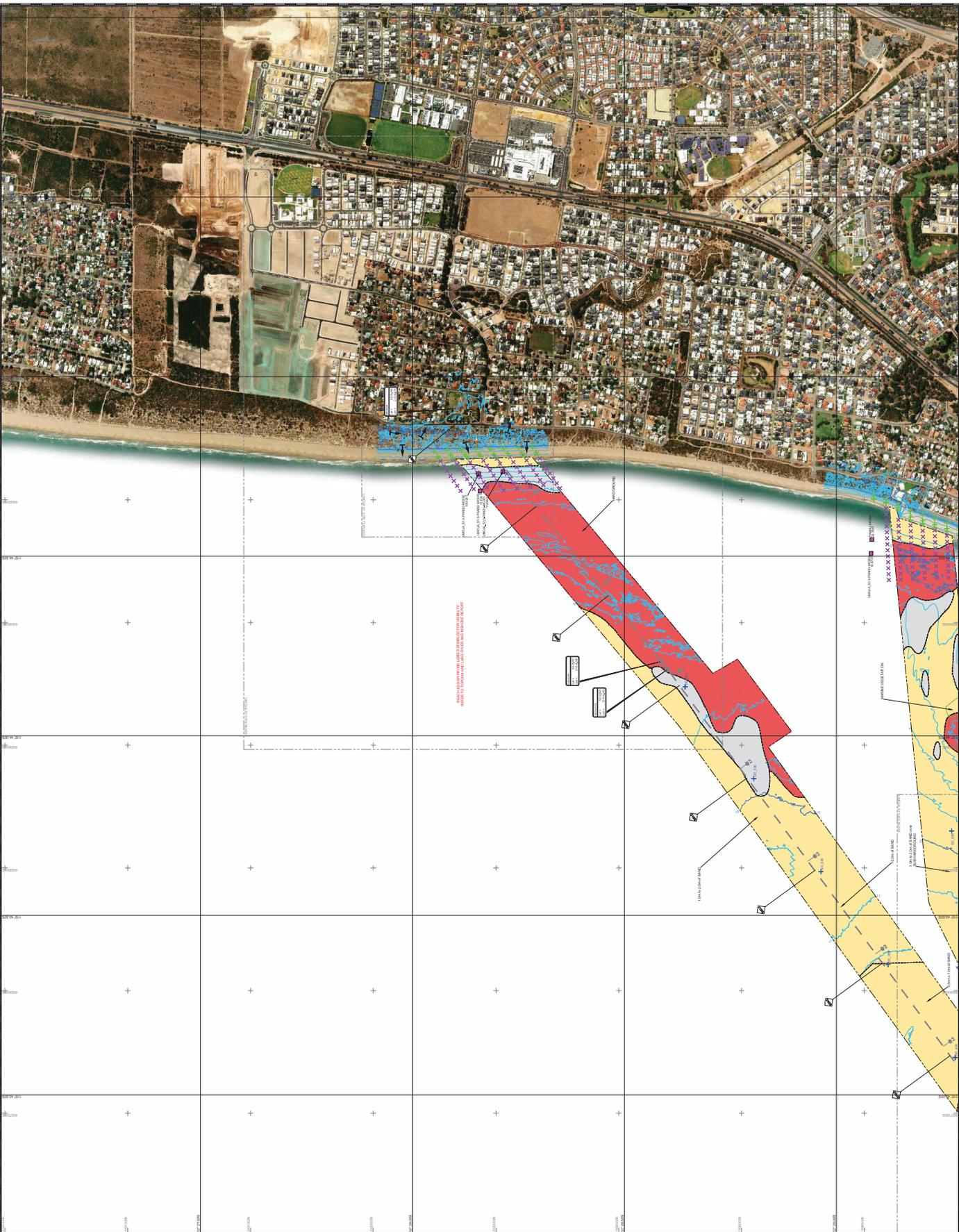
**PROJECT INFORMATION**  
 Project Name: Cable Installation  
 Project Number: 12345678  
 Date: 10/20/2011  
 Scale: 1:5000

**SUBCOM**  
 SUBCOM LLC  
 10000 N. 10th Street, Suite 100  
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**CLIENT INFORMATION**  
 Client Name: ABC Company  
 Client Address: 123 Main Street  
 Client City: Phoenix, AZ  
 Client State: AZ  
 Client Zip: 85001

**DESIGNER INFORMATION**  
 Designer Name: John Doe  
 Designer Title: Senior Engineer  
 Designer Contact: 602.955.1234

**DATE**  
 10/20/2011



**ROUTE SURVEY**  
 This drawing shows the proposed route for the cable installation. The route is shown in yellow and red. The route starts at the BMH Site P1 and ends at the BMH Site B4. The route is shown in yellow and red. The route is shown in yellow and red.

**BATHYMETRY**  
 Bathymetry is shown in blue and green. The bathymetry is shown in blue and green. The bathymetry is shown in blue and green.

**GEOMORPHOLOGY**  
 Geomorphology is shown in yellow and red. The geomorphology is shown in yellow and red. The geomorphology is shown in yellow and red.

**CABLE INSTALLATION**  
 Cable installation is shown in yellow and red. The cable installation is shown in yellow and red. The cable installation is shown in yellow and red.

**SURVEY NOTES**  
 Survey notes are provided for the route survey. The survey notes are provided for the route survey. The survey notes are provided for the route survey.

**INSTALLATION NOTES**  
 Installation notes are provided for the cable installation. The installation notes are provided for the cable installation. The installation notes are provided for the cable installation.

**GEOMETRIC PARAMETERS**  
 Geometric parameters are provided for the cable installation. The geometric parameters are provided for the cable installation. The geometric parameters are provided for the cable installation.

**KEY MAP**  
 Key map is provided for the route survey. The key map is provided for the route survey. The key map is provided for the route survey.

**SCALE**  
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**PROJECT INFORMATION**  
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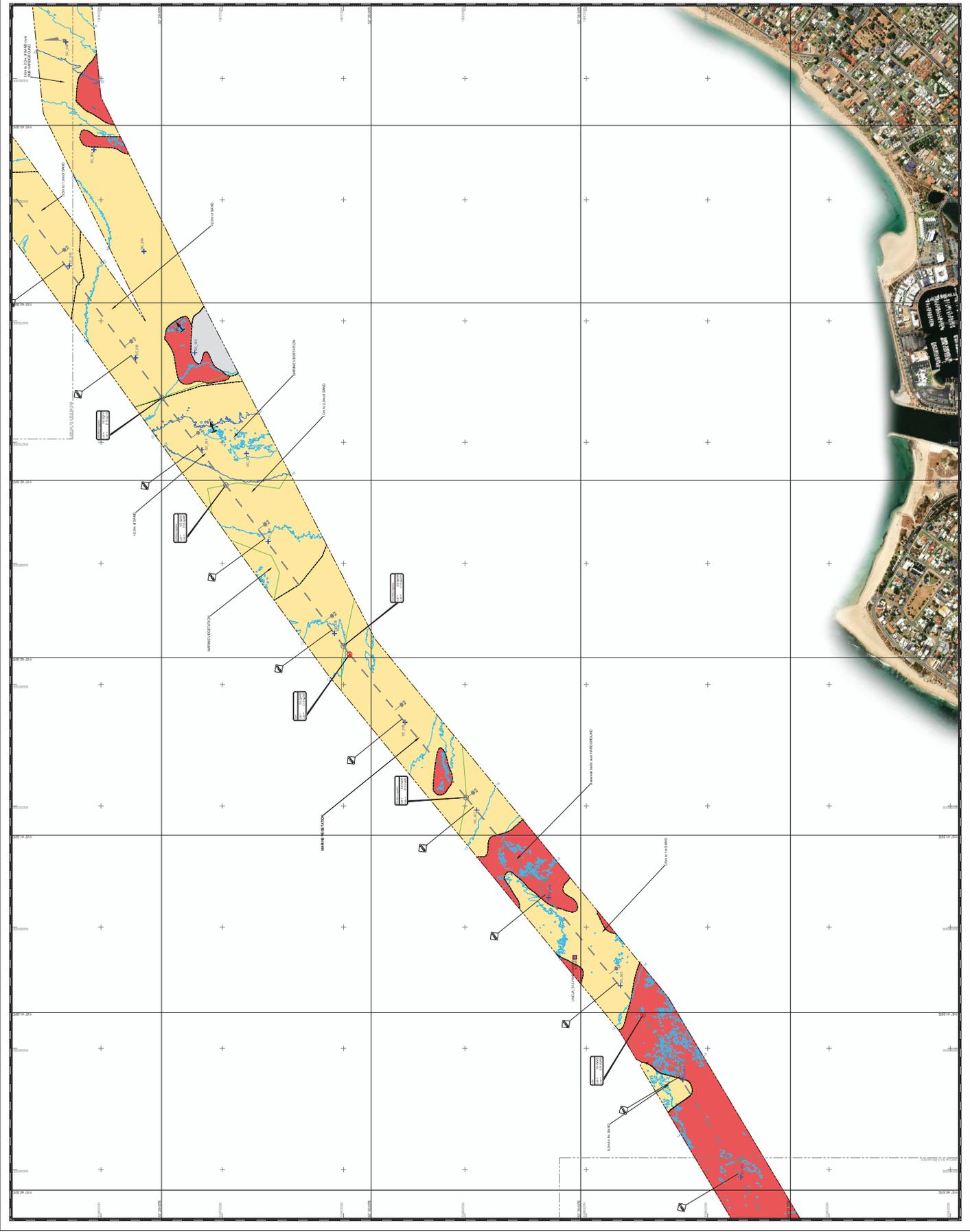
**CLIENT INFORMATION**  
 Client information is provided for the route survey. The client information is provided for the route survey. The client information is provided for the route survey.

**DATE**  
 Date is provided for the route survey. The date is provided for the route survey. The date is provided for the route survey.

**BY**  
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**CHECKED BY**  
 Checked by is provided for the route survey. The checked by is provided for the route survey. The checked by is provided for the route survey.

**APPROVED BY**  
 Approved by is provided for the route survey. The approved by is provided for the route survey. The approved by is provided for the route survey.



**ROUTE SURVEY**  
 This drawing shows the proposed route of the cable and the location of the cable trench. The route is shown in red and the trench is shown in yellow. The drawing also shows the location of the cable trench relative to the road and the utility lines. The drawing is a plan view and does not show the profile of the cable trench.

**BATHYMETRY**  
 Bathymetry is the measurement of the depth of a body of water. In this drawing, the bathymetry is shown in blue and green. The drawing shows the depth of the water in the river and the location of the cable trench relative to the water.

**GEOMORPHOLOGY**  
 Geomorphology is the study of the landforms and the processes that shape them. In this drawing, the geomorphology is shown in yellow and green. The drawing shows the location of the cable trench relative to the landforms and the utility lines.

**UTILITIES**  
 Utilities are the services that provide power, water, and gas to homes and businesses. In this drawing, the utilities are shown in red and yellow. The drawing shows the location of the cable trench relative to the utility lines.

**VEGETATION**  
 Vegetation is the plant life that grows in an area. In this drawing, the vegetation is shown in green. The drawing shows the location of the cable trench relative to the vegetation.

**ROADS**  
 Roads are the paths that connect different areas. In this drawing, the roads are shown in red. The drawing shows the location of the cable trench relative to the roads.

**PROPERTY LINES**  
 Property lines are the boundaries of a piece of land. In this drawing, the property lines are shown in black. The drawing shows the location of the cable trench relative to the property lines.

**ADDITIONAL NOTES**  
 This drawing is a plan view and does not show the profile of the cable trench. The drawing is a technical drawing and should be used as a guide only. The drawing is not a substitute for a professional engineering or architectural drawing.

**CABLE INSTALLATION**  
 Cable installation is the process of laying out the cable and the trench. The drawing shows the location of the cable trench relative to the road and the utility lines. The drawing also shows the location of the cable trench relative to the water and the vegetation.

**INSTALLATION NOTES**  
 The cable trench should be dug to a depth of 18 inches. The cable should be laid out in a straight line. The cable should be protected by a concrete cover. The cable should be tested before it is used.

**GEOMETRIC PARAMETERS**  
 The drawing shows the location of the cable trench relative to the road and the utility lines. The drawing also shows the location of the cable trench relative to the water and the vegetation.

**KEY MAP**  
 The key map shows the location of the cable trench relative to the road and the utility lines. The drawing also shows the location of the cable trench relative to the water and the vegetation.

**TRUE SCALE 1" = 500'**  
 The drawing is a technical drawing and should be used as a guide only. The drawing is not a substitute for a professional engineering or architectural drawing.

**PROJECT INFORMATION**  
 Project Name: Cable Installation  
 Project Number: 1002-005  
 Date: 10/20/2023

**CLIENT INFORMATION**  
 Client Name: SUBCOM  
 Client Address: 1002-005  
 Client Phone: 8245-183-8251-058

**DESIGNER INFORMATION**  
 Designer Name: SUBCOM  
 Designer Address: 1002-005  
 Designer Phone: 8245-183-8251-058

**DATE**  
 Date: 10/20/2023

**SCALE**  
 Scale: 1" = 500'

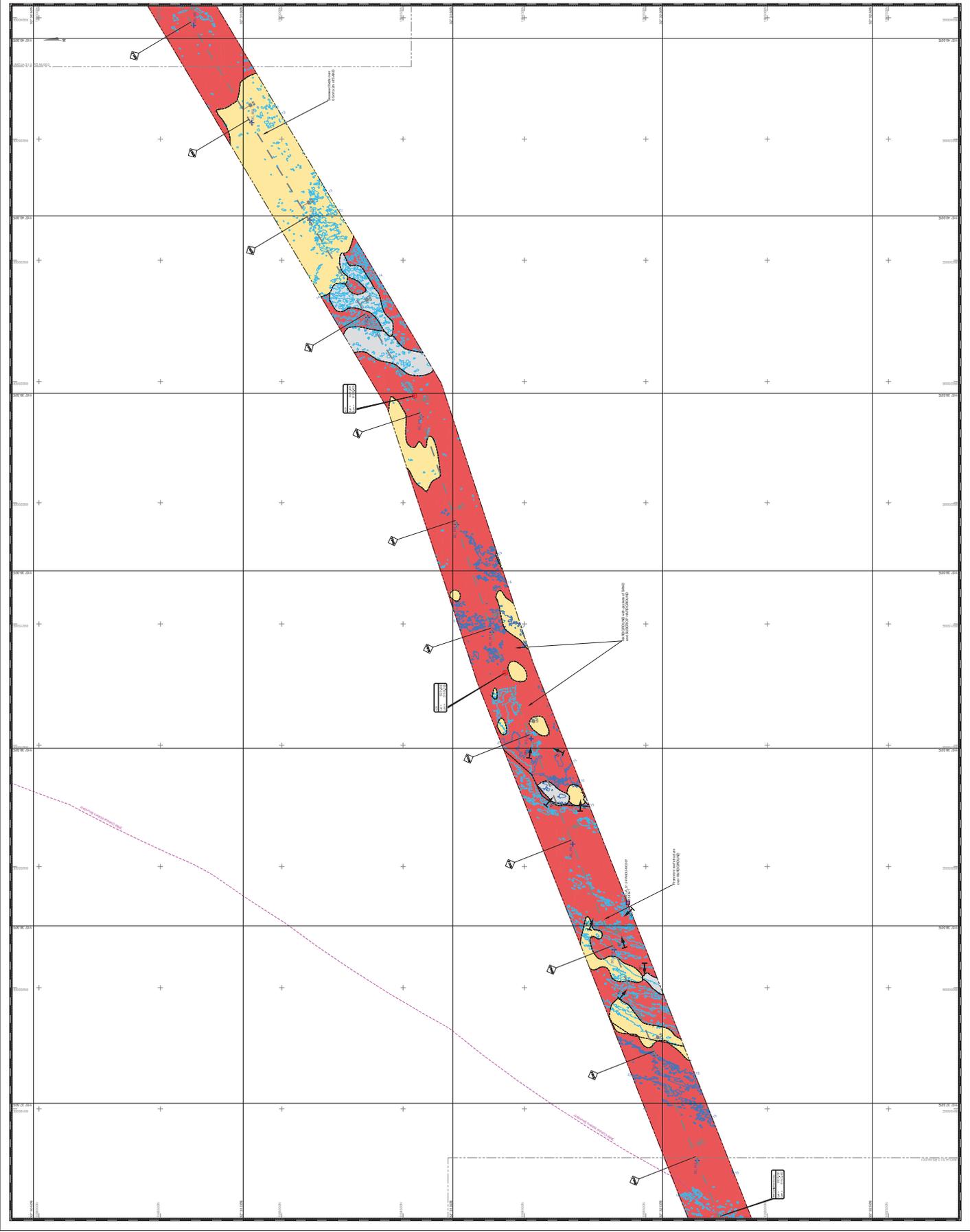
**PROJECT LOCATION**  
 Project Location: Cable Installation

**PROJECT NUMBER**  
 Project Number: 1002-005

**CLIENT NAME**  
 Client Name: SUBCOM

**CLIENT ADDRESS**  
 Client Address: 1002-005

**CLIENT PHONE**  
 Client Phone: 8245-183-8251-058



**PROJECT INFORMATION**  
 Project Name: Cable Installation  
 Project Number: 1002-005  
 Date: 10/20/2023

**CLIENT INFORMATION**  
 Client Name: SUBCOM  
 Client Address: 1002-005  
 Client Phone: 8245-183-8251-058

**PROJECT INFORMATION**  
 Project Name: Cable Installation  
 Project Number: 1002-005  
 Date: 10/20/2023

**CLIENT INFORMATION**  
 Client Name: SUBCOM  
 Client Address: 1002-005  
 Client Phone: 8245-183-8251-058

**PROJECT INFORMATION**  
 Project Name: Cable Installation  
 Project Number: 1002-005  
 Date: 10/20/2023

**CLIENT INFORMATION**  
 Client Name: SUBCOM  
 Client Address: 1002-005  
 Client Phone: 8245-183-8251-058



# **Appendix B**

**DPLH – Written Confirmation of  
Development Application**



Department of Planning,  
Lands and Heritage

Case:  
File: 03917-1962  
Telephone: (08) 6551 9122

GHD  
Sophie Antcliff  
999 Hay Street  
PERTH, WA 6000

Sent via email to: [sophie.antcliff@ghd.com](mailto:sophie.antcliff@ghd.com)

Dear Sophie,

### **APPLICATION FOR LANDOWNER CONSENT– PROPOSED INSTALLATION OF SUBSEA TELECOMMUNICATIONS CABLE**

Please find enclosed a signed Application for Planning Approval relating to proposed installation of a subsea telecommunications cable in coastal waters near Madora Bay.

The Department of Planning, Lands and Heritage (Department) has signed the attached Development Application as acknowledgement that an application is being made affecting Crown land, being the coastal waters west of Madora Bay through to north-west of Mandurah within the bounds of the Metropolitan Region Scheme 'Waterways' reservation (the 'affected land'). The affected land is depicted in the attached map.

The signing of the application forms does not represent approval for the proposal and should not be taken as an endorsement of the proposed development or to any modification to the tenure of the Crown land component. The application has been signed only as acknowledgement of and to facilitate the processing of the application. Further, the Department will not incur any application fees or costs associated with the preparation of plans or development.

The Department understands that the affected land that forms part of this Development Application does not fall within the jurisdiction of any local government. Additionally, the remaining portions of the development (i.e. cable install) are exempt from development approval under the provisions of the *Planning and Development Act 2005* on the grounds that they are to be installed pursuant to a permit under the Commonwealth *Telecommunications Act 1997* or are located within the Perth Cable Protection Zone as declared under the *Submarine Cable (Perth Protection Zone) Declaration 2007* (Cth). As such, GHD have advised that no tenure or planning requirements apply within this area.

The Department will continue discussions with GHD in relation to an appropriate form of tenure for the portion of development that forms part of this application for Development Approval under the Metropolitan Region Scheme.

Please do not hesitate to contact me on 6551 9122 or [keenan.ross@dplh.wa.gov.au](mailto:keenan.ross@dplh.wa.gov.au) if you require further information.

Yours sincerely

A handwritten signature in black ink, appearing to be the initials 'KR' in a cursive style.

Keenan Ross  
A/Manager – Metropolitan and Peel  
Land Use Management  
19 December 2025