

Appendix C – Other Existing Environmental Considerations

This section provides an overview of the existing environment in regards to social, regulatory and economic factors. This is intended to be descriptive of the current situation and potential interactions with the installation of the Indigo Central Cable (the cable) only, where as the main body of the report summarises these items and provides mitigation measures or recommendations as appropriate

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C. Appendix C - Regulatory

The regulatory landscape for the cable is presented below in terms of Commonwealth, State, and Local Government authorities. Also, provided is the interpretation of the Acts relative to the cable.

C.1 Commonwealth

C.1.1 Commonwealth Telecommunications Act 1997

Schedule 3A

Installation of fibre optic submarine cables fall under the Commonwealth *Telecommunications Act 1997* (the *Act*). This schedule protects existing critical infrastructure, ensures a high standard of care is taken to new works and to ensure the Australian consumers is exposed to new competitive markets.

Under subclause 6 (3) of Schedule 3 of the Act the Minister may declare parts of the project as “low impact facilities”, allowing the installation of these with only notification required to stakeholders.

Under the *Telecommunications (Low-impact Facilities) Determination 1997*, (made under the above subclause); Part 3, Schedule 3.1 (Part 2 (2)) Underground Housing, refers to a manhole surface of no more than 2 square metres. The existing Beach Manhole (BMH) and cable duct are fully below ground, and thus satisfying the low impact definition.

Part 3, Schedule 3.1 (Part 4 (1c, e)) *Underground Facilities* of the *Determination* defines a low impact facility as “bore or directional drill hole at least 600 millimetres below the surface”, “where vehicle access to property is not lost for more than 8 hours total”. As the cable duct is existing and located adjacent to an off-road parking facility, required works are minor and do not limit vehicle access to the carpark. Hence, the landside facilities are considered by GHD as low impact, as per definitions in the *Determination*. As the BMH and this portion of the cable meet the low impact definition, consultation has been undertaken and notification has been given to relevant stakeholders – Randwick City Council and Crown Lands. It is expected that the carrier will submit a Land Access and Activity Notice to Randwick City Council closer to the installation date.

The route from the BMH out to the extent of coastal waters (3 NM) is specifically mentioned in the *Act* under Schedule 3, subclause 6(4A) which states a submarine cable must not be specified under the low impact facility determination. As such, State approvals for installation within coastal waters were investigated with the NSW Office of Environment and Heritage under the NSW *Coastal Protection Act 1979* discussed further below.

Commonwealth – Southern Sydney Protection Zone

In July 2007, the Australian Communications and Media Authority (ACMA) declared two cable protection zones in NSW over two nationally significant cables; the Southern Cross cable and the Australia Japan cable. These two protection zones are known as the Northern Sydney Protection Zone (NSPZ) and the Southern Sydney Protection Zone (SSPZ). The SSPZ encompasses the coastal area between Bondi Beach and South Coogee, and extends approximately 35 NM (or 65 km) offshore to 2000 m water depth (WD). It covers the area from one nautical mile either side of the aforementioned cables as well as the area in between.

The objective of the SSPZ is to recognise submarine communications cables as nationally important infrastructure and protect them as such. To protect the cables from human

interference, certain activities are prohibited or restricted to certain water depths. Such activities are primarily associated with demersal or bottom fishing techniques.

All bottom and midwater trawling is prohibited, as is demersal longlining and various other destructive seabed activities such as dredging. A list of restricted activities has been reproduced from the ACMA website in Figure C-1.

Available: <https://www.acma.gov.au/-/media/Numbering-and-Projects/Information/pdf/Submarine-Telecommunications-Cables-NSW-Protection-Zones-Information.pdf> [Accessed 31 October 2017].

Table C-1 Restricted Activities within Sydney Protection Zones (taken from ACMA, 2007a)

Activity	0 – 500 m WD from low-water mark	500 m from low-water mark to 100 m WD	Waters of greater than 100 m WD
Anchoring in the NSPZ	Permitted	Is permitted, providing the anchor weighs 20 kg or less; and the anchor is fitted with a trip release mechanism; and the anchor line has a breaking strain of 850 kg or less; or the anchor weighs no more than 30 kg and is anchored within 200 metres of an ACMA specified shipwreck site.	Not permitted
Anchoring in the SSPZ	Permitted	Is permitted, providing the anchor weighs 20 kg or less; and the anchor is fitted with a trip release mechanism; and the anchor line has a breaking strain of 850 kg or less; or the anchor weighs no more than 30 kg and is anchored around the Peak (as specified by ACMA's coordinates).	Not permitted
Lowering, raising or suspending from a ship a shotline	Permitted	Is permitted, providing the shot weighs 20 kg or less, and the shotline has a maximum breaking strain of 850 kg or less.	Not permitted
Demersal fishing using J-hooks	Permitted	Is permitted, providing the fishing line has a breaking strain of 50 kg or less.	Is permitted, providing the fishing line has a breaking strain of 50 kg or less.
Use of or towing, operating or suspending from a ship a demersal dropline	Permitted	Is permitted, providing only circle-type hooks are used; and the dropline has a breaking strain of 850 kg or less; and the dropline does not use a wire snood, trace or mainline.	Is permitted, providing only circle-type hooks are used; and the dropline has a breaking strain of 850 kg or less; and the dropline does not use a wire snood, trace or mainline.
Use of or towing, operating or suspending	Permitted	Is permitted, providing the base of the trap does not exceed 2 metres in length, width or diameter; and the	Is permitted, providing the base of the trap does not exceed 2 metres in length, width or diameter; and the trap rope

Activity	0 – 500 m WD from low-water mark	500 m from low-water mark to 100 m WD	Waters of greater than 100 m WD
from a ship a pot or trap		trap rope breaking strain is 850 kg or less.	breaking strain is 850 kg or less.
Harvesting the benthos	Permitted	Is permitted, providing harvesting is conducted by hand.	Is permitted, providing harvesting is conducted by hand.
Use of or towing, operating or suspending from a ship a net anchored to the seabed	Permitted	Not permitted	Not permitted
Use of or towing, operating or suspending from a ship a grapnel	Permitted	Not permitted, except in waters more than 500 metres from the low water mark, and only if it is used in the course of work on electricity, oil or gas pipelines and cables, installations for the use of ships, civil engineering, mining or petroleum operations or in conducting research that involves contact with the seabed.	Not permitted, except in waters more than 500 metres from the low water mark, and only if it is used in the course of work on electricity, oil or gas pipelines and cables, installations for the use of ships, civil engineering, mining or petroleum operations or in conducting research that involves contact with the seabed.
Use of an explosive or explosive device	Permitted if used in the course of mineral or petroleum operations, civil engineering work or an exercise conducted by or with the Australian Defence Force.	Permitted if used in the course of mineral or petroleum operations, civil engineering work or an exercise conducted by or with the Australian Defence Force.	Permitted if used in the course of mineral or petroleum operations, civil engineering work or an exercise conducted by or with the Australian Defence Force.

Commonwealth – Perth Protection Zone

In September 2007, the ACMA made a declaration for a submarine cable protection zone off the coast of Perth, which has been in effect since 1 February 2008. The Perth Protection Zone (Perth PZ) is located around the SEA-ME-WE3 cable, which links Australia to South East Asia, the Middle East and Western Europe. The Perth PZ extends from City Beach / Floreat Beach, Perth to 51 nm offshore of the MWM (this corresponds to a water depth of 2,000 metres) and extends up to 1 nm either side of the SEA-ME-WE3 cable.

As with the Sydney Protection Zones, all bottom and midwater trawling are prohibited, as is demersal longlining and various other destructive seabed activities such as dredging (ACMA (2007b)). A list of activities restricted within the Perth PZ are detailed in Figure C-2.

Available: <https://www.acma.gov.au/-/media/Numbering-and-Projects/Information/pdf/Submarine-Telecommunications-Cables-WA-Protection-Zone-Information.PDF> [Accessed 31 October 2017]

Table C-2 Restricted Activities within Perth Protection Zone (ACMA, 2007b)

Activity	0 – 500 m WD from low-water mark	500 m from low-water mark to 100 m WD	Waters of greater than 100 m WD
Lowering, raising or suspending an anchor from a ship	Permitted	Is permitted, providing the anchor is fitted with a trip release mechanism, the anchor line has a maximum breaking strain of 1,090 kg or less, the ship uses a danforth anchor or sand and reef (SARC) anchor that weighs less than 15 kg, or the ship uses a plough anchor or reef pick anchor that weighs less than 25 kg.	Not permitted
Lowering, raising or suspending from a ship a shotline	Permitted	Is permitted, providing the shot weighs 20 kg or less, and the shotline has a maximum breaking strain of 850 kg or less.	Not permitted
Demersal fishing using J-hooks	Permitted	Is permitted, providing the fishing line has a breaking strain of 50 kg or less.	
Use of or towing, operating or suspending from a ship a demersal dropline	Permitted	Is permitted, providing only circle-type hooks are used; and the dropline has a breaking strain of 850 kg or less; and the dropline does not use a wire snood, trace or mainline.	
Use of or towing, operating or suspending from a ship a single pot or trap (e.g. for fish or lobster trapping)	Permitted	Is permitted, providing the base of the trap is 2 m or less in length, width or diameter, and the trap rope is not composed of wire and has a breaking strain of 2.7 tonnes or less.	
Use of or towing, operating or suspending from a ship multiple pots or traps (e.g. as often used in octopus and crab fisheries)	Permitted	Is permitted, providing multiple pots or traps are fixed to a single mainline, each pot or trap is 15 kg or less in weight when dry, the base of the trap is 2 m or less in length, width or diameter, the branch line has a maximum breaking strain of less than 500 kg, and the mainline is not composed of wire and has a breaking strain of 2.7 tonnes or less	
Harvesting the benthos	Permitted	Is permitted, providing harvesting is conducted by hand.	
Use of or towing, operating or suspending from a ship a demersal gillnet	Permitted	Permitted providing, anchors or weights are not used during the fishing operation, the net is composed of individual lines that have a breaking strain of 2.7 tonnes or less, and fishing is retrieved vertically to the greatest extent practicable so that the net does not drag on the seabed.	
Use of or towing, operating or suspending from a ship a grapnel	Permitted	Not permitted unless in the course of work on electricity, oil or gas pipelines and cables, installations for the use of ships, civil engineering, mining or petroleum operations, or in conducting research that involves contact with the seabed.	
Use of an explosive or explosive device	Permitted if used in the course of mineral or petroleum operations, civil engineering work or an exercise conducted by or with the Australian Defence Force.		

C.1.2 Commonwealth – Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* is described in detail in the main body of the report, with this EA forming part of the *EPBC Act* referral approvals process. Provided additionally herein is a description of the Marine Parks (MPs) currently being proposed to be proclaimed under the *EPBC Act*.

The Director of National Parks (the Director) is the Statutory Authority responsible for the administration, management and control of all MPs under the *EPBC Act*. The functions of the Director include the protection, conservation and management of biodiversity and heritage in Marine Parks.

The current cable route intersects with one Marine Park, with an active management plan, Beagle Marine Park.

The cable route will also be laid within 50 km of: the following MPs;

- Two Rocks
- Nelson
- Apollo.

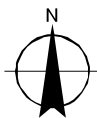
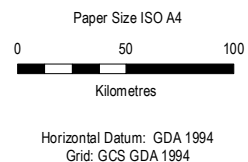
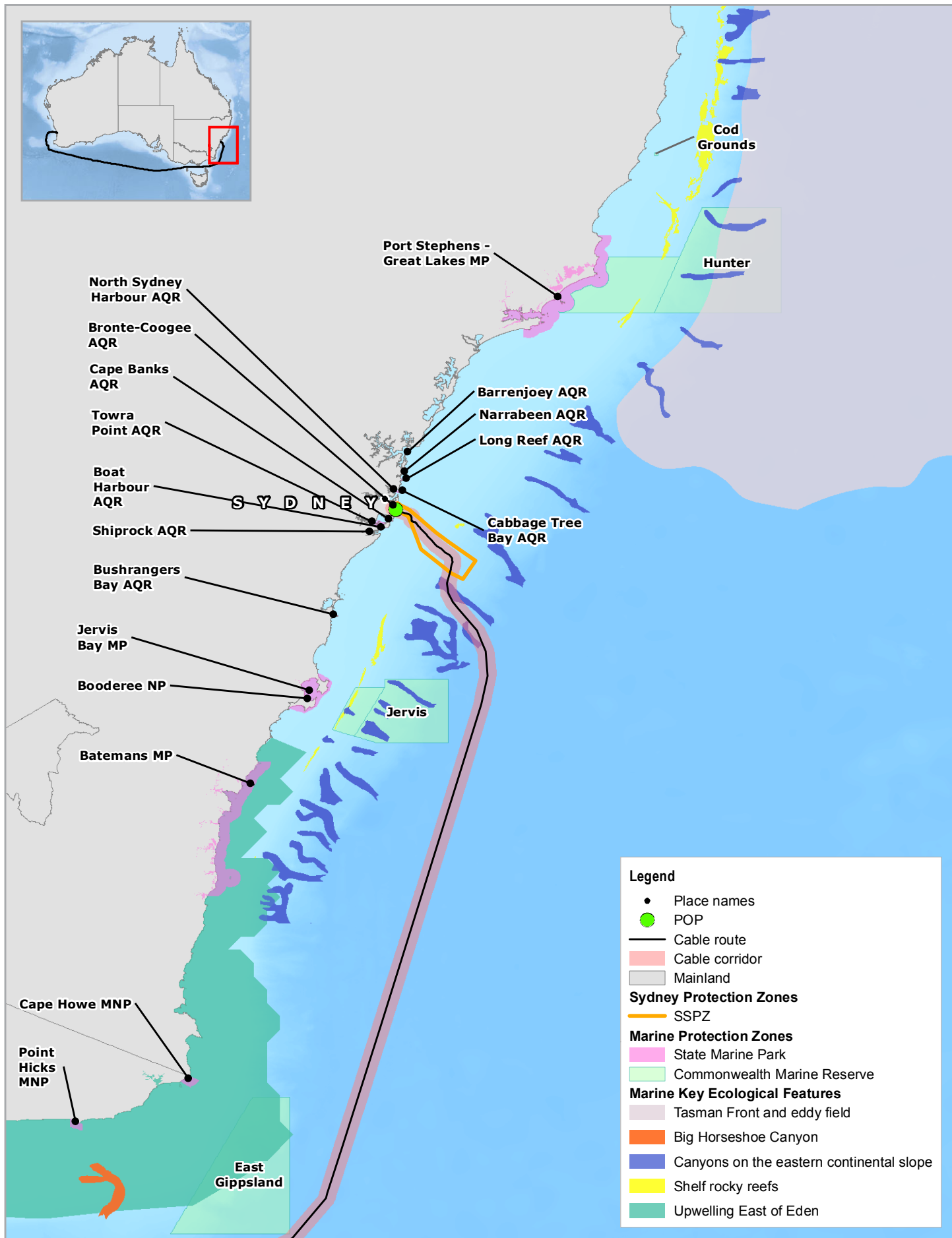
It should be noted that the cable corridor traverses the Apollo Commonwealth Marine Reserve but the actual cable route does not intersect with this area; it passes to the near south. No interference with the Apollo Marine Reserve is expected.

The approved actions relevant to the cable activities are:

- Erecting structures, carrying out works and carrying on an excavation
- Commercial vessel transit (being continuous passage of a vessel through an area by the shortest direct route without any other activity being carried out).

Previously, an Application to Conduct Activities within MP was required. Under the transitional management arrangements, approved actions may be carried out provided they are done so in accordance to the conditions under the general approval. It is unclear whether an application will be required under the new management plans. However, it is assumed that Parks Australia (Department of Environment and Energy) will be involved in the EPBC Act Referral review process, and so any standing approvals under this Act would be applicable if the new MP management plans came in to effect before the cable installation.

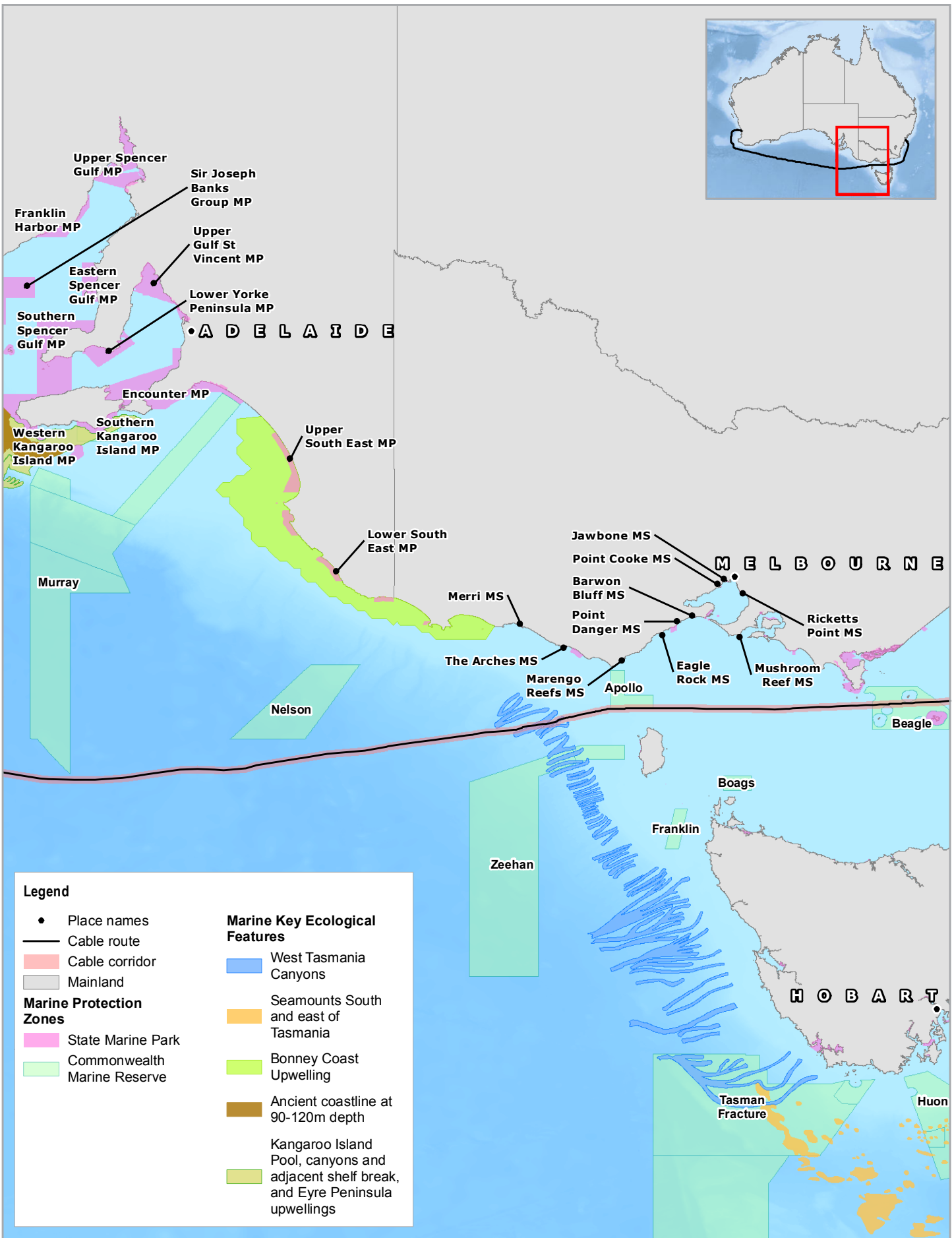
An overview of the cable interactions with the proposed MPs is displayed in Figure C-1, Figure C-2, Figure C-3.



ALCATEL SUBMARINE NETWORKS
INDIGO Central
 Environmental Impact Assessment
**Proposed cable route (NSW),
 State Marine Parks, and
 Commonwealth Marine Reserves**

Project No. 21-26628
 Revision No. 1
 Date 14/12/2017

FIGURE C-1



Legend

- Place names
- Cable route
- ▬ Cable corridor
- ▭ Mainland

Marine Protection Zones

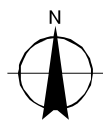
- ▭ State Marine Park
- ▭ Commonwealth Marine Reserve

Marine Key Ecological Features

- ▭ West Tasmania Canyons
- ▭ Seamounts South and east of Tasmania
- ▭ Bonney Coast Upwelling
- ▭ Ancient coastline at 90-120m depth
- ▭ Kangaroo Island Pool, canyons and adjacent shelf break, and Eyre Peninsula upwellings

Paper Size ISO A4
 0 50 100 150
 Kilometres

Horizontal Datum: GDA 1994
 Grid: GCS GDA 1994



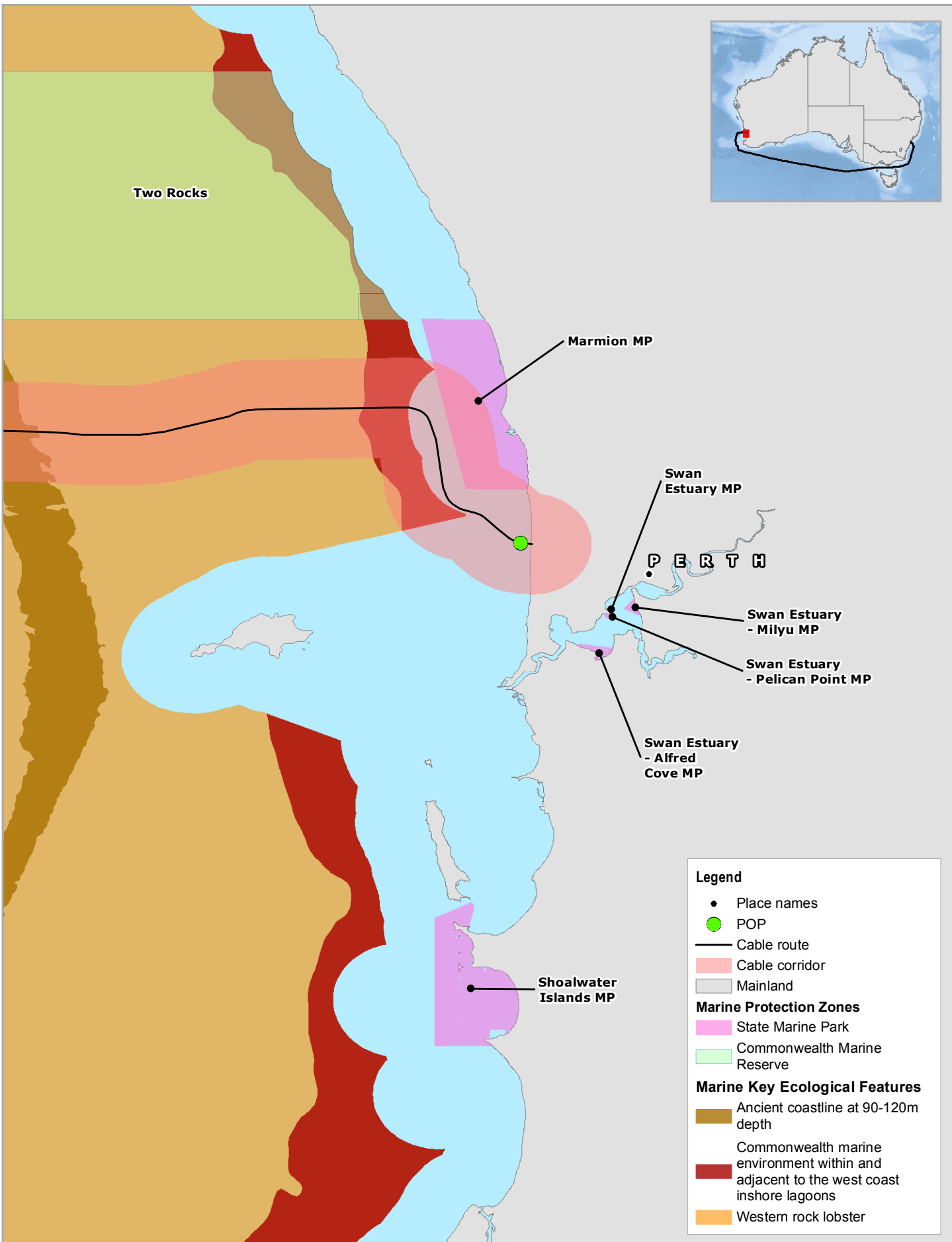
ALCATEL SUBMARINE NETWORKS
 INDIGO Central
 Environmental Impact Assessment

Project No. 21-26628
 Revision No. 1
 Date 14/12/2017

**Central cable route (Bass Strait),
 Marine Parks / Reserves and KEFs**

FIGURE C-2

N:\AU\Brisbane\Projects\2126628\GIS\MXD\Central\AC_21_26628_019_rev_1.mxd
 Print date: 14 Dec 2017 - 11:17
 Data source: GHD - POP, Cable route (28 - Nov 2017), Cable Corridor (2017), GA: Mainland, Bathymetry (2009), Department of Environment: Marine Key Ecological Features (2017), CAPAD - Marine Protected Zones (2016). Created by: xlee



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 Kilometres



Horizontal Datum: GDA 1994
 Grid: GCS GDA 1994



ALCATEL SUBMARINE NETWORKS
INDIGO Central
 Environmental Impact Assessment
Proposed cable route (WA),
State Marine Parks, and
Commonwealth Marine Reserves

Project No. 21-26628
 Revision No. 1
 Date 14/12/2017

FIGURE C-3

C.2 State

C.2.1 NSW Coastal Protection Act 1979

This Act makes provisions relating to the use and occupation of the coastal region of NSW (i.e. out to 3 NM) in order to preserve and protect these areas whilst encouraging sustainable use of the areas. The Act also establishes the NSW Coastal Panel to advise the Minister and local councils and exercise functions conferred on it by the *Environmental Planning and Assessment Act 1979*.

As per Clause 5 of the *Coastal Management Manual 2011*, which refers to the *Coastal Protection Act 1979*, activities in the coastal zone that do not require development consent or approval under the *Environmental Planning and Assessment Act 1979*, and that are not being carried out in accordance with a *Coastal Zone Management Plan*, require Ministerial concurrence. Clause 6, however, “exemption of certain development,” indicates that “*the temporary disturbance of the seabed (less than 30 days in any location) associated with the carrying out of development under the seabed such as the laying of pipes and cables*” indicates that the proposed works are excluded from this requirement.

The *Coastal Protection Act 1979* and the *Coastal Management Manual 2011* are to be replaced by the *Coastal Management Act 2016*. A part of the new Act will be a new definition of the coastal zone. The open water boundary will remain at 3 NM and be classified within the coastal environment area while the coastal use area will extend 200 m landward of the mean high water mark at the proposed landing location. There is no mention in the *Coastal Management Act 2016* of development relating to the laying of cables or temporary disturbance of the seabed. The *Coastal Management Act 2016* does however refer to the State Environmental Planning Policy Infrastructure 2007 (SEPP).

C.2.2 NSW State Environmental Planning Policy Infrastructure 2007

Telecommunication facilities are covered under this SEPP and are consistent with our understanding that no development applications are required by the State.

Division 21, Cl 114A of the SEPP, covers the coastal section of cable stating “*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*”

Similarly, Division 21, Cl.116 refers to Schedule 3A *Exempt and complying development in relation to telecommunications facilities* which echoes the *Telecommunications Act 1997 (Commonwealth)* by defining the following as Exempt Development

- underground housing manholes must not have an opening greater than 2 m² (Cl 9.1)
- underground cable hauled or otherwise deployed through a duct, pit, hole, tunnel or conduit (Cl 11.1c)

As long as the proposed works meet all of the development standards (identified in the SEPP for exempt and complying development), further approval is generally not required.

C.2.3 NSW Department of Primary Industries – Fisheries

Stakeholders that received a Flyer (including project brief and proposed cable route) directly from Fisheries (either hard copy, email, or link to SMS link to the website) were: the Professional Fisherman's Association as well as the NSW ocean trap and line, ocean trawl and lobster fishers.

As the cable is routed through the SSPZ, and ASN are not intending to apply to change the existing fishing regulations within the SSPZ, the response to the community consultation was expectedly low. A summary of all correspondence is included below in Table C-3.

Table C-3 NSW Stakeholder Feedback Summary

Received From	Method of Contact	Salient Points	GHD Response
DPI Fisheries NSW	Email	Fisheries asked if this project was related to the survey that was being undertaken by EGS.	Yes, this is the same project.
DPI Fisheries NSW (recreational fishing)	Phone	Recreation fishing is at its peak during the December/January holidays. It would be best to avoid installation during this period.	Noted, very valid point. This is to be considered in the installation planning.

The general lack of response indicates a general compliance with the proposed cable route.

The Ocean Trap and Line Fishery groups did not respond to the consultation flyer; however, it should be noted that demersal droplining and trap fishing are permitted within the SSPZ up to 100 m WD, providing the line breaking strain is 850 kg or less.

C.2.4 Port of Sydney

The Port Authority NSW is the nearest port authority to the cable around Sydney. The Port Authority NSW advised that the relevant project activities should be sent through one month prior to installation and they will issue a notice to mariners.

C.2.5 WA Department of Water and Environmental Regulation

The Department of Water and Environmental Regulation (DWER) has statutory obligations under the *Environmental Protection Act 1986*. The DWER have been provided with a project activity description and mapping for their assessment. The Resources Department within DWER put the provided description and mapping forward to the wider department for further commenting. No further feedback was received, and the consultation was concluded to be closed out.

C.2.6 WA Department of Primary Industries and Regional Development

The Department of Primary Industries and Regional Development (DPIRD) administers a number of fisheries resources legislation. DPIRD have been provided with a project activity description and mapping for their assessment.

Following an assessment of the project they have advised that they have no objection or further requirements as long as:

- The projects are formally assessed by the Commonwealth Department of Environment and Energy and the WA Environment Protection Authority under the EP Act
- There is continued consultation with WAFIC, RecFishWest and licence holders
- All statutory biosecurity requirements are met under the *Fish Resources Management Act 1994*

A summary of all correspondence is included below in Table C-4.

Table C-4 WA DPIRD Feedback Summary

Received From	Method of Contact	Salient Points	GHD Response
Hans Kemps Senior Management Officer Strategy and Aquatic Resources DPIRD	Phone/ Email/Letter	As long as project is referred under the EPBC Act, there is continued consultation with WAFIC and RecFishWest, and we meet biosecurity requirements then there is no departmental objection.	Confirmed these conditions will be met

C.2.7 WA Department of Biodiversity, Conservation and Attractions

The Department of Biodiversity, Conservation and Attractions (DBCA) administers a number of biodiversity legislation. DBCA have been provided with a project activity description and mapping for their assessment.

Following an assessment of the project they have advised that there is no approval requirements from this department under its legislative responsibilities as it does not traverse any WA State waters that are managed under the *Conservation and Land Management Act 1984*.

A summary of all correspondence is included below in Following an assessment of the project they have advised that they have no objection or further requirements as long as:

- The projects are formally assessed by the Commonwealth Department of Environment and Energy and the WA Environment Protection Authority under the EP Act
- There is continued consultation with WAFIC, RecFishWest and licence holders
- All statutory biosecurity requirements are met under the Fish Resources Management Act 1994

A summary of all correspondence is included below in Table C-5.

Table C-5 WA DBCA Feedback Summary

Received From	Method of Contact	Salient Points	GHD Response
Mr Dan Coffey Area Manager South, Environment Management Branch DBCA	Email	No approval requirements	NA

C.2.8 WA Department of Planning, Lands and Heritage, WA State Heritage Office

The Department of Planning, Lands and Heritage (DPLH) administers a number of development and heritage legislation. DPLH have been provided with a project activity description and mapping for their assessment.

Following an assessment of the project they have advised that there is no approval requirements from this department under its legislative responsibilities as it does not affect any place included in the State Register of Heritage Places.

A summary of all correspondence is included below in Table C-6.

Table C-6 WA DPLH Feedback Summary

Received From	Method of Contact	Salient Points	GHD Response
Ms Adelyn Siew Director Heritage Department DPLH	Email and letter	No approval requirements	NA

C.2.9 WA Department of Mines, Industry, Regulation and Safety

The Department of Mines, Industry, Regulation and Safety (DMIRS) administers the *Offshore Minerals Act 2003*. DMIRS advised that direct engagement was not required with their department as they receive information from DPLH which they use to cross-reference against their minerals database. If there are any issues, they raise that with DPLH and this is presented within the DPLH response.

A summary of all correspondence is included below in Table C-7.

Table C-7 WA DMIRS Feedback Summary

Received From	Method of Contact	Salient Points	GHD Response
Mr Warren Ormsby DMIRS	Phone	No approval requirements or further engagement needed.	NA

C.2.10 WAFIC

WAFIC is the peak commercial fisheries body. After discussions with WAFIC they advised they are currently undertaking the targeted licence holder consultation for EGS survey. WAFIC suggest that consultation for the cable installation to be undertaken one month prior to installation.

A summary of all correspondence is included below in Table C-8

Table C-8 WAFIC Feedback Summary

Received From	Method of Contact	Salient Points	GHD Response
Ms Mannie Shae Executive Officer Resource Access WAFIC	Phone and email	Licence holder consultation 1 month prior to installation. Currently undertaking licence holder consultation for EGS	To be engaged in the near future

C.2.11 WA RecFishWest

RecFishWest is the peak recreational fisheries body. RecFishWest were supplied with a project activity description and mapping for their assessment.

Following an assessment of the project they have advised that they have no comment on the project.

A summary of all correspondence is included below in Table C-9.

Table C-9 WA RecFishWest Feedback Summary

Received From	Method of Contact	Salient Points	GHD Response
Mr Leyland Campbell Operations Manager RecFishWest	Phone and email	No comment on project	NA

C.2.12 Port of Fremantle

The Port of Fremantle is the nearest port authority to the cable around Perth. The Port advised that the relevant project activities should be sent through one month prior to installation and they will issue a notice to mariners.

A summary of all correspondence is included below in Table C-10.

Table C-10 Port of Fremantle Feedback Summary

Received From	Method of Contact	Salient Points	GHD Response
Mr Stuart Davey Fremantle Ports	Phone	Project activities to be sent through 1 month prior to installation.	To be engaged in the near future

C.2.13 Government of SA – Primary Industries and Regions SA

The Primary Industries and Regions SA (PIRSA) was informed of the proposed cable installation, and they have distributed a consultation flyer to their major stakeholders. As the cable is not reaching SA State waters, and ASN are not intending to apply to change the existing fishing regulations surrounding the cable, the response to the community consultation was expectedly low, with no responses received.

C.2.14 Victorian Fisheries Authority

Victorian Fisheries Authority (VFA) advised GHD to send a consultation brief to Seafood Industry VIC, VRFish. Briefs were forwarded and the consultation was completed after a 3 week period during which the stakeholders were to submit comments and concerns. No comments were received, and a phone call with VFA confirmed that they were content with the consultation.

C.2.15 Tasmanian State Legislation, Department and Bodies

Liaison with Crown Land Services (CLS) of Tasmania Parks and Wildlife Services, confirms the State Waters surrounding Crocodile Rock are defined as Crown Land. The cable will traverse through these waters. This will require a Works Application to permit the cable installation, and a Licence Application for the use of the submerged Crown Land on which the cable will rest. Information developed under this EA will inform permit application and assessment.

C.3 Australian Fisheries Management Authority (Commonwealth)

AFMA was contacted and given a full project brief as well as a consultancy flyer for AFMA to distribute at their discretion. It is known that AFMA has had concerns of previous cable installations as installation activities may cause business disruption for commercial trawl fishing, and the concern that the cable may be fouled by trawlers. Considering the cable protection zones and the trawl closures, which cover a large percentage of the proposed cable route, it is unlikely that there will be any interactions between trawlers and cable ships during the cable installations in Australian waters. Cable fouling is also not anticipated as demersal long lining generally occurs in water depth less than 100 m WD. The Cable will exist in the SSPZ/Perth PZ at these water depths, where demersal long lining is prohibited. Table C-11 describes a summary of the consultation undertaken with AFMA.

Table C-11 AFMA Consultation Summary

Received From	Method of Contact	Salient Points	GHD Response
Dr James Findlay, Chief Executive Officer, Australian Fisheries Management Authority	Letter	<ul style="list-style-type: none"> AFMA is to be kept informed of the progress of the approval process and its outcome. GHD is to contact the Commonwealth Fisheries Association and/or Seafood Industry Australia regarding the project. 	<ul style="list-style-type: none"> AFMA will be updated before project commencement of any route changes or other matters that may affect AFMA. GHD contacted the Commonwealth Fisheries Association as well as the Seafood Industry Australia with project details and maps.

C.4 Department of Defence

It is a requirement under the *Defence Force Regulations 1952* that prior to accessing military training areas for cable installation and maintenance activities, vessel operators have an obligation to contact the Department of Defence. No specific training zones have been identified to conflict with the proposed route. The Department of Defence has been notified of the planned installation of the cable, to which they responded that the approximate dates are to be updated once known in order to facilitate de-confliction. An official notification shall be submitted a minimum of 14 days before activities begin. Additionally, they request that AUSCOAST (or similar) are sent warnings, which are to be promulgated through AMSA prior to the commencement of activities. Defence has submitted an official letter noting that the cable crosses the Eastern Australian Exercise Area (EAXA), in which weapons are fired and may come to rest on the seabed in close proximity to the cable, and advises that ASN are to conduct all activities at their own risk. Defence also advises that they will take no responsibility for any UXOs or the damage they may cause. Additionally, ASN are to submit any bathymetric data collected in EAXA to the Australian Hydrographic Service (AHS) as well as inform them of the intended action three weeks in advance.

C.5 Other Relevant Legislation

Other relevant legislation is summarised in Chapter 3 of the main report.

C. Maritime Archaeology

In 2017, GHD commissioned the archaeological consulting company Cosmos Archaeology to undertake a desktop review of the maritime archaeology surrounding the proposed Indigo Central cable alignment, to identify any archaeological sites with the potential to impact Indigo Central (CA 2017). The study used various sources to prepare a list of known and potential maritime archaeology sites within 2.5 nm either side of the proposed Indigo Central cable route within the Australian Economic Exclusion Zone, with a focus on sites within 500 m (0.27 nm) of the cable. It also includes a review of potential maritime archaeological sites within the SSPZ and the Perth PZ.

To account for the various factors which contributed to the confidence in the accuracy of the positions provided, all the items presented in the desk study were given an estimation of accuracy, i.e. a locational range, presented as a radius in nm from the position given. Standard accuracy radius estimates are provided below, however, some sites were given a unique position accuracy depending upon the quality of information available regarding their position.

- 0.5 nm - site has been inspected and positioned by government archaeologists
- 2 nm - GPS positions provided by reliable source but are unverified
- 5 nm GPS positions provided by unknown source

The outcomes of the desk study are summarised below.

C.6 Regulation of Maritime Archaeology along the Indigo Central Route

Maritime archaeology along the proposed cable route of Indigo Central in Australian waters falls under the jurisdiction of several pieces of legislation, as follows:

- *The Commonwealth Historic Shipwrecks Act 1976* - which protects historic wrecks and relics in Commonwealth waters, extending from below the low water mark
- *Western Australian Maritime Archaeology Act 1973* – which protects historic shipwrecks off the coast of Western Australia
- *Victorian Heritage Act 1995* – protects all items of cultural heritage significance in Victoria, including historic archaeological sites.
- *NSW Heritage Act 1997 (amended 1999)* - protects all items of environmental heritage (natural and cultural) in New South Wales
- *Tasmanian Historic Cultural Heritage Act 1995* - protects all items of cultural heritage significance in Tasmania, including historic archaeological sites
- *Australian Telecommunications Act 1997 and Telecommunications & Other Legislation Amendment (Protection of Submarine Cables & Other Measures) Act 2005* – which requires carriers seeking to install new submarine cables in Australian waters to apply to the ACMA for a permit to do so.

This legislation should be considered in all activities relating to the installation and operation of Indigo Central. Due to the likelihood that activities surrounding Indigo Central may uncover maritime archaeological sites along the proposed cable route, it is also important to note that if a shipwreck is identified, it is a legal requirement under the *Commonwealth Historic Shipwrecks Act 1976* to report the find to the relevant state department as soon as possible.

C.7 Known Maritime Archaeology Sites

Cosmos Archaeology identified a total of 49 known maritime archaeological sites with centre points within the study area. These included 44 sites within the SSPZ and 5 additional sites outside of its area. No known sites were identified within the Perth PZ. Identified sites consisted of:

- 30 shipwrecks
- Six ammunition dumps
- Four boat dumps
- Two chemical dumps
- One other dump
- Six anomalies.

Table C-12 and Table C-13, below, list the known archaeological sites and their location in relation to the Indigo Central cable route. Due to the potential inaccuracies in the locational information available for these sites, allocation of a locational range was necessary to provide an approximate positioning for the sites. Taking this into consideration, many of the sites have locational ranges that overlap the proposed cable route of Indigo Central, and as such, it is possible that they lie along its route and may be encountered.

Table C-12 Known Maritime Archaeological Sites Located within the SSPZ.

Object	Location (UTM Zone 56 H)		Location (WGS-84 Zone 56 H)		Centre point distance from cable (nm)	Position accuracy (nm)	Source	Description	Year Built	Year Wrecked	Construction	Tonnage	Notes	
	Easting (m E)	Northing (m S)	Latitude (S)	Longitude (E)										
Centre point within 500 m (0.27 nm) of cable														
Anomaly	341351.88	6244297.26	33 55.790	151 17.014	0.20	5.0	nsw wrecks	Anomaly 1	UNK	UNK	UNK	UNK	UNK	Unidentified Coogee Wreck alternative position
Anomaly	349128.03	6238489.79	33 59.000	151 22.000	0.20	5.0	Other	Anomaly A	UNK	UNK	UNK	UNK	UNK	Pers. Comm. with HD supplied this location sourced from research by Peter Taylor - Non-sub echo 184 of 2052
Boat dump	372723.61	6201865.44	34 19.000	151 37.000	0.20	2.0	AHS SD	<i>Cyclops</i>	UNK	1971	Steel	UNK	UNK	Pers. Comm. with HD also supplied this location.
Anomaly	341294.62	6244403.53	33 55.732	151 16.975	0.25	5.0	nsw wrecks	Anomaly 2	UNK	UNK	UNK	UNK	UNK	Unidentified Coogee Wreck
Other dump	349465.15	6236498.55	34 00.080	151 22.198	0.25	2.0	AHS SD	Demolition materials	N/A	N/A	N/A	N/A	N/A	Deposited in 1987. 22,000 tons.
Centre point within 2.5 nm of cable														
Ammo dump	367940.68	6214739.48	34 12.000	151 34.000	0.70	2.0	AHS SD	Various	N/A	N/A	N/A	N/A	N/A	Pers. Comm. with HD also supplied this location.
Ammo dump	367888.72	6218435.95	34 10.000	151 34.000	0.80	2.0	AHS SD	Smoke float	N/A	N/A	N/A	N/A	N/A	Pers. Comm. with HD also supplied this location.
Anomaly	347534.05	6239588.28	33 58.392	151 20.976	0.80	5.0	nsw wrecks	Anomaly 3	UNK	UNK	UNK	UNK	UNK	Non Sub Echoes 5
Anomaly	343512.37	6244861.86	33 55.504	151 18.422	0.95	5.0	nsw wrecks	Anomaly 4	UNK	UNK	UNK	UNK	UNK	Bronte
Shipwreck	345824.93	6244053.04	33 55.962	151 19.914	1.05	5.0	MHS	<i>Prima Donna</i>	1866	1882	UNK	85		
Ammo dump	364381.89	6216537.39	34 11.000	151 31.700	1.20	2.0	AHS SD	Shell	N/A	N/A	N/A	N/A	N/A	Pers. Comm. with HD also supplied this location.
Anomaly	340632.02	6247058.40	33 54.290	151 16.577	1.20	5.0	nsw wrecks	Anomaly 5	UNK	UNK	UNK	UNK	UNK	Wreck I
Shipwreck	353889.93	6229321.15	34 05.000	151 25.000	1.25	5.0	MHS	<i>Prince of Wales</i>	1877	1886	Wood	60		
Shipwreck	364136.30	6223758.27	34 07.092	151 31.608	1.30	5.0	Other	UNID 1	UNK	UNK	UNK	UNK	UNK	Pers. Comm. with HD supplied this location sourced from AHS chart AUS 808.
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Cavan</i>	1876	1932	Iron	731		Pers. Comm. with HD indicates wreck is not precisely located and maintains the position from MHS.

Object	Location (UTM Zone 56 H)		Location (WGS-84 Zone 56 H)		Centre point distance from cable (nm)	Position accuracy (nm)	Source	Description	Year Built	Year Wrecked	Construction	Tonnage	Notes
	Easting (m E)	Northing (m S)	Latitude (S)	Longitude (E)									
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Gabo</i>	1883	1933	Steel	2,060	Pers. Comm. with HD indicates wreck is not precisely located and maintains the position from MHS. Alternate location (AHS SD)
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Gannet</i>	1884	1946	Iron	243	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Geranium (ex HMAS)</i>	1916	1935	Iron	1,200	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Governor Blackall</i>	1871	1931	Iron	483	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	Hopper barge (400 tons)	UNK	1934	UNK	400	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	Hopper barge (50 tons)	UNK	1934	UNK	50	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	Hopper barge (500 tons)	UNK	1934	UNK	500	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	Hopper barge No. 969	UNK	1947	UNK	UNK	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Kembla</i>	1860	1936	Iron	449	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Kurnell</i>	1916	1946	Steel	194	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Matagalpa</i>	1920	1947	Steel	1,174	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Namoi</i>	1883	1933	Steel	1,416	Pers. Comm. HD indicates wreck is not precisely located and maintains the position from MHS.
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Our Elsie</i>	1908	1932	Wood	213	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Pioneer (ex HMAS)</i>	1900	1931	Iron	2,200	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Success HMAS</i>	1918	1941	Steel	1,075	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Sydney</i>	1863	1935	Iron	634	Pers. Comm. with HD indicates wreck is not precisely located and maintains the position from MHS.

Object	Location (UTM Zone 56 H)		Location (WGS-84 Zone 56 H)		Centre point distance from cable (nm)	Position accuracy (nm)	Source	Description	Year Built	Year Wrecked	Construction	Tonnage	Notes
	Easting (m E)	Northing (m S)	Latitude (S)	Longitude (E)									
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Taviuni</i>	1890	1931	Steel	1,465	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Wicklow</i>	UNK	1933	UNK	UNK	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Yamba</i>	1920	1942	Iron	104	Alternate location (AHS SD). Pers. Comm. with HD indicates wreck is not precisely located and maintains the position from MHS.
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Yarra (ex HMAS)</i>	1910	1932	Steel	700	
Shipwreck	361607.68	6227592.49	34 05.000	151 30.000	1.50	15.0	MHS	<i>Yuloo</i>	1910	1932	Steel	407	Pers. Comm. with HD indicates wreck is not precisely located and maintains the position from MHS.
Boat dump	361743.49	6218347.59	34 10.000	151 30.000	1.55	2.0	AHS SD	<i>Swordsman</i>	1918	1939	Steel	1,075	Same position by MHS. Pers. Comm. with HD also supplied this location.
Shipwreck	341436.36	6248375.19	33 53.585	151 17.113	2.00	0.5	HD	<i>Flora Bella - known</i>	1849	1857	Wood	103	Pers. Comm. With HD indicates wreck is known at this location.
Boat dump	356919.07	6222342.53	34 07.800	151 26.900	2.25	2.0	AHS SD	<i>Tasmania</i>	1918	1939	Steel	1,075	Alternate location (MHS). Pers. Comm. with HD also supplied this location.
Ammo dump	377178.95	6213016.33	34 13.000	151 40.000	2.45	2.0	AHS SD	Various	N/A	N/A	N/A	N/A	Pers. Comm. with HD also supplied this location.
Centre point beyond 2.5 nm of cable													
Ammo dump	364128.19	6212836.44	34 13.000	151 31.500	2.80	2.0	AHS SD	Various	N/A	N/A	N/A	N/A	Pers. Comm. with HD also supplied this location.
Shipwreck	354765.91	6222398.29	34 07.752	151 25.500	3.20	5.0	MHS	<i>Tasmania</i>	1918	1939	Steel	1,075	Alternate location (AHS SD). Pers. Comm. with HD indicates wreck is not precisely located and maintains the position from MHS.
Boat dump	382840.39	6202367.40	34 18.800	151 43.600	5.50	2.0	AHS SD	<i>Bantam</i>	1929	1946	Steel	3,322	Alternate location (MHS). Pers. Comm. with HD also supplied this location.

Object	Location (UTM Zone 56 H)		Location (WGS-84 Zone 56 H)		Centre point distance from cable (nm)	Position accuracy (nm)	Source	Description	Year Built	Year Wrecked	Construction	Tonnage	Notes
	Easting (m E)	Northing (m S)	Latitude (S)	Longitude (E)									
Chemical dump	382840.39	6202367.40	34 18.800	151 43.600	5.50	2.0	AHS SD	Chemical warfare agent	N/A	N/A	N/A	N/A	Pers. Comm. with HD also supplied this location.
Alternative locations outside of SSPZ													
Shipwreck	338756.91	6223528.05	34 07.000	151 15.100	N/A	5.0	MHS	<i>Bantam</i>	1929	1946	Steel	3,322	Alternate location (AHS SD).
Boat dump	373720.24	6241992.22	33 57.300	151 38.000	N/A	2.0	AHS SD	<i>Gabo</i>	1883	1933	UNK	UNK	Alternate location (MHS)

Table C-13 Known Maritime Archaeological Sites Located Near the Cable Route (outside the SSPZ).

Object	Location (UTM)			Location (WGS-84)		Centre point distance from cable (nm)	Position accuracy (nm)	Source	Description	Year Built	Year Wrecked	Construction	Tonnage	Notes
	Zone	Easting (m E)	Northing (m S)	Latitude (S)	Longitude (E)									
Centre point within 2.5 nm of cable														
Shipwreck	55 H	424994.00	5648460.00	39 18.600	146 07.800	1.65	10.0	ANSDB	<i>S.S Kanowna</i>	1903	1929	UNK	6,942	Ran ashore Wilsons Pomontory before drifting into Bass Strait and sinking
Ammo dump	50 J	333214.00	6481305.00	31 47.500	115 14.300	1.85	2.0	AHS SD	Depth charges (unexploded)	N/A	N/A	N/A	N/A	
Shipwreck	50 J	378063.10	6173914.56	31 51.840	115 42.660	2.00	0.5	WAM	<i>Centaur</i>	1849	1874	Iron	188	Inspected by WAM.
Shipwreck	55 H	518120.11	5655459.04	39 15.000	147 12.600	2.15	20.0	ANSDB	<i>Orion</i>	1900	1980	Wood	UNK	37.76 m long wooden steamer, disappeared

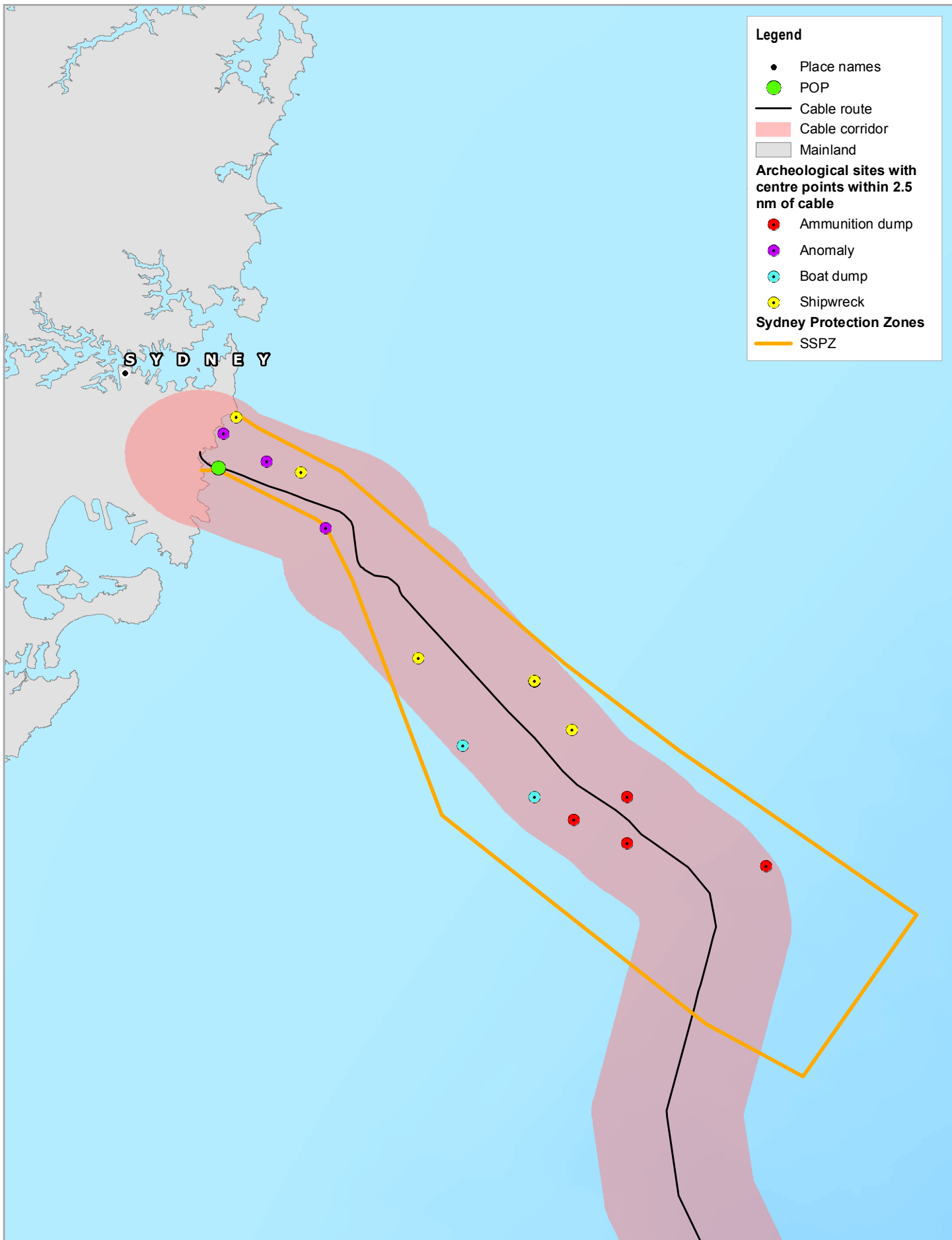
Object	Location (UTM)			Location (WGS-84)		Centre point distance from cable (nm)	Position accuracy (nm)	Source	Description	Year Built	Year Wrecked	Construction	Tonnage	Notes
	Zone	Easting (mE)	Northing (mS)	Latitude (S)	Longitude (E)									
Sites that extend over cable														
Chemical dump	54 H	245319.80	5632806.99	39 25.000	138 02.500	44.00	145.0	AHS SD range	Black liquor	N/A	N/A	N/A	N/A	A paper residue. 27,815 tonnes. Jan-1982 to Dec-1982. Position is the centre point of the range provided by AHS SD, which is a line 290 nm long.

C.7.1 Known Sites within the SSPZ

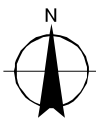
The 44 maritime archaeological sites identified with centre points within the SSPZ comprised:

- 27 shipwrecks
- Five ammunition dumps
- Four boat dumps
- One chemical dump
- One other dump
- Six other anomalies.

Five of these sites have centre points within 500 m of the proposed Indigo Central cable route, 35 sites have centre points more than 500 m but within 2.5 nm of the cable route (including the centre point of a 'disposal area' in New South Wales which contains at least 22 shipwrecks within an area of 15 nm), and the remaining four sites have centre points more than 2.5 nm from the cable route (Figure C-4). However, taking the locational range of the sites into consideration, 38 of the 44 sites have locational ranges that overlap the proposed cable route of Indigo Central, and as such, it is possible that these lie along its route.



Paper Size ISO A4
 0 5 10
 Kilometres



Horizontal Datum: WGS 1984
 Grid: GCS WGS 1984



ALCATEL SUBMARINE NETWORKS
 INDIGO Central
 Environmental Impact Assessment

Project No. 21-26628
 Revision No. 1
 Date 14/12/2017

Known maritime archaeology
 sites within the SSPZ

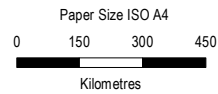
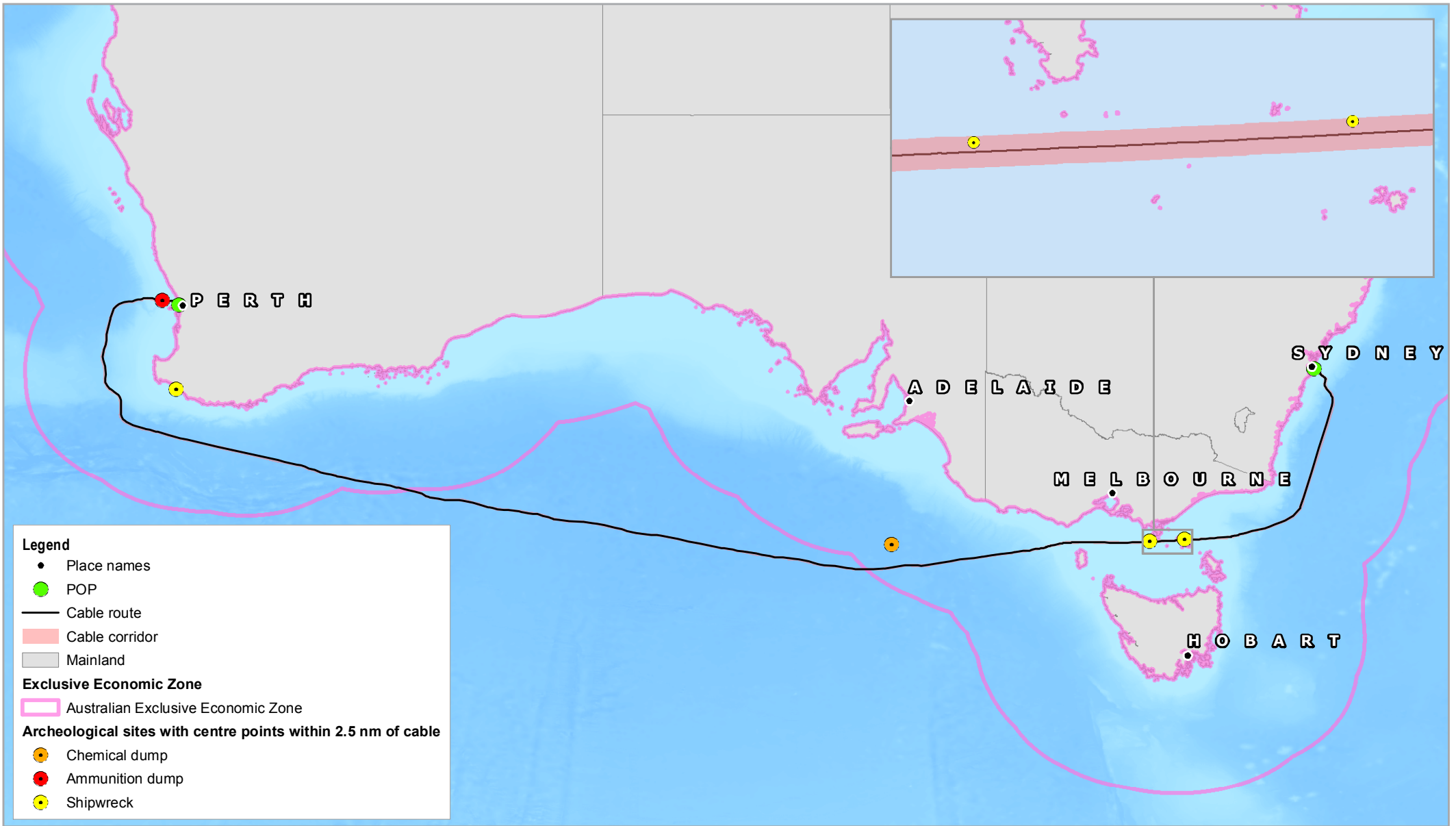
FIGURE C-4

C.7.2 Additional Sites outside of the SSPZ

Outside of the SSPZ, no sites were identified with centre points within 500 m of the Indigo Central cable route. However, five known maritime archaeology sites were identified, all with centre points within 2.5 nm of the cable route, including one site for which the area extended over the cable route. These include:

- Three shipwreck sites
- One ammunition dump, consisting of unexploded depth charges
- One chemical dump with a range that extends over the proposed cable route.

The sites are shown in Figure C-5 below. Yellow circles indicate shipwrecks, the blue dot indicates the ammunition dump and the green dots indicate the chemical dump range. All of these sites, with the exception of the shipwreck located at latitude 31 551.840, longitude 115 42.660, have locational ranges which overlap the proposed cable route of Indigo Central, and as such, it is possible that these lie along its route.



Horizontal Datum: GDA 1994
Grid: GCS GDA 1994



ALCATEL SUBMARINE NETWORKS
INDIGO Central
Environmental Impact Assessment
**Maritime archaeological sites with
centre points within 2.5 nm
of the Indigo Central cable corridor**

Project No. 21-26628
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Date 14/12/2017

FIGURE C-5

C.8 Potential Maritime Archaeology Sites

Cosmos Archaeology identified numerous historical cultural activities within the surrounds of the proposed Indigo Central route to include maritime exploratory activities, colonisation and development of ports, national and international shipping, military activity and sea dumping of ammunition, boats, chemical items and other items. All of these activities have the potential to produce maritime archaeological sites; as such, there is potential for additional maritime archaeological sites to exist within the area surrounding the Indigo Central cable route which have not yet been found.

Unidentified potential sites are more relevant to deeper water that is not commonly accessed by private and recreational boat users, and are more likely to consist of wreck sites. It is unlikely that there are unknown dumping locations in the vicinity or surrounds of the Indigo Central cable route as the Environment Protection (Sea Dumping) Act 1981 includes the requirement of a permit to dump material, which are kept on record and made public through Australian Notices to Mariners.

Cosmos Archaeology found 73 listed shipwrecks with unknown locations that may be located within the area surrounding the Indigo Central cable route, which included:

- 38 in Western Australian waters
- 13 in the Bass Strait
- 22 in the area around Sydney incorporating Bondi, Malabar, Maroubra and South Head

It should be noted that this list is not exhaustive, and the presence of additional previously unknown wrecks is also a possibility. In particular, there is also a potential that shipwrecks in Tasmania with unknown locations may be within in the area surrounding the Indigo Central cable, however, the searches conducted by Cosmos Archaeology did not reveal any unlocated Tasmanian shipwrecks with a rough location near the study area.

C.9 Assessment of Impact to Maritime Archaeology

Although the proposed route for Indigo Central has been selected with the intention of avoiding maritime archaeology sites of known location, precise recorded positions of identified known sites were not available for many of the sites identified in the desk study completed by Cosmos Archaeology. Taking the estimated locational ranges of the sites into consideration, it is possible that a large majority of the maritime archaeological sites identified by Cosmos Archaeology could be located along the proposed Indigo Central cable route. It must also be considered that, along with the known maritime archaeological sites, there are many shipwrecks without known positions that may be located within the vicinity or surrounding area of the Indigo Central cable route, including along its proposed positioning.

Logically, the probability of encounter of Indigo Central with maritime archaeological sites decreases with the expected distance of the site from the cable route. As such, most at risk of encounter of Indigo Central are the chemical dump known to have a range that extends over the proposed cable route, and the five sites with centre points located within 500 m of the cable route, all of which are within the SSPZ and are as follows:

- Shipwreck S.S. Kanowna
- Shipwreck Centaur
- Shipwreck Orion
- Ammo dump with unexploded depth charges
- Chemical dump identified to be black liquor.

The ability to identify known and potential maritime archaeology sites varies depending on the age of the site and seabed type, appearing either as a definitive long feature, a scatter of smaller features, or nothing at all. Based on known and potential sites, Cosmos Archaeology considers that Side Scan Sonar would likely locate any remains associated with the identified shipwrecks and dumps based on their construction and likely site formation processes. As such, it is expected that the proposed cable route survey for Indigo Central, to be undertaken prior to the laying of the cable, will identify unforeseen wreck sites and debris, enabling cable route repositioning to be undertaken prior to cable installation, which will minimise the risk of Indigo Central incurring impact to maritime archaeology sites.

Based on the findings of the assessment, it recommended that a suitably qualified maritime archaeologist should be employed to review the side scan sonar data and any other remote sensing data to identify any known or unidentified shipwrecks or remains of dumping material located within the proposed study area of the cable route, prior to cable installation. In addition, although no revision of the proposed cable route is required at this stage, after a review of the remote sensing data and the identification of possible sites, minimal re-routing may be required to avoid impacts. In such an occurrence, Cosmos Archaeology recommends that as a standard, a buffer distance of 500 m should be maintained between the site and the cable route around any potential shipwrecks or dump sites identified in the remote sensing data. In cases where this buffer is difficult to maintain, a suitably qualified maritime archaeologist should be engaged to review the data and assess the required buffer zone on a site-by-site basis.

C. Heritage

C.10 State-listed Heritage Sites

C.10.1 Sites in NSW

A review of the heritage database of the NSW Office of Environment and Heritage (NSWEH 2017) has shown that the locations of the landing point in Sydney for Indigo Central cable are proximate to the following listed sites (Table C-14). Being considerable distances away, these heritage sites are not anticipated to be impacted by installation works for Indigo Central.

Table C-14 Heritage Sites Listed in the NSW Heritage Database

Name and Description of Heritage Listing		Distance from Indigo Central	
		BMH Sydney	POP
Waverly Cemetery	State heritage significance as a general public Victorian-era cemetery, constructed in 1877. Located on St Thomas Street, Bronte, NSW 2024 in the local government area of Waverley.	~1260 m	~2344 m
Cliffbrook	State heritage significance for its association with the larger original Estate 'Cliff-brook' of John Thompson, Mayor of Randwick in 1873. Located on 45-51 Beach Street, Coogee, NSW 2034 in the local government area of Randwick	~510 m	~2107 m
McIver Women's Baths	State heritage significances as, reportedly, the only remaining swimming venue (specifically reserved for women) in continuous use in NSW. Formally recognised in 1786 but in use since the 1830s. Located on the Grant Reserve, Coogee, NSW 2034 in the local government area of Randwick.	~670 m	~1436 m
Wylie's Baths	State significance as one of the NSW's oldest, most intact and best-known ocean swimming pools, having been built in 1907. Located on 4B Neptune Street, Coogee, NSW 2034 in the local government area of Randwick.	~860 m	~1177 m

C.10.2 Sites in Victoria

Indigo Central is proposed to pass through the Bass Strait between the states of Victoria and Tasmania. A review of the Victorian Heritage Database (VHD 2017) identified the presence of the Wilsons Promontory Lightstation as listed in the Victorian War Heritage Inventory. Constructed in 2857, Wilsons Promontory Lightstation is listed as being of historical, architectural, and archaeological significance to the State of Victoria. It is located over 20 km north of the Indigo Central cable alignment at the closest point, and therefore unlikely to be affected by Indigo Central cable installation.

C.10.3 Sites in Tasmania

A review of the Tasmania Heritage Register (THR 2017), which is current as at 24 April 2017, identifies the Deal Island Light Station, including ruins, store, and Keepers Quarters), as a State Heritage listed site located on Deal Island in Bass Strait. It is located almost 24 km from the Indigo Cable alignment at its closest point.

Additionally, the Cape Wickham Lighthouse on King Island is listed on the State Heritage Register, and located 26 km south of the Indigo Cable alignment at its closest point along Bass Strait.

Given that both listed sites are large distances away from the Indigo Central cable, they will not be affected by the project.

Note: LISTmap (www.maps.thelist.tas.gov.au) is unavailable as of writing (06 October 2017), showing a DNS error (the host name of the page you are looking for does not exist), accessed as a link directly from the Heritage Tasmania website (<http://heritage.tas.gov.au/heritage-listed-places/search-the-register>).

C.10.4 Sites in Western Australia

Western Australia's Heritage Council maintains the inHerit database (WAHC 2017), which lists places of State and local significance. The Holy Spirit Catholic Church in City Beach in Perth is listed on the State Heritage Register. It was constructed from 1973 to 1974 and is also listed on the Aboriginal Heritage Sites Register and the Catholic Church Inventory. It is located approximately 1,178 m from the Perth BMH and 1,943 m from the Indigo Central POP.

Furthermore, Indigo Central passes due north of Rottnest Island, on which is located the Bathurst Lighthouse & Quarters, which is listed on the WA State Heritage Register. It was built in 1900 by the Western Australian Government. The Bathurst Lighthouse is located more than 17 km south of the Indigo Central cable at its closest point, and over 20 km southwest of the Indigo Central POP.

Neither of these sites are anticipated to be affected by the Indigo Central cable given the large distances involved.

C.11 Commonwealth Heritage

A review of the Australian Heritage Database (AHD 2017) was undertaken for places listed in the Commonwealth Heritage List that might be proximate to the proposed alignment of the Indigo Central submarine Cable.

C.11.1 Sites in NSW

Several sites listed in the Commonwealth Heritage Register are located near the Indigo Central Punch-out Point and BMH in Sydney. All are a large distance away from the cable route, however, and therefore unlikely to be affected by Indigo Central. These include:

- Bondi Beach Post Office, 20 Hall St., Bondi, constructed in 1922 and is of local historical significance as being associated with a period of local growth and development in the interwar period. It is located approximately 3,300 m from the Sydney BMH, and 4,317 m from the punch-out point.
- Sydney General Post Office, 1 Martin Pl, Sydney, built from the 1860s onwards on the site of the earlier Sydney post office, is historically highly significant on account of its association with the delivery and development of postal services in NSW over more than a century. It is located approximately 7,345 m from Sydney BMH and 9,115 m from the POP.
- Sydney Reserve Bank, 65 Martin Pl, Sydney, which was built in 1964, designed by the Commonwealth Department of Works, Bank, and Special Project Section and is considered to be of high significance in the development of post-World War II multi-storey office buildings in Australia. It is located approximately 7,082 m from the Sydney BMH and 8,853 m from the POP.

- The Sydney Airport Air Traffic Control Tower complex was commissioned in 1996, is the only cable-stayed control tower in Australia, as well as its cabin roof, which is carried on a single central column. It stands as the first and only control tower in Australia consciously designed as a landmark. It is located approximately 7,842 m from the Sydney BMH and 8,652 m from the POP.
- Sydney Customs House (former), 31 Alfred St., is considered to be historically highly significant for its lengthy association with the important task of customs collection, firstly by the NSW colonial government and later by the Commonwealth following Federation. It contains parts of the oldest surviving building of its kind in Australia, and is located approximately 7,628 m from the Sydney BMH and 9,417 m from the POP.
- School of Musketry and Officers Mess on Randwick Army Barracks is considered historically significant for its association with the Randwick Rifle Range that operated between 1891 and 1942, and the Officers Mess was an addition in the late 1920s. The School was the first permanent building constructed on site, and therefore the oldest still in use by the Army. It is located approximately 1,923 m from Sydney BMH and 2,788 m from the POP.

C.11.2 Sites in Victoria

The Wilson's Promontory Lighthouse in Tidal River in Victoria is the closest Commonwealth Heritage listed site to the Indigo Central cable, at approximately 21,582 m north at the closest point. It was erected in 1859 and considered to be significant for its association with the development and establishment of navigational aids along the Australian coastline, and also has significance as a well-executed example of the lighthouse designs of Victorian Public Works Department architect, Charles Mapleston.

The second closest heritage site to the Indigo Central Cable at its closest point is more than 96 km away in Leongatha, Victoria. The Leongatha Post & Telegraph Office is considered to be historically significant for being an integral element of the town's commercial district since 1907.

Both the above sites are great distances away and therefore unlikely to be affected by works associated with the Indigo Central cable.

C.11.3 Sites in Tasmania

The State-listed Cape Wickham Lighthouse on King Island is also on the Commonwealth Heritage Register. Built in 1861 and considered significant for being an integral part of Bass Strait's mid-nineteenth century network of lighthouses, and represents the first example of Australian colonies in sharing the costs and responsibilities of providing navigational aids. It makes a dramatic contribution to the rural landscape of the northern tip of King Island, and is located 26 km south of the Indigo Cable alignment at its closest point along Bass Strait.

The second closest Commonwealth Heritage listed site in Tasmania lies more than 117 km south of the Indigo Cable alignment at its closest point. The Goose Island Lighthouse is considered of historical significance as having been an integral part of the Bass Strait's mid-nineteenth century lighthouse network, and constructed in 1841–1846, at a time of increased shipping between Melbourne, Hobart, and Launceston. Having been built using convict labour, it demonstrated the continuing role of convicts in the construction of government facilities in Tasmania in the 1840s.

Both the above sites are great distances away and therefore unlikely to be affected by works associated with the Indigo Central cable.

C.11.4 Sites in Western Australia

Commonwealth-listed heritage sites in Western Australia proximate to the Indigo Central cable route, but far enough away not to be affected adversely by cable installation, include the following:

- Claremont Post Office in Bay View Tce, Claremont was constructed in 1896, and is considered to be historically important for its association with the development of Claremont following the population growth during the late nineteenth century gold boom. It is also considered significant for its architectural and streetscape values. It is located over 6 km from the Perth BMH and over 7 km from the POP.
- The Perth General Post Office on 3 Forrest Pl. was designed and constructed from 1911 to 1923 in the Beaux Arts style, which is a rare local example of the symmetrical and axial characteristics developing from contemporary academic influences in town planning and civic design. It is historically significant for its association with the transitional phase between Federation and State Government in Perth. It is located over 10 km from the Perth BMH and over 11 km from the HDD Punch Out.
- South Perth Post Office on 103 Mill Point Rd was constructed in 1901 and is located in the early business centre of South Perth and in the vicinity of other significant historic public buildings. Its historical significance lies in its attribution as being the first post office completed in Western Australia after the federation of the Australian colonies in 1901. It is located approximately 10.5 km from the Perth BMH and over 11 km from the POP.

C.12 National Heritage

A review was also undertaken of the Australian Heritage Database (AHD 2017) to identify areas of National Heritage Significance proximate to the Indigo Central cable alignment.

Fremantle Prison (1852–1859) in Western Australia is of heritage value to the nation as an outstanding example of nineteenth century convict establishment which continued to be used as a prison until 1991. It is the most intact such complex in Australia. It is located more than 14 km southeast of the Perth BMH and 14.5 km southeast of the Perth POP for Indigo Central cable.

Western Tasmania Aboriginal Cultural Landscape, Arthur River Rd, Tasmania represents the best evidence of an Aboriginal economic adaptation which included the development of a semi-sedentary way of life, and for this reason is included in the National Heritage List of national indigenous significance. The Indigo Central cable alignment passes more than 170 km north of the northernmost boundary of the culture scape in Western Tasmania.

The Great Ocean Road and Scenic Environs located along Appollo Bay in Victoria is more than 50 km north of the closest point of Indigo Cable alignment along Bass Strait, measured from the approximate southernmost land point on Appollo Bay, Victoria. It is on the National Heritage List for outstanding historical value, representing an iconic coastal journey that provides an understanding of Australia's history, prehistory, and ongoing coastal processes.

Bondi Beach in NSW is located approximately 3,378 m north of the Sydney BMH and 4,246 m north of the POP. Bondi Beach is considered as having national historic value for being an urban beach cultural landscape and for its significance in the course of Australia's cultural history as the site of the founding of Australia's first recognised surf lifesaving club in 1907.

All of the above sites are located large distances away from Indigo Central, and will therefore not be impacted by the project.

C.13 Aboriginal Heritage

Two sites of aboriginal heritage significance are listed in the NSW heritage list (NSWEH 2017). Moon Rock, a rock engraving site that represents different aspects of aboriginal culture, in Belrose is almost 6 ha in area, and is located approximately 23 km north of the Indigo Central cable in Sydney. Meanwhile, nearly 25 km southwest of the Indigo Central cable landing in Sydney, Camp Wonawong is believed to be a ceremonial site for Aboriginal men and women in Loftus NSW, where current generations of Aboriginal people feel a connection to their ancestors.

The Mount Chappell and Badger Islands Indigenous Protected Areas are found in the Bass Strait off the north-eastern tip of Tasmania and form part of the Fumeaux Group of islands. The two islands have long been regarded by Aboriginal people as an important part of the seasonal food-gathering cycle, and in 1995 the Tasmanian Government handed them back to the Aboriginal community; they are presently managed by the Tasmanian Aboriginal Centre. The two islands lie more than 113 km south of the Indigo Central cable at the closest point.

Both the above sites are great distances away and therefore unlikely to be affected by works associated with the Indigo Central cable.

C.14 Native Title

The National Native Title Tribunal GIS web service (NNTT 2017) containing native title records throughout Australia, Native TitleVision, was reviewed for the presence of Native Title determinations or applications proximate to the Indigo Central cable alignment and landing sites.

Available: <http://www.nntt.gov.au/assistance/Geospatial/Pages/NTV.aspx> [Accessed 30 November 2017].

Based on the review, an application for registration with the Register of Native Title Claims by the Whadjuk People exists in the vicinity of the Perth landing site of the Indigo Central cable, as shown in Figure C-6. As the Perth BMH is located within the claim area, ASN will take into consideration the implications to the project should the Federal Court of Australia decide to award this claim, which may involve payments associated with compensation for the extinguishment or impairment of native title under the Commonwealth Native Title Act 1993.

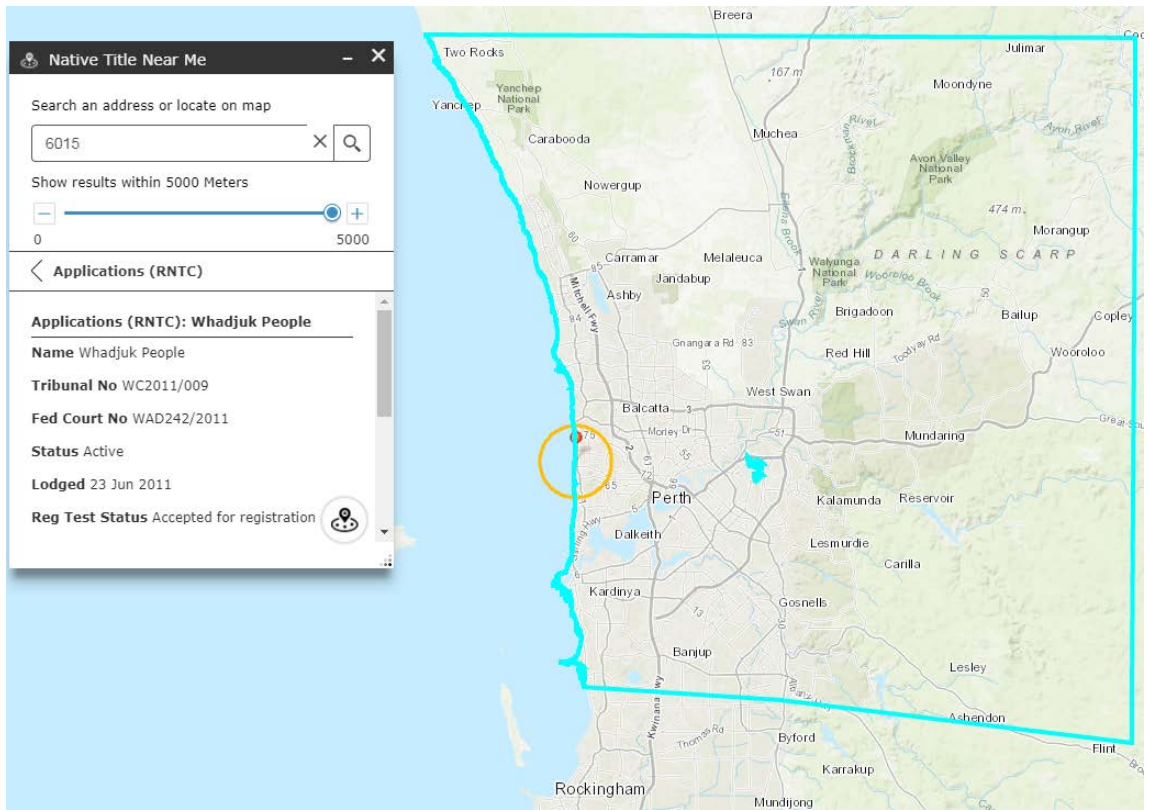


Figure C-6 RNTC Application within which the Perth BMH lies

An application for compensation also exists for Bold Park (NNTT number WP1998/003), located approximately 2.4 km south east of the Perth BMH site, as shown in Figure C-7. As this application does not overlap with infrastructure associated with the Indigo Central cable alignment, it is not anticipated to be affected.

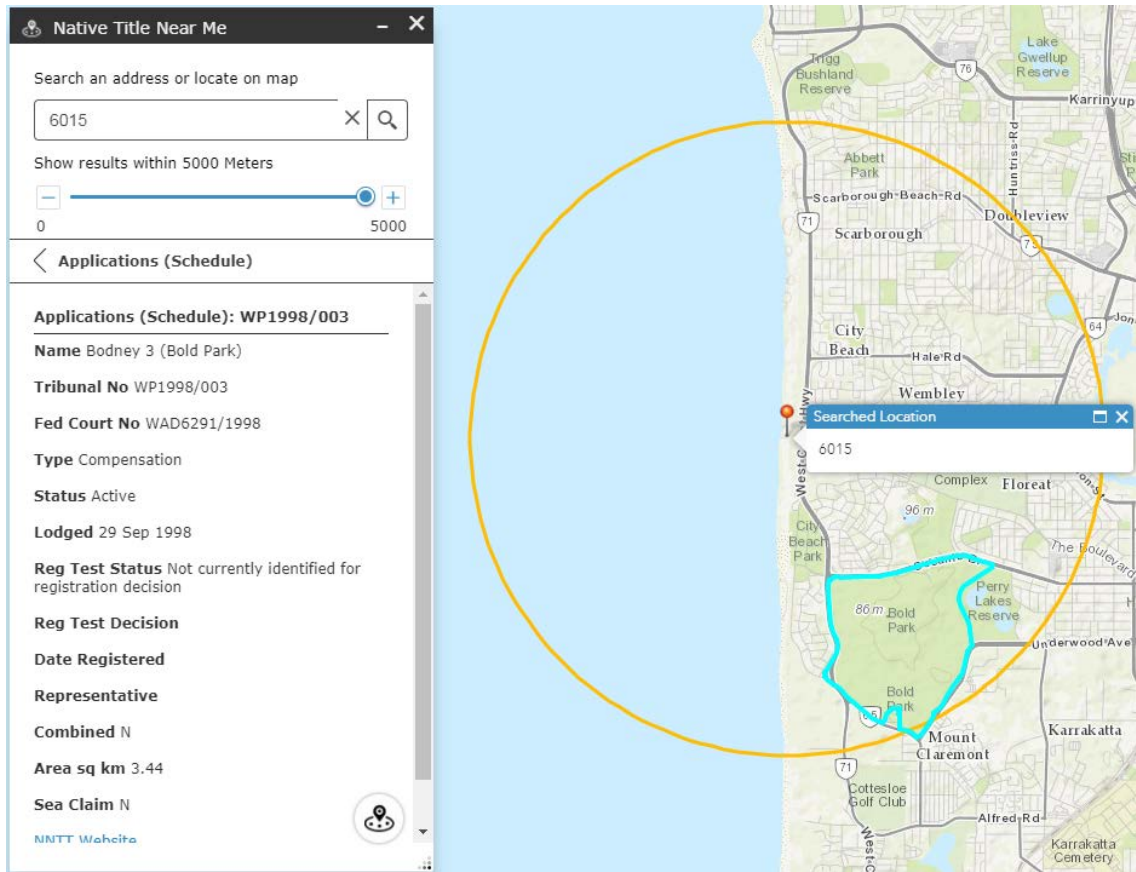


Figure C-7 RNTC Application not currently Identified for Registration Decision

No Native Title Claim determinations or applications exist within 5 km of the Indigo Central cable alignment in Victoria and Tasmania, nor of the cable landing site in New South Wales (Figure C-8).

The Native Title Claim closest to the Indigo Central cable in New South Wales is the Pre-notification claim of the South Coast People (NNTT number: NC2017/003), currently identified for registration decision. The north-eastern boundary of the claimed area is located approximately 16 km south of the Sydney POP.

In Victoria, the Gunaikurnai People have filed a claim for a Native Title for a 2000 sq km area covering most of South Gippsland, including the entirety of Wilsons Promontory, which is located more than 20 km north of the Indigo Central Cable at its closest point.

In Tasmania, no Native Title determinations or applications accepted for registration are within 20 km of the Indigo Central cable alignment of landing points.

As the above applications do not overlap with infrastructure associated with the Indigo Central cable alignment, it is not anticipated that they will be affected.

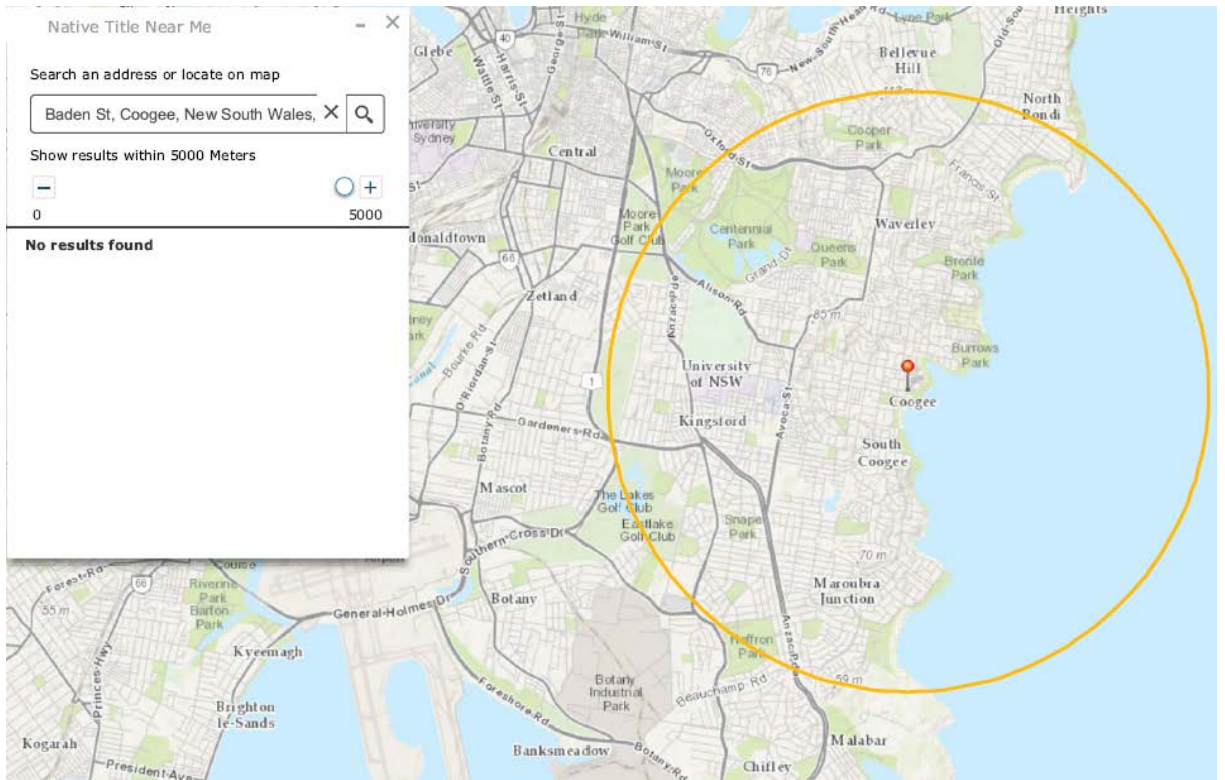


Figure C-8 Native TitleVision Results for NSW Landing Site of Indigo Central

C. Commercial Interests

C.15 Commercial Fisheries

As certain parts of coastal Australia have been designated as cable protection zones, including at the Indigo Central cable landing sites in the SSPZ (up to 1500 m water depth) and the Perth PZ (up to 1000 m water depth), these areas are rigorously managed with heavy penalties for breaches of no anchor or fishing restrictions. The ACMA, have defined the following prohibited activities within cable protection zones (ASN 2017b)

- Use of or towing, operating or suspending from a ship trawl gear designed to work on or near the seabed, or a mid-water trawl
- Use of or towing, operating or suspending from a ship a dredge, including for scallop dredging
- Use of or towing, operating or suspending from a ship a demersal longline, including setlines or trotlines
- Establishing, maintaining or using a spoil ground or other ocean disposal point (including dumping materials at sea)
- Scuttling or attempting to scuttle a ship
- Use of or towing, operating or suspending from a ship a structure moored to the seabed with the primary function of attracting fish for capture (such as a fish aggregating device (FAD))
- Use of or towing, operating or suspending from a ship a Scottish or Danish seine
- Use of or towing, operating or suspending from a ship a type of net, rope, chain or other object used in fishing operations that is capable of contacting the seabed, other than those activities listed in the restrictions.

In view of the above prohibitions, interaction between the Indigo Central cable and commercial fisheries in these areas are unlikely.

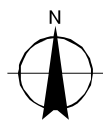
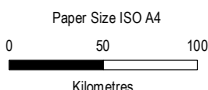
Nevertheless, in recognition of the diverse and active fishing industry that exist in Australian waters and involving many methods utilised to catch the different species, some commercial fishing activities may pose risks to the Indigo Central cable alignment, particularly within 500 m of the low-water mark, where restrictions are less stringent. The following activities may pose risk to the Indigo Central cable:

- Rock lobster fishing—at both Perth and Sydney where the routes cross the 220 m water depth contour, rock lobster is fished seasonally (November–June offshore of Perth, and November–April offshore of Sydney). However, risks during installation are low as installation in both sites will be within Cable Protection Zones, where rock lobster fishing should not occur. Fishery area is shown in Figure C-9.
- Bass Strait Scallop Fishery—Dredging or harvesting of scallops is conducted in the Bass Strait Central Zone Scallop Fishery with the default fishing season from 1st April to 31 December. The use of towed dredges presents a risk to the installed cable; nevertheless, plough burial should mitigate this risk. Fishery area is shown in Figure C-10.
- Shark fishing—Shark and crayfish fishing fleets operate up to 90 miles offshore; shark fishing vessels employ long lines, the ends of which are marked with buoys; care should subsequently be taken through the Bass Strait to avoid entanglement during installation. Fishery area is shown in Figure C-11.

- Western Deep Water Trawl Fishery—operates year round and is managed by limited entry; the fishery is in water deeper than 200 m off the coast of WA from Exmouth to Augusta. It is best defined as a mixed species fish trawl fishery, but is prohibited within the Cable Protection Zone, mitigating this risk to Indigo Central. Fishery area is shown in Figure C-12.
- Longlines—utilised around the whole coast of Australia to catch tuna and billfish; lines have potential to disrupt installation operations if gear becomes entangled.
- Fish aggregating devices—deployed for recreational fishing in NSW and WA; commercial activities using FADs is banned; as such, risks to Indigo Central should be low.



- Legend**
- Place names
 - POP
 - Cable route
 - ▭ Cable corridor
 - ▭ Mainland
 - ▭ Southeast Australia Rock Lobster Fishery Area



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Grid: GCS GDA 1994

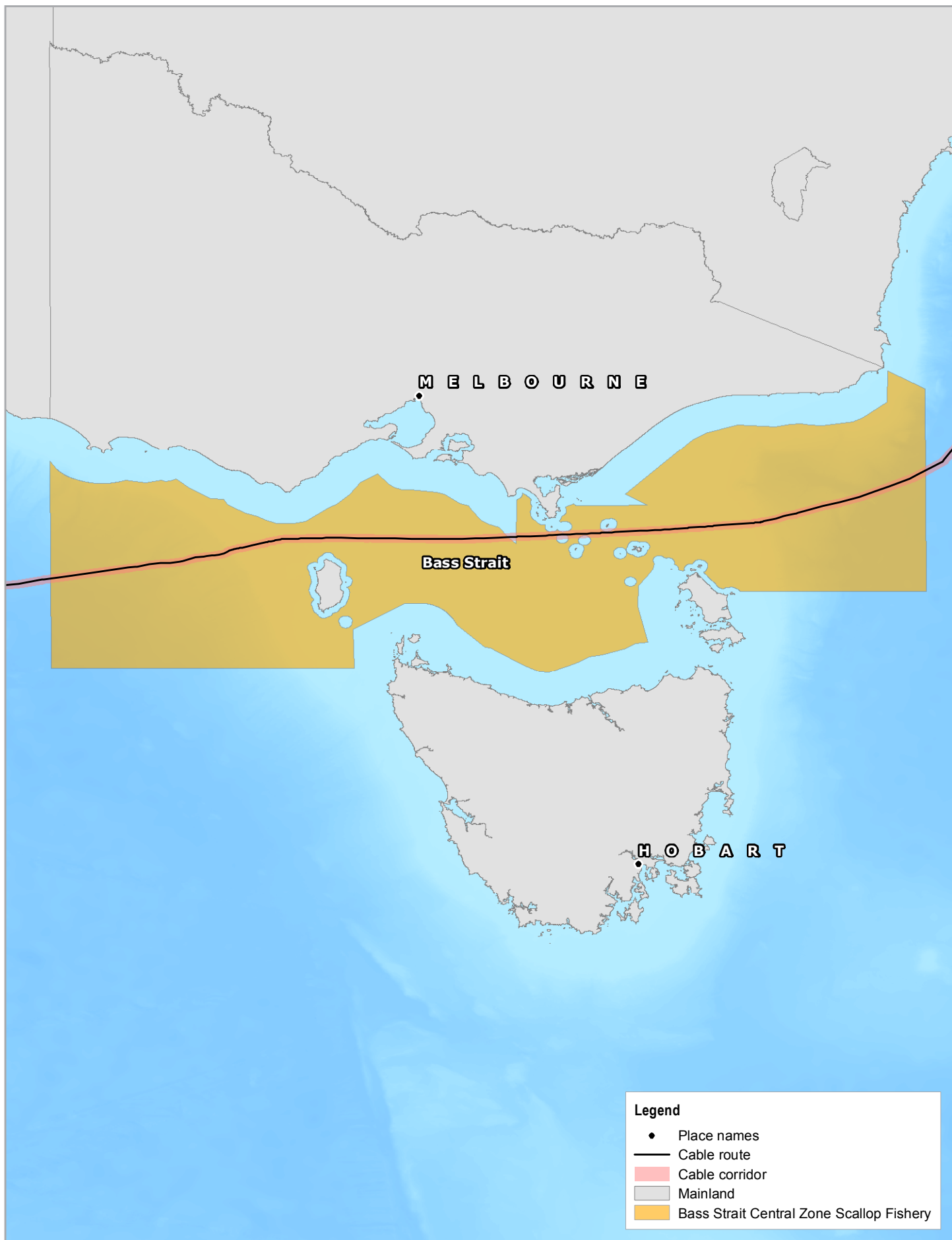


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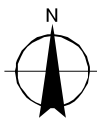
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**Southeast Australia Rock
Lobster Fishery area (ASN 2017a)**

FIGURE C-9



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 Kilometres



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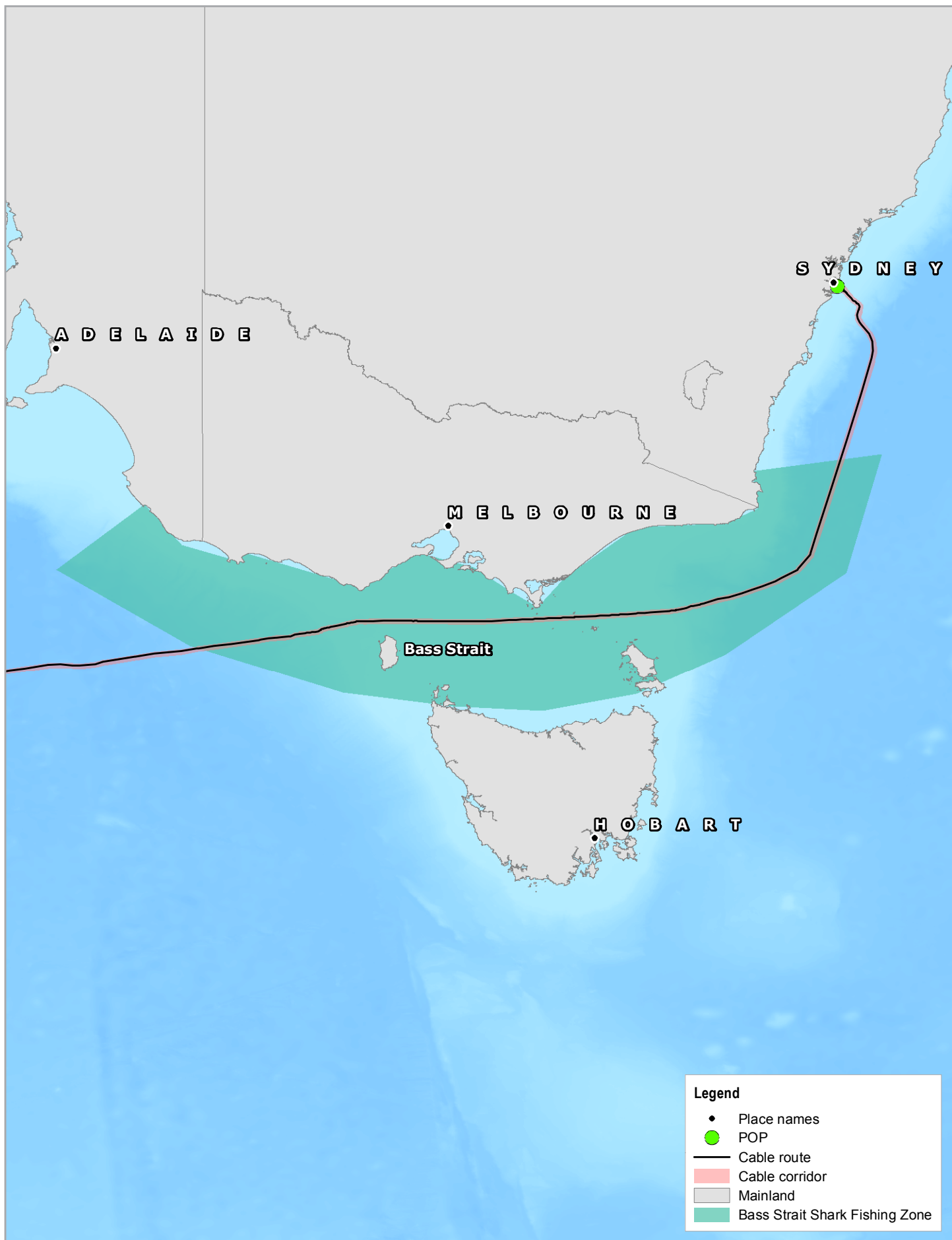


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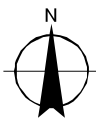
Bass Strait Central Zone
Scallop Fishery (ASN 2017a)

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FIGURE C-10



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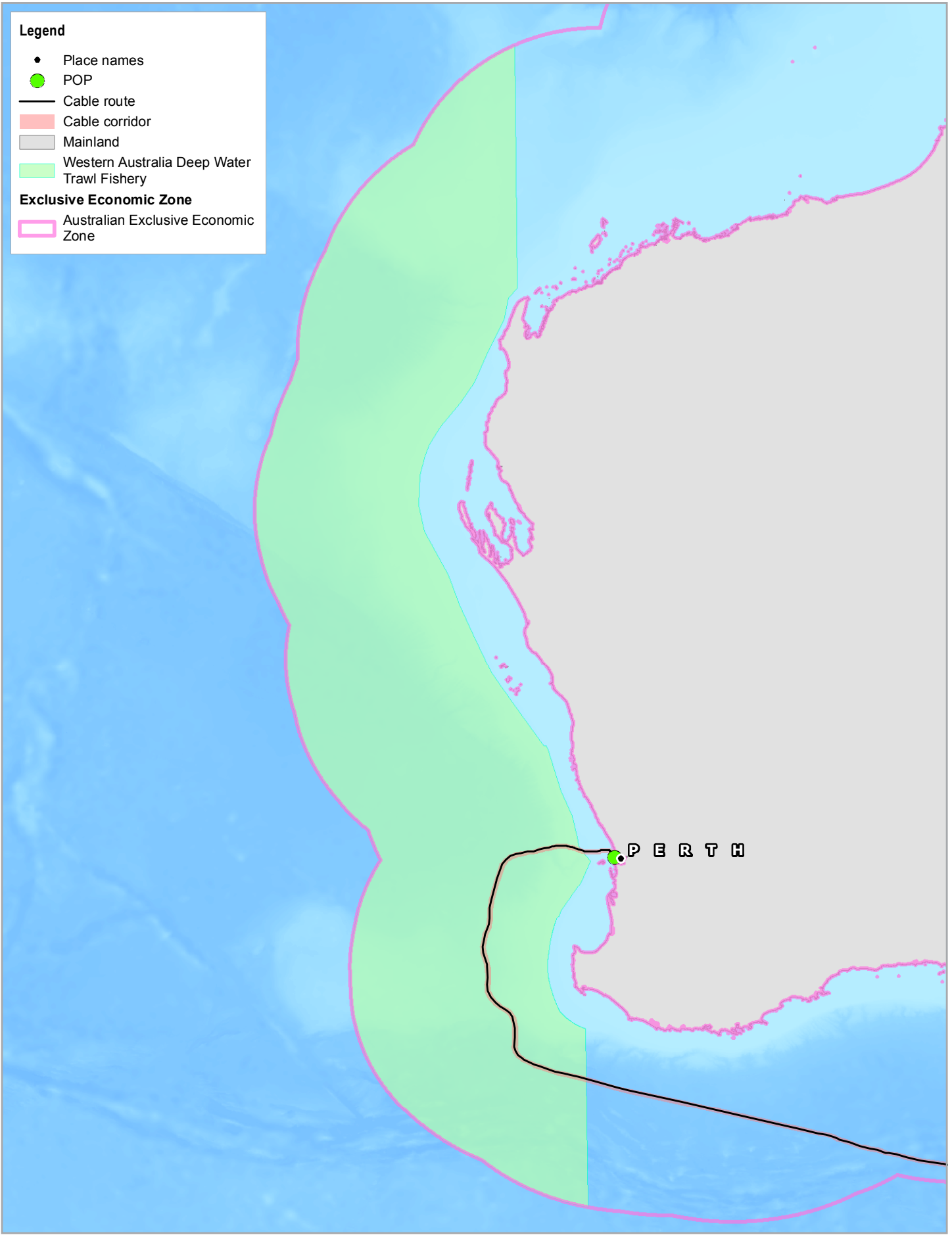


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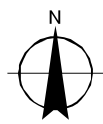
Project No. 21-26628
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Bass Strait Shark Fishing Zone (ASN 2017a)

FIGURE C-11



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 Grid: GCS GDA 1994



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**Western Australia Deep Water
 Trawl Fishery (ASN 2017a)**

FIGURE C-12

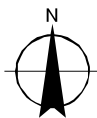
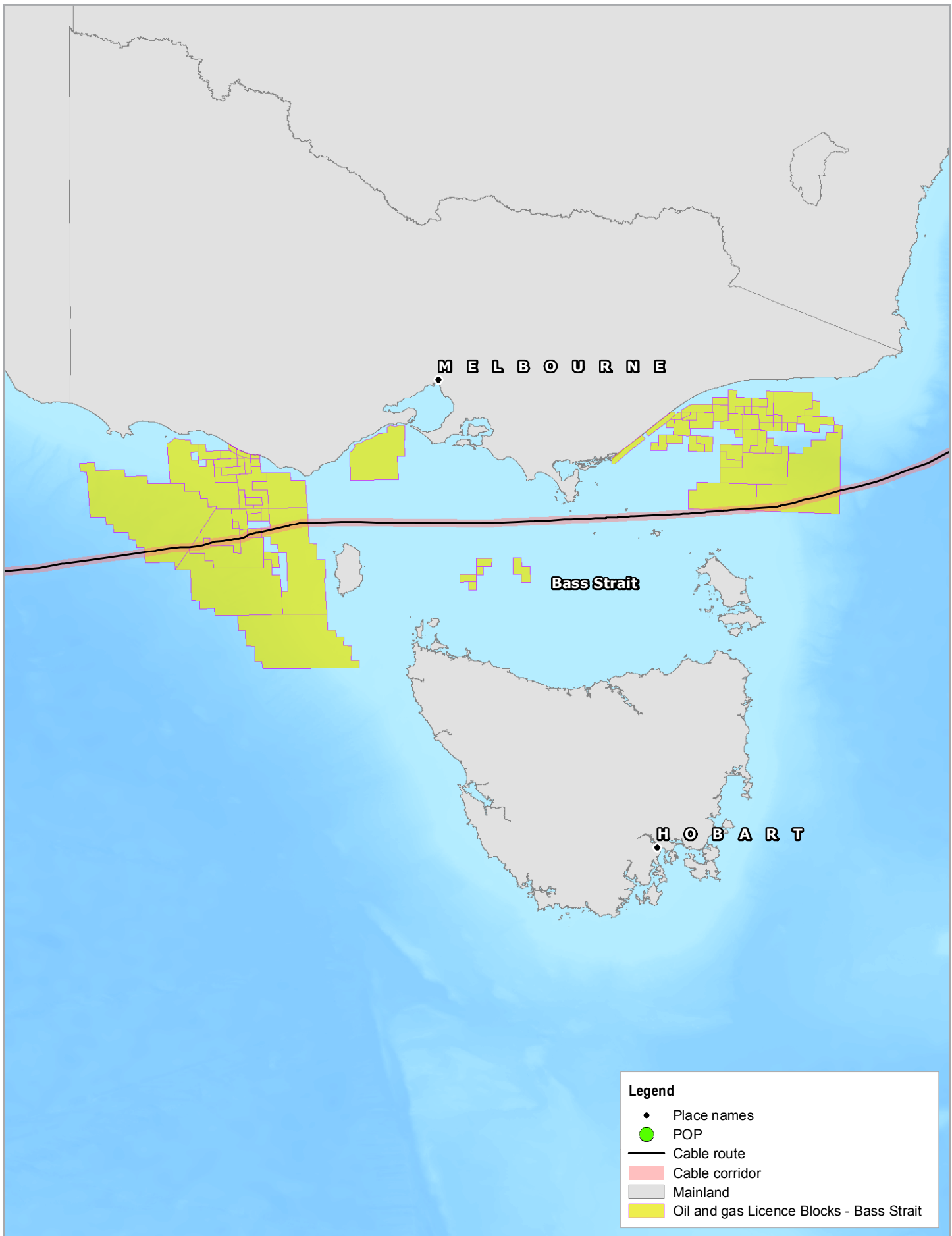
C.16 Hydrocarbon Activities

Current License Block Operators have been identified using database extracts requested from the Wood-Mackenzie database. Licensed operators should be contacted prior to survey activities and installation operations that take place within their concession blocks, to ensure no conflict between cable operations, and any activities the license holder in conducting or planning.

For Indigo Central, the focus of Oil & Gas activity is in the Bass Strait. Figure C-13 overpage and Table C-15 below shows the Licence Blocks that Indigo Central is proposed to cross. Contact with relevant parties has been made during design engineering of the proposed cable route.

Table C-15 Bass Strait Concession Blocks

Block No.	Operator	Contact Address	Contact	Operator Website
V15-1 V15-3 T15-1 T15-2			Not Operated	
T/34P T/30P	ORIGIN ENERGY	Coronation Drive Business Park 135 Coronation Drive, Milton QLD 4064	Tel: (07) 3858 0600 Fax: (07) 3369 7840	www.originenergy.com.au
T/49P	3D OIL	3D Oil Limited Level 18 41 Exhibition Street Melbourne Victoria 3000	Tel: +61 3 9650 9866 Fax: +61 3 9639 1960 Email: info@3doil.com.au	http://www.3doil.com.au/



Horizontal Datum: GDA 1994
Grid: GCS GDA 1994



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Oil and gas Licence Blocks
- Bass Strait (ASN 2017a)

FIGURE C-13

C.17 Mineral Extraction

The Indigo routes are proposed to pass close to only one mineral extraction area in Australian waters, a Lime Sand dredging operations by Cockburn Cement and located offshore of Woodman Point at the entrance to Cockburn Sound. This operation is not considered a risk to Indigo routes as the operation is approximately 40 km south of the proposed Indigo route.

C.18 Offshore Wind Farms

Database information of installed and planned offshore wind farm locations is limited as the industry is still in its infancy. However, available sources indicate that there are no planned or installed offshore wind farms in the immediate vicinity of the proposed Indigo routes.

C.19 Wrecks

Wrecks have been researched against the Indigo Central route using online research, Admiralty Charts, and UKHO database. The proposed alignment for Indigo Central avoids all known wrecks.

C.20 Dumping, Dredging, and Reclamation

The proposed Indigo routes have been reviewed using online research and Admiralty Charts. Dump dredging and reclamation sites have been identified and avoided, where possible (Figure C-14).

Dumping of Unexploded Ordnance (UXO)

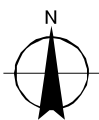
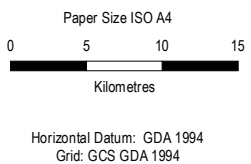
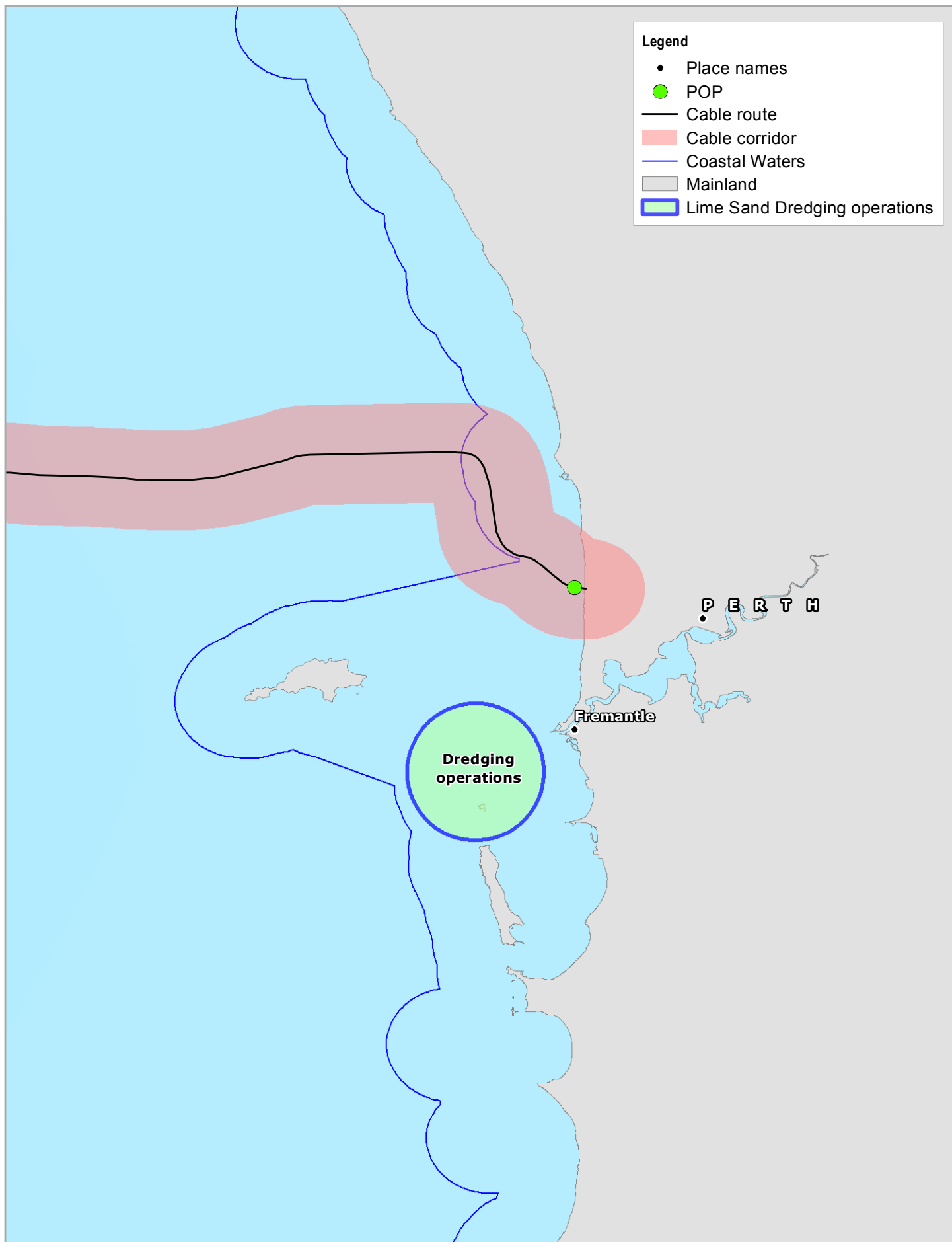
In Australia, UXO Dump Sites of significance to navigation are charted, however there are many more known sites offshore of Australia. Based on the Australian Defence Force website, the two areas of concern regarding UXO are offshore of Fremantle (Figure C-15), and within the Cable Protection Zone offshore of Sydney (Figure C-16).

Known UXO sites within 5 km of the proposed INDIGO routes are tabulated below (Table C-16).

Table C-16 UXO Dump Sites Less than 5 km from Indigo Central Route

Type	State	Date	Latitude	Longitude	Depth
Shell	NSW	1964	34,11,00	151,31,42	732
Smoke float	NSW	1970	34,10,00	151,34,00	549
Various	NSW	1964	34,13,00	151,31,30	640
Various	NSW	1967	34,12,00	151,34,00	915
Various	NSW	1972	34,13,00	151,40,00	1098
Depth charges	WA	-	31,47,30	115,14,18	-
Depth charges	WA	-	31,45,12	115,13,12	-

According to the Cable Route Study (ASN 2017a), the route for Indigo Central avoid all these sites by such margins as to where the cable or installation equipment can be deemed not at risk. Nevertheless, as cable burial of Indigo Central is proposed along the cable route near to these UXO sites, this activity would have the potential to significantly disrupt both the UXO sites and Indigo Central. As such, further clarification has been sought with the Australian Defence Force to see if these UXO sites will impact the installation operation. No further correspondence has been forthcoming and consequently, it is considered no potential conflicts will be realised.



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**Lime Sand Dredging, Fremantle,
Western Australia (ASN 2017a)**

FIGURE C-14

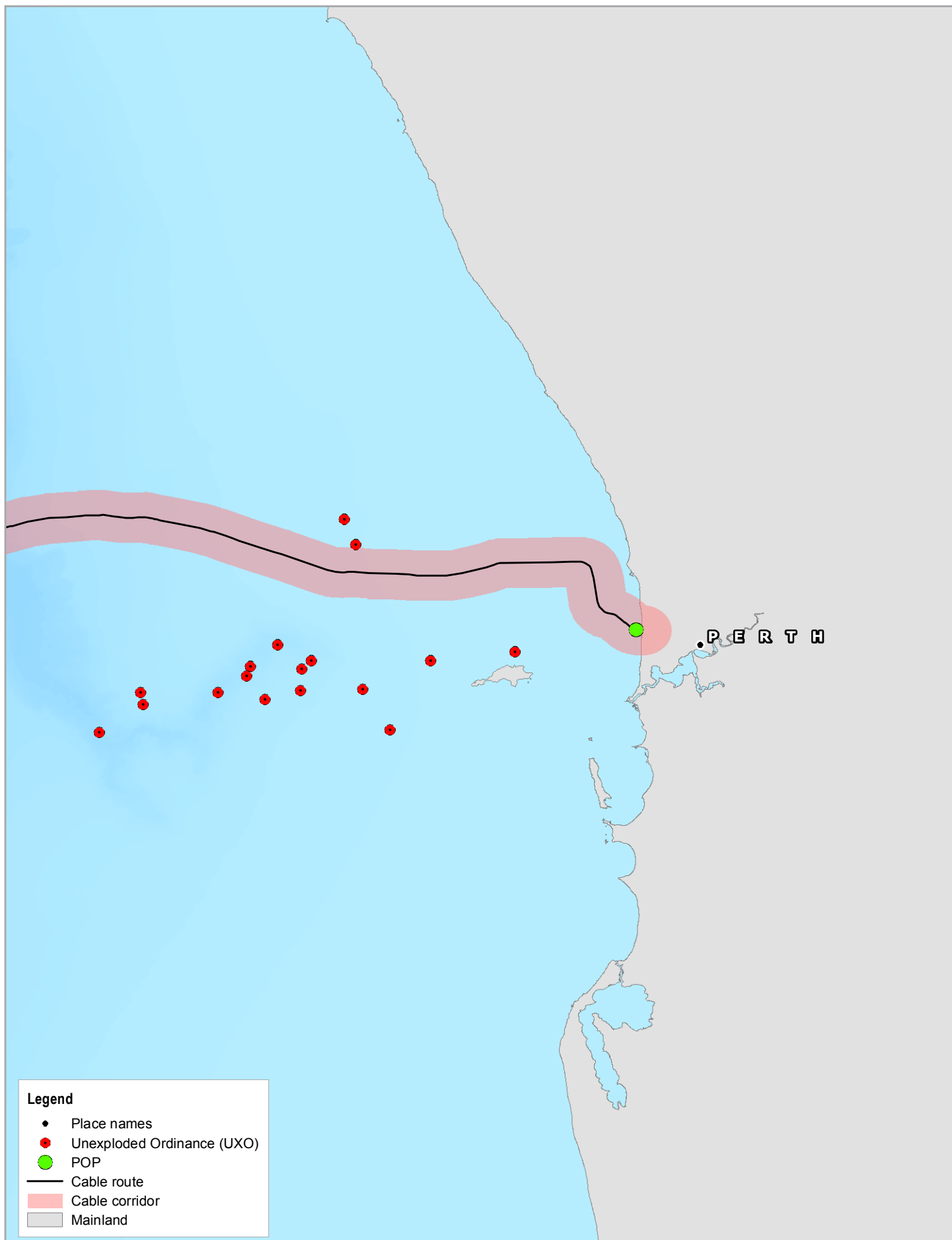
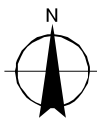
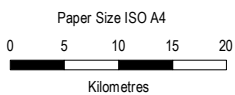
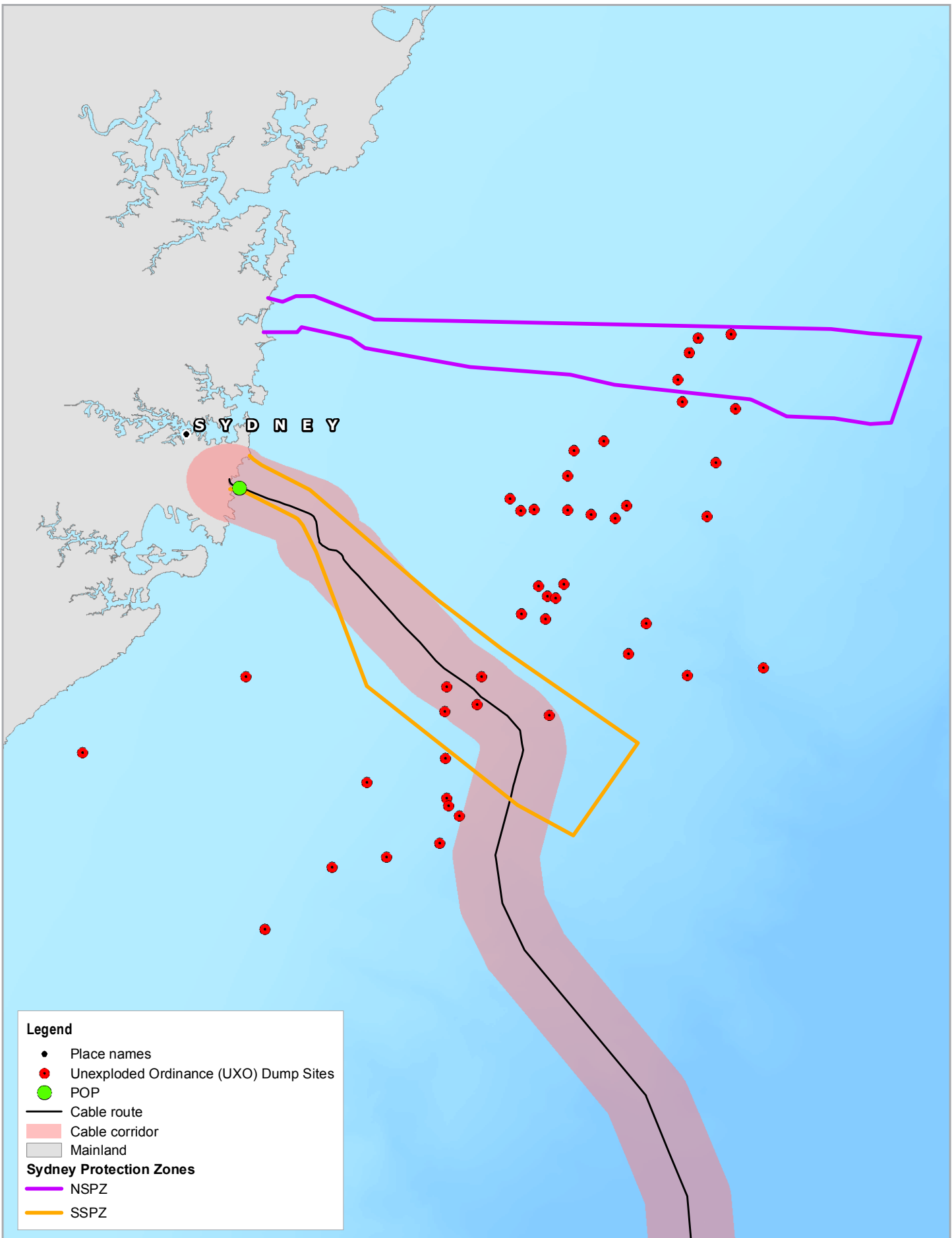


FIGURE C-15



Horizontal Datum: GDA 1994
Grid: GCS GDA 1994



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**Sydney Ammunition
Dump Sites (ASN 2017a)**

FIGURE C-16

Chemical Dump Sites

Several chemical dump sites have been identified offshore of Australia from the Annual Notice to Mariners (Australian Hydrographic Office 2017), all of which have been avoided by the Indigo Central route by greater than 5 km.

Radioactive Dump Sites

The International Cable Protection Committee (ICPC) Radioactive Dump Site Database does not identify any sites within 50 km of the planned Indigo Central cable route.

Spoil Grounds

Indigo routes are not proposed to pass through or within 10 km of any charted or known spoil grounds.

Dredging

Indigo Central is not proposed to pass through or within 10 km of any charted or known dredging operations.

Reclamation

There are no reclamation sites within Australian waters.

C. Cable and Pipeline Crossings

C.21 Existing Submarine Cables

The International Cable Protection Committee (ICPC) is the body responsible for the management of the submarine cable industry; its mandate includes the protection, security, and safe interaction of international submarine cables with seabed and ocean users. The ICPC has industry standard recommendations for promoting the highest reliability and safety of submarine cables, and includes procedures for crossing submarine telecommunications cables, and oil pipeline/power cables.

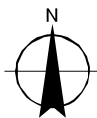
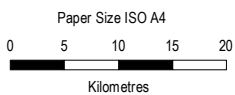
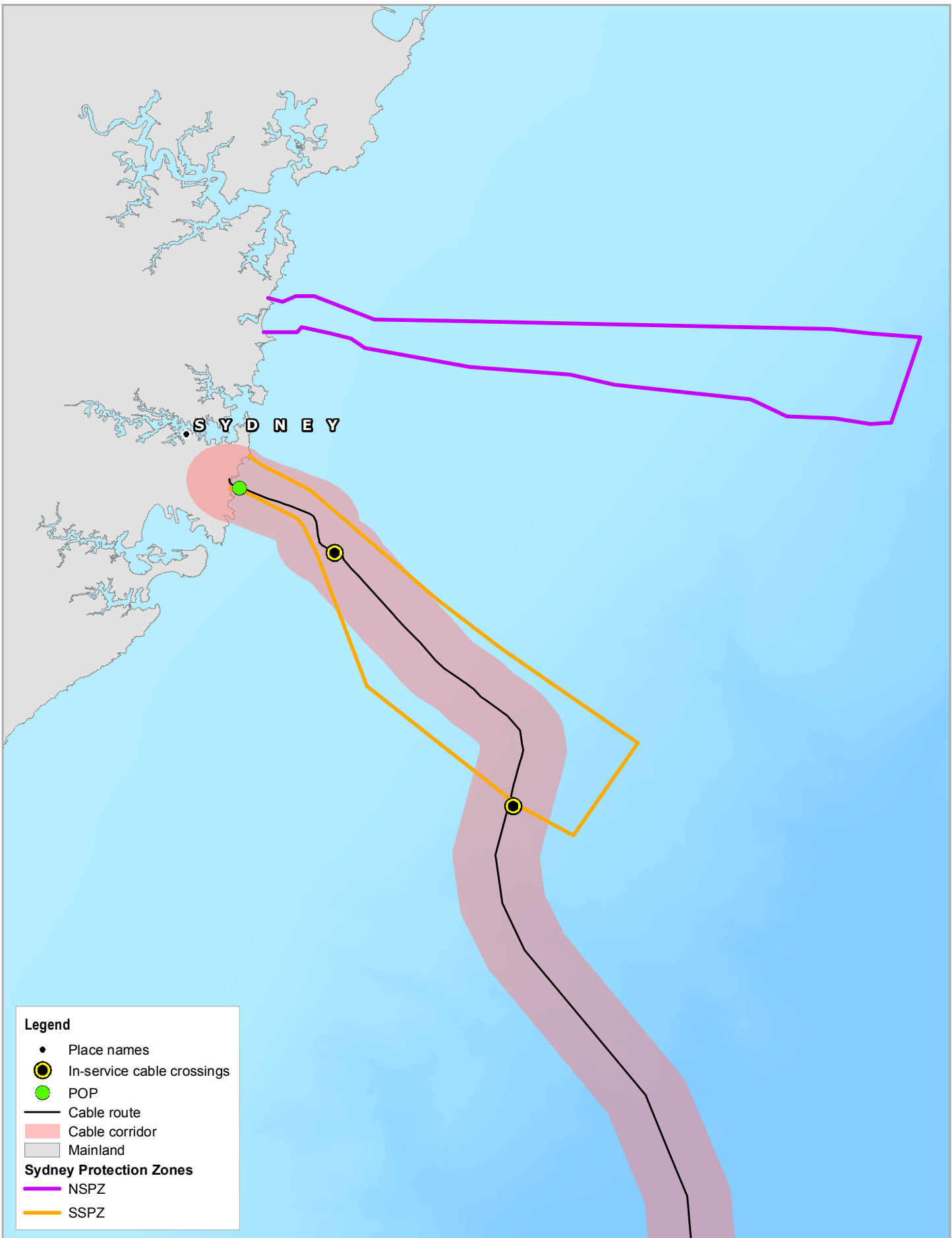
A review of the Global Marine Cable Database (Global Marine 2017) and Admiralty Charts undertaken as part of the Cable Route Study completed by ASN (ASN 2017a) enabled the identification of known existing and proposed telecommunication and power cable systems that are to be crossed by the planned Indigo Central cable route.

The in service cables to be crossed by Indigo Central are incorporated into the RPL (ASN 2017c), as shown in Figure C-17, Figure C-18, and Figure C-19 below. In addition, all in service and out of service (OOS) cables for the Indigo Central route are presented in Table C-17. This enables appropriate planning of the Indigo Central cable route, and adherence with the ICPC criteria for standardised installation processes with respect to crossings based on safe practical operational experience for cable recovery.

When a crossing is unavoidable, the ICPC recommends:

- Both parties negotiate a crossing agreement. This is equally important for out of service cables to confirm if the cable will be used in the future and is indeed out of service.
- Optimal crossing angle is 90°; however, if that cannot be achieved crossing angles down to 45° can be considered.
- Armoured cables should not cross lightweight (unarmoured) cables.
- A clearance of three times the water depth should be used when crossing in proximity of a repeater or a branching unit; however, two times the water depth can be used with modern navigational equipment.

During design engineering of the intended cable route cables that are expected to be crossed have been contacted to confirm alignment is optimised.



Horizontal Datum: GDA 1994
Grid: GCS GDA 1994



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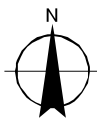
In-service cable crossings in NSW

FIGURE C-17





Paper Size ISO A4
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 Kilometres



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**In-service cable crossings
 in Western Australia**

FIGURE C-19

Table C-17 Locations of Existing Cable Crossings for Indigo Central (ASN 2017c)

Cable Type	Location						Depth (m)
	Latitude			Longitude			
Telegraph (OOS)	31	48.7339	S	115	28.5847	E	42
Telegraph (OOS)	31	49.3669	S	115	25.9656	E	45
Telegraph (OOS)	31	43.1258	S	114	45.8668	E	960
Telegraph (OOS)	39	22.0431	S	145	12.1566	E	73
Bass Strait 2	39	21.6536	S	145	35.1685	E	77
Bass Strait 1	39	20.6517	S	145	59.1649	E	75
Telegraph (OOS)	39	20.6265	S	146	00.3277	E	75
Basslink	39	18.1030	S	146	54.4188	E	64
Southern Cross Seg A	34	18.2474	S	151	37.1324	E	1489
Southern Cross Seg A	34	00.4745	S	151	23.3334	E	133

C.22 Planned Submarine Cables

The planned HAWAIIKI Cable is proposed to link Australia, New Zealand, American Samoa, Pacific Islands, Hawaii and Oregon, on the U.S. West Coast (ASN 2017a). The engineering and installation will be conducted by TE Subcom and proposed to be in service June 2018. The HAWAIIKI cable is proposed to land immediately south of Indigo Central at Coogee Beach, NSW and remains close to the Indigo Central route throughout the designated South Sydney Cable Protection Zone.

At the planned point of intersection, the Indigo Central cable is intended to be surface laid, and as such will not require a Route Clearance. TE Subcom has been contacted by ASN and are collaborating to ensure that there is no conflict in the offshore routes (ASN 2017a).

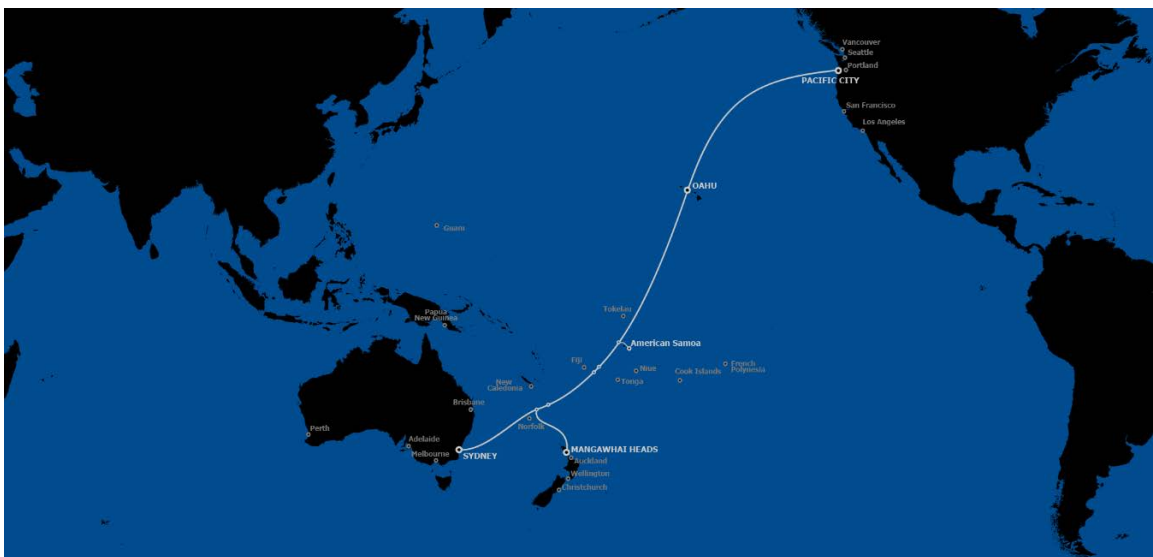


Figure C-20 Planned Hawaiki Cable Route (ASN 2017a)

The ASC-1 Cable connecting Australia to Singapore is underway with a completion date proposed to be August 2018. It is also being managed and installed by ASN, such that internal collaboration between ASN engineers ensures offshore routing does not conflict (ASN 2017a).



Figure C-21 ASC-1 Planned Cable (ASN 2017a)

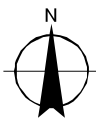
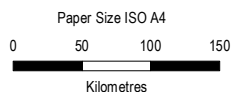
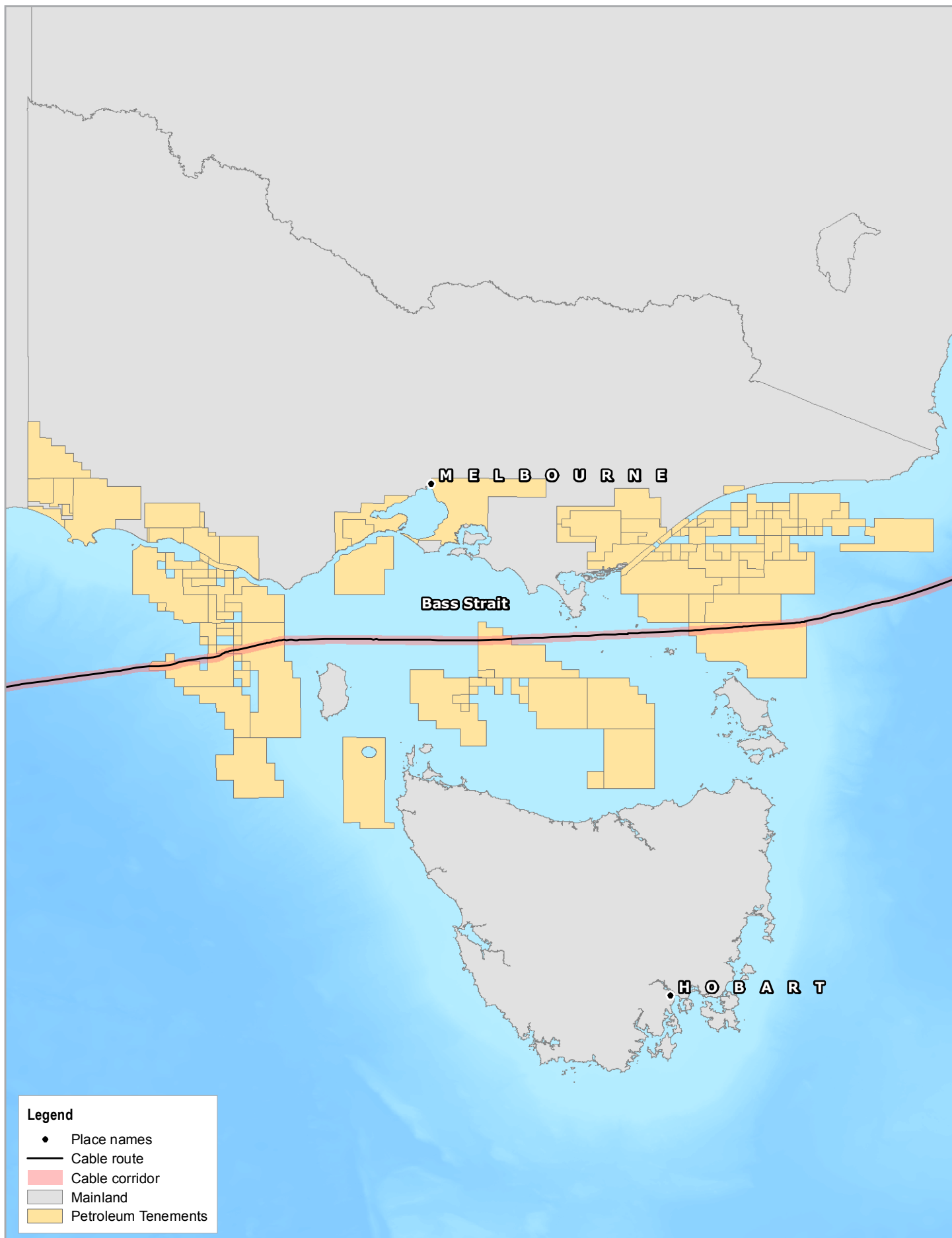
APX-East was planned to install a fibre optic telecommunications cable from Coogee Beach in Sydney through the SSPZ to California with a branch to Samoa. This project was referred to the Commonwealth for assessment under the EPBC Act in 2013. It was determined to be a not controlled action in April 2014 (EPBC 2014/7139). The APX-East alignment within the SSPZ is intended to be used by Indigo Central. SubPartners, who are the named party for APX-East, are members of the Indigo consortium. Use of the APX-East alignment and any approvals will be rescinded prior to any actions being undertaken for Indigo Central to ensure there is no conflict over cable route alignments for permitting assessment.

SubPartners also proposed to install a similar telecommunications cable through the Western Australia PZ to Singapore with branches to Indonesia and other locations. This was also determined to be not a controlled action in regards to the EPBC Act in January of 2014 (EPBC 2013/7102). Similar to APX-East, the APX-West alignment will be superseded by Indigo West. SubPartners, as members of the consortium for Indigo West will rescind any approvals or rights over the existing permits and alignment prior to Indigo West being constructed.

It is expected letters of rescindment for both cable alignments will be required as a provision of approvals under the EPBC Act and in support of permitting under the ACMA.

C.23 Pipelines

Crossing several pipelines is unavoidable through the Bass Strait, where numerous petroleum tenements exist, as shown in Figure C-22 below. As such, crossing pipelines is inevitable for Indigo Central; the pipelines proposed to be crossed are shown in Table C-18. ASN will be coordinating with pipeline operators regarding crossing operations.



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**Petroleum tenements
in the Bass Strait**

FIGURE C-22

Table C-18 Oil and Gas Pipelines in the Bass Strait Crossed by Indigo Central

Pipe Name	Latitude		Longitude		Depth (m)
Yolla-Victoria (Origin Energy)	39 21.5358	S	145 39.2634	E	76
Victoria-Tasmania (Tasmanian Gas Pipeline (TGP Pty Ltd))	39 17.5694	S	147 04.9626	E	62

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