



SELS POINT NATURAL VALUES ASSESSMENT

Report

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

A new discharge pipeline for treated wastewater from the existing Selfs Point Sewage Treatment Plant (STP) is proposed to be constructed at Selfs Point.

A natural values assessment (NVA) was undertaken to identify and confirm natural values such as threatened species, ecological communities and areas of conservation significance that may occur at the proposed development Site. The NVA included both a desktop review and an exploratory field survey, that included:

- Six transect searches within the development area.
- Active searches within the subtidal areas within the development area.
- Collection of video footage using Remote Operated Vehicle (ROV) along the proposed pipeline alignment.
- Collection of bathymetry data to confirm depth contouring in the area.

Field surveys of the intertidal and subtidal community identified a rocky intertidal zone characterised by a natural rock platform adjacent to a small sandy beach. The subtidal zone was predominately covered with a layer of soft, bare sediments with a gradual slope.

A total of twenty-two (22) intertidal species, and nine (9) subtidal species were observed during the surveys. Of the species recorded, six (6) were introduced. No threatened marine species or communities were identified during the field survey, although there are previous records of protected species within the vicinity of the development Site.

The design of the proposed discharge pipeline should consider construction methodologies that reduce the potential for sediment or habitat disturbance, such as placement of the pipeline on the seabed or installation via directional drilling. If poorly managed, disturbance to sediments during construction works have the potential to temporarily decrease water quality.

Impacts from construction works can be mitigated by implementing appropriate construction control measures, including:

- Construction of the proposed discharge pipeline via directional drilling to avoid the nearshore environment.
- Enable safe fish passage through the Site during installation of the pipeline, including during peak migration periods in spring/ early summer (i.e., September to January).
- Minimising noise through operational measures (e.g., soft start procedures) and method-based measures such as noise reduction.
- Managing sediment disturbance during construction to prevent temporary impacts to water quality of the Derwent River.

EXECUTIVE SUMMARY

- Implementing a CEMP during construction that aims to mitigate impacts to the natural values at the Site. The CEMP should consider the best practices outlined in the Tasmanian Coastal Works Manual (Page and Thorp 2010).

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ABBREVIATIONS

ALA	Atlas of Living Australia
CEMP	Construction Environmental Management Plan
EPBC	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ha	hectares
LMR	<i>Living Marine Resources Act 1995</i>
LUPA	<i>Land Use Planning and Approvals Act 1993</i>
m ²	Metres squared
MNES	Matters of National Environmental Significance
NVA	Natural Values Assessment
ROV	Remote Operated Vehicle
SRA	Shark refuge areas
STP	Sewage treatment plant
SCP	<i>State Coastal Policy 1996</i>
TSP	<i>Threatened Species Protection Act 1995</i>
WoRMS	World Register of Marine Species

1 SELFS POINT WASTEWATER PIPELINE

1.1 Background and Objective

Installation of a new wastewater pipeline is proposed for discharging treated wastewater generated by the Sels Point sewage treatment plant (STP). The discharge pipe would cross the shoreline in an easterly direction, entering the Derwent River at a position just south of the Origin Energy site and terminating at an unknown position offshore (**Figure 1**).

A Natural Values Assessment (NVA) was undertaken to identify any species, ecological communities and other features of conservation significance occurring or potentially occurring within the area that will be impacted by the pipeline works (i.e. the Site) (**Figure 2**). The NVA also includes an assessment of potential impacts of the proposed pipeline on threatened species that could occur within the footprint of the development, including to Matters of National Environmental Significance (MNES) under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999) and threatened species listed under the Tasmanian *Threatened Species Protection Act 1995* (TSP Act 1995).

A qualitative impact assessment was completed based on an indicative pipeline alignment, as detailed design drawings were not available at the time of this report.



Legend Indicative Pipeline Area Boundary	N Scale: 1:4,000 0204080120160 Meters	Site: Selfs Point STP, New Town, Tasmania	Client: TasWater	Title: NVA Base Map	Figure 1 PCS: WGS 1984 Web Mercator Auxiliary Sphere Datum: WGS 1984 Projection: Mercator Auxiliary Sphere Scale Factor: 0.0000 Map Units: Meter
		Date: 05 May 2022 Size: A3 Version: Rev B	Drawn: MU Approved: LF		



Figure 2: Existing infrastructure and shoreline near the proposed pipeline alignment.

1.2 Scope of Work

The NVA included the following scope:

- Desktop review of available literature and existing data regarding natural values reported or predicted to occur at the Site.
- Identify potentially occurring threatened species using previously recorded occurrences and range maps.
- Field surveys to describe environmental conditions at the Site including identification of natural values and presence of threatened and introduced species. The field surveys included:
 - Initial site inspection to collect bathymetry data and assess the Site setting.
 - Intertidal habitat walkover to identify rocky shore habitats and communities present at the Site.
 - Conduct a threatened seastar survey using transects and quadrat methods.
 - Search subtidal areas for threatened species.

SELS POINT WASTEWATER PIPELINE

- Collection of video footage by Remote Operated Vehicle (ROV) to identify subtidal habitats and communities within the proposed Site.
- Assess potential impacts from the proposed development to natural values identified at the Site.
- Prepare recommendations for environmental management measures to mitigate potential impacts during the installation of the pipeline.

1.3 Site Description

The proposed pipeline alignment (the Site) is located within Derwent River, upstream from the Tasman Bridge. The shoreline at the Site includes a rock platform adjacent to a small cliff at the southern end of the Site, and short sandy beach to the north (**Figure 3**).

Vegetation immediately along the shoreline is limited to common coastal plants such as native pigface (*Carpobrotus rossii*) and bower spinach (*Tetragonia implexicoma*). Introduced declared weeds such as African boxthorn (*Lycium ferocissimum*) are also present (**Figure 4**).

Existing industrial uses nearby include the Origin Energy gas storage site, Sels Point fuel depot and associated wharf.



Figure 3: Rocky platform extending seaward and small sandy beach at the Site.



Figure 4: Existing vegetation along the shoreline at the Site.

1.4 Land Tenure

The survey Site is located within land covered under the Hobart Interim Planning Scheme 2015. Land tenure at and adjacent to the Site is summarised in **Table 1** and includes land zoned as:

- Public Reserve.
- Environmental Management.
- Open Space.
- Port and Marine.

The proposed pipeline alignment crosses land zoned as Environmental Management which is zoned in the Hobart Interim Planning Scheme (2015) for the following purposes:

29.0 – Environmental Management

29.1.1 Zone Purpose Statements

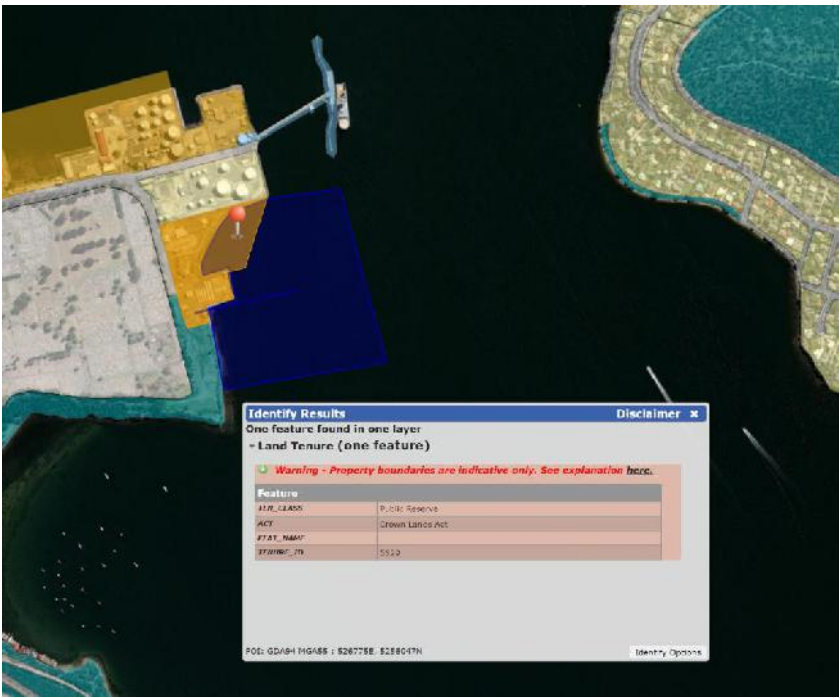
- *29.1.1.1 To provide for the protection, conservation and management of areas with significant ecological, scientific, cultural or aesthetic value, or with a significant likelihood of risk from a natural hazard.*

SELS POINT WASTEWATER PIPELINE

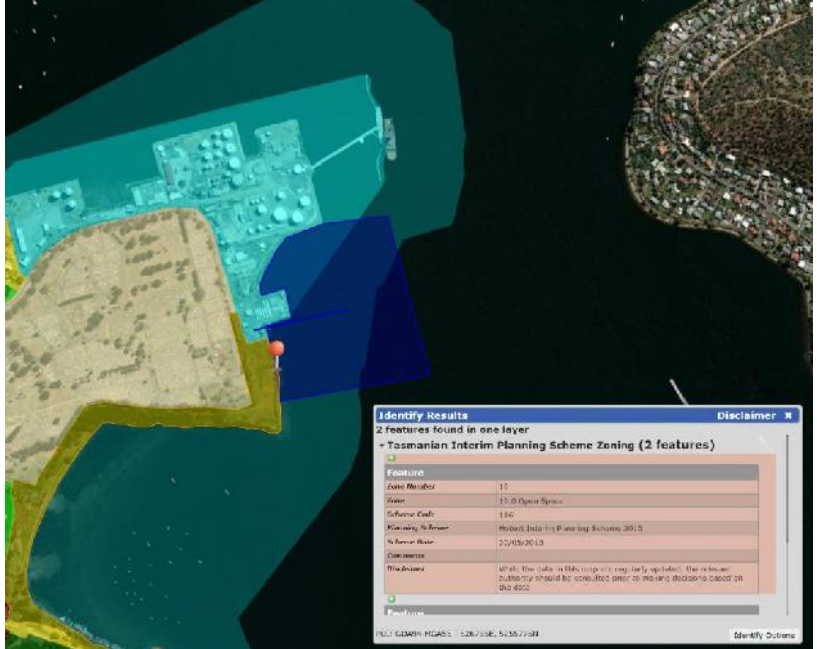
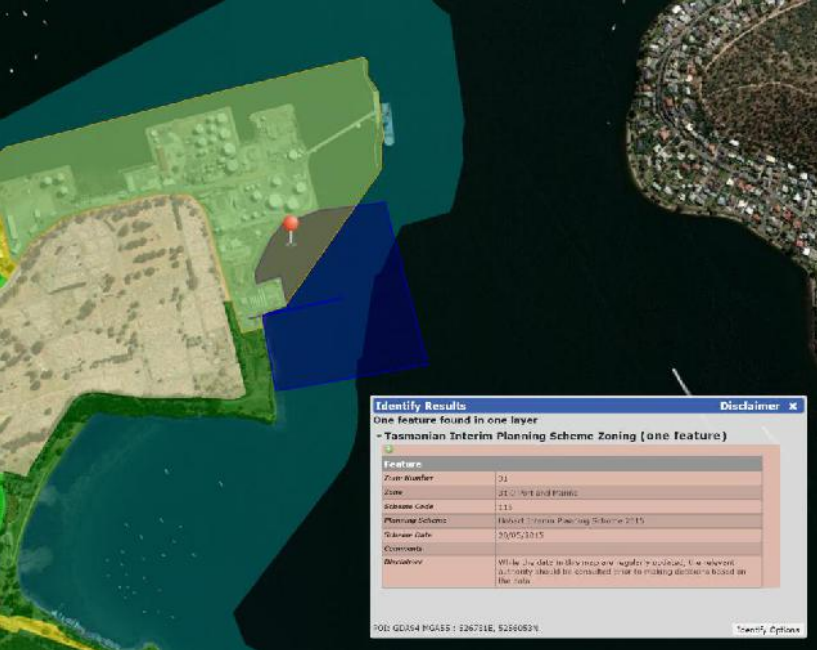
- 29.1.1.2 *To only allow for complementary use or development where consistent with any strategies for protection and management.*
- 29.1.1.3 *To facilitate passive recreational opportunities which are consistent with the protection of natural values in bushland and foreshore areas.*
- 29.1.1.4 *To recognise and protect highly significant natural values on private land.*
- 29.1.1.5 *To protect natural values in un-developed areas of the coast.*

SELS POINT WASTEWATER PIPELINE

Table 1: Land tenure (highlighted in orange) at the Site (proposed pipeline alignment in blue) (source: www.thelist.tas.gov.au, accessed 08/07/22).

Land Tenure and Zoning	Zoning Details and Location														
Public Reserve Hobart Interim Planning Scheme 2015	 Identify Results Disclaimer One feature found in one layer Land Tenure (one feature) Warning - Property boundaries are indicative only. See explanation here. <table border="1"> <thead> <tr> <th>Feature</th> <th></th> </tr> </thead> <tbody> <tr> <td>STATE_CLASS</td> <td>Public Reserve</td> </tr> <tr> <td>ACT</td> <td>Crown Lands Act</td> </tr> <tr> <td>STATE_NAME</td> <td>5513</td> </tr> </tbody> </table> POI: GDASH PG688 : 526775E, 528607N	Feature		STATE_CLASS	Public Reserve	ACT	Crown Lands Act	STATE_NAME	5513						
Feature															
STATE_CLASS	Public Reserve														
ACT	Crown Lands Act														
STATE_NAME	5513														
Environmental Management Hobart Interim Planning Scheme 2015	 Identify Results Disclaimer One feature found in one layer Hobart Interim Planning Scheme zoning (one feature) <table border="1"> <thead> <tr> <th>Feature</th> <th></th> </tr> </thead> <tbody> <tr> <td>Zone Number</td> <td>29</td> </tr> <tr> <td>Zone</td> <td>29 B. Environmental Management</td> </tr> <tr> <td>Zone Code</td> <td>116</td> </tr> <tr> <td>Planning Scheme</td> <td>Hobart Interim Planning Scheme 2015</td> </tr> <tr> <td>Zone Date</td> <td>20/05/2013</td> </tr> <tr> <td>Comments</td> <td>While the zone is in a non-regularly updated, the relevant policies in the Act, as well as the other policies, are not in force.</td> </tr> </tbody> </table> POI: GDASH PG688 : 526775E, 528607N	Feature		Zone Number	29	Zone	29 B. Environmental Management	Zone Code	116	Planning Scheme	Hobart Interim Planning Scheme 2015	Zone Date	20/05/2013	Comments	While the zone is in a non-regularly updated, the relevant policies in the Act, as well as the other policies, are not in force.
Feature															
Zone Number	29														
Zone	29 B. Environmental Management														
Zone Code	116														
Planning Scheme	Hobart Interim Planning Scheme 2015														
Zone Date	20/05/2013														
Comments	While the zone is in a non-regularly updated, the relevant policies in the Act, as well as the other policies, are not in force.														

SELS POINT WASTEWATER PIPELINE

Land Tenure and Zoning	Zoning Details and Location														
Open Space Hobart Interim Planning Scheme 2015	 Identify Results Disclaimer 2 features found in one layer - Tasmanian Interim Planning Scheme Zoning (2 features) <table border="1"> <thead> <tr> <th>Feature</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Zone Member</td> <td>15</td> </tr> <tr> <td>Zone</td> <td>15.0 Open Space</td> </tr> <tr> <td>Scheme Code</td> <td>116</td> </tr> <tr> <td>Planning Scheme</td> <td>Hobart Interim Planning Scheme 2015</td> </tr> <tr> <td>Version Date</td> <td>22/05/2015</td> </tr> <tr> <td>Comments</td> <td>While the data in this report may be updated, the relevant authority should be consulted prior to making decisions based on the data.</td> </tr> </tbody> </table> POB: GD404 PG405: 126/130, 126/131 Identify Options	Feature	Value	Zone Member	15	Zone	15.0 Open Space	Scheme Code	116	Planning Scheme	Hobart Interim Planning Scheme 2015	Version Date	22/05/2015	Comments	While the data in this report may be updated, the relevant authority should be consulted prior to making decisions based on the data.
Feature	Value														
Zone Member	15														
Zone	15.0 Open Space														
Scheme Code	116														
Planning Scheme	Hobart Interim Planning Scheme 2015														
Version Date	22/05/2015														
Comments	While the data in this report may be updated, the relevant authority should be consulted prior to making decisions based on the data.														
Port and Marine Hobart Interim Planning Scheme 2015	 Identify Results Disclaimer One feature found in one layer - Tasmanian Interim Planning Scheme Zoning (one feature) <table border="1"> <thead> <tr> <th>Feature</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Zone Member</td> <td>21</td> </tr> <tr> <td>Zone</td> <td>21.0 Port and Marine</td> </tr> <tr> <td>Scheme Code</td> <td>111</td> </tr> <tr> <td>Planning Scheme</td> <td>Hobart Interim Planning Scheme 2015</td> </tr> <tr> <td>Version Date</td> <td>22/05/2015</td> </tr> <tr> <td>Comments</td> <td>While the data in this report may be updated, the relevant authority should be consulted prior to making decisions based on the data.</td> </tr> </tbody> </table> POB: GD404 PG405: 126/130, 126/131 Identify Options	Feature	Value	Zone Member	21	Zone	21.0 Port and Marine	Scheme Code	111	Planning Scheme	Hobart Interim Planning Scheme 2015	Version Date	22/05/2015	Comments	While the data in this report may be updated, the relevant authority should be consulted prior to making decisions based on the data.
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Scheme Code	111														
Planning Scheme	Hobart Interim Planning Scheme 2015														
Version Date	22/05/2015														
Comments	While the data in this report may be updated, the relevant authority should be consulted prior to making decisions based on the data.														

2 DESKTOP REVIEW

2.1 Natural Value Assessment Desktop Review Resources

A desktop review of available literature and information was conducted to identify marine natural values such as threatened species, ecological communities and areas of conservation significance reported or predicted to occur at the Site. The review included searches of the following database resources:

- Various Tasmanian Government online resources regarding species listed under the Tasmanian *TSP Act 1995* including the Natural Values Atlas (NVA 2019), and The List (ListMap 2022).
- The Commonwealth Government 'Protected Matters Search Tool' for threatened species listed under the *EPBC Act 1999* (Department of the Environment 2016).
- Atlas of Living Australia (ALA) occurrence records (ALA 2022).

The Tasmanian Natural Values Atlas and the Commonwealth *EPBC Act 1999* Protected Matters Search Tool were accessed on the 28th June 2022 (refer to **Appendices A & B**), and the Atlas of Living Australia was accessed on the 8th July 2022 (**Appendix C**).

Database searches were generated using 500m and 5km buffers around the study area. For each species listed in the 'Protected Matters Search Tool' and Natural Values Atlas reports, a qualitative risk assessment was conducted to assess the likelihood of the species occurring in the local area and being impacted by the development. Species observations recorded in the ALA database were also included.

Other applicable Tasmanian legislation was also considered, including the *Living Marine Resources Act 1995* (*LMRA Act 1995*) (and associated regulations) and the *State Coastal Policy 1996* (*SCP 1996*).

Natural values identified in the desktop review that require further consideration or field surveys are highlighted in **BOLD** and key summary points are outlined.

2.2 Threatened Marine Species at the Site

The desktop review identified six (6) marine fish, five (5) marine birds, and two (2) marine mammals that in database searches are considered as *known* or *likely to occur* at or near the proposed Site (refer to **Sections 2.2.1 – 2.2.4**).

The likelihood of the threatened marine species occurring at the Site is summarised in **Section 2.2.5**.

2.2.1 Threatened Marine Fish Species

Database searches identified five (5) species of threatened marine fish that may occur at the Site (**Table 2**).

DESKTOP REVIEW

Table 2: Threatened marine species that may occur at the Site based on desktop database and literature review.

Common name	Scientific name	EPBC Status [^]	TSP Status [#]	Likelihood (based on literature review)
Fish				
Australian grayling	<i>Prototroctes maraena</i>	Vulnerable	Vulnerable	Species or species habitat known to occur within area.
porbeagle shark	<i>Lamna nasus</i>	Migratory	Not listed	Species or species habitat likely to occur within area.
school shark	<i>Galeorhinus galeus</i>	Conservation Dependent	Not listed	Species or species habitat likely to occur within buffer area.
southern bluefin tuna	<i>Thunnus maccoyii</i>	Conservation Dependent	Not listed	Species or species habitat likely to occur within area.
white shark	<i>Carcharodon carcharias</i>	Vulnerable	Vulnerable	Species or species habitat known to occur within buffer area.
big-belly seahorse	<i>Hippocampus abdominalis</i>	Listed Marine Species	Not listed	Species previously recorded during Reef Life surveys.

Notes:

[^]EPBC - Environment Protection and Biodiversity Conservation Act 1999

[#]TSP - Threatened Species Protection Act 1995

Australian Grayling - *Prototroctes maraena*

The Australian grayling is a diadromous species, migrating between rivers, their estuaries and coastal seas, and relies on free access to a range of freshwater, estuarine and marine habitats for its survival (Backhouse *et al.* 2008). Spawning of the Australian grayling takes place in spring/early summer (September to December, with peak abundances between late October and early November), with larvae drifting downstream to the sea, where they spend four to six months before returning to freshwater as juvenile fish (Koster and Gilligan, 2019; Koster *et al.* 2020). Changes in water quality, particularly reduced dissolved oxygen, increased nutrients and turbidity, toxicants and physical barriers can impact on the species at all life history stages.

Australian grayling is known to migrate through the Derwent River, and although individuals have not been recorded as occurring within the Selfs Point area, they must transit during late spring/early summer.

DESKTOP REVIEW

Potential impacts on the Australian grayling, associated with the proposed development will need to be considered. Mitigation measures should include maintenance of migration pathways, including during peak migration periods in spring/ early summer (i.e. September to December), prevention of underwater noise, and avoiding impacts to water quality.

Porbeagle Shark Lamna nasus

In Australia, porbeagle sharks occur in waters from southern Queensland to south-west Australia (Last & Stevens 2009). The species primarily inhabits oceanic waters and areas around the edge of the continental shelf. They occasionally move into coastal waters, but these movements are temporary (Campana & Joyce 2002; Francis et al. 2002).

There have not been any confirmed sightings of porbeagle sharks near the development area, which is well away from the continental shelf. The likelihood of this species occurring at the Site is considered low.

Porbeagle sharks are not considered further in this review.

School Shark - Galeorhinus galeus

The school shark (*Galeorhinus galeus*) is a long-lived species, within a lifespan of 50-60 years. Female school sharks and juveniles use sheltered inshore coastal areas around Tasmania and Victoria as nursery areas, separate from the main population (Pogonoski et al. 2002, McMillian et al. 2018). School shark pups in nursery areas feed on a variety of mainly seagrass associated fauna in the sediment (Olsen 1954; Walker et al. 2005).

The proposed construction Site is within a shark refuge area (SRA). Further details about the Derwent River SRA are provided in Section 2.3.2.

Southern Bluefin Tuna - Thunnus maccoyii

Southern bluefin tuna occur throughout the Atlantic, Pacific and Indian Oceans, are highly migratory and can travel long distances. They are a pelagic species that can be found to depths of 500 metres, with the majority of southern bluefin tuna found mainly in the Great Australian Bight (AFMA 2022a). Considering the pelagic nature of southern bluefin tuna (*Thunnus maccoyii*), the proposed development Site is not considered important habitat for the species.

Southern bluefin tuna are not considered further in this review.

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White Shark - Carcharodon carcharias

White sharks (*Carcharodon carcharias*) can be found around Tasmania from close inshore around rocky reefs, surf beaches and shallow coastal bays to outer continental shelf and slope areas. They make open ocean excursions and can cross ocean basins (e.g. eastern coast of Australia to New Zealand). White sharks are often found in regions with high prey density, such as pinniped colonies (Department of Environment 2022).

There have not been any confirmed sightings of white sharks in the Derwent River near the development area, and there are not any seal colonies that would entice or encourage them into the area. The likelihood of this species occurring at the Site is considered low.

White sharks are not considered further in this review.

Syngnathids

Syngnathids (seahorses and pipefish) have previously been recorded as occurring near the proposed pipeline alignment during Reef Life surveys in 2009 and 2010 (ALA 2022) (**Appendix C**).

Under Section 248 of the *EPBC Act 1999*, all syngnathids and solenostomids (seahorses, sea dragons, pipehorses and pipefish) are a listed marine species, and it is an offence to kill, injure, take or trade syngnathids and solenostomids in, or from, a Commonwealth area. The Tasmanian *Living Marine Resources Management Act 1995* also prohibits the taking or possession of all syngnathids and solenostomids.

Syngnathids are typically associated with seagrass meadows and other structured habitats, including artificial habitat such as bridge pylons (Foster & Vincent, 2004). Syngnathids are also generally characterized by a sparse distribution, low mobility and small home ranges (Foster & Vincent 2004).

The proposed pipeline alignment was surveyed for the presence of potential syngnathid habitat during the marine NVA field survey. No further surveys are required.

2.2.2 Threatened Marine Birds

Given the highly mobile nature of marine birds, a desktop review of potential impacts to marine bird species (including migratory species) was limited to species identified in database searches as *known to occur* within 500m of the proposed Site, excluding those species that were listed as likely to occur at the Site only during migration (i.e. overfly marine species) or only use the Site for foraging or feeding behaviour (**Table 3**).

Of the five (5) marine species identified as *known to occur* at the Site, none are listed as breeding within 5km of the Site.

DESKTOP REVIEW

Table 3:Threatened marine birds that may occur at the Site based on desktop database and literature review.

Common name	Scientific name	EPBC Status [^]	TSP Status [#]	Migratory	Likelihood (based on literature review)
Marine Birds					
white-throated needletail	<i>Hirundapus caudacutus</i>	Vulnerable	Not listed	Yes	Species or species habitat known to occur within area.
Nunivak bar-tailed godwit	<i>Limosa lapponica baueri</i>	Vulnerable	Not listed	No	Species or species habitat known to occur within area.
fairy prion	<i>Pachyptila turtur subantarctica</i>	Vulnerable	Endangered	No	Species or species habitat known to occur within area.
sharp-tailed sandpiper	<i>Calidris acuminata</i>	Not listed	Not listed	Yes	Species or species habitat known to occur within area.
bar-tailed godwit	<i>Limosa lapponica</i>	Not listed	Not listed	Yes	Species or species habitat known to occur within area.

Notes:

EPBC - Environment Protection and Biodiversity Conservation Act 1999

TSP - Threatened Species Protection Act 1995

The occurrence of any marine bird species at the Site was recorded during the marine NVA field survey conducted at the Site. No further surveys are required.

2.2.3 Threatened Marine Mammals

Marine mammal species identified in database searches as known or likely to occur near the proposed development area are summarised in **Table 4**.

Marine mammals (e.g. whales) are recorded as occasionally visiting the Selfs Point area and the greater Derwent River area. Existing observation records include the presence of southern right whales (*Eubalaena australis*) (within 500m) of the proposed development area (**Table 5**).

Under the *EPBC Act 1999*, all cetaceans (whales, dolphins and porpoises) are protected in Australian waters. The southern right whale (*Eubalaena australis*) and the blue whale (*Balaenoptera musculus*) are both listed as *Endangered* under the *EPBC Act 1999* and the Tasmanian *TSP Act 1995*.

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Table 4:Threatened marine mammals that may occur at the Site based on desktop database and literature review.

Common name	Scientific name	EPBC Status [^]	TSP Status [#]	Migratory	Likelihood (based on literature review)
Marine Mammals					
southern right whale	<i>Eubalaena australis</i>	Endangered	Endangered	Yes	Species or species habitat known to occur within area.
blue whale	<i>Balaenoptera musculus</i>	Endangered	Endangered	Yes	Species or species habitat likely to occur within area.

Southern Right Whale - Eubalaena australis

Southern right whales occur in Tasmania during their migration from feeding grounds in the Southern Ocean to sheltered breeding grounds in south-east Australia. Southern right whales are known to give birth in Tasmanian waters.

Blue whale - Balaenoptera musculus

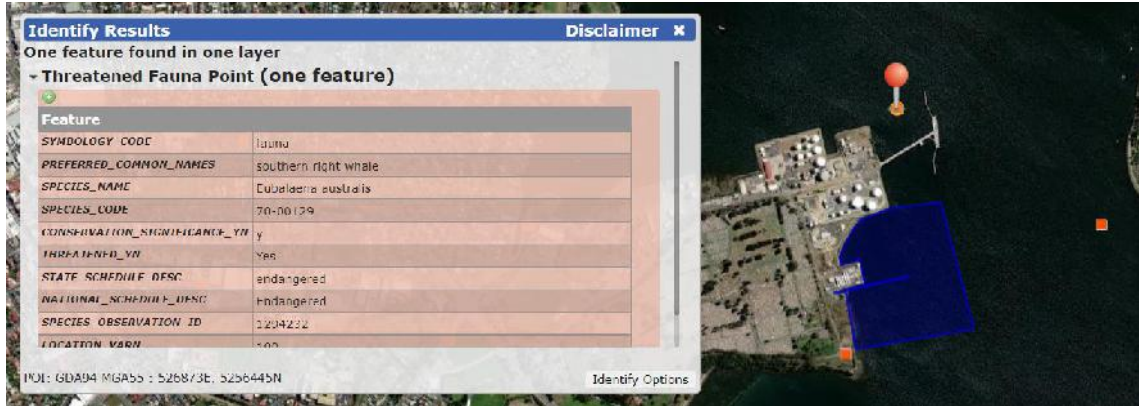
Blue whale sightings in Australian waters are widespread, and it is thought that the whales occur around the continent at various times of the year. However, much of the Australian continental shelf and coastal waters are believed to be used only for migration and opportunistic feeding. The only known areas of significance to the blue whale are feeding areas around the southern continental shelf, in Western Australia, South Australia and Victoria (DEH 2005).

Potential impacts on marine mammals, including whales, associated with the proposed development will need to be considered once the pipeline construction method is finalised.

Mitigation measures should consider operational measures (e.g., soft start procedures) and method-based measures such as noise reduction.

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Table 5: Whale observations within the Derwent River, adjacent to the proposed development area (shown in blue polygon) (source www.thelist.tas.gov.au , accessed 02/07/22).

Marine Mammal Observation	Observation Date	Location
Southern right whale observation point – approximately 500m upstream of the development Site.	2003	

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2.2.4 Threatened Marine Invertebrates

Marine invertebrate species identified in database searches as known or likely to occur near the proposed development area are summarised in **Table 6**.

Table 6:Threatened marine invertebrates that may occur at the Site based on desktop database and literature review.

Common name	Scientific name	EPBC Status [^]	TSP Status [#]	Likelihood (based on literature review)
Marine Invertebrates				
Derwent River seastar	<i>Patiriella littoralis</i>	Critically Endangered	Endangered	Species or species habitat likely to occur within area.

Derwent River Seastar - Patiriella littoralis

The Derwent River Seastar is a small seastar up to 17 mm across. The species usually has five arms and is a rounded pentagonal shape. It is bluish-greenish-brown on the upper (dorsal) surface, bordered by off-white around the outer edge. The species is endemic to Tasmania and only known from five locations in the Derwent River, adjacent to Hobart, in the state's south-east (Bryant & Jackson 1999, Dartnall 1970, Materia 1994) and was last recorded in 2004 (DEWA 2022).

Cornelian Bay Point, located adjacent to the proposed development area is a historical location of one of the subpopulations of the Derwent River seastar. However, the species has not been recorded from this location since 1969. It has been proposed that the species may have hybridised with the New Zealand seastar, *Patiriella regularis*, and is now extinct (O'Hara *et al.* 2018).

A field survey for the threatened Derwent River seastar (*Patiriella littoralis*) at the Site was undertaken during the marine NVA field survey. The field survey was conducted in accordance with the species-specific methods outlined by DPIWE (2021) – “Guidelines for Natural Values Surveys – Estuarine & Marine Development Proposals”. No further surveys are required.

2.2.5 Likelihood of Occurrence

For each marine species identified from database searches, a qualitative assessment of species 'likelihood of occurrence' at the project Site was undertaken based on species habitat requirements and documented occurrence records. Each species was assigned a score based on two criteria: (1) occurrence score, and (2) when the species was last reported within the project area. Scores were then multiplied together generate a score of the likelihood of occurring within the Site – high, moderate, low or unlikely (**Table 7**).

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Two (2) threatened or protected species (Australian grayling and school shark) were found to have a moderate likelihood of occurrence at the project Site (**Table 8**).

Table 7: Qualitative assessment criteria used to generate a score of likelihood of occurrence.

Qualitative Assessment Criteria	
Occurrence Score	
5	Species known to occur at the project Site, and suitable habitat (such as foraging habitat) exists within the project Site.
4	Species known to occur near the project Site (i.e. 5 km radius) though not recorded from the project Site, and potential suitable habitat (such as foraging habitat) exists within the project Site.
3	Species known from the broader project area (i.e. 10 km radius) though not recorded from the project Site, relies on migration through the Site, and/or potential suitable habitat (such as foraging habitat) exists within the project Site.
2	Species not known historically recorded within the broader project area (i.e. 10 km radius), though potential suitable habitat (such as foraging habitat) exists within the project Site.
1	No suitable habitat exists for the species within the project Site.
Last Reported Score (last reported within the project area i.e. 10 km radius)	
5	Last reported in the project area less than 1 year ago.
4	Last reported in the project area less than 5 years ago.
3	Last reported in the project area between 5 -10 years ago, or cryptic species unlikely to be reported in observations submitted to databases.
2	Last reported in the project area >10 years ago.
1	Last reported in the project area >15 years ago.
0	Not previously reported in the project area.
Likelihood of Occurring (within the Project Area) Score	
20 - 25	High
12 - 16	Moderate
6 - 10	Low
0 - 5	Unlikely

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Table 8: Summary of the likelihood of threatened marine species occurring within the proposed development Site.

Common Name	Scientific Name	EPBC Act 1999 [^]	TSP Act 1995 [#]	Habitat Preference	Occurrence Score	Last Reported Score	Likelihood of Occurrence	Comment
Marine Fish Species								
Australian grayling	<i>Prototroctes maraena</i>	V	V	Diadromous species, migrating between rivers, estuaries and coastal seas.	4	3	Moderate	Known to occur further upstream in Derwent River. Seasonal migration from September to December.
porbeagle shark	<i>Lamna nasus</i>	M	Not Listed	Primarily inhabits oceanic waters and areas around edge of continental shelf. Occasionally move into coastal waters, but these movements are temporary.	1	0	Unlikely	No confirmed sightings of porbeagle sharks near the development area, which is well away from the continental shelf. Habitat at the Site considered unsuitable for the pelagic species.
school shark	<i>Galeorhinus galeus</i>	CD	Not Listed	Female school sharks and juveniles use sheltered inshore coastal areas around Tasmania and Victoria as nursery areas.	4	3	Moderate	Common species inhabiting inundated tidal flats in Derwent River estuary. Juveniles feed and grow in shallow coastal bays and estuary waters before heading to deeper water as adults.
southern bluefin tuna	<i>Thunnus maccoyii</i>	CD	Not Listed	Highly migratory, pelagic, usually found in Great Australian Bight.	1	0	Unlikely	No confirmed sightings of southern bluefin tuna near the development area. Habitat at the Site considered unsuitable for the pelagic species.

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Common Name	Scientific Name	EPBC Act 1999^	TSP Act 1995#	Habitat Preference	Occurrence Score	Last Reported Score	Likelihood of Occurrence	Comment
white shark	<i>Carcharodon carcharias</i>	V	V	Often found in regions with high prey density, such as seal colonies.	2	0	Unlikely	Not previously recorded near project area.
big-belly seahorse	<i>Hippocampus abdominalis</i>	LM	Not listed	Typically associated with seagrass meadows and other structured habitats, including reefs and artificial habitat such as bridge pylons.	4	1	Unlikely	Lasted recorded near project area in 2010 and 2009. Known to occur elsewhere in the Derwent River but to be in decline.
Marine Bird Species								
No marine bird species identified in Desktop Review are known to use the Site for breeding and are therefore not considered further.								
Marine Mammal Species								
southern right whale	<i>Eubalaena australis</i>	E	E	Species undertakes long migrations, and is known along coastlines in Tasmania, including giving birth in Tasmania waters.	5	1	Unlikely	Most recent observation was within 500m of the Site in 2003. Known to occur within the Derwent River.
blue whale	<i>Balaenoptera musculus</i>	E	E	Species known to use continental shelves and upwellings for foraging. Coastal waters believed to be used only for migration and opportunistic feeding.	1	0	Unlikely	Not previously recorded near project area or within the Derwent River close to Hobart. Habitat at the Site considered unsuitable for the species.

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Common Name	Scientific Name	EPBC Act 1999^	TSP Act 1995#	Habitat Preference	Occurrence Score	Last Reported Score	Likelihood of Occurrence	Comment
Marine Invertebrate Species								
Derwent River seastar	<i>Patiriella littoralis</i>	CE	E	Endemic Tasmania species only known from five locations in the Derwent River, adjacent to Hobart. Not recorded since 2004 and believed to be possibly extinct.	4	1	Unlikely	Cornelian Bay Point, located adjacent to the proposed development area is a historical location of one of the subpopulations of the Derwent River seastar. Species has not been recorded from this location since 1969.

*Note: CE = Critically Endangered, E= Endangered, V = Vulnerable, CD = Conservation Dependant, LM = Listed Marine.

2.3 Other Natural Values at the Site

2.3.1 Legislative Acts and Policies

The desktop review also identified other marine natural values that require consideration, as the marine environment (including species, habitats and communities) is protected more generally under Tasmanian State legislation.

Under the Tasmanian LMR Act 1995 (refer to Part 5, Division 6):

“Unless otherwise authorised, a person must not carry out any activity which is likely to have a serious effect on the marine environment and involves or results in–

- (a) the disturbance of the bed of any State waters; or*
- (b) the removal of, or interference with, fish or marine or benthic flora or fauna in any State waters; or*
- (c) the discharge, release or deposit of any matter in any State waters.”*

Furthermore, the Tasmanian SCP 1996 states (refer to section 1.13 of SCP 1996):

“The coastal zone will be managed to conserve the diversity of all native flora and fauna and their habitats, including seagrass and seaweed beds, spawning and breeding areas. Appropriate conservation measures will be adopted for the protection of migratory species and the protection and recovery of rare, vulnerable and endangered species in accordance with this Policy and other relevant Acts and policies.”

The major legislation relating to the regulation and control of development in Tasmania is the *Land Use Planning and Approvals (LUPAA) Act 1993*. LUPAA establishes a system of planning schemes that provide a framework for regulating the use and development of land, and some resources, within local government areas. The local government planning scheme for the Site is the Hobart Interim Planning Code 2015, and the location of the new pipeline is in an area zoned as Environmental Management, which includes the following purposes:

29.0 – Environmental Management

29.1.1 Zone Purpose Statements

- 29.1.1.1 To provide for the protection, conservation and management of areas with significant ecological, scientific, cultural or aesthetic value, or with a significant likelihood of risk from a natural hazard.
- 29.1.1.2 To only allow for complementary use or development where consistent with any strategies for protection and management.

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- 29.1.1.3 To facilitate passive recreational opportunities which are consistent with the protection of natural values in bushland and foreshore areas.
- 29.1.1.4 To recognise and protect highly significant natural values on private land.
- 29.1.1.5 To protect natural values in un-developed areas of the coast.

2.3.2 Derwent River Shark Nursery Area

The Derwent River upstream of a line from Dennes Point to Cape Direction is recognised as a significant nursery area and habitat for the breeding of school (*Galeorhinus galeus*) and gummy (*Mustelus antarcticus*) sharks and has been declared a shark nursery (managed by the Tasmanian State Government, under the *LMR Act 1995*) (**Figure 5**). No shark, skate or ray of any kind (other than elephant-fish) may be taken from within the SRA.



Figure 5: Derwent River nursery area (shown in yellow) (source: <https://nre.tas.gov.au/sea-fishing-aquaculture/recreational-fishing/area-restrictions/shark-refuge-areas#DerwentRiver> accessed 04/07/22).

School (*Galeorhinus galeus*) and gummy (*Mustelus antarcticus*) sharks both give birth to litters of live sharks (Olsen 1954). Female school and gummy sharks and juveniles use sheltered inshore coastal areas around Tasmania and Victoria as nursery areas, separate from the main population (Pogonoski *et al.* 2002, McMillian *et al.* 2018). Studies have identified that pregnant sharks move into nursery areas in Tasmanian waters between November and January to give birth to shark pups, with the pups remaining in nursery areas during summer, before migrating into deeper waters in winter (Olsen 1954, Stevens and West 1997).

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Shark pups in nursery areas feed on a variety of mainly seagrass associated fauna in the sediment (Olsen 1954; Walker *et al.* 2005).

The school shark is listed as Vulnerable worldwide, including the Australasian subpopulation (ICUN, <http://www.redlist.org/>). Under the *EPBC Act 1999*, school sharks are listed as ‘conservation dependent’, but in Part 3 of the EPBC Act (i.e. requirements for environmental approvals), conservation dependent species are not matters of national environmental significance ([further details available in Matters of National Environmental Significance: Significant Impact Guidelines 1.1 \(awe.gov.au\)](#)).

The [Listing Statement](#) (under the *EPBC Act 1999*) identified key threats to the school shark including:

- Historic and ongoing fishing pressure.
- Environmental disturbance and habitat degradation in School Shark nursery areas.

Part of the response to the decline in school shark population included protecting coastal bays and estuaries throughout southern Australia, which were identified as nursery areas (McAllister 2018). Maintaining and protecting school shark nurseries or shark refuge areas (SRAs) is considered essential to ongoing stock rebuilding strategies, as it protects pregnant female sharks and juveniles (McAllister 2018).

Given the location of the development area within an SRA the presence of sharks within the development area is assumed.

Any construction works within the project footprint will need to be appropriately managed to avoid indirect impacts via noise, degradation of water quality, and allow safe passage for sharks through the Site. Construction works should avoid the shark migration period between November and January when pregnant females are moving into nursery areas to give birth.

2.4 Additional Considerations

2.4.1 Introduced Species

Seventy introduced species have been recorded within the Derwent River estuary, and of these the following species are thought to be impacting the ecology of the Derwent River:

- Northern Pacific seastar (*Asterias amurensis*).
- Pacific oyster (*Magallana gigas*).
- New Zealand seastar (*Patiriella regularis*).
- New Zealand screw shell (*Maoricolpus roseus*).
- New Zealand half-crab (*Petrolisthes elongatus*).
- Japanese seaweed (*Undaria pinnatifida*).

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- European clam (*Varicorbula gibba*).

The occurrence of any introduced marine species at the Site was recorded during the marine NVA field survey. No further surveys are required.

2.5 Conclusions and Summary from Desktop Review

The desktop review identified natural values that required further investigation during the marine NVA field survey (Table 9).

A review of the proposed development and potential impacts should also consider migratory fish species (Australian grayling and school shark), and marine mammals (southern right whale) that could be impacted during construction works whilst transiting the Site.

Table 9: Natural values and other considerations that may occur near the Site (based on desktop database and literature review) that required further investigation through field surveys.

Natural Values			
Species/Community	Protected under Commonwealth Legislation	Protected under Tasmanian Legislation	Type of Further Investigation Required
Derwent River seastar (<i>Patiriella littoralis</i>)	Yes	Yes	Field survey should include surveying for threatened seastars in accordance with survey guidelines.
big-belly seahorse <i>Hippocampus abdominalis</i>	Yes	Yes	Field survey should include checking for presence/absence of potential syngnathid habitat along the pipeline alignment.
Additional Considerations			
Introduced Species	No	No	Field survey should record any introduced species observed.
Marine Birds	Yes	Yes	Field survey should record all marine bird species observed.

3 FIELD SURVEY OBJECTIVES AND METHODS

3.1 Survey Objectives

Following the desktop review, objectives for the field survey were refined to include:

- Observations of intertidal and subtidal species along the Selfs Point shoreline within the proposed construction zone, including presence of introduced species.
- Inspecting various habitats such as the existing intertidal, subtidal, and other zones as identified.
- Identifying the presence of protected marine species within the proposed construction zone.
- Undertaking a threatened seastar survey.
- Recording marine bird species observed within the survey Site.
- Noting introduced species observed within the survey Site.
- Undertaking a bathymetry survey.

3.2 Survey Timing and Personnel

The intertidal field survey and collection of ROV footage was undertaken on 24th May 2022 by the following Elgin personnel:

- Dr Luke Finley: Principal Environmental Scientist, PhD, BSc (Hons).
- Annette Heath: Environmental Scientist, BSc, BAntStud (Hons).

The bathymetry mapping was undertaken on 5th May 2022.

3.3 Permits and Authorisations

Permits were not required because threatened species were not collected, or habitat disturbed.

3.4 Survey Area

The field surveys focused on both the intertidal and subtidal marine environment occurring within the footprint of the proposed development area (**Figure 6**).

The intertidal and threatened seastar field survey was timed to coincide with low tide when shoreline habitats were exposed.

The subtidal habitat was surveyed under suitable conditions for using a ROV.



Legend - Indicative Pipeline - Transect - Shoreline Inspection Area - Area Boundary - Data Boundaries	N Scale: 1:1,000 0 5 10 20 30 40 Meters	Site: Selfs Point STP, New Town, Tasmania	Client: TasWater	Title: Marine Habitat Inspections	Figure 6 PCS: WGS 1984 Web Mercator Auxiliary Sphere Datum: WGS 1984 Projection: Mercator Auxiliary Sphere Scale Factor: 0.0000 Map Units: Meter
		Date: 7 July 2022 Size: A3 Version: Rev C	Drawn: MU Approved: LF		

FIELD SURVEY OBJECTIVES AND METHODS

3.5 Survey Methods

The natural values field surveys included:

- Substrate characterisation within the intertidal and subtidal habitats.
- Intertidal biota and habitat surveys within the proposed construction zone.
- Threatened seastar survey using transects along the shoreline.
- ROV surveys along the alignment of the proposed pipeline to collect video footage within the construction zone.
- Visual searches for threatened and introduced marine species.

Substrate types were classified following the SEAMAP Tasmania classification hierarchy (Butler *et al.* 2017).

Marine species names are in accordance with current accepted nomenclature listed on the World Register of Marine Species (WoRMS) (<https://www.marinespecies.org/about.php>, accessed 6 July 2022).

3.5.1 Intertidal Marine Habitat Inspection

Habitat and Communities

Marine intertidal habitat inspections were undertaken within the shoreline of the proposed construction zone, including the natural beach area and rock armoured section of the shore. Species observed within the intertidal habitat were recorded and photographed. Where present, loose rocks were turned over within each habitat type and inspected for intertidal species (e.g., mobile crustaceans, gastropods) (Table 10).

Table 10: Example photographs of intertidal habitats inspected.

Intertidal Zone – Rock Armoured Shoreline	Intidal Zone – Natural Rock Platform
	

FIELD SURVEY OBJECTIVES AND METHODS

Threatened Seastar Survey

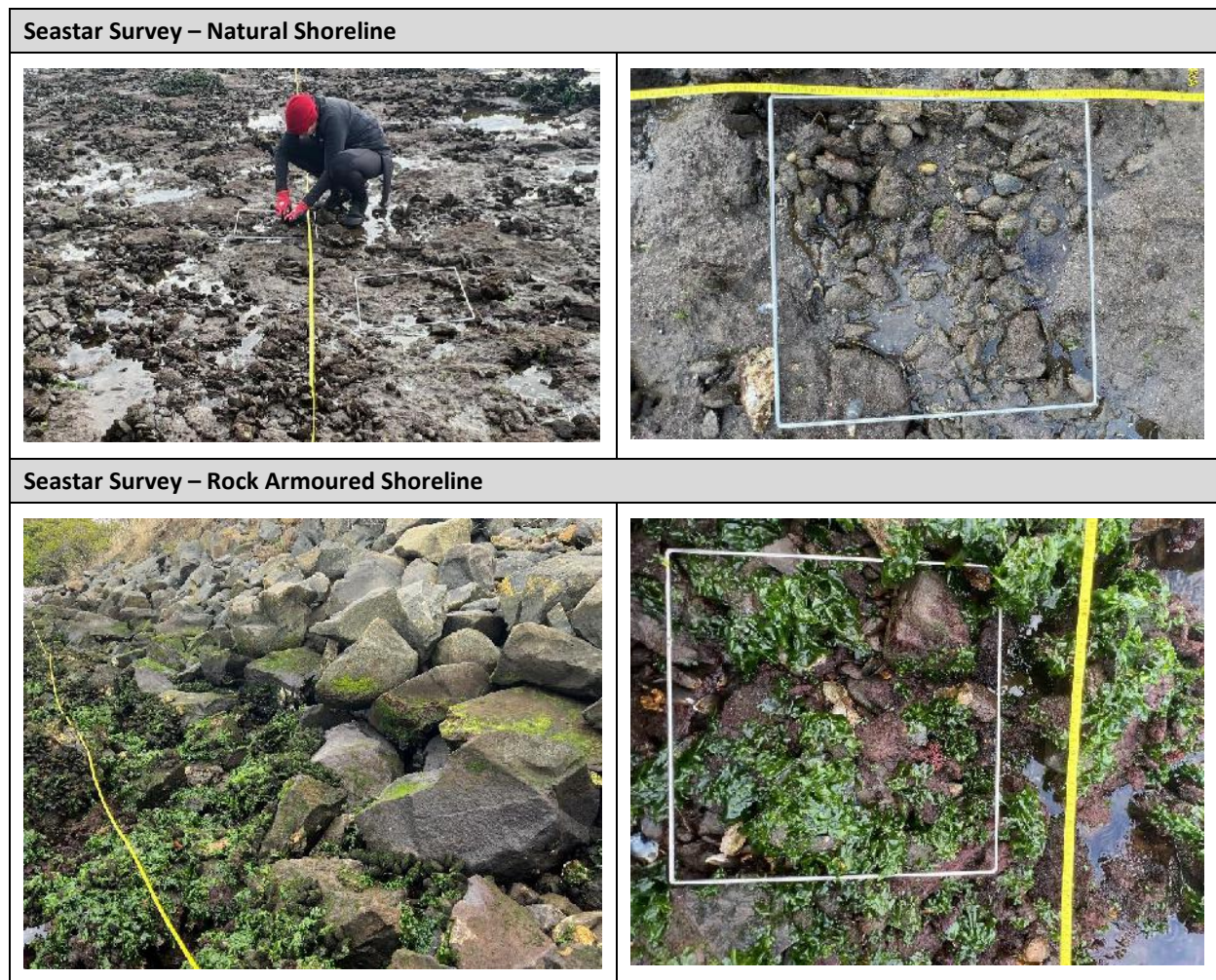
A threatened seastar survey was undertaken in accordance with the “Guidelines for Natural Values Surveys – Estuarine & Marine Development Proposals” (DPIWE 2021), with 4 transects positioned at different heights along the shoreline (refer **Figure 6, Table 11**):

- T1 – high water mark (26m long).
- T2 – low water mark (26m long).
- T3 – 0.5m below low water mark (28m long).
- T4 – 1m below low water mark (29m long).

A further transect (T5) along the artificial rock armoured section was also surveyed for threatened seastar species.

A 0.25m² quadrat was placed every 5m along the transect. Where present, loose rocks and other material (e.g. oyster and mussel shells) were turned over and inspected for threatened seastar species.

Table 11: Example photographs of threatened seastar transect surveys.



FIELD SURVEY OBJECTIVES AND METHODS

3.5.2 Subtidal Marine Habitat Inspection

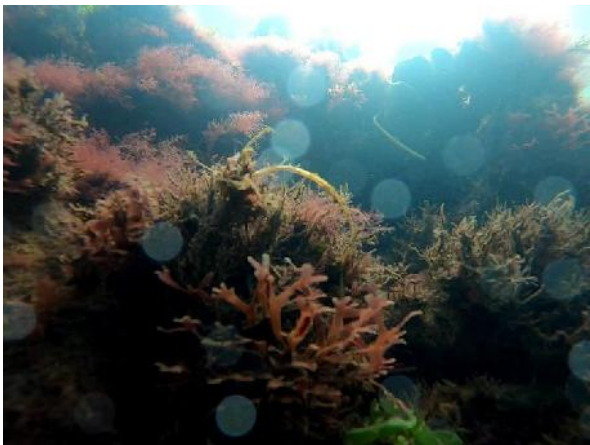
Bathymetry Survey

A bathymetry survey was conducted within the defined survey area (Figure 2). A Garmin GPSMAP chartplotter on the survey vessel collected depths at regular intervals along transects that were orientated both parallel and perpendicular to the shoreline. Data was processed in Reefmaster software.

Habitat and Communities

The subtidal habitat within the broader construction area, and the proposed pipeline alignment was inspected via ROV survey to better understand the habitats and communities present (refer to **Figure 6**, example images provided in **Table 12**). The footage collected was also reviewed for threatened species and potential seahorse habitat along the proposed pipeline alignment.

Table 12: Example photos from the subtidal inspections (ROV survey).

Subtidal Habitat Surveys	
ROV Surveys	
	

DESCRIPTION OF NATURAL VALUES

4 DESCRIPTION OF NATURAL VALUES

The following description of the natural values at the proposed development Site is based upon information gathered during the desktop review (**Section 2**) and field survey (**Section 3**).

4.1 Intertidal Habitat

4.1.1 Sediment Characteristics

The intertidal zone at the Site is predominately a gentle sloping rocky habitat (**Figure 7**), with sections of exposed bedrock and a small beach at the northern end composed of mixed substrata including coarse sand and gravel, and dead bivalve shells.

The natural shoreline has been modified, with dolerite rock armouring (for the Origin Energy gas site) along the margin of the artificially extended shoreline at the northern end of the beach (**Table 10**).



Figure 7: Intertidal habitat at Self's Point, comprised of a small sandy beach and rock platform. Photo is taken looking south towards the Tasman Bridge.

DESCRIPTION OF NATURAL VALUES

Within the survey area, there were six (6) distinct types of rocky habitats within the natural habitat (following the SEAMAP sediment classification system):

- Mixed Hard Substrata - Geologic (pavement with cobbles).
- Mixed Soft Substrata – Biogenic Carbonate Shell (oyster and mussel shell) and Coarse Sediments (sand).
- Mixed Soft Substrata - Biogenic Carbonate Shell (oyster and mussel shell) and Mixed Coarse Sediments (sand and pebbles).
- Mixed Soft Substrata - Coarse Sediments (sand and pebbles).
- Mixed Unconsolidated Hard/Soft Substrata - Geologic Sedimentary (cobbles, pebbles).
- Consolidated Substrata - Geologic Sedimentary Pavement.

A portion of the shoreline is modified with dolerite rock armouring (Transect T5, refer to **Figure 6**) and provided a further category of sediment:

- Mixed Hard Substrata – Geologic (boulder and cobbles).

A summary of habitat observations within the natural shoreline and rock armoured shoreline is provided in **Table 13** below, moving seaward from the shoreline.

DESCRIPTION OF NATURAL VALUES

Table 13: Example intertidal habitats at Selfs Point (natural and modified sediments).

Intertidal Habitat	SEAMAP Substrate Classification	Habitat Observations
	Mixed Hard Substrata - Geologic (pavement with cobbles).	Supralittoral zone at the southern end of the Site, at the base of the cliff. Loose cobbles and coarse sediments above high-water mark, with oyster shells. No marine fauna observed.
	Mixed Soft Substrata – Biogenic Carbonate Shell (oyster and mussel shell) and Coarse Sediments (sand).	Supralittoral zone at the small beach at the northern end of the Site. Dominated by thick accumulation of oyster and mussel shells on top of coarse sand. No marine fauna observed. Accumulation of shells approximately 2m wide.

DESCRIPTION OF NATURAL VALUES

Intertidal Habitat	SEAMAP Substrate Classification	Habitat Observations
	Mixed Soft Substrata - Biogenic Carbonate Shell (oyster and mussel shell) and Mixed Coarse Sediments (sand and pebbles)	Littoral zone. Coarse sand with bivalve shells. No marine fauna observed.
	Mixed Soft Substrata - Coarse Sediments (sand and pebbles)	Littoral zone. Coarse sediments (sand, gravels, pebbles) with coarse shell grit. No marine fauna observed.

DESCRIPTION OF NATURAL VALUES

Intertidal Habitat	SEAMAP Substrate Classification	Habitat Observations
	Mixed Unconsolidated Hard/Soft Substrata - Geologic Sedimentary (cobbles, pebbles)	Combination of cobbles, coarse sediments (pebbles and gravels etc). Dominated by bivalves (oysters and mussels), barnacles and mobile decapods such as the spotted shore crab (<i>Paragrapsus gaimardii</i>) and New Zealand half-crab (<i>Petrolisthes elongatus</i>). Occasional mobile gastropods such as southern chiton (<i>Ischnochiton australis</i>) and New Zealand green chiton (<i>Chiton glaucus</i>). Substrate and bivalves covered by a thick coating of sediment and encrusting red algae taxa.
	Consolidated Substrata - Geologic Sedimentary Pavement	Outcropping bedrock (basalt). Dominated by mussels (<i>Mytilus galloprovincialis</i>) and Pacific oysters (<i>Magallana gigas</i>). Estuary barnacles (<i>Austrominius covertus</i>) also common on mussels. Substrate and bivalves covered by a thick coating of sediment and encrusting algae.

DESCRIPTION OF NATURAL VALUES

Intertidal Habitat	SEAMAP Substrate Classification	Habitat Observations
	Mixed Hard Substrata – Geologic (boulder)	Artificial dolerite rock armouring. Dominated by mobile gastropods e.g. estuarine coniwink (<i>Bembicium auratum</i>), common coniwink (<i>Bembicium melanostoma</i>), corded siphon shell (<i>Siphonaria funiculata</i>). Darwin's barnacle (<i>Austrominius modestus</i>) also present. Substrate comparatively clean of sediment and algae.
	Mixed Hard Substrata – Geologic (boulders and cobbles)	Artificial dolerite rock armouring. Thick layer of mussels (<i>Mytilus galloprovincialis</i>) and abundant algae, particularly sea lettuce, <i>Ulva</i> spp. Red algae (e.g. Delesseriacea taxa and <i>Gelidium australe</i>) also common. Substrate covered with algae and sediment.

4.1.2 Intertidal Species and Habitat

Seventeen (17) animal species and five (5) algal species were observed within the intertidal zone at the Site (**Table 14**). All species were typical of sheltered estuarine environments within southern Tasmania. Example photos of intertidal species observed are provided in **Appendix D**.

No threatened intertidal marine species were identified during the field survey.

Bivalves were the dominant intertidal invertebrate recorded, with two species (the blue mussel, *Mytilus galloprovincialis*, and the Pacific oyster, *Magallana gigas*) dominating the lower intertidal area of natural rock habitat and the artificial rock armouring.

Four crab species were observed under larger cobbles and pebbles, with the spotted shore crab *Paragrapsus gaimardii* the most commonly observed crab species.

Mobile gastropods were also observed at the Site and were more diverse on the sections of rock armour that were comparatively devoid of sediment. The common conniwink (*Bembicium melanostoma*), estuarine conniwink (*Bembicium auratum*) and the corded siphon shell (*Siphonaria funiculata*) were the most common gastropods observed within the rock armoured shoreline. Lower on the natural shoreline the most common gastropods observed were New Zealand green chiton (*Chiton glaucus*) and the native southern chiton (*Ischnochiton australis*).

Algal diversity was greater along the rock armoured section of the shoreline, and red alga species were the most abundant algal taxa at the Site.

A summary of intertidal taxa observed within the survey area is provided in **Table 14**.

Table 14: Species list of intertidal marine invertebrates recorded during the NVA survey.

Kingdom Animalia			
Phylum	Class	Common Name	Scientific Name
Arthropoda	Malacostraca	green crab	<i>Carcinus maenas</i> *
		spotted shore crab	<i>Paragrapsus gaimardii</i>
		notched shore crab	<i>Paragrapsus quadridentatus</i>
		New Zealand porcelain crab	<i>Petrolisthes elongatus</i> *
	Maxillopoda	estuary barnacle	<i>Austrominius covertus</i>
		Darwin's barnacle	<i>Austrominius modestus</i>
Chordata	Actinopterygii	common shore eel	<i>Alabes dorsalis</i>
Echinodermata	Asteroidea	Pacific seastar	<i>Asterias amurensis</i> *
		Regular seastar	<i>Patiriella regularis</i> *

NATURAL VALUES SURVEY

Kingdom Animala			
Phylum	Class	Common Name	Scientific Name
Mollusca	Bivalvia	Blue mussel	<i>Mytilus galloprovincialis</i>
		Pacific oyster	<i>Magallana gigas</i> *
	Gastropoda	estuarine conniwink	<i>Bembicium auratum</i>
		common conniwink	<i>Bembicium melanostoma</i>
		New Zealand green chiton	<i>Chiton glaucus</i> *
		southern chiton	<i>Ischnochiton australis</i>
		Serpent-skin chiton	<i>Sypharochiton pelliserpentis</i>
		Corded siphon shell	<i>Siphonaria funiculata</i>
Kingdom Protista & Plantae			
Phylum	Family	Common Name	Scientific Name
Chlorophyta	Codiaceae	codium	<i>Codium spp.</i>
	Ulvaceae	sea lettuce	<i>Ulva lactuca</i>
			<i>Ulva prolifera</i>
Rhodophyta	Range of red algae species observed, including coralline species. Samples for taxonomic identification not collected.		
	Delesseriaceae	Sample not collected for taxonomic identification.	
	Gelidiaceae		<i>Gelidium australe</i>

* = introduced species

4.1.3 Threatened Seastar Survey

No threatened seastar species were observed in the natural intertidal zone or on the rock armouring.

4.2 Subtidal Habitat

4.2.1 Sediment Characteristics

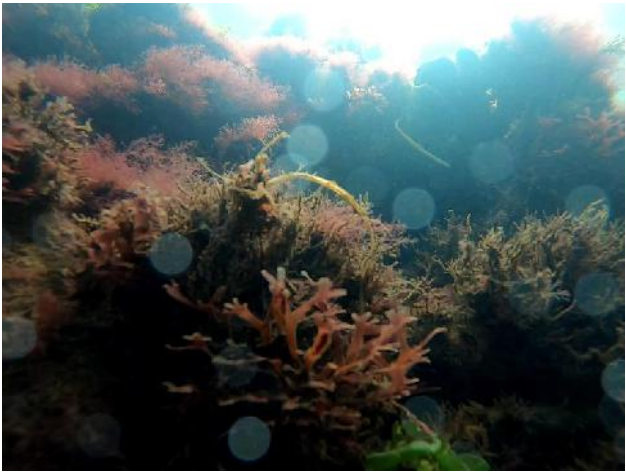
Two (2) distinct types of rocky habitats (following the SEAMAP sediment classification system) were observed on the ROV footage:

- Mixed Hard Substrata – Geologic (boulders and cobbles).
- Mixed Fine Sediments.

A summary of habitat observations and example photos within each zone is provided in **Table 15** below.

NATURAL VALUES SURVEY

Table 15: Example subtidal habitats along the proposed pipeline alignment.

Subtidal Habitat	SEAMAP Substrate Classification	Habitat Observations
	Mixed Hard Substrata – Geologic (boulders and cobbles) (photo from ROV survey)	Dolerite rock armour covered by a thick growth of algae. Dominated by red alga taxa including <i>Rhodymenia</i> spp. and Ceramialean species.
	Mixed Fine Sediments (photo from ROV survey)	Open fine sediments (silt), comparatively devoid of algae. Marine fauna observed include flathead (<i>Platycephalus</i> spp), and introduced seastars <i>Asterias amurensis</i> , <i>Patiriella regularis</i> .

NATURAL VALUES SURVEY

Subtidal Habitat	SEAMAP Substrate Classification	Habitat Observations
	Mixed Fine Sediments (photo from ROV survey)	Fine sediments (silt). Invertebrate burrows and polychaete tubes (unidentified species) common. Introduced Pacific seastar (<i>Asterias amurens</i>) present.
	Mixed Fine Sediments (photo from ROV survey)	Fine sediments (silt). Thick layer of filamentous winter weed (Ectocarpalean taxa).

4.2.2 Subtidal Species and Habitat

Nine (9) species were observed within the subtidal zone of the proposed pipeline alignment (**Table 16**). Example photos of intertidal species observed are provided in **Appendix D**. All species were typical of sheltered estuarine environments within southern Tasmania.

No threatened species identified in the desktop review were recorded during subtidal surveys.

NATURAL VALUES SURVEY

Away from the rock armouring, the seafloor was covered with a layer of fine sediments, with the introduced seastars, Pacific sea star (*Asterias amurensis*) and the regular seastar (*Patiriella regularis*) were the most commonly observed marine species.

The big-belly seahorse (*Hippocampus abdominalis*) was not observed during a search of deeper habitats, or on ROV footage along the proposed pipeline alignment or along the rock armoured shoreline. Most of the habitat along the pipeline alignment is considered unsuitable for the big-belly seahorse due to a lack of structure (i.e. it is dominated by soft sediments). The subtidal section of the rock armour and the associated algal species may provide some habitat for the big-belly seahorse, but they were not observed during the current survey.

A summary of taxa observed within the subtidal survey area is provided in **Table 16**.

Table 16: Species list of sub-tidal marine species recorded during the dive and ROV surveys within the natural values assessment area.

Kingdom Animalia			
Phylum	Class	Common Name	Scientific Name
Annelida	Polychaeta	Polychaete species. Sample not collected for identification.	
Chordata	Actinopterygii	southern hula fish	<i>Trachinops caudimaculatus</i>
	Osteichthyes	flathead	<i>Platycephalus spp.</i>
Echinodermata	Astroidea	Pacific sea star	<i>Asterias amurensis</i> *
	Astroidea	Regular seastar	<i>Patiriella regularis</i> *
Kingdom Protista & Plantae			
Phylum	Family	Common Name	Scientific Name
Heterokontophyta	Ectocarpaceae	winter weed	Sample not collected for taxonomic identification.
Rhodophyta	Rhodymeniaceae		<i>Rhodymenia spp.</i>
	Ceramiceae		<i>Ceramium spp.</i>
	Ceramiceae		<i>Centroceras clavulatum</i>

* = introduced species

4.3 Bathymetry Survey

The bathymetry within the proposed lease area was mapped using a single beam depth sounder to better understand the profile of the seafloor at the Site (**Figure 8**).

The seabed within the lease area was a consistent gradient, sloping gradually from the shoreline to a maximum of 24m deep to the north of the proposed pipeline alignment, with generally straight depth contours that ran parallel with the shore (**Figure 9**).

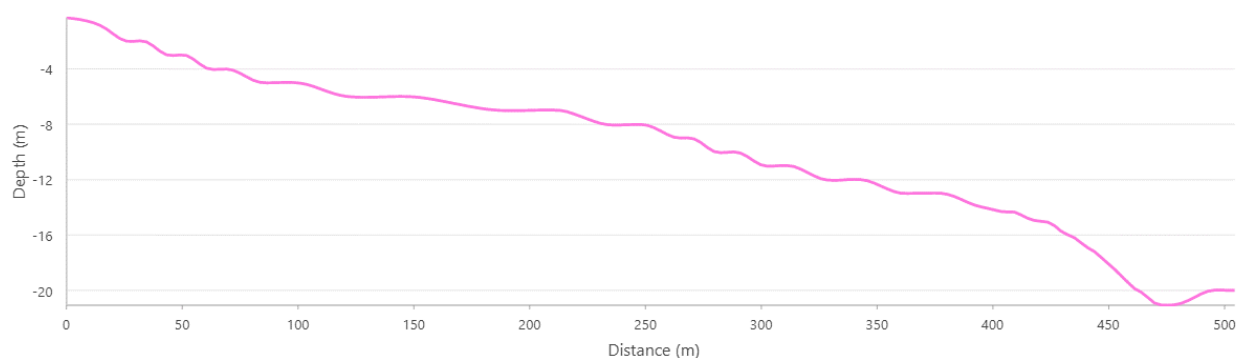
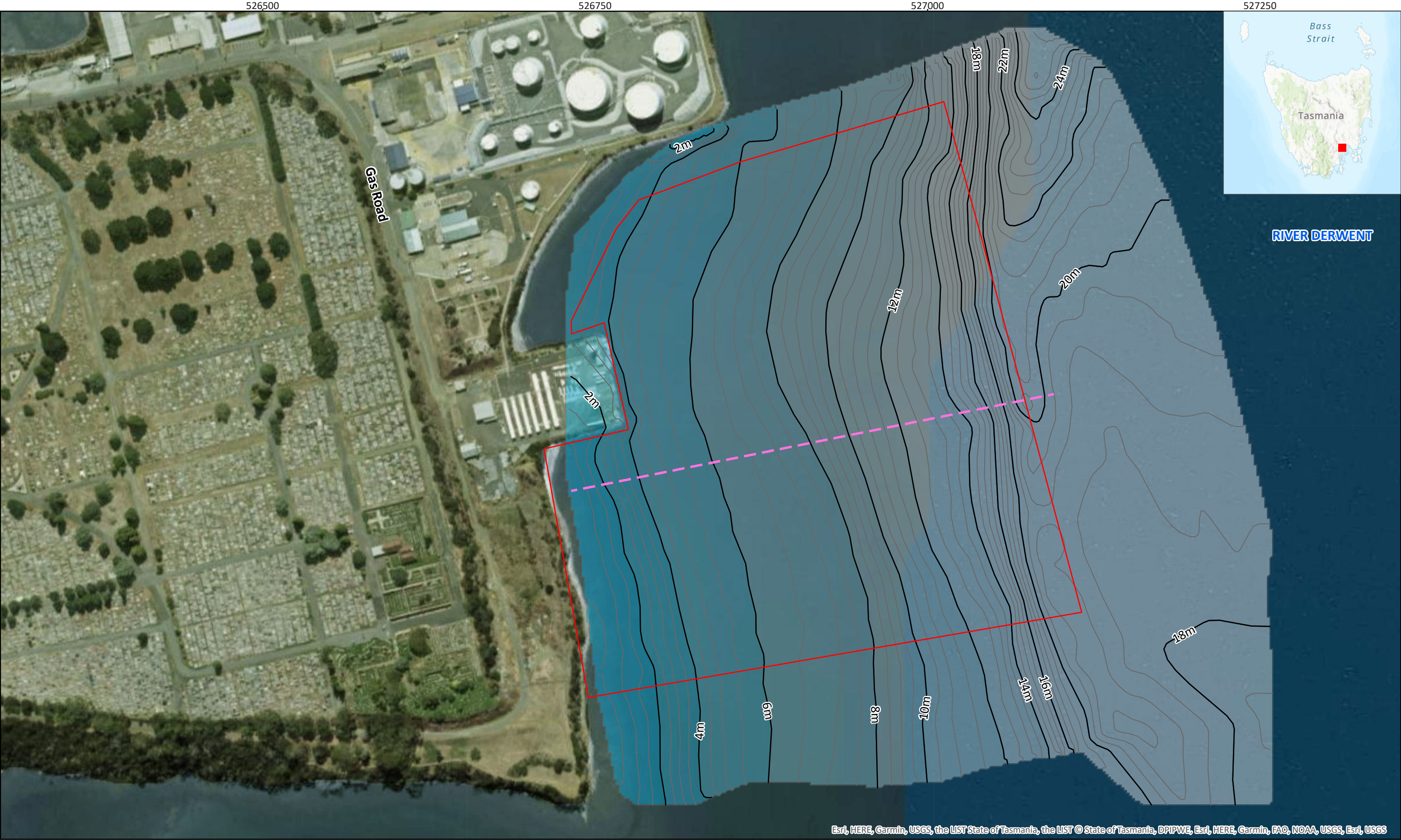


Figure 8: Bathymetry profile at the Site.



Legend - Major Contours - Minor Contours - Bathymetry Profile - Area Boundary	N Scale: 1:3,500 0 20 40 80 120 Meters	Site: Selfs Point STP, New Town, Tasmania	Client: TasWater	Title: Bathymetry Survey	Figure 9 PCS: WGS 1984 Web Mercator Auxiliary Sphere Datum: WGS 1984 Projection: Mercator Auxiliary Sphere Scale Factor: 0.0000 Map Units: Meter
		Date: 7 July 2022 Size: A3 Version: Rev B	Drawn: MU Approved: LF		

4.4 Marine Birds

Three (3) marine bird species at the southern end of the Site were observed during the marine habitat survey (Figure 10):

- Silver gull (*Chroicocephalus novaehollandiae*).
- Kelp gull (*Larus dominicanus*).
- Pied oyster catcher (*Haematopus longirostris*).

No threatened marine bird species were observed.



Figure 10: Marine bird species observed at the Site during the NVA survey.

4.5 Ecosystem-Based Risk Assessment

Risk assessment methods can assist in assessing and communicating the potential impacts of proposed developments on threatened species and facilitating successful ecosystem management processes.

As the natural values survey did not identify any species of conservation significance within the proposed footprint of the Site, a risk assessment was conducted only for relevant broader natural values identified in the desktop review that could be adversely impacted by changes in water quality during construction works (**Table 17**).

The lowest risk rating (negligible risk) was assigned to most of the natural values identified in the desktop review (**Table 17**), with a low risk assigned to interruption to fish passage that may impact school sharks and the Australian grayling (temporary during installation of pipeline). Refer to **Appendix E** for risk assessment framework details.

Table 17: Qualitative risk assessment matrix for natural values identified in the desktop review for the Self Pt wastewater pipeline NVA (based on Fletcher 2015).

Species	Potential Impact or Threat	Risk Analysis			
		Likelihood	Consequence	Risk Score	Overall Risk Level
School shark and Derwent River shark nursery	Interruption to fish passage (temporary during installation of pipeline).	3	1	3	Low
Migratory fish species such as Australian grayling	Interruption to fish passage (temporary during installation of pipeline).	3	1	3	Low
Marine mammals	Temporary noise impacts during installation of pipeline.	2	1	2	Negligible
Derwent River seastar	Changes in water quality or loss of habitat.	1	1	1	Negligible

NATURAL VALUES SURVEY

Species		Potential Impact or Threat	Risk Analysis			
			Likelihood	Consequence	Risk Score	Overall Risk Level
Overall Risk Level Key (refer to Appendix E)						
Risk Score	Risk Level	Possible Management Response				
1-2	Negligible	Acceptable with no management actions or regular monitoring				
3-4	Low	Acceptable with no direct management action and monitoring at specified intervals.				
6-8	Moderate	Acceptable with specific, direct management and regular monitoring.				
9-16	High	Unacceptable unless additional management actions are undertaken.				

5 EVALUATION OF IMPACTS ON NATURAL VALUES & RECOMMENDATIONS

5.1 Natural Values at Self Point

A Natural Values Assessment at Selfs Point was completed as part of planning requirements for the proposed treated wastewater pipeline. The NVA included both a desktop review and exploratory field surveys, including video survey of habitats within the proposed pipeline alignment. A threatened seastar survey was also undertaken using transects positioned at various heights on the shoreline.

Field surveys of the intertidal and subtidal community identified a rocky intertidal zone characterised by a natural rock platform adjacent to a small sandy beach. The subtidal zone was predominately covered with a layer of soft, bare sediments with a gradual slope.

A total of twenty-two (22) intertidal species, and nine (9) subtidal species were observed during the surveys. Of the species recorded, six (6) were introduced. Only two (Pacific seastar, *Asterias amurens* and the Pacific oyster, *Magallana gigas*) are included on the Australian Priority Marine Pest List (APMPL) (DAWE 2022).

No threatened marine species or communities were identified during the field survey.

5.2 Potential Impacts and Environmental Management Recommendations

The design of the proposed discharge pipeline should consider construction methodologies that reduce the potential for sediment or habitat disturbance, such as placement of the pipeline on the seabed or installation via directional drilling. If poorly managed, disturbance to sediments during construction works have the potential to temporarily decrease water quality.

Impacts from construction works can be mitigated by implementing appropriate construction control measures, including:

- Construction of the proposed discharge pipeline via directional drilling to avoid the nearshore environment.
- Enable safe fish passage through the Site during installation of the pipeline, including during peak migration periods in spring/ early summer (i.e., September to January).
- Minimising noise through operational measures (e.g., soft start procedures) and method-based measures such as noise reduction.
- Managing sediment disturbance during construction to prevent temporary impacts to water quality of the Derwent River.
- Implementing a CEMP during construction that aims to mitigate impacts to the natural values at the Site. The CEMP should consider the best practices outlined in the Tasmanian Coastal Works Manual (Page and Thorp 2010).

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6 REFERENCES

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7 LIMITATIONS

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The methodology adopted and sources of information used by Elgin Associates are outlined in this report. Elgin Associates has made no independent verification of this information beyond the agreed scope of works and Elgin Associates assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to Elgin Associates was false.

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APPENDIX A – NATURAL VALUES ATLAS REPORT

Natural Values Atlas Report

Authoritative, comprehensive information on Tasmania's natural values.

Reference:

Requested For: Selfs Point NVA

Report Type: Summary Report

Timestamp: 10:45:49 AM Tuesday 28 June 2022

Threatened Flora: buffers Min: 500m Max: 5000m

Threatened Fauna: buffers Min: 500m Max: 5000m

Raptors: buffers Min: 500m Max: 5000m

Tasmanian Weed Management Act Weeds: buffers Min: 500m Max: 5000m

Priority Weeds: buffers Min: 500m Max: 5000m

Geoconservation: buffer 1000m

Acid Sulfate Soils: buffer 1000m

TASVEG: buffer 1000m

Threatened Communities: buffer 1000m

Fire History: buffer 1000m

Tasmanian Reserve Estate: buffer 1000m

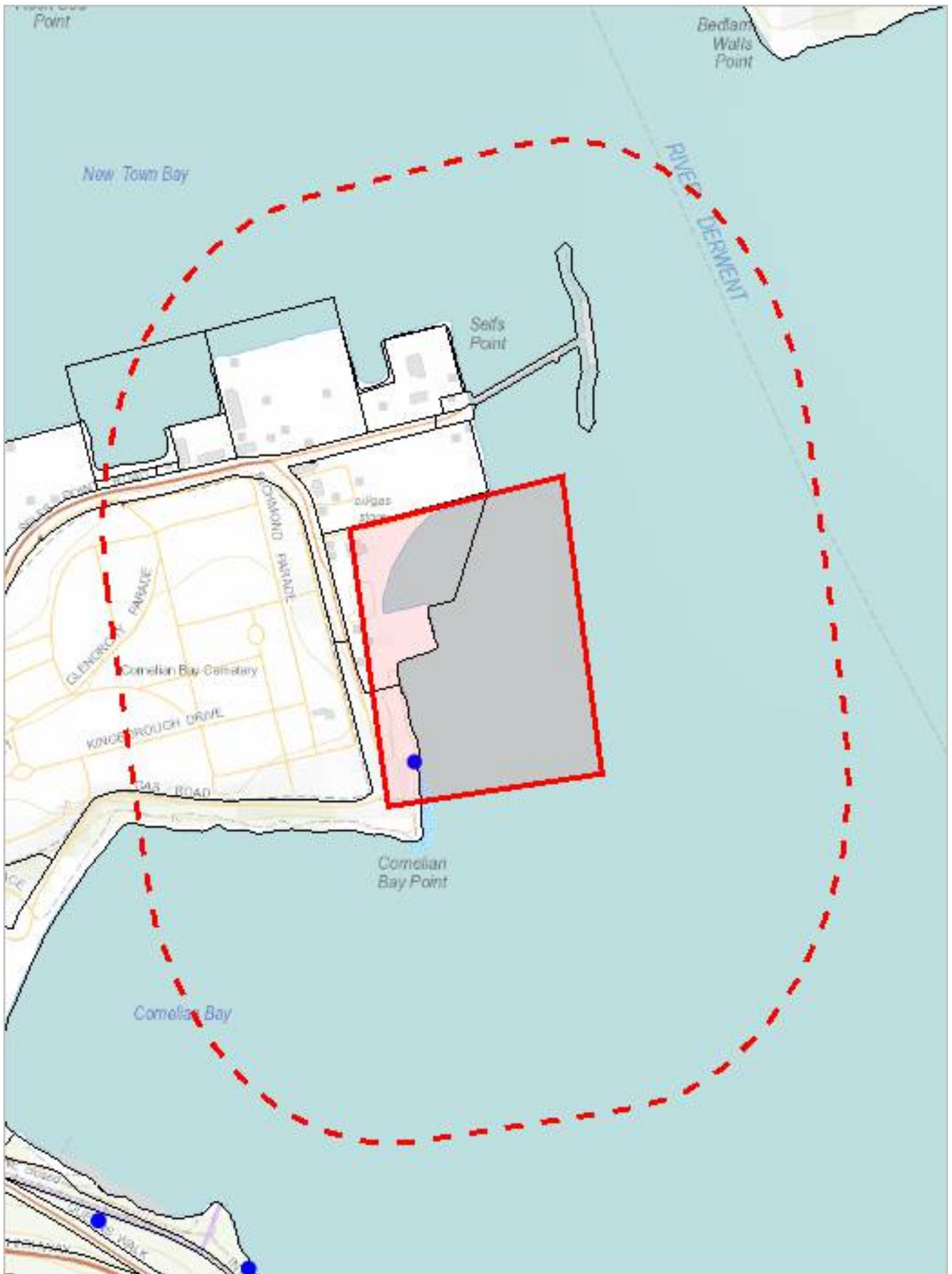
Biosecurity Risks: buffer 1000m



The centroid for this query GDA94: 526827.0, 5255908.0 falls within:

Threatened flora within 500 metres

527531, 5256861



526119, 5254970

Please note that some layers may not display at all requested map scales

Threatened flora within 500 metres

Legend: Verified and Unverified observations

- Point Verified

●

Point Unverified

▬

Line Verified

▬

Line Unverified

■

Polygon Verified

■

Polygon Unverified

Legend: Cadastral Parcels



Threatened flora within 500 metres

Verified Records

Species	Common Name	SS	NS	Bio	Observation Count	Last Recorded
<i>Asperula scoparia</i> subsp. <i>scoparia</i>	prickly woodruff	r		n	1	09-Jan-2006

Unverified Records

No unverified records were found!

For more information about threatened species, please contact Threatened Species Enquiries.

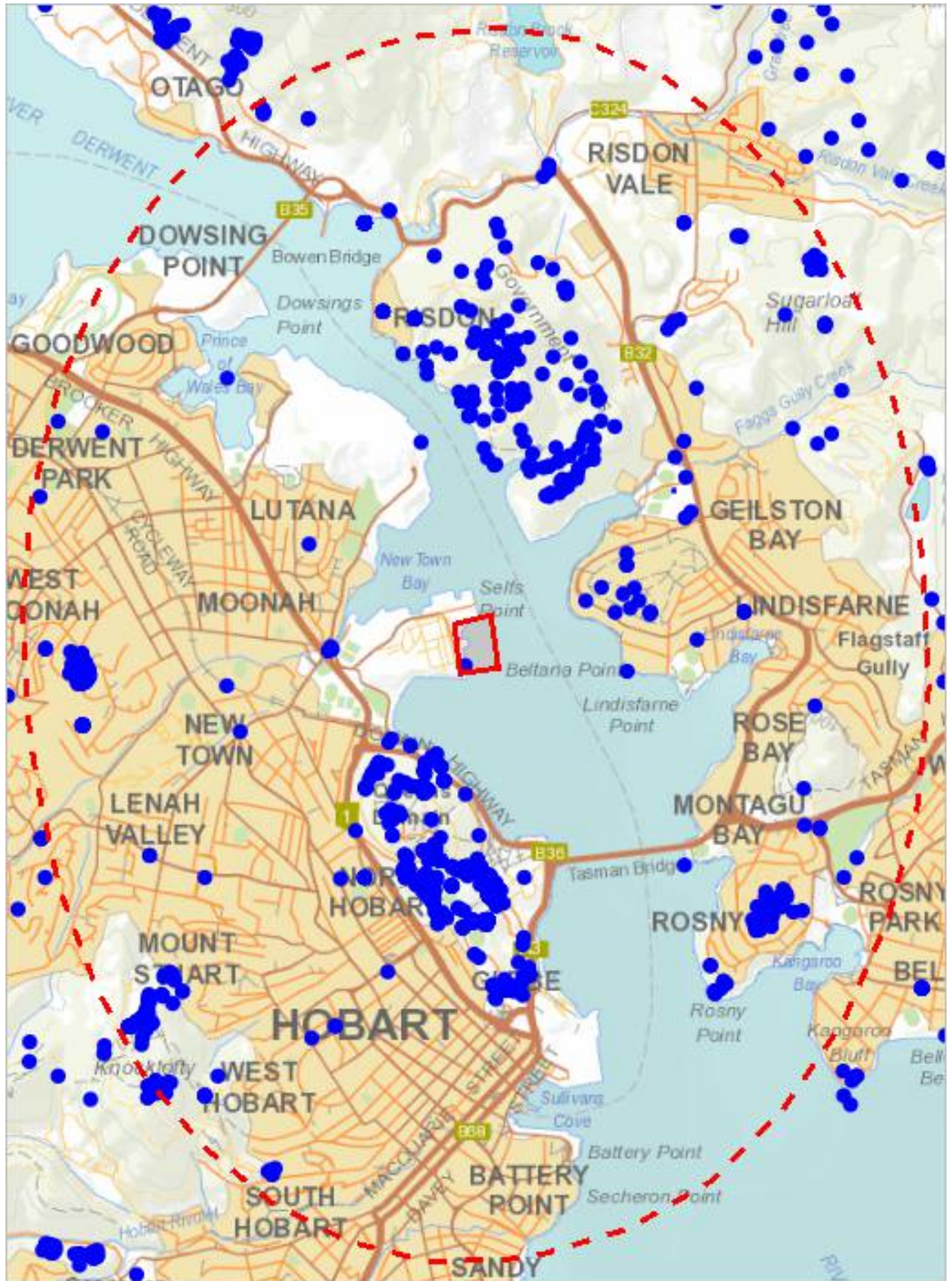
Telephone: 1300 368 550

Email: ThreatenedSpecies.Enquiries@nre.tas.gov.au

Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

Threatened flora within 5000 metres

530860, 5261370



522795, 5250472

Please note that some layers may not display at all requested map scales

Threatened flora within 5000 metres

Legend: Verified and Unverified observations

● Point Verified

✎ Line Unverified

● Point Unverified

□ Polygon Verified

✎ Line Verified

□ Polygon Unverified

Legend: Cadastral Parcels



Threatened flora within 5000 metres

Verified Records

Species	Common Name	SS	NS	Bio	Observation Count	Last Recorded
<i>Asperula scoparia</i> subsp. <i>scoparia</i>	prickly woodruff	r		n	10	01-Mar-2016
<i>Asperula subsimplex</i>	water woodruff	r		n	2	01-Dec-1891
<i>Austrostipa bigeniculata</i>	doublejointed speargrass	r		n	68	12-Apr-2022
<i>Austrostipa blackii</i>	crested speargrass	r		n	3	21-Dec-2011
<i>Bolboschoenus caldwellii</i>	sea clubsedge	r		n	6	06-Feb-2010
<i>Brachyscome perpusilla</i>	tiny daisy	r		n	1	12-Oct-1901
<i>Caladenia caudata</i>	tailed spider-orchid	v	VU	e	75	18-Sep-2019
<i>Caladenia filamentosa</i>	daddy longlegs	r		n	7	05-Nov-1950
<i>Calocephalus citreus</i>	lemon beautyheads	r		n	2	03-Feb-1948
<i>Carex gunniana</i>	mountain sedge	r		n	14	19-Aug-2013
<i>Carex longebrachiata</i>	drooping sedge	r		n	10	07-Oct-2016
<i>Comesperma defoliatum</i>	leafless milkwort	r		n	2	01-Jan-1896
<i>Corunastylis nuda</i>	tiny midge-orchid	r		n	1	20-Mar-2011
<i>Damasonium minus</i>	starfruit	r		n	1	01-Dec-1890
<i>Dianella amoena</i>	grassland flaxlily	r	EN	n	14	18-Jan-2021
<i>Diuris lanceolata</i>	large golden moths	e	EN	e	2	01-Oct-1918
<i>Diuris palustris</i>	swamp doubletail	e		n	1	01-Jan-1970
<i>Epacris virgata</i> (Kettering)	pretty heath	pv		e	2	20-Oct-1995
<i>Eryngium ovinum</i>	blue devil	v		n	236	07-Dec-2020
<i>Eucalyptus amygdalina</i> x <i>risdonii</i>		ph		e	61	02-May-1985
<i>Eucalyptus morrisbyi</i>	morrisbys gum	e	EN	e	364	28-Sep-2020
<i>Eucalyptus morrisbyi</i> x <i>viminalis</i> subsp. <i>viminalis</i>		ph	PH	e	2	01-Sep-1942
<i>Eucalyptus obliqua</i> x <i>risdonii</i>		ph		e	1	01-Oct-1940
<i>Eucalyptus risdonii</i>	risdon peppermint	r		e	158	24-Nov-2021
<i>Eucalyptus risdonii</i> - <i>tenuiramis</i>		ph		e	4	01-Sep-1937
<i>Eucalyptus risdonii</i> x		ph		n	1	31-Oct-1934
<i>Eucalyptus risdonii</i> x <i>tenuiramis</i>		ph		e	1	01-Sep-1937
<i>Euphrasia scabra</i>	yellow eyebright	e		n	1	01-Dec-1892
<i>Goodenia geniculata</i>	bent native-primrose	e		n	1	01-Jan-1805
<i>Haloragis aspera</i>	rough raspwort	v		n	1	01-Jan-1895
<i>Hyalosperma demissum</i>	moss sunray	e		n	2	15-Oct-1898
<i>Hydrocotyle laxiflora</i>	stinking pennywort	e		n	48	13-Aug-2018
<i>Isoetopsis graminifolia</i>	grass cushion	v		n	6	01-Jan-1896
<i>Isolepis stellata</i>	star clubsedge	r		n	1	30-Nov-1897
<i>Lachnagrostis semibarbata</i> var. <i>filifolia</i>	narrowleaf blowgrass	r		n	1	01-Jan-1929
<i>Lepidium hyssopifolium</i>	soft peppergrass	e	EN	n	5	17-Jan-2002
<i>Leucopogon virgatus</i> var. <i>brevifolius</i>	shortleaf beardheath	r		n	1	10-Oct-1948
<i>Olearia hookeri</i>	crimsontip daisybush	r		e	18	17-Sep-2016
<i>Pimelea curviflora</i> var. <i>gracilis</i>	slender curved riceflower	r		n	1	01-Jan-1945
<i>Pimelea flava</i> subsp. <i>flava</i>	yellow riceflower	r		n	8	28-Sep-2021
<i>Poa mollis</i>	soft tussockgrass	r		e	7	06-Apr-2021
<i>Pomaderris pilifera</i> subsp. <i>talpicutica</i>	moleskin dogwood	v	VU	e	24	01-Oct-2015
<i>Prasophyllum apoxychilum</i>	tapered leek-orchid	v	EN	e	2	29-Jan-1996
<i>Prasophyllum perangustum</i>	knocklofty leek-orchid	e	CR	e	13	04-Dec-2009
<i>Pterostylis squamata</i>	ruddy greenhood	v		n	1	06-Feb-1967
<i>Ranunculus pumilio</i> var. <i>pumilio</i>	ferny buttercup	r		n	1	01-Oct-1914
<i>Rumex bidens</i>	mud dock	v		n	1	01-Dec-1891
<i>Ruppia megacarpa</i>	largefruit seatassel	r		n	1	26-Jun-1997
<i>Scleranthus fasciculatus</i>	spreading knawel	v		n	169	23-Aug-2019
<i>Senecio georgianus</i>	grey fireweed	x	EX	n	2	01-Jan-1805
<i>Senecio squarrosus</i>	leafy fireweed	r		n	67	19-Nov-2020
<i>Sirophysalis trinodis</i>	three-node seaweed	r		n	1	01-Jan-2010
<i>Spyridium eriocephalum</i> var. <i>eriocephalum</i>	heath dustymiller	e		n	32	15-Nov-2018
<i>Spyridium vexilliferum</i> var. <i>vexilliferum</i>	helicopter bush	r		n	1	01-Nov-1928
<i>Stenopetalum lineare</i>	narrow threadpetal	e		n	5	17-Oct-1942
<i>Teucrium corymbosum</i>	forest germander	r		n	8	18-Feb-2011
<i>Thelymitra bracteata</i>	leafy sun-orchid	e		n	37	11-Nov-2016
<i>Velleia paradoxa</i>	spur velleia	v		n	104	12-Dec-2020
<i>Vittadinia burbridgeae</i>	smooth new-holland-daisy	r		e	1	22-Nov-2019
<i>Vittadinia cuneata</i> var. <i>cuneata</i>	fuzzy new-holland-daisy	r		n	3	01-Jan-1993
<i>Vittadinia gracilis</i>	woolly new-holland-daisy	r		n	23	07-Oct-2016

Threatened flora within 5000 metres

Species	Common Name	SS	NS	Bio	Observation Count	Last Recorded
Vittadinia muelleri	narrowleaf new-holland-daisy	r		n	274	12-Apr-2022
Vittadinia muelleri (broad sense)	narrow leaf new holland daisy	p		n	28	11-Oct-2006
Westringia angustifolia	narrowleaf westringia	r		e	1	01-Jan-1900
Xanthoparmelia oleosa		r		n	1	27-Nov-1965

Unverified Records

No unverified records were found!

For more information about threatened species, please contact Threatened Species Enquiries.

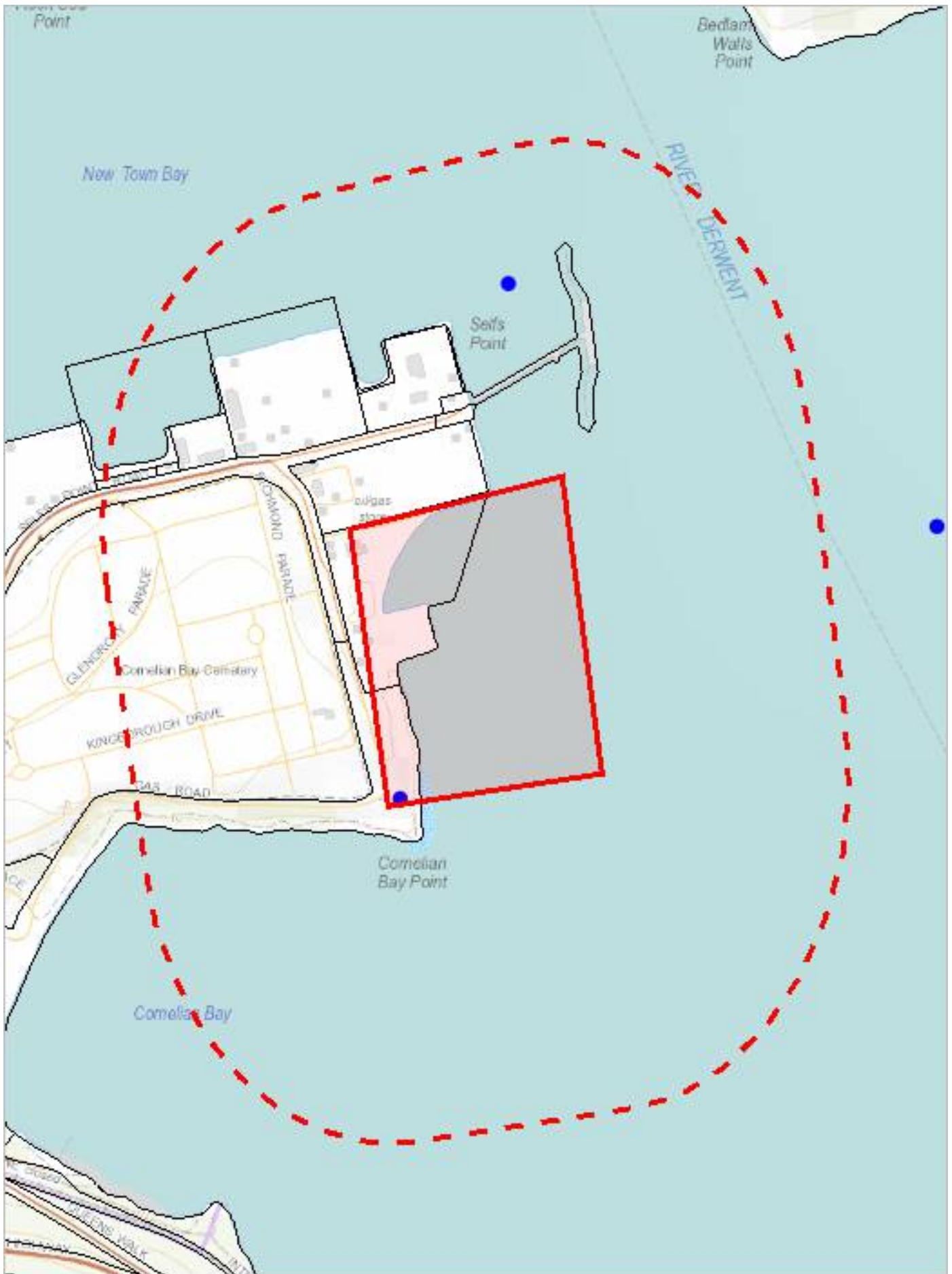
Telephone: 1300 368 550

Email: ThreatenedSpecies.Enquiries@nre.tas.gov.au

Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

Threatened fauna within 500 metres

527531, 5256861



526119, 5254970

Please note that some layers may not display at all requested map scales

Threatened fauna within 500 metres

Legend: Verified and Unverified observations

● Point Verified

✎ Line Unverified

● Point Unverified

□ Polygon Verified

✎ Line Verified

□ Polygon Unverified

Legend: Cadastral Parcels



Threatened fauna within 500 metres

Verified Records

Species	Common Name	SS	NS	Bio	Observation Count	Last Recorded
<i>Eubalaena australis</i>	southern right whale	e	EN	m	1	06-Jul-2003
<i>Marginaster littoralis</i>	Derwent River Seastar	e	CR	e?x	1	01-Jan-1900

Unverified Records

No unverified records were found!

Threatened fauna within 500 metres

(based on Range Boundaries)

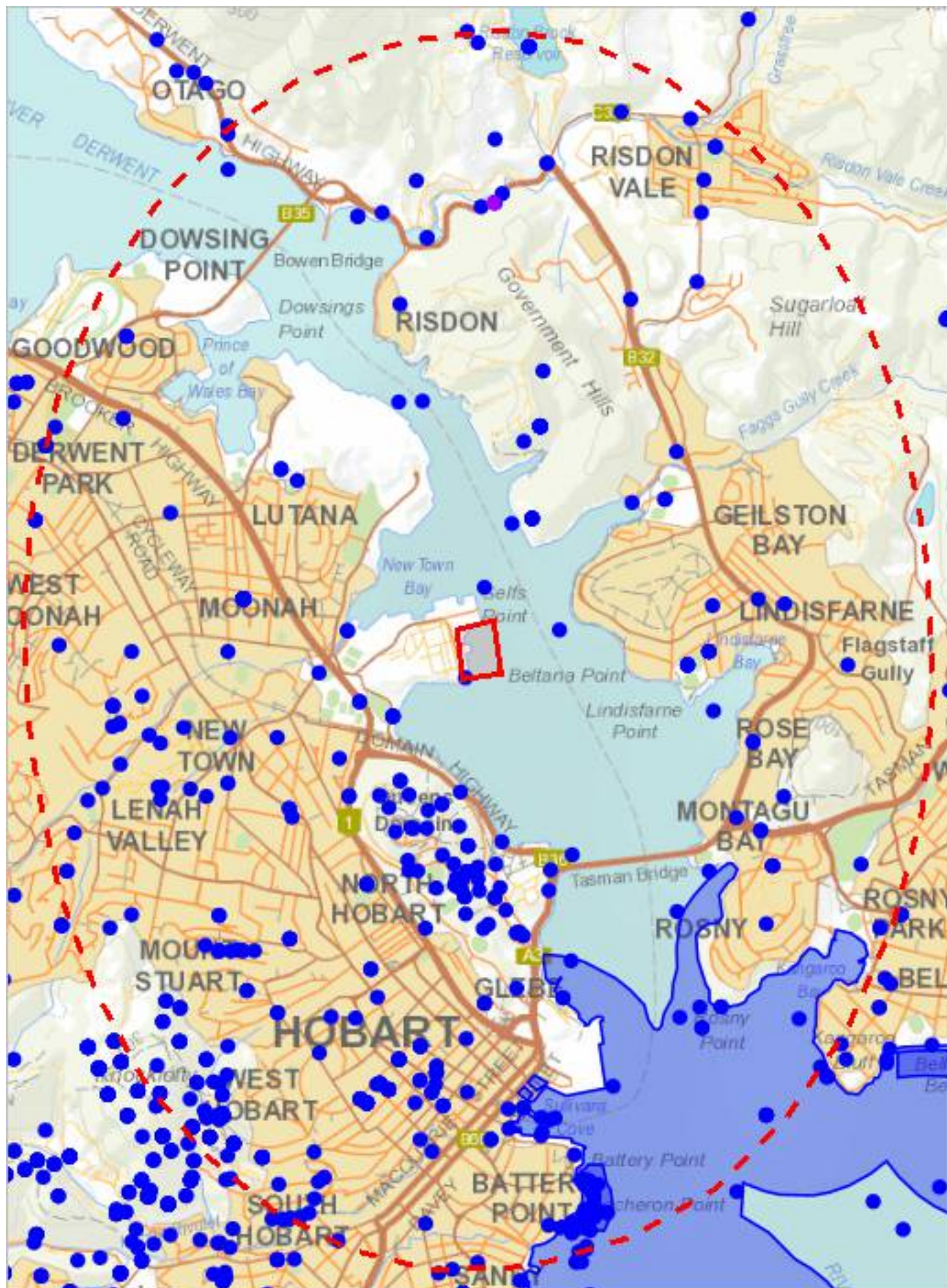
Species	Common Name	SS	NS	BO	Potential	Known	Core
<i>Litoria raniformis</i>	green and gold frog	v	VU	n	1	0	1
<i>Lathamus discolor</i>	swift parrot	e	CR	mbe	1	0	1
<i>Dasyurus maculatus</i> subsp. <i>maculatus</i>	spotted-tail quoll	r	VU	n	1	0	0
<i>Discocharopa vigens</i>	Ammonite Pinwheel Snail	e	CR		1	0	0
<i>Prototroctes maraena</i>	australian grayling	v	VU	ae	1	0	0
<i>Antipodia chaostola</i>	chaostola skipper	e	EN	ae	1	0	0
<i>Pseudemoia pagenstecheri</i>	tussock skink	v		n	1	0	0
<i>Tyto novaehollandiae</i> subsp. <i>castanops</i>	masked owl (Tasmanian)	e	VU	e	1	0	1
<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle	v		n	2	0	0
<i>Sarcophilus harrisii</i>	tasmanian devil	e	EN	e	1	0	0
<i>Accipiter novaehollandiae</i>	grey goshawk	e		n	1	0	0
<i>Pardalotus quadragintus</i>	forty-spotted pardalote	e	EN	e	1	0	0
<i>Perameles gunnii</i>	eastern barred bandicoot		VU	n	1	0	1
<i>Aquila audax</i> subsp. <i>fleayi</i>	tasmanian wedge-tailed eagle	e	EN	e	1	0	0
<i>Brachionichthys hirsutus</i>	spotted handfish	e	CR	e	1	0	0
<i>Dasyurus viverrinus</i>	eastern quoll		EN	n	0	0	1

For more information about threatened species, please contact Threatened Species Enquiries.

Telephone: 1300 368 550

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Address: GPO Box 44, Hobart, Tasmania, Australia, 7000



522795, 5250472

Please note that some layers may not display at all requested map scales

Threatened fauna within 5000 metres

Legend: Verified and Unverified observations

● Point Verified

✎ Line Unverified

● Point Unverified

□ Polygon Verified

✎ Line Verified

□ Polygon Unverified

Legend: Cadastral Parcels



Threatened fauna within 5000 metres

Verified Records

Species	Common Name	SS	NS	Bio	Observation Count	Last Recorded
<i>Acanthornis magna</i> subsp. <i>greeniana</i>	King Island scrubtit	e	CR	e	1	01-Dec-1894
<i>Accipiter novaehollandiae</i>	grey goshawk	e		n	60	02-Feb-2022
<i>Antipodia chaostola</i>	chaostola skipper	e	EN	ae	3	20-Nov-2006
<i>Antipodia chaostola</i> subsp. <i>leucophaea</i>	chaostola skipper	e	EN	e	2	30-Jul-2017
<i>Aquila audax</i>	wedge-tailed eagle	pe	PEN	n	17	29-Aug-2018
<i>Aquila audax</i> subsp. <i>fleayi</i>	tasmanian wedge-tailed eagle	e	EN	e	5	16-Oct-2017
<i>Arctocephalus forsteri</i>	new zealand fur seal	r		n	1	03-Mar-2018
<i>Arctocephalus forsteri</i> subsp. <i>doriferus</i>	new zealand fur seal	r		n	4	19-Mar-2006
<i>Arctocephalus tropicalis</i>	sub-antarctic fur seal	e	VU	n	2	16-Jun-2021
<i>Beddomeia tasmanica</i>	hydrobiid snail (terrys creek)	r		e	1	01-Jan-1000
<i>Botaurus poiciloptilus</i>	australasian bittern		EN	n	2	05-Apr-2001
<i>Brachionichthys hirsutus</i>	spotted handfish	e	CR	e	65	01-Jan-2018
<i>Dasyurus maculatus</i>	spotted-tail quoll	r	VU	n	1	26-May-2021
<i>Dasyurus viverrinus</i>	eastern quoll		EN	n	151	24-May-2021
<i>Discocharopa vigens</i>	Ammonite Pinwheel Snail	e	CR		4	29-Jan-2021
<i>Eubalaena australis</i>	southern right whale	e	EN	m	9	08-Oct-2019
<i>Gazameda gunnii</i>	Gunn's screw shell	v		ae	1	01-Jan-1950
<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle	v		n	33	11-Aug-2021
<i>Hirundapus caudacutus</i>	white-throated needletail		VU	n	9	24-Mar-2018
<i>Lathamus discolor</i>	swift parrot	e	CR	mbe	108	01-Dec-2019
<i>Litoria raniformis</i>	green and gold frog	v	VU	n	5	10-Oct-1985
<i>Marginaster littoralis</i>	Derwent River Seastar	e	CR	e?x	6	02-May-1969
<i>Megaptera novaeangliae</i>	humpback whale	e		m	5	01-Jul-2014
<i>Mirounga leonina</i>	southern elephant seal	e	VU	n	1	27-Jan-2017
<i>Mirounga leonina</i> subsp. <i>macquariensis</i>	southern elephant seal	pe	PVU	n	2	01-Jan-1981
<i>Pardalotus quadragintus</i>	forty-spotted pardalote	e	EN	e	5	27-Nov-2019
<i>Parvulastra vivipara</i>	live-bearing seastar	v	VU	e	1	01-Oct-1995
<i>Perameles gunnii</i>	eastern barred bandicoot		VU	n	84	05-Mar-2022
<i>Perameles gunnii</i> subsp. <i>gunnii</i>	eastern barred bandicoot		VU		3	22-Aug-2021
<i>Podiceps cristatus</i>	great crested grebe	v		n	4	10-Sep-2013
<i>Procellaria cinerea</i>	grey petrel	e		n	1	01-May-1976
<i>Pseudemoia pagenstecheri</i>	tussock skink	v		n	4	01-Jan-1998
<i>Sarcophilus harrisii</i>	tasmanian devil	e	EN	e	44	02-Dec-2021
<i>Thinornis cucullatus</i>	hooded plover		PVU	n	1	28-Nov-2016
<i>Thinornis rubricollis</i>	hooded plover		VU	n	1	25-Apr-1915
<i>Thylacinus cynocephalus</i>	thylacine	x	EX	ex	1	01-Jan-1900
<i>Tyto novaehollandiae</i>	masked owl	pe	PVU	n	23	09-Feb-2017
<i>Tyto novaehollandiae</i> subsp. <i>castanops</i>	masked owl (Tasmanian)	e	VU	e	2	26-Nov-2019

Unverified Records

Species	Common Name	SS	NS	Bio	Observation Count
<i>Dasyurus maculatus</i> subsp. <i>maculatus</i>	spotted-tail quoll	r	VU	n	1

Threatened fauna within 5000 metres

(based on Range Boundaries)

Species	Common Name	SS	NS	BO	Potential	Known	Core
<i>Litoria raniformis</i>	green and gold frog	v	VU	n	1	0	1
<i>Lathamus discolor</i>	swift parrot	e	CR	mbe	1	0	1
<i>Dasyurus maculatus</i> subsp. <i>maculatus</i>	spotted-tail quoll	r	VU	n	1	0	0
<i>Discocharopa vigens</i>	Ammonite Pinwheel Snail	e	CR		2	0	1
<i>Prototroctes maraena</i>	australian grayling	v	VU	ae	2	0	0
<i>Antipodia chaostola</i>	chaostola skipper	e	EN	ae	3	0	1
<i>Pseudemoia pagenstecheri</i>	tussock skink	v		n	1	0	1
<i>Tyto novaehollandiae</i> subsp. <i>castanops</i>	masked owl (Tasmanian)	e	VU	e	1	0	1
<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle	v		n	2	0	0
<i>Accipiter novaehollandiae</i>	grey goshawk	e		n	1	0	1
<i>Sarcophilus harrisii</i>	tasmanian devil	e	EN	e	1	0	0
<i>Pardalotus quadragintus</i>	forty-spotted pardalote	e	EN	e	1	0	0
<i>Brachionichthys hirsutus</i>	spotted handfish	e	CR	e	1	3	0
<i>Perameles gunnii</i>	eastern barred bandicoot		VU	n	1	0	1

Threatened fauna within 5000 metres

Species	Common Name	SS	NS	BO	Potential	Known	Core
<i>Aquila audax subsp. fleayi</i>	tasmanian wedge-tailed eagle	e	EN	e	1	0	0
<i>Dasyurus viverrinus</i>	eastern quoll		EN	n	0	0	1

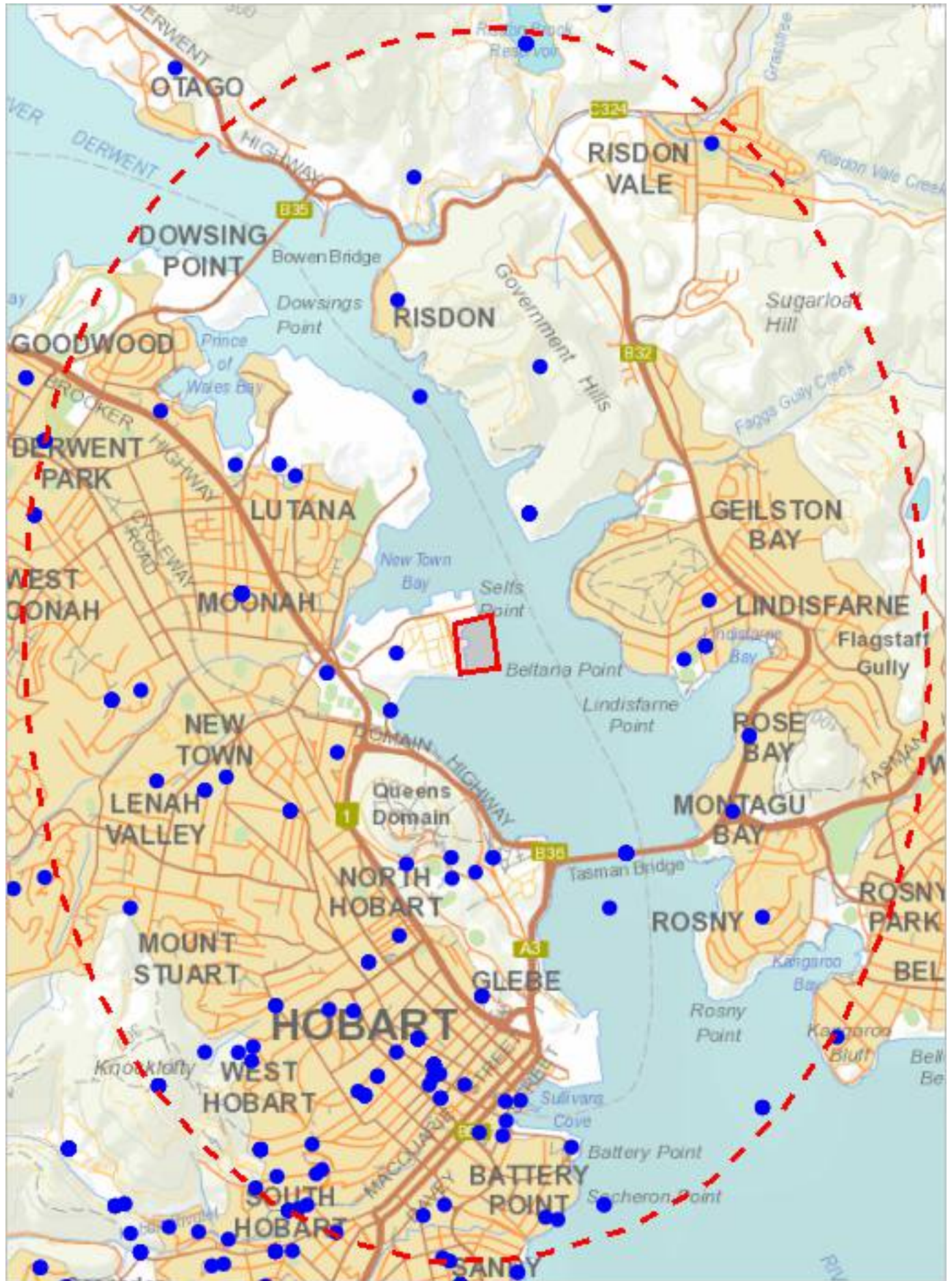
For more information about threatened species, please contact Threatened Species Enquiries.

Telephone: 1300 368 550

Email: ThreatenedSpecies.Enquiries@nre.tas.gov.au

Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

*** No Raptor nests or sightings found within 500 metres. ***



522795, 5250472

Please note that some layers may not display at all requested map scales

Raptor nests and sightings within 5000 metres

Legend: Verified and Unverified observations

● Point Verified

✎ Line Unverified

● Point Unverified

□ Polygon Verified

✎ Line Verified

□ Polygon Unverified

Legend: Cadastral Parcels



Raptor nests and sightings within 5000 metres

Verified Records

Nest Id/Location Foreign Id	Species	Common Name	Obs Type	Observation Count	Last Recorded
1497	Haliaeetus leucogaster	white-bellied sea-eagle	Nest	1	14-Dec-2006
	Accipiter novaehollandiae	grey goshawk	Carcass	5	01-May-2018
	Accipiter novaehollandiae	grey goshawk	Not Recorded	44	23-Jan-2018
	Accipiter novaehollandiae	grey goshawk	Sighting	15	02-Feb-2022
	Aquila audax	wedge-tailed eagle	Not Recorded	16	29-Aug-2018
	Aquila audax	wedge-tailed eagle	Sighting	1	18-Jun-2014
	Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	Carcass	1	26-Jun-2017
	Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	Not Recorded	2	01-Jan-1938
	Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	Sighting	3	16-Oct-2017
	Falco cenchroides	nankeen kestrel	Not Recorded	3	01-Jan-1900
	Falco cenchroides	nankeen kestrel	Sighting	1	01-Feb-1968
	Falco longipennis	australian hobby	Sighting	4	22-Sep-2010
	Falco peregrinus	peregrine falcon	Not Recorded	51	25-Aug-2018
	Falco peregrinus	peregrine falcon	Sighting	7	03-Apr-2020
	Haliaeetus leucogaster	white-bellied sea-eagle	Not Recorded	30	29-Aug-2018
	Haliaeetus leucogaster	white-bellied sea-eagle	Sighting	2	11-Aug-2021
	Tyto novaehollandiae	masked owl	Not Recorded	8	09-Feb-2017
	Tyto novaehollandiae	masked owl	Sighting	15	31-May-1993

Unverified Records

No unverified records were found!

Raptor nests and sightings within 5000 metres (based on Range Boundaries)

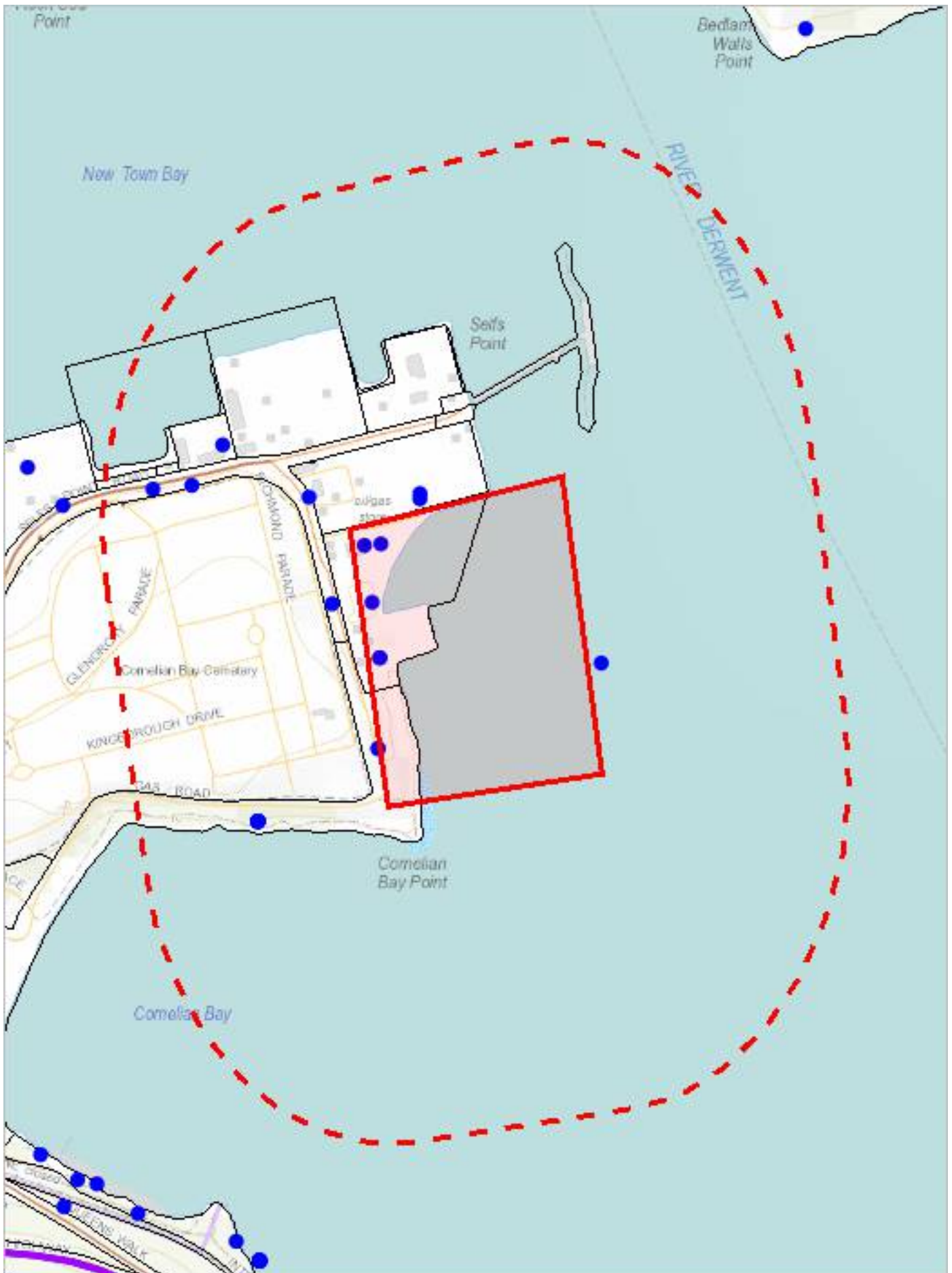
Species	Common Name	SS	NS	Potential	Known	Core
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	e	EN	1	0	0
Accipiter novaehollandiae	grey goshawk	e		1	0	1
Haliaeetus leucogaster	white-bellied sea-eagle	v		2	0	0

For more information about raptor nests, please contact Threatened Species Enquiries.

Telephone: 1300 368 550

Email: ThreatenedSpecies.Enquiries@nre.tas.gov.au

Address: GPO Box 44, Hobart, Tasmania, Australia, 7000



526119, 5254970

Please note that some layers may not display at all requested map scales

Tas Management Act Weeds within 500 m

Legend: Verified and Unverified observations

● Point Verified

✎ Line Unverified

● Point Unverified

□ Polygon Verified

✎ Line Verified

□ Polygon Unverified

Legend: Cadastral Parcels



Tas Management Act Weeds within 500 m

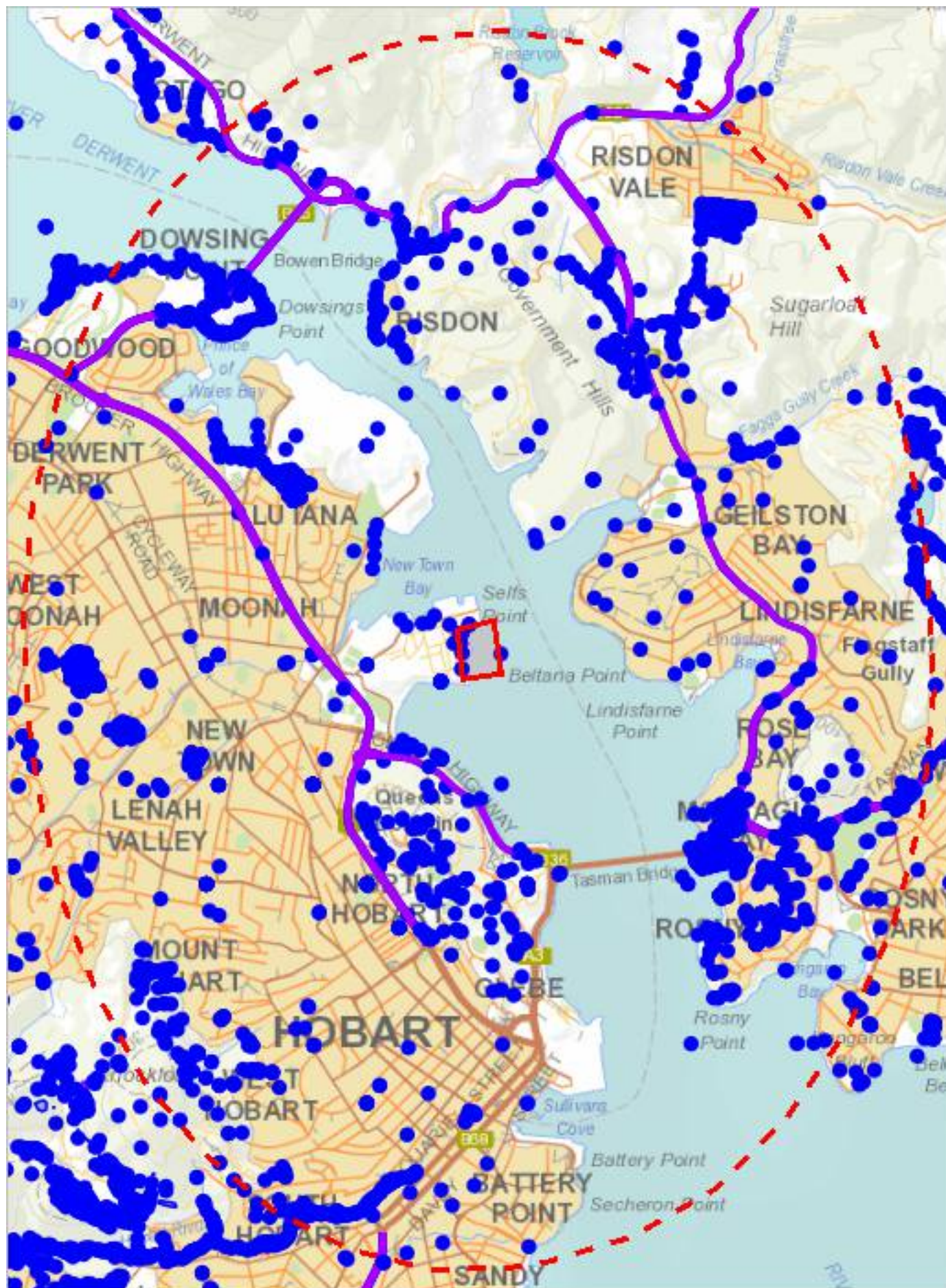
Verified Records

Species	Common Name	Observation Count	Last Recorded
<i>Carduus tenuiflorus</i>	winged thistle	1	01-Feb-2002
<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	boneseed	11	09-Jan-2006
<i>Cytisus scoparius</i>	english broom	1	09-Jan-2006
<i>Echium plantagineum</i>	patersons curse	1	19-Nov-1969
<i>Foeniculum vulgare</i>	fennel	3	03-Feb-2020
<i>Lycium ferocissimum</i>	african boxthorn	7	01-Jan-2007
<i>Rubus fruticosus</i>	blackberry	1	01-Feb-2002

Unverified Records

For more information about introduced weed species, please visit the following URL for contact details in your area:

<https://www.nre.tas.gov.au/invasive-species/weeds>



522795, 5250472

Please note that some layers may not display at all requested map scales

Tas Management Act Weeds within 5000 m

Legend: Verified and Unverified observations

● Point Verified

✎ Line Unverified

● Point Unverified

□ Polygon Verified

✎ Line Verified

□ Polygon Unverified

Legend: Cadastral Parcels



Tas Management Act Weeds within 5000 m

Verified Records

Species	Common Name	Observation Count	Last Recorded
<i>Allium vineale</i>	crow garlic	8	29-Aug-2018
<i>Alternanthera philoxeroides</i>	alligator weed	1	11-Mar-1998
<i>Amaranthus albus</i>	tumble pigweed	1	22-Mar-2012
<i>Amsinckia calycina</i>	hairy fiddleneck	8	19-Nov-2013
<i>Anthemis cotula</i>	stinking chamomile	2	01-Jan-1904
<i>Asparagus asparagoides</i>	bridal creeper	166	02-Jun-2021
<i>Asparagus scandens</i>	asparagus fern	1	27-Oct-2009
<i>Asphodelus fistulosus</i>	onion weed	6	05-Sep-2008
<i>Carduus nutans</i>	nodding thistle	1	16-Nov-1978
<i>Carduus pycnocephalus</i>	slender thistle	16	02-Dec-2021
<i>Carduus tenuiflorus</i>	winged thistle	6	06-Jan-2022
<i>Carex albula</i>	frosted curls	4	09-Jun-1989
<i>Carex testacea</i>	redbase sedge	4	09-Jun-1989
<i>Carthamus lanatus</i>	saffron thistle	3	01-Dec-1927
<i>Cenchrus longisetus</i>	feathertop	5	20-Apr-2006
<i>Cenchrus macrourus</i>	african feathergrass	8	01-Jan-2002
<i>Ceratophyllum demersum</i>	rigid or common hornwort	1	24-Jul-1981
<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	boneseed	884	06-Jan-2022
<i>Cirsium arvense</i>	californian thistle	1	01-Jan-1923
<i>Cirsium arvense</i> var. <i>arvense</i>	creeping thistle	13	20-May-2021
<i>Cortaderia jubata</i>	pink pampasgrass	6	01-Mar-2018
<i>Cortaderia selloana</i>	silver pampasgrass	25	06-Oct-2021
<i>Cortaderia</i> sp.	pampas grass	74	21-Jan-2022
<i>Cuscuta epithymum</i>	lesser dodder	1	01-Mar-1961
<i>Cytisus scoparius</i>	english broom	39	13-Sep-2021
<i>Datura stramonium</i>	common thornapple	4	16-Feb-1966
<i>Echium plantagineum</i>	patersons curse	54	24-Dec-2020
<i>Echium vulgare</i>	vipers bugloss	6	19-Nov-1969
<i>Egeria densa</i>	dense waterweed	1	13-Jan-1996
<i>Elodea canadensis</i>	canadian pondweed	5	17-Dec-1971
<i>Eragrostis curvula</i>	african lovegrass	198	27-May-2021
<i>Erica arborea</i>	tree heath	5	01-Jun-2016
<i>Erica carnea</i>	winter heath or winter-flowering heather	1	10-Apr-2019
<i>Erica cinerea</i>	bell heather	1	10-Apr-2019
<i>Erica lusitanica</i>	spanish heath	69	06-Jan-2022
<i>Erica scoparia</i>	twig heath	1	10-Apr-2019
<i>Erica vagans</i>	cornish heath	1	10-Apr-2019
<i>Fallopia japonica</i>	japanese knotweed	7	04-Dec-2008
<i>Foeniculum vulgare</i>	fennel	215	28-Oct-2021
<i>Galium tricornutum</i>	rough corn bedstraw	1	01-Jan-1900
<i>Genista monspessulana</i>	montpellier broom or canary broom	99	17-May-2021
<i>Hypericum perforatum</i>	perforated st johns-wort	17	15-Dec-2021
<i>Hypericum perforatum</i> subsp. <i>veronense</i>	perforated st johns-wort	8	06-Aug-2008
<i>Hypericum tetrapterum</i> var. <i>tetrapterum</i>	square st johns-wort	3	07-Jan-2015
<i>Ilex aquifolium</i>	holly	2	16-Oct-2017
<i>Lagarosiphon major</i>	oxygen weed	1	24-May-1983
<i>Lepidium draba</i>	hoary cress	33	26-Nov-2021
<i>Leycesteria formosa</i>	himalayan honeysuckle	5	02-Dec-2021
<i>Lycium ferocissimum</i>	african boxthorn	111	03-Jul-2021
<i>Marrubium vulgare</i>	white horehound	24	27-May-2020
<i>Moraea flaccida</i>	oneleaf cape tulip	3	05-Oct-1981
<i>Myriophyllum aquaticum</i>	parrotfeather	8	01-Jul-2011
<i>Nassella neesiana</i>	chilean needlegrass	1767	19-Apr-2021
<i>Nassella tenuissima</i>	mexican feather grass	3	20-Sep-2019
<i>Nassella trichotoma</i>	serrated tussock	47	17-Dec-2020
<i>Onopordum acanthium</i>	scotch thistle	8	10-Feb-2021
<i>Opuntia</i> sp.	prickly pear or cholla	6	02-Dec-2021
<i>Opuntia stricta</i>	common prickly pear	1	24-Sep-2004
<i>Pilosella aurantiaca</i> subsp. <i>aurantiaca</i>	orange hawkweed	4	01-Jun-2012
<i>Rubus anglocandicans</i>	blackberry	68	17-Feb-2021
<i>Rubus fruticosus</i>	blackberry	269	15-Dec-2021
<i>Rubus leucostachys</i>	blackberry	2	17-Feb-2004

Tas Management Act Weeds within 5000 m

Species	Common Name	Observation Count	Last Recorded
Salix alba var. vitellina	golden willow	6	17-Feb-2004
Salix caprea	goat willow	2	10-Mar-2004
Salix cinerea subsp. cinerea	grey willow	1	30-Mar-2004
Salix humboldtiana	chilean pencil willow	2	15-Dec-2006
Salix matsudana	sallow willow	2	04-Mar-2004
Salix purpurea	purple willow	1	04-Mar-2004
Salix x fragilis nothovar. fragilis	crack willow	97	17-May-2021
Salix x sepulcralis nothovar. chrysocoma	golden weeping willow	2	29-Oct-2003
Senecio jacobaea	ragwort	1	31-Aug-2004
Solanum marginatum	white-edged nightshade	11	01-Mar-2011
Tamarix aphylla	athel pine or tamarisk	1	15-Feb-2011
Ulex europaeus	gorse	259	21-Jan-2022
Urospermum dalechampii	false dandelion	58	13-Nov-2019
Xanthium spinosum	bathurst burr	3	27-Mar-1922

Unverified Records

For more information about introduced weed species, please visit the following URL for contact details in your area:

<https://www.nre.tas.gov.au/invasive-species/weeds>

*** No Priority Weeds found within 500 metres ***



522795, 5250472

Please note that some layers may not display at all requested map scales

Priority Weeds within 5000 m

Legend: Verified and Unverified observations

- Point Verified

●

Point Unverified

▬

Line Verified

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Line Unverified

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Polygon Unverified

Legend: Cadastral Parcels



Priority Weeds within 5000 m

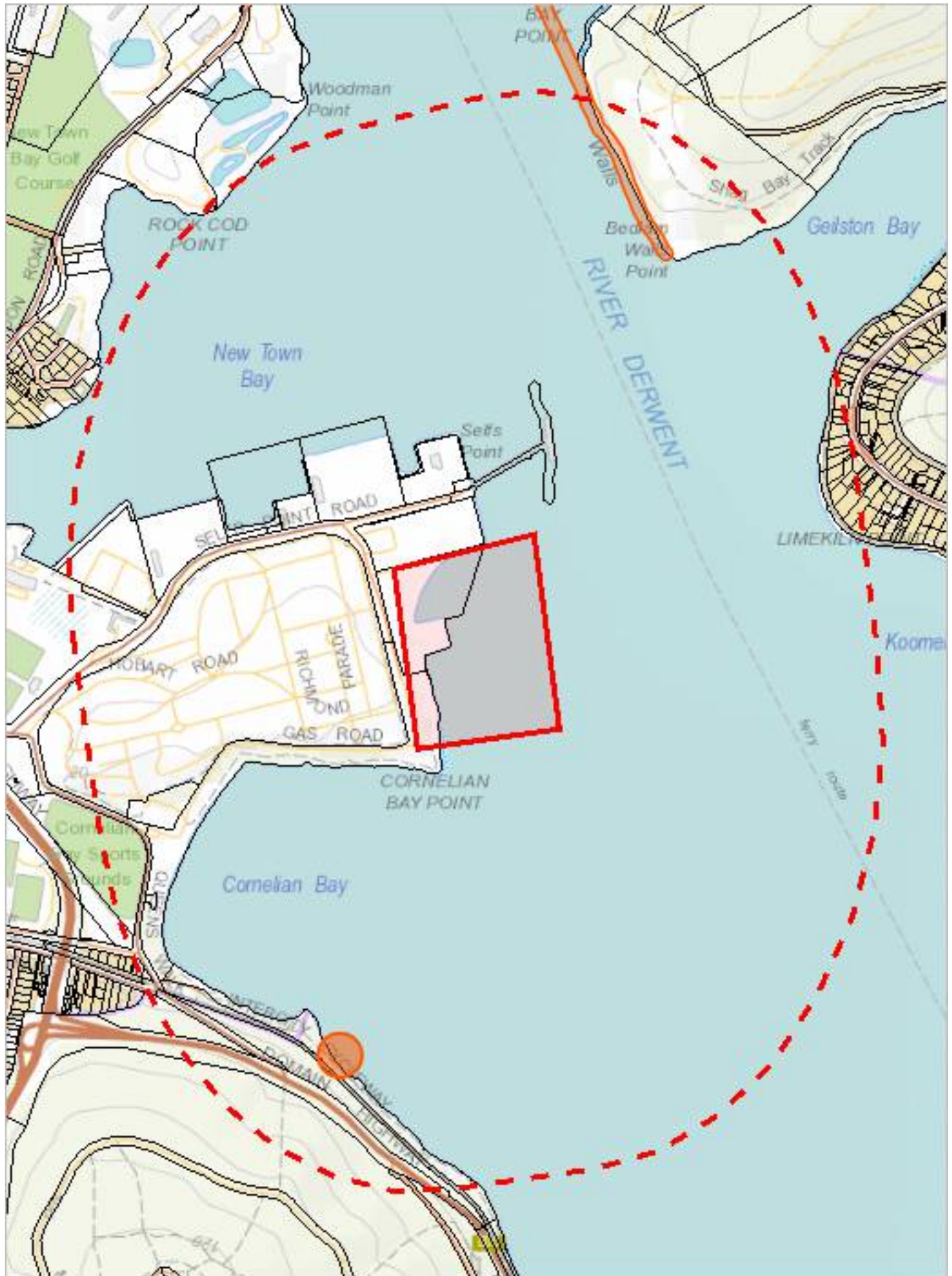
Verified Records

Species	Common Name	Observation Count	Last Recorded
<i>Acacia baileyana</i>	cootamundra wattle	1	18-Jan-2018
<i>Acacia howittii</i>	sticky wattle	2	18-Jan-2018
<i>Achillea millefolium</i>	yarrow	15	20-May-2021
<i>Ammophila arenaria</i>	marram grass	3	01-Jan-1924
<i>Anredera cordifolia</i>	madeira vine	6	03-May-2001
<i>Billardiera heterophylla</i>	bluebell creeper	11	25-Nov-2021
<i>Dipsacus fullonum</i>	wild teasel	5	04-Feb-2021
<i>Dipsacus fullonum</i> subsp. <i>fullonum</i>	wild teasel	1	01-Jan-1913
<i>Echium candicans</i>	pride-of-madeira	8	22-Sep-2018
<i>Equisetum hyemale</i>	rough horsetail	2	01-May-2007
<i>Gomphocarpus fruticosus</i> subsp. <i>fruticosus</i>	swanplant	5	26-Apr-2020
<i>Grevillea rosmarinifolia</i>	rosemary grevillea	7	14-Oct-2020
<i>Pittosporum undulatum</i>	sweet pittosporum	37	06-Jan-2022
<i>Polygala myrtifolia</i>	myrtleleaf milkwort	6	13-Nov-2019
<i>Reseda luteola</i>	weld	49	06-Jan-2022
<i>Retama raetam</i>	weeping white broom	1	05-Oct-2005
<i>Rumex obtusifolius</i>	broadleaf dock	7	22-Dec-2004
<i>Rumex obtusifolius</i> subsp. <i>obtusifolius</i>	western broadleaf dock	1	01-May-1945
<i>Salix x pendulina</i> var. <i>pendulina</i>	weeping willow	7	17-May-2021
<i>Spartina anglica</i>	common cordgrass	1	10-Mar-1998
<i>Tradescantia fluminensis</i>	wandering creeper	6	01-Nov-2019
<i>Verbascum thapsus</i>	great mullein	5	10-Feb-2021

Unverified Records

For more information about introduced weed species, please visit the following URL for contact details in your area:

<https://www.nre.tas.gov.au/invasive-species/weeds>



525750, 5254471

Please note that some layers may not display at all requested map scales

Geoconservation sites within 1000 metres

Legend: Geoconservation (NVA)



Legend: Cadastral Parcels



Geoconservation sites within 1000 metres

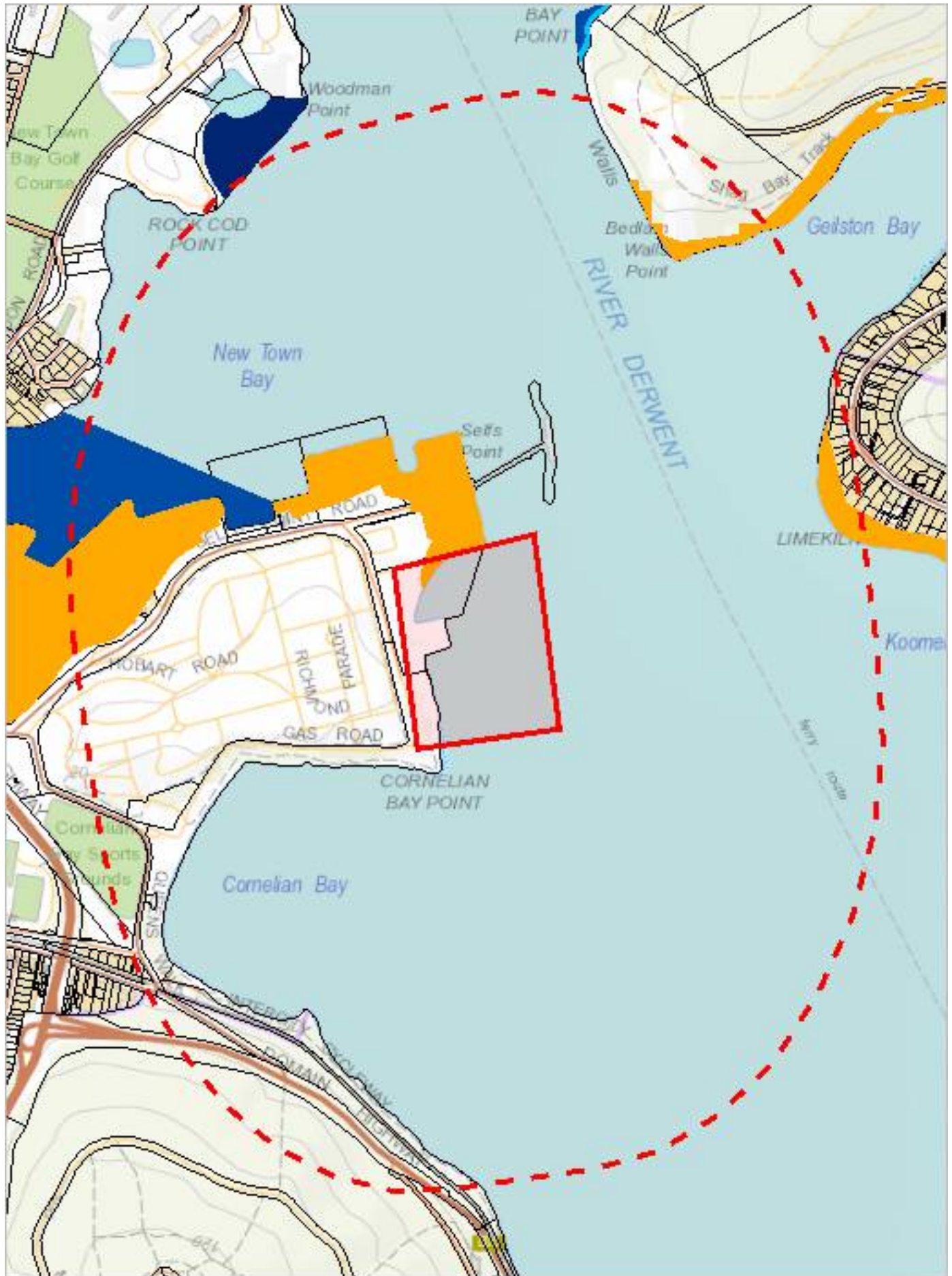
Id	Name	Statement of Significance	Significance Level	Status
2210	Bedlam Walls Scarp	Notable example of type.	State	Listed
3173	Cenozoic Plant Macrofossils of Tasmania	Tasmania contains a rich assemblage of Cenozoic plant macrofossils, many in an excellent state of preservation. Collectively, the fossil sites allow reconstruction of the character, evolution and palaeoenvironmental context of the southern hemisphere temperate palaeoflora of Tasmania across ca. 60 million years. The fossil record is crucial to our understanding of Tasmania's distinctive modern flora, especially conifers.	Global	Listed
3218	Cornelian Bay Tertiary Plant Fossil Site	This is a Tertiary plant macrofossil site in the Derwent Graben Tasmania. It preserves evidence that contributes to our understanding of the character, evolution and palaeoenvironmental context of Tasmania's Cenozoic flora.	District	Listed

For more information about the Geoconservation Database, please visit the website: <https://www.nre.tas.gov.au/conservation/geoconservation> or contact the Geoconservation Officer:

Telephone: (03) 6165 4401

Email: Geoconservation.Enquiries@nre.tas.gov.au

Address: GPO Box 44, Hobart, Tasmania, Australia, 7000



525750, 5254471

Please note that some layers may not display at all requested map scales

Acid Sulfate Soils within 1000 metres

Legend: Coastal Acid Sulfate Soils (0 - 20m AHD)

 High  Low  Extremely Low

Legend: Inland Acid Sulfate Soils (>20m AHD)

 High  Low  Extremely Low

Legend: Marine Subaqueous/Intertidal Acid Sulfate Soil

 High (Intertidal)  High (Subtidal)

Legend: Cadastral Parcels



Acid Sulfate Soils within 1000 metres

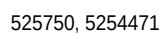
Dataset Name	Acid Sulfate Soil Probability	Acid Sulfate Soil Atlas	Description
Coastal Acid Sulfate Soils	Extremely Low	Cx(p3)	Extremely low probability of occurrence (1-5% of mapping unit). with occurrences in small areas. Disturbed ASS terrain, ASS material present below urban development, or present in former tidal zones inside bund walls e.g dredge spoil etc. Potential acid sulfate soil (PASS) = sulfidic material (Isbell 1996 p.122). No necessary analytical data are available but confidence is fair, based on a knowledge of similar soils in similar environments.
Coastal Acid Sulfate Soils	Low	Bu(p3)	Low probability of occurrence (6-70% chance of occurrence in mapping unit). Unclassified - Insufficient landscape information available to classify map unit. Potential acid sulfate soil (PASS) = sulfidic material (Isbell 1996 p.122). No necessary analytical data are available but confidence is fair, based on a knowledge of similar soils in similar environments.
Coastal Acid Sulfate Soils	Low	Bx(p3)	Low probability of occurrence (6-70% chance of occurrence in mapping unit). Disturbed ASS terrain, ASS material present below urban development, or present in former tidal zones inside bund walls e.g dredge spoil etc. Potential acid sulfate soil (PASS) = sulfidic material (Isbell 1996 p.122). No necessary analytical data are available but confidence is fair, based on a knowledge of similar soils in similar environments.
Marine Subaqueous and Intertidal Acid Sulfate Soils	High	Aa(p3)	High probability of occurrence (>70% chance of occurrence in mapping unit). Subaqueous material in subtidal wetland, PASS material and/or MBO. Often seagrasses. Potential acid sulfate soil (PASS) = sulfidic material (Isbell 1996 p.122). No necessary analytical data are available but confidence is fair, based on a knowledge of similar soils in similar environments.

For more information about Acid Sulfate Soils, please contact Land Management Enquiries.

Telephone: (03) 6777 2227

Email: LandManagement.Enquiries@nre.tas.gov.au

Address: 171 Westbury Road, Prospect, Tasmania, Australia, 7250



Department of Natural Resources and Environment Tasmania

Legend: TASVEG 4.0

	(AAP) Alkaline pans
	(AHF) Freshwater aquatic herbland
	(AHL) Lacustrine herbland
	(AHS) Saline aquatic herbland
	(ARS) Saline sedgeland / rushland
	(ASF) Fresh water aquatic sedgeland and rushland
	(ASP) Sphagnum peatland
	(ASS) Succulent saline herbland
	(AUS) Saltmarsh (undifferentiated)
	(AWU) Wetland (undifferentiated)
	(DAC) Eucalyptus amygdalina coastal forest and woodland
	(DAD) Eucalyptus amygdalina forest and woodland on dolerite
	(DAM) Eucalyptus amygdalina forest on mudstone
	(DAS) Eucalyptus amygdalina forest and woodland on sandstone
	(DAZ) Eucalyptus amygdalina inland forest and woodland on Cainozoic deposits
	(DBA) Eucalyptus barberi forest and woodland
	(DCO) Eucalyptus coccifera forest and woodland
	(DCR) Eucalyptus cordata forest
	(DDE) Eucalyptus delegatensis dry forest and woodland
	(DDP) Eucalyptus dalrympleana - Eucalyptus pauciflora forest and woodland
	(DGL) Eucalyptus globulus dry forest and woodland
	(DGW) Eucalyptus gunnii woodland
	(DKW) King Island Eucalypt woodland
	(DMO) Eucalyptus morrisbyi forest and woodland
	(DMW) Midlands woodland complex
	(DNF) Eucalyptus nitida Furneaux forest
	(DNI) Eucalyptus nitida dry forest and woodland
	(DOB) Eucalyptus obliqua dry forest
	(DOV) Eucalyptus ovata forest and woodland
	(DOW) Eucalyptus ovata heathy woodland
	(DPD) Eucalyptus pauciflora forest and woodland on dolerite
	(DPE) Eucalyptus perriniana forest and woodland
	(DPO) Eucalyptus pauciflora forest and woodland not on dolerite
	(DPU) Eucalyptus pulchella forest and woodland
	(DRI) Eucalyptus risdonii forest and woodland
	(DRO) Eucalyptus rodwayi forest and woodland
	(DSC) Eucalyptus amygdalina - Eucalyptus obliqua damp sclerophyll forest
	(DSG) Eucalyptus sieberi forest and woodland on granite
	(DSO) Eucalyptus sieberi forest and woodland not on granite
	(DTD) Eucalyptus tenuiramis forest and woodland on dolerite
	(DTG) Eucalyptus tenuiramis forest and woodland on granite
	(DTO) Eucalyptus tenuiramis forest and woodland on sediments
	(DVC) Eucalyptus viminalis - Eucalyptus globulus coastal forest and woodland
	(DVF) Eucalyptus viminalis Furneaux forest and woodland
	(DVG) Eucalyptus viminalis grassy forest and woodland
	(FAC) Improved pasture with native tree canopy
	(FAG) Agricultural land
	(FMG) Marram grassland
	(FPE) Permanent easements
	(FPF) Pteridium esculentum fernland
	(FPH) Plantations for silviculture - hardwood
	(FPS) Plantations for silviculture - softwood
	(FPU) Unverified plantations for silviculture
	(FRG) Regenerating cleared land
	(FSM) Spartina marshland
	(FUM) Extra-urban miscellaneous
	(FUR) Urban areas
	(FWU) Weed infestation
	(GCL) Lowland grassland complex

TASVEG 4.0 Communities within 1000 metres

	(GHC) Coastal grass and herbfield
	(GPH) Highland Poa grassland
	(GPL) Lowland Poa labillardierei grassland
	(GRP) Rockplate grassland
	(GSL) Lowland grassy sedgeland
	(GTL) Lowland Themeda triandra grassland
	(HCH) Alpine coniferous heathland
	(HCM) Cushion moorland
	(HHE) Eastern alpine heathland
	(HHW) Western alpine heathland
	(HSE) Eastern alpine sedgeland
	(HSW) Western alpine sedgeland/herbland
	(HUE) Eastern alpine vegetation (undifferentiated)
	(MBE) Eastern buttongrass moorland
	(MBP) Pure buttongrass moorland
	(MBR) Sparse buttongrass moorland on slopes
	(MBS) Buttongrass moorland with emergent shrubs
	(MBU) Buttongrass moorland (undifferentiated)
	(MBW) Western buttongrass moorland
	(MDS) Subalpine Diplarrena latifolia rushland
	(MGH) Highland grassy sedgeland
	(MRR) Restionaceae rushland
	(MSW) Western lowland sedgeland
	(NAD) Acacia dealbata forest
	(NAF) Acacia melanoxylon swamp forest
	(NAL) Allocasuarina littoralis forest
	(NAR) Acacia melanoxylon forest on rises
	(NAV) Allocasuarina verticillata forest
	(NBA) Bursaria - Acacia woodland
	(NBS) Banksia serrata woodland
	(NCR) Callitris rhomboidea forest
	(NLA) Leptospermum scoparium - Acacia mucronata forest
	(NLE) Leptospermum forest
	(NLM) Leptospermum lanigerum - Melaleuca squarrosa swamp forest
	(NLN) Subalpine Leptospermum nitidum woodland
	(NME) Melaleuca ericifolia swamp forest
	(OAQ) Water, sea
	(ORO) Lichen lithosere
	(OSM) Sand, mud
	(RCO) Coastal rainforest
	(RFE) Rainforest fernland
	(RFS) Nothofagus gunnii rainforest scrub
	(RHP) Lagarostrobos franklinii rainforest and scrub
	(RKF) Athrotaxis selaginoides - Nothofagus gunnii short rainforest
	(RKP) Athrotaxis selaginoides rainforest
	(RKS) Athrotaxis selaginoides subalpine scrub
	(RKX) Highland rainforest scrub with dead Athrotaxis selaginoides
	(RML) Nothofagus - Leptospermum short rainforest
	(RMS) Nothofagus - Phyllocladus short rainforest
	(RMT) Nothofagus - Atherosperma rainforest
	(RMU) Nothofagus rainforest (undifferentiated)
	(RPF) Athrotaxis cupressoides - Nothofagus gunnii short rainforest
	(RPP) Athrotaxis cupressoides rainforest
	(RPW) Athrotaxis cupressoides open woodland
	(RSH) Highland low rainforest and scrub
	(SAL) Acacia longifolia coastal scrub
	(SBM) Banksia marginata wet scrub
	(SBR) Broad-leaf scrub
	(SCA) Coastal scrub on alkaline sands
	(SCH) Coastal heathland
	(SCL) Heathland on calcareous substrates

TASVEG 4.0 Communities within 1000 metres

	(SED) Eastern scrub on dolerite
	(SHS) Subalpine heathland
	(SHW) Wet heathland
	(SKA) Kunzea ambigua regrowth scrub
	(SLG) Leptospermum glaucescens heathland and scrub
	(SLL) Leptospermum lanigerum scrub
	(SLS) Leptospermum scoparium heathland and scrub
	(SMM) Melaleuca squamea heathland
	(SMP) Melaleuca pustulata scrub
	(SMR) Melaleuca squarrosa scrub
	(SRE) Eastern riparian scrub
	(SRF) Leptospermum with rainforest scrub
	(SRH) Rookery halophytic herbland
	(SSC) Coastal scrub
	(SSK) Scrub complex on King Island
	(SSW) Western subalpine scrub
	(SSZ) Spray zone coastal complex
	(SWR) Western regrowth complex
	(SWW) Western wet scrub
	(WBR) Eucalyptus brookeriana wet forest
	(WDA) Eucalyptus dalrympleana forest
	(WDB) Eucalyptus delegatensis forest with broad-leaf shrubs
	(WDL) Eucalyptus delegatensis forest over Leptospermum
	(WDR) Eucalyptus delegatensis forest over rainforest
	(WDU) Eucalyptus delegatensis wet forest (undifferentiated)
	(WGL) Eucalyptus globulus King Island forest
	(WGL) Eucalyptus globulus wet forest
	(WNL) Eucalyptus nitida forest over Leptospermum
	(WNR) Eucalyptus nitida forest over rainforest
	(WNU) Eucalyptus nitida wet forest (undifferentiated)
	(WOB) Eucalyptus obliqua forest with broad-leaf shrubs
	(WOL) Eucalyptus obliqua forest over Leptospermum
	(WOR) Eucalyptus obliqua forest over rainforest
	(WOU) Eucalyptus obliqua wet forest (undifferentiated)
	(WRE) Eucalyptus regnans forest
	(WSU) Eucalyptus subcrenulata forest and woodland
	(WVI) Eucalyptus viminalis wet forest

Legend: Cadastral Parcels



TASVEG 4.0 Communities within 1000 metres

Code	Community	Canopy Tree
AUS	(AUS) Saltmarsh (undifferentiated)	
DAM	(DAM) Eucalyptus amygdalina forest on mudstone	
DVG	(DVG) Eucalyptus viminalis grassy forest and woodland	
FUR	(FUR) Urban areas	
GCL	(GCL) Lowland grassland complex	
NAV	(NAV) Allocasuarina verticillata forest	
NBA	(NBA) Bursaria - Acacia woodland	

For more information contact: Coordinator, Tasmanian Vegetation Monitoring and Mapping Program.

Telephone: (03) 6165 4320

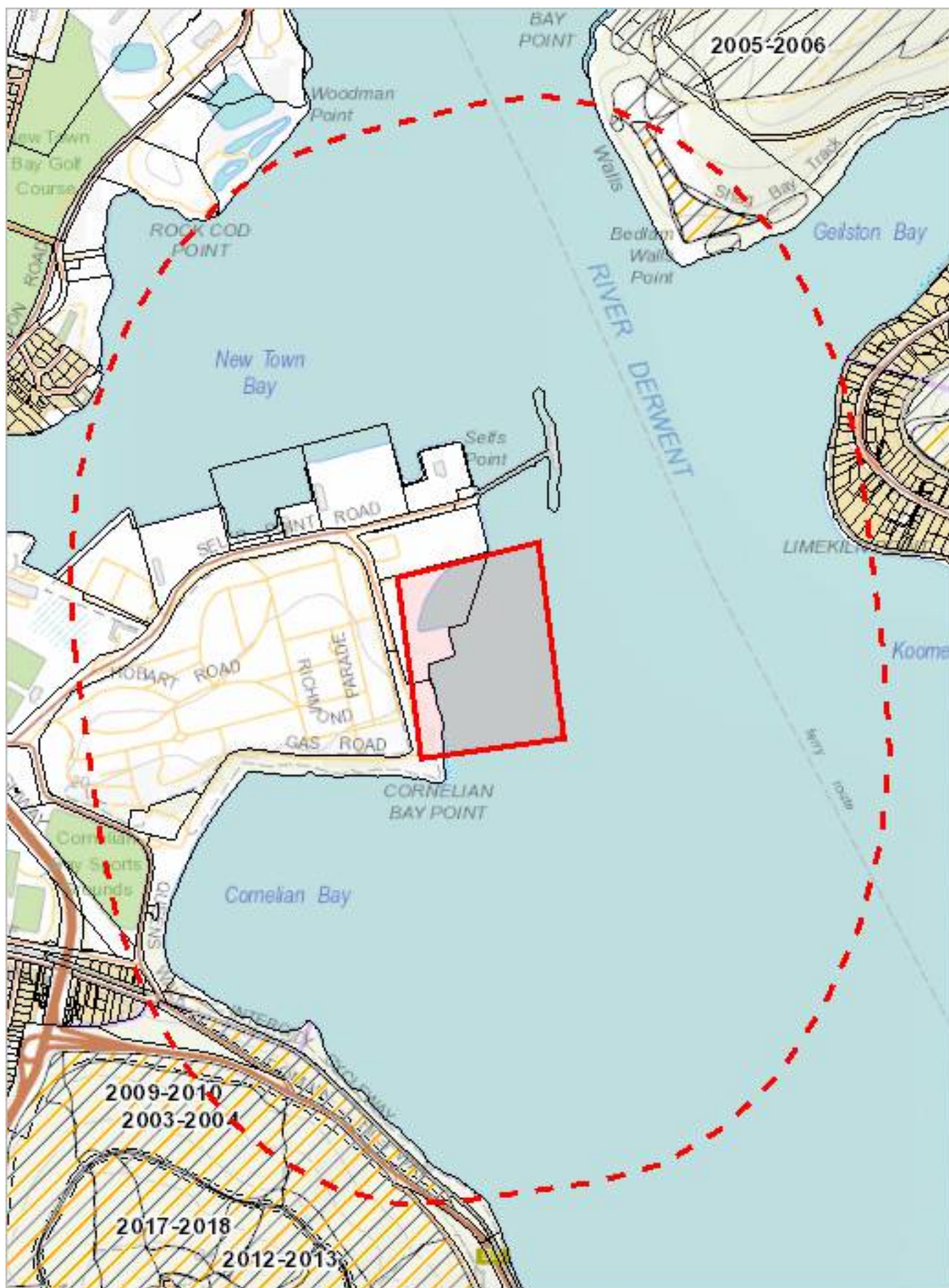
Email: TVMMPsupport@nre.tas.gov.au

Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

*** No threatened Communities (TNVC 2020) found within 1000 metres ***

Fire History (All) within 1000 metres

527901, 5257362



525750, 5254471

Please note that some layers may not display at all requested map scales

Fire History (All) within 1000 metres

Legend: Fire History All

- ☒ Bushfire-Unknown Category
- ☒ Bushfire
- ☒ Completed Planned Burn

Legend: Cadastral Parcels



Fire History (All) within 1000 metres

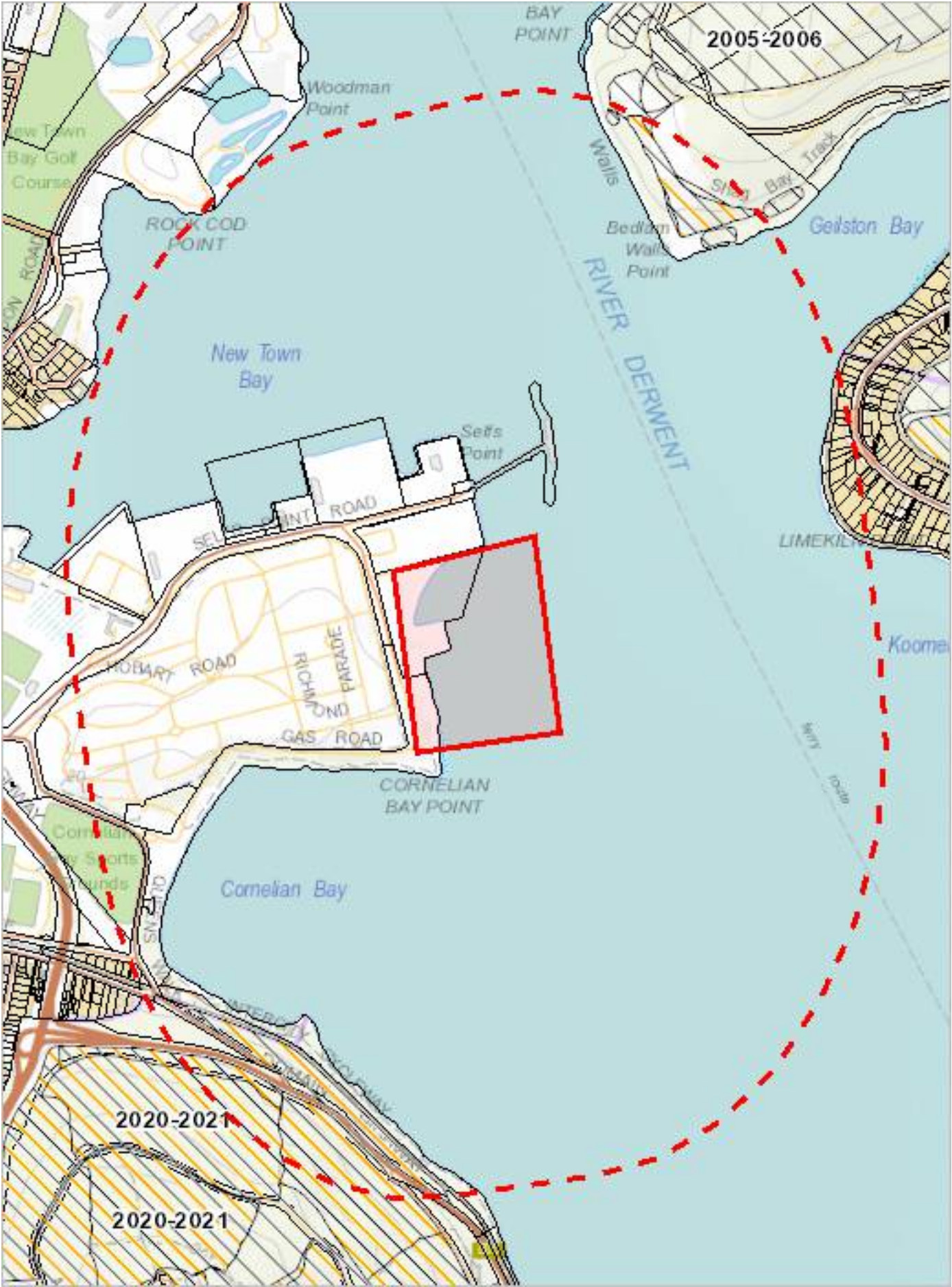
Incident Number	Fire Name	Ignition Date	Fire Type	Ignition Cause	Fire Area (HA)
1605	Bedlam Walls #2	29-Mar-2003	Bushfire	Undetermined	0.06963374
HHZ049BU	North Domain (Stage 1)	26-Apr-2021	Planned Burn	Planned Burn	10.76145306000001
	Bedlam Walls VMU 1	15-Apr-2011	Planned Burn	Planned Burn	1.74969346
	Bedlam walls fires 2004 to 2010	01-Apr-2010	Bushfire	Undetermined	1.66831968
	Bedlam walls fires pre 2004	01-Feb-1999	Bushfire	Undetermined	0.57393069
	Bedlam walls fires pre 2004	01-Apr-2002	Bushfire	Undetermined	2.93309546
	QD19	01-Jan-2006	Planned Burn	Planned Burn	8.06541534
	QD20	01-Jan-2004	Planned Burn	Planned Burn	2.96768039
	QD22	01-Dec-2003	Planned Burn	Planned Burn	12.14833419
	QD22	01-May-2010	Planned Burn	Planned Burn	12.14833419

For more information about Fire History, please contact the Manager Community Protection Planning, Tasmania Fire Service.

Telephone: 1800 000 699

Email: planning@fire.tas.gov.au

Address: cnr Argyle and Melville Streets, Hobart, Tasmania, Australia, 7000



525750, 5254471

Please note that some layers may not display at all requested map scales

Fire History (Last Burnt) within 1000 metres

Legend: Fire History Last

-  Bushfire-Unknown category
-  Completed Planned Burn

 Bushfire

Legend: Cadastral Parcels



Fire History (Last Burnt) within 1000 metres

Incident Number	Fire Name	Ignition Date	Fire Type	Ignition Cause	Fire Area (HA)
1605	Bedlam Walls #2	29-Mar-2003	Bushfire	Undetermined	0.06963374
HHZ049BU	North Domain (Stage 1)	26-Apr-2021	Planned Burn	Planned Burn	10.761453060000001
	Bedlam Walls VMU 1	15-Apr-2011	Planned Burn	Planned Burn	1.74969346
	Bedlam walls fires 2004 to 2010	01-Apr-2010	Bushfire	Undetermined	1.66831968
	Bedlam walls fires pre 2004	01-Feb-1999	Bushfire	Undetermined	0.57393069
	Bedlam walls fires pre 2004	01-Apr-2002	Bushfire	Undetermined	2.93309546
	QD19	01-Jan-2006	Planned Burn	Planned Burn	8.06541534
	QD20	01-Jan-2004	Planned Burn	Planned Burn	2.96768039
	QD22	01-May-2010	Planned Burn	Planned Burn	12.14833419

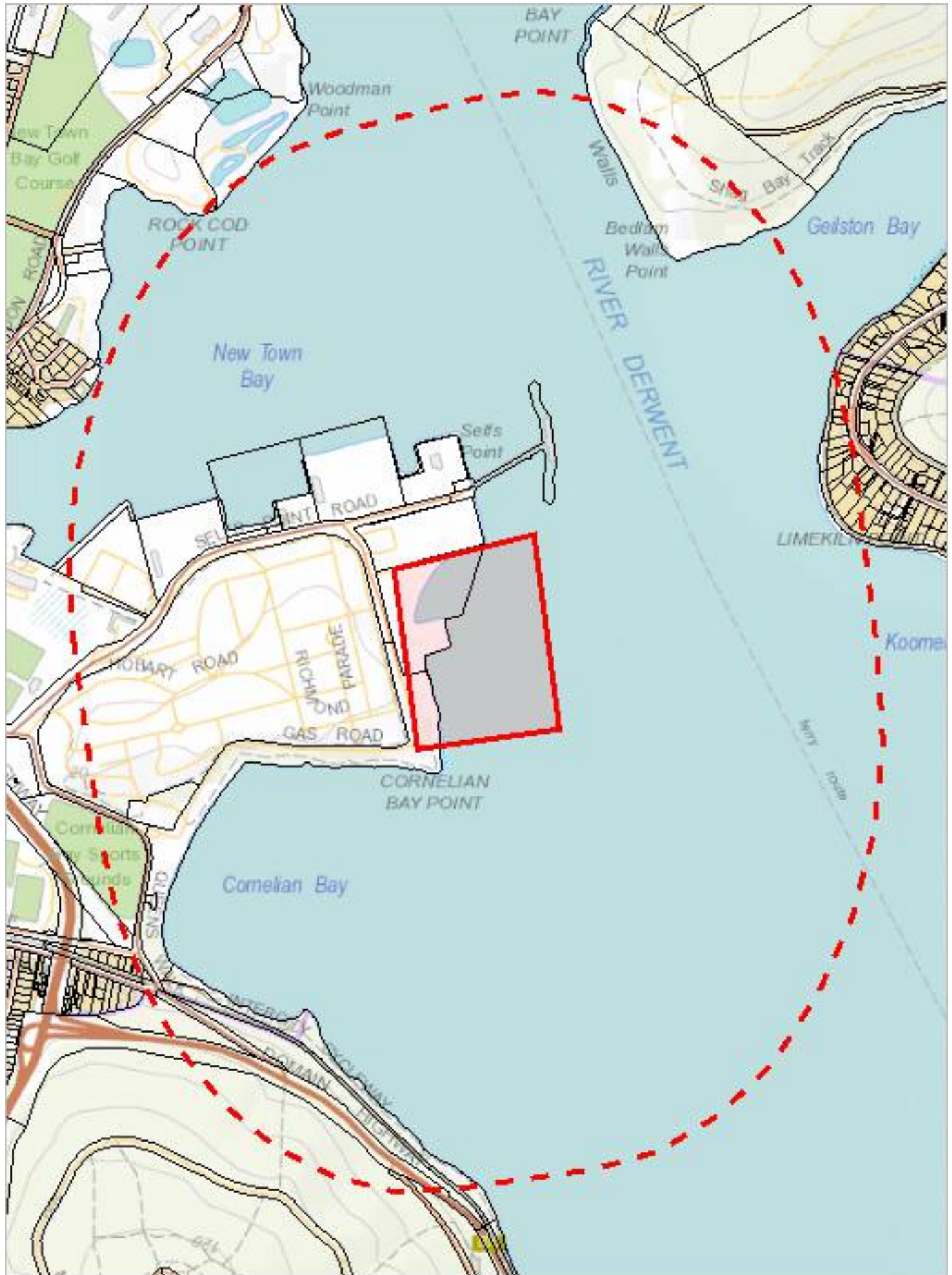
For more information about Fire History, please contact the Manager Community Protection Planning, Tasmania Fire Service.

Telephone: 1800 000 699

Email: planning@fire.tas.gov.au

Address: cnr Argyle and Melville Streets, Hobart, Tasmania, Australia, 7000

*** No reserves found within 1000 metres ***



525750, 5254471

Please note that some layers may not display at all requested map scales

Known biosecurity risks within 1000 meters

Legend: Biosecurity Risk Species

- Point Verified
- Point Unverified
- Line Unverified
- Polygon Verified
- Line Verified
- Polygon Unverified

Legend: Hygiene infrastructure

- Location Point Verified
- Location Point Unverified
- Location Line Verified
- Location Line Unverified
- Location Polygon Verified
- Location Polygon Unverified

Legend: Cadastral Parcels



Known biosecurity risks within 1000 meters

Verified Species of biosecurity risk

No verified species of biosecurity risk found within 1000 metres

Unverified Species of biosecurity risk

No unverified species of biosecurity risk found within 1000 metres

Generic Biosecurity Guidelines

The level and type of hygiene protocols required will vary depending on the tenure, activity and land use of the area. In all cases adhere to the land manager's biosecurity (hygiene) protocols. As a minimum always Check / Clean / Dry (Disinfect) clothing and equipment before trips and between sites within a trip as needed <https://www.nre.tas.gov.au/invasive-species/weeds/weed-hygiene/keeping-it-clean-a-tasmanian-field-hygiene-manual>

On Reserved land, the more remote, infrequently visited and undisturbed areas require tighter biosecurity measures.

In addition, where susceptible species and communities are known to occur, tighter biosecurity measures are required.

Apply controls relevant to the area / activity:

- Don't access sites infested with pathogen or weed species unless absolutely necessary. If it is necessary to visit, adopt high level hygiene protocols.
- Consider not accessing non-infested sites containing known susceptible species / communities. If it is necessary to visit, adopt high level hygiene protocols.
- Don't undertake activities that might spread pest / pathogen / weed species such as deliberately moving soil or water between areas.
- Modify / restrict activities to reduce the chance of spreading pest / pathogen / weed species e.g. avoid periods when weeds are seeding, avoid clothing/equipment that excessively collects soil and plant material e.g. Velcro, excessive tread on boots.
- Plan routes to visit clean (uninfested) sites prior to dirty (infested) sites. Do not travel through infested areas when moving between sites.
- Minimise the movement of soil, water, plant material and hitchhiking wildlife between areas by using the Check / Clean / Dry (Disinfect when drying is not possible) procedure for all clothing, footwear, equipment, hand tools and vehicles <https://www.nre.tas.gov.au/invasive-species/weeds/weed-hygiene/keeping-it-clean-a-tasmanian-field-hygiene-manual>
- Neoprene and netting can take 48 hours to dry, use non-porous gear wherever possible.
- Use walking track boot wash stations where available.
- Keep a hygiene kit in the vehicle that includes a scrubbing brush, boot pick, and disinfectant <https://www.nre.tas.gov.au/invasive-species/weeds/weed-hygiene/keeping-it-clean-a-tasmanian-field-hygiene-manual>
- Dispose of all freshwater away from natural water bodies e.g. do not empty water into streams or ponds.
- Dispose of used disinfectant ideally in town through a treatment or septic system. Always keep disinfectant well away from natural water systems.
- Securely contain any high risk pest / pathogen / weed species that must be collected and moved e.g. biological samples.

Hygiene Infrastructure

No known hygiene infrastructure found within 1000 metres

APPENDIX B – EPBC ACT PROTECTED MATTERS SEARCH



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 28-Jun-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	57
Listed Migratory Species:	32

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	50
Whales and Other Cetaceans:	6
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	2
Key Ecological Features (Marine):	None
Biologically Important Areas:	5
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	
Pitt water-orielton lagoon	Within 10km of Ramsar site	

Listed Threatened Ecological Communities	[Resource Information]
--	--------------------------

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Tasmanian Forests and Woodlands dominated by black gum or Brookers gum (Eucalyptus ovata / E. brookeriana)	Critically Endangered	Community likely to occur within area
Tasmanian white gum (Eucalyptus viminalis) wet forest	Critically Endangered	Community likely to occur within area

Listed Threatened Species	[Resource Information]
---------------------------	--------------------------

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Aquila audax fleayi		
Tasmanian Wedge-tailed Eagle, Wedge-tailed Eagle (Tasmanian) [64435]	Endangered	Species or species habitat likely to occur within area
Botaurus poiciloptilus		
Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ceyx azureus diemenensis Tasmanian Azure Kingfisher [25977]	Endangered	Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Breeding known to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Pardalotus quadragintus Forty-spotted Pardalote [418]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Tyto novaehollandiae castanops (Tasmanian population) Masked Owl (Tasmanian) [67051]	Vulnerable	Breeding known to occur within area
FISH		
Brachionichthys hirsutus Spotted Handfish [64418]	Critically Endangered	Species or species habitat may occur within area
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat known to occur within area
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thymichthys politus Red Handfish [83756]	Critically Endangered	Species or species habitat may occur within area
FROG		
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat likely to occur within area
INSECT		
Antipodia chaostola leucophaea Tasmanian Chaostola Skipper, Heath-sand Skipper [77672]	Endangered	Species or species habitat may occur within area
MAMMAL		
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (Tasmanian population) Spotted-tail Quoll, Spot-tailed Quoll, Tiger Quoll (Tasmanian population) [75183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus viverrinus Eastern Quoll, Luaner [333]	Endangered	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area
Perameles gunnii gunnii Eastern Barred Bandicoot (Tasmania) [66651]	Vulnerable	Species or species habitat likely to occur within area
Sarcophilus harrisii Tasmanian Devil [299]	Endangered	Species or species habitat likely to occur within area
PLANT		
Caladenia caudata Tailed Spider-orchid [17067]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Dianella amoena Matted Flax-lily [64886]	Endangered	Species or species habitat known to occur within area
Eucalyptus morrisbyi Morrisby's Gum, Morrisbys Gum [7382]	Endangered	Species or species habitat may occur within area
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat may occur within area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat known to occur within area
Leucochrysum albicans subsp. tricolor Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat may occur within area
Pomaderris pilifera subsp. talpicutica Moleskin Dogwood [84295]	Vulnerable	Species or species habitat likely to occur within area
Prasophyllum apoxychilum Tapered Leek-orchid [64947]	Endangered	Species or species habitat likely to occur within area
Xerochrysum palustre Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat likely to occur within area
SEASTAR		
Marginaster littoralis Derwent River Seastar [66762]	Critically Endangered	Species or species habitat likely to occur within area
Parvulastra vivipara Tasmanian Live-bearing Seastar [85451]	Vulnerable	Species or species habitat may occur within area
SHARK		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat likely to occur within area

SNAIL		
Ammoniropa vigens Ammonite Pinwheel Snail [90200]	Critically Endangered	Species or species habitat likely to occur within area

Listed Migratory Species

[[Resource Information](#)]

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea Sooty Shearwater [82651]		Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Migratory Marine Species		
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species	[Resource Information]	
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]		Species or species habitat likely to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Breeding known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area
Fish		
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys mollisoni Mollison's Pipefish [66260]		Species or species habitat may occur within area
Mitotichthys semistriatus Halfbanded Pipefish [66261]		Species or species habitat may occur within area
Mitotichthys tuckeri Tucker's Pipefish [66262]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area

Mammal		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area

Whales and Other Cetaceans [Resource Information]		
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence	
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	
Extra Information			
Regional Forest Agreements		[Resource Information]	
Note that all areas with completed RFAs have been included.			
RFA Name		State	
Tasmania RFA		Tasmania	
EPBC Act Referrals		[Resource Information]	
Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Tasmania Natural Gas Project - Stage 3	2001/212	Controlled Action	Post-Approval
Not controlled action			
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Biologically Important Areas			
Scientific Name		Behaviour	Presence
Seabirds			
Ardeanna grisea Sooty Shearwater [82651]		Foraging	Known to occur
Ardeanna tenuirostris Short-tailed Shearwater [82652]		Foraging	Known to occur
Pelecanoides urinatrix Common Diving-petrel [1018]		Foraging	Known to occur
Pterodroma mollis Soft-plumaged Petrel [1036]		Foraging	Known to occur
Thalassarche cauta cauta Shy Albatross [82345]		Foraging likely	Likely to occur

Scientific Name	Behaviour	Presence
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Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

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APPENDIX C – ATLAS OF LIVING AUSTRALIA SEARCH



AREA REPORT

Area: 0.14 sq km	Species: 15	Occurrences: 24
Endemic species: 0	All threatened species: 1	Migratory species: 0
All invasive species: 2	Iconic species: 1	JournalMap Articles: 0
Animals: 8	Plants: 7	Birds: 0

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new area

Area: 0.14 sq km

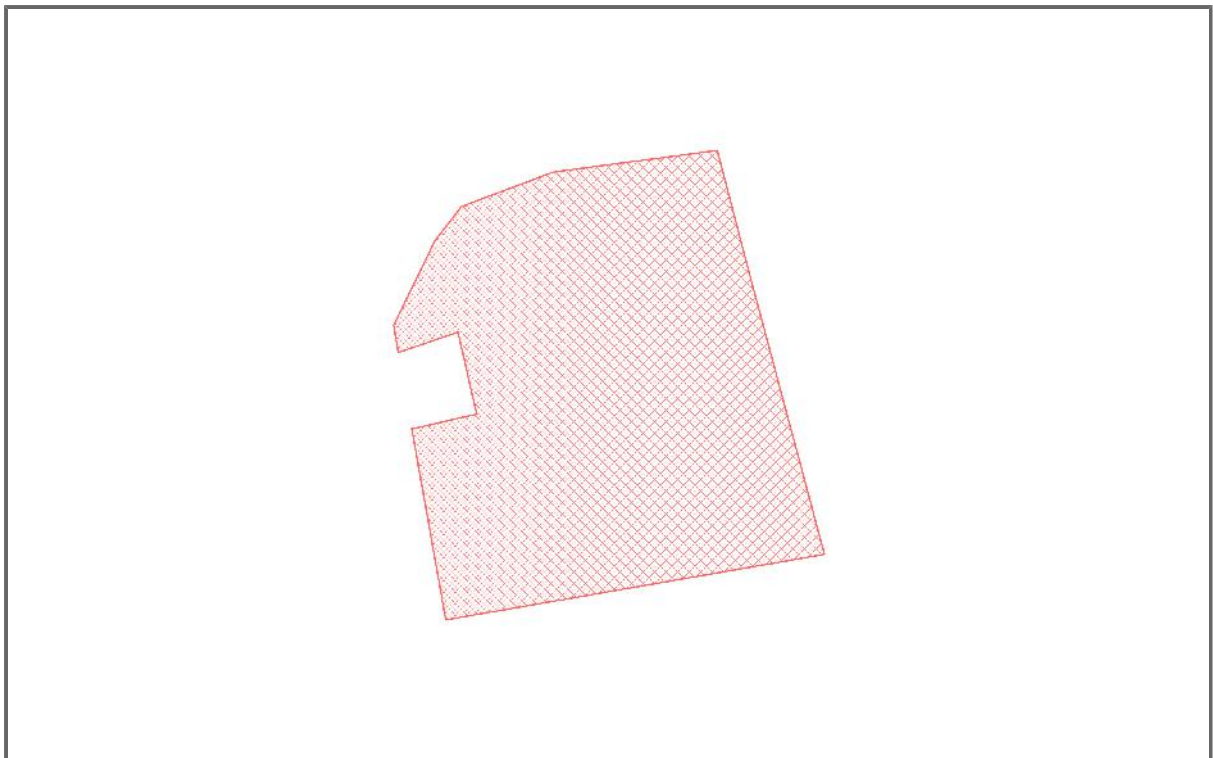
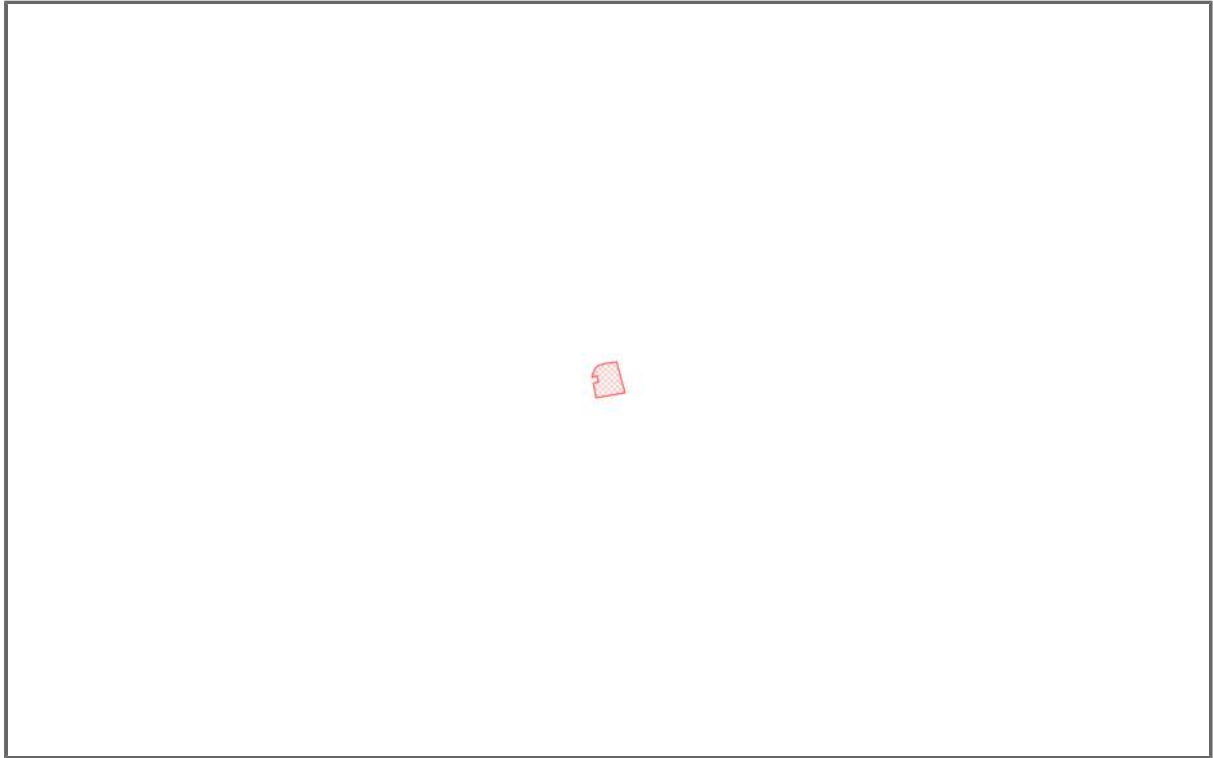


Figure 1 : Map of new area

Occurrences

Occurrences: **24**

Spatially valid records are considered those that do not have any type of flag questioning their location, for example a terrestrial species being recorded in the ocean. [Ref6]

Number of occurrences (spatially valid only): **24**

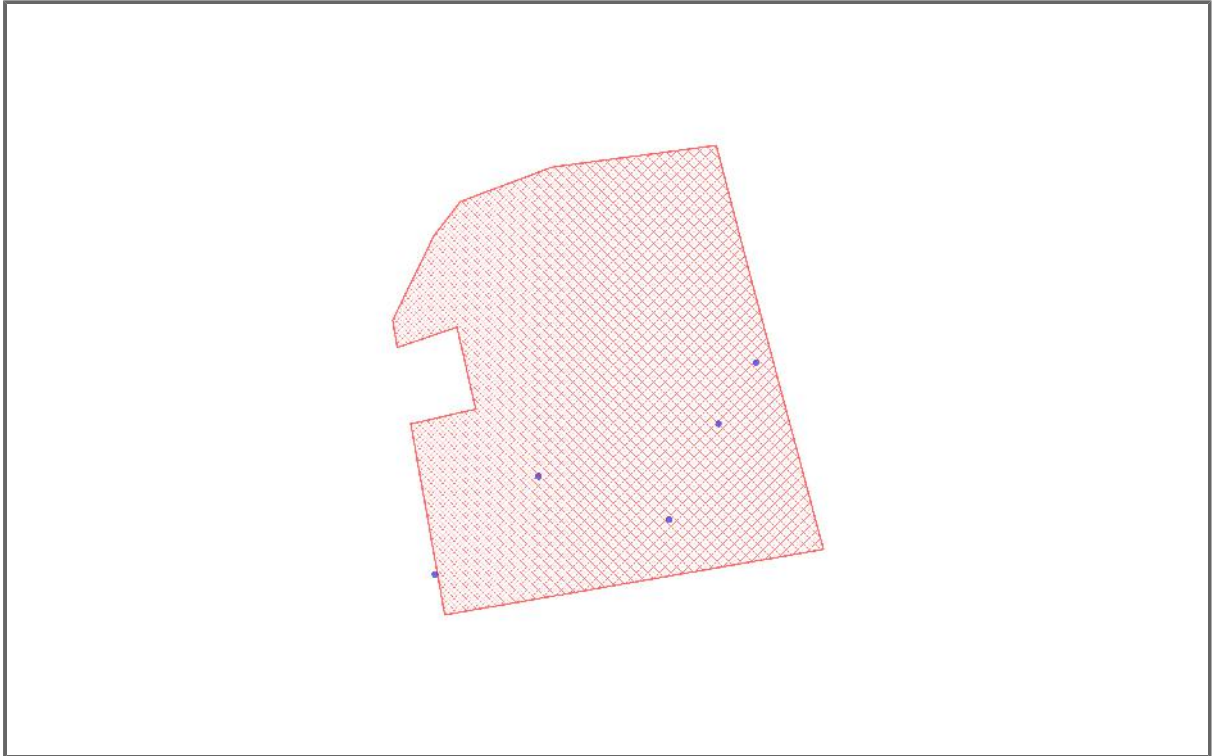


Figure 2 : Map of Occurrences

Species

Species: **15**

Spatially valid records are considered those that do not have any type of flag questioning their location, for example a terrestrial species being recorded in the ocean. [Ref6]

Number of species (spatially valid only): **15**

Table 1: Species

Family	Scientific Name	Common Name	No. Occurrences
Plesiopidae	Trachinops caudimaculatus	Southern Hulafish	6
Syngnathidae	Hippocampus abdominalis	Manaia	3
Casuarinaceae	Allocasuarina littoralis	Fire oak	2
Potoroidae	Potorous tridactylus apicalis		2
Aracanidae	Aracana ornata	ornate cowfish	1
Rubiaceae	Asperula scoparia subsp. scoparia	Prickly Woodruff	1
Fabaceae	Daviesia latifolia		1
Hemerocallidaceae	Dianella revoluta var. revoluta		1
Boraginaceae	Echium plantagineum		1
Syngnathidae	Hippocampus	seahorses	1
Platycephalidae	PLATYCEPHALIDAE	flatheads	1
Philine	Philine		1
Rhamnaceae	Pomaderris elliptica var. diemenica		1
Brassicaceae	Sinapis arvensis		1
Urolophidae	Urolophus cruciatus	Banded Stingaree	1

Endemic Species

Endemic Species: 0

Spatially valid records are considered those that do not have any type of flag questioning their location, for example a terrestrial species being recorded in the ocean. [Ref6]

Number of endemic species (spatially valid only): 0

Table 2: Endemic Species

Family	Scientific Name	Common Name	No. Occurrences
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All threatened species

Number of threatened species: 1

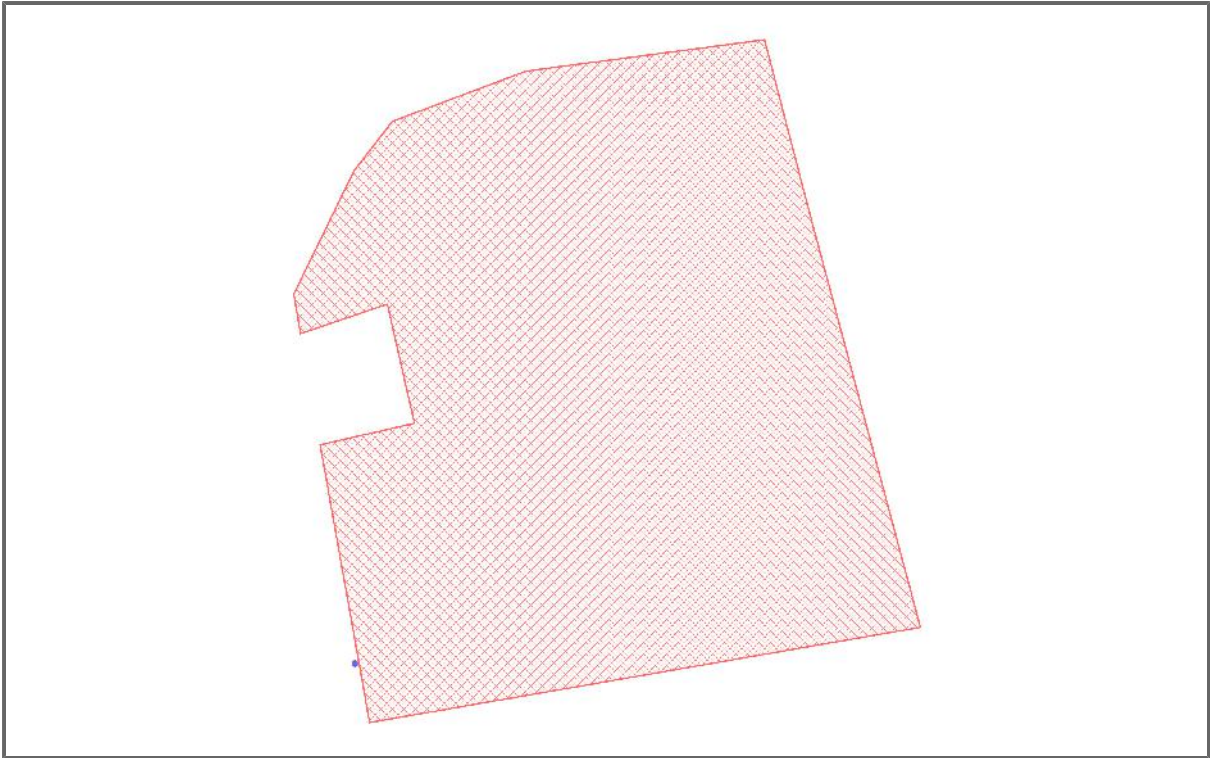


Figure 3 : Map of All threatened species

Table 3: All threatened species [\(Link to full list\)](#)

Family	Scientific Name	Common Name	No. Occurrences
Rubiaceae	Asperula scoparia subsp. scoparia	Prickly Woodruff	1

All invasive species

Number of invasive species: 2

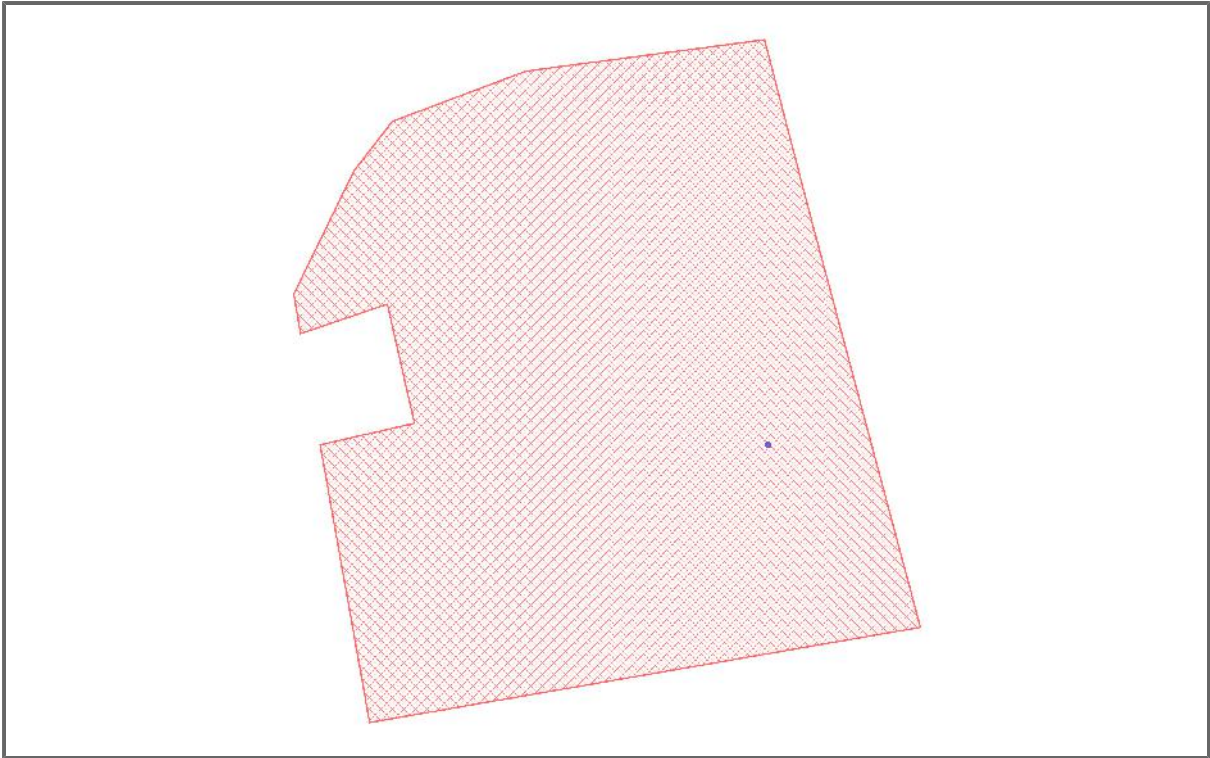


Figure 4 : Map of All invasive species

Table 4: All invasive species [\(Link to full list\)](#)

Family	Scientific Name	Common Name	No. Occurrences
Boraginaceae	Echium plantagineum		1
Brassicaceae	Sinapis arvensis		1

Iconic species

Number of iconic species: 1

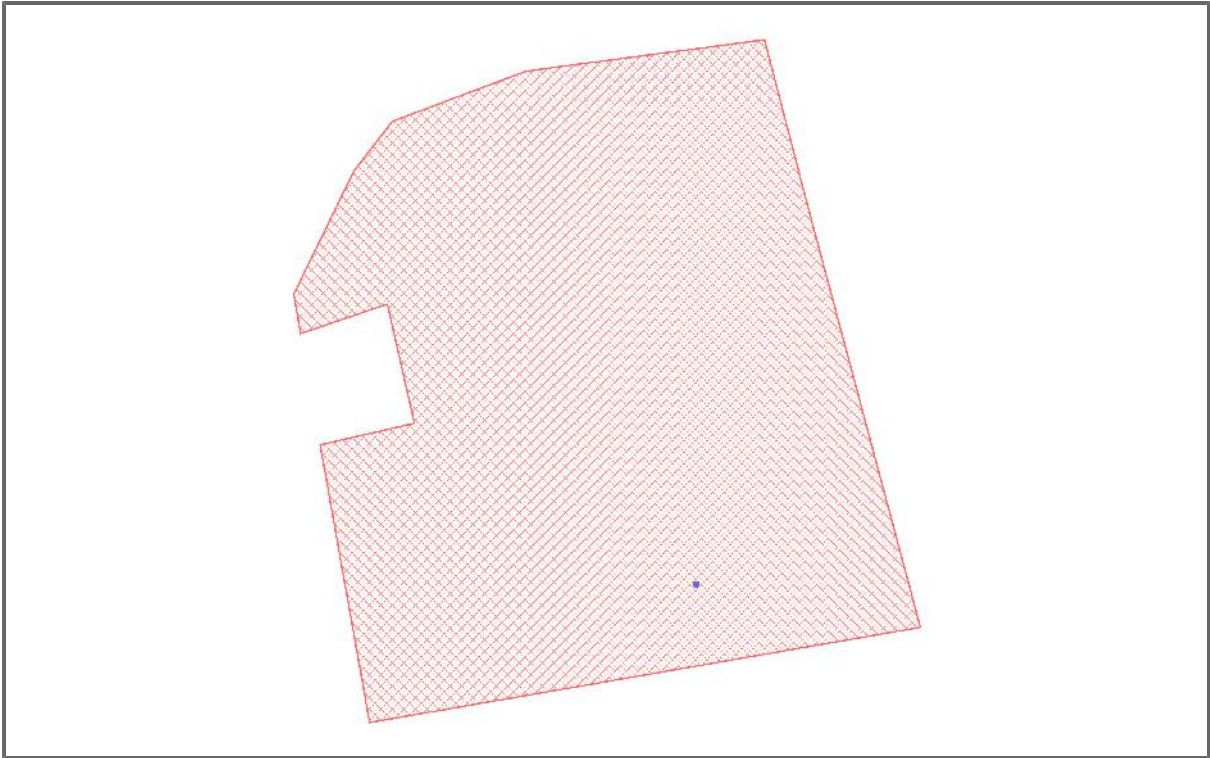


Figure 5 : Map of Iconic species

Table 5: Iconic species [\(Link to full list\)](#)

Family	Scientific Name	Common Name	No. Occurrences
Casuarinaceae	Allocasuarina littoralis	Fire oak	2

Migratory species

Number of migratory species: 0

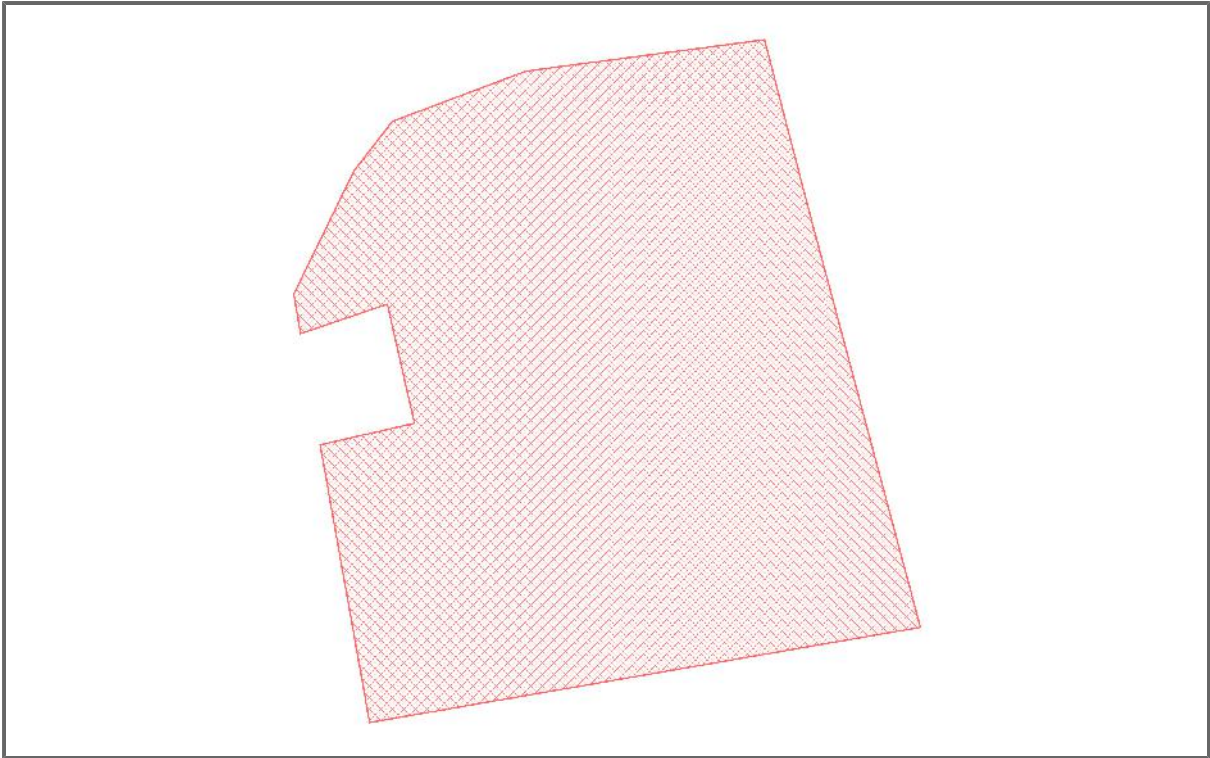


Figure 6 : Map of Migratory species

Table 6:Migratory species [\(Link to full list\)](#)

Family	Scientific Name	Common Name	No. Occurrences
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Lifeform - Algae

Number of Algae 0

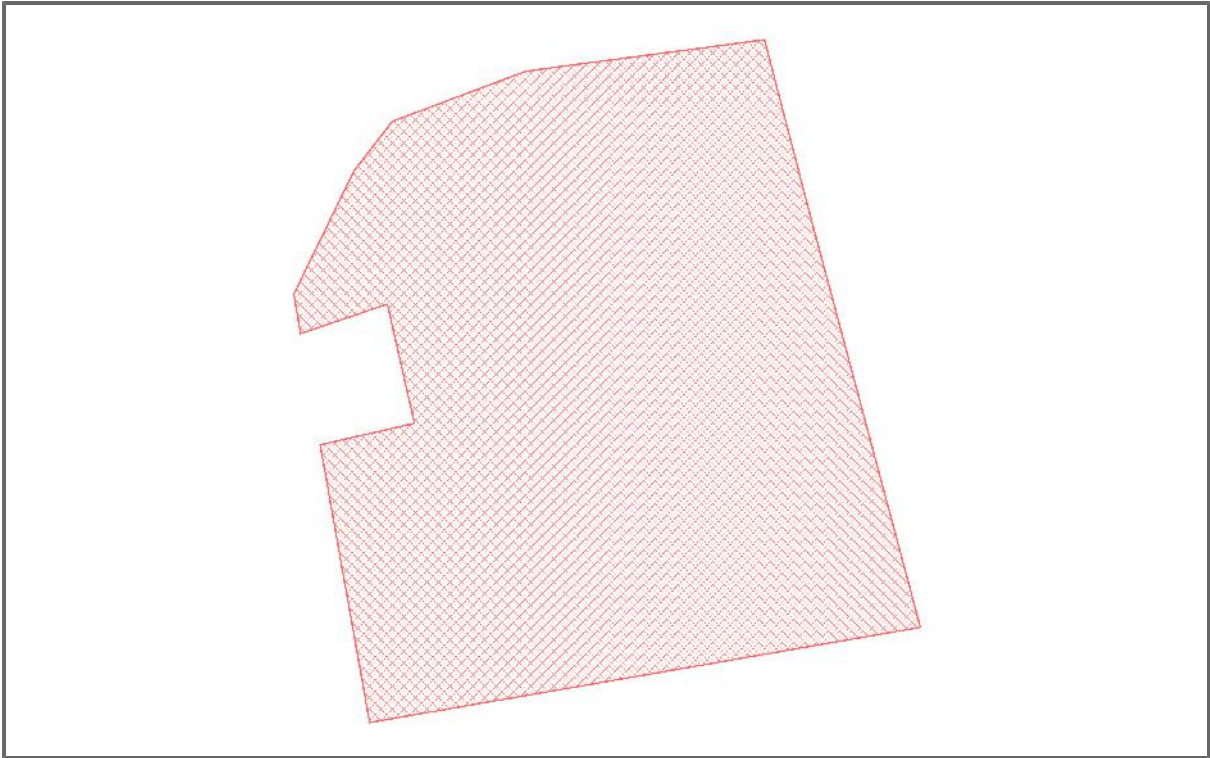


Figure 7 : Map of Lifeform - Algae

Table 7: Lifeform - Algae [\(Link to full list\)](#)

Family	Scientific Name	Common Name	No. Occurrences
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Lifeform - Animals

Number of Animals 8

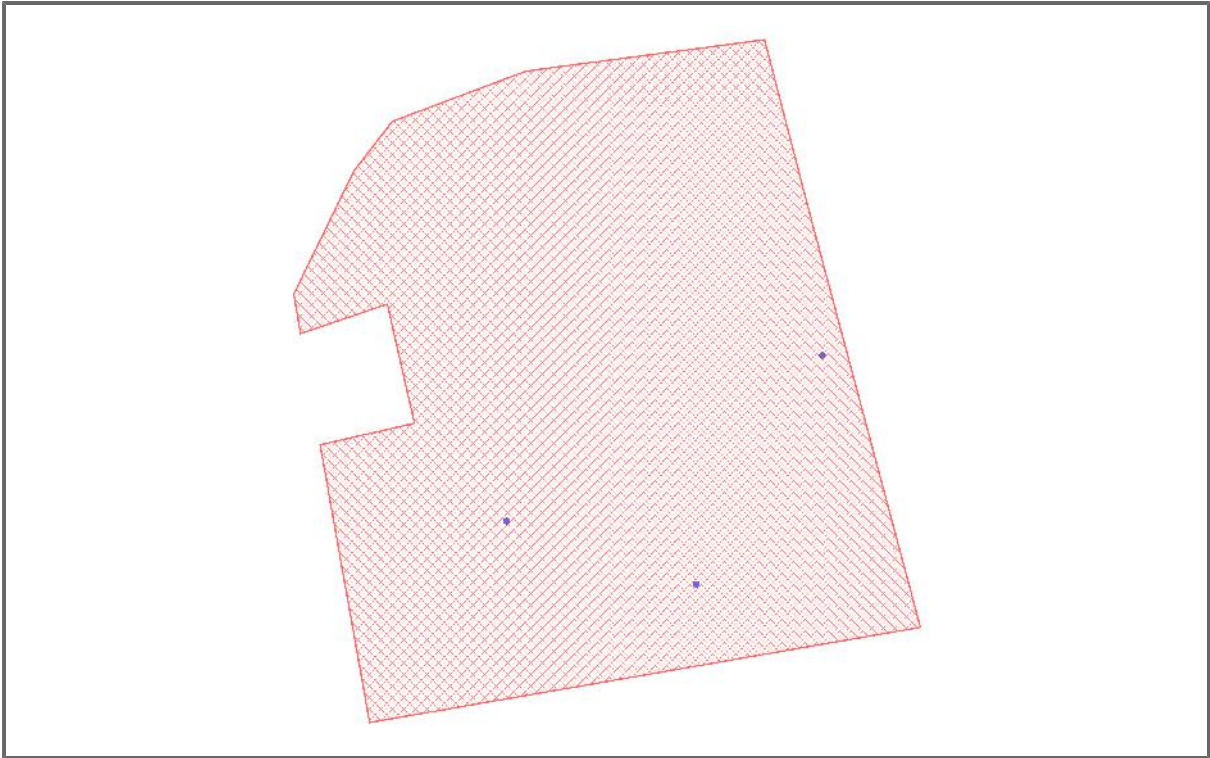


Figure 8 : Map of Lifeform - Animals

Table 8: Lifeform - Animals [\(Link to full list\)](#)

Family	Scientific Name	Common Name	No. Occurrences
Plesiopidae	Trachinops caudimaculatus	Southern Hulafish	6
Syngnathidae	Hippocampus abdominalis	Manaia	3
Potoroidae	Potorous tridactylus apicalis		2
Aracanidae	Aracana ornata	ornate cowfish	1
Syngnathidae	Hippocampus	seahorses	1
Platycephalidae	PLATYCEPHALIDAE	flatheads	1
Philinidae	Philine		1
Urolophidae	Urolophus cruciatus	Banded Stingaree	1

Lifeform - Arthropods

Number of Arthropods 0

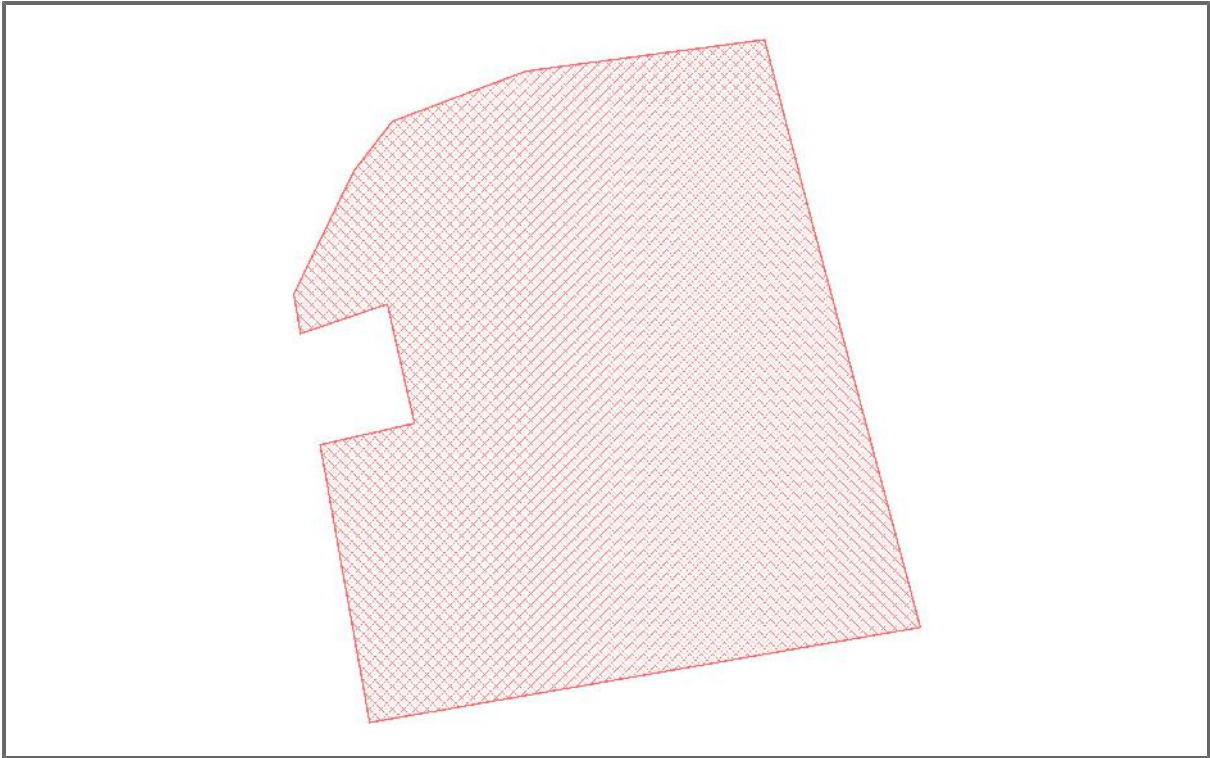


Figure 9 : Map of Lifeform - Arthropods

Table 9: Lifeform - Arthropods ([Link to full list](#))

Family	Scientific Name	Common Name	No. Occurrences
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Lifeform - Bacteria

Number of Bacteria 0

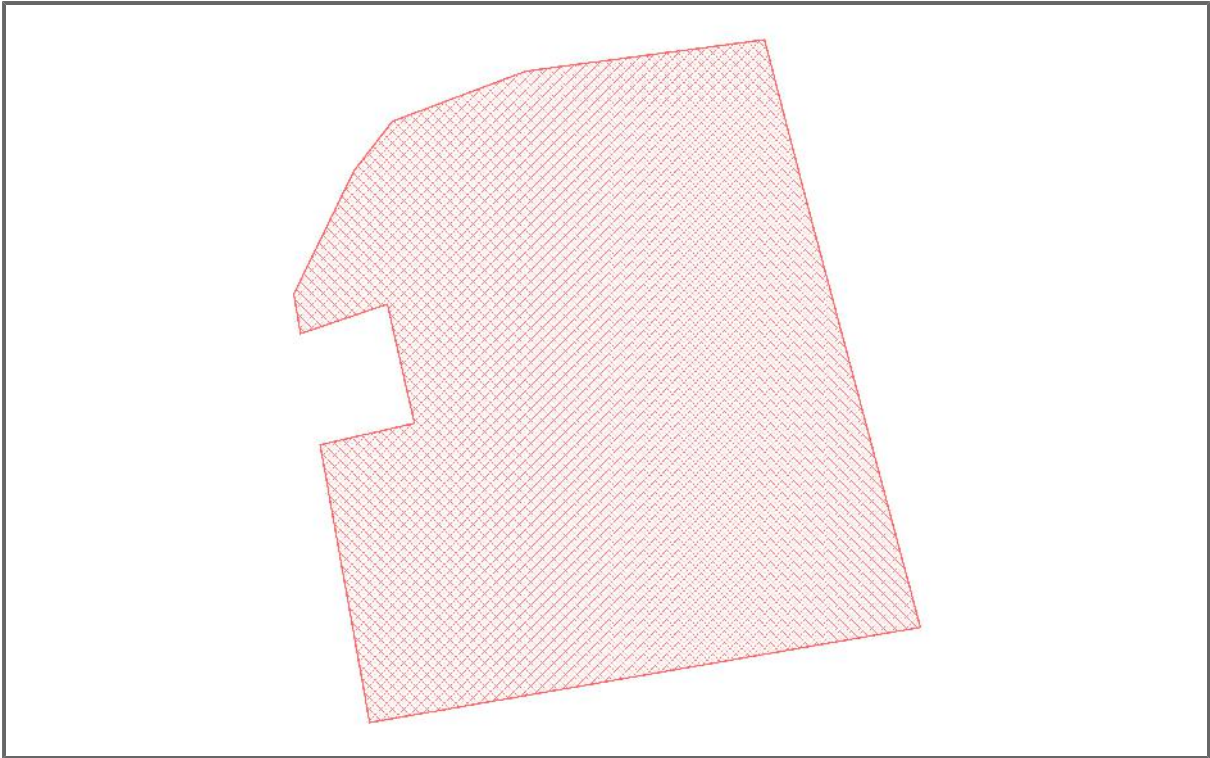


Figure 10 : Map of Lifeform - Bacteria

Table 10: Lifeform - Bacteria [\(Link to full list\)](#)

Family	Scientific Name	Common Name	No. Occurrences
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Lifeform - Birds

Number of Birds 0

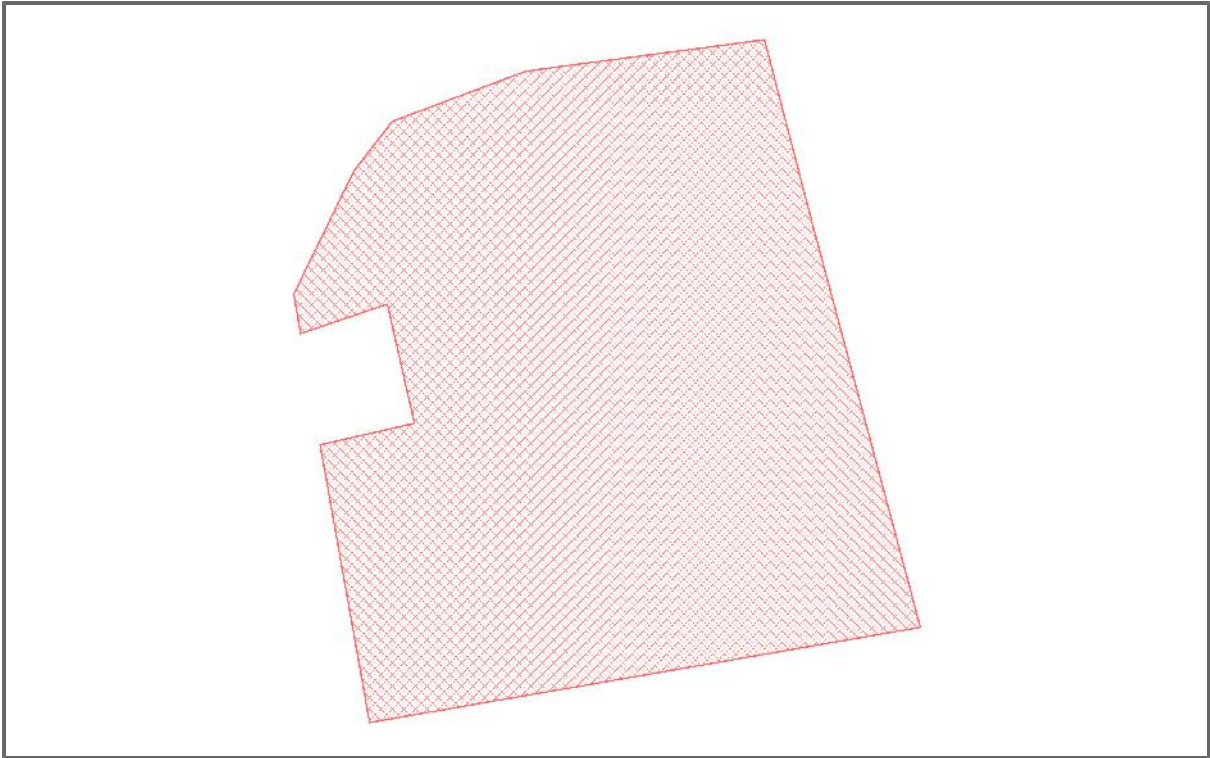


Figure 11 : Map of Lifeform - Birds

Table 11: Lifeform - Birds [\(Link to full list\)](#)

Family	Scientific Name	Common Name	No. Occurrences
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Lifeform - Chromista

Number of Chromista 0

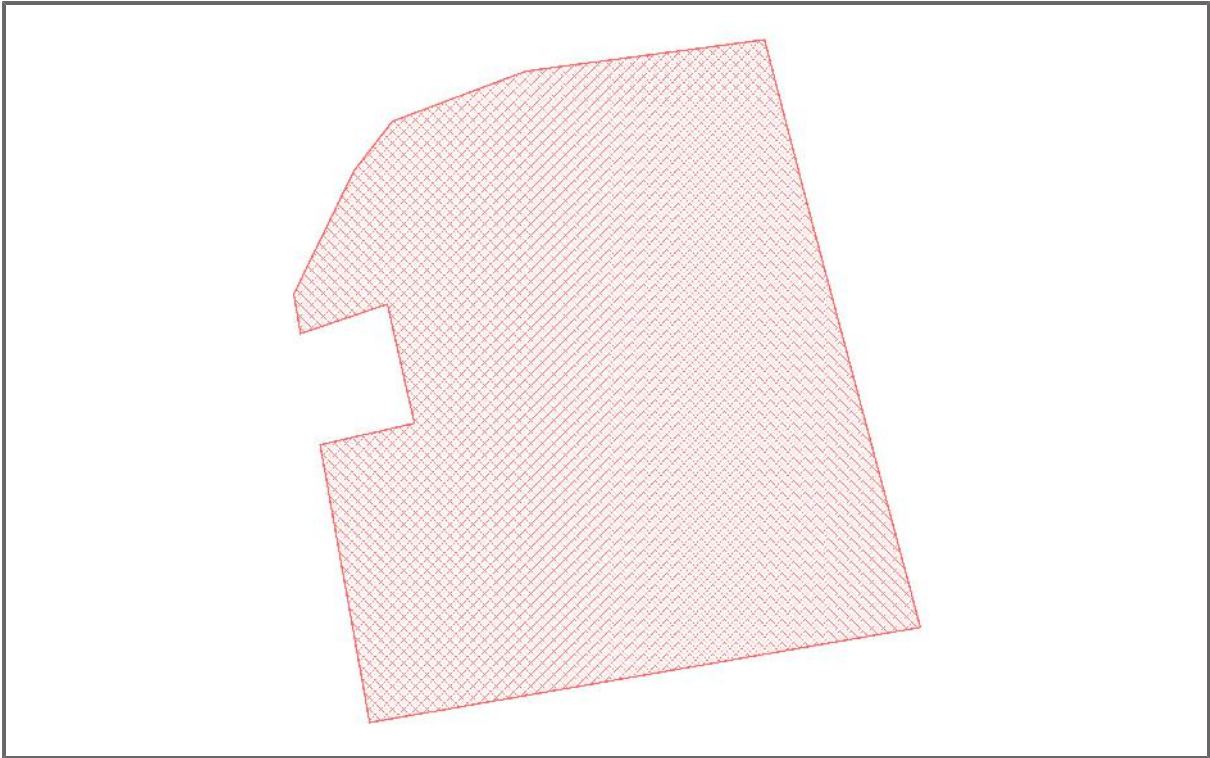


Figure 12 : Map of Lifeform - Chromista

Table 12: Lifeform - Chromista ([Link to full list](#))

Family	Scientific Name	Common Name	No. Occurrences
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Lifeform - Crustaceans

Number of Crustaceans 0

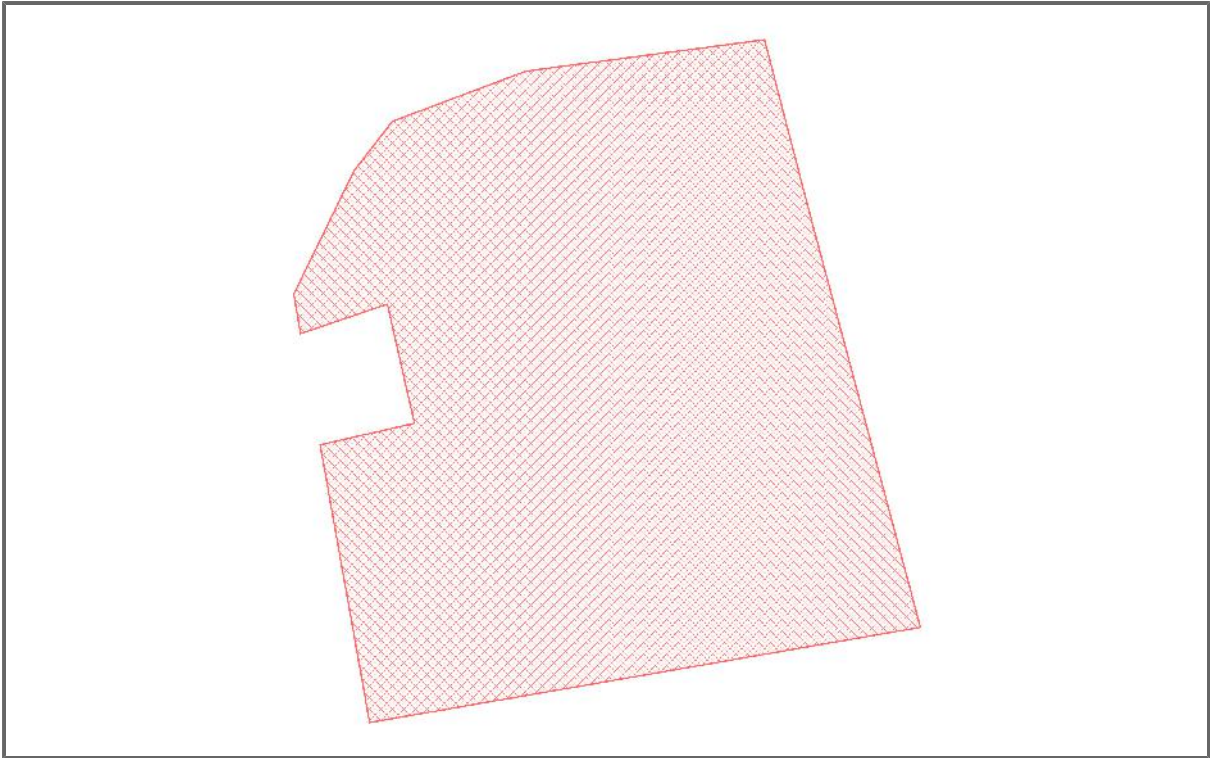


Figure 13 : Map of Lifeform - Crustaceans

Table 13: Lifeform - Crustaceans [\(Link to full list\)](#)

Family	Scientific Name	Common Name	No. Occurrences
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Lifeform - Fishes

Number of Fishes 6

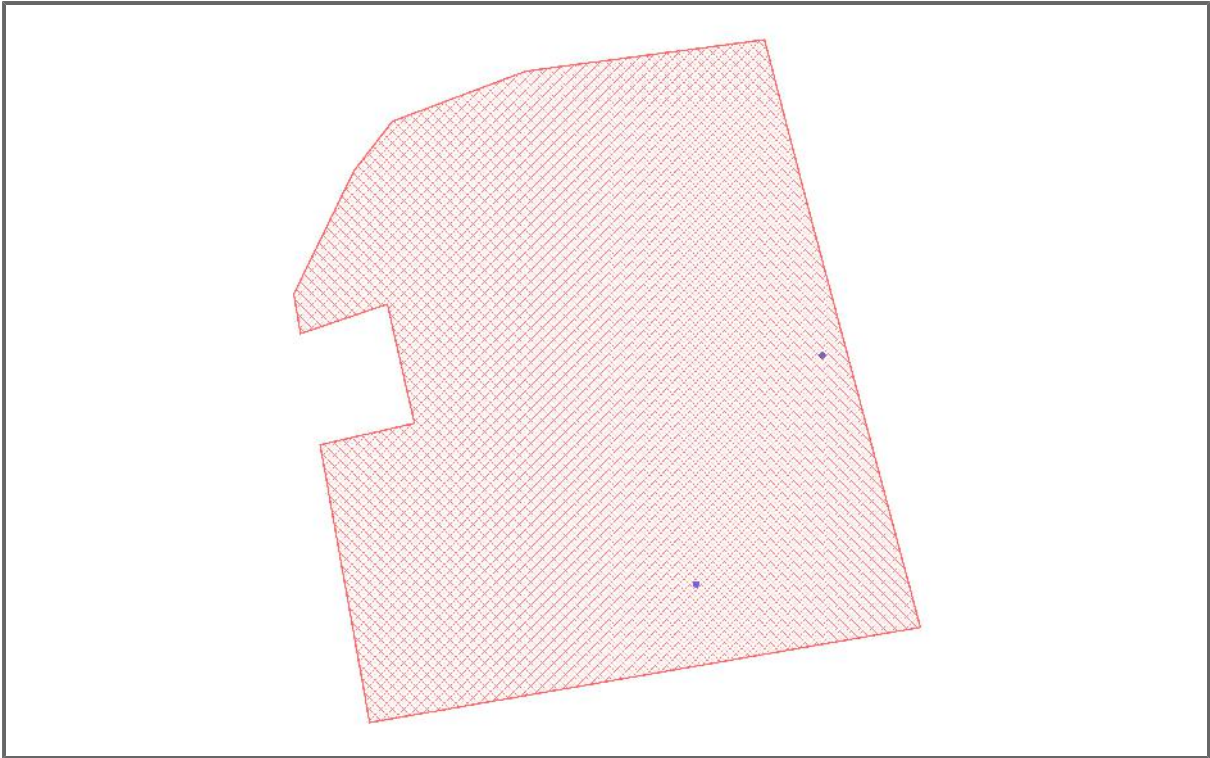


Figure 14 : Map of Lifeform - Fishes

Table 14: Lifeform - Fishes [\(Link to full list\)](#)

Family	Scientific Name	Common Name	No. Occurrences
Plesiopidae	Trachinops caudimaculatus	Southern Hulafish	6
Syngnathidae	Hippocampus abdominalis	Manaia	3
Aracanidae	Aracana ornata	ornate cowfish	1
Syngnathidae	Hippocampus	seahorses	1
Platycephalidae	PLATYCEPHALIDAE	flatheads	1
Urolophidae	Urolophus cruciatus	Banded Stingaree	1

Lifeform - Mammals

Number of Mammals 1

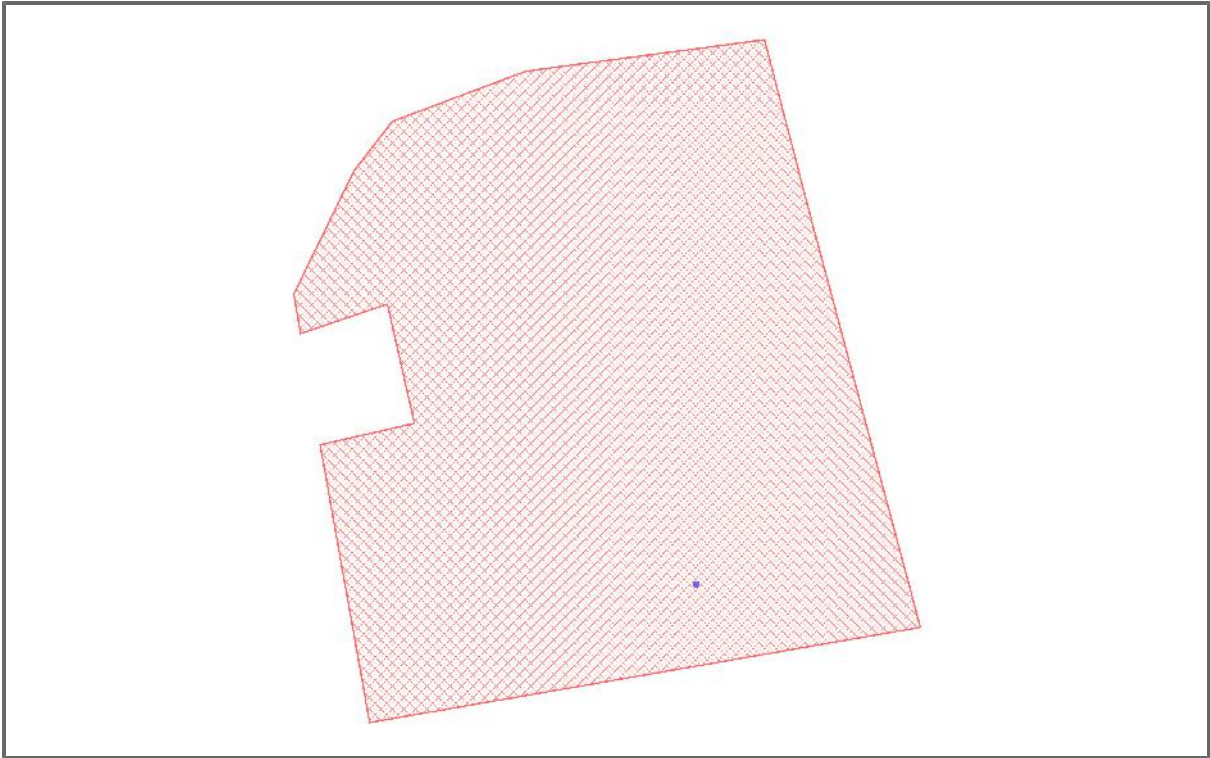


Figure 15 : Map of Lifeform - Mammals

Table 15: Lifeform - Mammals [\(Link to full list\)](#)

Family	Scientific Name	Common Name	No. Occurrences
Potoroidae	Potorous tridactylus apicalis		2

Lifeform - Molluscs

Number of Molluscs 1

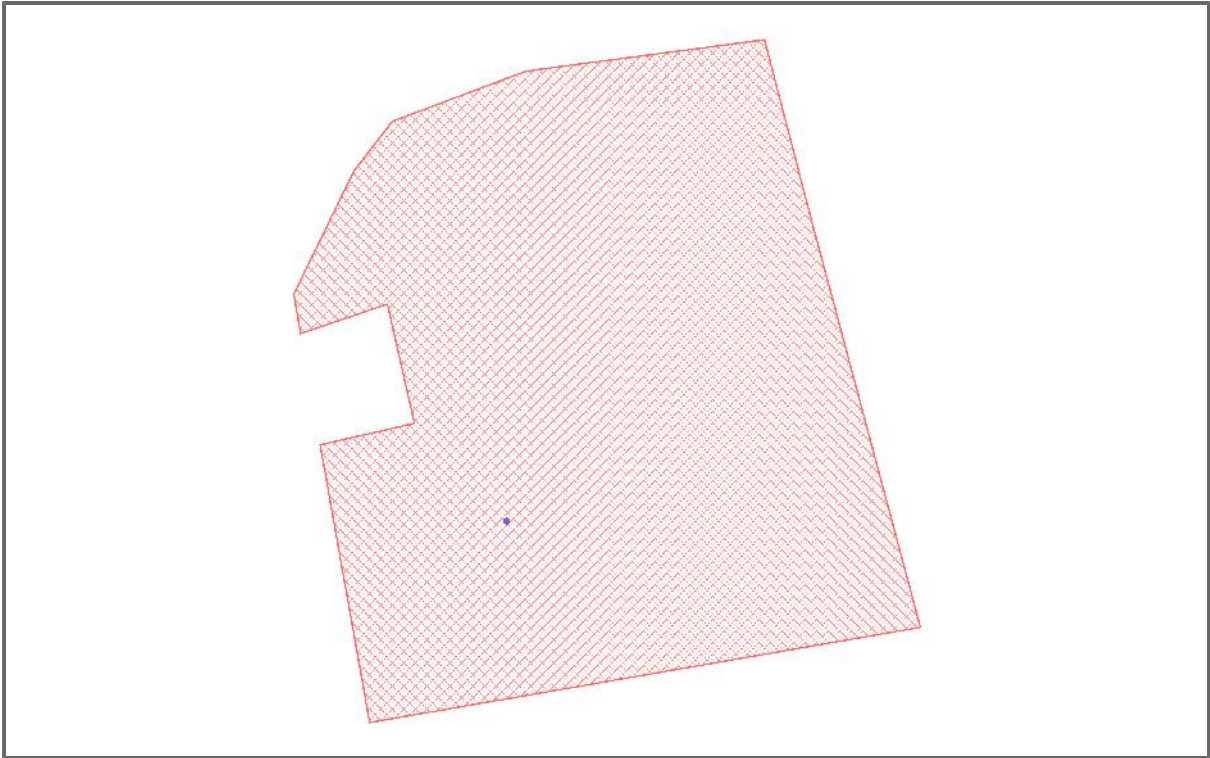


Figure 16 : Map of Lifeform - Molluscs

Table 16: Lifeform - Molluscs [\(Link to full list\)](#)

Family	Scientific Name	Common Name	No. Occurrences
Philinidae	Philine		1

Lifeform - Protozoa

Number of Protozoa 0

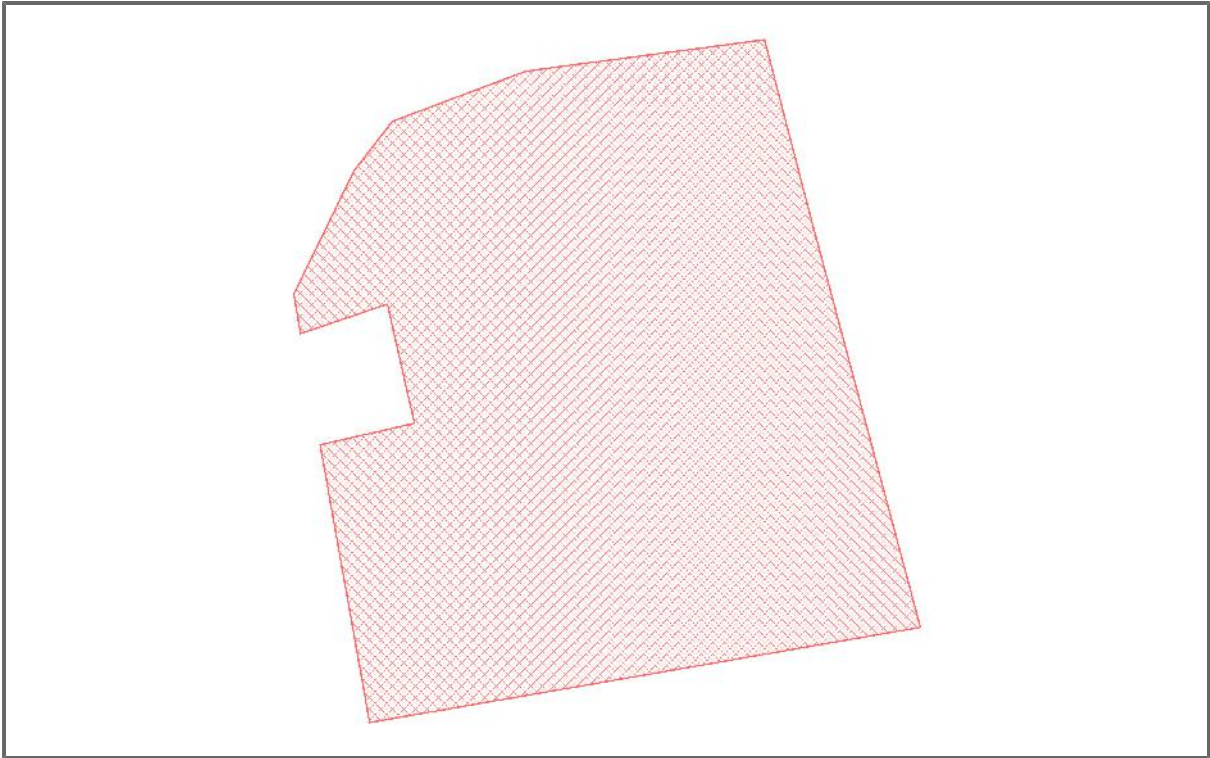


Figure 17 : Map of Lifeform - Protozoa

Table 17: Lifeform - Protozoa [\(Link to full list\)](#)

Family	Scientific Name	Common Name	No. Occurrences
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Expert Distributions

Number of expert distributions: **136**

Table 18: Expert Distributions

Family	Scientific Name	Common Name	Min Depth	Max Depth	Area Name	Area sq km
Orchidaceae	<i>Pterostylis ziegeleri</i>	Grassland Greenhood, Cape Portland Greenhood			Expert distribution (maybe) <i>Pterostylis ziegeleri</i>	
Dasyuridae	<i>Sarcophilus harrisii</i>	Tasmanian Devil			Expert distribution (likely) <i>Sarcophilus harrisii</i>	
Orchidaceae	<i>Caladenia caudata</i>	Tailed Spider-orchid			Expert distribution (likely) <i>Caladenia caudata</i>	
Asterinidae	<i>Parvulastra vivipara</i>	Tasmanian Live-bearing Seastar			Expert distribution (maybe) <i>Parvulastra vivipara</i>	
Charopidae	<i>Discocharopa vigens</i>	a land snail, a charopid land snail			Expert distribution (likely) <i>Discocharopa vigens</i>	
Hesperiidae	<i>Antipodia chaostola leucophaea</i>	Tasmanian Chaostola Skipper, Heath-sand Skipper			Expert distribution (likely) <i>Antipodia chaostola leucophaea</i>	
Orchidaceae	<i>Thelymitra jonesii</i>	Sky-blue Sun-orchid			Expert distribution (maybe) <i>Thelymitra jonesii</i>	
Orchidaceae	<i>Prasophyllum apoxychilum</i>	Tapered Leek-orchid			Expert distribution (maybe) <i>Prasophyllum apoxychilum</i>	
MALURIDAE	<i>Malurus (Malurus) cyaneus</i>	Superb Fairy-wren			Expert distribution <i>Malurus cyaneus</i>	1243356.340395255
Brachionichthyidae	<i>Thymichthys politus</i>	Red Handfish			Expert distribution (maybe) <i>Thymichthys politus</i>	
Diomedidae	<i>Diomedea epomophora (sensu stricto)</i>	Southern Royal Albatross			Expert distribution (likely) <i>Diomedea epomophora (sensu stricto)</i>	
Diomedidae	<i>Diomedea epomophora epomophora</i>	Southern Royal Albatross			Expert distribution (likely) <i>Diomedea epomophora epomophora</i>	
Delphinidae	<i>Lagenorhynchus obscurus</i>	Dusky Dolphin			Expert distribution (maybe) <i>Lagenorhynchus obscurus</i>	
Diomedidae	<i>Thalassarche steadi</i>	White-capped Albatross			Expert distribution (likely) <i>Thalassarche steadi</i>	
Diomedidae	<i>Thalassarche cauta steadi</i>	White-capped Albatross			Expert distribution (likely) <i>Thalassarche cauta steadi</i>	
Balaenopteridae	<i>Megaptera novaeangliae</i>	Humpback Whale			Expert distribution (maybe) <i>Megaptera novaeangliae</i>	
Delphinidae	<i>Orcinus orca</i>	Killer Whale, Orca			Expert distribution (maybe) <i>Orcinus orca</i>	
CHARADRIIDAE	<i>Pluvialis fulva</i>	Pacific Golden Plover			Expert distribution <i>Pluvialis fulva</i>	7571696.635213181
PROCELLARIIDAE	<i>Pterodroma (Cookilaria) leucoptera</i>	Gould's Petrel			Expert distribution <i>Pterodroma leucoptera</i>	4.9544964119448155E7
PROCELLARIIDAE	<i>Puffinus (Puffinus) assimilis</i>	Little Shearwater			Expert distribution <i>Puffinus assimilis</i>	5.8559943045880064E7
PHASIANIDAE	<i>Phasianus colchicus</i>	Common Pheasant			Expert distribution <i>Phasianus colchicus</i>	1.6815917878408086E7
STERCORARIIDAE	<i>Stercorarius parasiticus</i>	Arctic Jaeger			Expert distribution <i>Stercorarius parasiticus</i>	2.199881769543429E7
DIOMEDEIDAE	<i>Thalassarche bulleri</i>	Buller's Albatross			Expert distribution <i>Thalassarche bulleri</i>	1.5735003067942105E7
COLUMBIDAE	<i>Columba (Columba) livia</i>	Rock Dove			Expert distribution <i>Columba livia</i>	4.0132736330543496E7

Diomedidae	Thalassarche steadi	White-capped Albatross	Expert distribution Thalassarche steadi	7.792522667471914E7
PROCELLARIIDAE	Pachyptila belcheri	Slender-billed Prion	Expert distribution Pachyptila belcheri	5.734158393569749E7
PROCELLARIIDAE	Ardenna carneipes	Flesh-footed Shearwater	Expert distribution Puffinus carneipes	1.110908151657407E8
STERCORCARIIDAE	Stercorarius pomarinus	Pomarine Jaeger	Expert distribution Stercorarius pomarinus	8.454859714656392E7
Diomedidae	Thalassarche eremita	Chatham Albatross	Expert distribution Thalassarche eremita	4.712208555856114E7
DIOMEDEIDAE	Thalassarche cauta	Shy Albatross	Expert distribution Thalassarche cauta	8.004832269408609E7
Diomedidae	Thalassarche salvini	Salvin's Albatross	Expert distribution Thalassarche salvini	4.339806849825634E7
OCEANITIDAE	Fregetta tropica	Black-bellied Storm-petrel	Expert distribution Fregetta tropica	1.9253724315203547E8
PROCELLARIIDAE	Daption capense	Cape Petrel	Expert distribution Daption capense	1.3657536698388353E8
PROCELLARIIDAE	Procellaria (Adamastor) cinerea	Grey Petrel	Expert distribution Procellaria cinerea	7.432570978397079E7
LARIDAE	Sternula albifrons	Little Tern	Expert distribution Sterna albifrons	2.4775665422168545E7
PROCELLARIIDAE	Puffinus griseus	Sooty Shearwater	Expert distribution Puffinus griseus	3.0814371300453067E8
OCEANITIDAE	Pelagodroma marina	White-faced Storm-petrel	Expert distribution Pelagodroma marina	1.0528568742486809E8
SCOLOPACIDAE	Limicola falcinellus	Broad-billed Sandpiper	Expert distribution Limicola falcinellus	3033885.919544636
OCEANITIDAE	Oceanites oceanicus	Wilson's Storm-petrel	Expert distribution Oceanites oceanicus	2.6520828735940558E8
PROCELLARIIDAE	Puffinus (Puffinus) huttoni	Hutton's Shearwater	Expert distribution Puffinus huttoni	4018352.6633580597
FRINGILLIDAE	Carduelis chloris	Greenfinch	Expert distribution Carduelis chloris	1.0478396560826305E7
LARIDAE	Thalasseus bergii	Crested Tern	Expert distribution Sterna bergii	4.262120532110755E7
PROCELLARIIDAE	Pterodroma (Unplaced) inexpectata	Mottled Petrel	Expert distribution Pterodroma inexpectata	1.0834004601552314E8
PROCELLARIIDAE	Procellaria (Procellaria) aequinoctialis	White-chinned Petrel	Expert distribution Procellaria aequinoctialis	8.663485987258756E7
PHALACROCORACIDAE	Phalacrocorax (Anacarro) fuscens	Black-faced Cormorant	Expert distribution Phalacrocorax fuscens	203378.26753375825
Procellariidae	Pterodroma leucoptera leucoptera	Gould's Petrel	Expert distribution (maybe) Pterodroma leucoptera leucoptera	
Ardeidae	Ardea alba	Great Egret, White Egret	Expert distribution (likely) Ardea alba	
Diomedidae	Diomedea sanfordi	Northern Royal Albatross	Expert distribution (likely) Diomedea sanfordi	
Diomedidae	Diomedea epomophora sanfordi	Northern Royal Albatross	Expert distribution (likely) Diomedea epomophora sanfordi	
Lamnidae	Carcharodon carcharias	Great White Shark	Expert distribution (likely) Carcharodon carcharias	
Diomedidae	Thalassarche cauta (sensu stricto)	Shy Albatross, Tasmanian Shy Albatross	Expert distribution (likely) Thalassarche cauta (sensu stricto)	
Diomedidae	Thalassarche cauta cauta	Shy Albatross, Tasmanian Shy Albatross	Expert distribution (likely) Thalassarche cauta cauta	
		Flesh-footed Shearwater,	Expert distribution (likely)	

Procellariidae	Puffinus carneipes	Fleshy-footed Shearwater	Puffinus carneipes	
Accipitridae	Haliaeetus leucogaster	White-bellied Sea-Eagle	Expert distribution (likely) Haliaeetus leucogaster	
Diomedeidae	Diomedea antipodensis	Antipodean Albatross	Expert distribution (likely) Diomedea antipodensis	
Diomedeidae	Thalassarche carteri	Indian Yellow-nosed Albatross	Expert distribution (likely) Thalassarche carteri	
Diomedeidae	Diomedea exulans gibsoni	Gibson's Albatross	Expert distribution (likely) Diomedea exulans gibsoni	
Diomedeidae	Thalassarche cauta salvini	Salvin's Albatross	Expert distribution (likely) Thalassarche cauta salvini	
Diomedeidae	Thalassarche salvini	Salvin's Albatross	Expert distribution (likely) Thalassarche salvini	
Diomedeidae	Diomedea gibsoni	Gibson's Albatross	Expert distribution (likely) Diomedea gibsoni	
Laridae	Sternula nereis nereis	Australian Fairy Tern	Expert distribution (likely) Sternula nereis nereis	
MELIPHAGIDAE	Manorina (Myzantha) melanocephala	Noisy Miner	Expert distribution Manorina melanocephala	2072642.7869011532
CACATUIDAE	Eolophus roseicapillus roseicapillus	Galah	Expert distribution Cacatua roseicapilla	7705836.893658913
ACCIPITRIDAE	Elanus axillaris	Black-shouldered Kite	Expert distribution Elanus axillaris	7680926.926024271
LARIDAE	Chroicocephalus novaehollandiae novaehollandiae	Silver Gull	Expert distribution Larus novaehollandiae	7828185.178686493
Procellariidae	Macronectes halli	Northern Giant-Petrel	Expert distribution (maybe) Macronectes halli	
Procellariidae	Macronectes giganteus	Southern Giant-Petrel	Expert distribution (likely) Macronectes giganteus	
Diomedeidae	Diomedea exulans exulans	Tristan Albatross	Expert distribution (maybe) Diomedea exulans exulans	
Diomedeidae	Diomedea dabbenena	Tristan Albatross	Expert distribution (maybe) Diomedea dabbenena	
SPHENISCIDAE	Eudyptes pachyrhynchus	Fiordland Penguin	Expert distribution Eudyptes pachyrhynchus	1238504.1942874868
PROCELLARIIDAE	Pachyptila salvini	Salvin's Prion	Expert distribution Pachyptila salvini	2.959628655822681E7
LARIDAE	Sterna (Sterna) striata	White-fronted Tern	Expert distribution Sterna striata	231858.17767031243
PROCELLARIIDAE	Puffinus (Puffinus) gavia	Fluttering Shearwater	Expert distribution Puffinus gavia	1.026059415854687E7
Diomedeidae	Thalassarche carteri	Indian Yellow-nosed Albatross	Expert distribution Thalassarche carteri	3.4594895528503254E7
DIOMEDEIDAE	Diomedea exulans	Wandering Albatross	Expert distribution Diomedea exulans	8.830526778032972E7
PROCELLARIIDAE	Pterodroma (Pterodroma) macroptera	Great-winged Petrel	Expert distribution Pterodroma macroptera	5.838446048366017E7
DIOMEDEIDAE	Diomedea epomophora sanfordi	Northern Royal Albatross	Expert distribution Diomedea sanfordi	5.64393092475914E7
DIOMEDEIDAE	Diomedea epomophora	Royal Albatross	Expert distribution Diomedea epomophora	5.646881698204961E7
OCEANITIDAE	Garrodia nereis	Grey-backed Storm-petrel	Expert distribution Garrodia nereis	2.8447588107581872E7
Diomedeidae	Diomedea antipodensis	Antipodean Albatross	Expert distribution Diomedea antipodensis	3.752288233934419E7
PROCELLARIIDAE	Macronectes halli	Northern Giant-petrel	Expert distribution Macronectes halli	8.859143571910456E7

Diomedidae	Thalassarche impavida	Campbell Albatross	Expert distribution Thalassarche impavida	3.177517017598996E7
PROCELLARIIDAE	Pterodroma (Pterodroma) lessonii	White-headed Petrel	Expert distribution Pterodroma lessonii	7.488411221486267E7
PROCELLARIIDAE	Pachyptila desolata	Antarctic Prion	Expert distribution Pachyptila desolata	8.412237226667722E7
	Stercorarius lonnbergi		Expert distribution Stercorarius lonnbergi	8.556443576172975E7
PROCELLARIIDAE	Lugensa brevirostris	Kerguelen Petrel	Expert distribution Lugensa brevirostris	6.004690013239411E7
PROCELLARIIDAE	Macronectes giganteus	Southern Giant-petrel	Expert distribution Macronectes giganteus	9.476233635584523E7
PROCELLARIIDAE	Fulmarus glacialis	Southern Fulmar	Expert distribution Fulmarus glacialis	9.746356833449008E7
Peramelidae	Perameles gunnii gunnii	Eastern Barred Bandicoot (Tasmania)	Expert distribution (likely) Perameles gunnii gunnii	
Ardeidae	Ardea ibis	Cattle Egret	Expert distribution (maybe) Ardea ibis	
Diomedidae	Diomedea exulans antipodensis	Antipodean Albatross	Expert distribution (likely) Diomedea exulans antipodensis	
Rhamnaceae	Pomaderris pilifera subsp. talpicutica	Moleskin Dogwood	Expert distribution (likely) Pomaderris pilifera subsp. talpicutica	
Dasyuridae	Dasyurus maculatus maculatus (Tasmanian population)	Spotted-tail Quoll, Spot-tailed Quoll, Tiger Quoll (Tasmanian population)	Expert distribution (likely) Dasyurus maculatus maculatus (Tasmanian population)	
Orchidaceae	Caladenia sylvicola	Forest Fingers	Expert distribution (likely) Caladenia sylvicola	
Myrtaceae	Eucalyptus morrisbyi	Morrisbys Gum	Expert distribution (likely) Eucalyptus morrisbyi	
Diomedidae	Thalassarche melanophris impavida	Campbell Albatross	Expert distribution (likely) Thalassarche melanophris impavida	
Diomedidae	Thalassarche impavida	Campbell Albatross	Expert distribution (likely) Thalassarche impavida	
Squalidae	Centrophorus zeehaani	Southern Dogfish, Endeavour Dogfish, Little Gulper Shark	Expert distribution (maybe) Centrophorus zeehaani	
LARIDAE	Sterna nereis	Fairy Tern	Expert distribution Sterna nereis	586686.816636479
Cyperaceae	Carex tasmanica	Curly Sedge	Expert distribution (likely) Carex tasmanica	
Triakidae	Galeorhinus galeus	School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark	Expert distribution (maybe) Galeorhinus galeus	
Apodidae	Apus pacificus	Fork-tailed Swift	Expert distribution (likely) Apus pacificus	
RECURVIROSTRIDAE	Cladorhynchus leucocephalus	Banded Stilt	Expert distribution Cladorhynchus leucocephalus	1295039.3403912226
Neobalaenidae	Caperea marginata	Pygmy Right Whale	Expert distribution (maybe) Caperea marginata	
Poraniidae	Marginaster littoralis	Derwent River Seastar	Expert distribution (likely) Marginaster littoralis	
Charadriidae	Thinornis rubricollis rubricollis	Hooded Plover (eastern)	Expert distribution (likely) Thinornis rubricollis rubricollis	
Dicruridae	Myiagra cyanoleuca	Satin Flycatcher	Expert distribution (likely) Myiagra cyanoleuca	
Brassicaceae	Lepidium hyssopifolium	Basalt Pepper-cress, Peppergrass, Rubble	Expert distribution (likely)	

		Pepper-cress, Pepperweed	Lepidium hyssopifolium	
Asteraceae	Ozothamnus reflexifolius	Reflexed Everlasting	Expert distribution (likely) Ozothamnus reflexifolius	
Orchidaceae	Prasophyllum perangustum	Knocklofty Leek-orchid	Expert distribution (likely) Prasophyllum perangustum	
Ardeidae	Botaurus poiciloptilus	Australasian Bittern	Expert distribution (likely) Botaurus poiciloptilus	
Retropinnidae	Prototroctes maraena	Australian Grayling	Expert distribution (likely) Prototroctes maraena	
Orchidaceae	Pterostylis wapstrarum	Fleshy Greenhood	Expert distribution (likely) Pterostylis wapstrarum	
Hydrobatidae	Fregetta grallaria grallaria	White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian)	Expert distribution (likely) Fregetta grallaria grallaria	
Scolopacidae	Gallinago hardwickii	Latham's Snipe, Japanese Snipe	Expert distribution (maybe) Gallinago hardwickii	
Hylidae	Litoria raniformis	Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog	Expert distribution (likely) Litoria raniformis	
Apodidae	Hirundapus caudacutus	White-throated Needletail	Expert distribution (likely) Hirundapus caudacutus	
Fabaceae	Glycine latrobeana	Clover Glycine, Purple Clover	Expert distribution (likely) Glycine latrobeana	
Psittacidae	Lathamus discolor	Swift Parrot	Expert distribution (likely) Lathamus discolor	
Brachionichthyidae	Brachionichthys hirsutus	Spotted Handfish	Expert distribution (likely) Brachionichthys hirsutus	
Tytonidae	Tyto novaehollandiae castanops (Tasmanian population)	Masked Owl (Tasmanian)	Expert distribution (likely) Tyto novaehollandiae castanops (Tasmanian population)	
Accipitridae	Aquila audax fleayi	Wedge-tailed Eagle (Tasmanian)	Expert distribution (likely) Aquila audax fleayi	
Alcedinidae	Ceyx azureus diemenensis	Tasmanian Azure Kingfisher	Expert distribution (maybe) Ceyx azureus diemenensis	
Diomedidae	Thalassarche bulleri	Buller's Albatross, Pacific Albatross	Expert distribution (likely) Thalassarche bulleri	
Diomedidae	Diomedea exulans (sensu lato)	Wandering Albatross	Expert distribution (likely) Diomedea exulans (sensu lato)	
Diomedidae	Thalassarche chrysostoma	Grey-headed Albatross	Expert distribution (maybe) Thalassarche chrysostoma	
Diomedidae	Thalassarche melanophris	Black-browed Albatross	Expert distribution (likely) Thalassarche melanophris	
SPHENISCIDAE	Eudyptes pachyrhynchus robustus	Snares Penguin	Expert distribution Eudyptes robustus	3480750.013817717
PROCELLARIIDAE	Halobaena caerulea	Blue Petrel	Expert distribution Halobaena caerulea	7.562256096612188E7
DIOMEDEIDAE	Thalassarche chrysostoma	Grey-headed Albatross	Expert distribution Thalassarche chrysostoma	7.901858973508221E7
DIOMEDEIDAE	Phoebastria palpebrata	Light-mantled Sooty Albatross	Expert distribution Phoebastria palpebrata	6.490109129131799E7
Phormiaceae	Dianella amoena	Matted Flax-lily	Expert distribution (likely) Dianella amoena	
Scombridae	Thunnus maccoyii	Southern Bluefin Tuna	Expert distribution (likely) Thunnus maccoyii	
Lamnidae	Lamna nasus	Porbeagle, Mackerel Shark	Expert distribution (likely) Lamna nasus	
Poaceae	Rytidosperma popinensis	Roadside Wallaby Grass	Expert distribution (likely) Rytidosperma popinensis	

Epacridaceae	Epacris virgata	Pretty Heath, Dan Hill Heath	Expert distribution (likely) Epacris virgata
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Further Links

Geoscience Australia: <http://www.ga.gov.au/>

Global Biodiversity Information Facility: <https://www.gbif.org/>

Threatened Species & Ecological Communities: <https://www.environment.gov.au/topics/threatened-species-ecological-communities>

WWF Ecoregions: <https://worldwildlife.org/biomes>

Environmental Resources Information Network (ERIN): <https://www.environment.gov.au/topics/science-and-research/databases-and-maps/erin>

Australian National Fish Expert Distributions: <https://collections.ala.org.au/public/show/dr803>

Lists of Australian endemic species: <http://Intreasures.com/australia.html>

Federal

Department of the Environment: <https://www.environment.gov.au/>

State/Territory

Australian Capital Territory

Environment and Sustainable Development Directorate: <https://www.environment.act.gov.au/>

New South Wales

Office of Environment and Heritage: <http://www.environment.nsw.gov.au/>

Northern Territory

Department of Land Resource Management: <https://www.lrm.nt.gov.au/>

Queensland

Department of Environment and Heritage Protection: <https://www.ehp.qld.gov.au/>

South Australia

Department of Environment, Water and Natural Resources: <https://www.environment.sa.gov.au/Home>

Tasmania

Department of Primary Industries, Parks, Water and Environment: <http://www.dpiw.tas.gov.au/>

Western Australia

Department of Parks and Wildlife: <https://www.dpaw.wa.gov.au/>

Victoria

Department of Environment and Primary Industries: <http://www.depi.vic.gov.au/>

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APPENDIX D – INTERTIDAL AND SUBTIDAL SPECIES

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Intertidal Species List – Selfs Point Survey

Kingdom Animalia					
Phylum	Class	Common Name	Scientific Name	Example Field Photo	
Arthropoda	Malacostraca	green crab	<i>Carcinus maenas</i> *		
Arthropoda	Malacostraca	spotted shore crab	<i>Paragrapsus gaimardii</i>		

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Kingdom Animalia				
Phylum	Class	Common Name	Scientific Name	Example Field Photo
Arthropoda	Malacostraca	notched shore crab	<i>Paragrapsus quadridentatus</i>	
Arthropoda	Malacostraca	New Zealand half-crab	<i>Petrolisthes elongatus</i> *	

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Kingdom Animala					
Phylum	Class	Common Name	Scientific Name	Example Field Photo	
Arthropoda	Maxillopoda	estuary barnacle	<i>Austrominius covertus</i>		
Arthropoda	Maxillopoda	Darwin's barnacle	<i>Austrominius modestus</i>		

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Kingdom Animalia				
Phylum	Class	Common Name	Scientific Name	Example Field Photo
Chordata	Actinopterygii	common shore eel	<i>Alabes dorsalis</i>	
Echinodermata	Asteroidea	Pacific seastar	<i>Asterias amurensis</i> *	

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Kingdom Animalia				
Phylum	Class	Common Name	Scientific Name	Example Field Photo
Echinodermata	Asteroidea	Regular seastar	<i>Patiriella regularis</i> *	
Mollusca	Bivalvia	Blue mussel	<i>Mytilus galloprovincialis</i>	

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Kingdom Animalia				
Phylum	Class	Common Name	Scientific Name	Example Field Photo
Mollusca	Bivalvia	Pacific oyster	<i>Magallana gigas</i> *	
Mollusca	Gastropoda	estuarine conniwink	<i>Bembicium auratum</i>	

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Kingdom Animalia				
Phylum	Class	Common Name	Scientific Name	Example Field Photo
Mollusca	Gastropoda	common conniwink	<i>Bembicium melanostoma</i>	
Mollusca	Gastropoda	New Zealand green chiton	<i>Chiton glaucus</i> *	

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Kingdom Animala				
Phylum	Class	Common Name	Scientific Name	Example Field Photo
Mollusca	Gastropoda	southern chiton	<i>Ischnochiton australis</i>	
Mollusca	Gastropoda	Serpent-skin chiton	<i>Sypharochiton pelliserpentis</i>	

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Kingdom Animala				
Phylum	Class	Common Name	Scientific Name	Example Field Photo
Mollusca	Gastropoda	Corded siphon shell	<i>Siphonaria funiculata</i>	

Kingdom Protista & Plantae				
Phylum	Family	Common Name	Scientific Name	
Chlorophyta	Codiaceae	codium	<i>Codium spp.</i> Sample not collected for taxonomic identification.	

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Kingdom Protista & Plantae				
Phylum	Family	Common Name	Scientific Name	
Chlorophyta	Ulvaceae	sea lettuce	<i>Ulva lactuca</i>	
Chlorophyta	Ulvaceae		<i>Ulva prolifera</i>	

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Kingdom Protista & Plantae				
Phylum	Family	Common Name	Scientific Name	
Rhodophyta	Red algae.		Range of red algae species observed, including coralline species. Samples for taxonomic identification not collected.	
	Example photo shown.			
Rhodophyta	Delesseriaceae	Sample not collected for taxonomic identification.		

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Kingdom Protista & Plantae				
Phylum	Family	Common Name	Scientific Name	
Rhodophyta	Gelidiaceae		<i>Gelidium australe</i>	

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Subtidal Species List – Selfs Point Survey

Kingdom Animalia				
Phylum	Class	Common Name	Scientific Name	Example Field Photo
Annelida	Polychaeta	Polychaete species. Sample not collected for identification		

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Kingdom Animalia				
Phylum	Class	Common Name	Scientific Name	Example Field Photo
Chordata	Osteichthyes	flathead	<i>Platycephalus spp.</i>	
Chordata	Actinopterygii	southern hulafish	<i>Trachinops caudimaculatus</i>	

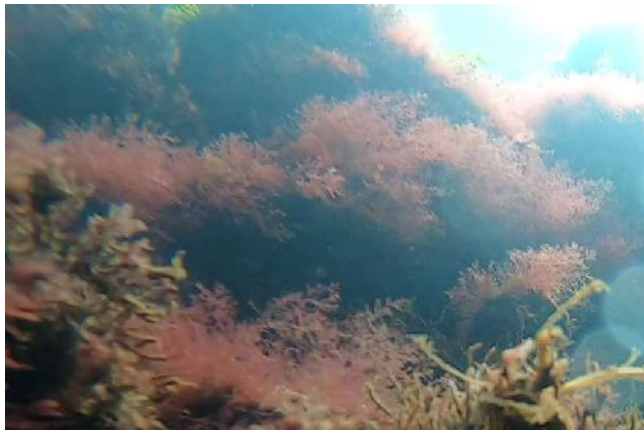
APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Kingdom Animala				
Phylum	Class	Common Name	Scientific Name	Example Field Photo
Echinodermata	Asteroidea	Pacific sea star	<i>Asterias amurensis</i> *	
Echinodermata	Asteroidea	Regular seastar	<i>Patiriella regularis</i> *	

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Kingdom Protista & Plantae				
Phylum	Family	Common Name	Scientific Name	
Heterokontophyta	Ectocarpaceae	winter weed	Sample not collected for taxonomic identification.	
Rhodophyta	Rhodymeniaceae		<i>Rhodymenia</i> spp. Sample not collected for taxonomic identification.	

APPENDIX D - INTERTIDAL AND SUBTIDAL MARINE SPECIES OBSERVED

Kingdom Protista & Plantae				
Phylum	Family	Common Name	Scientific Name	
Rhodophyta	Ceramiceae		<i>Ceramium spp.</i> or <i>Centroceras clavulatum</i> Sample not collected for taxonomic identification.	

APPENDIX E – ECOSYSTEM RISK ASSESSMENT

APPENDIX E - QUALITATIVE RISK ASSESSMENT

Qualitative Risk Assessment – Ecosystem-Based Management Approach

Risk assessment methods can assist in assessing and communicating the potential impacts of proposed developments and facilitating the successful ecosystem management processes.

Tables 1-4 summarise the approach described in Fletcher (2015).

Table 1: Likelihood scoring following a four-tier system (adapted from Fletcher 2015).

Level	Descriptor	Example detailed description
1	Remote	The consequence is not heard of in these circumstances, but still plausible within the time frame (indicative probability 1-2%).
2	Unlikely	The consequence is not expected to occur in the time frame, but some evidence that it could occur under special circumstances (indicative probability 3-9%).
3	Possible	Evidence to suggest this consequence level may occur in some circumstances within the time frame (indicative probability of 10-39%).
4	Likely	A particular consequence level is expected to occur in the time frame (indicative probability 40-100%).

Table 2: Consequence scoring for protected species and ecosystem structure (adapted from Fletcher 2015).

Level	Descriptor	Threatened Species	Threatened Communities
1	Minor	Few individuals directly impacted in most years.	Measurable but minor changes to ecosystem structure, but no measurable change to function.
2	Moderate	Impact at the maximum acceptable level.	Maximum acceptable level of change in the ecosystem structure with no material change in function.
3	Major	Recovery may be affected and serious and long-term impacts occurring.	Ecosystem function now altered with some function or major components now missing and/or new species are prevalent.
4	Extreme	Population declines generated with widespread and irreversible effects.	Extreme change to structure and function. Complete species shifts in capture or prevalence in system.

Qualitative risk assessment matrix adapted from Fletcher (2015 (**Table 3**). The numbers in the cells indicate the risk score values and the shading represent the levels of risk as described in **Table 4**.

APPENDIX E - QUALITATIVE RISK ASSESSMENT

Table 3: Qualitative risk assessment matrix (adapted from Fletcher 2015).

Likelihood	Consequence			
	Minor (1)	Moderate (2)	Major (3)	Extreme (4)
Likely (4)	4	8	12	16
Possible (3)	3	6	9	12
Unlikely (2)	2	4	6	8
Remote (1)	1	2	3	4

Table 4: Overall risk summary (adapted from Fletcher 2015).

Risk Score	Risk Level	Possible Management Response
1-2	Negligible	Acceptable with no management actions or regular monitoring
3-4	Low	Acceptable with no direct management action and monitoring at specified intervals.
6-8	Moderate	Acceptable with specific, direct management and regular monitoring.
9-16	High	Unacceptable unless additional management actions are undertaken.

REFERENCES

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