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ECOSYSTEM SERVICES

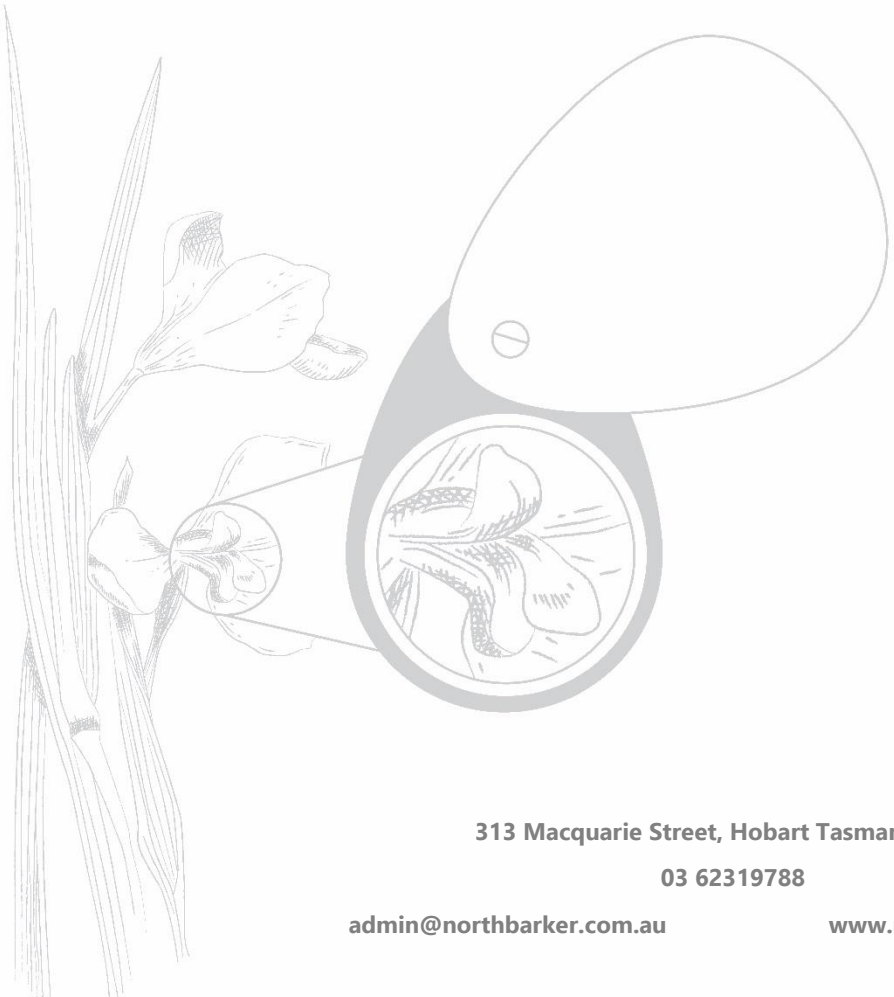
Macquarie Point Precinct Plan

# NATURAL VALUES ASSESSMENT

27th August 2024

For Macquarie Point Development Corporation

MPD001



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# ACKNOWLEDGEMENTS

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|---|---|
| **Project** | Macquarie Point Multipurpose Stadium Project of State Significance Natural Values Assessment |
| **Location** | Macquarie Point, Hobart |
| **Proponent** | Macquarie Point Development Corporation |
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| **NBES Job Code** | MPD001 |
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| **Mapping** | Liam Andrews (BSc) |

| Version | Date | Author & Comment | Position |
|---|---|---|---|
| Version 0.1 | 28/05/2024 | Drafted by Will Dobson | Ecologist |
| Version 0.2 | 14/06/2024 | Noise and light impacts drafted by Morgan Humphrey | Graduate Ecologist |
| Version 0.3 | 02/07/2024 | Updated by Will Dobson | Ecologist |
| Version 1.0 | 16/07/2024 | Reviewed and delivered to proponent by Jared Parry | Senior Ecologist |
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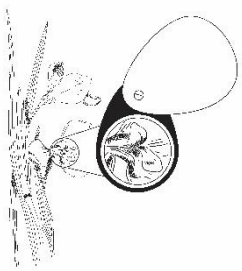
| Version 2.0 | 27/08/2024 | Additional edits from MPD review – Grant Daniels | Managing Director |







# EXECUTIVE SUMMARY

The Macquarie Point Precinct Plan has been prepared by the Macquarie Point Development Corporation. As part of the plan, a proposal by the Crown in Right of Tasmania for the development of a multipurpose stadium at Macquarie Point has been declared a Project of State Significance by order of the Governor. The order was approved by both houses of the Tasmanian Parliament on the 8th of November 2023 and took effect on the 9th of November 2023.

A ministerial direction from the Premier of Tasmania, dated 16th of October 2023 directs the Tasmanian Planning Commission (the Commission) to undertake an integrated assessment of the Macquarie Point Multipurpose Stadium project in accordance with the Tasmanian *State Policies and Projects Act 1993*.

The proponent has engaged North Barker Ecosystem Services to provide a natural values assessment to address the entirety of the Macquarie Point Precinct Plan area, as well as addressing specific requirements pertaining to natural values specified in the Commission's *Macquarie Point Multipurpose Stadium Project of State Significance Guidelines* (PoSS guidelines)[1]. This report addresses key aspects of the guidelines, including (but not limited to):

- 1.2.1 - Site description - existing vegetation types and ecological vegetation classes of the project site and adjacent area;
- 8.3.1 - Light - impacts on fauna/ecology only;
- 8.4.1 - Noise and vibration - impacts and effects on fauna only;
- 8.5.1 - Impacts and effects on flora and fauna within the Derwent Estuary; and risks associated with disturbance and re-suspension of sediments within the Derwent Estuary.
- 8.5.2 - The site and surrounding hydrology and ecology, including as a catchment; the receiving environment including all relevant Protected Environmental Values.

A summary of the project areas values and recommendations are as follows:

Vegetation

The project area is heavily disturbed and covered completely by the modified land community extra-urban miscellaneous (TASVEG- FUM). The vegetation present is dominated by exotic ground cover and shrubs. There were no signs and/or presence of threatened flora or fauna observed within the project area. The project will not conflict with the objectives of the Tasmanian *Nature Conservation Act 2002*, and provided the recommendations are adhered to, the project can comply with the relevant code overlays of the Tasmanian Planning Scheme.

Threatened flora

No threatened flora species were recorded during the survey and given the small spatial extent and modified nature of the project area; it is unlikely that any threatened flora have been overlooked.

Threatened flora habitat for two *Vittadinia* species (V. *gracilis* [TSPA – rare] and V. *muelleri* [TSPA – rare]) was observed within the project area, although no plants were observed. Spring surveys targeting this potential habitat for these species is recommended to determine presence/absence in the project area. If surveys fail to detect any threatened flora species, no action is required under the Tasmanian *Threatened Species Protection Act 1995*. A permit to take will be required in the event that threatened flora is recorded on site and cannot be avoided.

Threatened fauna

[1] Tasmanian Planning Commission (2024)

No presence or signs of threatened fauna were recorded across the project area. Surveys identified that low potential foraging habitat exists for the eastern barred bandicoot. However, the habitat present does not constitute critical habitat for the species and is isolated from native vegetation remnants.

Surrounding habitat for eastern barred bandicoots, swift parrots and blue-winged parrots will be subject to minor increases in the levels of anthropogenic noise and light, although impacts will be restricted to foraging and dispersal habitat and will represent a relatively minor disturbance during events. This is not expected to permanently exclude these species from utilising the area for foraging and dispersal.

The proposed stadium and associated infrastructure may present a collision risk to birds due to reflection and transparency. We consider the risk of collision to be relatively low given that the proposed design will contain high volumes of visual obstruction, with the exception potentially being birds travelling from the water at night with potential light impacts – this has been addressed in a separate document[2].

Impacts to marine values are not anticipated; however, the marine natural values assessment (Attachment A) has recommended that further survey for the red and spotted handfish may be warranted in the event that in water works are required for any aspect of the proposal.

Weeds

Seven declared weed species listed under the Tasmanian *Biosecurity Act 2019* were recorded in the project area, those being African boxthorn, blackberry, boneseed, cutleaf nightshade, fennel, gorse, and white weed. Numerous non-listed environmental weed species were also recorded across the site.

To manage the risks of spreading weeds within and from the project area, a project-specific weed and hygiene management plan is recommended to detail weed and hygiene prescriptions for contractors through construction of the stadium and for land managers into operations. The plan must outline primary and secondary weed control and requirements, including wash-down stations and auditing procedures and be consistent with the applicable guidelines outlined in our recommendation (Section 3.4).

Legislative compliance

At this stage, significant impacts to EPBCA matters of national environmental significance (MNES) are not likely, and as such, the project does not warrant a referral to the Minister for potential impacts to MNES (within our scope). This could change pending any confirmation regarding in water works which may impact the red and/or spotted handfish.

Based on our understanding of the project area, no action is required under the Tasmanian *Threatened Species Protection Act 1995* or the Tasmanian *Nature Conservation Act 2002*. The development of a weed and hygiene management plan will satisfy the requirements of the Tasmanian *Biosecurity Act 2019*.

The project can meet the requirements of the relevant code overlays under the Hobart Draft Local Provisions Schedule of the Tasmanian Planning Scheme as there is no priority vegetation on site, and with mitigation measures for erosion, siltation, sedimentation and runoff in place, the provisions of the Waterways and Coastal Protection Area overlay can be satisfied.

Provided that the recommendations of this report are adhered to, the project can satisfy the environmental requirements of the *Macquarie Point Multipurpose Stadium Project of State Significance Guidelines*[3] as follows (with responses in Italics):

- Section 1.2.1 - existing vegetation types and ecological vegetation classes of the project sites and adjacent area.

[2] North Barker Ecosystem Services (2024)
[3] Tasmanian Planning Commission (2024)

- *Provision of this natural values assessment satisfies this criterion with vegetation and ecological communities considered for the site and surrounds to the degree applicable to any plausible risks to conservation significant values in particular, and native values in general.*

- Section 1.4.2 - how management actions applied during construction and operation of the proposed project eliminate, minimise, mitigate or offset direct adverse social and environmental effects to an acceptable level.
  - *As the potential level of impacts anticipated to environmental values is negligible, potential environmental effects are considered to be acceptable so long as all recommendations are adhered to, with reporting and assessment (limited to our scope) including reference to eliminating, minimising, mitigating and/or offsetting effects to the degree applicable or required, such that this criterion is satisfied.*
- Section 8.3.1 - The reports are to describe the existing light conditions of the project site and the vicinity. The reports are to describe all sources and integration of proposed lighting and its use during different activities, including during events and outside of events. The reports are to evaluate the potential for adverse effects arising from lighting, including the cumulative impact, taking into account surrounding sources of lighting. The reports are to consider the nature of adjacent use and development potentially adversely impacted from lighting on the site, and whether there are any potential effects on fauna or on traffic safety. If necessary, the reports are to outline control measures to prevent the spill.
  - *Detailed assessment of impacts due to lighting have been conducted by Introba Consulting in order to satisfy this criterion.*
  - *Given the expected illumination, limited operational timeframes, and relatively small impact area overlapping with fauna habitat of minimal value, meaningful impacts to threatened fauna species from lighting are not anticipated – key requirements to be adhered to in relation to lighting are noted as avoiding refuge sites, foraging or dispersal routes, minimising light spill, and considering fauna responses with appropriate light selection, all of which should be feasible to achieve in relation to the expected species and habitat values in the surrounding area at risk of potential lighting impacts.*
- Section 8.4.1- The reports are to describe the existing noise and vibration conditions of the project site and vicinity. The reports are to describe all sources of noise and vibration that can be reasonably identified from the use of the proposed project, considering all types of expected and possible events. The reports are to analyse the potential effects of impacts from noise and vibration, taking into account noise and vibration impacts and effects on fauna;
  - *Detailed noise modelling has been conducted by AECOM in order to satisfy this criterion.*
  - *Impacts due to noise and vibration are unlikely to have detrimental impacts on threatened fauna species due to the infrequent nature of impacts, and the presence of existing noise disturbances in the broader area, including various events in the immediate vicinity. Noise and vibration is not a listed threat to any of the terrestrial and avian fauna species that have some potential of occurring in the project area (limited to threatened species).*
- Section 8.5.1 - The reports are to identify and describe the potential effects of the design and operation of the proposed project on site and surrounding hydrology, water quality and stormwater drainage. The reports are to describe management strategies for impacts and effects on flora and fauna within the Derwent Estuary.
  - *The potential impacts to relevant marine and intertidal ecological values within the Derwent Estuary are addressed in Attachment A to the necessary degree to satisfy this criterion.*

- Section 8.5.2 - In preparing these reports specific consideration is given to the site and surrounding hydrology and ecology, including as a catchment; and the receiving environment including all relevant protected environmental values.
    - *The potential impacts to relevant marine and intertidal ecological values are addressed in Attachment A with respect to all relevant protected aquatic environmental values with the potential to interact with the proposal, such that this criterion is satisfied.*
- Section 9.2.2 - The reports are to outline the results of soil contamination and acid sulfate soil analysis description of any proposed disturbance.
    - *The development of an acid sulfate soils management plan is to be undertaken separately to address this criterion.*

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# 1. PROJECT DETAILS

## 1.1. BACKGROUND

The Macquarie Point Precinct Plan (MPPP) has been prepared by the Macquarie Point Development Corporation (MPDC). As part of the plan, a proposal by the Crown in Right of Tasmania for the development of a multipurpose stadium at Macquarie Point has been declared a Project of State Significance (PoSS) by order (the order) of the Governor. The order was approved by both houses of the Tasmanian Parliament on the 8th of November 2023 and took effect on the 9th of November 2023.

The Macquarie Point Multipurpose Stadium (herein referred to as 'the stadium') is proposed to be a key part of the MPPP. The stadium will have 23,000 seats, be roofed, and be the home ground of a Tasmanian AFL team. The stadium will also support other sporting events in addition to arts, cultural events and entertainment uses.

A ministerial direction from the Premier of Tasmania, dated 16th of October 2023 directs the Tasmanian Planning Commission (the Commission) to undertake an integrated assessment of the Macquarie Point Multipurpose Stadium project in accordance with the Tasmanian *State Policies and Projects Act 1993* (SPPA).

Specifically, the Commission must undertake an integrated assessment of the proposed project in accordance with Part 3 of the SPPA. This includes the assessment of the environmental, social, economic and community impacts of the proposed project.

The proponent of the proposed project is the Crown in Right of Tasmania. The Premier has advised that the MPDC will be responsible for overseeing the planning and delivery of the stadium and other aspects of the MPPP. The MPDC is a statutory authority and state agency, charged with planning, facilitating and managing the remediation and development of Macquarie Point.

North Barker Ecosystem Services (NBES) conducted a natural values assessment of a section of the MPPP in September of 2023[4]. The intention of this assessment was to address concerns with a priority vegetation area on the site, as mapped in the draft local provisions schedule of the Tasmanian Planning Scheme.

This current natural values assessment has been undertaken to address the entirety of the MPPP in accordance with the Department of Natural Resources and Environments (NRE) *Guidelines for Natural Values Surveys- terrestrial Development Proposals*, as well as addressing specific requirements pertaining to natural values specified in the Commission's *Macquarie Point Multipurpose Stadium Project of State Significance Guidelines* (PoSS guidelines)[5] and legislated under the SPPA. In particular, the natural values assessment specifically addresses the following sections of the PoSS guidelines:

- **Section 1.2 – Site description**
  - Section 1.2.1 - existing vegetation types and ecological vegetation classes of the project sites and adjacent area.
- **Section 1.4 – Design and management response**
  - Section 1.4.2 - how management actions applied during construction and operation of the proposed project eliminate, minimise, mitigate or offset direct adverse social and environmental effects to an acceptable level.
- **Section 8.3 - Light**
  - Section 8.3.1 - The reports are to describe the existing light conditions of the project site and the vicinity. The reports are to describe all sources and integration of proposed lighting and its use during different activities, including during events and outside of events. The reports are to evaluate the potential for adverse effects arising from lighting, including the

[4] North Barker Ecosystem Services (2023)
[5] Tasmanian Planning Commission (2024)

cumulative impact, taking into account surrounding sources of lighting. The reports are to consider the mature of adjacent use and development potentially adversely impacted from lighting on the site, and whether there are any potential effects on fauna or on traffic safety. If necessary, the reports are to outline control measures to prevent the spill.

- **Section 8.4 - Noise and vibration**
  - Section 8.4.1- The reports are to describe the existing noise and vibration conditions of the project site and vicinity. The reports are to describe all sources of noise and vibration that can be reasonably identified from the use of the proposed project, considering all types of expected and possible events. The reports are to analyse the potential effects of impacts from noise and vibration, taking into account, but not limited by, the following:
    - Noise and vibration impacts and effects on fauna;
- **Section 8.5 - Water quality and water management**
  - Section 8.5.1 - The reports are to identify and describe the potential effects of the design and operation of the proposed project on site and surrounding hydrology, water quality and stormwater drainage. The reports are to describe management strategies for:
    - Environmental impacts, including but not limited to:
      - Impacts and effects on flora and fauna within the Derwent Estuary.
  - Section 8.5.2 - In preparing these reports specific consideration is given to:
    - The site and surrounding hydrology and ecology, including as a catchment; and
    - The receiving environment including all relevant protected environmental values.
- **Section 9.2 - Construction management**
  - Section 9.2.2 - The reports are to outline:
    - Potential adverse environmental effects:
    - The results of soil contamination and acid sulfate soil analysis description of any proposed disturbance.

## 1.2. PREVIOUS NATURAL VALUES ASSESSMENTS

North Barker Ecosystem Services completed a natural values assessment of a section of the project area in September of 2023. This assessment focused on addressing planning scheme requirements in relation to a medium-density residential development under the soon to be adopted Tasmanian Planning Scheme (TPS). In particular, the assessment focused on an area proposed to be mapped as 'Priority Vegetation Area' and 'Waterway and Coastal Protection Area' overlays under the Natural Assets Code (C7.0) of the TPS. The area proposed for the residential development is located along the foreshore below the Hobart Regatta grounds at Macquarie Point and overlaps with the northern section of the project area as described in Section 1.3.

## 1.3. PROJECT AREA

The project area comprises 9.3 ha proposed for development under the MPPP and is shown in Figure 1. The MPPP is shown in Figure 2 and includes the Macquarie Point site, the TasPorts Macquarie Wharf, the TasRail Transit Corridor, a City of Hobart land parcel, and the TasPorts Huon Quays.

The waterfront site is situated on the western shore of the Derwent estuary and south of the Hobart Cenotaph with historic buildings clustered to the southeast. The site has a long and varied history of land uses. Prior to European colonisation, the area was utilised by the muwinina people for an estimated 40,000 years. Following British arrival, the next two centuries saw the river gradually reclaimed and the site utilised as an orphanage, farm, abattoir, lumber yard, cold store, goods storage, gasworks plant, railway line and terminus station, sanitary depot and sewerage treatment plant. Due to various fuel and heavy metal pollutants within the sites soil and ground water, it has been subject to extensive remediation efforts by the MPDC over the past several years.


**Figure 1: Project area**


**Figure 2: The Macquarie Point Precinct Plan**

## 1.4. METHODS

A field survey was undertaken by an NBES ecologist on the 22nd of May 2024, using a meandering area search technique[6]. Additional survey effort was applied to habitats suitable for threatened species and/or vegetation communities (under the Tasmanian *Threatened Species Protection Act 1995* [TSPA], the Tasmanian *Nature Conservation Act 2002* [NCA], and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* [EPBCA]), and to occurrences of 'declared' weeds listed under the Tasmanian *Biosecurity Act 2019* and associated *Biosecurity Regulations 2022*, or Weeds of National Significance [WoNS] under the *Australian Weed Strategy 2017- 2027*[7]. All location data was recorded with a handheld GPS, with an accuracy of ±10 m.

The assessment methodology is informed by the *Guidelines for Natural Values Surveys*[8]. Native vegetation was mapped in accordance with units defined in TASVEG 4.0[9]. Botanical nomenclature follows the current census of Tasmanian plants[10]. The Natural Values Atlas[11] database was consulted for records of threatened species and vegetation types within a 5 km radius. The possibility of the project area supporting threatened values known from within this radius has been considered in the interpretation of results and discussion. The NRE *Guidelines for Natural Values Surveys*[12] requires that a desktop assessment must be undertaken to determine if any geoconservation sites occur within 1 km of the project area. If sites are present, and are at risk of impacts, further assessment by a suitably qualified specialist may be required.

The boundaries of the project area were defined by the proponent, utilising existing cadastral boundaries in the area.

Marine components of this assessment were conducted by Marine Solutions Tasmania Pty Ltd in accordance with the *Guidelines for Natural Values Surveys - Estuarine and Marine Development Proposals*[13] and is provided in Attachment A.

## 1.5. LIMITATIONS

Due to seasonal variations in detectability and accurate discrimination (*i.e.* identification of closely related species), there may be some herb, orchid and/or graminoid species present on the route that have been overlooked. Flora surveys were strategically timed to maximize the opportunity to detect seasonal threatened flora, though may not have been ideal for detection of all species. To compensate for this, field data from the present study were supplemented with data from the Tasmanian Natural Values Atlas[14] (Attachment B).

Due to hazardous drilling and rock crushing activities that were being undertaken at the time, the westernmost extent of the Macquarie Point site were inaccessible (Plate 1). However, assessment of this area was able to be undertaken from a distance. Additionally, the TasPorts Macquarie Wharf site was not able to be surveyed due to site access constraints. However, based on a desktop analysis of this modified site no terrestrial natural values are expected to occur. A survey of the Huon Quays zone was not considered necessarily due to site being recently surveyed by NBES in 2023.

[6] Goff *et al.* (1982)
[7] Invasive Plants and Animals Committee (2016)
[8] Department of Primary Industries, Parks, Water & Environment (2019)
[9] Kitchener & Harris (2013)
[10] de Salas & Baker (2023)
[11] Department of Natural Resources & Environment (2024a)
[12] Department of Primary Industries, Parks, Water & Environment (2019)
[13] Natural & Cultural Heritage Division (2020)
[14] Department of Natural Resources & Environment (2024a)

# 2. SITE VALUES

## 2.1. VEGETATION COMMUNITIES

The vegetation of the project area is highly modified and is entirely classified as extra-urban miscellaneous land (FUM), as per the TASVEG 4.0 categorisation[15], with 51 of 72 species (71 %) being exotic (Appendix A). This community is not listed as threatened under the TSPA or the EPBCA, nor does it meet the definition of priority vegetation[16] under the provisions of the TPS.

The Macquarie Point site comprises of roads, bitumen and bare soil with vegetation only present in narrow sections that have been excluded from active construction works. The vegetation in these areas is entirely exotic and comprises of ground cover species such as *Cirsium vulgare*, *Leontodon saxatilis*, *Conyza* sp., *Sonchus asper*, *Hirschfeldia incana* and *Verbascum thapsus*. The northern sloped section of the Macquarie Point site that borders the Hobart Cenotaph includes a canopy mixture of native and introduced trees and shrubs (Plate 2, Plate 3), predominately *Allocasuarina verticillata*, *Acacia melanoxylon*, *Populus nigra*, *Cotoneaster* sp., *Rosa rubiginosa*, *Coprosma repens*, *Pinus radiata*, *Centranthus ruber* subsp. *ruber,* and *Pittosporum undulatum*. Exotic grasses are dominant in the understorey and include *Agrostis capillaris*, *Dactylis glomerata*, *Phalaris aquatica*, *Echinochloa crus-galli* and *Panicum capillare*. Herb cover is sparse but includes *Dichondra repens*, *Daucus carota* and *Acaena* sp.

Vegetation within the areas in the north of the Macquarie Point site is similar (Plate 4), with a high composition of exotic species. However, ground cover species including *Plantago coronopus*, *Arctotheca calendula*, *Hypochaeris radicata*, *Malva* sp, *Dimorphotheca fruticosa*, and *Erodium moschatum* are more apparent. Exotic grasses such as *Dactylis glomerata, Holcus lanatus*, *Bromus catharticus*, *Paspalum* sp., *Digitaria sanguinalis* and *Poa annua* also occur with no true canopy present. The tallest vegetation consists of isolated planted individuals of *Eucalyptus viminalis*, *Kunzea ambigua*, *Melaleuca armillaris* and *Hesperocyparis macrocarpa* that boarders the TasPorts Macquarie Wharf and TasPorts Huon Quay areas (Plate 5). Larger shrubs within this area include *Coprosma repens* and *Pyracantha* sp. Some native species such as *Acaena echinata*, *Carpobrotus rossii* and *Senecio* sp. were recorded, however they are a minor component and do not contribute significantly to the vegetation cover or diversity of the project area.

A list of all species recorded during field investigations is provided in Appendix A. Distribution of vegetation communities and weeds is presented in Figure 3a-b.

[15] Kitchener & Harris (2013)

[16] Priority vegetation refers to native vegetation where any of the following apply: (a) it forms an integral part of a threatened native vegetation community as prescribed under Schedule 3A of the Tasmanian *Nature Conservation Act 2002*; (b) is a threatened flora species; (c) it forms a significant habitat for a threatened fauna species; or (d) it has been identified as native vegetation of local importance.

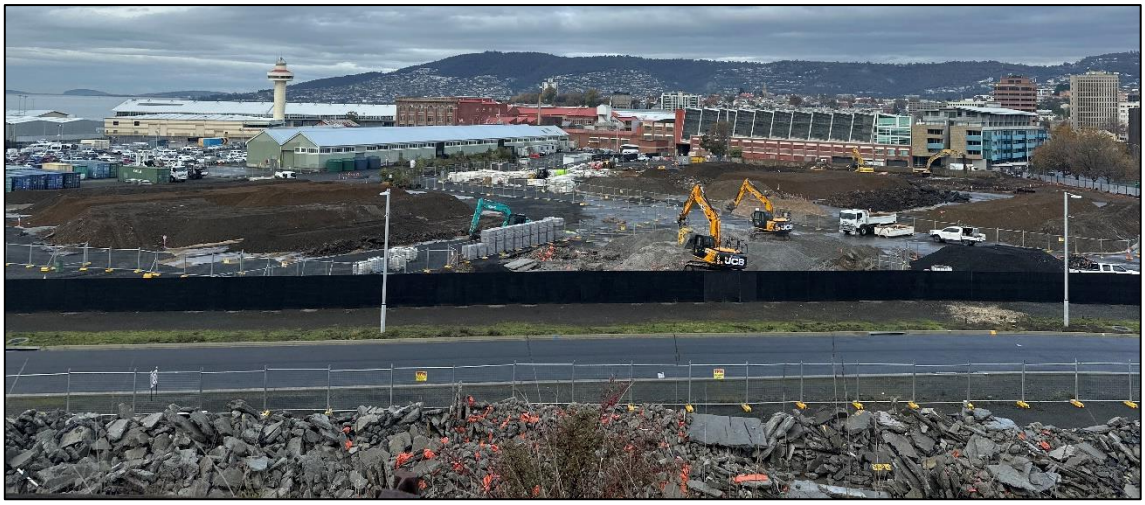


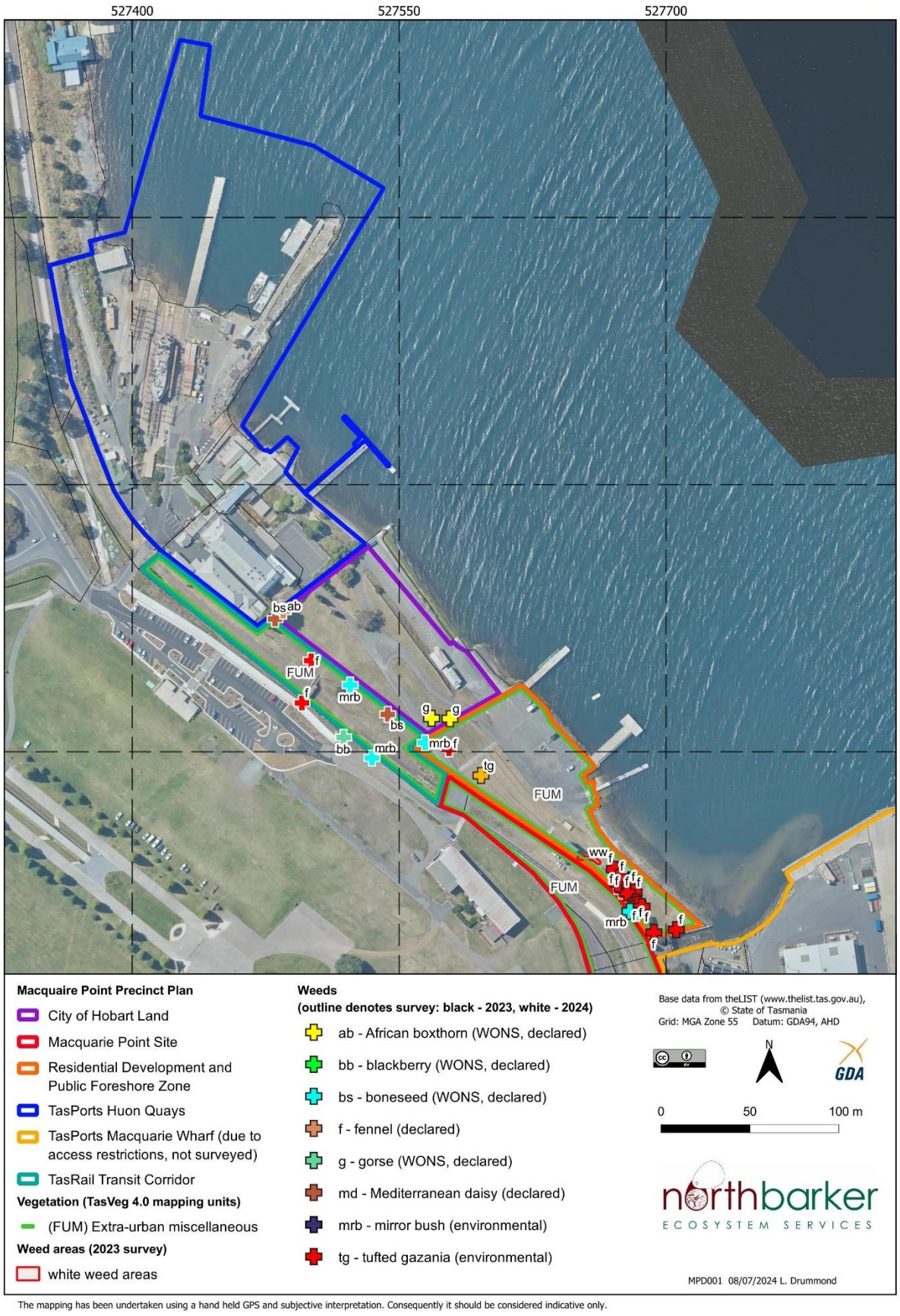
**Plate 1: Ongoing construction activities within the Macquarie Point site**

**Plate 2: Vegetation composition within the north of the Macquarie Point site**

**Plate 3: Mixture of exotic and native vegetation neighbouring the Hobart Cenotaph**

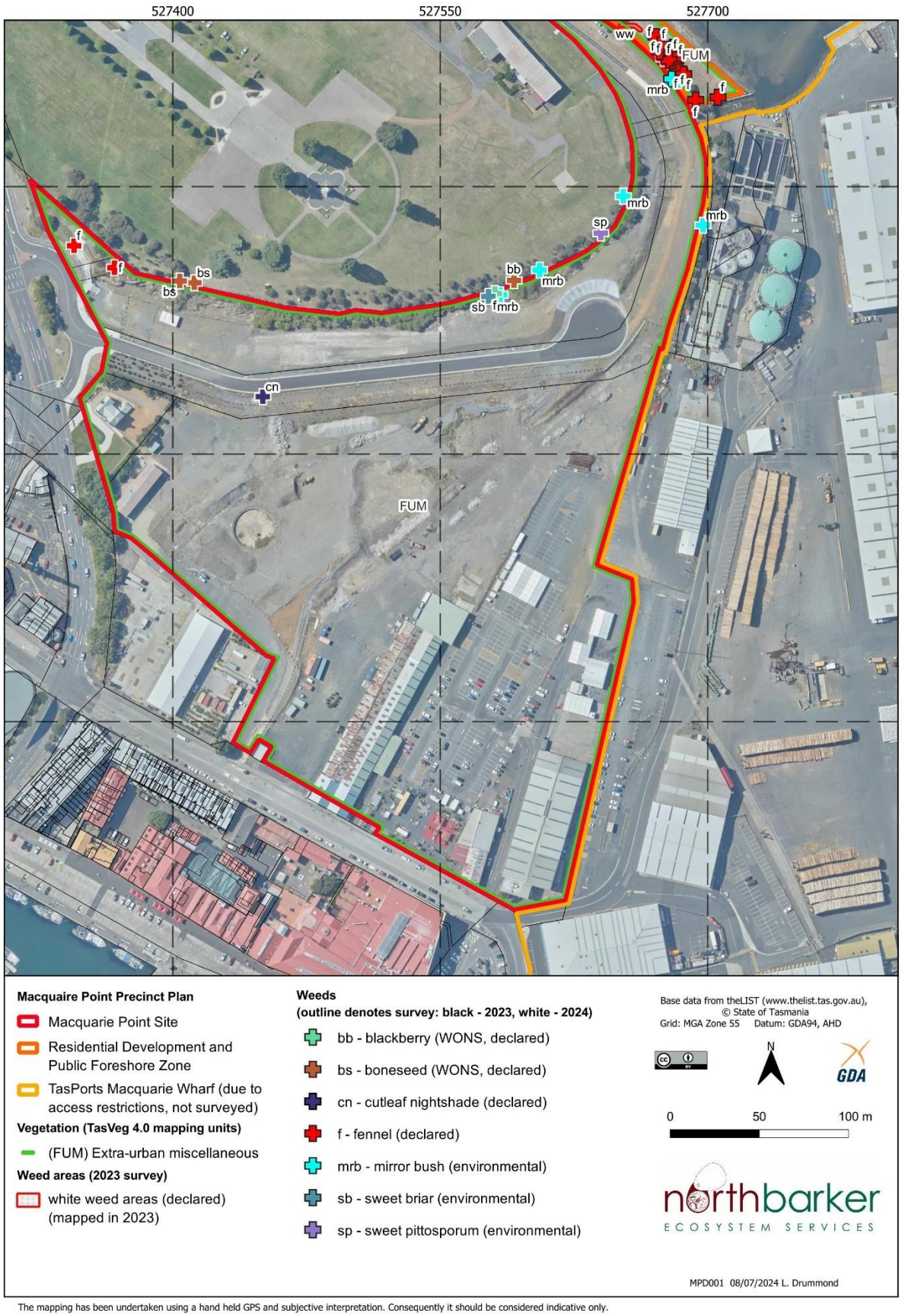
**Plate 4: Vegetation composition within the south of the Macquarie Point site**

**Plate 5: Exotic vegetation within the proposed Residential Development and Public Foreshore Zone**




The mapping has been undertaken using a hand held GPS and subjective interpretation. Consequently it should be considered indicative only.

**Figure 3a: Natural values within the northern extent of the project area**




The mapping has been undertaken using a hand held GPS and subjective interpretation. Consequently it should be considered indicative only.

**Figure 3b: Natural values within the southern extent of the project area**

## 2.2. CONSERVATION SIGNIFICANT FLORA

No threatened flora species listed under either the TSPA or EPBCA were observed during field surveys. Given the small spatial extent and significantly modified nature of the project area, it is unlikely that any threatened flora have been overlooked during surveying.

The TasPorts Macquarie Wharf and Macquarie Point site are almost entirely comprised of concrete and bitumen (Figure 3a-b) and provide little to no habitat for any threatened flora species.

As discussed in the previous Natural Values Assessment conducted by NBES in September 2023[17], the areas north of the Macquarie Point site around the City of Hobart land parcel provide potential habitat for TSPA listed threatened *Vittadinia* spp. within the project area (Figure 4, Plate 6). Both *Vittadinia gracilis* (TSPA - rare) and *V. muelleri* (TSPA - rare) have been recorded within 500 m of the project area (Appendix B). Though the bare ground habitat is suitable for these species, no *Vittadinia* spp. were again detected during the most recent surveys, and it is our assessment that there is a low to negligible likelihood of occurrence in this area.

According to the Natural Values Atlas, an additional 65 threatened species listed under either the TSPA and/or EPBCA have been previously recorded within 5 km of the project area[18]. These species have been considered in regard to their likelihood of occurrence and based on the availability of suitable habitat within the project area. These records of threatened flora within 5 km and their likelihood of impact under the proposed MPPP development are discussed in Appendix B.

**Plate 6: Potential *Vittadinia* spp. habitat in the bare ground either side of the intercity cycleway within the project area**

[17] North Barker Ecosystem Services (2023)
[18] Department of Natural Resources & Environment (2024a)

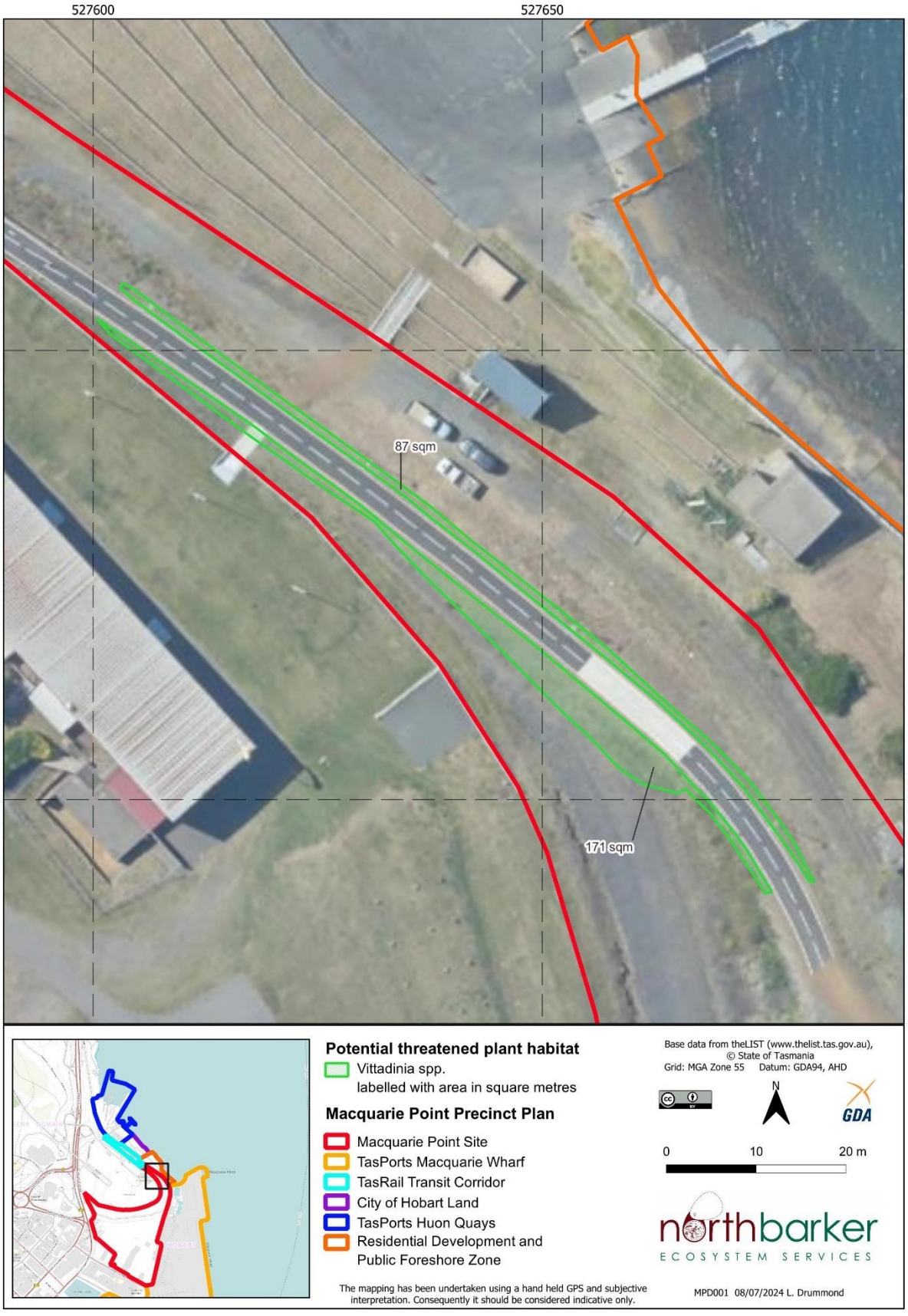



**Figure 4: Location of most suitable habitat for threatened *Vittadinia* species within the project area**

## 2.3. CONSERVATION SIGNIFICANT FAUNA

No signs and/or presence of threatened fauna were observed in the project area. Given the small spatial extent and significantly modified nature of the project area it is unlikely that any additional threatened fauna values have been overlooked.

According to the Natural Values Atlas[19], 42 threatened fauna species have been recorded within 5 km of the project area. These include the eastern barred bandicoot *Perameles gunnii* (EPBCA - Vulnerable), swift parrot *Lathamus discolor* (TSPA - Endangered / EPBCA - Critically Endangered), blue-winged parrot *Neophema chrysostoma* (EPBCA – Vulnerable), and hooded plover *Thinornis cucullatus* (EPBCA - Vulnerable).

No potential sheltering habitat for the eastern barred bandicoot was observed and no observations of use including conical diggings consistent with the species was observed within the project area. The project area is highly modified and is isolated from native vegetation remnants and thus constitutes low potential foraging habitat for the species. This species is more likely to occur in the surrounding areas of the Queens Domain where there is a greater abundance of native vegetation that offers foraging and sheltering habitat.

No potential foraging or nesting habitat suitable for either the swift parrot or hooded plover occurs within the project area. The project area comprises very poor habitat for most threatened species given the sites lack of natural resources, significant modification and ongoing industrial activity.

Threatened fauna species listed under either the TSPA and/or EPBCA and recorded within 5 km of the project area have been considered in regard to their likelihood of occurrence and based on the availability of suitable habitat within the project area. Appendix C discusses all records of threatened fauna within 5 km and their likelihood of impact under the proposed MPPP development.

Marine fauna associated with the River Derwent that have potential to be impacted by the proposal have been addressed in a separate report produced by Marine Solutions Tasmania Pty Ltd (Attachment A).

## 2.4. INTRODUCED FLORA, FAUNA, AND PATHOGENS

### 2.4.1. Introduced flora

Seven weed species listed as declared under the Tasmanian *Biosecurity Regulations 2022* (in effect under the Tasmanian *Biosecurity Act 2019)* are present in the project area (Figure 3a-b), three of which are listed as a Weed of National Significance (WoNS) under the *Australian Weed Strategy 2017-2027*[20]. No signs of direct weed management, such as dieback from spraying, was observed. The extent and distribution of these weeds is described in Table 1 and displayed in Figure 3a-b.

In addition to declared weeds, environmental weeds are in high abundance throughout the project area and include mirror bush (*Coprosma repens*), sweet pittosporum (*Pittosporum undulatum*), cotoneaster (*Cotoneaster sp.*), red valerian (*Centranthus ruber* subsp. *ruber*), spear thistle (*Cirsium vulgare*) and trailing daisy (*Dimorphotheca fruticosa*).

[19] Natural Values Atlas data – as of June 21, 2024
[20] Invasive Plants & Animals Committee (2016)

**Table 1: Extent of declared weed species found within the project area**

| Species | WoNS | *Biosecurity Act 2019* Class | Extent |
|---|---|---|---|
| **African boxthorn** *Lycium ferocissimum* | **YES** | **B** | Confined to isolated occurrences on the City of Hobart land parcel within the north of the project area (Figure 3a). |
| **blackberry** *Rubus fruticosus* aggregate | **YES** | **B** | Significant infestations occur on the fencing between the Macquarie Point site and the Hobart Cenotaph. |
| **boneseed** *Chrysanthemoides monilifera* subsp. *monilifera* | **YES** | **B** | Present throughout the project area but particularly abundant bordering the Macquarie Point site and Hobart Cenotaph. |
| **cutleaf nightshade** *Solanum triflorum* | **NO** | **A** | Located adjacent to an access road on the western side of the Macquarie Point site (Figure 3b). |
| **fennel** *Foeniculum vulgare* | **NO** | **B** | Present throughout the project area but particularly abundant bordering the Macquarie Point site and Hobart Cenotaph. |
| **gorse** *Ulex europaeus* | **YES** | **B** | Occurs within the northern extent of the project area within the City of Hobart regatta grounds (Figure 3a). |
| **white weed** *Lepidium draba* | **NO** | **A** | Occurs as a small patch in the north of the project area within the residential development and public foreshore zone (Figure 3a). |

**Plate 7: Fennel north of the Macquarie Point site**

**Plate 8: Mirror bush north of the Macquarie Point site**

**Plate 9: African boxthorn bordering the TasPorts Huon Quays**

**Plate 10: Blackberry infestation on the border of Mac Point site and the Hobart Cenotaph**

### 2.4.2. Introduced fauna

The project area likely supports a wide range of introduced fauna species passing through the broader area including birds such as the European blackbird (*Turdus merula*), kookaburra (*Dacelo novaeguineae*), European starling (*Sturnus vulgaris*) and mallard (*Anas platyrhynchos*), mammals such as the European rabbit (*Oryctolagus cuniculus*) and feral cats (*Felis catus*) and marine fauna including the northern Pacific seastar (*Asterias amurensis*) and European clam (*Varicorbula gibba*). Signs of introduced fauna observed during the assessment included rabbit diggings that were common across the project area.

### 2.4.3. Introduced pathogens

#### 2.4.3.1. *Phytophthora cinnamomi*

Commonly referred to as dieback or root rot fungus, PC is a soil-borne fungus exotic to Tasmania. The fungus is pathogenic, requiring plant tissue as a food source. By parasitising its feeder roots, PC can fatally starve its host plants of nutrients and water. Members of the Ericaceae, Myrtaceae and Proteaceae families, among them numerous threatened species, are known to be highly susceptible to PC[21]. When infected, susceptible species display a characteristic progression of morphological traits, beginning with leaf-yellowing, progressing to substantive dieback (browning) and ending in death. Other potentially fatal processes, such as drought, can cause similar visual symptoms to PC, but the impact of drought at a given location tends to vary less within and between species. Thus, a mosaic of symptomatic and healthy plants can be a good indicator of the presence of PC, in particular if symptoms are concentrated in susceptible species and in moist locations.

[21] Podger & Brown (1989); Barker & Wardlaw (1995)

The establishment and spread of PC are generally restricted to areas that receive above 600 mm of rainfall per annum and are below 900 m altitude (predominantly below 600 m)[22]. Temperature is critical, with the disease not impacting areas where the mean annual temperature is below 7.5 °C, and in closed-canopy environments requiring disturbance that facilitates soil temperatures to exceed 15 °C. Rainfall is crucial because the life cycle of PC depends on moist conditions for growth, spore production and dispersal.

Humans are the primary long-distance dispersal agent of PC, with contaminated soil being spread on vehicles, construction machinery and walking boots[23]. PC spores and infected root material can be transported in minute quantities of soil, but the risk of infection increases with the quantity of soil moved. Thus, vehicles that tend to accumulate large sods of soils during works pose the greatest risk of spreading contaminants. Once established at a site, PC can spread rapidly through root contact and water movement (above and below ground).

No characteristic signs or evidence of soil borne diseases or pathogens such as PC were observed across the project area. However, the project area is below 700 m in elevation and receives around 600 mm of rainfall annually, thus there is a low likelihood that it could persist within the project area if established; however, the majority of the site comprises introduced species and many of the few native species present including *Allocasuarina littoralis, Melaleuca squarrosa* and *Kunzea ambigua* are generally resistant to PC infections[24]. Nevertheless, PC presents a risk to the site and adjacent areas and appropriate hygiene regimes will need to be maintained throughout the development of the MPPP.

#### 2.4.3.2. Chytrid fungus

Chytrid fungus (*Batrachochytrium dendrobatidis*) causes the infectious disease, chytridiomycosis, which is affecting amphibians worldwide, including Tasmania. The fungus grows on the animal's skin and causes it to harden[25]. Frogs absorb water and mineral salts through the skin and the infected hardened skin is no longer able to perform this function. The resulting imbalance causes metabolic changes that kill the animal. It is capable of causing sporadic deaths in some populations and up to 100 per cent mortality in others.

Human population density has been found to be a highly influential (positive) variable in the presence of the pathogen[26]. The spread of the pathogen is considered likely to be promoted by human activity in Tasmania, as its occurrence in remote wilderness areas is positively associated with variables linked to human-disturbance, including gravel roads[27].

No frogs have been recorded and no breeding habitat exists within the project area. However, frogs may occasionally utilise the site while transversing across the broader area and effective hygiene controls should be implemented to manage the potential spread of chytrid fungus.

## 2.5. MARINE VALUES

An assessment of marine natural values was undertaken by Marine Solutions of behalf of NBES. This assessment consisted of a preliminary desktop assessment of marine natural values and accompanying intertidal surveys to identify threatened species in the vicinity of the proposed development. A summary of their findings is as follows:

- One threatened marine ecological community and 21 threatened marine species were identified as possibly occurring in the area or known to occur in the area (Natural Values Atlas and Protected Matters Search Tool results);

[22] Podger & Brown (1989); Podger *et al.* (1990)
[23] Department of Natural Resources & Environment (2015)
[24] Department of Natural Resources & Environment (2024b)
[25] Department of Natural Resources & Environment (2015)
[26] Rohr *et al.* (2011)
[27] Pauza *et al.* (2010)

- The intertidal survey, primarily targeted to the Tasmanian live-bearing sea star *(Parvulastra vivipara)* and the Derwent River sea star *(Marginaster littoralis)* failed to detect the species in the vicinity of the proposed development;
- It was determined that the development poses minimal risk to fish, turtles and marine mammals as it is unlikely to significantly disrupt migratory access, movements or behaviour of any species;
- The identified ecological community and threatened flora species were deemed unlikely to be present within the project vicinity;
- The Derwent estuary is a recognised Shark Refuge Area and impacts to school shark *(Galeorhinus galeus)* populations should be considered further in follow up impact assessments;
- At this stage, in water works are not planned for this project, and would likely require additional considerations for relevant natural values. Less mobile species such as the red *(Thymichthys politus)* and spotted handfish *(Brachionichthys hirsutus)* or threatened sea stars should be considered if in water works are required, due to their limited ability to move away from negative stimuli such as construction noise. Furthermore, if in water works are required it was recommended that impacts from contaminated soil and polluted sediment should be mitigated, which may include baseline testing of contaminated sediments and treatment of stormwater runoff.
- Future information pertaining to design, duration and timing of development may require further developments to the marine natural values assessment.

The full report prepared by Marine Solutions Tasmania Pty Ltd has been provided alongside this natural values assessment report (Attachment A).

## 2.6. GEOCONSERVATION SITES

The desktop assessment identified no known geoconservation sites within 1 km of the project area, with the nearest site, the "Cenozoic Plant Macrofossils of Tasmania (ID: 3173)", being found in West Hobart, 1.8 km to the west.

## 2.7. ACID SULFATE SOILS

Acid sulfate soils are natural soils that contain sulfides (typically iron sulfides) and underlie large areas of the coastline of Australia. Most of these sulfides were formed by bacterial activity underwater long ago. Sea water provides a ready source of sulfur for conversion to sulphides and thus the higher risk areas tend to be low-lying coastal margins that were once covered by water[28]. In an undisturbed and waterlogged state these soils are harmless, but when disturbed and exposed to oxygen through drainage or excavation, a process of oxidation can produce sulfuric acid in large quantities. In the undisturbed state the soils are called Potential Acid Sulfate Soils (PASS). Once they are disturbed and start oxidising, they are called Actual Acid Sulfate Soils (AASS). They are collectively referred to as Acid Sulfate Soils (ASS)[29].

Across the study area, there are no areas of high potential ASS, however there is a high probability of occurrence of marine subaqueous and intertidal sulfate soils in the adjacent waters of Sullivans Cove[30]. Across the project area there is a low probability of coastal acid sulfate soils being present. An ASS assessment has been commissioned by the MPDC for this project.

[28] Department of Primary Industries, Parks, Water & Environment (2009)
[29] Department of Primary Industries, Parks, Water & Environment (2009)
[30] Department of Natural Resources & Environment (2024a)

# 3. IMPACT ASSESSMENT, SCOPE FOR MITIGATION, AND RECOMMENDATIONS

Overall, the proposed Macquarie Point Precinct Plan (MPPP) is unlikely to impact any terrestrial natural values afforded protection under both State and Commonwealth legislation. The specific recommendations for values that have been assessed are provided below.

## 3.1. VEGETATION COMMUNITIES

The proposed development area contains no native vegetation communities as the project area is comprised entirely of highly modified land. Large sections of the site comprise of cleared land and built infrastructure that does not support vegetation. Areas that do support vegetation are dominated by exotic species with native species negligibly contributing to the vegetation cover observed. No mitigation measures are necessary.

## 3.2. CONSERVATION SIGNIFICANT FLORA

No threatened flora species were recorded in the project area and the likelihood of any species occurring is considered very low. Potential habitat for *Vittadinia* spp. was identified, however it is highly unlikely to occur. To rule this out, a spring survey may be desirable to rule out the potential occurrence of this species in the project area. If present, a permit to take under the TSPA will be required if the occurrence/s cannot be avoided.

## 3.3. CONSERVATION SIGNIFICANT FAUNA

No direct impact to threatened fauna is anticipated within the project area.

The habitat present within the project area is highly modified and presents low to very low potential habitat value for threatened species. Therefore, threatened species that are known to occur within 500 m, or which have potential range boundaries within 500 m of the project area, have little to no chance of occurring. Any threatened species that may occur are only likely to be transient visitors only.

3.3.1.1. Eastern barred bandicoot

The eastern barred bandicoot (*Perameles gunnii*), whilst most likely to occur in the project area, is unlikely to utilise the area due to the negligible habitat present and the availability of better habitat west of the site at the Queens Domain. There is little understorey cover present in the project area for this species to utilise as shelter and for nesting opportunities. Impacts from the proposed development are likely to be negligible as any habitat lost will be marginal and not significant for the species. No mitigation measures are necessary for this species.

3.3.1.2. Swift parrot and blue-winged parrot

The swift parrot is listed as endangered under the TSPA and Critically Endangered under the EPBCA. Swift parrots are endemic breeders to Tasmania, migrating from south-eastern mainland Australia where they spend the winter. The threatened status is a result of population decline associated with the loss of foraging and nesting habitat, predation by Krefft's gliders (*Petaurus notatus)* and collisions with man-made objects[31].

Blue-winged parrots are also a Tasmanian migrant, and inhabit a range of habitats from coastal, sub-coastal and inland areas, through to semi-arid zones. They tend to favour grasslands and grassy woodlands and are often found near wetlands. The species can also be seen in altered environments such as airfields, golf-courses, and paddocks. Pairs or small parties of blue-winged parrots forage mainly near or on the ground for seeds of a wide range of native and introduced grasses, herbs, and shrubs.

[31] Threatened Species Section (2024)

Both the swift parrot and blue-winged parrot may utilise the broader area on occasion, with potential nesting habitat occurring at the Queens Domain west of the site. However, the project area itself contains no viable habitat for the species to nest or forage.

#### 3.3.1.3. Collision risk

Any infrastructure can create a potential collision hazard to birds if it is not clearly visible and avoidable. In almost all scenarios, the risk that buildings pose to bird collisions relates to the design and location of windows and any other reflective surfaces. Threats posed by such surfaces can be classified into two main categories:

- Reflection - a reflection can imitate continuous habitat. When seen from the outside of a building, glass often has a reflective quality, mirroring the sky, trees and other features.
- Transparency - birds perceive a passageway through clear glass and attempt to fly straight through. Glass lobbies, balconies, windows, glass walls that meet at a corner, or aligned windows (windows installed parallel to each other, on opposite sides of the building) may provide an unobstructed view of habitat and sky on the other side.

We consider the risk of collision to be relatively low given that the proposed design will contain high volumes of visual obstruction, with the exception potentially being birds travelling from the water at night with potential light impacts. In addition, we haven't identified any avifauna at population level risk of impact from the proposal. Collison risk has been addressed more in a separate document[32].

#### 3.3.1.4. Light impacts

Changes or increases in urban light pollution can have detrimental effects on wildlife, with the potential to disorient migratory species, disrupt foraging and nesting behaviour or induce physiological changes[33]. There is minimal literature regarding the impact of urban light pollution on swift parrots, eastern barred bandicoots or hooded plovers specifically, although it is not a listed threat for any of these species[34]. Other non-listed species, including migratory Procellariiformes, can suffer disorientation from lighting in particular scenarios.

Impact areas have been modelled within the PoSS Lighting Assessment by Introba Consulting[35]. Sport lighting will be highly directional and mounted below the roof, minimising direct light spill from the fittings, with any light emitted being the result of reflectance only. The surrounding area is predicted to experience a maximum increase in residual nocturnal light of <0.5 lux beyond ~200 m to north and west of the proposed stadium structure. This increase is minimal in the context of the maximum vertical illuminance of town and city centres (5 – 25 lux) and less than the illuminance of rural and semi-rural areas at night (1 – 5 lux).

To minimise impacts to foraging behaviour of terrestrial mammals, recommendations from the National Light Pollution Guidelines suggest avoiding directly lighting refuge sites, foraging or dispersal routes, minimising light spill, and avoiding lights with spectral content such as blue wavelengths that are easily perceived by terrestrial mammals and their predators[36], all of which are considered to be reasonably achievable for the project in the context of the limited risk posed by the location and the mammal assemblage expected to be present based on habitat.

No nesting habitat for the eastern barred bandicoot will be exposed to increased light and the proposed lighting will have no impact to the species breeding behaviour in the nearest suitable breeding habitat. Potential foraging habitat for eastern barred bandicoots may include grassed areas very close to the project area. These areas are expected to experience a maximum increase of 0.5 lux, which will only

[32] North Barker Ecosystem Services (2024)
[33] Fardell & Dickman (2023); Kight & Swaddle (2011)
[34] Based upon SPRAT profiles for each species
[35] Introba Consulting (2024)
[36] Department of Climate Change, Energy, the Environment & Water (2023)

operate until 11 pm as per the AS4282 Standards. Given the minimal increase in illumination, limited operation timeframes and relatively small impact area, this will not represent a population level decrease in foraging habitat nor a meaningful impact at the local level, in which bandicoots could be expected to exhibit temporal and spatial avoidance of any light conditions should they be detrimental at a small scale.

Swift parrots may utilise the area on occasion for dispersal only, as no foraging or breeding habitat will experience increased light exposure. Constant evening light pollution can mask changes in natural day length and disrupt cues for breeding and migratory birds[37]. Due to the diurnal nature of the species, the lack of nesting and foraging sites within the impact area, and the extremely low likelihood of them roosting within areas of increased light exposure, the additional lighting will not impact behaviour of swift parrots.

No potentially suitable nesting or foraging habitat for the hooded plover occurs within the area of predicted light impacts.

Migratory Procellariiformes such as short-tailed shearwaters are known to pass through the River Derwent during their annual migration from south-east Tasmania and may travel within close vicinity of the project area. The lighting array for the project is expected to pose less of a disorientation risk than existing exposed lighting traversing the water (such as the risk of lighting across the River Derwent) but nonetheless shearwater collisions are considered in the collision risk assessment.

3.3.1.5. Noise and vibration impacts

Acoustic disturbance can interrupt auditory signalling and detection in wildlife and result in species avoiding areas of high anthropogenic noise[38]. There is minimal literature regarding the impact of anthropogenic noise on swift parrots, eastern barred bandicoots or hooded plovers specifically, although it is not a listed threat for any of these species[39].

A Noise and Vibration Assessment was conducted by AECOM[40], modelling current and predicted noise impacts to the surrounding area. Modelling of noise levels is limited to the operational phase, with construction phase impacts yet to be assessed. Current background anthropogenic noise in potential foraging areas within the Cenotaph and Queens Domain is between 47 – 52 dB(A), mainly due to traffic along the Tasman Highway and TasPorts operations.

Increases in noise levels will be restricted to events (sporting and music), with daily operation of permanent building services plant expected to have a negligible (< 20 dB(A)) increase to the north and west of the site. Maximum cumulative noise impacts are predicted to be 53 - 80 within 200 m to the north in the Cenotaph/Queen's Domain, although this represents temporary increases during live music events. Sporting events are predicted to generate a maximum of 44 – 58 dB(A) within 200 m of the site in the Cenotaph/Queens Domain from crowd noise and 60 – 73 dB(A) from sirens.

Despite the increase in maximum noise from 52 to 80 dB(A) in potential eastern barred bandicoot foraging areas, it is unlikely to have any permanent impact on the species in terms of behavioural or spatial avoidance. Temporary disturbances from evening music and cultural events within the Cenotaph and Regatta Grounds are not considered to permanently alter the viability of foraging habitat in the surrounding areas, and large music events at the Royal Botanical Gardens do not appear to have a detrimental impact on populations of eastern barred bandicoot known to nest and forage in the adjacent Queen's Domain. Furthermore, the enclosed design of the stadium would produce lower residual noise impacts than such open-air events. The area of greatest noise impact within 200 m of the

[37] Dominoni *et al.* (2014); Wilson *et al.* (2021)
[38] Francis & Barber (2013)
[39] Based upon SPRAT profiles for each species
[40] AECOM (2024)

stadium constitutes low potential foraging habitat and is not considered to be critical for population persistence in the broader area based on relative habitat quality and existing disturbance of habitats.

Temporary increases in noise are not predicted to have detrimental impacts on swift parrots as nearby foraging habitat in the Queen's Domain is >500 m from the site and is not predicted to experience an increase above existing noise levels during sporting events, and only a marginal increase during infrequent live music events. Potential nesting habitat for the species is not expected to experience any increase in noise during events due to expected spatial separation of any plausible nesting locations.

No potentially suitable nesting or foraging habitat for the hooded plover occurs within the area of predicted noise impacts.

## 3.4. INTRODUCED FLORA, FAUNA, AND PATHOGENS

The proposed development poses a risk of spreading weeds locally and increasing infestations through creating new disturbance niches. Increased weed infestations may risk compromising nearby native vegetation remnants, the occurrences of threatened flora in the local area, and the integrity of adjacent crown-owned and privately-owned land.

To manage this risk, a project-specific weed and hygiene management plan (WHMP) is recommended to detail weed and hygiene prescriptions for contractors through construction of the stadium and for land managers into operations. The plan must outline primary and secondary weed control and requirements, including wash-down stations and auditing procedures. The plan should consider the following guidelines:

- *Keeping it clean – A Tasmanian field hygiene manual to prevent the spread of freshwater pests and pathogens* [41];
- *Weed and Disease Planning and Hygiene Guidelines – Preventing the spread of weeds and diseases in Tasmania* [42];
- *Tasmanian Washdown Guidelines for Weed and Disease Control. Machinery, Vehicles & Equipment* [43].

Having a WHMP will ensure legislative compliance and ensure that the proponent's responsibility regarding the containment of the declared weed species.

A follow-up weed inspection of the project area is recommended to establish if treatment is warranted for the proliferation of weeds due to the project disturbance. This should be undertaken in spring or summer and at least 6 months after works are completed.

## 3.5. GEOCONSERVATION SITES

There will be no direct impact from the proposed development to sites of geoconservation significance as there are no geoconservation values present within or around the project area.

## 3.6. ACID SULFATE SOILS

An ASS assessment has been commissioned by the MPDC for this project. Even as the probability of ASS being present on the site is modelled as low, an ASS Management Plan is recommended to be implemented. This is generally a manageable construction requirement.

[41] Allen & Gartenstein (2010) - https://nre.tas.gov.au/invasive-species/weeds/weed-hygiene/keeping-it-clean-a-tasmanian-field-hygiene-manual

[42] Department of Primary Industries, Parks, Water & Environment (2015) - https://nre.tas.gov.au/invasive-species/weeds/weed-hygiene/weed-and-disease-planning-and-hygiene-guidelines

[43] Department of Primary Industries, Parks, Water & Environment (2004) - https://nre.tas.gov.au/Documents/Washdown-Guidelines-Edition-1.pdf

# 4. LEGISLATIVE IMPLICATIONS

## 4.1. *ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999*

The EPBCA is structured for self-assessment, with guidelines and criteria available to assist any person who proposes to take an action to decide whether they should submit a referral to the national Department of Climate Change, Energy, the Environment and Water (DCCEEW) for a decision by the Minister on whether assessment and approval is required under this Act.

Under this Act, an action will require approval from the minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance (MNES), which includes all species and communities listed as threatened and/or migratory under this Act.

It is not considered likely that any MNES protected under this Act will be impacted by the proposed development to an extent that it will trigger the Act and require referral of the project for consideration as a controlled action by the Minister. This may change pending any confirmation regarding in water works which may impact the red and/or spotted handfish.

## 4.2. TASMANIAN *THREATENED SPECIES PROTECTION ACT 1995*

Under the TSPA, a person cannot knowingly without a permit 'take' a listed species. The definition of 'take' encompassing actions that kill, injure, catch, damage, destroy and/or collect threatened species or vegetation elements that support threatened species, *e.g.,* nests and dens.

At this stage, no threatened flora or fauna are likely to be impacted by the proposed development in accordance with this definition, thus no action is required under this Act; however, if further surveys for *Vittadinia* spp. are undertaken and are present on site, a permit to take will be required if they are present and cannot be avoided.

## 4.3. TASMANIAN *NATURE CONSERVATION ACT 2002*

The Tasmanian *Nature Conservation Act 2002* (NCA) operates under Tasmania's resource management and planning system and provides provisions with respect to the conservation and protection of Tasmania's fauna, flora and geological diversity. The Act establishes the regulations for taking and trading in native wildlife and lists threatened native vegetation communities that are to be protected under the forest practices system. The Act also classifies reserved lands in Tasmania and establishes values and objectives for each reserve class.

If a den/burrow or nest of a species listed under Schedule 1, 5 or 8 of the Tasmanian *Nature Conservation (Wildlife) Regulations 2021* is at risk of impact, then a permit to take a product of wildlife would be required for removal of the burrow or nest. Permits to take are administered under the NCA.

Based on our current understanding of the project area, no action is required under this Act.

## 4.4. TASMANIAN *BIOSECURITY REGULATIONS 2022*

According to the provisions of the Tasmanian *Biosecurity Regulations 2022*, administered under the Tasmanian *Biosecurity Act 2019*, Class A localities are areas in which eradication is deemed feasible (generally due to the existence of a targeted management plan) and is the responsibility of the landowner or land manager, or in the case of disturbance the development proponent.

Class B municipalities are those which host moderate or large infestations of the declared weed that are not deemed eradicable because the feasibility of effective management is low at this time. Therefore, the objective is containment of infestations. This includes preventing spread of the declared weed from the municipality or into properties currently free of the weed or which have developed or are implementing a locally integrated weed management plan for that species. As well there is a requirement to prevent spread of the weeds to properties containing sites for significant flora, fauna, and vegetation communities.

According to the relevant statutory weed management plans, two of the declared weeds, cut-leaf nightshade (*Solanum triflorum*) and white weed (*Lepidium draba*) are listed as a Class A weed in the Hobart municipality and thus eradication objectives apply. The remaining five declared weeds within the project area are listed as a Class B weeds in the Hobart municipality and will require the application of containment objectives measures. A project specific WHMP has been recommended.

## 4.5. TASMANIAN *LAND USE PLANNING AND APPROVALS ACT 1993*

LUPAA states that 'in determining an application for a permit, a planning authority must (amongst other things) seek out the objectives set out in Schedule 1'[44].

Schedule 1 includes 'The objectives of the Resource Management and Planning System of Tasmania' which are (amongst other things):

> *'To promote sustainable development of natural and physical resources and the maintenance of ecological processes and genetic diversity'.*

Sustainable development includes 'avoiding, remedying or mitigating any adverse effects of activities on the environment'[45]. The objectives of LUPAA when dealing with planning proposal are administered through the application of the local authority planning schemes.

## 4.6. TASMANIAN PLANNING SCHEME- HOBART DRAFT LOCAL PROVISIONS SCHEDULE

The project area is located entirely within the Hobart City Council area and is currently subject to the *Sullivans Cover Planning Scheme 1997*. However, as the statewide rollout of the Tasmanian Planning Scheme (TPS) progresses, it is expected that the Sullivans Cove Planning Scheme will likely be replaced in the near future. Additionally, the Tasmanian Planning Scheme- Hobart Draft Local Provisions Schedule has been released with a finalised scheme expected to be in effect upon the development of the MPPP. As such this assessment will address the requirements under the TPS rather than the Sullivans Cove Planning Scheme.

The Hobart Draft Local Provisions Schedule overlay maps suggest the project area will be zoned as 'Particular Purpose', 'Port and Marine' and 'Open Space' and will be subject to the 'Waterway and Coastal Protection Area' and 'Priority Vegetation Area' overlays under the Natural Assets Code (C7.0) of the TPS[46] (Appendix D).

The purpose of the Natural Assets Code is to:

| | |
|---|---|
| (C7.1.1) | minimise impacts on water quality, natural assets including native riparian vegetation, river condition and the natural ecological function of watercourses, wetlands, and lakes. |
| (C7.1.2) | to minimise impacts on coastal and foreshore assets, native littoral vegetation, natural coastal processes, and the natural ecological function of the coast. |
| (C7.1.3) | To protect vulnerable coastal areas to enable natural processes to continue to occur, including the landward transgression of sand dunes, wetlands, saltmarshes, and other sensitive coastal habitats due to sea-level rise. |
| (C7.1.4) | To minimise impacts on identified priority vegetation. |
| (C7.1.5) | To manage impacts on threatened fauna species by minimising clearance of significant habitat |

[44] Section 51(2)(b) – Part 4 Enforcement of Planning Control – Division 2 Development Control (*LUPAA 1993*) - Tasmanian Government 1993
[45] page 56 – *LUPAA 1993*
[46] City of Hobart (2024)

The development standards for buildings and works under the TPS in relation to these overlays and the proposed MPPP is addressed below.

### 4.6.1. Priority vegetation area

The priority vegetation area refers to land that includes native vegetation where any of the following apply:

(a) It forms an in integral part of a threatened native vegetation community as prescribed under Schedule 3A of the *Nature Conservation Act 2002*;
(b) is a threatened flora species;
(c) it forms a significant habitat for a threatened fauna species; or
(d) it has been identified as native vegetation of local importance.

The priority vegetation provision proposed will apply to the proposed MPPP as the area to the north of the project area will be enclosed by this overlay.

It is likely that the priority vegetation area was established to cover grassy areas that could be an extension of the lowland *Themeda* grasslands (GTL) that are present ~300 m to the west of the project area on the Queens Domain. This vegetation types meets the definition of priority vegetation as the community can contribute to the critically endangered EPBCA listed ecological community *Lowland Native Grasslands of Tasmania*[47], as well as providing habitat for both threatened flora and fauna species. The presence of the lowland grasslands of Tasmania listed ecological community can be determined if criteria established under the EPBCA is satisfied.

The grassy areas present in the project area were assessed by NBES in September of 2023 and did not satisfy the several of the criteria needed to determine the presences of the EPBCA listed ecological community, lowland native grasslands of Tasmania. However, the grassy areas in the site did not satisfy the criteria for the EPBCA community as:

- Perennial non-native plant species (weeds) make up more than 20% of the total ground cover of the patch.
- Perennial tussocks (*Themeda triandra* and/or *Poa rodwayi*) do not cover at least 50% of the patch.
- At least 50% of ground cover[48] of the patch is not made up of native herbs (excluding any grasses that are not from the genera *Poa* and/or *Themeda*).
- There are at least five native wildflower species[49] present in a 0.5 hectare area of the patch during September to March.

Alternatively, the priority vegetation area could be present due to the area's ability to provide 'significant habitat for a threatened fauna species'. The eastern barred bandicoot is the most likely threatened fauna visitor to the project area. This species inhabits 'open habitats' such as 'exotic grasslands', however it 'required understorey plants to provide shelter, nest sites and food[50]. Therefore, significant habitat for the species needs to have these understorey habitat elements present. However, there is no nesting habitat present for the species within the project area. Additionally, the foraging potential for the species is low due to the lack of adequate sheltering opportunities and foraging sites. Therefore, the habitat present within the project area does not constitute significant habitat for the species. Thus, the vegetation within the project area does not meet the definition of priority vegetation.

However, the provisions of the priority vegetation overlay have been assessed, given the nature of the proposed development and context of the project area in Table 2.

[47] Department of the Environment, Water, Heritage & the Arts (2010)
[48] Ground cover includes all living material in the ground layer (e.g. herbs, lichens).
[49] Wildflowers include all native herbaceous plant species, excluding grasses, sedges and rushes.
[50] Department of the Environment, Water, Heritage & the Arts (2008)

**Table 2: Application of the Priority Vegetation Development Standards for Buildings and Works (C7.6.2)**

| | | |
|---|---|---|
| **Objective** | | |
| That clearance of native vegetation within a priority vegetation area:<br>(a) Does not result in unreasonable loss of priority vegetation;<br>(b) Is appropriately managed to adequately protect identified priority vegetation; and<br>(c) Minimises and appropriately manages impacts from construction and development activities. | | |
| **Acceptable Solutions** | | |
| **A1** | Clearance of native vegetation within a priority vegetation area must be within a building area on a sealed plan approved under this planning scheme. | The proposed development does not meet the acceptable solution. |
| **Performance Criteria** | | |
| **P1.1** Clearance of native vegetation within a priority vegetation area must be for: | | |
| **(a)** | An existing use on the site, provided any clearance is contained within the minimum area necessary to be cleared to provide adequate bushfire protection, as recommended by the Tasmanian Fire Service or an accredited person. | The criterion is not satisfied as the proposed development is not an existing use of the site. Any required clearance for the proposed development however will be restricted to modified areas. There is no priority vegetation present within the project area (as per the definitions of priority vegetation). |
| **(b)** | Buildings and works associated with the construction of a single dwelling or an associated outbuilding. | Not applicable to the proposed development. |
| **(c)** | Subdivision in the General Residential Zone or Low-Density Residential Zone. | Not applicable to the proposed development. |
| **(d)** | Use or development that will result in significant long term social and economic benefits and there is no feasible alternative location or design. | The assessment of the potential social and economic benefits of the proposed development is not within our scope as ecologists. |
| **(e)** | Clearance of native vegetation where it is demonstrated that on-going pre-existing management cannot ensure the survival of the priority vegetation and there is little potential for long-term persistence. | This assessment has determined there is no priority vegetation (or any native vegetation communities) present within the project area. Therefore, this performance criterion is not applicable as any clearance will be limited to existing modified vegetation. |
| **(f)** | The clearance of native vegetation that is of limited scale relative to the extent of priority vegetation on the site. | This assessment has determined there is no priority vegetation present within the project area. Therefore, this performance criterion is satisfied as any clearance will be limited to existing modified vegetation. |
| Given that there is no priority vegetation present within the project area, the proposed development can meet the performance criteria (P1.1) under criterion (f), and likely criterion (d). | | |

| **P1.2** Clearance of native vegetation within a priority vegetation area must minimise adverse impacts on priority vegetation, having regard to: | | |
|---|---|---|
| **(a)** | The design and location of buildings and works and any constraints such as topography or land hazards. | There are no design and location constraints likely to influence the proposed development such that it will impact any areas of priority vegetation. |
| **(b)** | Any particular requirements for the buildings and works. | Particular requirements for the buildings and works has not been specified. |
| **(c)** | Minimising impacts resulting from bushfire hazard management measures through siting and fire-resistant design of habitable buildings. | There will be no resultant impacts of priority vegetation from bushfire hazard management measures as there is no priority vegetation within the project area, or immediately adjacent to it. |
| **(d)** | Any mitigation measures implemented to minimise the residual impacts on priority vegetation. | None of the mitigation measures described in this report will have residual impacts on any priority vegetation. |
| **(e)** | Any on-site biodiversity offsets. | As there will be no priority vegetation impacted by the proposed development, onsite biodiversity offsets are not proposed. |
| **(f)** | Any existing cleared areas on the site. | The proposed development will utilise existing cleared areas by situating any proposed footprints within the modified areas. |
| Given that there is no priority vegetation present within the project area, the proposed development can meet the all of performance criteria (P1.2). | | |

### 4.6.2. Waterway and coastal protection area

The Waterway and Coastal Protection Area refers to land that is:

- Within the relevant distance from a watercourse, wetland, lake or the coast… but does not include a piped watercourse or piped drainage line.

The Waterway and Coastal Protection Area provisions are likely to apply to the proposed MPPP as the coastline of the project area is covered by the overlay (Appendix D). The small area that overlay covers within the project area comprises a modified seawall structure on reclaimed land (Plate 11). The are no natural coastal formations present within the study area, such as dunes or beaches. There is limited cover on the rocks at the low tide line of non-terrestrial flora (seaweeds) (Plate 12), however there is no terrestrial riparian vegetation present.

The provisions of the Waterway and Coastal Protection Area overlay to the proposed development and study area are addressed in Table 3.

**Plate 11. The coastline within the Waterway and Coastal Protection Area on the eastern boundary of the project area**

**Plate 12. Marine flora (seaweeds) present on the seawalls along the eastern boundary of the project area**

**Table 3: Application of the Waterway and Coastal Protection for Buildings and Works within a Waterway and Coastal Protection Area or a Future Coastal Refugia Area (C7.6.1)**

| | | |
|---|---|---|
| **Objective** | | |
| That buildings and works within a waterway and coastal protection area or future coastal refugia area will not have an unnecessary or unacceptable impact on natural assets. | | |
| **Acceptable Solutions** | | |
| **A1** Buildings and works within a waterway and coastal protection area must: | | |
| **(a)** | Be within a building area on a sealed plan approved under this planning scheme. | This acceptable solution cannot be met. |
| **(b)** | In relation to a Class 4 watercourse, be for a crossing or bridge not more than 5m in width. | This acceptable solution cannot be met. |
| **(c)** | If within the spatial extent of tidal waters, be an extension to an existing boat ramp, car park, jetty, marina, marine farming shore facility or slipway that is not more than 20% of the area of the facility existing at the effective date. | This acceptable solution cannot be met. |
| The proposed development does not meet any of the acceptable solutions, therefore the performance criteria must be addressed. | | |
| **Performance Criteria** | | |
| **P1.1** Buildings and works within a waterway and coastal protection area must avoid or minimise adverse impacts on natural assets, having regard to: | | |
| **(a)** | Impacts caused by erosion, siltation, sedimentation, and runoff. | At this time, impacts related to erosion, siltation, sedimentation and runoff are not anticipated, however with design updates and knowledge of construction methodology, specific mitigation for these aspects may require investigation. |
| **(b)** | Impacts on riparian or littoral vegetation. | There is no riparian vegetation present in the project area. Therefore, the proposed development will have no impact to riparian vegetation. |
| **(c)** | maintaining natural streambank and streambed condition, where it exists. | No natural streambank or streambed exists within the development footprint. The coastline present within the project area is entirely modified into a seawall. Therefore, there will be no impact to the natural streambank and streambed condition. |
| **(d)** | Impacts on in-stream natural habitat, such as fallen logs, bank overhangs, rocks and trailing vegetation. | There is no in-stream habitat present within the project area. Therefore, there will be no impact to in-stream habitat. |
| **(e)** | The need to avoid significantly impeding natural flow and drainage. | Natural flow and drainage will not be impeded by the proposed development. |

| | | |
|---|---|---|
| **(f)** | The need to maintain fish passage, where known to exist. | The proposed development is terrestrially based. Therefore, there will be no impact to fish passage. |
| **(g)** | The need to avoid land filling of wetlands. | There is no need for filling of wetlands. |
| **(h)** | The need to group new facilities with existing facilities, where reasonably practical. | There is limited existing facilities within the project area that can be utilised by the proposed development. Any new facilities should be grouped with existing facilities, where reasonably practicable. |
| **(i)** | Minimising cut and fill. | The final design has not been confirmed at the time of this report, therefore the total extent of cut and fill actions cannot be evaluated. |
| **(j)** | Building design that responds to the particular size, shape, contours, or slope of the land. | The final design has not been confirmed at the time of this report, therefore, response of the building design to the nature of the land within the project area cannot be evaluated. |
| **(k)** | Minimising impacts on coastal processes, including sand movement and wave action. | The coastline of the project area is entirely modified into a seawall. Therefore, there will be no additional impacts to the coastal processes from the development. |
| **(l)** | Minimising the need for future works for the protection of natural assets, infrastructure and property. | The proposed development will occur close to the existing coastline on the eastern boundary of the project area.<br>Future coastal risks must be considered in the design of the development to reduce the need for future works. |
| **(m)** | The environmental best practice guidelines in the *Wetlands and Waterways Works Manual*. | All works associated within the overlay area will adhere to best practice guidelines set out in the *Wetlands and Waterways Works Manual*. |
| **(n)** | The guidelines in the *Tasmanian Coastal Works Manual*. | All works associated with the proposal within the overlay areas will adhere to best practice guidelines set out in the *Tasmanian Coastal Works Manual*. |
| It is our assessment that the project can meet the provisions of this code, however mitigation regarding erosion, siltation, sedimentation and runoff may warrant further investigation once designs and construction methodology are confirmed. | | |

# 5. CONCLUSION

Overall, our assessment has found that the proposed multipurpose stadium is not likely to have any significant environmental impacts, provided that the recommendations made in this report are applied.

A summary of the key Project of State Significance criteria and how they are satisfactorily addressed is summarised in below in Italicised points:

- Section 1.2.1 - existing vegetation types and ecological vegetation classes of the project sites and adjacent area.
    - *Provision of this natural values assessment satisfies this criterion with vegetation and ecological communities considered for the site and surrounds to the degree applicable to any plausible risks to conservation significant values in particular and native values in general.*
- Section 1.4.2 - how management actions applied during construction and operation of the proposed project eliminate, minimise, mitigate or offset direct adverse social and environmental effects to an acceptable level.
    - *As the potential level of impacts anticipated to environmental values is negligible, potential environmental effects are considered to be acceptable so long as all recommendations are adhered to, with reporting and assessment (limited to our scope) including reference to eliminating, minimising, mitigating and/or offsetting effects to the degree applicable or required, such that this criterion is satisfied.*
- Section 8.3.1 - The reports are to describe the existing light conditions of the project site and the vicinity. The reports are to describe all sources and integration of proposed lighting and its use during different activities, including during events and outside of events. The reports are to evaluate the potential for adverse effects arising from lighting, including the cumulative impact, taking into account surrounding sources of lighting. The reports are to consider the nature of adjacent use and development potentially adversely impacted from lighting on the site, and whether there are any potential effects on fauna or on traffic safety. If necessary, the reports are to outline control measures to prevent the spill.
    - *Detailed assessment of impacts due to lighting have been conducted by Introba Consulting in order to satisfy this criterion.*
    - *Given the expected illumination, limited operational timeframes, and relatively small impact area overlapping with fauna habitat of minimal value, meaningful impacts to threatened fauna species from lighting are not anticipated – key requirements to be adhered to in relation to lighting are noted as avoiding refuge sites, foraging or dispersal routes, minimising light spill, and considering fauna responses with appropriate light selection, all of which should be feasible to achieve in relation to the expected species and habitat values in the surrounding area at risk of potential lighting impacts.*
- Section 8.4.1- The reports are to describe the existing noise and vibration conditions of the project site and vicinity. The reports are to describe all sources of noise and vibration that can be reasonably identified from the use of the proposed project, considering all types of expected and possible events. The reports are to analyse the potential effects of impacts from noise and vibration, taking into account noise and vibration impacts and effects on fauna;
    - *Detailed noise modelling has been conducted by AECOM in order to satisfy this criterion.*
    - *Impacts due to noise and vibration are unlikely to have detrimental impacts on threatened fauna species due to the infrequent nature of impacts, and the presence of existing noise disturbances in the broader area, including various events in the immediate vicinity. Noise and vibration is not a listed threat to any of the terrestrial and avian fauna species that have some potential of occurring in the project area (limited to threatened species).*

- Section 8.5.1 - The reports are to identify and describe the potential effects of the design and operation of the proposed project on site and surrounding hydrology, water quality and stormwater drainage. The reports are to describe management strategies for impacts and effects on flora and fauna within the Derwent Estuary.
    - *The potential impacts to relevant marine and intertidal ecological values within the Derwent Estuary are addressed in Attachment A to the necessary degree to satisfy this criterion.*
- Section 8.5.2 - In preparing these reports specific consideration is given to the site and surrounding hydrology and ecology, including as a catchment; and the receiving environment including all relevant protected environmental values.
    - *The potential impacts to relevant marine and intertidal ecological values are addressed in Attachment A with respect to all relevant protected aquatic environmental values with the potential to interact with the proposal, such that this criterion is satisfied.*
- Section 9.2.2 - The reports are to outline the results of soil contamination and acid sulfate soil analysis description of any proposed disturbance.
    - *The development of an acid sulfate soils management plan is to be undertaken separately to address this criterion.*

In addition to the PoSS guidelines requirements, specific recommendations for the proposed stadium are summarised below for minimising impacts and ensuring legislative compliance.

Vegetation

- The project area is entirely modified, dominated by of mostly exotic species, and there are no native vegetation communities present. There were no signs and/or presence of threatened flora or fauna observed within the project area. The project will not conflict with the objectives of the Tasmanian *Nature Conservation Act 2002*, and provided the recommendations are adhered to, the project can comply with the relevant code overlays of the Tasmanian Planning Scheme.

Threatened flora

- Spring surveys targeting potential habitat for the TSPA listed *Vittadinia* spp. is recommended to determine presence/absence in the project area. If surveys fail to detect any threatened flora species, no action is required under the Tasmanian *Threatened Species Protection Act 1995*. A permit to take will be required in the event that threatened flora is recorded on site and cannot be avoided.
- Significant impacts to EPBCA listed flora MNES are not likely, and as such, the project does not warrant referral in relation to listed flora (at the national level).

Threatened fauna

- Potential impacts to threatened fauna are considered to be negligible, with no loss of significant breeding or foraging habitat for any TSPA or EPBCA listed species.
- Avian collision with the proposed stadium presents has been addressed separately.
- The marine natural values assessment has recommended that further survey for the red and spotted handfish may be warranted in the event that in water works are required for any aspect of the proposal, with this being considered to be the only EPBCA fauna referral trigger that could reasonably eventuate (but which based on the current proposal is not warranted).

Weeds, pests and pathogens

- Declared weeds are present on site. A project specific weed and hygiene management plan is recommended to mitigate the risk of introducing weeds and pathogens to the site and spreading existing infestation.

Other values

- The proposed stadium will not impact on any geoconservation sites, thus, specific mitigation for this value is not warranted.
- There is a low probability of coastal acid sulfate soils occurring in the project area. The development of an acid sulfate soils management plan is required to manage the risk of exposing potential acid sulfate soils in the project area.
- In the event that in water works are required or if runoff is contaminated, further surveys, including sediment sampling, may be required to meet the PoSS requirements.

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# APPENDIX A – VASCULAR FLORA SPECIES LIST

**Status codes:**

| ORIGIN | NATIONAL SCHEDULE | STATE SCHEDULE |
|---|---|---|
| i - introduced | EPBC Act 1999 | TSP Act 1995 |
| d - declared weed WM Act | CR - critically endangered | e - endangered |
| en - endemic to Tasmania | EN - endangered | v - vulnerable |
| t - within Australia, occurs only in Tas. | VU - vulnerable | r - rare |

**Sites:**

| | | | |
|---|---|---|---|
| 1 | FUM - Extra urban miscellaneous - E527670, N5252746 | 13/09/2023 | Ian Jenkinson |
| 2 | FUM - Extra urban miscellaneous - E527630, N5252780 | 13/09/2023 | Ian Jenkinson |
| 3 | FUM - Extra urban miscellaneous - E527604, N5252831 | 13/09/2023 | Ian Jenkinson |
| 4 | FUM - Extra urban miscellaneous - E527590, N5252868 | 13/09/2023 | Ian Jenkinson |
| 5 | FUM - Extra urban miscellaneous - E527694, N5252765 | 13/09/2023 | Ian Jenkinson |
| 6 | FUM - Extra urban miscellaneous - E527628, N5252738 | 13/09/2023 | Ian Jenkinson |
| 7 | FUM - Extra urban miscellaneous - E527517, N5252791 | 13/09/2023 | Ian Jenkinson |
| 8 | FUM - Extra urban miscellaneous - E527344, N5252667 | 22/05/2024 | Will Dobson |

| Site | Name | Common name | Status |
|---|---|---|---|
| | DICOTYLEDONAE | | |
| | **AIZOACEAE** | | |
| 8 | *Carpobrotus rossii* | native pigface | |
| | **APIACEAE** | | |
| 8 | *Daucus carota* | wild carrot | i |
| 5 8 | *Foeniculum vulgare* | fennel | d |
| | **ARALIACEAE** | | |
| 4 | *Hedera helix* | ivy | i |
| | **ASTERACEAE** | | |
| 1 2 3 4 5 6 8 | *Arctotheca calendula* | capeweed | i |
| 6 7 | *Bellis perennis* | english daisy | i |
| 2 3 4 5 | *Calendula arvensis* | field marigold | i |
| 8 | *Calendula officinalis* | garden marigold | i |
| 8 | *Chrysanthemoides monilifera subsp. monilifera* | boneseed | d |
| 4 8 | *Cirsium vulgare* | spear thistle | i |
| 8 | *Conyza sp.* | fleabane | i |
| 8 | *Dimorphotheca fruticosa* | trailing daisy | i |
| 1 2 3 4 5 | *Erigeron bonariensis* | flaxleaf fleabane | i |
| 3 | *Gazania linearis* | tufted gazania | i |
| 8 | *Helminthotheca echioides* | bristly oxtongue | i |
| 1 2 3 4 5 6 7 8 | *Hypochaeris radicata* | rough catsear | i |
| 8 | *Lactuca serriola f. serriola* | prickly lettuce | i |
| 8 | *Leontodon saxatilis* | hairy hawkbit | i |
| 1 5 8 | *Senecio sp.* | groundsel | |
| 1 2 3 4 5 6 8 | *Sonchus asper* | prickly sowthistle | i |
| 8 | *Sonchus oleraceus* | common sowthistle | i |
| 5 7 | *Urospermum dalechampii* | false dandelion | d |
| | **BRASSICACEAE** | | |
| 1 2 3 5 6 | *Brassica rapa* | turnip | i |
| 1 | *Brassicaceae sp.* | | i |

| | | | |
|---|---|---|---|
| 8 | *Capsella bursa-pastoris* | shepherds purse | i |
| 8 | *Hirschfeldia incana* | hoary mustard | i |
| 2 5 8 | *Lepidium draba* | hoary cress | d |
| 3 | *Sisymbrium sp.* | hedge-mustard | i |
| | **CASUARINACEAE** | | |
| 8 | *Allocasuarina littoralis* | black sheoak | |
| 8 | *Allocasuarina verticillata* | drooping sheoak | |
| | **CONVOLVULACEAE** | | |
| 2 3 | *Convolvulus arvensis* | field bindweed | i |
| 8 | *Dichondra repens* | kidneyweed | |
| | **FABACEAE** | | |
| 8 | *Acacia dealbata subsp. dealbata* | silver wattle | |
| 8 | *Acacia melanoxylon* | blackwood | |
| 8 | *Acacia mucronata* | variable sallow wattle | |
| 1 2 4 | *Lotus corniculatus* | bird's-foot trefoil | i |
| 2 3 4 5 6 | *Trifolium dubium* | suckling clover | i |
| 2 3 5 8 | *Trifolium repens* | white clover | i |
| 8 | *Trifolium subterraneum* | subterranean clover | i |
| 4 8 | *Ulex europaeus* | gorse | d |
| | **FUMARIACEAE** | | |
| 3 4 | *Fumaria bastardii* | bastards fumitory | i |
| 1 2 3 4 5 | *Fumaria muralis subsp. Muralis* | wall fumitory | i |
| | **GERANIACEAE** | | |
| 1 | *Erodium botrys* | long heronsbill | i |
| 1 | *Erodium cicutarium* | common heronsbill | i |
| 2 3 4 5 8 | *Erodium moschatum* | musky heronsbill | i |
| 1 | *Geranium potentilloides var.* | mountain cranesbill | |
| 8 | *Geranium sp.* | native geranium | |
| | **LAMIACEAE** | | |
| 1 2 3 4 5 6 | *Salvia verbenaca var. verbenaca* | wild sage | i |
| | **LYTHRACEAE** | | |
| 3 4 | *Lythrum hyssopifolia* | small loosestrife | |
| | **MALVACEAE** | | |
| 1 3 8 | *Malva sp.* | mallow | i |
| 1 3 4 5 6 | *Malva sylvestris* | tall mallow | i |
| | **MYRTACEAE** | | |
| 8 | *Eucalyptus viminalis subsp. viminalis* | white gum | |
| 8 | *Kunzea ambigua* | white kunzea | |
| 8 | *Melaleuca armillaris* | giant honeymyrtle | |
| 8 | *Melaleuca squarrosa* | scented paperbark | |
| | **OROBANCHACEAE** | | |
| 8 | *Parentucellia latifolia* | broadleaf glandweed | i |
| | **OXALIDACEAE** | | |
| 3 5 6 7 | *Oxalis pes-caprae* | soursob | i |
| | **PITTOSPORACEAE** | | |
| 8 | *Pittosporum undulatum* | sweet pittosporum | i |
| | **PLANTAGINACEAE** | | |
| 8 | *Antirrhinum majus* | snapdragon | i |

| | | | |
|---|---|---|---|
| 1 2 3 4 5 6 7 8 | *Plantago coronopus* | buckshorn plantain | i |
| 1 2 3 4 5 6 7 8 | *Plantago lanceolata* | ribwort plantain | i |
| | **POLYGONACEAE** | | |
| 3 4 8 | *Acetosella vulgaris* | sheep sorrel | i |
| 8 | *Rumex crispus* | curled dock | i |
| | **PRIMULACEAE** | | |
| 4 | *Lysimachia arvensis* | scarlet pimpernel | i |
| | **RANUNCULACEAE** | | |
| 8 | *Clematis sp.* | clematis | |
| 8 | *Clematis vitalba var. vitalba* | travellers joy | i |
| | **ROSACEAE** | | |
| 8 | *Acaena echinata* | spiny sheeps burr | |
| 8 | *Acaena sp.* | sheep's burr | |
| 8 | *Cotoneaster franchetii* | grey cotoneaster | i |
| 8 | *Cotoneaster sp.* | cotoneaster | i |
| 8 | *Malus domestica* | apple | i |
| 5 8 | *Pyracantha sp.* | firethorn | i |
| 8 | *Rosa rubiginosa* | sweet briar | i |
| 8 | *Rubus fruticosus* | blackberry | d |
| 1 2 3 4 5 6 7 | *Sanguisorba minor* | salad burnet | i |
| | **RUBIACEAE** | | |
| 5 8 | *Coprosma repens* | mirrorbush | i |
| 1 2 8 | *Galium aparine* | cleavers | i |
| 1 2 3 6 | *Galium murale* | small bedstraw | i |
| | **SALICACEAE** | | |
| 8 | *Populus nigra* | lombardy poplar, italica | i |
| | **SCROPHULARIACEAE** | | |
| 5 8 | *Verbascum thapsus* | great mullein | i |
| | **SOLANACEAE** | | |
| 8 | *Lycium ferocissimum* | african boxthorn | d |
| 1 5 8 | *Solanum nigrum* | blackberry nightshade | i |
| 8 | *Solanum sp.* | nightshade | i |
| 8 | *Solanum triflorum* | cutleaf nightshade | d |
| | **VALERIANACEAE** | | |
| 8 | *Centranthus ruber subsp. ruber* | red valerian | i |
| | GYMNOSPERMAE | | |
| | **CUPRESSACEAE** | | |
| 8 | *Hesperocyparis macrocarpa* | monterey cypress | i |
| | **PINACEAE** | | |
| 8 | *Pinus radiata* | radiata pine | i |
| | MONOCOTYLEDONAE | | |
| | **POACEAE** | | |
| 8 | *Agrostis capillaris* | brown top bent grass | i |
| 8 | *Aira sp.* | hair grass | i |

| | | | |
|---|---|---|---|
| 2 3 4 5 6 7 | *Avena barbata* | bearded oat | i |
| 2 8 | *Bromus catharticus* | prairie grass | i |
| 2 5 | *Bromus hordeaceus* | soft brome | i |
| 4 5 | *Cenchrus clandestinus* | kikuyu grass | i |
| 1 2 3 4 5 6 7 8 | *Dactylis glomerata* | cocksfoot | i |
| 8 | *Digitaria sanguinalis* | summergrass | i |
| 8 | *Echinochloa crus-galli* | common barnyardgrass | i |
| 1 2 3 6 7 | *Ehrharta erecta* | panic veldtgrass | i |
| 1 2 3 4 5 6 7 8 | *Holcus lanatus* | yorkshire fog | i |
| 1 2 3 4 | *Lolium perenne* | perennial ryegrass | i |
| 8 | *Panicum capillare* | common witchgrass | i |
| 8 | *Paspalum sp.* | paspalum | i |
| 8 | *Phalaris aquatica* | toowoomba canarygrass | i |
| 8 | *Poa annua* | winter grass | i |
| 3 4 6 7 | *Poa bulbosa* | bulbous meadowgrass | i |
| 1 2 3 4 6 7 | *Vulpia bromoides* | squirreltail fescue | i |

# APPENDIX B – CONSERVATION SIGNIFICANT FLORA WITHIN 5 KM[51]

| Species | National Status EPBCA | State Status TSPA | Records within 500 m / 5 km | Habitat | Likelihood of Impact | Commentary |
|---|---|---|---|---|---|---|
| *Acacia ulicifolia* juniper wattle | - | Rare | **- / 1** | Sandy coastal heaths and open heathy forest and woodland in the north and east of Tasmania. Populations are often sparsely distributed, and most sites are near-coastal, but it can occasionally extend inland (up to 30 km). | **NONE** | In Tasmania this species is found in coastal heaths, open forest and woodland. However no suitable habitat is present within the project area. This species is easily identifiable, and it is unlikely that is has been overlooked during both the most recent and 2023 survey. There is no chance of this species occurring in the project area. |
| *Allocasuarina duncanii* conical sheoak | - | Rare | **- / 1** | Endemic to southern Tasmania. It is known from Mt Dromedary, the Wellington Range, Snug Tiers and South Bruny Island. The species grows on shallow soils over dolerite, typically in association with *Eucalyptus delegatensis* or *Eucalyptus coccifera*, with two of the smaller sites on sandstone. The species may also form almost monotypic scrubs on dolerite rock pavements, e.g. at Billy Brown Falls, Mount Lloyd. | **NONE** | This species is highly distinctive and unlikely to have been overlooked during surveys. Additionally, the study area supports poor-quality habitat for the species. There is no chance of this species occurring in the project area. |
| *Asperula scoparia* subsp. *scoparia* prickly wood | - | Rare | **- / 24** | In Tasmania, *Asperula scoparia* subsp. *scoparia* is widespread but only occasionally found. It has been recorded from grassy woodland and tall eucalypt forest, often in hilly and rocky sites. | **NONE** | This species appears to be restricted to the south of the State and has been found at New Norfolk north of the project area. However, this species was not observed during surveys and no suitable woodland or habitat exists within the project area to support it. There is no chance of this species occurring in the project area. |
| *Asperula subsimplex* water woodruff | - | Rare | **- / 2** | Occurs in sites with impeded drainage including damp grasslands, floodplains and sometimes in grassy forest and woodland along drainage depressions. | **NONE** | This species occurs in poor drainage sites and is known from grasslands and damp floodplains. However no suitable habitat occurs within the project area and the likelihood that it occurs is low. Additionally, this species is readily identifiable and is unlikely to have been overlooked. |
| *Atriplex suberecta* sprawling saltbush | - | Vulnerable | **- / 1** | Wide range of habitats on most soil types, including saline areas, but is most commonly found in disturbed areas. | **NONE** | This species occurs in a wide range of soil types including saline areas such as the project area. However, this species is distinctive and was not observed during the survey or the prior 2023 survey. There is no chance of this species occurring in the project area. |
| *Austrostipa bigeniculata* doublejointed speargrass | - | Rare | **11 / 69** | Open woodland and grasslands with fertile soils. | **VERY LOW** | There are known records of this species in the remnant native grasslands and grassy woodlands of the Queens Domain, ~350 m to the north-west of the project area. There is, however, a low likelihood of impact to this species within the project area given the highly modified nature and the dominance of exotic grass species within of the project area.<br>Summer surveys are not warranted for this species as no *Austrostipa* spp. were detected during surveys in spring of 2023, and it has very little chance of occurring. |
| *Austrostipa blackii* crested speargrass | - | Rare | **- / 3** | Margins of saline lagoons, creek outfalls, and vegetated dunes. Can also occur in grassy woodlands | **VERY LOW** | This species occurs near coastal sites and requires mature inflorescence for identification. The closest record of this species is approximately 5 km to the northeast. As discussed above no *Austrostipa* spp. were detected during surveys in spring of 2023, and it has very little chance of occurring. |
| *Bolboschoenus caldwellii* sea clubsedge | - | Rare | **- / 32** | Widespread in shallow, standing, sometimes brackish water, rooted in heavy black mud. | **NONE** | This species is only known from aquatic habitats and was not identified during field surveys. No suitable habitat is present within the project area and the species is unlikely to have been overlooked, thus there is no chance of this species occurring in the project area. |
| *Brachyscome perpusilla* tiny daisy | - | Rare | **- / 1** | Found on rock plates in grassy woodland. It was recently recorded in a grassy herbfield on very shallow dolerite soils in the Midlands. | **NONE** | No suitable habitat is present within the project area to support this species. Additionally, local records are limited to one observation from 1901 with a spatial accuracy of over 1 km. There is no chance of this species occurring in the project area. |

[51] Department of Natural Resources & Environment (2024)

| Species | National Status EPBCA | State Status TSPA | Records within 500 m / 5 km | Habitat | Likelihood of Impact | Commentary |
|---|---|---|---|---|---|---|
| *Caladenia caudata* tailed spider-orchid | Vulnerable | Vulnerable | **- / 86** | Highly variable habitat on a range of substrates. Typically found in heathy forest. | **NONE** | No suitable heathland or heathy woodland habitat occurs within the project area to support this orchid species. There are no known records of this species within proximity to the project area. Although the survey timing was unsuitable detection of this species it is considered to have no chance of occurring following the significant modification and clearing of Macquarie Point over the last two centuries. |
| *Caladenia filamentosa* daddy longlegs | - | Rare | **- / 9** | Heathy and sedgy eucalypt forest on sandy soils. | **NONE** | Similar to *C. caudata*, no suitable habitat is present within the project area to support this species. Although survey timing for detection was unsuitable it has almost no chance of occurring within the highly modified project area. There is no chance of this species occurring in the project area. |
| *Caladenia patersonii* Paterson's spider-orchid | - | Vulnerable | **- / 3** | Coastal and near-coastal areas in northern Tasmania, growing in low shrubby heathland and heathy forest/woodland in moist to well drained sandy and clay loam. | **NONE** | Similar to *C. caudata*, no suitable habitat is present within the project area to support this species. Although survey timing for detection was unsuitable it has almost no chance of occurring within the highly modified project area. There is no chance of this species occurring in the project area. |
| *Caladenia sylvicola* forest fingers | Critically Endangered | Endangered | **- / 7** | This species typically occurs in dry forest on well-drained soils amongst heathy/shrubby vegetation. | **NONE** | Similar to *C. caudata,* no suitable habitat is present within the project area to support this species. Although survey timing for detection was unsuitable it has almost no chance of occurring within the highly modified project area. There is no chance of this species occurring in the project area. |
| *Calocephalus citreus* lemon beautyheads | - | Rare | **- / 2** | Occurs in open, dry sites in lowland areas of eastern and northern Tasmania and at lower altitudes of the Central Plateau. It requires bare ground for recruitment and may benefit from disturbance. It is often found on roadsides and beside tracks. | **NONE** | This species is known from a few locations in the south-east of the State where it inhabits disturbed dry grasslands. However, this species is relatively easy to identify and given it was not detected and the highly modified nature of the project area, there is no chance of this species occurring. |
| *Calocephalus lacteus* milky beautyheads | - | Rare | **- / 1** | Occurs in open, dry sites in lowland areas of eastern and northern Tasmania and at lower altitudes of the Central Plateau. It requires bare ground for recruitment and may benefit from disturbance. It is often found on roadsides and beside tracks. | **NONE** | This species is known from lowland areas in the east and north of State and can be identified throughout most of the year due to its distinctive silver-blue foliage. Given the small scale and modified nature of the project area, there is no chance of this species occurring. |
| *Carex gunniana* mountain sedge | - | Rare | **- / 14** | Wet eucalypt forest, sandy heathlands, margins of streams, littoral sands, shingle with seepage, damp grasslands within dry forest and rough pasture. | **NONE** | No suitable habitat exists within the project area to support this species. It is known to occur northwest of the site at the Queens Domain. However, it was not detected during surveys and is considered unlikely to occur based on the highly modified nature of the site. |
| *Carex longebrachiata* drooping sedge | - | Rare | **- / 12** | Grows along riverbanks, in rough grassland and pastures, in damp drainage depressions and on moist slopes amongst forest, often dominated by *Eucalyptus viminalis*, *E. ovata* or *E. rodwayi*. | **NONE** | Similar to *C. gunniana*, no suitable habitat exists within the project area to support this species and it has no chance of occurring. |
| *Comesperma defoliatum* leafless milkwort | - | Rare | **- / 3** | Wet heathland/sedgeland, buttongrass moorland, coastal low scrub and on the crests of dunes, and in flat alkaline pans. Peat, quartzite and sandy substrates. | **NONE** | No suitable habitat exists within the project area to support this species. The closest known observation was recorded over a century ago and is subject to very low spatial accuracy. There is no chance of this species occurring in the project area. |

| Species | National Status EPBCA | State Status TSPA | Records within 500 m / 5 km | Habitat | Likelihood of Impact | Commentary |
|---|---|---|---|---|---|---|
| *Corunastylis nuda* tiny midge-orchid | - | Rare | **- / 25** | Occurs in a wide range of habitats including scrub, subalpine grassland, heathy open forest, open rock plates among forest, shrubby dry sclerophyll forest and open wet sclerophyll forest, from near sea level to 1,000 m elevation on a range of different soil types and parent geologies. | **NONE** | Although the survey timing was sub-optimal for the detection of this orchid, it has no likelihood of occurring given the lack of suitable habitat and highly modified nature of the site. |
| *Corunastylis nudiscapa* bare midge-orchid | - | Endangered | **- / 130** | Open forests and woodlands on mudstone, dominated by *Eucalyptus tenuiramis*, and occasionally *E. obliqua* or *E. amygdalina*, with a heathy or grassy ground layer of varying density. | **NONE** | This species has been recorded near the Knocklofty Reserve and at the foothills of kunanyi / Mount Wellington. However, no forest or woodland habitat exists within the project area to support this species and given the modified nature of the site, there is no chance of this species occurring in the project area. |
| *Damasonium minus* starfruit | - | Rare | **- / 2** | Occupies swampy habitat and farm dams and prefers slow-flowing or stationary water. | **NONE** | No suitable aquatic or semi-aquatic habitat occurs within the project area to support this species. It is unlikely to have been overlooked and considered no chance of occurring. |
| *Deyeuxia minor* small bentgrass | - | Rare | **- / 1** | Inhabits open eucalypt forests or the margins of wet sclerophyll forest in the south-west, south and north-east of the State. | **NONE** | No suitable forest habitat is present within the project area and the one record present is over a century old and subject to significant spatial variability. As such the species is considered to have no likelihood of occurrence. |
| *Dianella amoena* grassland flaxlily | Endangered | Rare | **1 / 19** | This species occurs mainly in the northern and southern Midlands, where it grows in native grasslands and grassy woodlands. Most frequent on basalt substrates in *Themeda triandra* grasslands. | **NONE** | There are known records of this species in the remnant native grasslands and grassy woodlands of the Queens Domain, ~500 m to the north-west of the project area.<br>The grassy habitat present within the project area is marginal habitat for this species due to the dominance of exotic species and its highly disturbed nature.<br>This species is detectable year-round and given the small total area of the project area, if present, it is unlikely to have been overlooked. |
| *Diuris lanceolata* large golden moths | Endangered | Endangered | **- / 2** | Coastal scrub and wind-swept coastal grassland and heaths amongst stunted shrubs and sedges on moist to well-drained sandy and clay loam, and occasionally on rock outcrops. | **NONE** | No suitable habitat is present to support this species. The two existing records were observed over a century ago and are subject to significant spatial inaccuracy. Although the survey timing was unsuitable for detection it is nevertheless considered very unlikely that this species occurs within the project area. |
| *Diuris palustris* swamp doubletail | - | Endangered | **- / 4** | Occurs in coastal areas in grassy open eucalypt forest, sedgy grassland and heathland with *Leptospermum* (teatree) and *Melaleuca* (paperbark) on poorly- to moderately drained sandy peat and loams, usually in sites that are wet in winter. | **NONE** | Similar to *D. lanceolata*, no suitable habitat exists within the project area to support this species and given the highly modified nature of the site it is considered very unlikely to occur. |
| *Eryngium ovinum* blue devil | - | Vulnerable | **- / 4** | Occurs in eucalypt woodland/forest with a grassy or lightly shrubby understorey. *Eryngium ovinum* may also occur in native grassland, with *Themeda triandra* (kangaroo grass) and Poa species prominent. Soils are relatively deep and fertile, usually derived from Tertiary basalt or Jurassic dolerite, while landforms range from broad flats, toe slopes, gentle saddles, to broad ridges and moist upper slopes. The elevation of known sites ranges from close to sea level to about 350 m, with most sites below about 150 m. | **NONE** | This distinctive perennial herb can be detected year-round and occurs in roadsides, grassy woodlands and damp clays. A significant population occurs near the Springfield Gardens Primary School in West Moonah. However, no suitable habitat occurs within the project area to support this species and it is unlikely to have been overlooked. |

| Species | National Status EPBCA | State Status TSPA | Records within 500 m / 5 km | Habitat | Likelihood of Impact | Commentary |
|---|---|---|---|---|---|---|
| *Eucalyptus morrisbyi* Morrisby's gum | Critically Endangered | Endangered | **- / 3** | Occurs in coastal, dry sclerophyll woodland on gentle to hilly slopes with poor drainage. It tends to be restricted to gullies that offer some relief in this drought-prone, low-rainfall area. It is associated with poor soils. The Calvert's Hill subpopulation and associated remnant stands occur on recent sands overlying dolerite, and the Risdon subpopulation occurs on Permian mudstone. | **NONE** | This small tree can be identified at any time of the year and its wild population is only known from the Cremorne area with a number of conservation and ornamental plantings found within the southeast of the State. There is no chance of this species occurring in the project area. |
| *Eucalyptus risdonii* Risdon peppermint | - | Rare | **- / 301** | This species is found on Permian mudstone from sea level to 150 m. Habitat includes low open forest on very sunny ridges and northwest facing upper slopes, most commonly in the Meehan Range. | **NONE** | Similar to *E. morrisbyi* this is a small tree that can be identified at any time of the year. There is no chance of this species occurring in the project area. |
| *Euphrasia scabra* yellow eyebright | - | Endangered | **- / 8** | This species occurs in moist herb/sedge communities in grassy leads in marshes and in drier open grassy areas at the headwaters of creeks. Its habitat is associated with gaps created by grazing, flooding or other disturbance. It has been recorded from scattered sites throughout lowland areas of Tasmania, including the north-west coast, central north, Midlands, Eastern Tiers and around Hobart. However, it is considered to be extinct from many of these sites, and populations are low and transient in areas (Eastern Tiers and Hobart) with the greatest probability of still supporting the species. | **NONE** | No suitable herb or sedge communities exists within the project area to support this species. The nearest record of the species in North Hobart was recorded over a century ago and is subject to significant spatial inaccuracy. Although survey timing was poor for the detection of this species there is no chance of this species occurring in the project area. |
| *Goodenia geniculata* bent native-primrose | - | Endangered | **- / 1** | Moderately steep midslopes to gentle lower slopes, on well-drained soils derived from Precambrian metamorphic sequences between 10 m and 120 m above sea level. | **NONE** | This species has only been recorded from two sites in Tasmania over the past 20 years, Cathedral Hill at Rocky Cape and an unvouchered site at nearby Crayfish Creek[52]. The nearest observation within Hobart was recorded in 1805 and it has no chance of occurring within the project area. |
| *Haloragis heterophylla* variable raspwort | - | Rare | **- / 1** | Poorly drained sites (sometimes only marginally so), which are often associated with grasslands and grassy woodlands with a high component of *Themeda triandra*. Also occurs in grassy/sedgy *Eucalyptus ovata* forest and woodland, shrubby creek lines, and broad sedgy/grassy flats, wet pasture and margins of farm dams. | **NONE** | No *Themeda* grassland habitat exists within the project area to support this species. The closest recorded observation exists approximately 4.5 km to the east. Although survey timing for detection of this species, there is no chance of this species occurring in the project area. |
| *Hyalosperma demissum* moss sunray | - | Endangered | **- / 2** | Rock pavements and shallow, sandy soils in dry areas, and in scalded patches in *E. amygdalina* forest and woodlands. | **NONE** | No suitable rock pavements or shallow sandy soils occur to support this species and the closest record occurs on the Queens Domain and is subject to significant spatial inaccuracy. Although survey timing was unsuitable for the detection of this species, there is no chance of this species occurring in the project area. |
| *Hydrocotyle laxiflora* stinking pennywort | - | Endangered | **- / 51** | In Tasmania, the species is known from the northern flanks of the Queens Domain in Hobart. It occurs in woodlands dominated by *Allocasuarina verticillata* or *Eucalyptus viminalis* or open shrublands dominated by *Allocasuarina verticillata, Bursaria spinosa* and *Acacia mearnsii*. | **NONE** | This perennial herb is only known 13 patches occupying 0.24 ha in a single location at the Queens Domain. There is no habitat suitable to support this species in the project area and given the modified nature of the site there is no chance of this species occurring in the project area. |

[52] Threatened species section (2016)

| Species | National Status EPBCA | State Status TSPA | Records within 500 m / 5 km | Habitat | Likelihood of Impact | Commentary |
|---|---|---|---|---|---|---|
| *Isoetopsis graminifolia* grass cushion | - | Vulnerable | **- / 6** | Native grasslands, usually dominated by *Themeda triandra*, or on rock plates, the underlying substrate being mostly basalt or dolerite. The elevation range of recorded sites is 20–360 m above sea level in areas of low rainfall. | **NONE** | No suitable grasslands occur within the project area to support this species. The nearest observation within proximity to the project area is listed on the Queens Domain. However, this record is over a century old and has significant spatial inaccuracy. There is no chance of this species occurring in the project area. |
| *Isolepis stellata* star clubsedge | - | Rare | **- / 1** | This species been recorded from near-coastal areas in the State's north and east, and also in the Northern Midlands near Conara. Habitat includes the margins of sedgy wetlands, wet soaks and seasonally inundated heathy sedgelands; the altitude of recorded sites in Tasmania ranges from close to sea level to elevations of 240 m above sea level. | **NONE** | One record of this species exists dated from 1897 approximately 3 km east of the site on the eastern shore. This record has significant spatial inaccuracy. No suitable habitat exists on site and there is no chance of this species occurring in the project area. |
| *Lachnagrostis semibarbata* var. *filifolia* narrowleaf blowngrass | - | Rare | **- / 1** | Moist depressions in grassy woodlands/forests and grasslands, and on the edges of swamps and saline flats. | **NONE** | No suitable grassy woodland habitat exists within the project area to support this species. One record exists within the Hobart area however this record is over 70 years old and subject to significant spatial inaccuracy. There is no chance of this species occurring in the project area. |
| *Lepidium hyssopifolium* soft peppercress | Endangered | Endangered | **- / 9** | Primarily under large exotic trees on roadsides and in home yards on farms in eastern Tasmania between 0 and 500 m above sea level in dry, warm and fertile areas on flat ground on weakly acid to alkaline soils derived from a range of rock types. Also occurs on frequently slashed grassy/weedy roadside verges where shade trees are absent. | **NONE** | This species has been recorded north of the project area at the Queens Domain, with the most recent observation dated from 2006. Given that the species can be readily identified throughout the year, the significant public visitation throughout the broader area and the modified nature of the site, it is unlikely that it occurs or has been overlooked during surveys. |
| *Olearia hookeri* crimsontip daisybush | - | Rare | **- / 13** | Found on dry hills around Hobart in the State's south and also along the central east coast. It grows within eucalypt woodlands with a mixed grassy-shrubby understorey, favouring north-north-westerly slopes on mudstone (except for an atypical occurrence on dolerite at Templestowe flats near Seymour). In the south of the State the habitat is dominated by *Eucalyptus amygdalina*, *Eucalyptus risdonii* or *Eucalyptus tenuiramis*; in the central east near Mt Peter the habitat is dominated by *Eucalyptus sieberi* over a very sparse understorey. | **NONE** | This distinctive species is known from the East Risdon State Reserve and the Meehan Range. However, no suitable woodland habitat occurs within the project area, and it is very unlikely to have been overlooked during surveys. There is no chance of this species occurring in the project area. |
| *Phyllangium divergens* wiry mitrewort | - | Vulnerable | **- / 1** | A wide variety of near-coastal habitats on a range of substrates, a common feature usually being bare ground (e.g. tracks) and rock exposures (outcrops, coastal cliffs, etc.). | **NONE** | One record of this species is listed on the NVA in New Town; however, the listing has no date and has a very high spatial inaccuracy. Additionally, given the highly modified nature of the site, there is no chance of this species occurring in the project area. |
| *Pimelea flava* subsp. *flava* yellow riceflower | - | Rare | **- / 12** | Wet and dry sclerophyll forest and woodland, extending into hardwood and softwood plantations. It often occurs abundantly on disturbed sites such as in logged forest, firebreaks, powerline easements and road batters. | **NONE** | This species is known from the greater Hobart area with records occurring at the Knocklofty Reserve and on the foothills of kunanyi / Mount Wellington. However, no suitable forest habitat occurs within the modified project area. There is no chance of this species occurring in the project area. |
| *Pomaderris pilifera* subsp. *talpicutica* moleskin dogwood | Vulnerable | Vulnerable | **- / 13** | Known with certainty from two small subpopulations, one in the Government Hills east of Risdon in the south of Tasmania, and one close to the East Tamar Highway in the north. A third location east of Mathinna consists of a single plant in poor condition that has only been tentatively ascribed to the taxon. At East Risdon, *Pomaderris pilifera* subsp. *talpicutica* is found | **NONE** | No suitable habitat occurs within the project area to support this species. No *Pomaderris* was recorded during the survey, and it is very unlikely that this species has been overlooked if present. As such, there is no chance of this species occurring in the project area. |

| Species | National Status EPBCA | State Status TSPA | Records within 500 m / 5 km | Habitat | Likelihood of Impact | Commentary |
|---|---|---|---|---|---|---|
| | | | | on the western slope of a hill within 60-80 m of the River Derwent and between 30-35 m above sea level. It occurs on mudstone on very well drained skeletal soils with much broken and weathered shell debris scattered about. Elsewhere, the taxon occurs in open shrubby woodland dominated by *Eucalyptus amygdalina*, usually on dolerite. | | |
| *Paraprasophyllum apoxychilum* tapered leek-orchid | Endangered | Vulnerable | **- / 2** | This species is restricted to eastern and north-eastern Tasmania where it occurs in coastal heathland or grassy and scrubby open eucalypt forest on sandy and clay loams, often among rocks. It occurs at a range of elevations and seems to be strongly associated with dolerite in the east and south-east of its range. | **NONE** | Although survey timing was unsuitable for the detection of this species. The project area provides very poor-quality orchid habitat given the significant modification and abundance of introduced vegetation. As such there is no chance of this species occurring. |
| *Paraprasophyllum perangustum* Knocklofty leek-orchid | Critically Endangered | Endangered | **- / 14** | Known only from one small population in Knocklofty Park in the foothills of Kunanyi/Mt. Wellington about 350 m above sea level. It occurs in grassy *Eucalyptus pulchella* forest on well-drained clay loam and skeletal clay loam derived from dolerite. | **NONE** | Similar to *P. apoxychilum*, the project area provides very poor-quality orchid habitat given the significant modification and abundance of introduced vegetation. As such there is no chance of this species occurring. |
| *Pterostylis atriola* Snug greenhood | - | Rare | **- / 3** | Occurs in the north and east of Tasmania on generally stony soil in dry to damp sclerophyll forest, typically with an open understorey. The species occurs at a range of elevations but is most strongly associated with winter cold sites (e.g. Snug Tiers) or areas receiving a moderately consistent rainfall (e.g. Wielangta, Railton). | **NONE** | No suitable habitat exists within the project area to support this orchid given the significant modification, abundance of introduced vegetation and lack of historical observations. As such there is no chance of this species occurring. |
| *Pterostylis squamata* ruddy greenhood | - | Vulnerable | **- / 2** | Occurs in heathy and grassy open eucalypt forest, woodland and heathland on well-drained sandy and clay loams. | **NONE** | No suitable habitat exists within the project area to support this orchid given the significant modification, abundance of introduced vegetation and lack of historical observations. As such there is no chance of this species occurring |
| *Pterostylis wapstrarum* fleshy greenhood | Critically Endangered | Endangered | **- / 1** | Restricted to the Midlands and south-east of Tasmania where it occurs in native grassland and possibly grassy woodland. It has been reported from basalt soils. | **NONE** | No suitable habitat exists within the project area to support this orchid given the significant modification, abundance of introduced vegetation and lack of historical observations. As such there is no chance of this species occurring |
| *Pterostylis ziegeleri* grassland greenhood | Vulnerable | Vulnerable | **- / 1** | Restricted to the east and north of Tasmania. In coastal areas, the species occurs on the slopes of low stabilised sand dunes and in grassy dune swales, while in the Midlands it grows in native grassland or grassy woodland on well-drained clay loams derived from basalt. | **NONE** | No suitable habitat exists within the project area to support this orchid given the significant modification, abundance of introduced vegetation and lack of historical observations. As such there is no chance of this species occurring |
| *Puccinellia perlaxa* spreading saltmarshgrass | - | Rare | **- / 1** | Known from saline areas associated with shallow depressions and waterways in the northern Midlands. | **NONE** | One record for this species exists several kilometres north of the project area. However, this observation is over a century old and subject to significant spatial inaccuracy. There is no chance of this species occurring in the project area. |
| *Ranunculus pumilio* var. *pumilio* ferny buttercup | - | Rare | **- / 1** | Occurs mostly in wet places (e.g. broad floodplains of permanent creeks, "wet pastures") from sea level to altitudes of 800–900 m above sea level. | **NONE** | Only one record of this species is known within 5 km of the project area and was recorded over a century ago with a high spatial inaccuracy. It is very unlikely that the species is present given the poor-quality habitat present and lack of historical observations. |

| Species | National Status EPBCA | State Status TSPA | Records within 500 m / 5 km | Habitat | Likelihood of Impact | Commentary |
|---|---|---|---|---|---|---|
| *Rhodanthe anthemoides* chamomile sunray | - | Rare | **- / 1** | The distribution of *Rhodanthe anthemoides* includes montane grasslands, heath and heathy scrub in central and north-western Tasmania. | **NONE** | Only one record exists within 5 km of the project area in Mt Nelson. However, this observation is over a century old and subject to significant spatial inaccuracy. No suitable habitat is present to support this species and it has no chance of occurring. |
| *Rumex bidens* mud dock | - | Vulnerable | **- / 1** | Grows at the margins of lakes, swamps, and slow-moving rivers and streams, and may also occur in drainage channels. | **NONE** | One record exists for this distinctive aquatic species within 5 km of the project area and was recorded over a century ago. It is subject to significant spatial inaccuracy and given the poor-quality habitat on site there is no chance this species occurs within the project area. |
| *Scleranthus fasciculatus* spreading knawel | - | Vulnerable | **37 / 175** | *Poa* grassland/grassy woodland. It appears to need gaps between the tussock spaces for its survival and both fire and stock grazing maintain the openness it requires. Often found in areas protected from grazing, such as fallen trees and branches. | **NONE** | This species is well known to occur at the Queens Domain north of the project area. However, no suitable grassland habitat exists within the project area to support this species and there is no likelihood of it occurring. |
| *Senecio squarrosus* leafy fireweed | - | Rare | **2 / 85** | Dry grassy forests but can extend into wet forests and other vegetation types. This species is thought to be require regular fire to germinate. | **NONE** | The *Senecio* genus is somewhat distinctive as it does not require flowers to identify to the species level. Although *Senecio* species were recorded during the survey, none of this exhibited leaf morphology compatible with this species.<br>The project area has no recorded fire history and as it is thought to require fire to germinate, it is unlikely that the species is present. |
| *Sirophysalis trinodis* three-node seaweed | - | Rare | **- / 1** | This seaweed is known from tidal pools, shallow subtidal areas and sheltered coasts to a depth of 1 m. | **NONE** | This is a marine species and has no possibility of occurring within the terrestrial project area. |
| *Spyridium eriocephalum* var. *eriocephalum* heath dustymiller | - | Endangered | **- / 23** | Known to be extant at a single subpopulation within East Risdon State Reserve. At East Risdon the species grows on mudstones in open shrublands or low open eucalypt woodlands, the two main patches being closely associated with Aboriginal middens, | **NONE** | No suitable habitat occurs within the project area to support this species. The nearest record to the project area is associated with the subpopulation at East Risdon. As such there is no chance that this species occurs within the project area. |
| *Stenopetalum lineare* narrow threadpetal | - | Endangered | **- / 5** | Occurs on low grass-covered dunes, and in coastal heathy woodland and open grassy forest. | **NONE** | No suitable habitat occurs within the project area to support this species. The records associated with this species are at least 50 years old or greater and have significant spatial inaccuracy. Given the modified nature of the site there is no chance that this species occurs. |
| *Thelymitra bracteata* leafy sun-orchid | - | Endangered | **- / 37** | Occurs in open grassy and heathy forest/woodland on mudstone and sandstone. At the Rosny Hill site, the species is most abundant on the top of the hill on open ground with dense exotic grasses and sparse in a remnant patch of native grass close to *Allocasuarina verticillata* woodland. At Conningham, the species occurs in a canopy gap created by a rough track amongst heathy *Eucalyptus amygdalina* forest on Triassic sandstone. | **NONE** | No suitable open grassy and heathy forest/woodland occur within the project area to support this species. Although survey timing was unsuitable for the detection of this species, given the highly disturbed nature of the project area, there is no chance that this species occurs. |

| Species | National Status EPBCA | State Status TSPA | Records within 500 m / 5 km | Habitat | Likelihood of Impact | Commentary |
|---|---|---|---|---|---|---|
| *Thelymitra holmesii* bluestar sun-orchid | - | Rare | **- / 2** | Moist areas of grassland, heathy open forest and heathland in water retentive soils such as clay loam and peaty loam, in soaks. | **NONE** | Similar to *T. bracteata*, no suitable habitat occurs to support this species and given the highly modified nature of the project area it is considered no chance to occur. |
| *Velleia paradoxa* spur velleia | - | Vulnerable | **- / 109** | Grassy woodlands or grasslands on dry sites. It has been recorded up to 550 m above sea level at sites with an annual rainfall range of 450–750 mm. | **NONE** | This species is known to occur throughout the broader Hobart area. However, no forest or grassy woodlands occur within the project area to support this species. There is no chance of this species occurring in the project area. |
| *Vittadinia burbidgeae* smooth new-holland daisy | - | Rare | **- / 10** | Native grassland and grassy woodland. | **VERY LOW** | The nearest record of this species is listed at the foothills of Kunanyi/Mount Wellington. No suitable native grassland or grassy woodland exists within the project area to support this species and given the modified nature of the site it is considered very unlikely to occur. |
| *Vittadinia cuneata* var. *cuneata* fuzzy new-holland daisy | - | Rare | **- / 2** | Native grassland and grassy woodland on fertile soils, typically overlying basalt. | **VERY LOW** | This species is known to occur at the Prince of Wales Bay north of the project area, with the closest record on the NVA observed at the Queens Domain in 2002. However, given the lack of native grassland and grassy woodland within the project area and the abundance of exotic vegetation it is considered very unlikely that this species occurs. |
| *Vittadinia gracilis* woolly new-holland daisy | - | Rare | **3 / 25** | Dry grassy habitats, often in relatively degraded grasslands and grassy woodlands. It has been found to occur in low-rainfall areas, on a range of substrates. | **LOW** | Suitable habitat for this species was observed within the bare ground patches near the Huon Quays; however, these areas are colonised by abundant weed species, which are known to reduce the abundance of this species. Targeted surveys are recommended to determine presence/absence of this species in the project area. |
| *Vittadinia muelleri* narrowleaf new-holland-daisy | - | Rare | **13 / 740** | This species is known from the driest and most fertile soils in the Hobart area and extending up into the Midlands. | **LOW** | Suitable habitat for this species was observed within the bare ground patches near the Huon Quays; however, these areas are colonised by abundant weed species, which are known to reduce the abundance of this species. Targeted surveys are recommended to determine presence/absence of this species in the project area. |
| *Westringia angustifolia* narrowleaf westringia | - | Rare | **- / 1** | Occurs mainly in mid elevations, always on dolerite (but can be close to dolerite-sediment contact zones), in dry to wet sclerophyll forest on broad ridges, slopes and dense riparian shrubberies. | **NONE** | No wet sclerophyll forest exists within the project area to support this species. The one record of this species listed on the NVA was recorded over a century ago and is subject to significant variation. As such, there is no chance of this species occurring. |
| *Xerochrysum bicolor* eastcoast paperdaisy | - | Rare | **- / 1** | Grows in swampy habitats such as sedgy-heathy wetlands, heathlands and woodlands. | **NONE** | No swampy habitat exists within the project area to support this species. The nearest species listed on the NVA was recorded near Tolman's Hill in 1997. There is no chance of this species occurring in the project area. |

# APPENDIX C – CONSERVATION SIGNIFICANT FAUNA WITHIN 5 KM[53]

| Species | Status TSPA / EPBCA | Records within 500 m / 5 km | Potential to Occur | Preferred Habitat and Commentary |
|---|---|---|---|---|
| **MAMMALS** | | | | |
| *Dasyurus viverrinus*<br>eastern quoll | Endangered /<br>Endangered | **1 / 215** | Denning: NONE<br>Foraging: NONE | Occurs in most parts of Tasmania but is recorded infrequently in the wetter western third of the state. This species' distribution is associated with areas of low rainfall and cold winter minimum temperatures. It is found in a range of vegetation types including open grassland (including farmland), tussock grassland, grassy woodland, dry eucalypt forest, coastal scrub and alpine heathland, but is typically absent from large tracts of wet eucalypt forest and rainforest.<br>Various records of this species exist within the Knocklofty Reserve and surrounding areas. Additionally, this species has been observed within the Queens Domain northwest of the project area. However, there is very marginal habitat present within the site itself to support this species including native grassland and rocky outcrops. Given the lack of resources and significant modified nature of the project area it is highly unlikely that this species utilises the project area and the no impacts to the species associated with the proposed development are anticipated. |
| *Perameles gunnii*<br>eastern barred bandicoot | - /<br>Vulnerable | **5 / 476** | Nesting: NONE<br>Foraging: LOW | In Tasmania it is relatively widespread although it has declined throughout the Midlands. It is most often found in relatively open areas such as woodlands and open grassy sites, where it forages for food. Its native habitat is grassland and grassy woodland dominated by tussocks, reeds, and grasses. It requires thicker ground cover for nesting and shelter.<br>The intense mowing of the project area has removed potential nesting and sheltering cover for this species. Subsequently, the foraging potential for the species is low given the lack of nearby cover, isolating the potential habitat from nearby areas, such as the Queens Domain. Despite diggings being observed within the project area, as they were quite large and not distinctively conical, they are likely made by rabbits.<br>See Section 3.3 for further detail regarding potential impacts to this species. |
| *Pteropus poliocephalus*<br>grey-headed flying fox | - /<br>Vulnerable | **0 / 1** | Nesting: NONE<br>Foraging: NONE | This species is an occasional visitor to Tasmania; however, no populations of this species are known to occur within Tasmania. There is no likelihood of this species occurring within the project area. |
| *Sarcophilus harrisii*<br>Tasmanian devil | Endangered /<br>Endangered | **0 / 89** | Denning: NONE<br>Foraging: NONE | This species occupies a wide range of habitats across Tasmania and exploits landscapes with a mosaic of pasture and forest with elevated prey densities; it is attracted to roadkill hotspots with concentrated scavenging resource. The protection of breeding opportunities is particularly important for the species due to the mortalities from demographic pressures. This species is known to den in log hollows and wombat burrows.<br>The project area offers very poor habitat to this species given the lack of potential denning habitat and scavenging resources and the highly modified nature of the site. The high-profile location is not known to support any observations of the species and as such the proposed development is considered unlikely to have any potential impact of devils. |
| *Thylacinus cynocephalus*<br>Thylacine | Extinct /<br>Extinct | **0 / 1** | Denning: NONE<br>Foraging: NONE | This iconic Tasmanian species was infamously hunted to extinction by early European colonisers and was officially accepted as extinct in 1936. One record for this species occurs approximately 3 km west of the project area. However, this record was observed over a century ago and there is no likelihood that this species is still present. |
| **BIRDS** | | | | |
| *Accipiter novaehollandiae*<br>grey goshawk | Endangered /<br>- | **0 / 181** | Nesting: NONE<br>Foraging: LOW | Inhabits large tracts of wet forest and swamp forest, particularly patches with closed canopies above an open understorey, but with dense stands of prey habitat nearby. Mature trees provide the best nesting sites. Most nests have been recorded from blackwoods and occasionally myrtle beeches.<br>This species may occasionally pass over the project area whilst foraging throughout the broader landscape. Although no suitable habitat exists to support this species and given the modified nature of the project area and availability of improved habitat elsewhere there is no likelihood that this species will be impacted by the proposed development. |
| *Ardenna grisea*<br>sooty shearwater | - /<br>Vulnerable | **0 / 1** | Nesting: NONE<br>Foraging: LOW | This species is a trans-equatorial migrant is typically found over deep ocean waters but is sometimes found in onshore areas particularly in rough weather. The species nests in a burrow or rock crevice on slopes, ridges or cliff tops across southern Australia, New Zealand and southern South Africa. |

[53] Natural Values Atlas data – as of June 21, 2024

| Species | Status TSPA / EPBCA | Records within 500 m / 5 km | Potential to Occur | Preferred Habitat and Commentary |
|---|---|---|---|---|
| | | | | There is no suitable breeding habitat within the project area to support this species and it is unlikely to occur given the significant disturbance and availability of better habitat elsewhere across southeast Tasmania. However, the species may occasionally pass over the project area.<br><br>The overall impact of the proposed development on this species is considered to be low. There is a low potential for increased light pollution to impact the species while flying over the area. |
| *Aquila audax* subsp. *fleayi*<br>Tasmanian wedge-tailed eagle | Endangered /<br>Endangered | **0 / 7** | Nesting: NONE<br>Foraging: LOW | This species nests in a range of old-growth native forests and is dependent on forest for nesting. Territories can contain up to five alternate nests that are usually close to each other but may be up to 1 km apart where habitat is locally restricted. This eagle preys and scavenges on a wide variety of fauna including fish, reptiles, birds and mammals.<br><br>Although this species may occasionally pass over the project area whilst foraging throughout the broader area, there is no suitable nesting habitat and no known nests within 1 km of the project area. Additionally, there is negligible eagle nesting habitat modelled across the project area under the Forest Practices Authorities Eagle Nesting Habitat Model. As such the proposed development is unlikely to have any impact upon this species. |
| *Botaurus poiciloptilus*<br>Australasian bittern | - /<br>Endangered | **0 / 1** | Nesting: NONE<br>Foraging: NONE | A highly cryptic species utilising wetlands and lakes with a dense cover of vegetation. This species is known to utilise wetlands and marshlands further north within the Derwent Estuary near Dromedary. However, no wetland habitat exists within the project area to support this species and it is considered very unlikely to occur. As such the proposed development will not have any impact upon this species. |
| *Calidris acuminata*<br>sharp-tailed sandpiper | - /<br>Vulnerable | **0 / 1** | Nesting: NONE<br>Foraging: NONE | This small-medium wader is known from inland and coastal locations and in both freshwater and saline habitats. Optimal habitat includes wetlands, saltmarsh, lagoons, swamps, places and pools near the coast and dams, waterholes, and saltpans inland. However, no such habitat occurs within the project area and given the significantly modified nature of the site coupled with the lack of known observations across the area it is considered unlikely that this species occurs and has no potential to be impacted by the proposed development. |
| *Diomedea exulans*<br>wandering albatross | - /<br>Vulnerable | **0 / 2** | Nesting: NONE<br>Foraging: NONE | This species is only known from pelagic environments and as such has no likelihood of occurring within the project area. |
| *Haliaeetus leucogaster*<br>white-bellied sea-eagle | Vulnerable /<br>- | **4 / 90** | Nesting: NONE<br>Foraging: LOW | In Tasmania, this species is restricted to nesting within 5 km of coastlines, major estuaries and inland lakes. They typically build nests in large eucalypt trees, much like the Tasmanian wedge-tailed eagle (*Aquila audax fleayi*), although their specific nesting requirements are not as strict, such that they often nest in relatively small and exposed coastal trees (including, in a minority of cases, non-native species such as *Pinus radiata*). They are also known to nest occasionally on sea cliffs or even piles of rocks at ground level on islands lacking ground predators (e.g. Ninth Island).<br><br>This species may occasionally pass over the project area whilst foraging throughout the broader landscape. However, there is no suitable nesting habitat and no known nests within 1 km of the project area. Additionally, there is negligible eagle nesting habitat modelled across the project area under the Forest Practices Authorities Eagle Nesting Habitat Model. As such the proposed development is unlikely to have any impact upon this species. |
| *Hirundapus caudacutus*<br>white-throated needletail | - /<br>Vulnerable | **0 / 40** | Nesting: NONE<br>Foraging: NONE | This migratory species breeds in central and north-eastern Asia in Siberia, Mongolia, north-eastern China and northern Japan. It migrates south through eastern China, Korea and Japan spending its non-breeding season in eastern and south-eastern Australia including Tasmania. This species is almost exclusively aerial, occurring over most types of habitat, with a preference of wooded areas, open forests, heathland and rainforests.<br><br>Although this species may pass over the project area whilst foraging throughout the broader landscape it is unlikely to utilise the project area given the lack of suitable habitat and significant disturbance. As such there is no likelihood that the proposed development will impact this species. |
| *Lathamus discolor*<br>swift parrot | Endangered /<br>Critically Endangered | **1 / 917** | Nesting: NONE<br>Foraging: NONE | This species spends its winter in south-eastern mainland Australia before migrating to Tasmania in late winter/early spring to breed. During the breeding season, nectar from Tasmanian blue gum (*Eucalyptus globulus*) and black gum (*Eucalyptus ovata*) flowers is the primary food source for the species. These eucalypts are patchily distributed, and their flowering patterns are erratic and unpredictable, often leading to only a small proportion of swift parrot habitat being available for breeding in any one year. Swift parrots breed in tree hollows in mature eucalypts within foraging range of a flower source.<br><br>There is no foraging or nesting habitat present within the project area, or in areas directly surrounding the project area, for this species. There is suitable habitat in the nearby Queens Domain area.<br><br>As there is potential nesting habitat in the nearby Queens Domain area, any future development could pose a potential collision risk to parrots - this has been addressed in a separate document[54]. |

[54] North Barker Ecosystem Services (2024)

| Species | Status TSPA / EPBCA | Records within 500 m / 5 km | Potential to Occur | Preferred Habitat and Commentary |
|---|---|---|---|---|
| *Neophema chrysostoma* blue-winged parrot | - / Vulnerable | **0 / 33** | Nesting: NONE Foraging: LOW | The blue-winged parrot is a partial migrant; although some birds overwinter in Tasmania, they are supplemented in the summer breeding season. They utilise a range of habitats from coastal, sub-coastal to inland areas, favouring grasslands and grassy woodlands. They forage on the ground mostly on grass seeds. They are often found near wetlands. They can also be seen in altered environments such as airfields, golf courses and paddocks.<br>There is no potential nesting habitat and limited foraging habitat for the blue-winged parrot within the project area. Similarly to the swift parrot, this species may occasionally pass over the project area whilst foraging throughout the broader environment and the proposed development could pose a potential collision risk to the species – this has been addressed in a separate document[55]. |
| *Pluvialis squatarola* grey plover | - / Vulnerable | **0 / 2** | Nesting: NONE Foraging: NONE | This species is rarely observed in Tasmania but is known to occur within the north and east coast[56]. This species is known to inhabit sheltered embayment's, estuaries and lagoons with mudflats and sandflats and occasionally on rocky coasts with wave-cute platforms or reef-flats. No such habitat exists within the project area and given the lack of observations within the Derwent Estuary this species is considered no chance to occur. |
| *Pardalotus quadragintus* forty-spotted pardalote | Endangered / Endangered | **0 / 14** | Nesting: NONE Foraging: NONE | Endemic to Tasmania and occurs in only a few small areas within the State. It is relatively restricted to dry grassy forest and woodland along the east coast containing mature white gum (*Eucalyptus viminalis*). No such habitat occurs within the project area and given the highly modified nature of the site and lack of records within the Hobart waterfront there is no likelihood that this species occurs. |
| *Podiceps cristatus australis* great crested grebe | Vulnerable / - | **1 / 5** | Nesting: NONE Foraging: LOW | This species inhabits wetlands, deep lakes, rivers and swamps and prefers a combination of open water and dense reedbeds. This species is relatively rare in Tasmania but can have minor irruptions and periods of regular sightings in some areas. Given the project area does not support any suitable habitat for the species and the availability of better habitat further north of the project area, it is considered very unlikely that this species utilises the project area and is not at risk of impact. |
| *Procellaria cinerea* grey petrel | Endangered / Marine | **0 / 1** | Nesting: NONE Foraging: NONE | This species is only known from pelagic environments and as such has no likelihood of occurring within the project area. |
| *Thinornis cucullatus* hooded plover | Vulnerable / - | **1 / 4** | Nesting: NONE Foraging: NONE | The species primarily inhabits sandy, ocean beaches, with the highest densities on beaches with large amounts of beach-washed seaweed, that are backed by extensive open dunes.<br>The shoreline present on the eastern boundary of the project area is highly modified into a sea wall. As such there is no habitat suitable for this species in the project area, and thus no chance of it occurring beyond transient occurrences. |
| *Tringa nebularia* common greenshank | - / Endangered | **0 / 1** | Nesting: NONE Foraging: NONE | This migratory species is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass. Other habitats include embayments, harbours, river estuaries, deltas and lagoons.<br>Given the project area is highly modified and provides no wetland or coastal habitat to the species it is considered very unlikely that this species utilises the project area and is not at risk of impact. |
| *Tyto novaehollandiae* subsp. *castanops* masked owl (Tasmanian) | Endangered / Vulnerable | **0 / 57** | Nesting: NONE Foraging: LOW | Found in a range of habitats which contain some mature hollow-bearing forest, usually below 600 m altitude. This includes native forests and woodlands as well as agricultural areas with a mosaic of native vegetation and pasture. Significant habitat for this species is limited to large eucalypts within dry eucalypt forest in its core range.<br>This species may occasionally pass over the project area whilst foraging throughout the broader landscape. However, given the lack of mature eucalypts, lack of observations and the highly modified nature of the project area it is considered very unlikely to occur and is not at risk of impacts. |
| **AMPHIBIANS** | | | | |
| *Caretta caretta* loggerhead turtle | Endangered / Endangered | **0 / 1** | NONE | Loggerhead turtles have large ranges in the Indian and Pacific oceans and are only occasional visitors to Tasmanian waters. They do not breed here. The species migrates from its feeding grounds in Indonesia, the Northern Territory, New South Wales and Queensland to nest along eastern and western Australian coastlines. The species main threats in Australian waters include disturbance to breeding areas, ingestion of plastics and entanglement in ropes and nets.<br>Discussion of potential impacts to marine species is provided in Attachment A. |

[55] North Barker Ecosystem Services (2024)
[56] Department of Climate Change, Energy, the Environment and Water (2024)

| Species | Status TSPA / EPBCA | Records within 500 m / 5 km | Potential to Occur | Preferred Habitat and Commentary |
|---|---|---|---|---|
| *Litoria raniformis*<br>green and gold frog | Vulnerable /<br>Vulnerable | **0 / 6** | NONE | In Tasmania, this species is found in lowland areas, primarily on the coast. It requires permanent or temporary water bodies for survival and tends to inhabit ones containing emergent plants such as *Cycnogeton procera* or species of *Juncus* or sedge. The frogs are rarely seen in open water and spend most of their time in vegetation at the water's edges. They depend upon permanent fresh water for breeding, which occurs in spring and summer.<br>The Hobart Cenotaph area provides very marginal frog dispersal habitat given it is isolated by the Tasman Highway and other major roads. Additionally, the project area itself is entirely modified and has no available freshwater sources, high anthropogenic activity and a lack of known green and gold records within proximity to the site. As such the species is considered no chance to occur and not at risk of impact. |
| *Pseudemoia pagenstecheri*<br>tussock skink | Vulnerable /<br>- | **0 / 4** | NONE | A ground-dwelling lizard occurring in native grassland and grassy woodland habitats at a range of elevations. Recorded in Tasmania in a few disconnected patches of habitat from Midlands, inland Cradle Coast, and eastern Bass Strait islands.<br>The closest record of this species occurs within the Queens Domain northwest of the project area. However, no suitable habitat in the form of native grassland and grassy woodland occurs within the project area. The species is more likely to utilise suitable habitat within the broader landscape and is likely to scatter from the site following vibrations in the ground from the proposed works. As such no impacts to this species from the proposed development is expected. |
| **INVERTEBRATES** | | | | |
| *Antipodia chaostola*<br>chaostola skipper | Endangered /<br>Endangered | **0 / 6** | NONE | This species is restricted to dry forest and woodland supporting the sedge *Gahnia radula* and occurs in isolated populations in south-eastern and eastern Tasmania. The project area does not contain any habitat supporting *G. radula* and similar sedges and therefore there is no likelihood this species occurs. |
| *Dasybela achroa*<br>saltmarsh looper moth | Vulnerable /<br>- | **0 / 1** | NONE | Typically found in wetland and saltmarsh habitats, however the species preferred habitat not well known. One record is listed on the NVA approximately 1 km west of the site within the Hobart CBD observed in 1901 and is subject to significant spatial inaccuracy.<br>Given there is no wetland or saltmarsh habitat and a lack of reliable observations there is no likelihood that this species occurs within the project area. |
| *Discocharopa vigens*<br>ammonite pinwheel snail | Endangered /<br>Critically Endangered | **0 / 29** | NONE | This snail has been recorded from seven locations in the Hobart metropolitan area: Mt Wellington, Mt Nelson, The Domain, Hillgrove, Grasstree Hill, South Hobart and Austins Ferry. The species is thought to be extinct on Mt Nelson. Habitat of the species includes dry and wet eucalypt forests below 400 m in altitude. To date the species has been found only under dolerite rocks.<br>No viable habitat in the form of dolerite rocks occurs within the project area. Given the significant modification and lack of records within the project area there is no likelihood that this species occurs. |
| *Exquisitiropa agnewi*<br>silky pinwheel snail | Rare / - | **0 / 1** | NONE | This snail is known only from a few sites across kunanyi / Mt Wellington and is poorly understood. It has been found in open boulder fields in patches of wet eucalypt vegetation. No snails were observed during field surveys and there are no known records of this species within proximity to the project area.<br>Given the significantly modified and high-profile nature of the site there is no likelihood that this species occurs. |
| *Gazameda gunnii*<br>Gunn's screw shell | Vulnerable /<br>- | **1 / 1** | VERY LOW | Lives sub tidally and offshore on sand. Widespread in Tasmanian waters but locally common only as a beached shell. One record for the species observed in 1950 is listed on the NVA approximately 250 m south of the project area. However, this record is over 70 years old and is subject to significant spatial inaccuracy.<br>Discussion of potential impacts to marine species is provided in Attachment A. |
| *Hadronyche pulvinator*<br>Cascade funnel-web spider | Extinct / - | **0 / 2** | NONE | This spider was first described in 1926 from burrows near the bank of a creek in the Cascades area near Hobart. However, there have been no other sightings or records of this spider for over 50 years, and it is presumed to be extinct. The place where it was initially found has now been destroyed through suburban growth[57]. As such there is no likelihood that this species occurs In the project area. |
| **MARINE** | | | | |

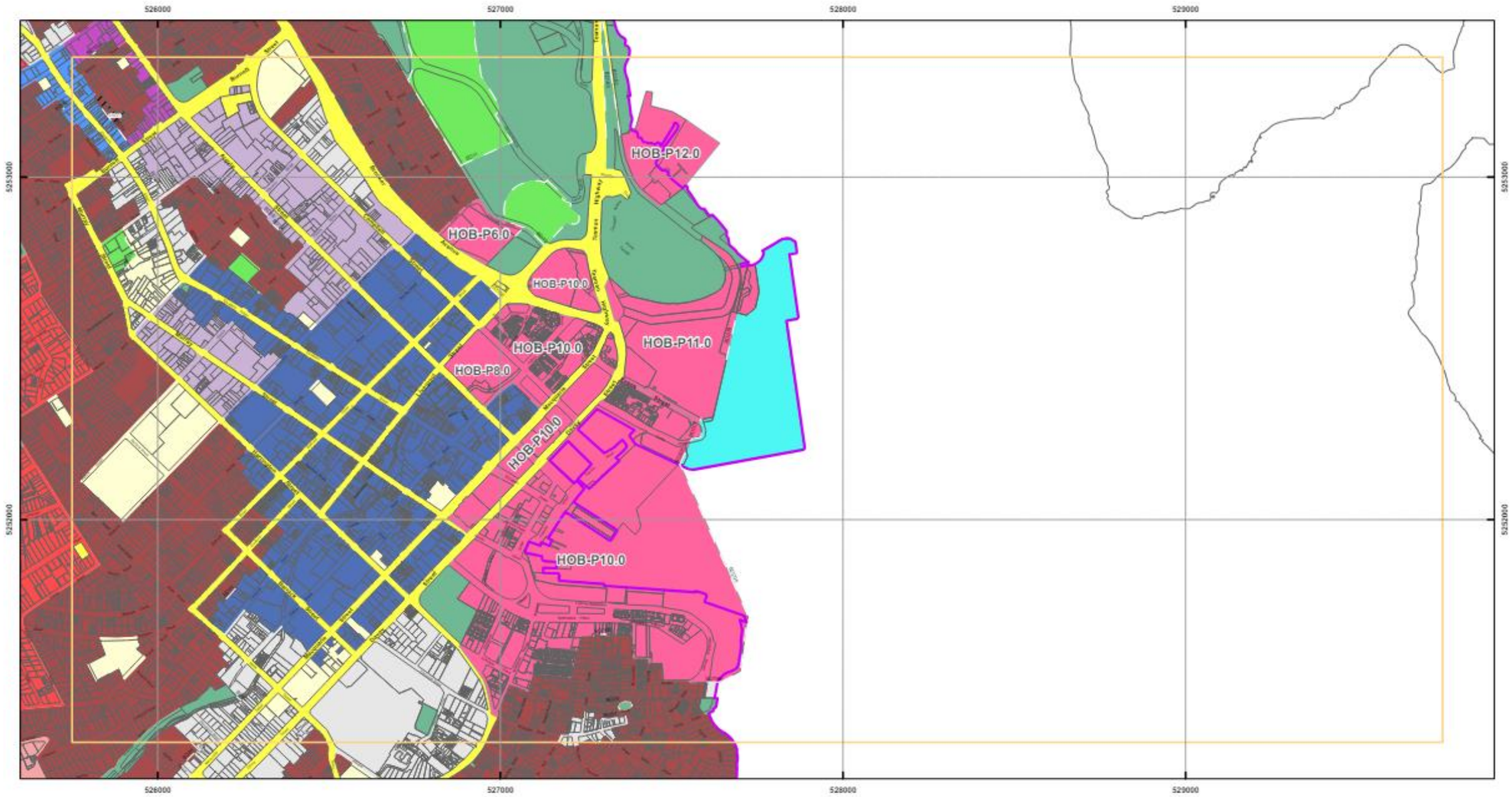
[57] Department of Natural Resources and Environment (2017)

| Species | Status TSPA / EPBCA | Records within 500 m / 5 km | Potential to Occur | Preferred Habitat and Commentary |
|---|---|---|---|---|
| *Marginaster littoralis*<br>Derwent River seastar | Endangered /<br>Critically Endangered | **0 / 6** | NONE | This seastar is endemic to Tasmania and lives within rocky, shallow waters in the Derwent River. It is restricted to the mid-littoral zone in waters between 0-1.5 m in depth and is unlikely to migrate across open and deep water away from the mid-littoral zone. The main threat to the Derwent River seastar is interspecific competition by introduced seastars such as the New Zealand seastar (*Patiriella regularis*) and the Northern Pacific seastar (*Asterias amurensis*). Other threats include habitat modification and destruction from development.<br>Targeted surveys in 1993 and 2010 failed to find this species and it is highly probably that the Derwent River seastar is now extinct[58]. As such the proposed development is unlikely to result in any further impact to this species.<br>Discussion of potential impacts to marine species is provided in Attachment A. |
| *Parvulastra vivipara*<br>Tasmanian live-bearing seastar | Endangered /<br>Vulnerable | **0 / 1** | LOW | Known only from littoral waters (the area between the high and low tide mark) in the State's southeast. The species lives in rocky areas in the upper intertidal zone, usually under rocks or in crevices. It appears to have a water depth limit, being found from just below the high-water mark to a depth of approximately 1.2 m at high water. The species prefers gently sloping, sheltered shores, characterised by rocks often no more than 20 to 30 cm high. Some small colonies seem to be habitat-specific, with some preferring dolerite and others preferring sandstone.<br>This species is known to occur further south of the project area and is unlikely to inhibit the Hobart waterfront area where significant populations of invasive seastars reside. One record of the species is listed on the NVA approximately 1 km north of the project area by the Collegiate School rowing sheds. Given the disturbed environment it is not anticipated that the proposed development will impact this species.<br>Discussion of potential impacts to marine species is provided in Attachment A. |
| *Arctocephalus forsteri*<br>New Zealand fur seal | Rare /<br>- | **0 / 10** | VERY LOW | The largest breeding colonies occur at Flat Witch, Maatsuyker and Tasman islands. The species can occur in large numbers at non-breeding haul-out sites including Taillefer Rocks, Cape Raoul, Cape Pillar, Wendar Island and Niblin Point, with occasional pupping recorded at several of these sites. Individuals range widely and occasionally reach the beaches of Tasmania and mainland Australia.<br>This species is known to occasionally pass through the Derwent Estuary with numerous records listed on the NVA. The construction of the proposed development will generate noise pollution which may affect marine mammals. However, being highly mobile, marine mammals are likely to remove themselves from unpleasant stimuli when possible.<br>Discussion of potential impacts to marine species is provided in Attachment A. |
| *Arctocephalus tropicalis*<br>sub-Antarctic fur seal | Endangered /<br>Vulnerable | **0 / 3** | VERY LOW | The subantarctic fur seal breeds, moults and hauls out mainly on Macquarie Island, but individuals range widely and occasionally reach the beaches of Tasmania and mainland Australia. Vagrant individuals are occasionally known to pass through the Derwent Estuary.<br>Similar to the New Zealand fur seal, the construction of the proposed development will generate noise pollution which may affect marine mammals. However, being highly mobile, marine mammals are likely to remove themselves from unpleasant stimuli when possible.<br>Discussion of potential impacts to marine species is provided in Attachment A. |
| *Eubalaena australis*<br>southern right whale | Endangered /<br>Endangered | **2 / 20** | LOW | This is an open-water species and primarily known to occur in Tasmanian waters as it migrates from summer feeding grounds in the Southern Ocean and the polar front, to winter breeding grounds in south-east Australia and then back again.<br>The Derwent Estuary once supported large numbers of whales and was a calving ground for the southern right whale[59]. However, since the arrival of Europeans the number of this species were driven to near extinction. Populations now appear to be recovering with various sightings listed across the Derwent on the NVA as the species migrates along coastal routes.<br>The construction of the proposed development will generate noise pollution which may affect marine mammals. However, being highly mobile, marine mammals are likely to remove themselves from unpleasant stimuli when possible.<br>Discussion of potential impacts to marine species is provided in Attachment A. |
| *Megaptera novaeangliae*<br>humpback whale | Endangered /<br>- | **2 / 10** | LOW | This is an open-water species and is primarily known to occur in Tasmanian waters as it migrates from summer feeding grounds in the Southern Ocean and the polar front, to winter breeding grounds in south-east Australia and then back again. |

[58] O'hara et al. (2019)
[59] Derwent Estuary Program (2010)

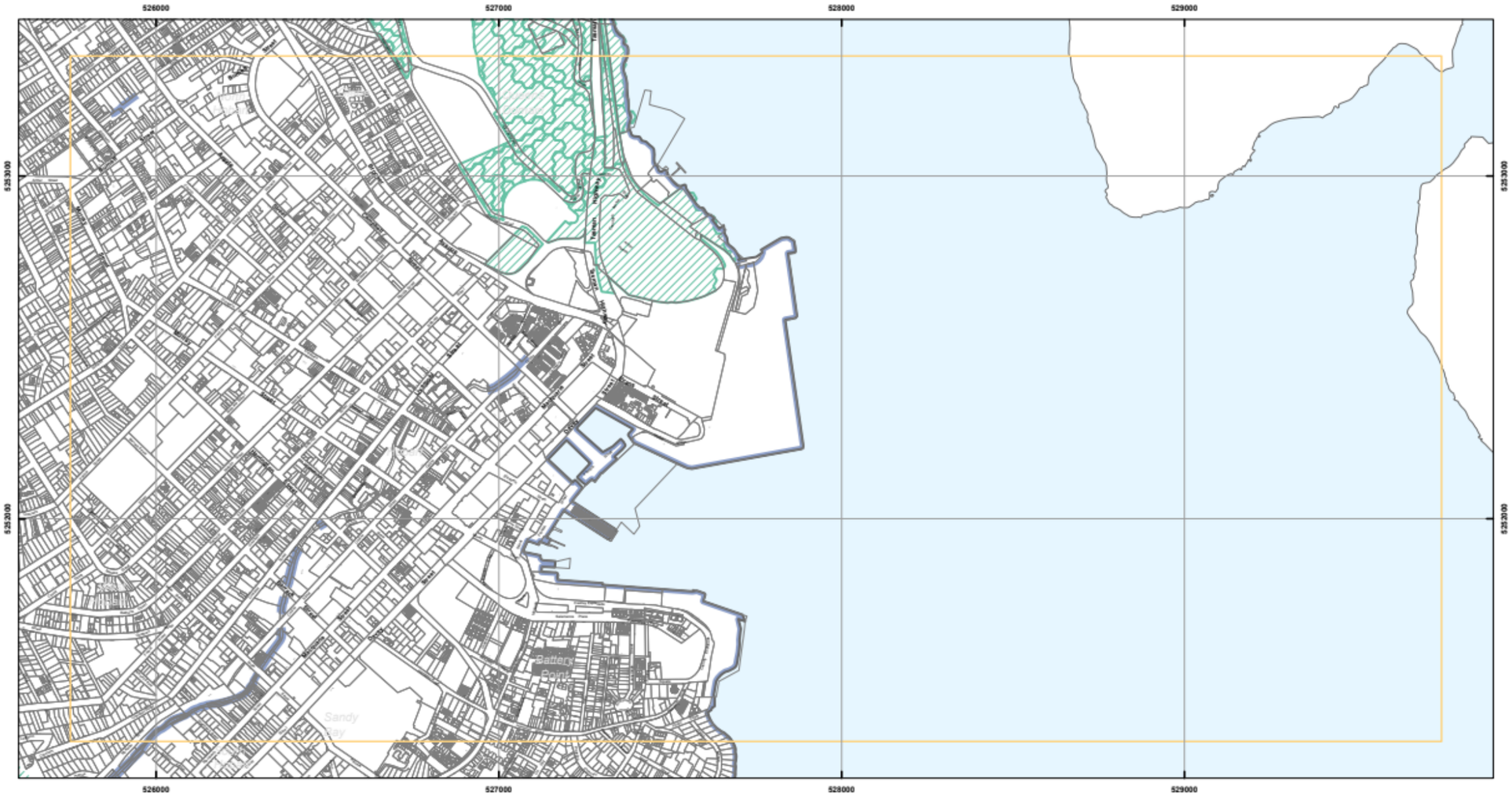
| Species | Status TSPA / EPBCA | Records within 500 m / 5 km | Potential to Occur | Preferred Habitat and Commentary |
|---|---|---|---|---|
| | | | | The species may occur within Tasmanian waters during its winter migration but typically occurs offshore. The construction of the proposed development will generate noise pollution which may affect marine mammals. However, being highly mobile, marine mammals are likely to remove themselves from unpleasant stimuli when possible.<br>Discussion of potential impacts to marine species is provided in Attachment A. |
| *Mirounga leonina macquariensis*<br>southern elephant seal | Endangered / Vulnerable | **2 / 3** | VERY LOW | This species is commonly found on sub-Antarctic islands and now turns up on Tasmanian coasts only very occasionally, with even rarer records of breeding.<br>The species are known to occur within Tasmanian waters but sightings are rare and are only of vagrant individuals. The construction of the proposed development will generate noise pollution which may affect marine mammals. However, being highly mobile, marine mammals are likely to remove themselves from unpleasant stimuli when possible.<br>Discussion of potential impacts to marine species is provided in Attachment A. |
| *Brachionichthys hirsutus*<br>spotted handfish | Endangered / Critically Endangered | **3 / 400** | LOW | Found in a small number of local populations within the lower Derwent Estuary, adjoining bays and channels and the Huon Estuary. It inhabits coastal waters in soft sediment benthic environments, from coarse to fine sand and shell grit to silt, with a depth distribution of 0–60 m. Within this habitat it displays a strong preference for complex microhabitats such as shell hash-filled holes left by foraging skates and rays. This species has suffered from a serious decline in distribution and abundance coinciding with the introduction of the Northern Pacific seastar (*Asterias amurensis*).<br>A marine natural values assessment has been produced by Marine Solutions Pty Ltd and suggested that the species presence in the vicinity of the proposed development and potential to be impacted by the proposed development is low given the abundance of the Northern Pacific seastar.<br>Discussion of potential impacts to marine species is provided in Attachment A. |
| *Seriolella brama*<br>blue warehou | - / Conservation Dependent | **0 / 1** | NONE | The blue warehou is a benthopelagic species that inhabits continental shelf and slope waters. Adults can be found at depths from 50 m to 300 m. Blue warehou is a schooling fish and they usually aggregate close to the seabed. This species occurs predominantly in coastal shelf, upper continental slope and seamount waters offshore.<br>Discussion of potential impacts to marine species is provided in Attachment A. |

## APPENDIX D – DRAFT OF THE TASMANIAN PLANNING SCHEME ZONING AND CODE OVERLAYS FOR HOBART[60]




[60] City of Hobart (2024)

## Tasmanian Planning Scheme - Overlays - Hobart Local Provisions Schedule
## C7.0 Natural Assets Code




**C7.0 Natural Assets Code Legend**

- Waterway and Coastal Protection Area
- Priority Vegetation Area
- LPS Boundary
- Property Parcels

**C7.0 Natural Assets Code**
**Map 7 of 13**

0 100 200 300 400 500
Metres

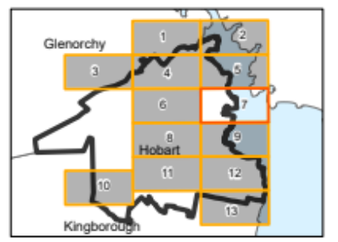
Coordinate System: GDA 94 MGA Zone 55

Overlay data from Hobart City Council
Base topographic data from the LIST © State of Tasmania
Land title information current as at 03/04/2019

Disclaimer: Before taking any action based on data shown on this map, it should first be verified with the relevant council.

Print Date: 13/05/2019

N



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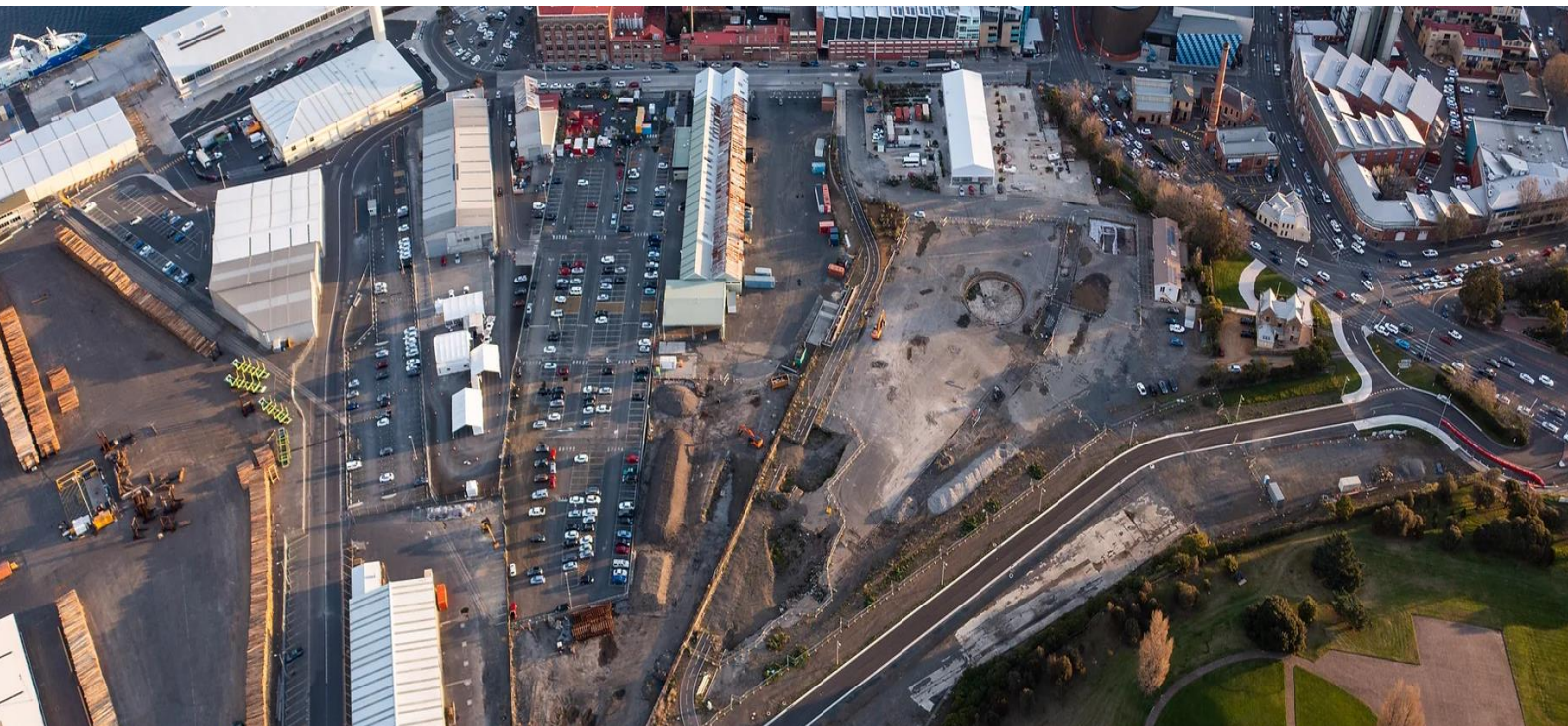
# MACQUARIE POINT MULTIPURPOSE STADIUM PROJECT – NATURAL VALUES ASSESSMENT

## SUMMARY OF WORKS

prepared for

North Barker

June 2024



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| Version | Contributor/s | Date reviewed | Reviewed by | Notes |
|---|---|---|---|---|
| 1 | K. Burgess<br>K.MacAdie | 14/06/2024 | E. Johnson<br>K.MacAdie | |

Cover photo: Artist's impression of proposed development (image source: stadiaprecinct.com, 2024).

# Table of Figures

# Executive Summary

Marine Solutions was commissioned by North Barker to undertake field surveys pertaining to natural values assessment, including an intertidal survey, at the site of a proposed community precinct development at the Queens Domain, Derwent Estuary, Hobart, Tasmania. This report focuses on surveys conducted on May 30, 2024, detailing the operational summary, significant observations, and data interpretations.

This report summarises the results of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (PMST) and the *Threatened Species Protection* (*TSP*) *Act 1995* through a Natural Values Atlas assessment which identify listed threatened and vulnerable species and communities in the vicinity of the proposed development. The results indicate that the development poses minimal risk to threatened and vulnerable marine mammals, turtles, fish and elasmobranchs and/or marine communities.

An intertidal survey and targeted threatened species search failed to identify any Tasmanian live-bearing seastar *(Parvulastra vivipara*) or Derwent River seastar (*Marginaster littoralis*). Where impacts of construction activities are likely to generate water quality impacts, mitigation strategies should be taken to reduce any risk to possible nearby handfish and threatened sea star communities such as timing of works to minimise impacts on handfish breeding.

The potential for environmental impact will depend on the proposed design, duration, and timing of development activities, alongside consideration of effective mitigations, such as controls of suspended sediment and contaminated stormwater runoff, selective timing of development and noise control. Given the infancy of this project, new information may determine further changes and developments to natural values assessment.

This report aims to deliver an initial marine natural values assessment of the proposed site, providing the proponent with information to guide initial planning and discussions with regulators.

# 1 Introduction

## 1.1 Purpose and Scope

Marine Solutions was engaged by Jared Parry from North Barker to undertake a marine environmental impact assessment of the proposed development on the Western foreshore of the Derwent Estuary at the Queens Domain, Hobart, Tasmania.

The primary purpose of this scope of work is to identify the natural values within the current proposed construction and operation area and provide the relevant mitigations where necessary to minimise impact. This work will support the relevant environmental regulatory frameworks required.

This report provides an operational summary of the findings from Stage 1: Aquatic natural values assessment as outlined in the Macquarie Point Multipurpose Stadium Project, Quote and Scope (Marine Solutions, May 2024). These works were undertaken by qualified marine scientists.

The objectives of Stage 1 were to:

- characterise aquatic natural values in the proposed development areas, and
- identify any constraints within the marine environment that could affect the development.

The scope of the aquatic natural values assessment includes both desktop and field components. Findings will inform subsequent stages of the project. We incorporated the following aspects into the aquatic natural values assessment:

  - Preliminary desktop assessment
  - Field investigation
    - Ecological flora and fauna intertidal surveys, including targeted search for threatened species
  - Reporting

## 1.2 Project Background

The proposed development will include a multipurpose stadium, mixed-use commercial area, residential development and public foreshore zone, and Antarctic facilities at Queens Domain, Hobart (Figure 1).

North Barker requires comprehensive environmental surveys for the proposed stadium development footprint. The purpose of the surveys is to identify environmental constraints and potential risks to construction and operation.

## 1.3 Site overview

A multi-purpose stadium and community precinct development has been proposed on the western shore of the Derwent Estuary in the vicinity of the Hobart Cenotaph. The foreshore development will include both residential and public use spaces and will improve the accessibility and amenity to the existing jetties and ramp for the launching of small vessels (Mac Point Draft Precinct Plan 2023).

The existing and proposed site design generally has gentle gradients which are favourable for application of stormwater management controls (BMT, 2024). The Macquarie Point Precinct is primarily impermeable consisting of buildings, concrete and bitumen. Hydrogeological surveys were conducted in 2019 and found a general southeast direction associated with groundwater flow.

Existing drainage at the site includes three separate pipe networks including a pipe towards the northern boundary of the site through the rivulet, to the west along Davey Street which discharges to the marina and immediately south along Evans Street into the marina (BMT, 2024).

The land at the Macquarie Point site is historically reclaimed land, therefore the site is to have significantly been filled with a combination of clays, sands gravels, cobbles and bricks. Beneath the reclaimed land, the natural soil types are predominantly silty sands and dolerite.

Given the historical activities at the site, potential for subsurface contamination is high which has resulted in significant remediation operations required to remove and dispose of the contaminated material.

## 1.4 Relevant Legislation

This report is intended to provide an initial natural values assessment across the proposed development and to provide the proponent with essential information to guide initial planning and discussions with regulators. Should the project be declared a Major Project under *Land Use Planning and Approvals Act 1993*, all planning, environmental, historic cultural heritage, Aboriginal heritage and threatened species requirements will be assessed by an independent panel created by the Tasmanian Planning Commission.

If the development is not declared a Major Project, discussions should be sought with EPA Tasmania and relevant planning authorities with respect to development requirements under the *Environmental Management and Pollution Control Act 1994*. Following this, it is anticipated that the development will be subject to board determination of the class of assessment, after which the proponent should expect to be issued project specific guidelines in preparation of a case for assessment (in the form of an EER or EIS) which will determine ongoing environmental survey and assessment requirements.

In addition to state requirements, the Commonwealth assessment may be required under the EPBC Act. Commonwealth approval is required for an action which has, will have, or is likely to have a significant impact on a matter of national environmental significance (including nationally listed threatened and migratory species) or on Commonwealth waters or land. Where necessary a bilateral agreement between the Tasmanian and Commonwealth Governments may be invoked, allowing the state and Commonwealth assessments to be undertaken concurrently.

The Protected Environmental Values of the Derwent Estuary (2003) pertain to the management of recreational water quality, protection of aquatic ecosystems, water supply, agriculture water uses and industrial water supply.

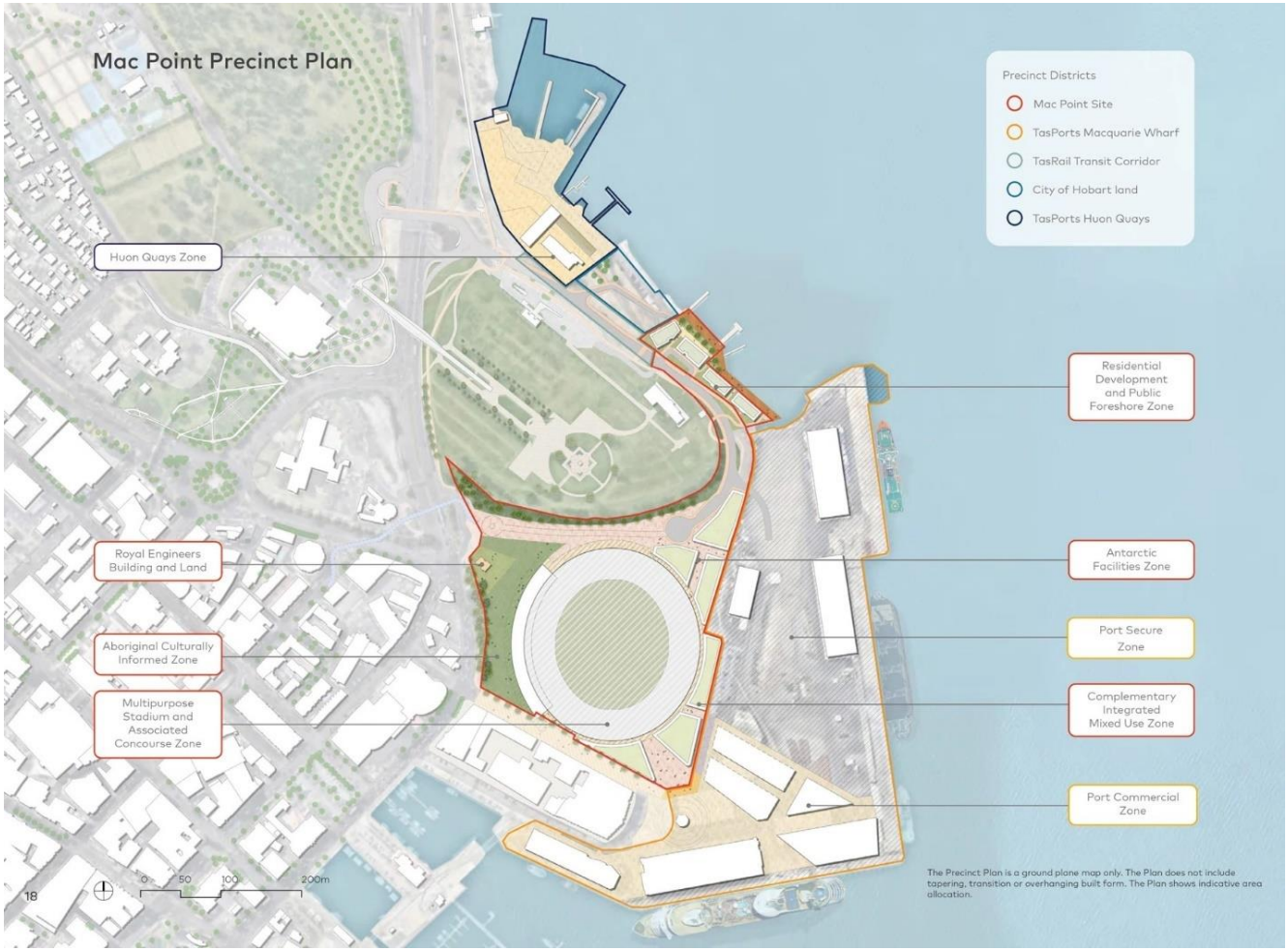


Figure 1. Location and plan for a multi-purpose stadium precinct on the Western shore of the Derwent Estuary (image source: macpoint.com/precinctplan 30/05/2024).

# 2 Desktop Protected Matters Summary

A desktop review of natural values was conducted in accordance with current guidelines relating to development impacts within the marine environment (NCH 2020) to identify potentially impacted natural values in the vicinity of the proposed development.

## 2.1 EPBC Act Protected Matters Report

The *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* Protected Matters Search Tool (PMST) is a tool managed by the Department of Agriculture, Water and the Environment to help determine whether Matters of National Environmental Significance (MNES) or other matters protected by the *EPBC Act* are likely to occur in a given area of interest (Commonwealth of Australia 2024). The PMST was used to identify protected matters relating to the study area, with a buffer of 500 m and 5000 m (Table 1, Table 2). The full report is available upon request from Marine Solutions. Threatened and protected marine species identified in the report are listed in Table 2.

## 2.2 Tasmanian Government Natural Values Report

A Natural Values Report was compiled using the Tasmanian Governments online Natural Values Atlas tool. The tool utilises several data sets together to provide a resource that can be used for desktop reviews of natural values for specific areas around Tasmania. The Natural Values Atlas tool was used to identify protected matters relating to a 500 m and a 5000 m buffer zone surrounding the study area. The full report is available upon request from Marine Solutions. Threatened and protected marine species identified in the report are listed in Table 2.

Table 1. Summary of findings of the *EPBC Act* PMST.

| | Item | # ID'd by PMST | Notes |
|---|---|---|---|
| **Matters of National Environmental Significance** | World Heritage Properties | 1 | |
| | National Heritage Places | 2 | |
| | Wetlands of International Importance | 1 | |
| | Great Barrier Reef Marine Park | 0 | |
| | Commonwealth Marine Area | 0 | |
| | Listed Threatened Ecological Communities | 4 | Includes 1 marine ecological community |
| | Listed Threatened Species | 69 | Includes 15 marine species |
| | Listed Migratory Species | 33 | Includes 5 marine species, the remainder are avian species. |
| **Other Matters Protected by EPBCA** | Commonwealth Lands | 29 | |
| | Commonwealth Heritage Places | 4 | |
| | Listed Marine Species | 53 | Includes 13 fish species and 9 marine mammals, the remainder are avian species |
| | Whales and Other Cetaceans | 7 | |
| | Critical Habitats | 0 | |
| | Commonwealth Reserves Terrestrial | 0 | |
| | Australian Marine Parks | 0 | |
| | Habitat Critical to the Survival of Marine Turtles | 0 | |
| **Extra Information** | State and Territory Reserves | 17 | |
| | Regional Forest Agreements | 1 | |
| | Nationally Important Wetlands | 0 | |
| | EPBC Act Referrals | 18 | |
| | Key Ecological Features (Marine) | 0 | |
| | Biologically Important Areas | 5 | |
| | Bioregional Assessments | 0 | |
| | Geological and Bioregional Assessments | 0 | |

## 2.3 Threatened and Protected Species/Ecological Communities

There are a number of marine species listed as threatened and protected that may occur in the vicinity of the proposed development. Threatened species are protected under the *Threatened Species Protection* (*TSP*) *Act 1995* (Tasmanian State legislation) and/or the *EPBC Act* (Australian Government legislation).

Under the *TSP Act*, no listed species is allowed to be collected, disturbed, damaged, or destroyed without a permit. Under the *EPBC Act*, any action with significant impact on a listed threatened species and/or community is prohibited without approval.

In addition to threatened species legislation, the *Fisheries (General and Fees) Regulations 2006* under the *Living Marine Resources Management Act 1995* prohibits the taking/possession of a number of marine species, including syngnathids (seahorses, seadragons and pipehorses), handfish, threefin blennies, limpets/false limpets of three superfamilies, and five species of shark. Additional species are protected by the schedules of the *Wildlife (General) Regulations 2010* (Regulations under the *Nature Conservation Act 2002*), under which a person must not take, buy, sell, or have possession of any protected wildlife or any product of any protected wildlife without a permit. Threatened species that could potentially occur within the vicinity of the study area are discussed in greater detail below.

In a search of the Natural Values Atlas (NRE Tas 2024) and EPBC PMST (Commonwealth of Australia 2024), one threatened marine ecological community and 21 threatened marine species were identified as possibly occurring in the area or known to occur in the area (Table 2). Verified records of nine threatened species within a 500 m radius of the study area were found (NRE Tas 2024).

### 2.3.1 Threatened Species

Table 2. Summary of threatened marine species identified in a search of the Natural Values Atlas (500 m and 5000 m buffer zone) and the EPBC PMST (500 m and 5000 m buffer zone). Note that the scope does not extend to terrestrial or avian biota.

| | Species/ Community | Listing | | EPBC PMST findings | NVA findings |
|---|---|---|---|---|---|
| | | EPBC Act | TSP Act | | |
| Marine Mammals | Blue whale (*Balaenoptera musculus*) | Endangered | Endangered | Species or species habitat likely to occur within area | |
| | Southern right whale (*Eubalaena australis*) | Endangered | Endangered | Breeding known to occur within area | Verified record within 500 m |
| | Humpback whale (*Megaptera novaeangliae*) | | Endangered | Species or species habitat known to occur within 500 m | Verified record within 500 m |
| | New Zealand fur seal (*Arctocephalus forsteri*) | | Rare | | Verified record within 500 m |
| | Southern elephant seal (*Mirounga leonia*) | | Endangered (unofficial) | | Verified record within 500 m |
| | Sub-Antarctic fur seal (*Arctocephalus tropicalis*) | Vulnerable | Endangered | | Verified record within 5000 m |
| Reptiles | Loggerhead turtle (*Caretta caretta*) | Endangered | Endangered | | Verified record within 5000 m |
| Fish/elasmobranchs | Southern bluefin tuna (*Thunnus maccoyii*) | Conservation dependent | | Species or species habitat likely to occur within 500 m | |
| | Australian grayling (*Prototroctes maraena*) | Vulnerable | Vulnerable | Species or species habitat known to occur within 500 m | Unverified record within 500 m |
| | Blue warehou (*Seriolella brama*) | | Conservation dependent | | Verified record within 5000 m |
| | Red handfish (*Thymichthys politus*) | Critically endangered | Endangered | Species or species habitat may occur within 500 m | |
| | Spotted handfish (*Brachionichthys hirsutus*) | Critically endangered | Endangered | Species or species habitat known to occur within area | Verified record within 500 m |
| | Great white shark (*Carcharodon carcharias*) | Vulnerable | | Species or species habitat known to occur within area | |
| | School shark (*Galeorhinus galeus*) | Conservation dependent | | Species or species habitat likely to occur within area | |
| | Porbeagle (*Lamna nasus*) | | Endangered | Species or species habitat likely to occur within area | Verified record within 500 m |

| | | | | | |
|---|---|---|---|---|---|
| Inverts | Tasmanian live-bearing seastar (*Parvulastra vivipara*) | Vulnerable | Endangered | Species or species habitat likely to occur within area | Verified record within 500 m |
| | Derwent River seastar (*Marginaster littoralis*) | Critically endangered | Endangered | Species or species habitat likely to occur within area | Verified record within 500 m |
| | Gunn's screw shell (*Gazameda gunnii*) | | Vulnerable | | Verified record within 500 m |
| Flora | Three-node seaweed (*Sirophysalis trinodis*) | | Rare | | Verified record within 5000 m |
| | Mud dock (*Rumex bidens*) | | Vulnerable | | Verified record within 5000 m |
| | Spreading saltmarshgrass (*Puccinellia perlaxa*) | | Rare | | Unverified record within 5000 m. Highly unlikely due to distribution |
| Communities | Giant kelp marine forests of South East Australia | Endangered | | Community may occur within 500 m | |

#### *2.3.1.1 Threatened Marine Mammals*

Cetaceans (whales and dolphins) and pinnipeds (seals) are known to occur near the proposed development site periodically.

Blue whales (*Baleanoptera musculus*) and humpback whales (*Megaptera novaeangliae*) may occur in Tasmanian waters during winter migrations, but generally occur offshore. Southern right whales (*Eubalaena australis*) also migrate along coastal routes and may occur near shore.

Southern elephant seals (*Mirounga leonina*) are known to occur in Tasmanian waters; however, sightings are rare and only of wandering vagrant individuals.

The NVA identified verified records of four threatened marine mammal species within 500 m of the proposed developments (NRE Tas 2024).

Threats to marine mammals include acoustic pollution, entanglement (e.g., marine debris, fishing equipment), vessel-strike injury and water quality degradation. Marine mammals, particularly cetaceans, use acoustic signals for detecting prey, navigating and communication. Acoustic pollution

can significantly impact these species directly through auditory injury, masking of important natural sounds, inducing behavioural changes or inducing stress. Impacts on larvae or prey species may also indirectly affect marine mammals (Erbe 2012).

The construction of the proposed development will generate noise pollution which may affect marine mammals. However, being highly mobile, marine mammals are likely to remove themselves from unpleasant stimuli when possible.

#### *2.3.1.2 Threatened Fish*

Excluding handfish, the threatened fish species identified in the desktop study are migratory or highly mobile and able to avoid unpleasant stimuli. As such, the development is not anticipated to have an impact on threatened fish species.

##### 2.3.1.2.1 Great White Shark

Great white sharks (*Carcharodon carcharias*) are listed as vulnerable and migratory under the *EPBC Act 1999*. It is unlikely that great white sharks will occur in the proximity of the proposed development, as they are primarily an oceanic species. Threats to great white sharks include commercial fishing rather than shallow coastal developments (DSEWPC 2013). It is unlikely that the proposed development would present any risk to white sharks given that they are highly mobile and can avoid any construction works. Furthermore, the development is unlikely to significantly alter any critical habitat of the great white shark.

##### 2.3.1.2.2 School Shark

Threats to school sharks include fishing and habitat degradation of nursery grounds (TSSC 2009). School sharks (*Galeorhinus galeus*) are known to depend on inshore nursery areas, and the Derwent Estuary has been formally recognised as a Shark Refuge Area to protect shark species (TSSC 2009). Consideration of impacts to school shark populations should be considered further in any follow-up impact assessment and approvals referral.

##### 2.3.1.2.3 Australian Grayling

Australian grayling (*Prototroctes maraena*) are a medium-sized slender silver fish native to Tasmania and southeast mainland Australia. The Australian grayling is diadromous, migrating between fresh

and marine waters; the majority of their lives are spent in freshwater (TSSC 2021). Timing of spawning varies between seasons but is typically in late summer in Tasmania (Backhouse *et al* 2008b). Larvae are transported to sea in stream and river currents and return as migrating juveniles approximately 4 to 6 months later (Backhouse *et al* 2008a, Bryant and Jackson 1999).

The EPBC PMST assessment identified that the species or suitable species habitat is known to occur within 500 m of the proposed development. Pollution of waterways is also considered a threat to their survival. The most serious threat facing the Australian grayling population is habitat disturbance such as the construction of dams and weirs resulting in barriers to migration (DPIPWE 2008). The proposed development will not be a barrier for migration.

#### 2.3.1.2.4 Blue Warehou

The blue warehou (*Seriolella brama*) is a mid-sized species of schooling fish often found under jetties, wharves, and moored boats. Blue warehou were listed as conservation dependent due to the impacts of overfishing (TSSC 2015). As the species occurs predominantly in coastal shelf, upper continental slope and seamount waters offshore, the proposed development is not expected to have any foreseen impact on blue warehou populations.

#### 2.3.1.2.5 Southern Bluefin Tuna

Southern bluefin tuna (*Thunnus maccoyii*) are found in open ocean habitats and are generally found in Tasmanian waters from March to June but can theoretically be found year-round (TSSC 2010). They are actively targeted by game fishers and are listed as conservation dependent under the *EPBC Act 1999*. It is unlikely that this species will occur in the proximity of the proposed development, as they are primarily an oceanic species and is therefore unlikely to have any significant impact on their populations.

#### 2.3.1.2.6 Handfish

Spotted handfish are small, colourful, slow moving benthic fish (DCCEEW 2015) found only in southeastern Tasmania in environments with unconsolidated, benthic sediments.

Verified records of spotted handfish (*Brachionichthys hirsutus)* were identified within 500 m of the proposed development. The spotted handfish breeding season occurs between mid-July and mid-

November (T Lynch 2019, pers. comms. with S. Ibbott 25th February). They are reliant on spawning substrate for attachment of eggs, preferring stalked ascidians *Sycozoa* sp. but also utilising sponges and seagrass (Bruce *et al.* 1998; Spotted Handfish Recovery Team 2002). Availability of suitable spawning substrata is considered critical to their reproductive success (Pogonoski *et al.* 2002). Spotted handfish do not have a larval dispersal phase; juvenile hatchlings are thought to settle in the immediate vicinity of the hatch-site (Bruce *et al.* 1997).

The species has suffered from a serious decline in distribution and abundance coinciding with the introduction of the Northern Pacific seastar (*Asterias amurensis*) (Pogonoski *et al.*2002; Bruce *et al.* 1999). Remaining individuals today exist in fragmented sub-populations within the species' historic range (Last and Gledhill 2009).

The desktop review identified that the red handfish (*Thymichthys politus)* or red handfish habitat are "likely to occur within the area" (Commonwealth of Australia 2024); however, red handfish have not previously been recorded within the Derwent Estuary, therefore it is considered that the likelihood of their presence in the vicinity of the proposed development and potential impact to any populations would be extremely low.

#### *2.3.1.3 Threatened Reptiles*

##### 2.3.1.3.1 Loggerhead Turtle

Sightings of any turtles are extremely rare in the Derwent Estuary and any itinerant individuals are not likely to be present to breed. It is not thought that the development will have any impact on turtle species.

#### *2.3.1.4 Threatened Invertebrates*

##### 2.3.1.4.1 Gunn's screwshell

Gunn's screwshell (*Gazameda gunnii*) is a small species of mollusc endemic to Australia occupying a range of habitats from Cape Moreton in Queensland to northern and eastern regions of Tasmania. The species can reach up to 69 mm in length, however the majority of specimens are within 30 – 40 mm. They occupy a depth range of benthic habitats from 8 – 140 m, and a variety of particle sizes,

however they are generally more common in coarser sediments. Gunn's screw shells are listed as vulnerable under the *TSP Act 1995*. The main process threatening the species is potential competition from the introduced New Zealand screw shell (*Maoricolpus rosea*) (Reef Life Survey 2008). It is highly unlikely that the species are present in the area and thus targeted surveys for *Gazemeda* are not required in Derwent Estuary (NCH 2020).

#### 2.3.1.4.2 Seastars

Two species of endemic seastars have been recorded within 500 m of the proposed development site. Tasmanian live-bearing seastar (*Parvulastra vivipara*) is a small species, up to 30 mm across, inhabiting littoral waters in the state's southeast (DNRE 2023). The species is one of very few seastars worldwide that brood their eggs and then give birth to live young. The population has reduced by 88% between the early 2000s and 2020, with the main threats to this species being habitat deterioration and destruction through sedimentation, eutrophication, and coastal development.

The Derwent River seastar (*Marginaster littoralis*) is a small species, up to 17 mm across, that inhabits rocky shallow waters in the mid-littoral zone up to 1.5 m depth. Known threats to the seastar include interspecific competition and anthropogenic habitat modification/destruction (Materia 1994). The Derwent River seastar populations are severely impacted by introduced species that co-occur in super-abundance (e.g. New Zealand Porcelain Crab *Petrolisthes elongata* and the New Zealand common cushion star *Patiriella regularis*) (Barrett *et al* 2010; Materia 1994). Furthermore, it has been hypothesised that the current lack of Derwent River seastar observations may be attributable to possible hybridisation with *P. regularis*, resulting in genetic swamping (Materia 1994). Targeted surveys in 1993 and 2010 failed to find this species, and it is highly probable that the Derwent River seastar is now extinct (O'hara *et al.* 2019)

### *2.3.1.5 Threatened Flora*

#### 2.3.1.5.1 Three node seaweed

Three node seaweed (*Sirophysalis trinodis*, previously *Cystoseira trinodis*) is a species of brown algae listed as rare under the *TSP Act*. The species has a widespread distribution around mainland Australia, however in Tasmania is only known from a single population in Blackman's Bay (Sanderson 2000).

Survey requirements for three node seaweed are limited to Blackman's Bay (NRE Tas 2021) as its distribution is unlikely to extend to the proposed development site.

#### 2.3.1.5.2 Mud dock

Mud dock (*Rumex bidens*) is a rare native aquatic or semi-aquatic plant with stout, prostrate stems, and large leaves. The major threat to mud dock is permanent drainage and loss of its wetland habitat. There are no known populations of the plant in the project vicinity and no sightings in the Derwent area for over 50 years.

### *2.3.1.6 Threatened Ecological Communities*

#### 2.3.1.6.1 Giant kelp forests of south east Australia

Giant kelp forests of south east Australia were added to federal legislation as a threatened ecological community in August 2012 (DSEWPC 2012). The progressive decline of these forests has been the most noticeable in Tasmanian waters and is attributed to changing oceanographic conditions, including rising sea surface temperatures and changes to the East Australian Current. Giant kelp (*Macrocystis pyrifera*) grows on rocky reefs in cold temperate waters off south-east Australia. The vertical structure provided by giant kelp forests increases local biodiversity by creating habitat for numerous marine species (DSEWPC 2012).

The EPBC PMST report identified that giant kelp communities may occur within 500 m of the proposed development, however the closest identifiable giant kelp community is towards Blackmans Bay, over 10 km away (NRE Tas 2024). Given the distance of known kelp forests from the development site, and the small-scale nature of the proposed development, potential impacts of the proposed development to this threatened community are deemed negligible.

# 3 Intertidal Survey

The intertidal survey included habitat observations and a targeted search for the Tasmanian live-bearing seastar *(Parvulastra vivipara*) and the Derwent River seastar (*Marginaster littoralis*).

## 3.1 Habitat Survey

### 3.1.1 Methods

The intertidal survey was conducted on 30/05/2024. Where possible, quadrat surveys were conducted along 2 x 225 m transects, adjacent to the foreshore, at approximately mean high water (MHW) and mean low water (MLW) marks. The location of each quadrat was recorded with a Garmin GPS (Figure 2), and typical habitats were photographed (Figure 3). All species found were noted and photographed when possible.

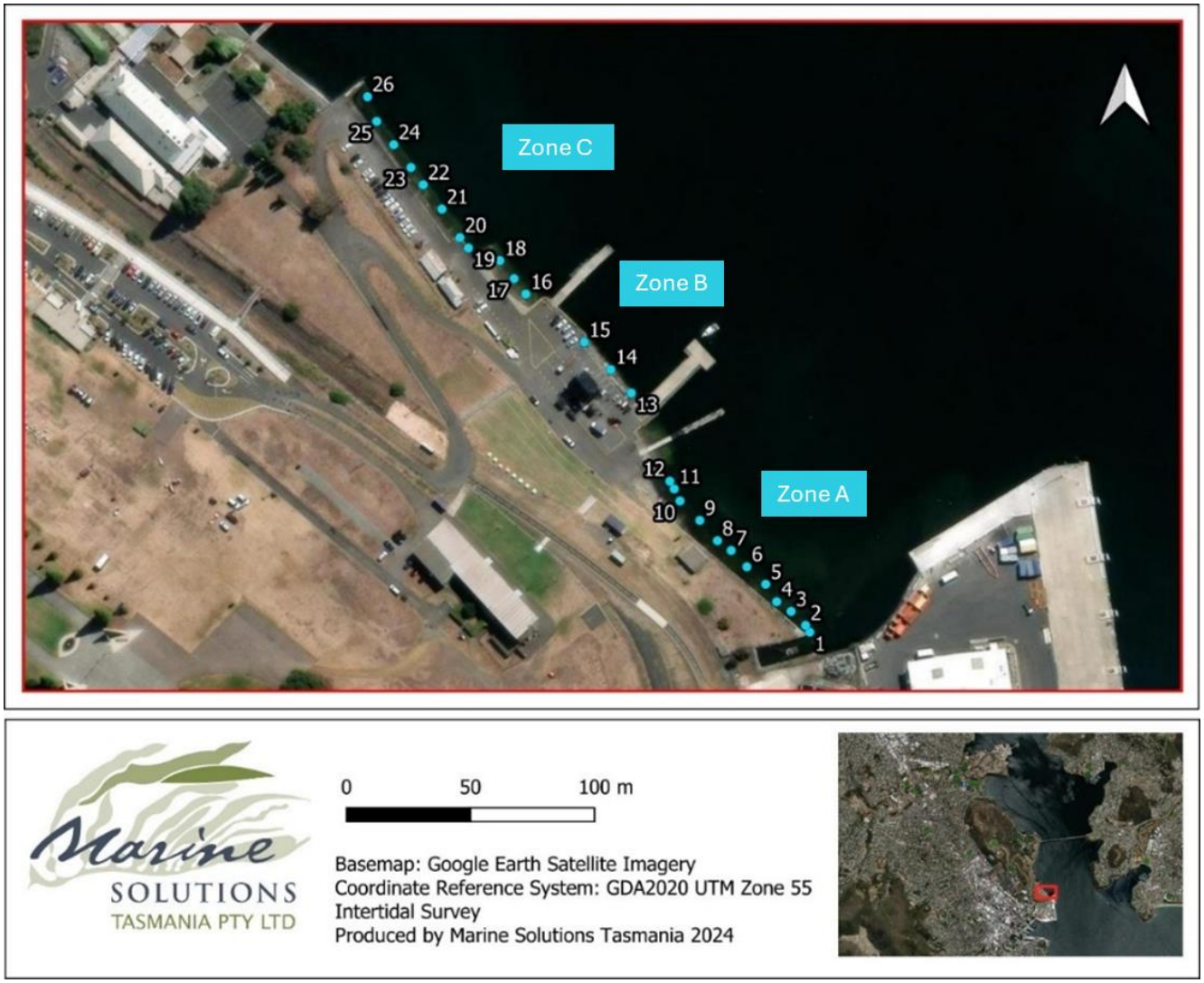


Figure 2. Points of intertidal survey quadrats at the proposed development site.

### 3.1.2 Results

The substrate at sites 1-12 (zone A) was comprised of cobbles almost entirely covered by blue mussels *Mytilus edulis* and a film of green algae. Darwin's barnacles *Elminius modestus* and Pacific oysters *Crassostrea gigas* were observed. Sites 13-15 (zone B) were along an artificial boulder wall. Boulders in zone B were partially covered by blue mussels, Pacific oysters and sea lettuce *Ulva spp*. Common siphon-shell *Siphonaria diemenensis* was observed here. Sites 16-26 (zone C) were along an area of foreshore almost exclusively hardened by sloped concrete slabs. Blue mussels, sea lettuce and Pacific oysters were observed, however these species were far less abundant in this zone.

Figure 3. Typical intertidal habitats at zone A (left), B (centre), and C (right), adjacent to the foreshore at Queens Domain.

## 3.2 Targeted Search for Threatened Species

### 3.2.1 Methods

A targeted search for threatened seastars (*P. vivipara* and *M. littoralis*) was conducted on 30/05/2024, throughout intertidal habitat within the area of proposed development (Figure 4). The intertidal habitat quadrats were searched thoroughly for threatened species, including undersides of any loose cobbles/boulders.

### 3.2.2 Results

No threatened seastars were found within the surveyed area. Several invasive species were observed along the transects in zone A and B, including Northern Pacific seastar *Asterias amurensis*, New

Zealand common cushion star *Patiriella regularis* and New Zealand half crab *Petrolisthes elongatus*. Zone C was comprised mostly of blue mussels and Pacific oysters.

Figure 4. Invasive species observed during the targeted search for threatened species.

# 4 Stormwater Management

A Storm Water Management Plan was undertaken by BMT in 2024 which assess a conceptual stormwater management quality system for the development. The report indicates that the required discharge objectives can be met with the inclusion of the proposed stormwater management controls. These controls include water storage, which can offset potable water demand and manage run off and water quality in the Derwent River. Additionally, bio-retention basins are included in this plan for the treatment of stormwater at the source and will be targeted in suitable areas near roads, pedestrian used areas which are more likely to contribute to pollutants.

It is expected that the development will discharge minor flows to the Derwent River, and major flows, similarly, will be directed via overland flow paths designed to limit potential flood impacts (BMT, 2024). Additionally, rainwater harvesting is designed to reduced peak flows from the site for reuse.

A key constraint of the development, relating to storm water management is below ground conditions and possible constraints with site remediation. Without effective site remediation, contaminates must be reassessed to determine environmental impacts of the storm water. An additional constraint is the capacity of existing stormwater infrastructure which may have to be increased throughout the development.

Ongoing site assessments and design processes will further refine the assessment related to impacts of stormwater on water quality which may influence further works to determine and minimise the impact to the marine environment. Water quality objectives will depend on the success of the storm water management plan which should be assessed for achievement in the discharge objectives.

# 5 In Water Works

At this stage, in water works are not planned for this project. However, there may be additional considerations relevant to natural values, dependent on changes in the proposed design, duration, and timing of development activities. In the instance of in water works, considerations must include additional targeted species within the area, potential contaminated stormwater runoff and sediment

sampling of areas in proximity to construction. If construction is to occur in the marine environment (e.g. land reclamation, piling or installation of floating structures), effective mitigation of environmental deterioration should be taken.

## 5.1 Contaminated Soil

The soil at the proposed development site is heavily contaminated with heavy metals, asbestos, coal tar, spent fuel, phosphorus and sulphur (Mac Point 2023). Appropriate management/treatment of runoff such that water into the estuary will be 'inert' (absent of suspended sediments or leached contaminants) is necessary. See section 4.

## 5.2 Polluted Sediment

Levels of pollution into the Derwent River and Estuary have been historically high, and it is recommended that sediments be collected and tested from areas near the proposed development, in anticipation of exploratory heavy metal and chemical contaminant. If in water construction commences, there is a risk that pile driving may cause disturbance and resuspension of sediments. This has the potential to impact water quality by releasing contaminants associated with sediment particles and increase turbidity, which in turn decreases light availability, around the construction area.

### 5.2.1 Mitigations

- The construction of piles should be undertaken in an outgoing tide so that resuspended sediments are less likely to flow upstream of the project site.
- Works should be undertaken in calm weather to minimize the spread of disturbed sediments. The water should be monitored for any large plumes caused by construction activities. If there is a large plume, work should be stopped, and appropriate mitigation actions should be taken.
- Baseline testing of contaminated sediments.

## 5.3 Threatened Species

A number of anthropogenic development activities can impact handfish populations, including commercial and recreational dredging and land management activities that alter turbidity, water and sediment quality (TSSC 2012). Possible impacts of the proposed development to handfish populations include degradation of species habitat and subsequent disturbance to breeding. Any reduction in the availability of suitable spawning substrate has been found to limit the reproductive success of spotted handfish in the Derwent Estuary (Spotted Handfish Recovery Team 2002).

### 5.3.1 Mitigations

- A targeted handfish survey should be undertaken by divers or equivalent to assess the risk of any potential in water works to the population of critically endangered spotted handfish (*Brachionichthys hirsutus*).

## 5.4 Noise Pollution

Piling activities may create short term underwater acoustic disturbance which may impact marine fauna that rely on acoustic cues for feeding, social and reproductive behaviours. Noise control should be considered during potential in water works to mitigate the effects of acoustic pollution to marine mammals.

### 5.4.1 Mitigations

- A pre-start-up visual observation for marine mammals should be undertaken in a 300 m radius prior to commencement of soft-start procedures.
- A soft-start may commence if no marine mammals have been sighted within the 300 m radius. Soft start procedures should be used each time construction is initiated, gradually increasing power over a 10-minute period.
- If a marine mammal is sighted within 300 m radius marine construction should shut down completely. Construction works should be halted until such time that no marine mammal has been sighted for 30 minutes.

# 6 Recommendations & Conclusions

The Natural Values Atlas and EPBC Protected Matters Search Tool identified one threatened marine ecological community and 21 threatened marine species as possibly occurring in the area or known to occur in the area. Verified records of nine threatened species within a 500 m radius of the study area were found. These works find no contraventions to the Protected Environmental Values of the Derwent Estuary in relation to the intertidal zone adjacent to the proposed development. An intertidal survey was undertaken along the foreshore of the proposed development. The habitat consisted primarily of flat concrete slabs and riprap material, largely made up of sea lettuce, blue mussels and Pacific oysters. A targeted threatened species search failed to identify any Tasmanian live-bearing seastar or Derwent River seastar. The proposed development does not pose any risk to these species.

The development poses minimal risk to fish given the development is unlikely to significantly disrupt migratory access, movements or behaviour. Red and spotted handfish should be considered for this development if in water works are required, given the possibility of their occurrence at the site and their limited ability to move away from negative stimuli.

Additionally, in the instance where in water construction will occur, or if runoff is contaminated or likely to contaminate the marine environment, further surveys (e.g. sediment sampling, handfish surveys), will be required to meet state significance guidelines and inform the project of state significance documentation. It is recommended that environmental management of in water works be aimed at contaminated stormwater runoff control, sediment sampling of areas in proximity to construction, a targeted search for threatened species within the subtidal area, and noise pollution control.

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# 8 Appendices

## Appendix 1. Operational Summary

| Date | Personnel | Time (start) | Time (end) | Cloud | Rain | Swell | Wind | Tide | Works conducted |
|---|---|---|---|---|---|---|---|---|---|
| 30/05/2024 | K. Macadie<br>K. Burgess | 8:30 | 12:00 | 6/8 | No | Calm | 10 kts NE | Outgoing to low | Intertidal Survey |

# Natural Values Atlas Report

*Authoritative, comprehensive information on Tasmania's natural values.*

Reference: NBES
Requested For: MPD001
Report Type: Summary Report
Timestamp: 01:07:00 PM Wednesday 19 June 2024

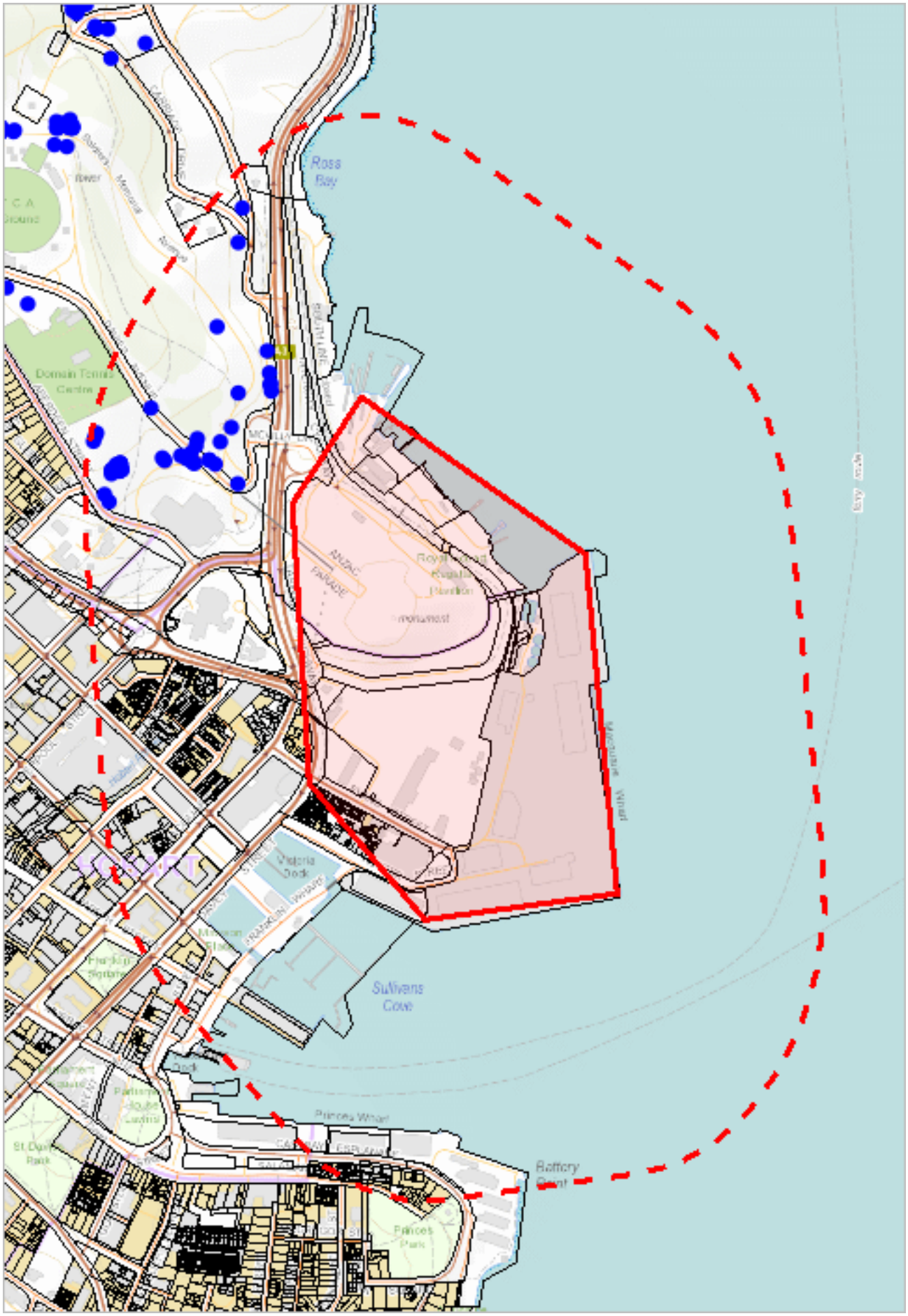
Threatened Flora: buffers Min: 500m Max: 5000m
Tasmanian Weed Management Act Weeds: buffers Min: 500m Max: 5000m
Priority Weeds: buffers Min: 500m Max: 5000m
Geoconservation: buffer 1000m
Acid Sulfate Soils: buffer 1000m
TASVEG: buffer 1000m
Threatened Communities: buffer 1000m
Fire History: buffer 1000m
Tasmanian Reserve Estate: buffer 1000m
Biosecurity Risks: buffer 1000m


The centroid for this query GDA94: 527585.0, 5252593.0 falls within:

Property: 9126826

# Threatened flora within 500 metres

528402, 5253793




526787, 5251465

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 |
|---|---|---|---|---|---|---|
| Austrostipa bigeniculata | doublejointed speargrass | r | | n | 11 | 16-Jan-2019 |
| Dianella amoena | grassland flaxlily | r | EN | n | 1 | 14-Dec-2020 |
| Scleranthus fasciculatus | spreading knawel | v | | n | 37 | 16-Jan-2019 |
| Senecio squarrosus | leafy fireweed | r | | n | 2 | 16-Jan-2019 |
| Vittadinia gracilis | woolly new-holland-daisy | r | | n | 3 | 06-Mar-2007 |
| Vittadinia muelleri | narrowleaf new-holland-daisy | r | | n | 13 | 27-Nov-2019 |

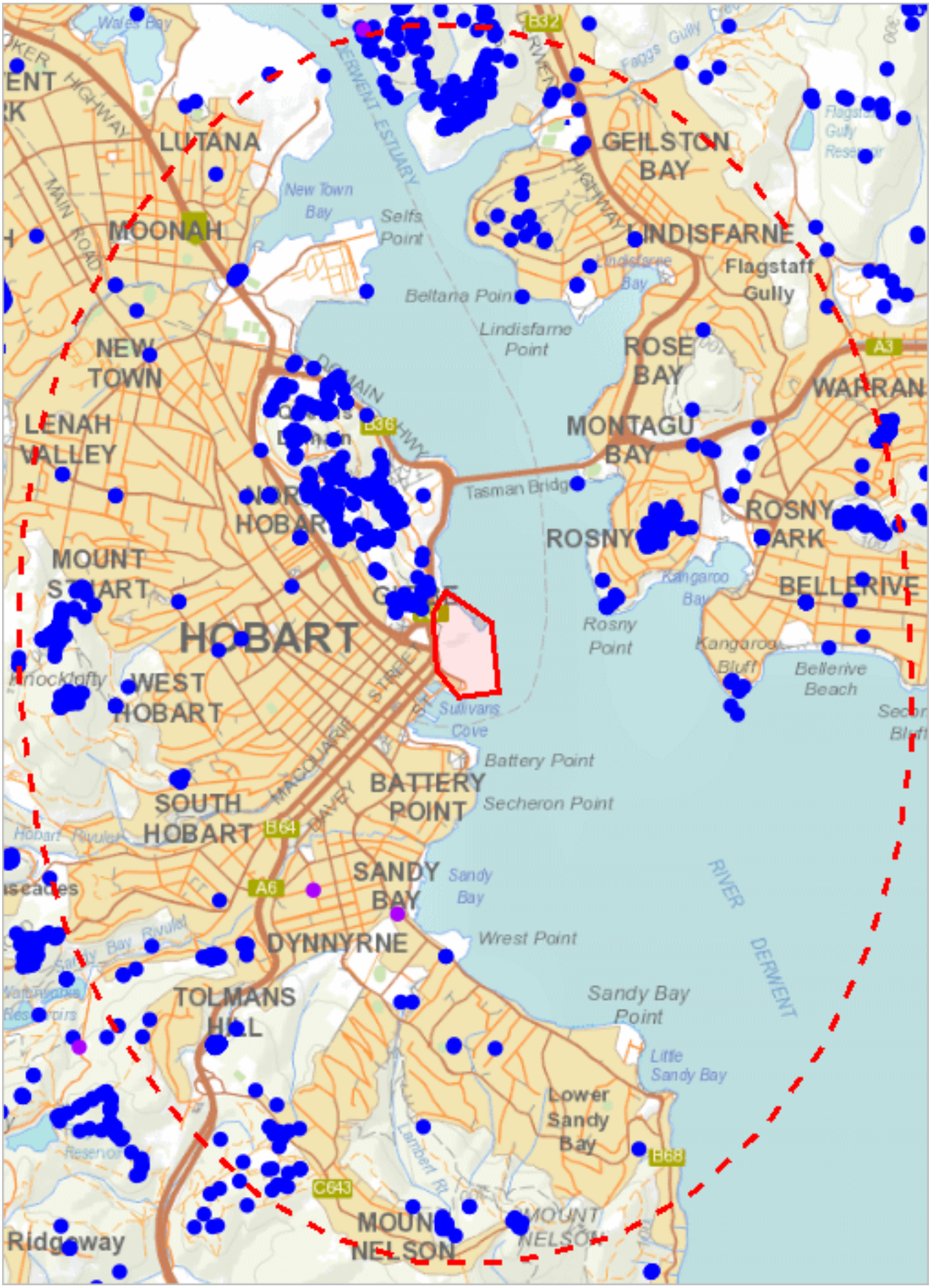
## Unverified Records

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

531722, 5258287




523477, 5246974

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

Legend: Cadastral Parcels

# Threatened flora within 5000 metres

## Verified Records

| Species | Common Name | SS | NS | Bio | Observation Count | Last Recorded |
|---|---|---|---|---|---|---|
| Acacia ulicifolia | juniper wattle | r | | n | 1 | 17-Oct-1980 |
| Allocasuarina duncanii | conical sheoak | r | | e | 1 | 10-Jun-2020 |
| Asperula scoparia subsp. scoparia | prickly woodruff | r | | n | 24 | 03-May-2017 |
| Asperula subsimplex | water woodruff | r | | n | 2 | 01-Dec-1891 |
| Atriplex suberecta | sprawling saltbush | v | | n | 1 | 01-Jan-1900 |
| Austrostipa bigeniculata | doublejointed speargrass | r | | n | 69 | 06-Apr-2023 |
| Austrostipa blackii | crested speargrass | r | | n | 3 | 29-Jan-2021 |
| Bolboschoenus caldwellii | sea clubsedge | r | | n | 32 | 01-Feb-2024 |
| Brachyscome perpusilla | tiny daisy | r | | n | 1 | 12-Oct-1901 |
| Caladenia caudata | tailed spider-orchid | v | VU | e | 86 | 21-Oct-2022 |
| Caladenia filamentosa | daddy longlegs | r | | n | 9 | 05-Nov-1950 |
| Caladenia patersonii | patersons spider-orchid | v | | n | 3 | 13-Nov-1993 |
| Caladenia sylvicola | forest fingers | e | CR | e | 7 | 26-Oct-2009 |
| Calocephalus citreus | lemon beautyheads | r | | n | 2 | 03-Feb-1948 |
| Calocephalus lacteus | milky beautyheads | r | | n | 1 | 31-Jan-1804 |
| Carex gunniana | mountain sedge | r | | n | 14 | 19-Aug-2013 |
| Carex longebrachiata | drooping sedge | r | | n | 12 | 07-Oct-2016 |
| Comesperma defoliatum | leafless milkwort | r | | n | 3 | 31-Dec-1899 |
| Corunastylis nuda | tiny midge-orchid | r | | n | 25 | 24-Mar-2018 |
| Corunastylis nudiscapa | bare midge-orchid | e | | e | 130 | 12-Feb-2022 |
| Damasonium minus | starfruit | r | | n | 2 | 30-Nov-1924 |
| Deyeuxia minor | small bentgrass | r | | n | 1 | 31-Oct-1898 |
| Dianella amoena | grassland flaxlily | r | EN | n | 19 | 09-Feb-2023 |
| Diuris lanceolata | large golden moths | e | EN | e | 2 | 01-Oct-1918 |
| Diuris palustris | swamp doubletail | e | | n | 4 | 01-Jan-1970 |
| Eryngium ovinum | blue devil | v | | n | 4 | 17-Jul-1996 |
| Eucalyptus morrisbyi | morrisbys gum | e | CR | e | 3 | 15-Nov-2023 |
| Eucalyptus obliqua x risdonii | | ph | | e | 1 | 01-Oct-1940 |
| Eucalyptus risdonii | risdon peppermint | r | | e | 301 | 24-Jan-2024 |
| Euphrasia scabra | yellow eyebright | e | | n | 8 | 06-Feb-1960 |
| Goodenia geniculata | bent native-primrose | e | | n | 1 | 01-Jan-1805 |
| Haloragis heterophylla | variable raspwort | r | | n | 1 | 01-Jan-2003 |
| Hyalosperma demissum | moss sunray | e | | n | 2 | 15-Oct-1898 |
| Hydrocotyle laxiflora | stinking pennywort | e | | n | 51 | 24-Oct-2020 |
| Isoetopsis graminifolia | grass cushion | v | | n | 6 | 01-Jan-1896 |
| Isolepis stellata | star clubsedge | r | | n | 1 | 30-Nov-1897 |
| Lachnagrostis semibarbata var. filifolia | narrowleaf blowngrass | r | | n | 1 | 01-Jan-1929 |
| Lepidium hyssopifolium | soft peppercress | e | EN | n | 9 | 04-Mar-2003 |
| Olearia hookeri | crimsontip daisybush | r | | e | 13 | 27-Dec-2011 |
| Phyllangium divergens | wiry mitrewort | v | | n | 1 | 01-Jan-1000 |
| Pimelea flava subsp. flava | yellow riceflower | r | | n | 12 | 28-Sep-2021 |
| Pomaderris pilifera subsp. talpicutica | moleskin dogwood | v | VU | e | 13 | 26-Sep-2015 |
| Prasophyllum apoxychilum | tapered leek-orchid | v | EN | e | 2 | 29-Jan-1996 |
| Prasophyllum perangustum | knocklofty leek-orchid | e | CR | e | 14 | 04-Dec-2009 |
| Pterostylis atriola | snug greenhood | r | | e | 3 | 30-Apr-2021 |
| Pterostylis squamata | ruddy greenhood | v | | n | 2 | 06-Feb-1967 |
| Pterostylis wapstrarum | fleshy greenhood | e | CR | e | 1 | 07-Nov-1955 |
| Pterostylis ziegeleri | grassland greenhood | v | VU | e | 1 | 30-Sep-1920 |
| Puccinellia perlaxa | spreading saltmarshgrass | r | | n | 1 | 30-Nov-1923 |
| Ranunculus pumilio var. pumilio | ferny buttercup | r | | n | 1 | 01-Oct-1914 |
| Rhodanthe anthemoides | chamomile sunray | r | | n | 1 | 15-Jan-1898 |
| Rumex bidens | mud dock | v | | n | 1 | 01-Dec-1891 |
| Scleranthus fasciculatus | spreading knawel | v | | n | 175 | 19-Jan-2023 |
| Senecio squarrosus | leafy fireweed | r | | n | 85 | 25-Feb-2022 |
| Sirophysalis trinodis | three-node seaweed | r | | n | 1 | 01-Jan-2010 |
| Spyridium eriocephalum | heath spyridium | pe | | n | 2 | 31-Oct-2023 |
| Spyridium eriocephalum var. eriocephalum | heath dustymiller | e | | n | 23 | 15-Nov-2018 |
| Stenopetalum lineare | narrow threadpetal | e | | n | 5 | 17-Oct-1942 |
| Thelymitra bracteata | leafy sun-orchid | e | | n | 37 | 11-Nov-2016 |
| Thelymitra holmesii | bluestar sun-orchid | r | | n | 2 | 01-Dec-2000 |
| Velleia paradoxa | spur velleia | v | | n | 109 | 05-Jan-2022 |
| Vittadinia burbidgeae | smooth new-holland-daisy | r | | e | 10 | 22-Nov-2019 |

# Threatened flora within 5000 metres

| Species | Common Name | SS | NS | Bio | Observation Count | Last Recorded |
|---|---|---|---|---|---|---|
| Vittadinia cuneata var. cuneata | fuzzy new-holland-daisy | r | | n | 2 | 01-Jan-1993 |
| Vittadinia gracilis | woolly new-holland-daisy | r | | n | 25 | 07-Oct-2016 |
| Vittadinia muelleri | narrowleaf new-holland-daisy | r | | n | 740 | 29-Nov-2023 |
| Vittadinia muelleri (broad sense) | narrow leaf new holland daisy | p | | n | 23 | 11-Oct-2006 |
| Westringia angustifolia | narrowleaf westringia | r | | e | 1 | 01-Jan-1900 |
| Xerochrysum bicolor | eastcoast paperdaisy | r | | n | 1 | 02-Apr-1997 |

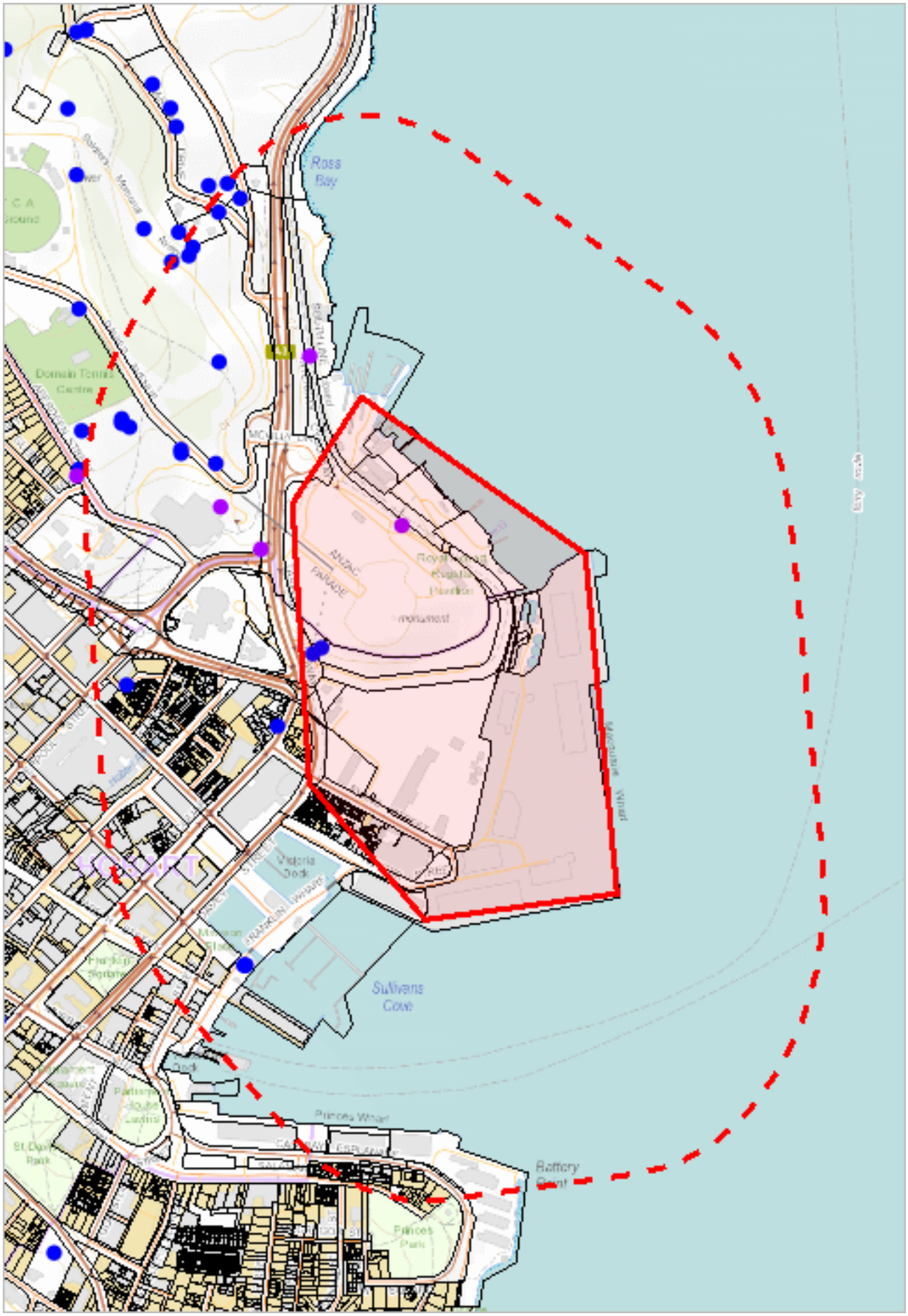
## Unverified Records

| Species | Common Name | SS | NS | Bio | Observation Count |
|---|---|---|---|---|---|
| Pandorea pandorana | wonga vine | r | | n | 1 |
| Pimelea flava subsp. flava | yellow riceflower | r | | n | 2 |
| Prostanthera rotundifolia | roundleaf mintbush | v | | n | 1 |
| Vittadinia muelleri | narrowleaf new-holland-daisy | r | | n | 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

# Tas Management Act Weeds within 500 m

528402, 5253793




526787, 5251465

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

Legend: Cadastral Parcels

# Tas Management Act Weeds within 500 m

## Verified Records

| Species | Common Name | Observation Count | Last Recorded |
|---|---|---|---|
| Asparagus asparagoides | bridal creeper | 5 | 30-May-2023 |
| Carex albula | frosted curls | 2 | 09-Jun-1989 |
| Carex testacea | redbase sedge | 1 | 25-May-1988 |
| Foeniculum vulgare | fennel | 5 | 10-Oct-2023 |
| Lepidium draba | hoary cress | 5 | 31-Aug-2022 |
| Marrubium vulgare | white horehound | 4 | 28-Sep-2018 |
| Urospermum dalechampii | false dandelion | 4 | 02-Feb-2022 |

## Unverified Records

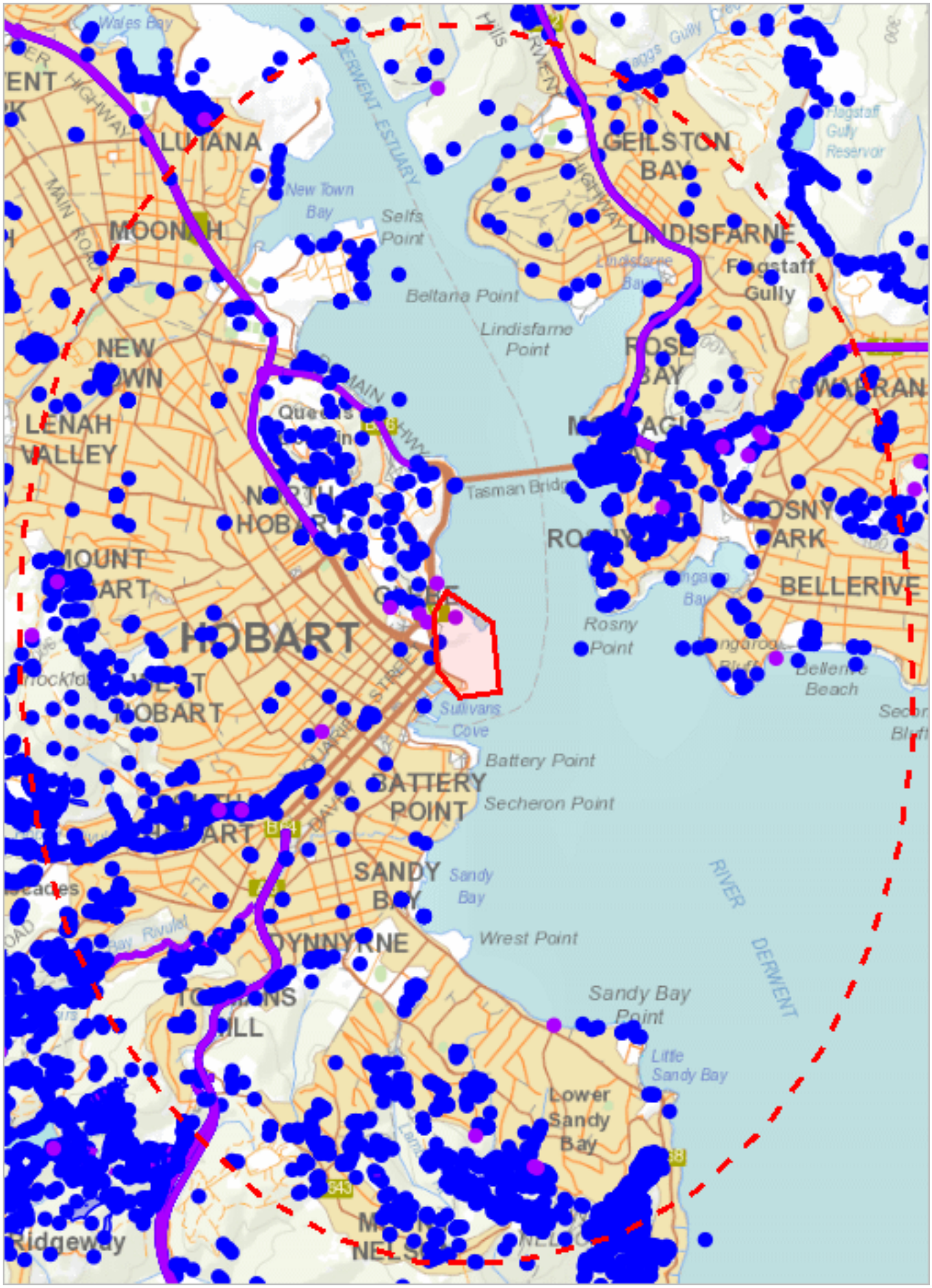
| Species | Common Name | Observation Count |
|---|---|---|
| Urospermum dalechampii | false dandelion | 5 |

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

# Tas Management Act Weeds within 5000 m

531722, 5258287




523477, 5246974

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

Legend: Cadastral Parcels

# Tas Management Act Weeds within 5000 m

## Verified Records

| Species | Common Name | Observation Count | Last Recorded |
|---|---|---|---|
| Allium vineale | crow garlic | 1 | 04-Feb-2004 |
| Alternanthera philoxeroides | alligator weed | 1 | 11-Mar-1998 |
| Amaranthus albus | tumble pigweed | 1 | 22-Mar-2012 |
| Amsinckia calycina | hairy fiddleneck | 9 | 12-Oct-2020 |
| Anthemis cotula | stinking chamomile | 4 | 01-Jun-2014 |
| Asparagus asparagoides | bridal creeper | 81 | 30-May-2023 |
| Asparagus scandens | asparagus fern | 1 | 27-Oct-2009 |
| Asphodelus fistulosus | onion weed | 7 | 10-Nov-2021 |
| Austroderia richardii | toe-toe pampasgrass | 1 | 20-Mar-2014 |
| Berberis darwinii | darwins barberry | 3 | 14-Oct-2023 |
| Calluna vulgaris | heather | 7 | 24-Feb-2014 |
| Carduus nutans | nodding thistle | 1 | 16-Nov-1978 |
| Carduus pycnocephalus | slender thistle | 24 | 18-Sep-2022 |
| Carduus tenuiflorus | winged thistle | 6 | 05-Dec-2007 |
| Carex albula | frosted curls | 4 | 09-Jun-1989 |
| Carex testacea | redbase sedge | 6 | 05-Dec-2007 |
| Carthamus lanatus | saffron thistle | 7 | 30-Apr-1942 |
| Cenchrus longisetus | feathertop | 6 | 20-Apr-2006 |
| Cenchrus macrourus | african feathergrass | 14 | 20-Mar-2018 |
| Ceratophyllum demersum | rigid or common hornwort | 1 | 24-Jul-1981 |
| Chrysanthemoides monilifera subsp. monilifera | boneseed | 1266 | 22-Apr-2024 |
| Cirsium arvense | californian thistle | 2 | 21-Mar-1966 |
| Cirsium arvense var. arvense | creeping thistle | 55 | 05-Oct-2023 |
| Coprosma robusta | karamu | 14 | 17-May-2021 |
| Cortaderia jubata | pink pampasgrass | 4 | 27-Apr-2023 |
| Cortaderia selloana | silver pampasgrass | 32 | 06-Jul-2023 |
| Cortaderia sp. | pampas grass | 39 | 28-Feb-2024 |
| Cuscuta epithymum | lesser dodder | 1 | 01-Mar-1961 |
| Cytisus scoparius | english broom | 146 | 25-Nov-2023 |
| Datura stramonium | common thornapple | 4 | 16-Feb-1966 |
| Echium plantagineum | patersons curse | 54 | 10-Feb-2023 |
| Echium vulgare | vipers bugloss | 4 | 19-Nov-1969 |
| Egeria densa | dense waterweed | 3 | 13-Jan-1996 |
| Elodea canadensis | canadian pondweed | 5 | 17-Dec-1971 |
| Eragrostis curvula | african lovegrass | 101 | 18-Mar-2022 |
| Erica arborea | tree heath | 22 | 08-Sep-2022 |
| Erica baccans | berryflower heath | 3 | 10-Sep-2014 |
| Erica carnea | winter heath or winter-flowering heather | 1 | 10-Apr-2019 |
| Erica cinerea | bell heather | 1 | 10-Apr-2019 |
| Erica lusitanica | spanish heath | 361 | 05-Oct-2023 |
| Erica scoparia | twig heath | 1 | 10-Apr-2019 |
| Erica vagans | cornish heath | 1 | 10-Apr-2019 |
| Fallopia japonica | japanese knotweed | 7 | 04-Dec-2008 |
| Foeniculum vulgare | fennel | 193 | 17-Oct-2023 |
| Galium tricornutum | rough corn bedstraw | 4 | 16-Sep-2020 |
| Genista monspessulana | montpellier broom or canary broom | 216 | 23-Apr-2024 |
| Hypericum perforatum | perforated st johns-wort | 41 | 15-Sep-2023 |
| Hypericum perforatum subsp. veronense | perforated st johns-wort | 15 | 16-Jan-2022 |
| Hypericum tetrapterum var. tetrapterum | square st johns-wort | 1 | 04-Mar-1986 |
| Ilex aquifolium | holly | 44 | 18-Sep-2022 |
| Lagarosiphon major | oxygen weed | 1 | 24-May-1983 |
| Lantana camara | lantana | 1 | 01-Feb-2007 |
| Lepidium draba | hoary cress | 39 | 30-Sep-2022 |
| Leycesteria formosa | himalayan honeysuckle | 11 | 17-May-2021 |
| Lycium ferocissimum | african boxthorn | 42 | 19-Nov-2021 |
| Marrubium vulgare | white horehound | 21 | 28-Sep-2018 |
| Moraea flaccida | oneleaf cape tulip | 3 | 05-Oct-1981 |
| Myriophyllum aquaticum | parrotfeather | 9 | 01-Jul-2011 |
| Nassella neesiana | chilean needlegrass | 1832 | 08-Nov-2023 |
| Nassella tenuissima | mexican feather grass | 3 | 20-Sep-2019 |
| Nassella trichotoma | serrated tussock | 102 | 01-Aug-2023 |
| Onopordum acanthium | scotch thistle | 6 | 10-Feb-2021 |

# Tas Management Act Weeds within 5000 m

| Species | Common Name | Observation Count | Last Recorded |
|---|---|---|---|
| Opuntia sp. | prickly pear or cholla | 4 | 19-Aug-2021 |
| Opuntia stricta | common prickly pear | 1 | 24-Sep-2004 |
| Pilosella aurantiaca subsp. aurantiaca | orange hawkweed | 9 | 21-Jan-2020 |
| Rubus anglocandicans | blackberry | 79 | 11-May-2021 |
| Rubus fruticosus | blackberry | 612 | 05-Oct-2023 |
| Rubus leucostachys | blackberry | 2 | 17-Feb-2004 |
| Salix alba var. vitellina | golden willow | 8 | 09-Dec-2010 |
| Salix caprea | goat willow | 3 | 17-May-2021 |
| 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 | 259 | 23-Mar-2023 |
| Salix x sepulcralis nothovar. chrysocoma | golden weeping willow | 2 | 29-Oct-2003 |
| Senecio jacobaea | ragwort | 2 | 16-Sep-2020 |
| Solanum marginatum | white-edged nightshade | 10 | 01-Mar-2011 |
| Ulex europaeus | gorse | 694 | 28-Feb-2024 |
| Urospermum dalechampii | false dandelion | 65 | 02-Feb-2022 |
| Xanthium spinosum | bathurst burr | 2 | 01-Feb-1894 |

## Unverified Records

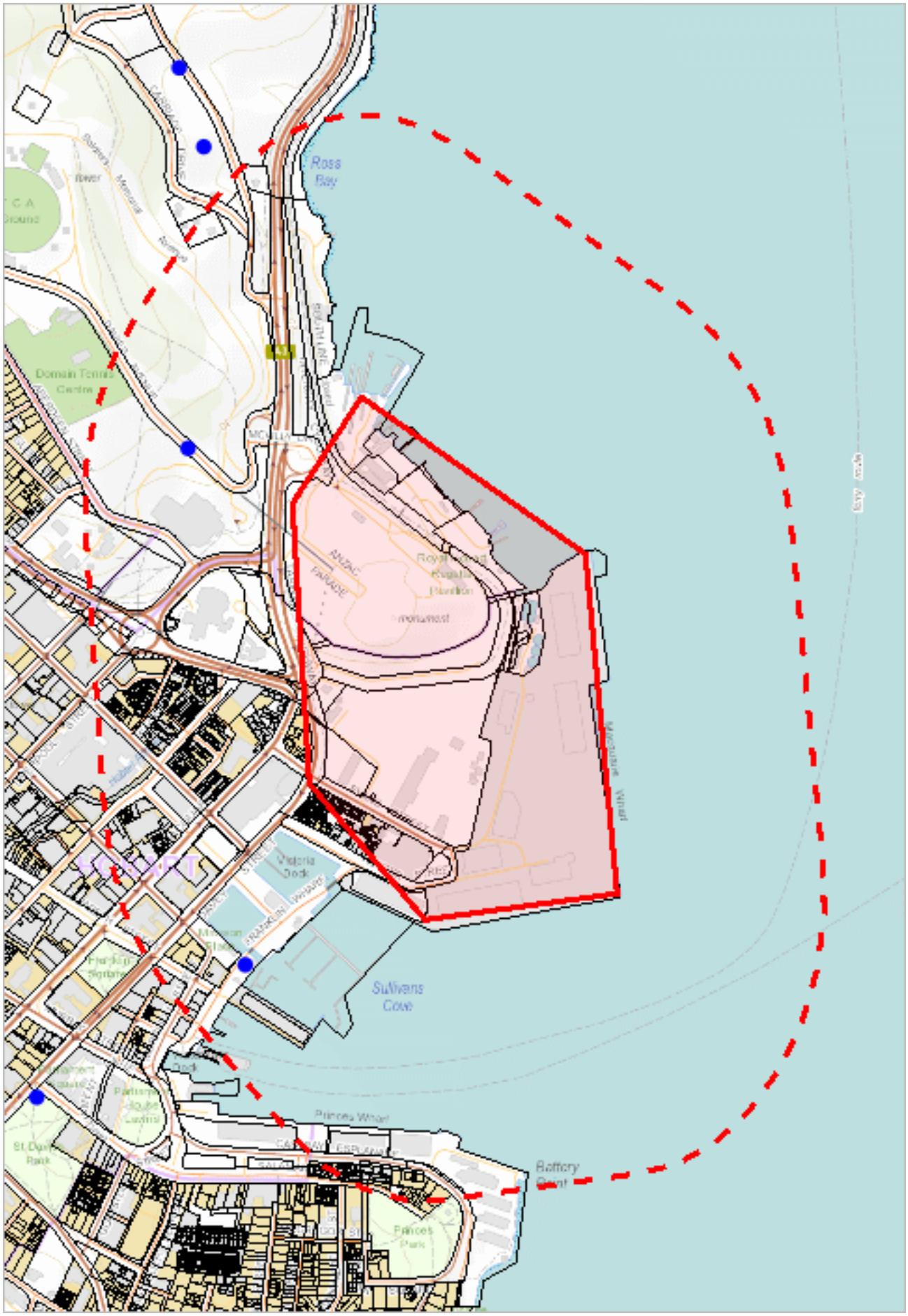
| Species | Common Name | Observation Count |
|---|---|---|
| Chrysanthemoides monilifera subsp. monilifera | boneseed | 7 |
| Erica arborea | tree heath | 1 |
| Erica lusitanica | spanish heath | 1 |
| Fallopia japonica | japanese knotweed | 1 |
| Hypericum perforatum | perforated st johns-wort | 5 |
| Lycium ferocissimum | african boxthorn | 1 |
| Marrubium vulgare | white horehound | 1 |
| Urospermum dalechampii | false dandelion | 9 |

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

# Priority Weeds within 500 m

528402, 5253793




526787, 5251465

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

# Priority Weeds within 500 m

Legend: Verified and Unverified observations

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

Legend: Cadastral Parcels

# Priority Weeds within 500 m

## Verified Records

| Species | Common Name | Observation Count | Last Recorded |
|---|---|---|---|
| Billardiera heterophylla | bluebell creeper | 1 | 06-Jul-2022 |
| Rumex obtusifolius | broadleaf dock | 1 | 01-May-1945 |

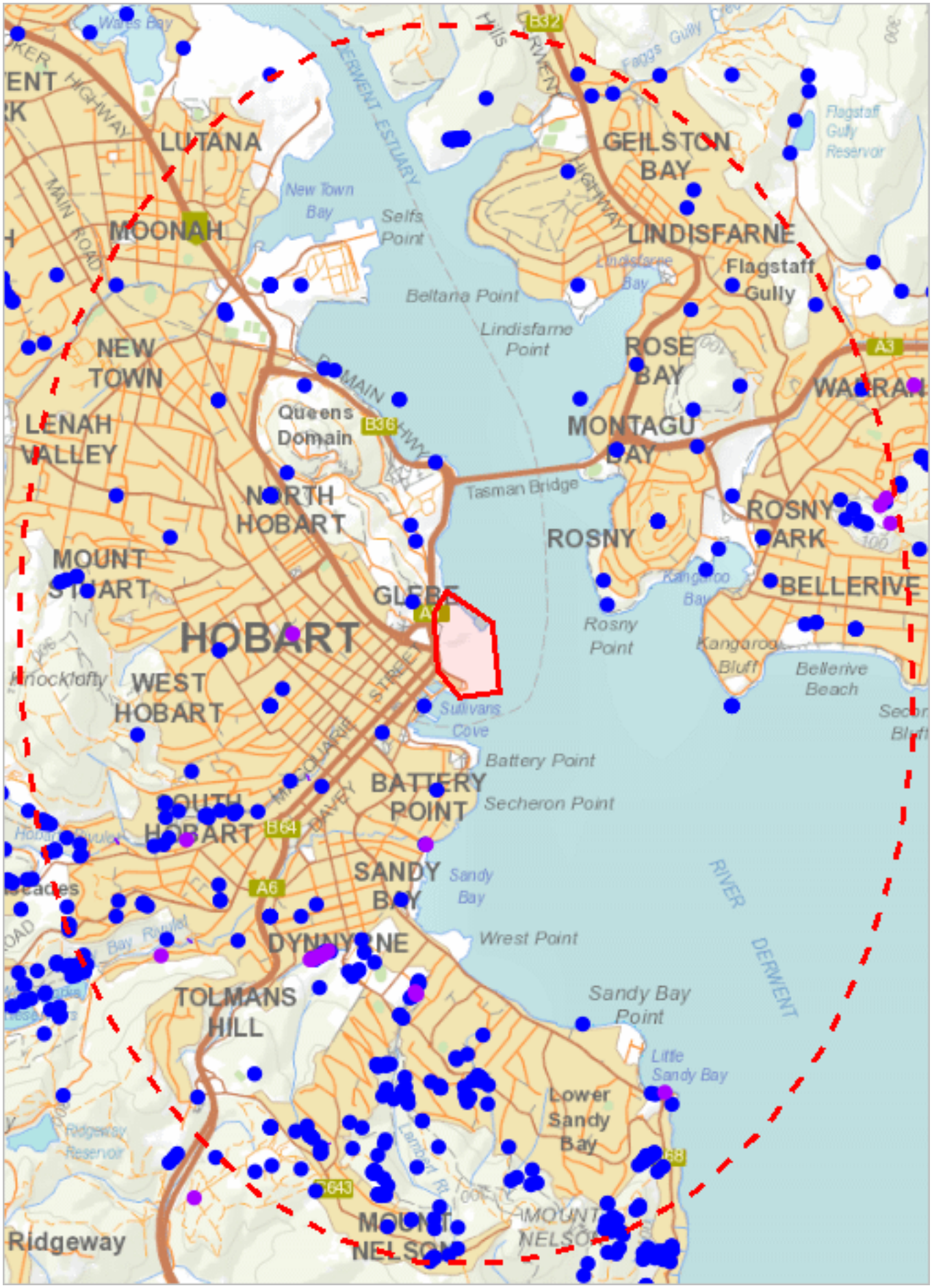
## Unverified Records

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

# Priority Weeds within 5000 m

531722, 5258287




523477, 5246974

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
- Line Unverified
- Polygon Verified
- Polygon Unverified

Legend: Cadastral Parcels

# Priority Weeds within 5000 m

## Verified Records

| Species | Common Name | Observation Count | Last Recorded |
|---|---|---|---|
| Acacia baileyana | cootamundra wattle | 6 | 03-Feb-2021 |
| Acacia howittii | sticky wattle | 42 | 17-Feb-2023 |
| Achillea millefolium | yarrow | 11 | 04-Jan-2007 |
| Ammophila arenaria | marram grass | 5 | 17-May-1954 |
| Anredera cordifolia | madeira vine | 9 | 03-May-2001 |
| Billardiera heterophylla | bluebell creeper | 51 | 23-Apr-2024 |
| Cenchrus clandestinus | kikuyu grass | 1 | 23-Jan-1986 |
| Dipsacus fullonum | wild teasel | 13 | 17-May-2022 |
| Dipsacus fullonum subsp. fullonum | wild teasel | 1 | 01-Jan-1913 |
| Echium candicans | pride-of-madeira | 34 | 26-May-2022 |
| Equisetum hyemale | rough horsetail | 2 | 01-May-2007 |
| Gomphocarpus fruticosus subsp. fruticosus | swanplant | 8 | 07-Jun-2023 |
| Grevillea rosmarinifolia | rosemary grevillea | 21 | 13-Sep-2023 |
| Pittosporum undulatum | sweet pittosporum | 175 | 05-Feb-2024 |
| Polygala myrtifolia | myrtleleaf milkwort | 10 | 20-Aug-2023 |
| Prunus laurocerasus | cherry laurel | 18 | 17-May-2021 |
| Reseda luteola | weld | 57 | 22-Apr-2024 |
| Retama raetam | weeping white broom | 1 | 05-Oct-2005 |
| Rumex obtusifolius | broadleaf dock | 11 | 22-Dec-2004 |
| Rumex obtusifolius subsp. obtusifolius | western broadleaf dock | 3 | 01-May-1945 |
| Salix x pendulina var. pendulina | weeping willow | 10 | 17-May-2021 |
| Tradescantia fluminensis | wandering creeper | 11 | 21-Jan-2023 |
| Verbascum thapsus | great mullein | 19 | 31-Mar-2023 |

## Unverified Records

| Species | Common Name | Observation Count |
|---|---|---|
| Acacia baileyana | cootamundra wattle | 1 |
| Dipsacus fullonum | wild teasel | 6 |
| Echium candicans | pride-of-madeira | 8 |
| Reseda luteola | weld | 3 |
| Verbascum thapsus | great mullein | 5 |

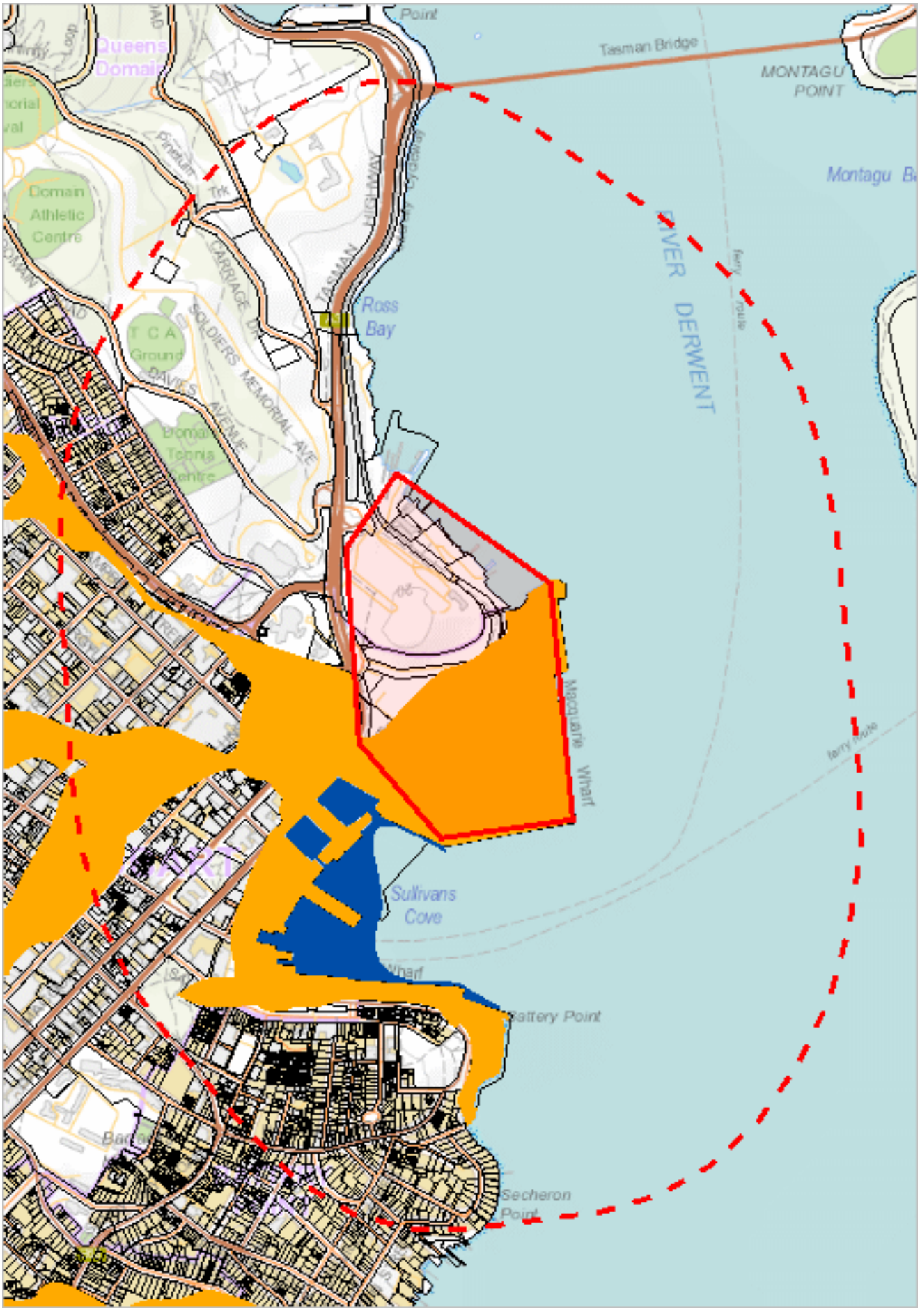
For more information about introduced weed species, please visit the following URL for contact details in your area:

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

*** No Geoconservation sites found within 1000 metres. ***

# Acid Sulfate Soils within 1000 metres

528771, 5254292




526419, 5250966

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 | Low | Bf(p3) | Low probability of occurance (6-70% chance of occurrence in mapping unit). Floodplains 2-4m AHD, ASS generally below 1m from the surface.generally wetland forests. (e.g Melaleuca, Casuarina). Includes plains and levees. 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 | Bg(p3) | Low probability of occurance (6-70% chance of occurrence in mapping unit). Floodplains >4m AHD, ASS generally below 3m from the surface.generally forests. Includes plains and levees. 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 occurance (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 occurance (>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.

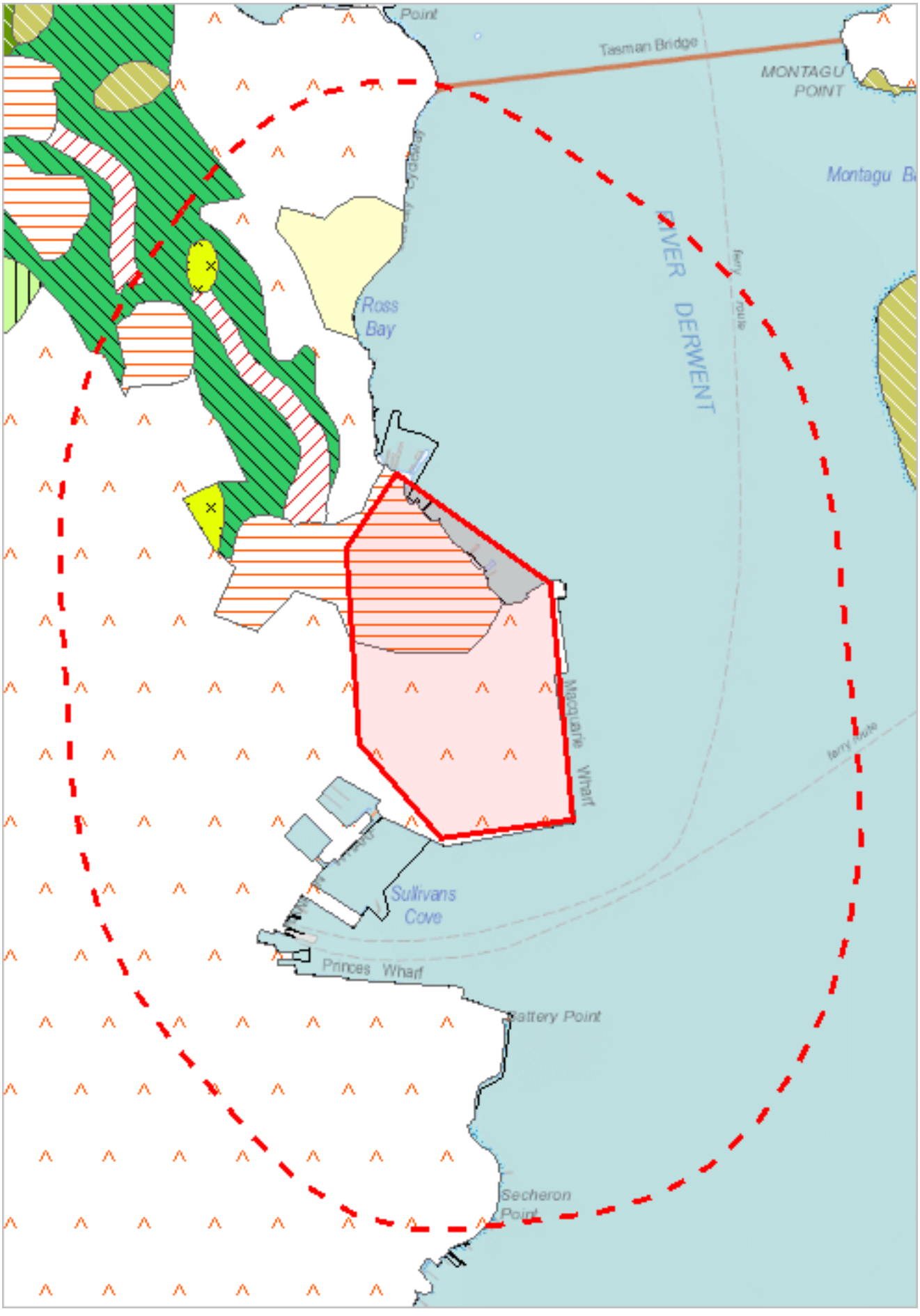
Telephone: (03) 6777 2227

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

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

# TASVEG 4.0 Communities within 1000 metres

528771, 5254292



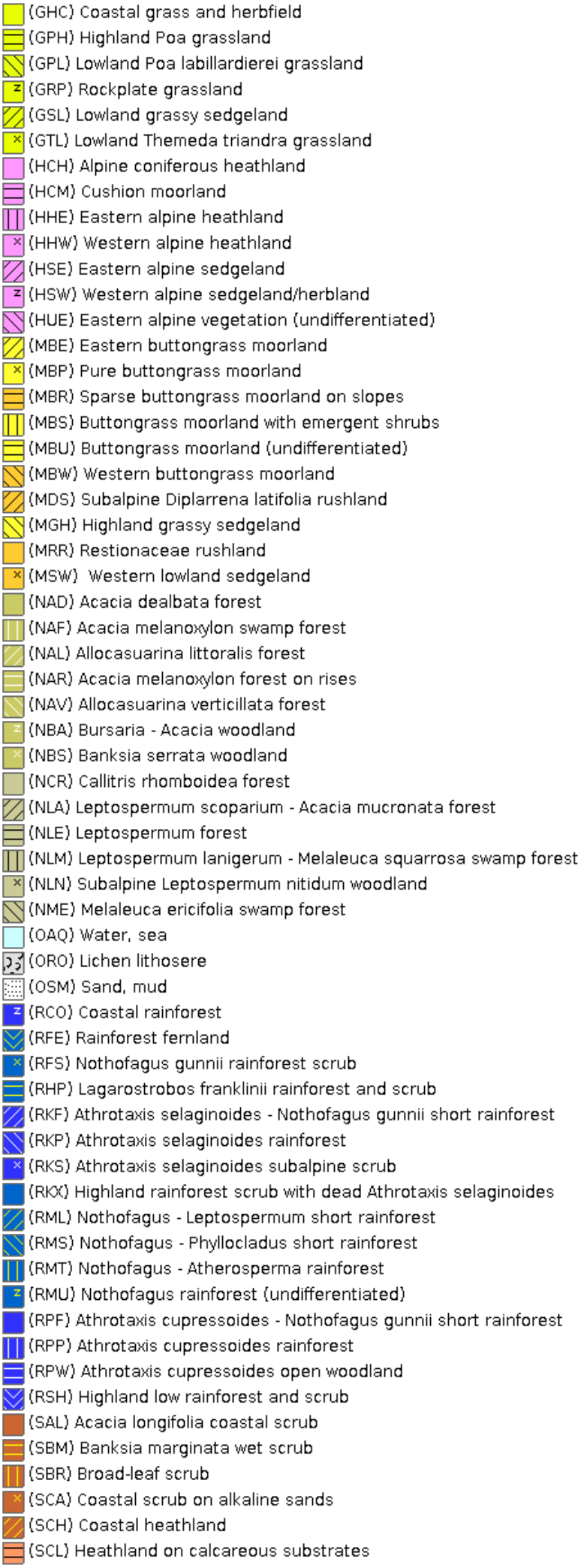

526419, 5250966

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

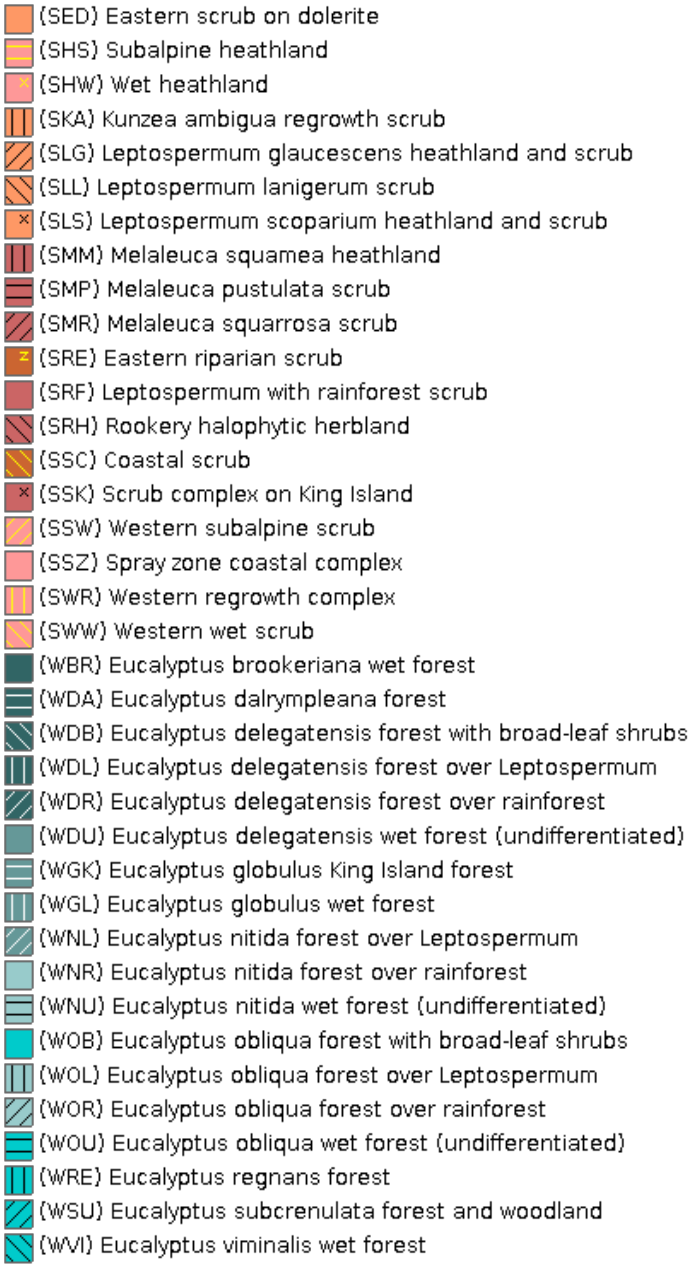
# TASVEG 4.0 Communities within 1000 metres

Legend: TASVEG 4.0

# TASVEG 4.0 Communities within 1000 metres



# TASVEG 4.0 Communities within 1000 metres




Legend: Cadastral Parcels

# TASVEG 4.0 Communities within 1000 metres

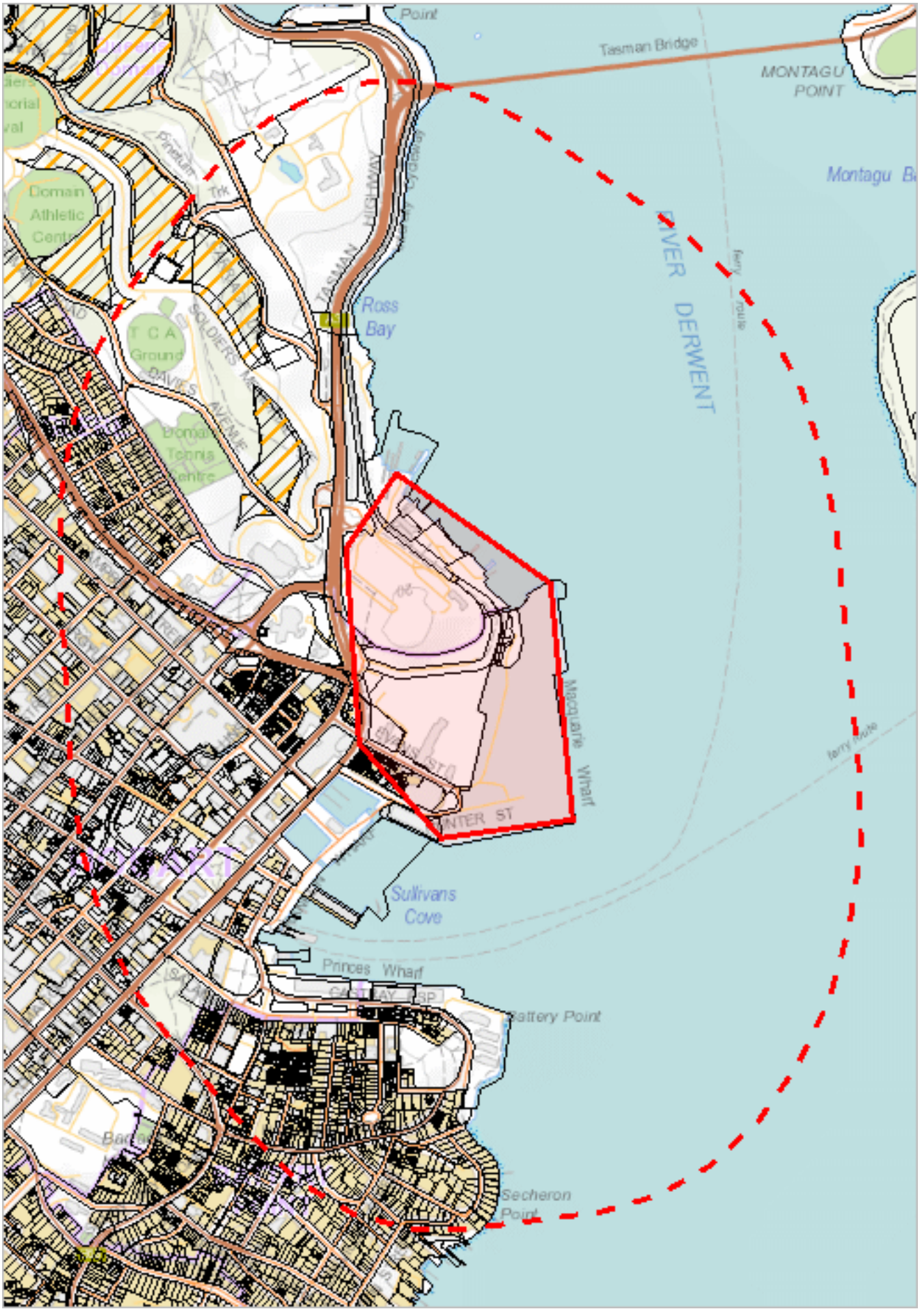
| Code | Community | Canopy Tree |
|---|---|---|
| DVG | (DVG) Eucalyptus viminalis grassy forest and woodland | |
| FAG | (FAG) Agricultural land | |
| FPE | (FPE) Permanent easements | |
| FUM | (FUM) Extra-urban miscellaneous | |
| FUR | (FUR) Urban areas | |
| GTL | (GTL) Lowland Themeda triandra grassland | |

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

528771, 5254292




526419, 5250966

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

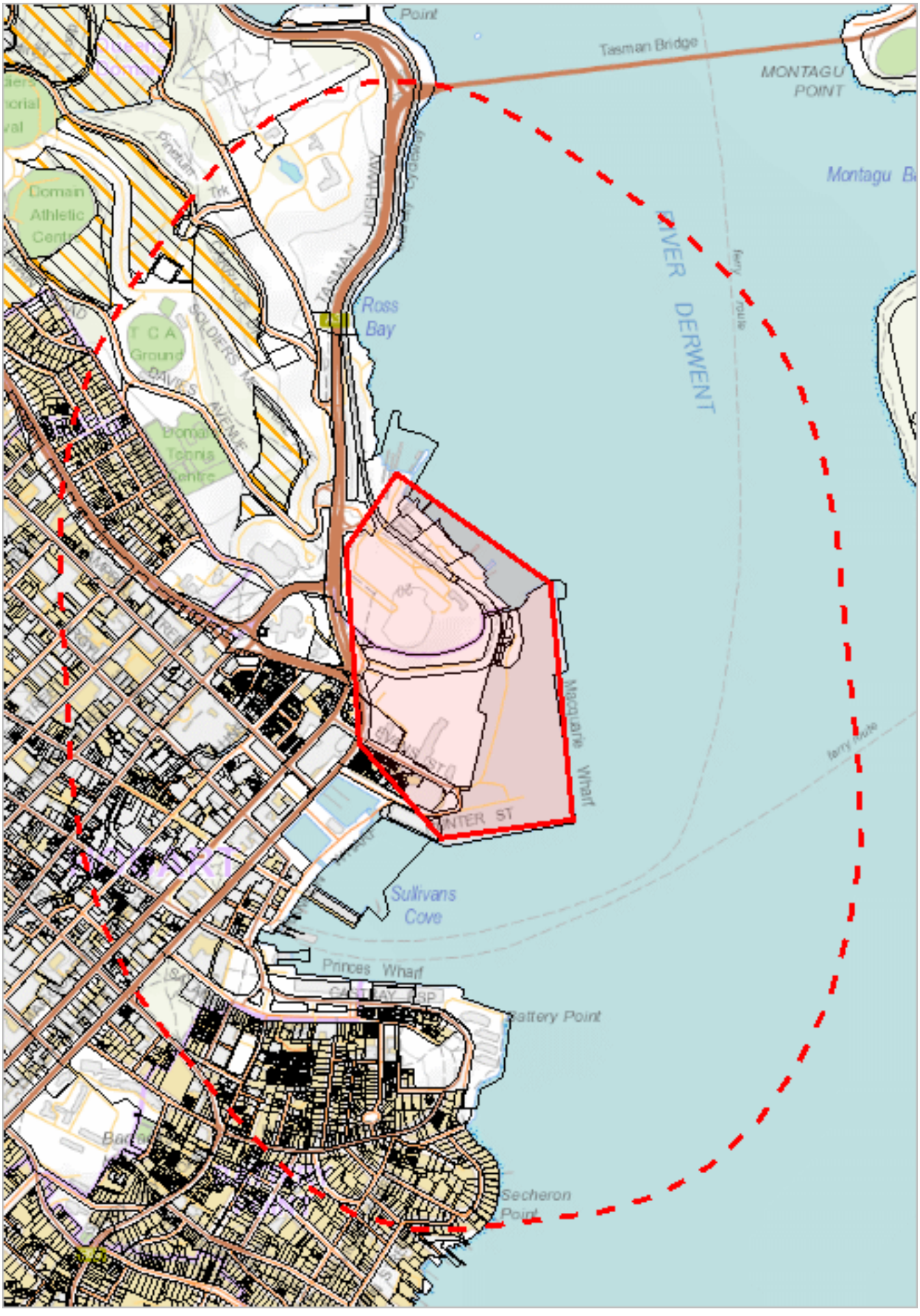
# Fire History (All) within 1000 metres

| Incident Number | Fire Name | Ignition Date | Fire Type | Ignition Cause | Fire Area (HA) |
|---|---|---|---|---|---|
| HHZ004BU | Cricket Pitch - TCA East | 05-Oct-2018 | Planned Burn | Planned Burn | 2.10849141 |
| HHZ051BU | Gunpowder Mag | 08-May-2019 | Planned Burn | Planned Burn | 4.75715584 |
| HHZ065BU | Gunpowder Mag (Stage 2) | 24-May-2021 | Planned Burn | Planned Burn | 3.78034029 |
| HHZ069BU | Aquatic Centre Grassland | 02-Jun-2021 | Planned Burn | Planned Burn | 0.34069629 |
| | QD12 | 01-Apr-2004 | Planned Burn | Planned Burn | 4.07949001 |
| | QD13 | 01-Apr-2002 | Planned Burn | Planned Burn | 3.90991691 |
| | QD14 | 01-Apr-2006 | Planned Burn | Planned Burn | 3.46359902 |
| | QD15 | 01-Apr-2005 | Planned Burn | Planned Burn | 2.63123802 |

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

# Fire History (Last Burnt) within 1000 metres

528771, 5254292




526419, 5250966

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

Bushfire

Completed Planned Burn

Legend: Cadastral Parcels

# Fire History (Last Burnt) within 1000 metres

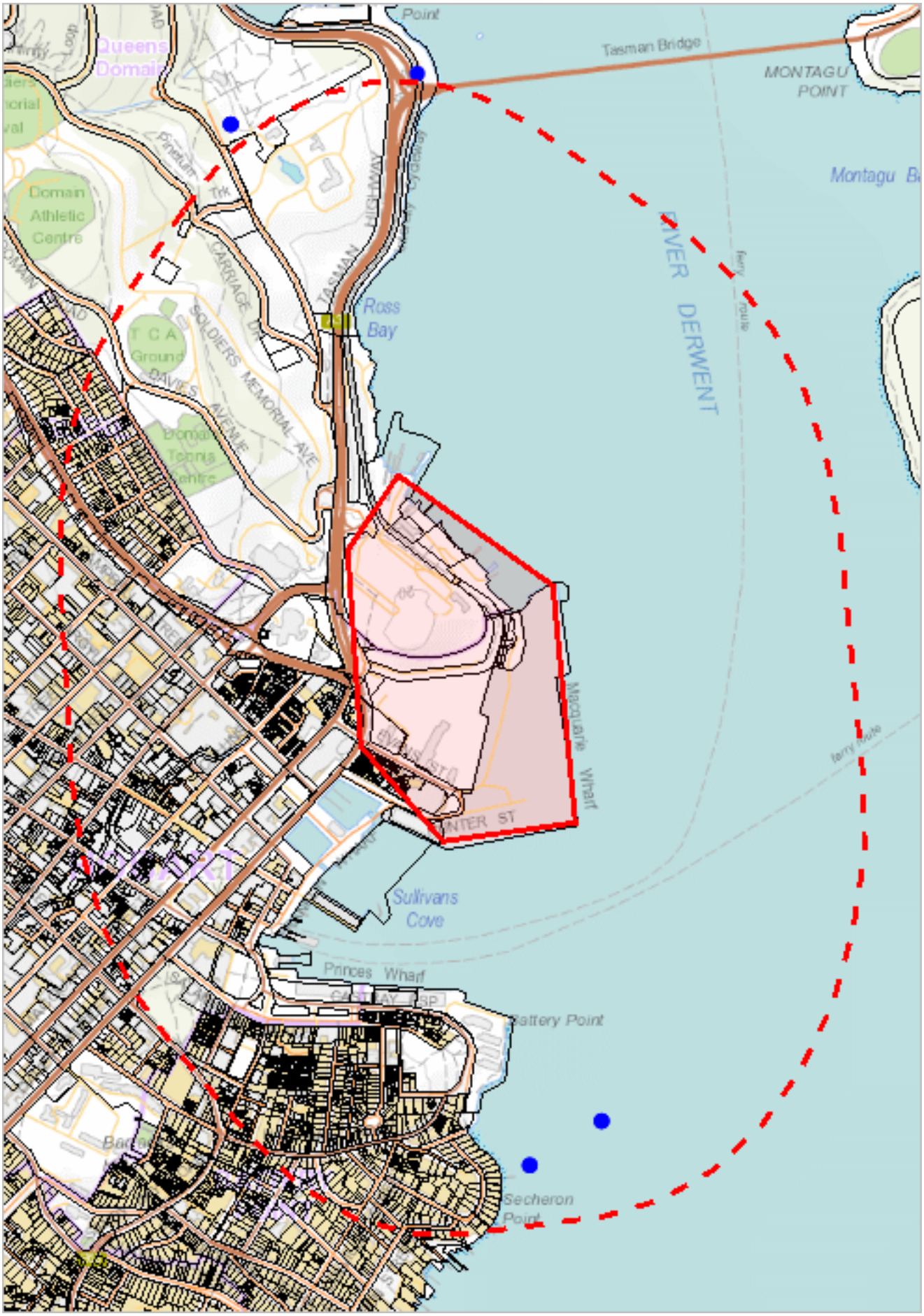
| Incident Number | Fire Name | Ignition Date | Fire Type | Ignition Cause | Fire Area (HA) |
|---|---|---|---|---|---|
| HHZ004BU | Cricket Pitch - TCA East | 05-Oct-2018 | Planned Burn | Planned Burn | 2.10849141 |
| HHZ051BU | Gunpowder Mag | 08-May-2019 | Planned Burn | Planned Burn | 4.75715584 |
| HHZ065BU | Gunpowder Mag (Stage 2) | 24-May-2021 | Planned Burn | Planned Burn | 3.78034029 |
| HHZ069BU | Aquatic Centre Grassland | 02-Jun-2021 | Planned Burn | Planned Burn | 0.34069629 |
| | QD12 | 01-Apr-2004 | Planned Burn | Planned Burn | 4.07949001 |
| | QD13 | 01-Apr-2002 | Planned Burn | Planned Burn | 3.90991691 |
| | QD14 | 01-Apr-2006 | Planned Burn | Planned Burn | 3.46359902 |
| | QD15 | 01-Apr-2005 | Planned Burn | Planned Burn | 2.63123802 |

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 ***

# Known biosecurity risks within 1000 meters

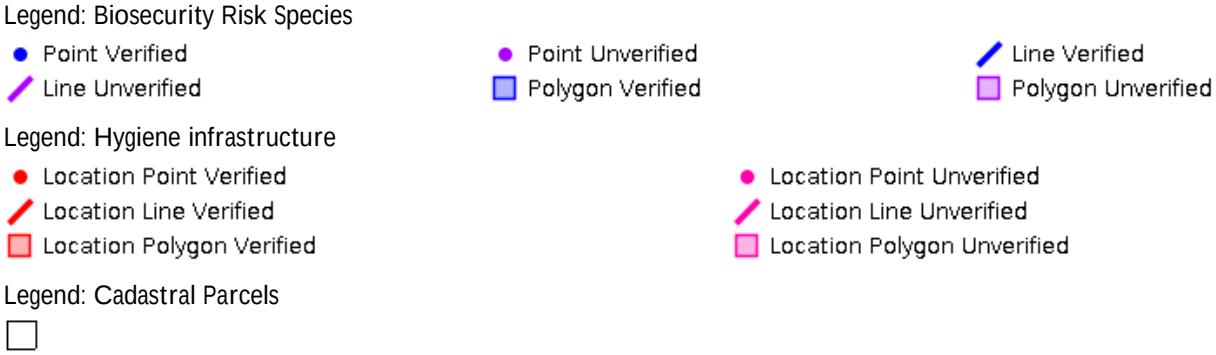
528771, 5254292




526419, 5250966

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

# Known biosecurity risks within 1000 meters



# Known biosecurity risks within 1000 meters

## Verified Species of biosecurity risk

| Species Name | Common Name | Prescription | Observation Count | Last Recorded |
|---|---|---|---|---|
| Mus musculus | house mouse | | 4 | 16-Apr-1967 |
| Phytophthora cinnamomi | root rot or water mould | | 4 | 08-Feb-1995 |
| Rattus rattus | black rat | | 2 | 29-Apr-1997 |

## 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
- 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 though 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

northbarker
ECOSYSTEM SERVICES

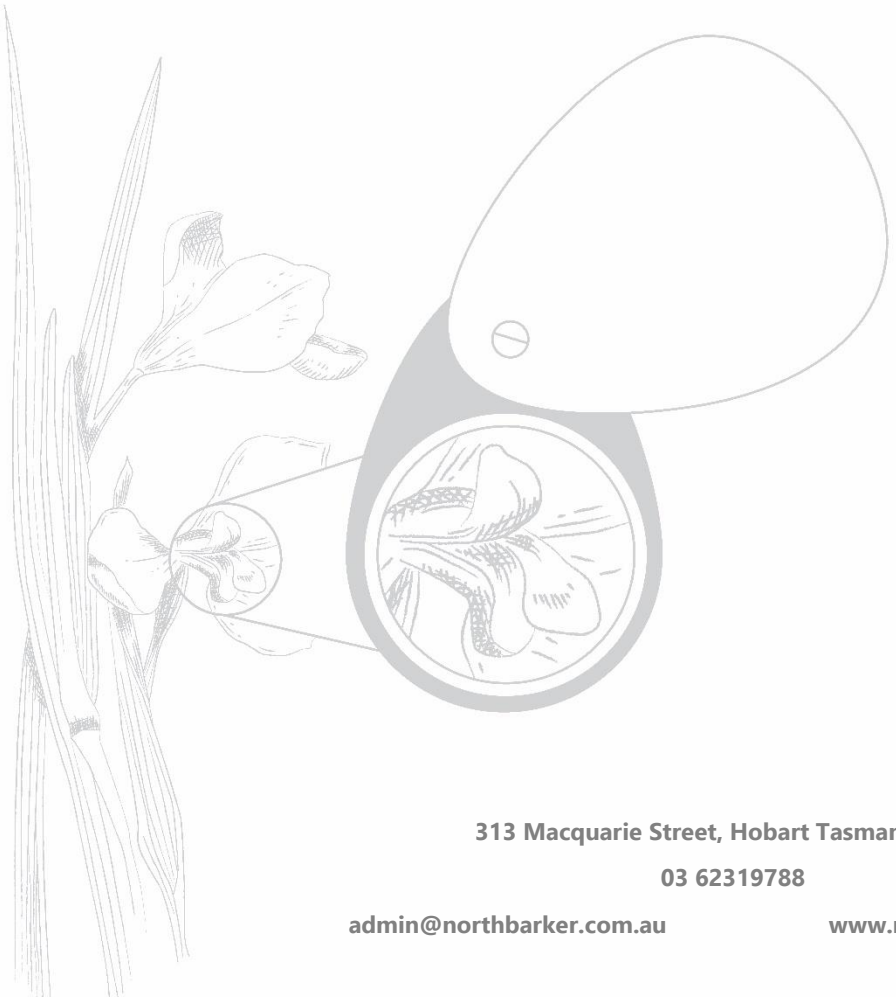
Macquarie Point Multipurpose Stadium

# COLLISION RISK ASSESSMENT

27th August 2024

For Macquarie Point Development Corporation

MPD001



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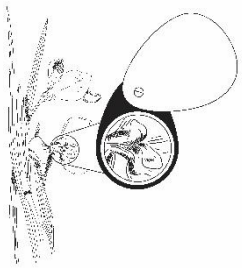
admin@northbarker.com.au www.northbarker.com.au

# ACKNOWLEDGEMENTS


| | |
|---|---|
| **Project** | Macquarie Point Multipurpose Stadium Project of State Significance Collision Risk Assessment |
| **Location** | Macquarie Point, Hobart |
| **Proponent** | Macquarie Point Development Corporation |
| **Project Manager** | Kate Harris (kate@macpoint.com)<br>Sean McArdle (sean@macpoint.com) |
| **NBES Job Code** | MPD001 |
| **NBES Project Manager** | Jared Parry (MEM, BBA) (jparry@northbarker.com.au) |
| **Reporting** | Alice Grieve (MASc, BSc) |
| **Mapping** | Linda Drummond (MSc, BSc) |

| Version | Date | Author & Comment | Position |
|---|---|---|---|
| Version 0.1 | 12/08/2024 | Alice Grieve | Senior Ecologist |
| Version 0.2 | 19/08/2024 | Penny Pascoe (BSc Hons 1st class, PhD) - review | Ecologist |
| Version 1.0 | 27/08/2024 | Grant Daniels (BSc Hons 1st class, PhD) – review and delivery | Managing Director |

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# 1. INTRODUCTION

The Macquarie Point Precinct Plan (MPPP) has been prepared by the Macquarie Point Development Corporation (MPDC). As part of the plan, a proposal by the Crown in Right of Tasmania for the development of a multipurpose stadium at Macquarie Point has been declared a Project of State Significance (PoSS) by order (the order) of the Governor. The order was approved by both houses of the Tasmanian Parliament on the 8th of November 2023 and took effect on the 9th of November 2023. The Macquarie Point Multipurpose Stadium (herein referred to as 'the stadium') is proposed to be a key part of the MPPP. The stadium will have 23,000 seats, be roofed, and be the home ground of a Tasmanian AFL team. The stadium will also support other sporting events in addition to arts, cultural events and entertainment uses.

A ministerial direction from the Premier of Tasmania, dated 16th of October 2023 directs the Tasmanian Planning Commission (the Commission) to undertake an integrated assessment of the Macquarie Point Multipurpose Stadium project in accordance with the Tasmanian *State Policies and Projects Act 1993* (SPPA). Specifically, the Commission must undertake an integrated assessment of the proposed project in accordance with Part 3 of the SPPA. This includes the assessment of the environmental, social, economic and community impacts of the proposed project.

The proponent of the proposed project is the Crown in Right of Tasmania. The Premier has advised that the MPDC will be responsible for overseeing the planning and delivery of the stadium and other aspects of the MPPP. The MPDC is a statutory authority and state agency, charged with planning, facilitating and managing the remediation and development of Macquarie Point.

North Barker Ecosystem Services (NBES) was engaged to conduct a natural values assessment[1] to address the entirety of the MPPP in accordance with the Department of Natural Resources and Environments (NRE) *Guidelines for Natural Values Surveys - Terrestrial Development Proposals*, as well as addressing specific requirements pertaining to natural values specified in the Commission's *Macquarie Point Multipurpose Stadium Project of State Significance Guidelines* (PoSS guidelines)[2] and legislated under the SPPA. The project area considered for the natural values assessment comprises 9.3 ha proposed for development under the MPPP and is shown in Figure 1.

This report acts as a supplement to the natural values assessment by actioning a recommendation to assess the potential risk of bird collisions and mortalities related to the proposed design of the stadium, and to advise on suitable mitigation if necessary. Threatened species that are known to occur in the vicinity of the project area are given particular consideration in this assessment, including swift parrot (*Lathamus discolor*) and marine birds such as shearwaters. This report focuses only on the stadium building and directly associated infrastructure (Figure 2), with the assessment based on design concepts provided by the MPDC[3] (Figure 3), and information and architectural drawings provided by Cox Architecture[4] (Figure 4, Figure 6, Figure 7). As such, any subsequent changes to the stadium design not considered here may require further assessment if they pose a potential collision risk.

[1] North Barker Ecosystem Services (2024)
[2] Tasmanian Planning Commission (2024)
[3] Macquarie Point Development Corporation (2024a); Macquarie Point Development Corporation (2024b)
[4] Cox Architecture (2024)


**Figure 1: Project area covered in initial natural values assessment**

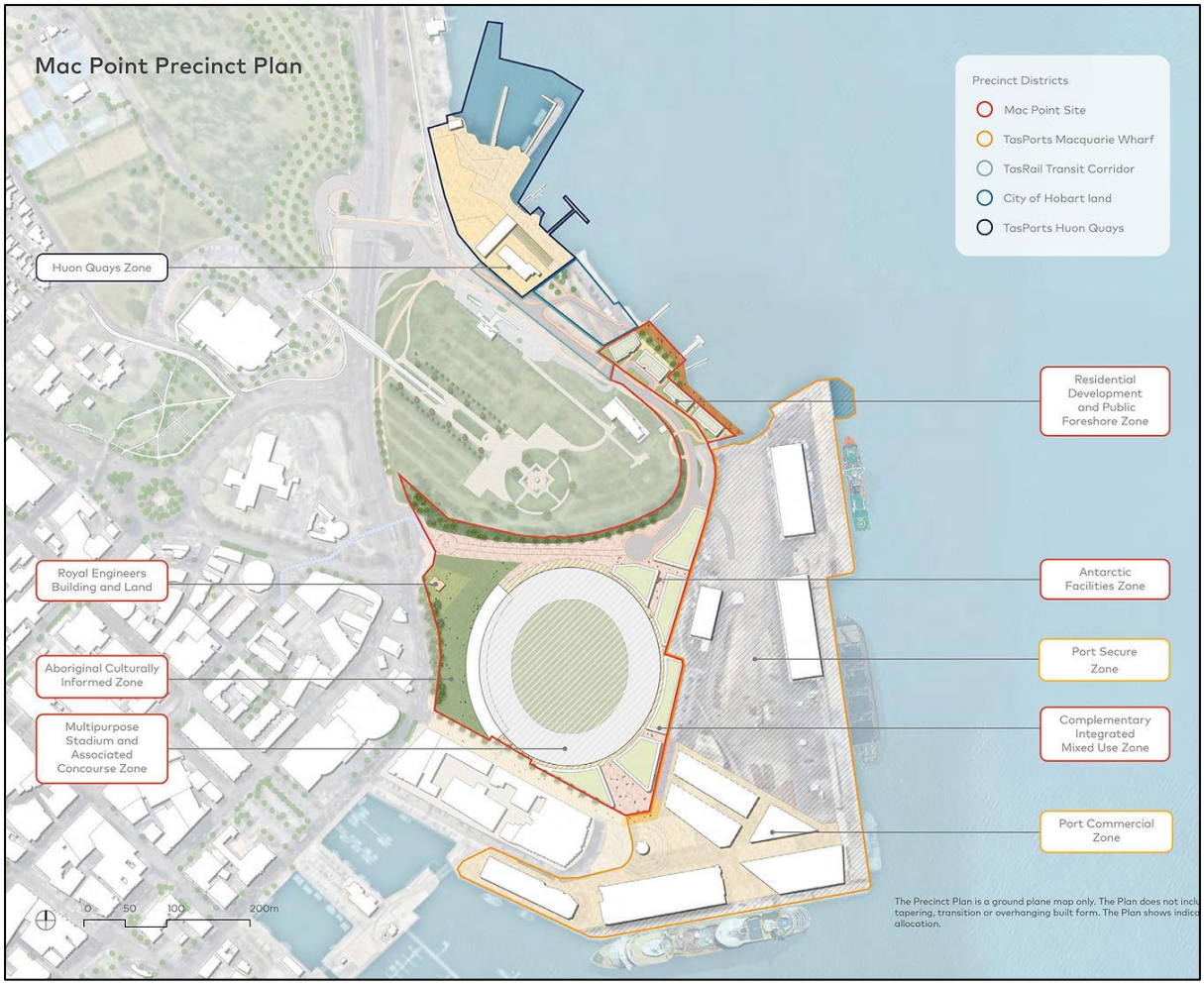


**Figure 2: Site Plan from the Mac Point Precinct Plan[5] showing the location of the stadium in the context of the greater project area**

[5] Macquarie Point Development Corporation (2024a)

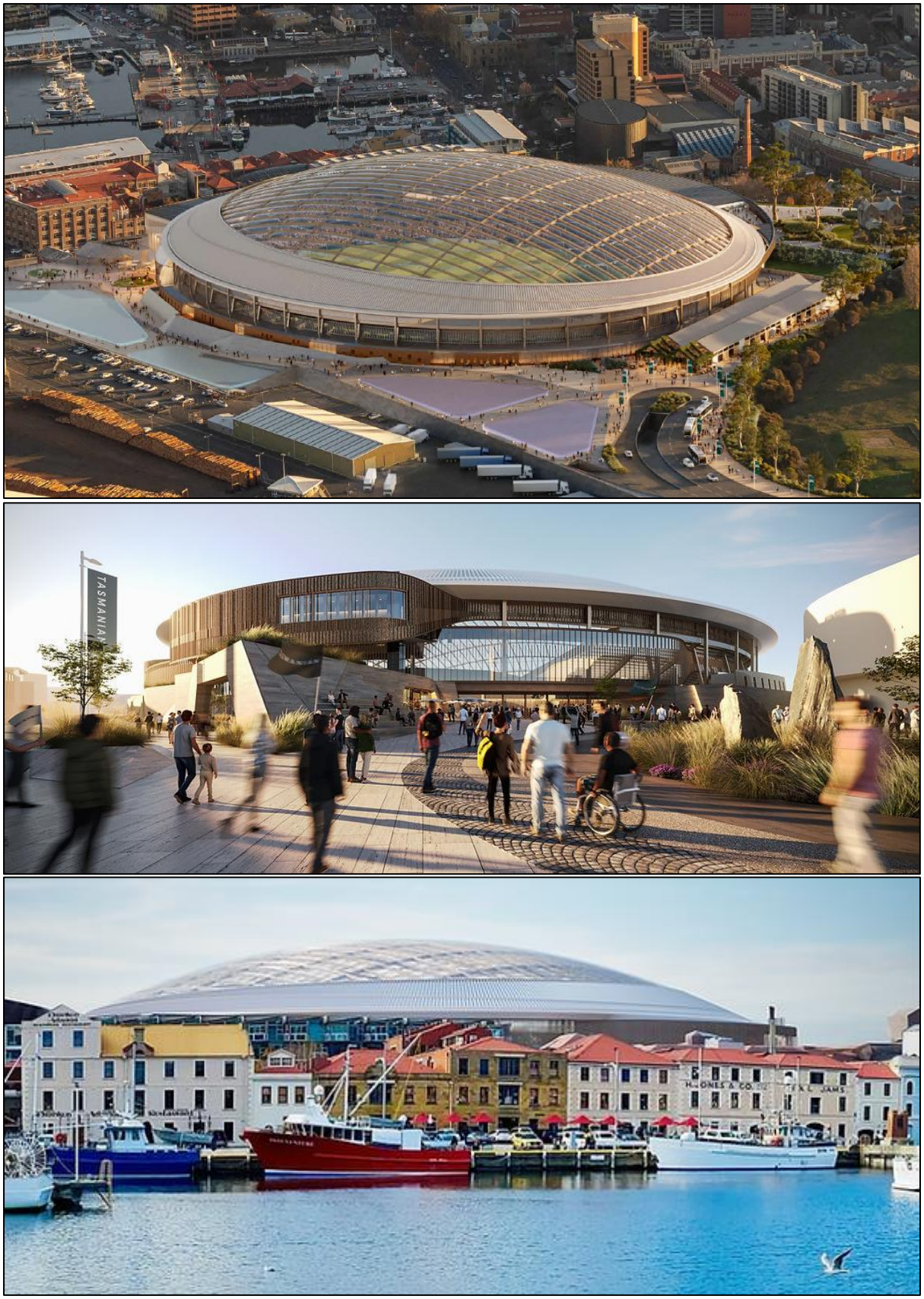


**Figure 3: Concept renders of the proposed Macquarie Point Multipurpose Stadium design from various perspectives[6]**

[6] Macquarie Point Development Corporation (2024b)

# 2. COLLISION RISK ASSESSMENT

## 2.1. BACKGROUND

Any infrastructure can create a potential collision hazard to birds if it is not clearly visible and avoidable. In almost all scenarios, the risk that buildings pose to bird collisions relates to the design and location of windows and any other reflective surfaces. Threats posed by such surfaces can be classified into two main categories:

- Reflections: A reflection can imitate continuous habitat. When seen from the outside of a building, glass often has a reflective quality, mirroring the sky, trees and other features. The reflectivity increases when glass is seen at an oblique angle, regardless of whether the glass is transparent or tinted. Birds do not understand that a reflection is false. Instead, they perceive a continuation of their habitat or flight path and try to fly to/through it, resulting in collisions.
- Transparency: Birds perceive a passageway between clear glass and attempt to fly straight through. Glass lobbies, balconies, windows, glass walls that meet at a corner, or aligned windows (windows installed parallel to each other, on opposite sides of the building) may provide an unobstructed view of habitat and sky on the other side. Also, transparent window panes mimic tinted reflective panes when little or no light is visible behind them.

The choice of materials therefore influences the risk, as the reflection and transparency of certain materials, such as glass or shiny metals can imitate continuous habitat that birds may perceive as a passageway through solid structures. Furthermore, structures such as wires or chain mesh fencing that provide an unobstructed view of habitat and sky can increase the risk of collisions. In cases where there is a reasonable expectation that collisions could result, the design and/or placement of such materials can be mitigated to reduce the appearance of flight paths.

Further to this, the location and layout of the building also plays a large role in the level of risk posed, as the proximity of structures to areas frequented by birds can increase the risk of collision. Features like shorelines, ridgelines and rivers are typically used as corridors for many birds during migration[7]. Certain structures inherently result in more collisions purely based on their height[8] (i.e., high rise buildings and communication towers) and function (i.e., movement of wind turbines). In addition to height and function is lighting. The use of lighting can often disorientate night-flying birds, particularly in urban environments and particularly migratory species. Artificial lighting can confuse birds in flight as they rely on natural light cues for navigation[9], and disorientated birds are at a greater risk of colliding with man-made structures and vehicles[10].

In relation to the proposed stadium design, the risk of bird collisions can thus be assessed by considering the potential for perceived reflections and transparencies in the design (Section 2.2) and how the location may influence the composition and movement of avifauna in the area (Section 2.3).

## 2.2. DESIGN

The building is proposed to reach 51 m above ground level at the highest point of the fixed-dome roof (Figure 6, Figure 7). The roof will be supported by a steel and timber frame, with steel bracing at 20 metre intervals and structural timber cross beams at 5 metre intervals; this grid will be covered with two layers of transparent ETFE (ethylene tetrafluoroethylene) creating a series of pillow-like elements across the fixed-dome stadium roof (Figure 4). This material does not create mirror-like reflections like glass does[11], and thus poses a lower risk of reflection-related collisions. The relatively low pitch of the dome

[7] U.S Fish and Wildlife Services (2022)
[8] U.S Fish and Wildlife Services (2022)
[9] Van Doren et al. (2017)
[10] Rodriguez et al. (2014)
[11] Hoong and Basher (2021)

roof combined with the visual obstruction of the steel bracing and timber beams minimise risks of transparency-related collisions with the roof. As such, the proposed roof design is considered to represent a very low risk of avifauna collisions.

The stadium edges are proposed to reach 22 m above ground level (Figure 6, Figure 7). The proposed design shows that windows are proposed to be fitted with batten screens fixed to metal cladding (Figure 4, see label FT01 in Figure 6 and Figure 7). These screens will provide visual obstruction to glazed sections, minimising the areas that may create mirror-like reflections of sky or habitat. Further, the glazed sections are generally not elevated above the surrounding buildings and landforms and are recessed under eaves or embedded within and adjacent to solid surfaces (Figure 3). The proposed designed does not appear to feature large sections of clear glass aligned on opposite sides of the building or at corners that may create the appearance of an unobstructed passageway between habitat or sky to fly to/through (Figure 6, Figure 7). Thus, the scope for both reflections of sky or habitat, and transparencies between clear glass, are considered quite low, such that the stadium edges are considered to represent a very low risk of avifauna collisions.

Direct effects of the proposed stadium lighting has been addressed elsewhere, within the PoSS Lighting Assessment by Introba Consulting[12] and in Section 3.3.1.4. of the natural values assessment[13]. With regards to any indirect effects of lighting as it relates to collision risk, there is not considered to be any risk of any increase in either reflection or transparency due to the lighting of the proposed design.

Therefore, the proposed stadium design poses a very low overall risk of bird collisions.

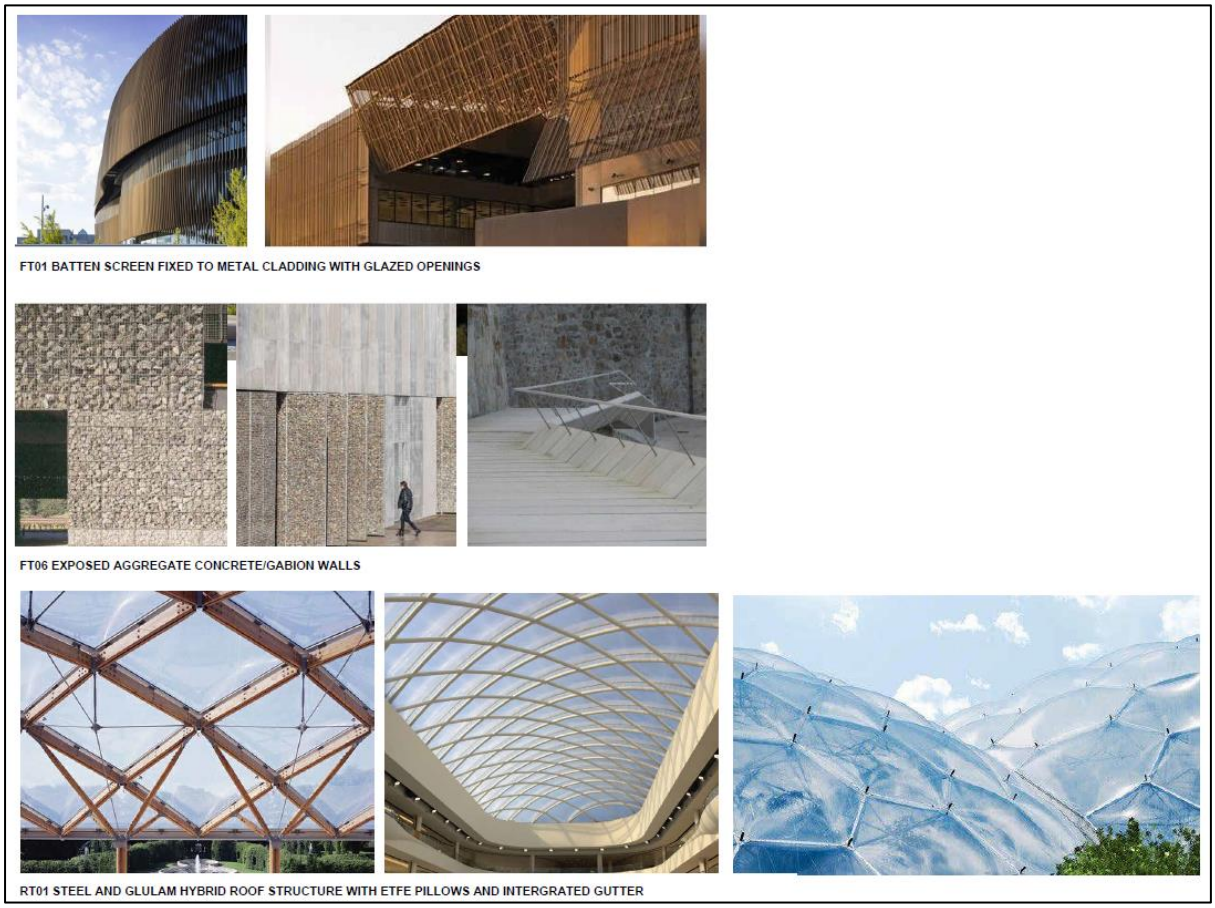


**Figure 4: Material palette showing examples of the materials and finished to be used in the proposed stadium design[14]**

[12] Introba Consulting (2024)
[13] North Barker Ecosystem Services (2024)
[14] Cox Architecture (2024)

## 2.3. SPECIES-SPECIFIC CONSIDERATIONS

In particular locations or environments, collisions with human infrastructure can represent a significant source of mortality for birds. There is however a limited understanding of the impacts of this mortality on broader population viability for most species and specific scenarios. It can however be reasonably expected that collision mortality poses a greater risk to threatened species which are at a greater susceptibility to extinction from demographic pressures[15].

The proposed stadium site is situated on the western shore of the Derwent estuary to the south of the Hobart Cenotaph, with historic buildings clustered to the southeast of the project area (Figure 2). This location is already heavily modified, consisting of commercial and industrial ports to the east and southeast, historic commercial buildings to the southwest and west, and open grass field with small amounts of ornamental plantings to the north. The project area comprises very poor habitat given the site's lack of natural resources, significant modification and ongoing industrial activity.

Table 1 summarises the state and federally listed threatened bird species with the potential to occur in or around the project area and their relative risk of collisions with the proposed stadium design. The assessments of relative risk (Section 2.3.1 and Section 2.3.2) are derived from combined consideration of the design, reported observations of respective species, surrounding habitat (influencing the likelihood of species occurrence and behaviour) and consideration of available literature in relation to collision risk.

**Table 1: Summary of assessed collision risk of listed threatened bird species that may occur within the project area**

| Species | EPBCA status | TSPA status | Likelihood of occurrence | Assessed collision risk |
|---|---|---|---|---|
| **Terrestrial birds** | | | | |
| swift parrot *Lathamus discolor* | Critically Endangered | Endangered | Low | **Low** |
| blue-winged parrot *Neophema chrysostoma* | Vulnerable | - | Low | **Very low** |
| Tasmanian wedge-tailed eagle *Aquila audax fleayi* | Endangered | Endangered | Very low | **Very low** |
| grey goshawk *Accipiter novaehollandiae* | - | Endangered | Low | **Very low** |
| white-throated needletail *Hirundapus caudacutus* | Vulnerable | - | Very low | **Very low** |
| Tasmanian masked owl *Tyto novaehollandiae castanops* | Vulnerable | Endangered | Very low | **Very low** |
| **Marine and coastal birds** | | | | |
| sooty shearwater *Ardenna grisea* | Vulnerable | - | Very low | **Very low** |
| white-bellied sea eagle *Haliaeetus leucogaster* | - | Vulnerable | Low | **Very low** |
| hooded plover *Thinornis cucullatus* | Vulnerable | - | Very low | **Very low** |

[15] Avian Power Line Interaction Committee (APLIC) (2012); D'Amico (2019)

### 2.3.1. Terrestrial birds

Threatened terrestrial bird species considered here include swift parrot (*Lathamus discolor)*, blue-winged parrot (*Neophema chrysostoma*), Tasmanian wedge-tailed eagle (*Aquila audax fleayi*), grey goshawk (*Accipiter novaehollandiae*), white-throated needletail (*Hirundapus caudacutus*), and Tasmanian masked owl (*Tyto novaehollandiae castanops*). These species have all been recorded within 5 km of the proposed stadium on the Natural Values Atlas (NVA). Collision risk as it relates to terrestrial birds is determined by the presence of suitable foraging and breeding habitat within the immediate vicinity of the proposed building, and the typical flight behaviours of the species (including expected pathways).

**Swift parrots** are endemic breeders to Tasmania, migrating from south-eastern mainland Australia where they spend the winter. Swift parrots have previously been recognised as a species that suffers from collision induced mortality, to the extent that there are guidelines for minimising the swift parrot collision threat[16]. Swift parrots are susceptible to collision with a range of artificial structures. Of greatest risk is open fencing, wires, and buildings with reflective glass or see-through flight lines or corners[17]. The swift parrot national recovery plan discusses collision mortality as a threat to the species[18], primarily referencing Pfennigwerth (2008). Swift parrots migrate annually to Tasmania from August to March, where they feed primarily on nectar of the Tasmanian blue gum (*Eucalyptus globulus*) and black gum (*E. ovata*). Swift parrots nest in hollows of mature eucalypts in range (generally < 10 km) of bulk food sources[19]. The flowers of these species are utilised before and during the breeding season between August and February. Because patches of food plants flower with varying intensity each year, the swift parrot population can breed in different areas in different years. The project area is within the core breeding and foraging range of the swift parrot and is located within a Swift Parrot Important Breeding Area (SPIBA), which are key regions known or suspected to have supported a large portion of the swift parrot breeding population in any given year[20]. No foraging habitat occurs within the project area, nor any trees with potentially suitable hollows for breeding. Potential swift parrot habitat in the surrounding area can be approximated using the TASVEG *E. globulus* dry forest and woodland (DGL) and *E. ovata* forest and woodland (DOV) communities mapped on the NVA, with the closest being a patch of DGL approximately 1.5 km northwest of the proposed stadium in the Queens Domain area. Approximate flight paths between nearby patches of these communities have been plotted in Figure 5, with only one flight path taking these birds over the proposed stadium location. It is also noted that there are scattered *E. globulus* and *E. ovata* trees around the cenotaph and Queens Domain areas and through the Hobart CBD in which swift parrots have been observed foraging, as demonstrated by the records of this species in the surrounding area (Figure 5). The proposed stadium is located at a lower point in the landscape compared to potential foraging patches, situated in the port area set back from the waterfront behind other buildings should create a sufficient visual barrier to minimise the risk of flight paths between habitat patches directly intercepting the stadium building. It is therefore highly unlikely that the stadium will directly intercept any flight paths between local foraging or breeding habitat patches, thus there is a low likelihood that swift parrots may occasionally pass over the project area whilst moving through the broader environment.

**Blue-winged parrots** are partial migrants; they breed in spring and summer in Tasmania, and winter on the mainland, however some birds remain in Tasmania over winter and some remain on the mainland to breed in summer. There is no potential nesting habitat in the project area, and the nearest potential breeding habitat is located in the Queens Domain area. Blue-winged parrots forage on the ground, mostly on grass seeds, and are often found near wetlands but are also observed in altered environments

[16] Pfennigwerth (2008)
[17] Pfennigwerth (2008)
[18] DCCEEW (2024)
[19] Threatened Species Scientific Committee (2016)
[20] DCCEEW (2024)

such as airfields, golf courses and paddocks[21]. There is blue-winged parrot foraging habitat within the vicinity of the project area, however there is no foraging habitat within the project area and this species is known to have limited occurrences in industrial and high human-use areas such as suburbia[22]. Thus, there is a very low likelihood that blue-winged parrots may occasionally forage nearby or pass over the project area and thus there is a subsequent very low risk of collision.

**Eagles, goshawks, owls and needletails** may occasionally pass over the project area whilst foraging throughout the broader landscape. The heavily modified urban nature of the project area is not preferred foraging habitat for these species, as they prefer open fields and forests, thus it is deemed highly unlikely that the stadium will present a collision risk to these four species.

### 2.3.2. Marine birds

Species considered here are threatened birds that are strongly associated with marine environments; seabirds are highly dependent on the marine environment as they spend a large portion of life at sea breed on islands, and coastal birds that use marine edge habitat for foraging and breeding. Hooded plover (*Thinornis cucullatus*), white-bellied sea eagle (*Haliaeetus leucogaster*) and sooty shearwater (*Ardenna grisea*) have been recorded within 5 km of the proposed stadium on the NVA. Collision risk as it relates to marine and coastal birds is determined by the proximity of the proposed building to the shore or open water, the presence of foraging habitat in the immediate vicinity, and the typical flight behaviours of the species.

**Hooded plovers** primarily inhabit sandy, ocean beaches, with the highest densities on beaches with large amounts of beach-washed seaweed, that are backed by extensive open dunes[23]. There are four NVA records of this species within 5 km of the proposed stadium; interrogation of these records found that the closest and most recent observation from 2016 has inaccurate location information and should instead be located on Bruny Island (this error has been reported to the NVA), while the remaining three records are from 1998 or earlier[24]. The shoreline present on the eastern boundary of the project area is highly modified into a sea wall, thus there is no habitat suitable for this species within the project area nor in the surrounding area, and thus there is a very low likelihood that this species may occur in the project area beyond rare transient occurrences.

**White-bellied sea eagles** are tolerant to human activity and may hunt over the Derwent River adjacent to the site on occasions. Eagles have been shown to have concentrated activity in areas of relatively high prey densities, avoid areas with low pretty densities, and to frequently travel along and near forest edges or along rivers[25]. Based on these expected flying habits the likelihood of eagles flying over the project area at a low height for foraging is considered very low and thus the risk of collision is very low.

**Sooty shearwaters** are typically found over deep ocean waters when not breeding in burrow nests or rock crevices on slopes, however they are sometimes found in onshore areas particularly after rough weather[26]. There is no suitable breeding habitat within the project area to support this species and it is highly unlikely to occur given the significant disturbance and availability of better habitat elsewhere across southeast Tasmania, thus there is a negligible likelihood to occur beyond rare transient occurrences. The short-tailed shearwater (*Ardenna tenuirostris*), the most abundant seabird species in Australian waters, is a migratory species that breeds mainly on small islands in Bass Strait and Tasmania and migrates north for the northern hemisphere summer[27]. This species is not listed as threatened at either the state or federal level (listed as migratory and marine under the EPBCA) but can suffer collisions

[21] Department of Climate Change, Energy, the Environment and Water (2023a)
[22] Daniels (2005)
[23] Department of the Environment (2014)
[24] Department of Natural Resources and Environment Tasmania (2024)
[25] Singh (2016); Sandgren (2014)
[26] Department of Climate Change, Energy, the Environment and Water (2023b)
[27] Commonwealth of Australia (2024)

resulting from disorientation caused by artificial lighting, with a number of collisions of this species known from the Tasman Bridge[28]. However, as discussed above, the light spill impacts of this stadium have been deemed to be minimal[29] and the location of the stadium set back from the waterfront behind other buildings should create a sufficient visual barrier to further minimise this risk (to both species). It is therefore deemed unlikely that the stadium will present a collision risk to these threatened marine species.

# 3. CONCLUSION AND RECOMMENDATIONS

The proposed stadium introduces new infrastructure into an already heavily modified landscape. NBES have assessed the proposed infrastructure with respect to collision risk, as well as reviewing the likelihood of occurrence and thus the scope for collision risk of threatened bird species with the potential to occur within the project area. It is our assessment that the proposed design poses a very low overall risk of bird collisions, and threatened bird species with any likelihood of occurrence are very unlikely to interact with the design. As a precautionary measure, we do however recommend that this project, during both the construction and operation phases, should ensure onsite staff are trained in wildlife handling so that birds can be rescued as soon as possible in the event of a collision. Should any such collision event occur then it should be recorded and reported to the relevant regulatory body (periodically for non-threatened species and immediately for threatened species), and these records can then be used to determine whether additional adaptive management measures are required.

[28] E.g., see https://www.abc.net.au/news/2019-05-10/record-number-of-mutton-birds-taken-into-care/11100436
[29] Introba Consulting (2024)

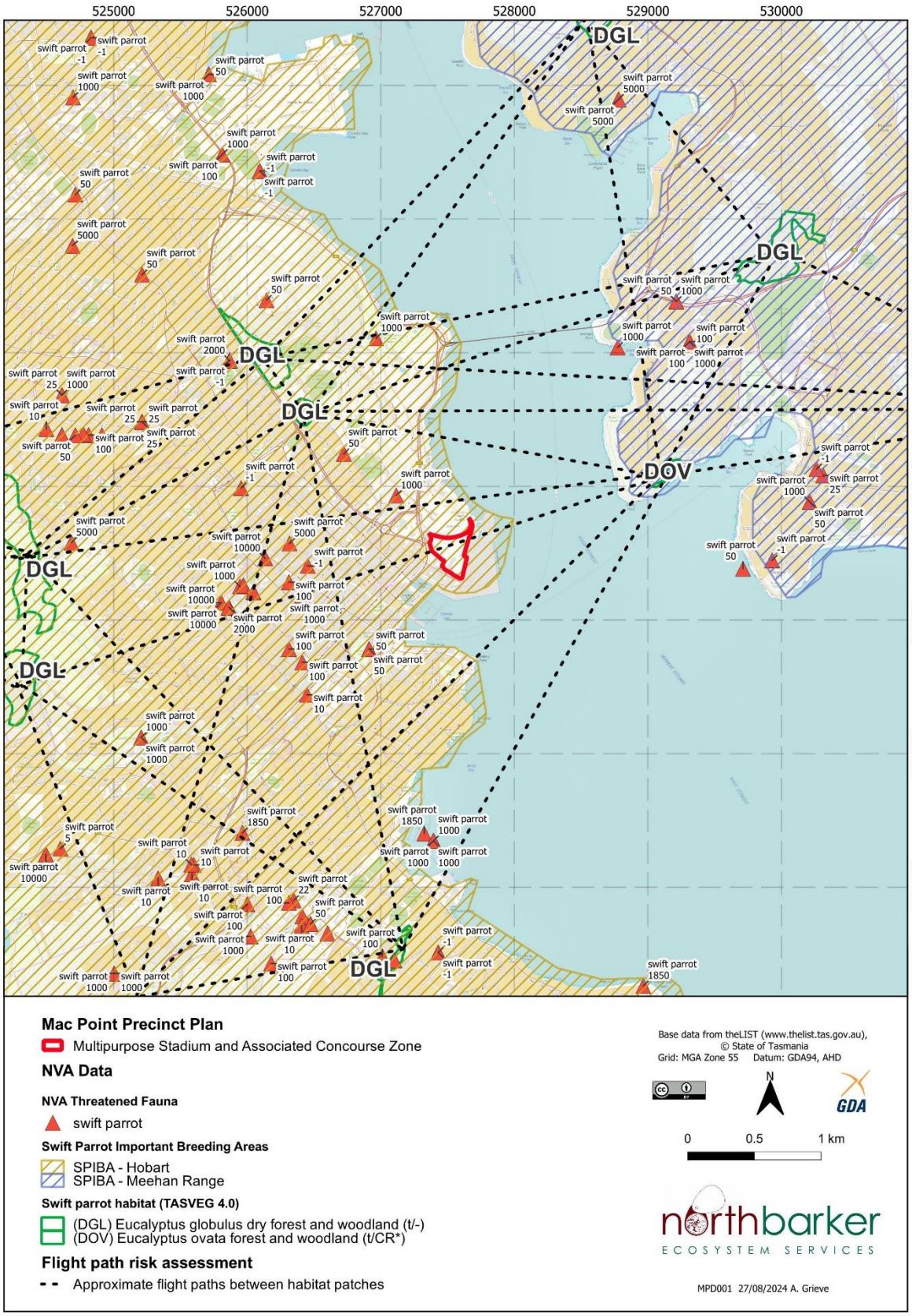


**Figure 5: Visualisation of possible Swift Parrot flight paths between mapped habitat patches surrounding the proposed stadium**

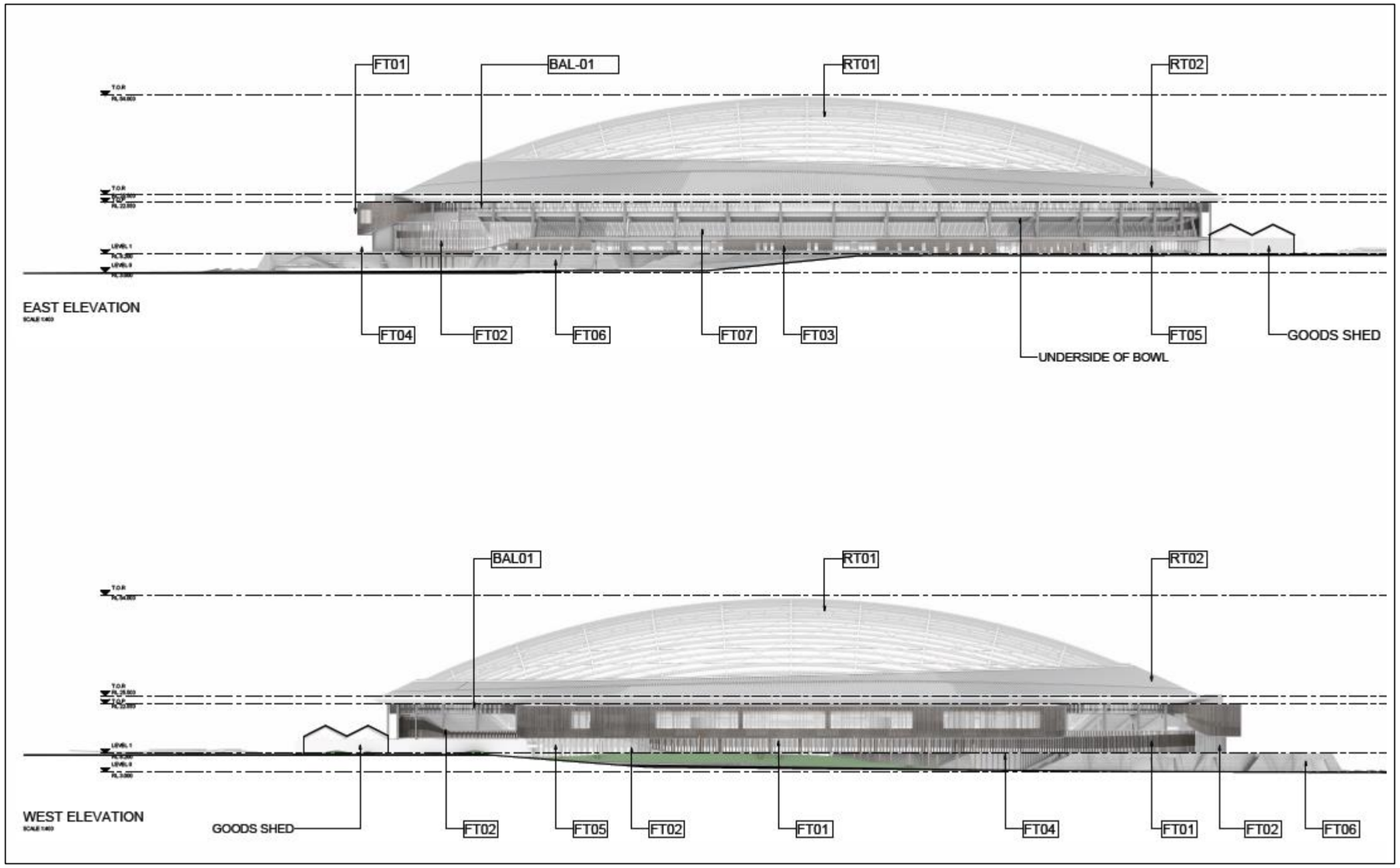


**Figure 6: Proposed stadium design from the perspective of the western and eastern elevations[30]**

[30] Cox Architecture (2024)

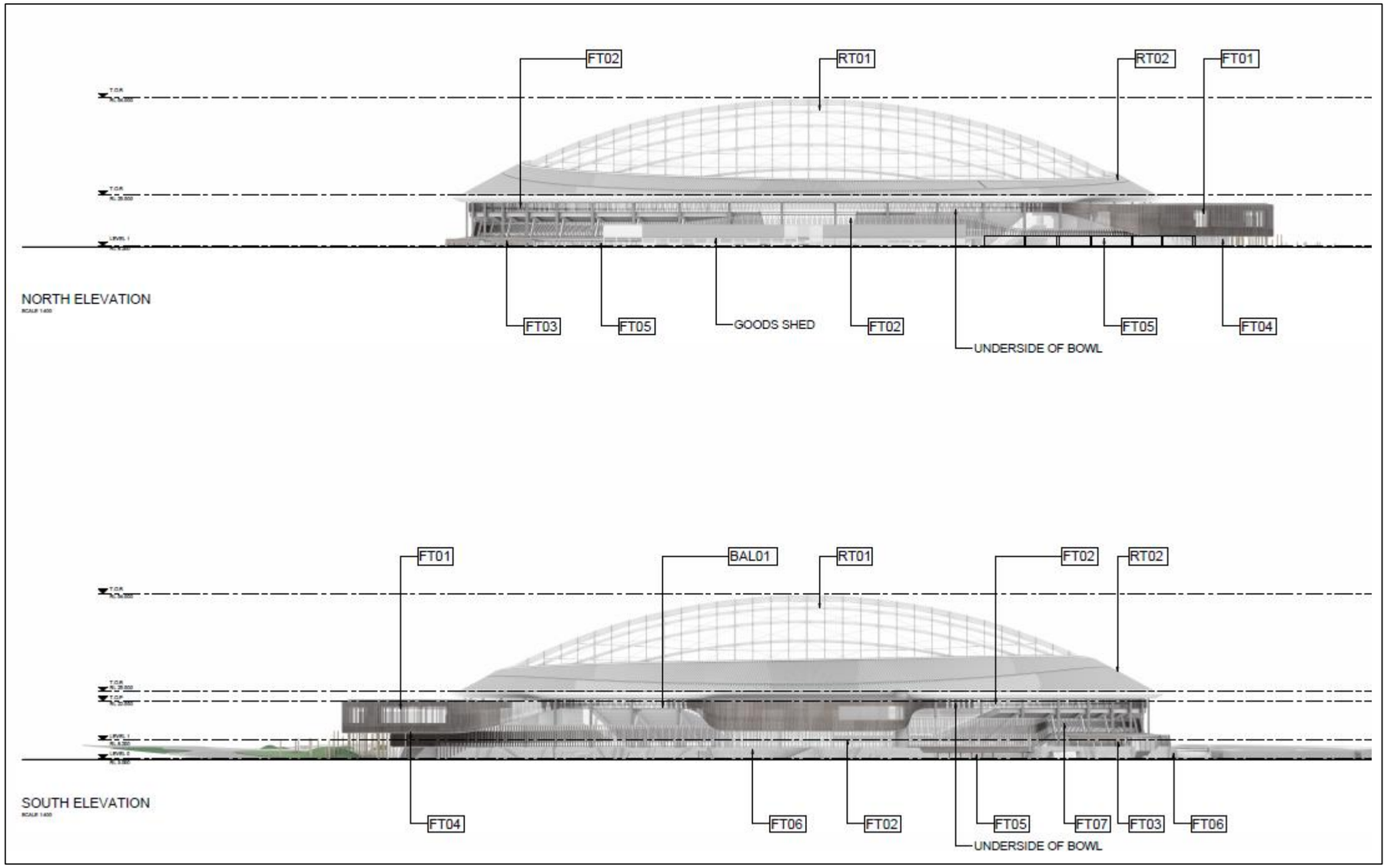


**Figure 7: Proposed stadium design from the perspective of the northern and southern elevations**[31]

[31] Cox Architecture (2024)

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