SCENIC AND ECOLOGICAL ASSESSMENTS – CT199735/1

VINEGAR HILL, FLINDERS ISLAND

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Document Status

Revision	Author	Review	Date
1	R Barnes C McCoull	R Barnes and C McCoull, VDC	14-3-2022
1	R Barnes C McCoull	R Barnes and C McCoull, VDC	19-5-2022

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TABLES

FIGURES

DEFINITIONS

(the) Land	CT199735/1 located at Lady Barron, Flinders island
(the) Scheme	Tasmanian Planning Scheme - Flinders
Threatened fauna	Species of fauna listed on the – • Tasmanian *Threatened Species Protection Act 1995,* or the • Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.*
Threatened flora	Species of flora listed on the – • Tasmanian *Threatened Species Protection Act 1995,* or the • Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
Threatened native vegetation communities	Native vegetation communities listed under Schedule 3A of the Tasmanian *Nature Conservation Act 2002*. Ecological communities listed under s 181 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

ACRONYMS

BVD	Biodiversity Values Database
DNRE	Department of Natural Resources and Environment Tasmania
DPIPWE (now DNRE)	Department of Primary Industries, Parks, Water and Environment
NVA	Natural Values Atlas

PART A – BACKGROUND

A.1 OBJECTIVE OF REPORT

A development application for use and/or development may on occasion need to assess the requirements of Scheme Codes and zone provisions. The need to assess specific matters is often determined by the zone within which the use and development are proposed, and Code overlays (where mapped) or other specific Code provisions which are not shown on Scheme maps.

The basis of this Report is to provide information to base an assessment of a use and development where that assessment requires consideration of natural values (7.0 Natural Assets Code) and scenic protection values (8.0 Scenic Protection Code).

A.2 SURVEY AREA

The Survey Area is the land located at Vinegar Hill, being CT199735/1 (the 'Land', **Figures A-1 and A-2**).

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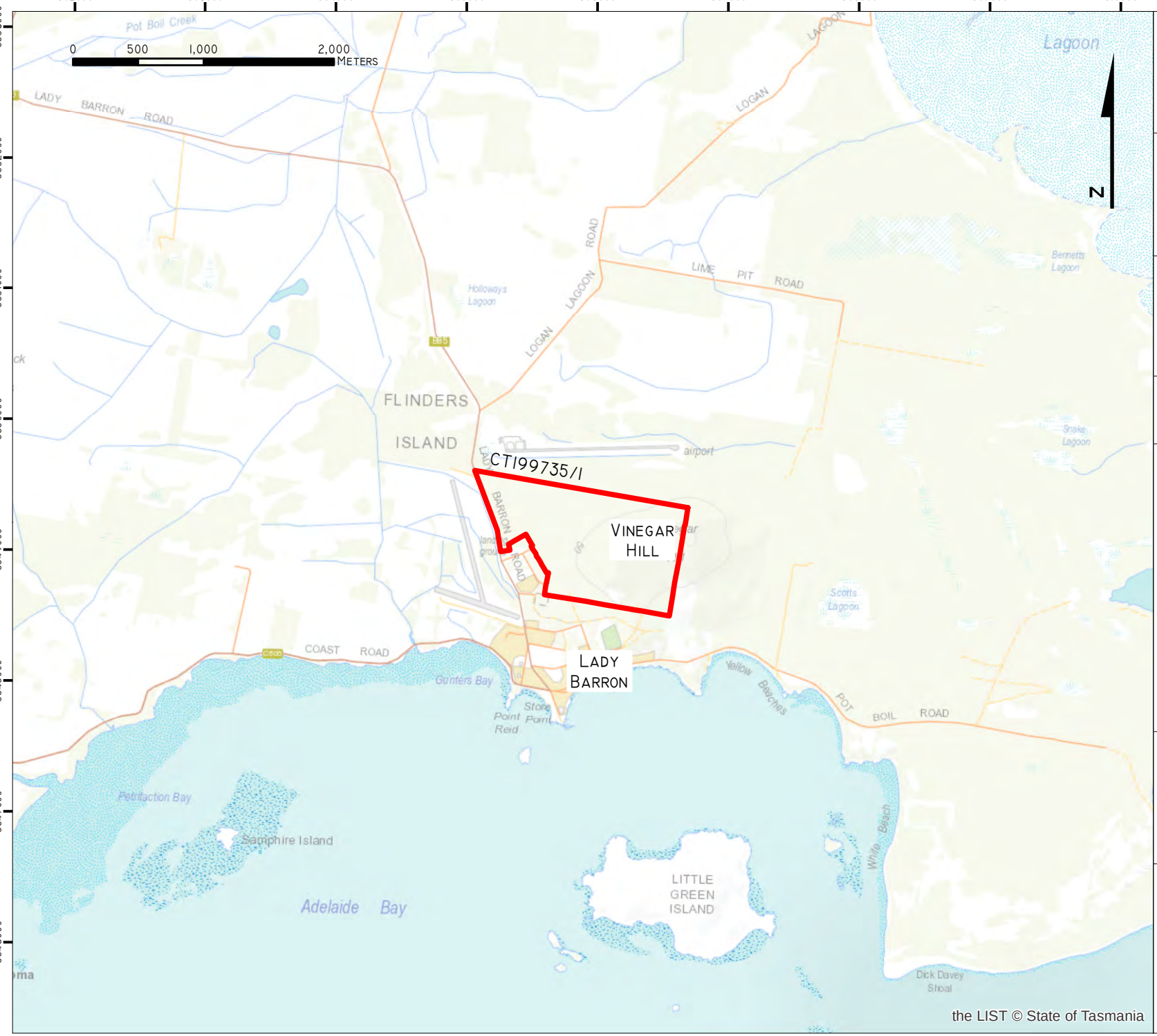
Scenic and ecological assessments, Vinegar Hill

Vinegar Hill
CT199735/1

Figure A1: Location of CT199735/1

TASMAP:	LGA:
FISHER 5954	FLINDERS

CT 199735/1



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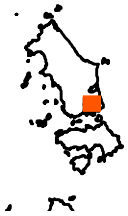

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SCALE: @A4 - NA

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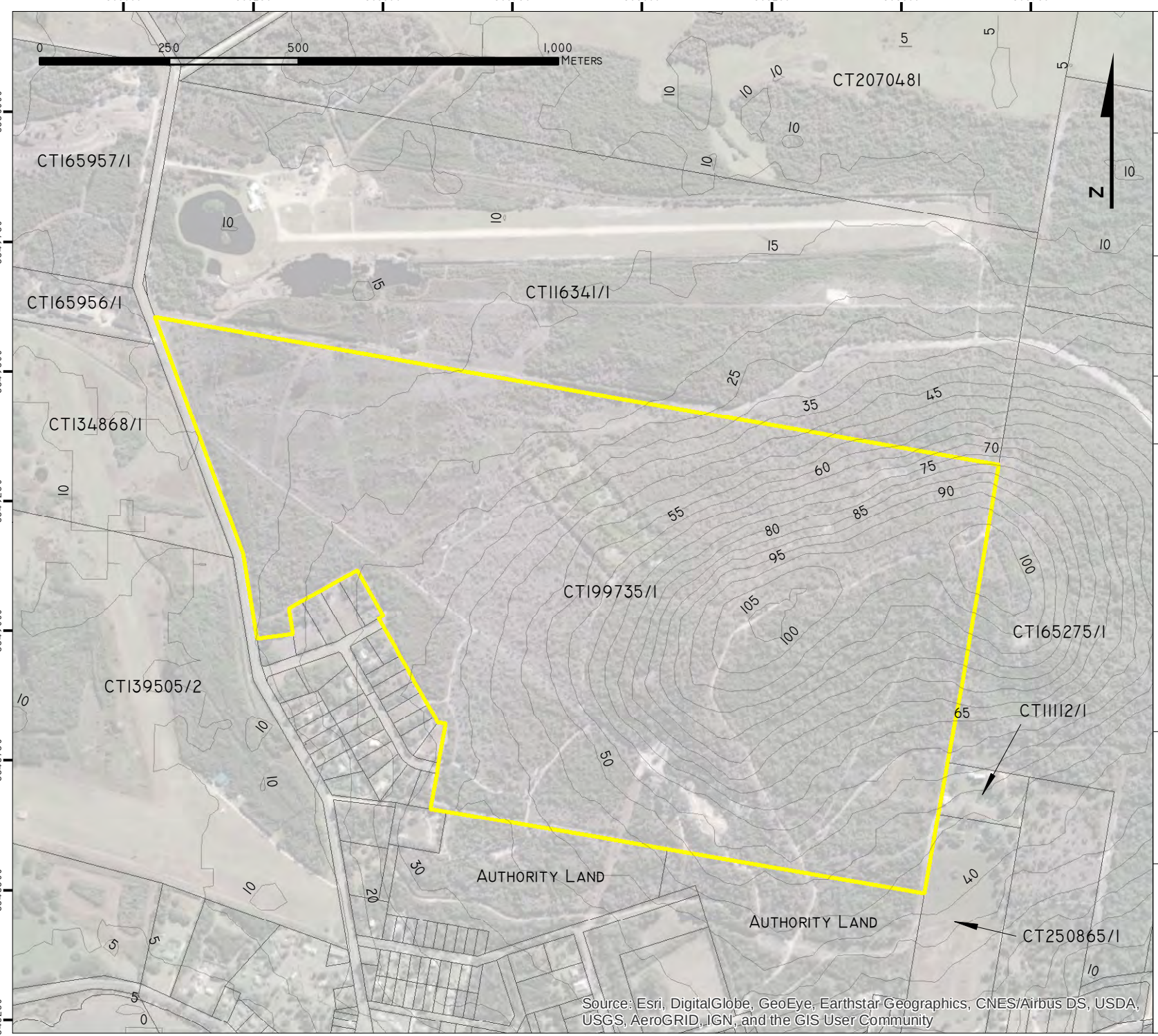
DATE: 16 MAY 2022



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SCENIC AND ECOLOGICAL ASSESSMENTS, VINEGAR HILL

VINEGAR HILL
CT199735/1

FIGURE A2: LAND TITLES AND TOPOGRAPHY

TASMAP:	LGA:
FISHER 5954	FLINDERS

5M CONTOURS

CT 199735/1

OTHER LAND TITLES (THE LIST)

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SCALE: @A4 - NA

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PART B – NATURAL ASSETS CODE

The Land is partly covered by the Priority Vegetation overlay which triggers the Natural Asset Code where applicable in Clause 7.2.1 of the Scheme.

The objective of this report section is to document the findings of ecological assessments of CT 199735/1 (the 'Survey Area').

B.1 SURVEY METHODS

B.1.1 Qualifications of personnel

The Natural and Cultural Heritage Division (2015[1]) note that -

> 'The proponent or their representative must ensure that the personnel undertaking surveys and preparing reports have appropriate skills, qualifications and experience in identification and documentation of all natural values of interest, including a knowledge of Tasmanian species, their habitat and other ecological requirements, and vegetation communities.'

In this case, the surveyors of the natural values each hold a PhD in a relevant field of science – zoology and botany – and over 50 years of combined field expertise in natural values assessment, identification, mapping, reporting and ecological impact assessment/mitigation.

The surveys were conducted in February 2022.

B.1.2 Vegetation Classification and Mapping

Classification

Vegetation communities were identified and attributed to Tasmanian Vegetation Mapping Units (Kitchener and Harris 2013, 2nd Edition and with revisions in April 2019). All vegetation types in the Survey Area were assessed and the variation within each explored. Flora species present within representative plots were recorded and additional species were added to the list as they were encountered in a meandering survey. Scientific names for flora species follow de Salas and Baker (2020).

Mapping

A handheld GIS/GPS unit was used to navigate within the Survey Area which had been loaded with shapefiles of the Survey Area boundaries. An iPhone was also used to navigate and assist with the interpretation of vegetation types using Google Earth overlain with shapefiles of the Survey Area and threatened species

[1] Natural and Cultural Heritage Division (2015). Guidelines for Natural Values Surveys - Terrestrial Development Proposals. Department of Primary Industries, Parks, Water and Environment. Version 1.1 – 13th August 2019 (minor updates to links in document).

locations (NVA data). Aerial photography both in the field and in the office was used to further interpret vegetation boundaries.

B.1.3 General Flora and Fauna Species Survey

Queries of the following database sources were used to generate reports to identify previous recorded locations of species (flora and fauna) and range boundaries for significant or threatened fauna species.

- Biodiversity Values Database (BVD, **Attachment 1**) managed by the Forest Practices Authority, and
- Natural Values Atlas (NVA, **Attachment 2**) managed by the Department of Natural Resources and Environment Tasmania, and

The conservation status of flora and fauna species follow the:

- Tasmanian *Threatened Species Protection Act 1995,*
- Tasmanian *Nature Conservation Act 2002,* and
- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

The survey directly assessed the range of habitat types present in the Survey Area, especially wet soaks, and rocky outcrops as these tend to support rare or interesting flora species or vegetation communities.

B.1.4 Targeted Flora and Fauna Species Surveys

Flora species of particular focus were those listed in the Biodiversity Values Database report as having known records, or potential habitat, within and near the Survey Area. The flora surveys were limited to vascular species: species of mosses, lichens and liverworts were not recorded. However, consideration was made of species (vascular and non-vascular) likely to be present based on available habitat information and database records. Potential habitat for threatened fauna was assessed by reference to the vegetation communities present and the associated characteristics of the habitat values each provided to fauna species - assessments were made by comparing the characteristics of known fauna habitat with the habitat present in the Survey Area.

<u>Eagle species</u>

The Survey Area is within the breeding range of both the Tasmanian wedge-tailed eagle (*Aquila audax fleayi*) and white-bellied sea eagle (*Haliaeetus leucogaster*). The proximity of the coastal zone makes nesting by the white-bellied eagle more likely.

<u>Conservation Listed (threatened) Mammal Species</u>

Only one mammal species of conservation significance is identified in the BVD and NVA reports – New Holland mouse (*Pseudomys novaehollandiae*). Trapping was not conducted as it would have required the approval of the Tasmanian Animal Ethics Committee and was not considered warranted. A 'habitat suitability' assessment rather than trapping is justified in this case as there is anecdotal evidence and existing State Government data (BVD and Natural Values Atlas) that this species may be present in suitable habitat.

B.1.5 Fauna Habitat Assessment Criteria

Fauna species with potential or known habitat in the Survey Area were considered in the context of habitat ranges/descriptions provided below (FPA 2020) –

Habitat Descriptor	**Definition**
Core Range	Encompasses the area, within the known range, known to support the highest densities of the species and/or thought to be of highest importance for the maintenance of breeding populations of the species.
Potential Range	Encompasses the area, within the known range, known to support the highest densities of the species and/or thought to be of highest importance for the maintenance of breeding populations of the species.
Known Range	is the area within which the species is most likely to occur, being the area of land within a minimum convex polygon of all known localities of the species. This term is synonymous with 'extent of occurrence' as referred to in the *Guidelines for Eligibility for Listing under the* Threatened Species Protection Act 1995 (DPIW 2009).
Potential habitat	is all habitat types within the potential range of a species that are likely to support that species in the short and/or long term. It may not include habitats known to be occupied intermittently (e.g. occasional foraging habitat only). Potential habitat is determined from published and unpublished scientific literature and/or expert opinion, and is agreed by the Threatened Species Section (DPIPWE) in consultation with species' specialists.
Significant habitat	is habitat within the known or core range of a species that (1) is known to be of high priority for the maintenance of breeding populations throughout the species' range and/or (2) conversion of which to non-native vegetation is considered to result in a long-term negative impact on breeding populations of the species. It may include areas that do not currently support breeding populations of the species but that need to be maintained to ensure the long-term future of the species. Significant habitat is determined from published and unpublished scientific literature and/or expert opinion, and is agreed by the Threatened Species Section (DPIPWE) in consultation

B.1.6 Existing Impacts to Vegetation

<u>Fire – planned and unplanned</u>

Of relevance is the occurrence of planned burns in the Survey Area, with the most recent occurring in the 2017-18 burning season. The map below is extracted from the NVA report (**Attachment 2**, pg 26-27) which shows the extent of the 2017-18 planned burn. The forest on Vinegar Hill is adjacent to the Lady Barron township so its management for fire hazard reduction is seemingly important to the protection of the township.

Fire occurrence, including the lack of fire and its frequency, can significantly influence the condition, species diversity, structural complexity, and aesthetics of it when viewed through human eyes. On Flinders Island for example, the absence of fire for a long period of time (many decades) in damp areas of eucalypt forest can result in the succession of eucalypt forest to Oyster pine bay forest. Conversely, Oyster bay pine can be eradicated from areas where fire occurrence is frequent.

The vegetation observed at Vinegar Hill has been significantly affected by the occurrence of fire, with Oyster bay pine being present but mainly as seedlings with most (>90%) parent trees killed by the fire – a fire before the seedlings can reach an age to produce seed could see the species dramatically reduced at the location or eradicated entirely as has occurred on many other parts of the island.

Tracks and infrastructure

The Land contains a number of infrastructure assets including water tanks (active and disused), water lines for Taswater to distribute water, roads, and tracks, fencelines, an existing granite quarry, and telecommunications infrastructure (tower, phone line and associated power lines). Pictures below provide an indication of the type and form of the infrastructure present.

Taswater holding tank on the Land above Lady Barron township

Road access and underground water pipeline from Taswater treatment plant (at Lady Barron Road in the distance) to new holding tank

Disused Lady Barron township water holding tank near quarry

Telecommunications tower, shed and fenced area (with fire buffer) on north-eastern side of the Land.

Track and associated phone line

Existing track/road

Existing track/road

Existing fencelines and posts around previously cleared areas

Powerline and power pole clearing lines and access track

Gravel pit near Barr Street

B.1.7 Limitations

Flora

Due to varying flowering times and seasonality of occurrence not all flora species that occur in the Survey Area may have been recorded during the on-ground surveys.

Short lived annuals, orchids and lilies that may be present at the site may have been missed because they were not able to be identified (they were not flowering) or they were not evident at this time of year (they were annual plants that had died back or not emerged at the time of survey). Specifically, two conservation significant orchid species known to be in the area (*Pterostylis sanguinea* and *Pterostylis tunstallii*) flower in mid to late winter so their presence could not be confirmed by this survey however it is possible to assess and spatially identify suitable habitat based on spatially accurate records and habitat descriptions of known populations.

Overall, it is unlikely that species of conservation significance were not appropriately considered in the survey/assessment and recommendations made from the results of those surveys.

Fauna

The fauna assessment (except for direct searches of nests and dens etc as outlined above) was limited to a habitat assessment for fauna species, including the ground truthing of potential habitats for significant fauna species that were identified in database searches. See section B.1.4 TARGETED FLORA AND FAUNA SPECIES SURVEYS for information about target species.

Micro Flora and Fauna

The flora and fauna surveys excluded micro-flora and micro-invertebrates such as algae, zooplankton, and cave-dwelling fauna.

B.2 RESULTS

B.2.1 Vegetation Communities

A list of vegetation communities located in the Survey Area is provided in Table 1, and spatially presented in **Figure B-1**. There are 2 native forest communities present within the Survey Area, one non-forest community and 2 non-native land use mapping units.

One native vegetation community listed on Schedule 3A (Threatened native vegetation communities) of the *Nature Conservation Act 2002* occur on the Land.

No ecological communities listed under section 181 of the *Environment Protection and Biodiversity Conservation Act 1999* occur on the Land.

Table 1. Vegetation (TASVEG codes) categories recorded in the Survey Area

TASVEG CODE	TASVEG COMMUNITY	Threatened native vegetation community#	Extent in Survey Area (hectares)
DNF	*Eucalyptus nitida* Furneaux forest	No	77.61
DVF	***Eucalyptus viminalis* Furneaux forest and woodland**	**Yes**	**17.31**
SHW	Wet heathland	No	9.53
FUM	Extra-urban miscellaneous	No	1.16
FRG	Regenerating cleared land	No	3.93

Threatened native vegetation communities are those listed in Schedule 3A of the *Nature Conservation Act* 2002

Descriptions of each vegetation community and some representative images for forest communities are provided below.

<u>*Eucalyptus nitida* Furneaux forest (DNF)</u>

The dominant species is *Eucalyptus nitida* (Furneaux peppermint), with *Allocasuarina verticillata* and *Callitris rhomboidea* sporadically present. The understorey is heathy to shrubby. There are considerable areas of bare ground between eucalypts and the taller shrubs commonly include *Banksia marginata, Leptospermum glaucescens, L. scoparium, L. lanigerum* and *Acacia sophorae*. *Xanthorrhoea australis* is sparse but on occasion it can be locally abundant, especially occurring as regrowth plants which lack a trunk (root rot fungus is present, and widespread in some areas as evident by a 'wave' of infection).

The ground layer species diversity is greatest in recently burnt areas – some areas were burnt in 2018 as part of a fuel reduction burn – but the ground coverage of plants remains as low as those areas where were unburnt. Long undisturbed understorey areas (those areas not burnt in 2018) are closed *Leptospermum* scrub

with patchy bracken-fern. The forest type grades into wet heathland in the Survey Area (in the north-western corner of the Land) with occasional emergent *Eucalyptus nitida*.

The following images depict the various forms of this forest type present in the Survey Area.

A regrowth unburnt section of *E. nitida* Furneaux forest with a midstorey of sheoak and tea-tree.

The canopy gap in the foreground supports bracken-fern and a few dry forest herbs.

E. nitida Furneaux forest with a sparse shrubby midstorey with canopy gaps where *X. australis* can grow.

E. nitida Furneaux forest with a bracken-fern dominated understorey.

Dead regrowth eucalypts are abundant (fire killed) and sub-canopy trees are present as regrowth shrubs to small trees.

A closed canopy section of *E. nitida* Furneaux forest with the ground layer covered by leaf litter only.

A localised patch of *Xanthorrhoea australis* with PC present.

<u>*Eucalyptus viminalis* Furneaux forest and woodland (DVF)</u>

This forest type is usually dominated by *Eucalyptus viminalis* with damp forest species present, however there is on occasion a facies dominated by *Eucalyptus globulus* (Tasmanian blue gum) which seems to be prevalent on granite (or Mathinna bed) derived gravels, boulders, and rock slopes on hilltop or near hilltop locations (e.g., Broughams Sugarloaf).

The facies present on the upper north-facing slopes and ridgeline of Vinegar Hill is dominated by *Eucalyptus globulus* growing on granite derived soils (including coarse to fine gravels, sheet-rock and granite derived loams, clays, and talus) with *E. nitida* as a sub-dominant tree on the lower slopes where the soils transition to acidic sands. *Eucalyptus viminalis* is absent possibly due to the very dry nature of the site and lack of watercourses or damp gullies on deep loams and clays.

Eucalyptus globulus gives way to *E. nitida* when the deep acidic sands of the lower slopes are reached, with several other species also disappearing or becoming very sparse at that point (e.g., *Kunzea ambigua*). The transition from DVF to DNF is quite abrupt, with a distinctive change in soil profile observed.

Eucalyptus globulus attains a height of up to 20 m. Fire frequency has been high evident by the abundant fire scars on larger trees and there is a sapling cohort present, presumably stimulated by the 2018 planned fuel reduction burn.

The following images depict the various forms of this forest type present in the Survey Area.

Eucalyptus globulus forest on both sides of a road on the ridgeline of Vinegar Hill.

Fire has affected some canopy trees and sapling regrowth is present.

Eucalyptus globulus forest on both sides of a road on the ridgeline of Vinegar Hill.

Fire has affected some canopy trees and sapling regrowth is present, with most impact to the vegetation being on the northern side of the road (left side of image).

Eucalyptus globulus forest adjacent to a road on the ridgeline of Vinegar Hill.

Fire has affected some canopy trees and sapling regrowth is present.

Eucalyptus globulus forest adjacent on the ridgeline of Vinegar Hill.

Fire has affected some canopy trees and sapling regrowth is present.

Eucalyptus globulus forest adjacent on the ridgeline of Vinegar Hill.

Note the *Callitris rhomboidea* (arrows) that largely escaped impact from the fire

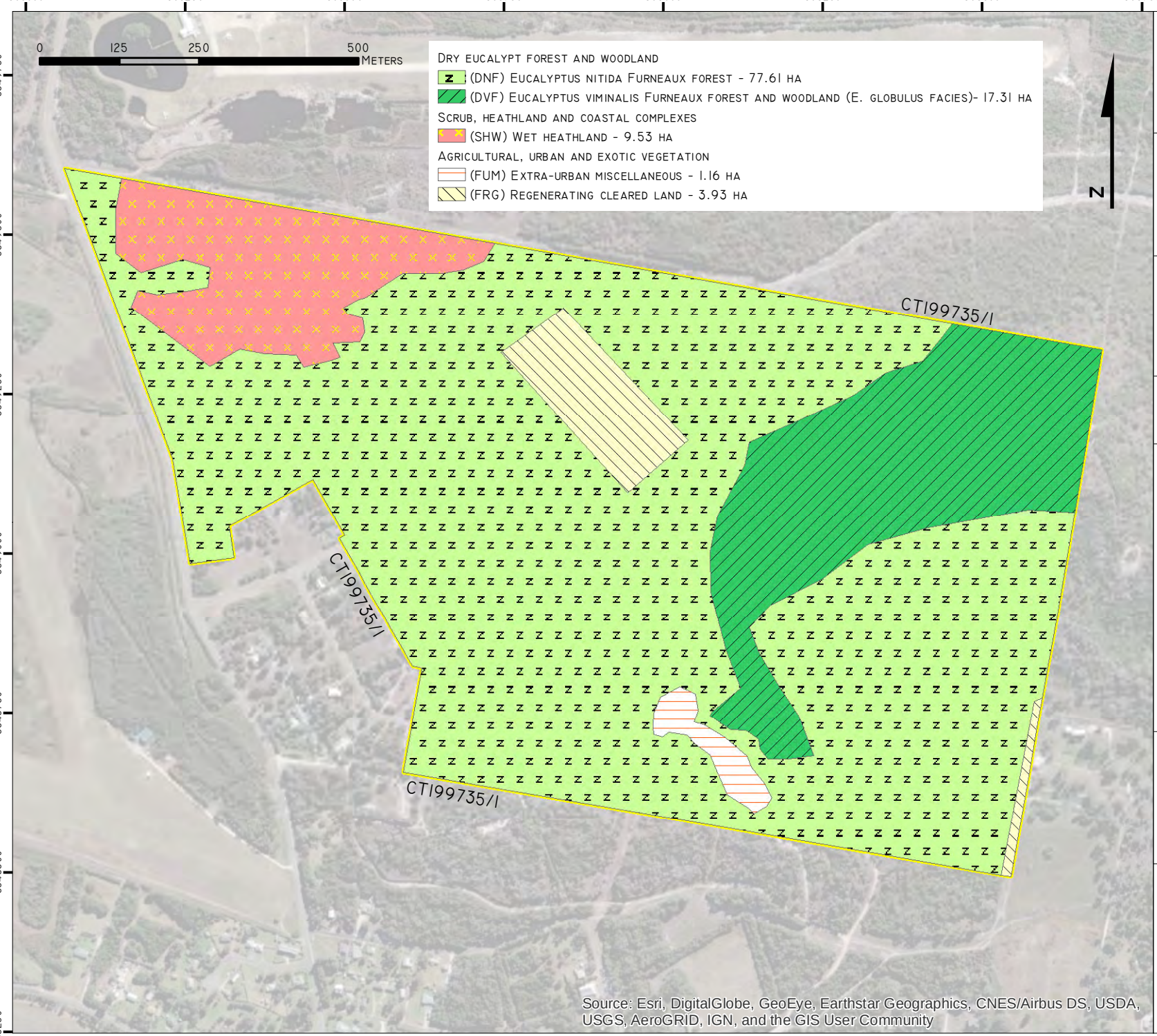
Fire affected *E. globulus* forest on north-facing slope of Vinegar Hill

Open area of regrowth *E. globulus* with sapling *Allocasuarina verticillata*.

Note the large dead *Callitris rhomboidea* (arrow)

Severely fire-damaged *E. globulus* forest.

Note the large dead *Callitris rhomboidea* (arrows)



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SCENIC AND ECOLOGICAL ASSESSMENTS, VINEGAR HILL

VINEGAR HILL
CT199735/1

FIGURE B1: TASVEG COMMUNITIES WITHIN CT199735/1

TASMAP:	LGA:
FISHER 5954	FLINDERS

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DATUM: GDA94
GRID: MGA ZONE 55
SCALE: @A4 - NA

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DATE: 10 MAY 2022

Wet heathland (SHW)

This community is generally of low height (generally <1m excluding the eucalypt copses and wet areas dominated by the shrub species) and is growing on sands with occasional peat (of shallow to deep formation).

Eucalyptus nitida is present as scattered regrowth fire-affected trees. Fires have clearly been frequent as evident by the abundant and various age fire scars on the eucalypts. Like any wet heathland environment, its species diversity and structure changes with fire frequency and soil conditions, with peaty areas of poor drainage being dominated by sedges, rushes, and water loving shrub species. Fire can also eradicate species that require longer periods between fires to grow and set seed – the notable absence of *Hakea* and species suggests a high fire frequency, perhaps combined with the occurrence of PC in the heathland.

Common shrub species include *Melaleuca squarrosa, M. gibbosa, Leptospermum glaucescens, L. scoparium, Acacia verticillata, A. mucronata, A. sophorae, Banksia marginata* and . The heaths present include *Epacris obtusifolia, E. lanuginosa, E. impressa, Sprengelia incarnata, Acrotriche serrulata* (on drier sandier areas)*, Boronia pilosa* and *Hibbertia procumbens*. Herbs are also present.

Species of Restionaceae and Cyperaceae form a large proportion of the plant coverage in the ground layer, and include *Lepidosperma filiforme, L. concavum, Baloskion australe, Gahnia grandis, Leptocarpus tenax,* and *Empodisma minus*. The ferns, *Lindsaea linearis* and *Gleichenia microcarpa*, and the clubmoss, *Selaginella uliginosa*, are present.

The following images depict the various forms of this vegetation type present in the Survey Area.

Low wet heathland on a sandy and shallow peat soil.

Eucalyptus nitida regrowth is emergent and form localised copses in a few locations

Low wet heathland on a sandy and shallow peat soil.

PC (root rot fungus) is present throughout the heathland, with *X. australis* especially affected (see blue arrows)

Low wet heathland on a sandy and shallow peat soil.

PC (root rot fungus) is present throughout the heathland, with heaths and legumes affected – arrows indicated yellowing or dead plants

Extra-urban miscellaneous (FUM)

This category includes the existing granite gravel quarry. The following images depict the category.

Existing granite quarry north of Lady Barron, accessed via Barr Street

Regenerating cleared land (FRG)

This category includes the old vineyard and associated dam that was installed several years ago. Wattles now dominate the area, being *A. sophorae* and *A. mucronata* with occasional *Allocasuarina verticillata*. Eucalypts are absent.

The following images depict the various forms of this forest type present in the Survey Area.

Acacia sophorae in the previously cleared area. Many plants are dead with little regrowth.

Acacia sophorae in the previously cleared area with sub-dominant *Leptospermum glaucescens* and *L. scoparium*.

Disused dam at the top of the cleared area.

B.2.2 Threatened Flora Species

Previous Observations

There are several threatened flora species recorded near (within 500m) the Survey Area based on data contained within the Biodiversity Values Database (**Attachment 1**) and Natural Values Atlas (**Attachment 2**). **Table 2** provides a list of the species.

Table 2. Threatened flora species previously observed within 5km of the Survey Area

Species name	**Common name**	**TSPA / EPBC**
Acacia uncifolia	coast wirilda	r / -
Asperula minima	mossy woodruff	r / -
Caladenia australis	southern spider orchid	e / -
Caladenia pusilla	tiny fingers	r / -
Gyrostemon thesioides	Broom wheelfruit	r / -
Hydrocotyle comocarpa	fringefruit pennywort	r / -
Leucopogon affinis	lanceleaf beardheath	r / -
Parietaria debilis	Shade pellitory	r / -

Pterostylis sanguinea	banded greenhood	r / -
Pterostylis tunstallii	Tunstalls greenhood	e / -
Scaevola albida	pale fanflower	v / -
Spyridium parvifolium var. *parvifolium*	coast dustymiller	r / -

* Derived from records in the BVD Report (Attachment 1) and Natural Values Atlas (Attachment 2).

Threatened flora species observed

One species was observed during the survey of the Survey Area:

Gyrostemon thesioides – broom wheelfruit

Threatened Species Protection Act 1995 – Rare

Environment Protection and Biodiversity Conservation Act 1999 – Not listed

In Tasmania the species has been recorded from the central east and also the Furneaux Group of islands. Habitat includes low forest or scrub dominated by *Allocasuarina verticillata* (drooping sheoak), and also woodland dominated by 'half-barked' *Eucalyptus amygdalina* (black peppermint), the underlying geology being mostly Jurassic dolerite on mainland Tasmania and Devonian granite elsewhere. Associated species may include *Kunzea ambigua* (white kunzea) and, for occurrences on dolerite, *Scaevola aemula* (fairy fanflower). **Attachment 5** contains the DNRE notesheet for these species.

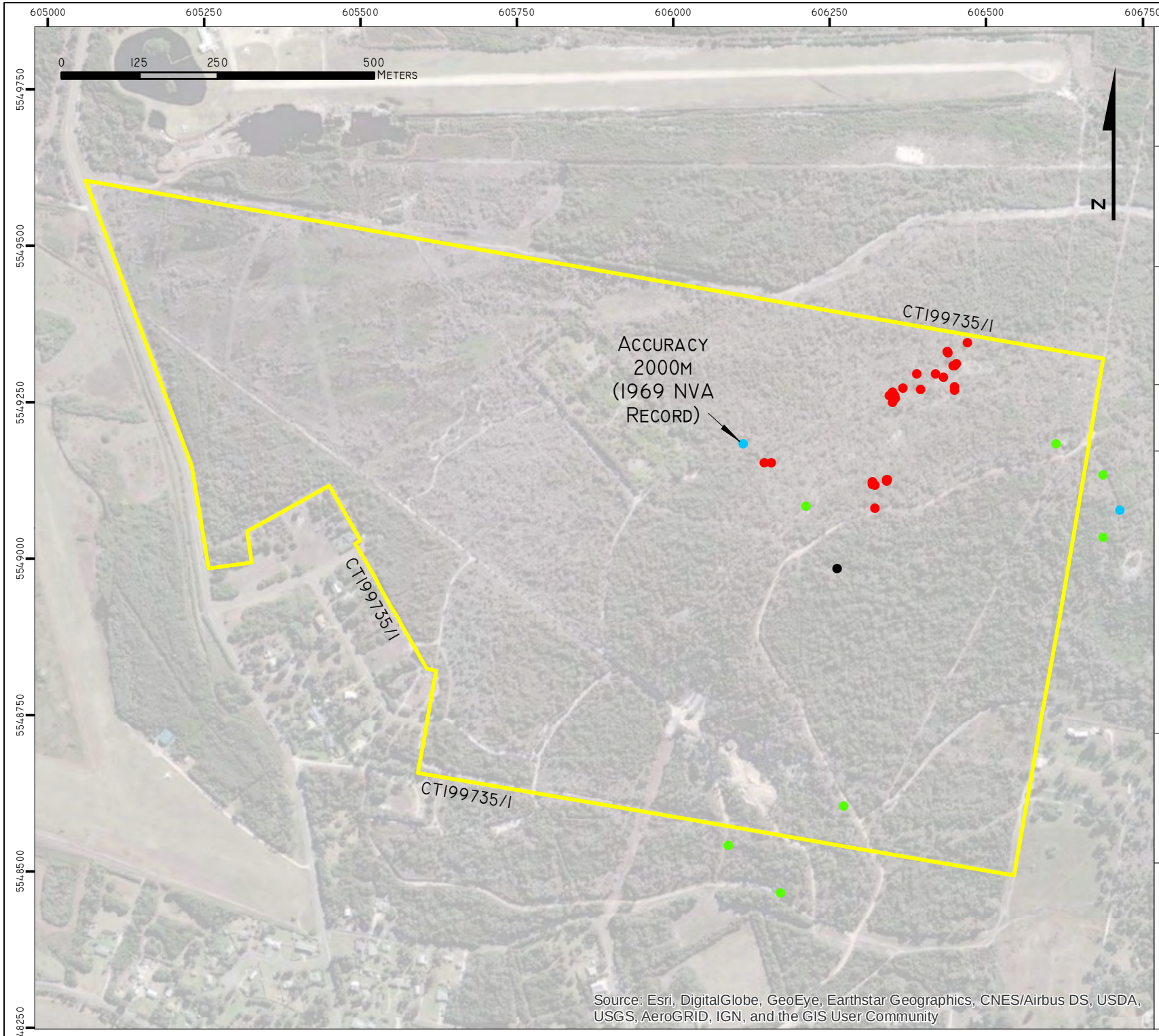
On the Land, the species was observed in DVF community where it was locally abundant on granite sheet rock, and granite derived gravels and sands with a moderate clay content. The species occurred with *Kunzea ambigua* and *Allocasuarina verticillata* regrowth in fire affected areas – the fire may have stimulated the germination of seed and subsequent growth of the species. Some plants were dead, possibly from drought or their lifespan had been reached, while others were young and vigorous covered in developing seed pods. It is likely that as the forest becomes closed (in the absence of fire) the species reduces in number and may become restricted to areas around rock plates where light exposure remains high and some soil disturbance continues for seed germination to occur (e.g., rock fall, tree fall, soil expansion and contraction from wetting and drying, animals digging in and around cryptogamic mats on the granite bedrock).

It has been recorded on the Land previously, as per the NVA records shown in **Figure B-2**.

The species did not extend its range to the deep acidic sands of the lower slopes of Vinegar Hill where the DVF community was replaced with *Eucalyptus nitida* Furneaux forest (DNF).

Broom wheelfruit growing on skeletal granite bedrock with *Kunzea ambigua*

broom wheelfruit (fresh seed pods present) growing on granite derived gravelly soils with a well-developed leaf litter layer



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SCENIC AND ECOLOGICAL ASSESSMENTS, VINEGAR HILL

VINEGAR HILL
CT199735/1

FIGURE B2: THREATENED FLORA WITHIN CT199735/1 (NVA AND OBSERVED)

TASMAP: FISHER 5954	LGA: FLINDERS

- ASPERULA MINIMA (R/-)
- GYROSTEMON THESIOIDES (R/-)
- PTEROSTYLIS SANGUINEA (R/-)
- PTEROSTYLIS TUNSTALLII (E/-)

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No species listed on the *Environment Protection and Biodiversity Conservation Act 1999* were observed during the surveys of the Survey Area.

Threatened flora species potentially present (database and habitat analysis)

Species in Table 3.1 (Attachment 3) include those that are listed in the BVD (**Attachment 1**) and NVA (**Attachment 2**) that may have or are likely to have habitat present in the area based on predictive modelling.

Two orchid species are known from the area – *Pterostylis sanguinea* and *P. tunstallii* (see **Attachment 5** for notesheets for these species).

Most ***Pterostylis tunstallii*** records are on the ridgeline of Vinegar Hill, which may be a biased sampling regime because people may have simply, walked the road that traverses the area. Nevertheless, the species .

The 1969 recorded location for *P. tunstallii* has an accuracy of 2,000m and the location does not support the habitat otherwise occupied by the other locations which are much more accurate. The record could be relatively accurate compared to its stated accuracy given it is not far from habitat (DVF community) to which the orchid species has been recorded. Like many old records, their reliability is unknown and should not be relied upon, without some verification, as part of an assessment process.

Pterostylis sanguinea recorded locations are on the south-facing slopes of Vinegar Hill (most off the Land) and on the ridgeline in associated with or nearby to *Pterostylis tunstallii*. *Pterostylis sanguinea* is an orchid of well-drained gravelly to sandy soils often in association with deep organic litter – soil and habitat conditions within the DVF community.

It is unlikely that either species extends their range to the acidic deep sands of the lower slopes of Vinegar Hill (including those of the south-east facing gully) which are leached and lack a deep litter layer.

*B.2.3 Root-rot fungus (*Phytophthora cinnamomi)

Root-rot fungus (*Phytophthora cinnamomi,* PC) is a soil borne water-mould that causes death in a wide range of native plant species often leading to floristic and structural changes in susceptible plant communities.

PC evolved in tropical areas, and it requires warm moist soils for at least some time of the year to produce sporangia and release zoospores (Rudman 2005). Only those areas of the State that are below an altitude of about 700m above sea level have soils sufficiently warm for this to occur (Podger *et al* 1990). Vegetation types below 700m elevation may not be wholly or partly susceptible if closed canopies keep soil temperatures cool during the summer months, such as tall wet eucalypt forests over rainforest species, or rainforest communities.

PC can be spread through the movement of infected soil or plant material by people or animals and can even be transported by water percolating through soil or via surface water, such as in creeks and other drainage lines. Transport of PC to new areas is usually through soil/dirt adhering to vehicles and machinery. Transport into non-roaded areas of high human usage is mainly via bushwalking items such as tents or footwear but can also occur by bird activity.

The water mould is not always evident in the landscape as it attacks root systems of susceptible species, usually causing death in new growth or the yellowing of leaves followed by loss of vigour and, in most cases, death. The water mould can inhabit the root systems of resistant species without any visible signs of infection within the host plant.

The Survey Area is not within a PC Management Area[2].

Samples to directly survey for PC were not collected as they were not needed to identify the presence of this water mould. Instead, areas within and around the Survey Area were inspected in detail for signs of infection by PC which included areas of water accumulation such as spoon drains, culverts, and other drainage features.

Evidence of PC was observed across the Land, with symptoms (and death) most commonly observed in *X. australis* plants and heaths such as species of *Epacris* and *Leucopogon, Sprengelia incarnata* and *Banksia marginata*. It was evident in some areas that PC has been present for some time, with the understorey being dominated by species that are host or non-susceptible to the water mould (e.g., most sedges, rushes, tea-tree, paperbarks etc).

Most plants with symptoms were observed adjacent to or near roads, tracks, drains, and other areas of activity such as the telecommunications tower, water pipeline. The long linear infrastructure associated with powerlines, and the water pipeline (see also Tracks and infrastructure) are ideal conduits for the movement of water and animals which would carry the zoospores of the water mould.

Images below show the typical impact of the water mould on *X. australis* plants.

Xanthorrhoea australis plants infected with PC growing adjacent to a track.

Note the near death of some plants and early symptoms in adjacent plants.

[2] See Schahinger, R., Rudman T., and Wardlaw, T. J. (2003). Conservation of Tasmanian Plant Species & Communities threatened by *Phytophthora cinnamomi*. Strategic Regional Plan for Tasmania. Technical Report 03/03, Nature Conservation Branch, Department of Primary Industries, Water and Environment, Hobart

Xanthorrhoea australis plants infected with PC growing adjacent to a track

Xanthorrhoea australis plant infected with PC growing in forest away from a track – indicates the movement of PC by means other than track use (e.g., water or animal movement).

B.2.4 Threatened Fauna Habitat Assessment – Mammalia

In conjunction with the BVD (**Attachment 1**) and NVA (**Attachment 2**) reports, the following species were considered in detail for the assessment.

New Holland Mouse (Pseudomys novaehollandiae)

The New Holland Mouse (*Pseudomys novaehollandiae*) is a small, nocturnal native rodent found in a small number of disjunct populations on the north and north-east coast of Tasmania including Flinders Island. The species also occurs in Queensland, New South Wales and Victoria. The New Holland Mouse is similar in appearance to the introduced and relatively common House Mouse (*Mus musculus*), but can be distinguished by its relatively large eyes and lack of a 'mousey' odour. In Tasmania, it has been found in open heathlands,

heathy woodlands, and vegetated sand dunes. The species appears to have undergone a major decline since European settlement. Historical and ongoing threats to the species include loss of habitat and predation from introduced predators. Causes of habitat loss include inappropriate fire regimes (either burning too little or too often), root rot fungus (*Phytophthora cinnamomi*), and coastal development.

Habitat for the New Holland Mouse includes the following elements: coastal open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes, particularly where the following indicator species also occur: Common Aotus (*Aotus ericoides*), Tassel Rope Rush (*Hypolaena fastigiata*), Sand Sword sedge (*Lepidosperma concavum*) and grasstree (*Xanthorrhoea* species).

The Range and Habitat descriptors for the species (FPA 2020) are -

Core Range	The core range of the New Holland mouse is a 3 km (radius) buffer centred on the known sites.
Potential Range	The potential range of the New Holland mouse includes the core range and specialist-defined extensions of the core range that may support the species but are as yet largely unsurveyed (extends to within c. 15 km inland) from between Boltons Beach (east coast) around to East Devonport (north coast), including the Furneaux islands.
Known Range	N/A
Potential habitat	Potential habitat for the New Holland mouse is heathlands (mainly dry heathlands but also where dry heathlands form a mosaic with other heathland, moorland and scrub complexes), heathy woodlands (i.e. eucalypt canopy cover 5-20%), *Allocasuarina*-dominated forests on sandy substrates (not dolerite or basalt), and vegetated sand dunes. Key indicator plant species include (but are not restricted to) *Aotus ericoides, Lepidosperma concavum, Hypolaena fastigiata* and *Xanthorrhoea* spp.
Significant Habitat	Significant habitat for the New Holland mouse is all potential habitat within the core range of the species.

Survey Results

There is no core habitat present because there are no known sites within 3km. Some suitable or potential habitat is present in the form of *Allocasuarina*-dominated forests on sandy substrates (with *Allocasuarina* as the midstorey to eucalypt forest, being DVF) and wet heathland. The heathland is dominated by sedge and rush species with prolific evidence of current and past infection by PC, which has significantly reduced the diversity of the heath and therefore the food items available (and their density) to the New Holland Mouse.

Assessment of habitat and likely presence in Survey Area

There are no known records of New Holland Mouse within 10kms of the Land, and some suitable habitat is present, but its quality is low due to the widespread (past and present) abundance of PC.

Conclusion

Core habitat is absent (no known sites within 3km) so significant habitat is therefore absent.

B.2.5 Threatened Fauna Habitat Assessment – Aves

In conjunction with the BVD (**Attachment 1**) and NVA (**Attachment 2**) reports, the following species were considered in detail for the assessment.

Wedge-tailed eagle (Aquila audax fleayi)

This eagle subspecies is found only in Tasmania and occurs throughout the State including large offshore islands. It hunts over a wide range of habitats, but nests only in old-growth trees in native forests. Bird densities are highest in areas with mosaics of forest, farmland, grassland, wetlands, and rivers. Eagles feed mainly on rabbits, hares, wallabies, possums, birds such as native hens and ravens and carrion.

Nests are usually in tall eucalypt trees in large tracts (more than 10 ha) of old-growth eucalypt or mixed forest. Nest trees are amongst the largest in a locality. They are in sheltered positions on leeward slopes, between the lower and mid slopes and with the top of the tree usually lower than the ground level of the top of the ridge. Nests are not constructed close to sources of disturbance such as quarries or houses. Nests are traditional, with some having been used for at least 50 years. More than one nest may occur within a territory but only one is used in any one year. Breeding failure often promotes a change of nest in the next year. The breeding season occurs between August and January inclusive with eagles being particularly sensitive to disturbance early in this period.

The Recovery Plan (2006-2010) states for this species:

> 'Habitat critical to the survival of the Tasmanian Wedge-tailed Eagle is defined by nesting habitat (see Mooney & Holdsworth 1991, Brown & Mooney 1997), as forests of predominantly old growth trees greater than 10ha in area and occurring on sites sheltered from prevailing strong winds. Trees selected for nesting are greater than 27 m in height, with few exceptions. Most nest sites have an eastern, south-eastern or southern aspect and the height of the nest is usually positioned below that of the ridge to the windward side.'

The Range and Habitat descriptors for the species (FPA 2020) are -

Core Range	N/A
Potential Range	The whole of Tasmania including islands.
Known Range	N/A
Potential habitat	Potential habitat for the wedge-tailed eagle comprises potential nesting habitat and potential foraging habitat. Potential foraging habitat is a wide variety of forest (including areas subject to native forest silviculture) and non-forest habitats. Potential nesting habitat is tall eucalypt trees in large tracts (usually more than 10 ha) of eucalypt or mixed forest. Nest trees are usually amongst the largest in a locality. They are generally in sheltered positions on leeward slopes, between the lower and mid sections of a slope and with the top of the tree usually lower than the ground level of the top of the ridge, although in some parts of the State topographic shelter is not always a significant factor (e.g. parts of the northwest and Central Highlands). Nests are usually not constructed close to sources of disturbance and nests close to disturbance are less productive. More than one nest may occur within a territory but only one is used for breeding in any one year. Breeding failure often promotes a change of nest in the next year. [see FPA's Fauna Technical Note 1 and FPA's Fauna Technical Note 6 for more information].
Significant Habitat	Is all native forest and native non-forest vegetation within 500m or 1 km line-of-sight of known nest sites (where the nest tree is still present).

Survey Results

An eagle nest search was conducted of modelled habitat (see image below which shows a 1,000m radius circle and modelled habitat – yellow and orange) around Vinegar Hill. No nests were found.

Assessment of habitat and likely presence in Survey Area

There are very few raptor nests in the region attributed to wedge-tailed eagle, none of which occur within 1,000 m line-of-sight or 500 m of the Land. The Land is within the range of breeding for both the Tasmanian wedge-tailed eagle (*Aquila audax fleayi*) and white-bellied sea eagle (*Haliaeetus leucogaster*). The proximity of the coastal zone (including the Tamar River) however makes nesting by white-bellied eagle more likely.

Conclusion

No wedge-tailed eagle nests occur on or near the Land. Significant habitat is therefore absent.

Grey goshawk (*Accipiter novaehollandiae*)

This raptor species inhabits mature blackwood swamp forest, wet forest, and mixed forest, primarily at lower altitudes (Forest Practices Authority 2008). In general, forest with a closed canopy and low stem density is favoured by the birds for nesting. Consequently, breeding densities are greatest in blackwood swamps and riparian blackwood forest in the north-west. Other areas where breeding occurs are in the north-east, the south-east (including wet parts of Bruny Island), the Mount Field area, the northern side of the Western Tiers, south of Macquarie Harbour and in coastal forest between Macquarie Harbour and the Pieman River.

The Range and Habitat descriptors for the species (FPA 2020) are -

Core Range	A specialist defined area (N.Mooney, unpublished data) based on the availability of potential and significant habitat and known breeding records.
Potential Range	The whole of mainland Tasmania.
Known Range	N/A
Potential habitat	Native forest with mature elements below 600 m altitude, particularly along watercourses. FPA's Fauna Technical Note 12 can be used as a guide in the identification of grey goshawk habitat.
Significant Habitat	May be summarised as areas of wet forest, rainforest and damp forest patches in dry forest, with a relatively closed mature canopy, low stem density, and open understorey in close proximity to foraging habitat and a freshwater body (i.e. stream, river, lake, swamp, etc.). FPA's Fauna Technical Note 12 can be used as a guide in the identification of grey goshawk habitat.

Survey Results

There is no potential nesting or foraging habitat for grey goshawk on the Land. The Land has no watercourses that support dense blackwood and tea-tree, nor does it have any areas of closed canopy in association with ponds, dams, or any other artificial waterbody.

Assessment of habitat and likely presence in Survey Area

There is no potential nesting or foraging habitat for grey goshawk on the Land.

Conclusion

There is no potential nesting or foraging habitat or significant habitat for grey goshawk on the Land.

Swift parrot (*Lathamus discolor*)

The swift parrot is a small, largely nectar-feeding fast flying parrot which spends its winter in south-eastern mainland Australian 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. *Eucalyptus ovata* flowers before the main food tree *Eucalyptus globulus* and consequently *E. ovata* is considered an important earlier feeding resource for breeding swift parrots.

Swift Parrots nest in tree hollows in mature eucalypts within foraging range of a flower source. Birds can nest at low densities or sometimes in groups of >50 nests in <100 ha depending on the availability of flowers and tree hollows.

The Range and Habitat descriptors for the species (FPA 2020) are -

Core Range	The area within the SE potential breeding range that is within 10km of the coast or is designated as a SPIBA (as defined in FPA 2010).
Potential Range	**Potential breeding range** of the swift parrot comprises the **NW potential breeding range** and the **SE potential breeding range**. The **NW potential breeding range** includes the NW breeding areas (known nesting locations e.g. Gog Range, Badger Range, Kelsey Tier).
Known Range	N/A
Potential habitat	Potential breeding habitat for the swift parrot comprises potential foraging habitat and potential nesting habitat, and is based on definitions of foraging and nesting trees (see Table 1 in Technical Note 3). Potential foraging habitat comprises *E. globulus* or *E. ovata* trees that are old enough to flower (for management purposes, this applies to native forest only). The occurrence of foraging habitat can be remotely assessed, although only to a limited extent, by using mapping layers such as GlobMap (DPIPWE 2010). Due to the scale and inadequacies in current foraging-habitat mapping, potential foraging habitat density within operational areas may need to be largely identified by ground-based surveys as per Table 2 in the swift parrot habitat assessment Technical Note). For management purposes potential nesting habitat is considered to comprise eucalypt forests that contain hollow-bearing trees. The FPA mature habitat availability map (see FPA's Fauna Technical Note 2) predicts the availability of hollow-bearing trees using the relevant definitions of habitat provided in Table 3 of the swift parrot habitat assessment Technical Note. The mature habitat availability map is designed to be used to make landscape-scale assessments and may not be reliable for stand-level assessments required during the development of a forest practices plan. At the stand-level the availability and distribution of hollow-bearing trees across a coupe or operation area is best determined from a ground-based assessment (see Table 3 in the Fauna Technical Note 3 Swift parrot breeding habitat).
Significant Habitat	All potential breeding habitat within the SE potential breeding range and the NW breeding areas.

Survey Results

The Land supports a significant area (elevated slopes and ridgeline on granite derived soils) of the primary swift parrot foraging resource species *Eucalyptus globulus*. There are trees with some minor hollow development in the Land (the DVF community) but the species is not known to breed on Flinders Island.

Assessment of habitat and likely presence in Survey Area

The *E. globulus* forest is likely to be used by swift parrots moving between mainland Tasmania (for breeding) and Australia (over-wintering).

Conclusion

The *E. globulus* forest (when trees are in flower) is likely to be used by swift parrots as they migrate between mainland Tasmania (for breeding) and Australia (over-wintering). Hollows suitable for breeding are very few in number and this location is not an area known to be used for breeding (i.e., significant habitat is absent).

White-bellied sea eagle (Haliaeetus leucogaster)

The white-bellied sea eagle is widely distributed from India to Australia. Key sites in Tasmania include the Tamar River estuary, Tasman Peninsula and the Bass Strait Islands. They nest and forage mainly near the coast but will also live near large rivers and lakes inland, often moving on a seasonal basis.

The nest of the white-bellied sea eagle is similar in construction to the wedge-tailed eagle and when resources are limited, competition for nest sites between the two species can occur. As with the wedge-tailed eagle, the white-bellied sea eagle nests are traditional. More than one nest may occur within a territory, but only one is used in any one year. The breeding season occurs between August and January inclusive with eagles being particularly sensitive to disturbance early in this period.

The Range and Habitat descriptors for the species (FPA 2020) are -

Core Range	N/A
Potential Range	The whole of Tasmania including islands.
Known Range	N/A
Potential habitat	Potential habitat for the white-bellied sea-eagle species comprises potential nesting habitat and potential foraging habitat. Potential foraging habitat is any large waterbody (including sea coasts, estuaries, wide rivers, lakes, impoundments and even large farm dams) supporting prey items (fish). Potential nesting habitat is tall eucalypt trees in large tracts (usually more than 10 ha) of eucalypt or mixed forest within 5 km of the coast (nearest coast including shores, bays, inlets and peninsulas), large rivers (Class 1), lakes or complexes of large farm dams. Scattered trees along river banks or pasture land may also be used. The species nests and forages mainly near the coast but will also live near rivers, lakes and farm dams. Nest trees are amongst the largest in a locality. Nests are not usually constructed close to sources of disturbance and nests close to disturbance are less productive. More than one nest may occur within a territory but only one is used for breeding in any one year. Breeding failure often promotes a change of nest in the next year. [see Part I of the BVD, and FPA's Fauna Technical Note 1 for more information]
Significant Habitat	All native forest and native non-forest vegetation within 500 m or 1 km line-of-sight of known nest sites (where nest tree still present).

Survey Results

An eagle nest search was conducted of modelled habitat (see image below which shows a 1,000m radius circle and modelled habitat – yellow and orange) around Vinegar Hill. No nests were found. The nearest nest of white-bellied sea eagle is on the north-eastern side of Great Dog Island.

Assessment of habitat and likely presence in Survey Area

There are several raptor nests in the region attributed to white-bellied sea eagle, none of which occur within 1,000 m line-of-sight or 500 m of the Land. The Land is within the range of breeding for both the Tasmanian wedge-tailed eagle (*Aquila audax fleayi*) and white-bellied sea eagle (*Haliaeetus leucogaster*). The proximity of the coastal zone (including the Tamar River) however makes nesting by white-bellied eagle more likely.

Conclusion

No white-bellied sea eagle nests occur on or near the Land. Significant habitat is therefore absent.

B.2.6 Threatened Fauna Habitat Assessment – Amphibians

In conjunction with the BVD report (**Attachment 1**) the following species were considered in detail for the assessment, mainly because there is either evidence for them occurring in the area, or that suitable/potential habitat (even marginal/small areas) is present in the Survey Area.

Green and Gold Frog or Growling grass frog (*Litoria raniformis*)

Green and golden frogs are active during both day and night throughout the warmer months and can sometimes be seen basking out of the water amongst vegetation or on rocks and logs, the only Tasmanian frog to exhibit this behaviour. They have keen eyesight in daylight and as they are approached, they will jump

into the water with a distinctive 'plop'. This is often the only way to know that they are there. At night, however, they can be approached with relative ease.

The breeding season in Tasmania spans September to January when males can be heard calling. The mating call of this species is a very distinctive and complex series of grunts and growls. Calling activity can be erratic, often being restricted to warm calm days and evenings. Choruses (many males calling) can reach peaks mid-morning and early evening. In breeding condition, the male frog exhibits a mottled black throat and develops black nuptial pads (hard calluses) on the back of each thumb with which he grasps the female when mating.

Green and golden frogs' occurrence is dependent upon permanent freshwater lagoons for breeding. Ideal breeding habitat is the shallow part of lagoons (to approx. 1.5m) where there is generally a complex vegetation structure. Breeding sites often contain vegetation communities dominated by emergent plants such as water ribbons (*Triglochin*) and spike-rush (*Eleocharis*), and submerged plants such as (*Myriophyllum*), marsh-flower (*Villarsia*) and pondweed (*Potamogeton*). However, other plant communities can form equally suitable habitat.

The range of the green and golden frog is restricted to lowland areas, mainly in coastal zones except for the Deloraine-Longford-Launceston region, and historically it was common in the Midlands region. This frog was once common on King Island and Flinders Island but is now rare on these islands.

The DEWHA Species Profile and Threats Database for this species states:

> 'Habitat
>
> This species is found mostly amongst emergent vegetation (Robinson 1993), including Typha sp. (bullrush), Phragmites sp. (reeds) and Eleocharis sp. (sedges), in or at the edges of still or slow-flowing water bodies such as lagoons, swamps, lakes, ponds and farm dams (NSW DEC 2005a). The Growling Grass Frog can be found floating in warmer waters in temperatures between 18–25°C.
>
> Additionally, this species occurs in:
>
> - clays or well-watered sandy soils;
> - open grassland, open forest, and ephemeral and permanent non-saline marshes and swamps;
> - montane eucalypt forest, dry sclerophyll forest in coastal Victoria;
> - steep-banked water edges (like ditches and drains) and gently graded edges containing fringing plants; and
> - formerly, areas of high altitudes (Ehmann & White 1997; NSW DEC 2005a)
>
> Submerged vegetation is important habitat for breeding success as it provides egg-laying sites, calling stages for males, and food and shelter for tadpoles. Grassland provides habitat for foraging, dispersal and shelter, and may also provide overwintering sites for Growling Grass Frogs (Clemann & Gillespie 2004; Hamer & Organ 2006). Hamer and Organ (2006) found that large and relatively permanent waterbodies, with a high proportion of emergent vegetation cover, were more likely to be occupied by the Growling Grass Frog.
>
> The Growling Grass Frog can also inhabit agricultural and higher rainfall pastoral lands so long as permanent and non-permanent water sites are available with dense emergent or fringing vegetation (Ehmann & White 1997; S. Wassens pers. comm. cited in NSW DEC 2005a).

The wetland systems that the Growling Grass Frog occupies in NSW consists of a mosaic of permanent and ephemeral waterbodies which flood in the spring of most years. Within these habitats, the greater the water depth and aquatic vegetation cover, the higher the probability that the Growling Grass Frog will be present. In the Lowbidgee Irrigation Area, NSW, Growling Grass Frogs occur in a series of small water bodies. The species is thought to retreat to these small water bodies during the dry season (between January and August). When the area is flooded during the wet season, these small waters bodies flood to form a large wetland, which is used by the species for breeding, tadpole habitat and tadpole morphosis (NSW DEC 2005a; Wassens 2005; Wassens et al. 2008).

In the Coleambally Irrigation Area, NSW, the Growling Grass Frog occurs in irrigation channels and crops (NSW DEC 2005a). The species also occurs in lignum shrublands, black box and river red gum woodlands (S. Wassens undated, pers. comm. cited in NSW DEC 2005a) and alongside rivers in the southern parts of NSW (NSW DEC 2005a).

Basking Habitat

Growling Grass Frogs are active during both day and night throughout the warmer months and can be seen basking out of water amongst vegetation or on rocks and logs. In Tasmania, it is the only frog to exhibit this behaviour (Threatened Species Unit 2001). Growling Grass Frogs are known to bask in filtered sunlight, that is, under partly cloudy conditions or in deep vegetation (Ehmann & White 1997). The Growling Grass Frog is frequently found basking on grassy banks near water (Courtice & Grigg 1975). Its behaviour during winter is not well known, although it is speculated that it hibernates in warm, moist areas such as the mud at the bottom of ponds, under logs, rocks and debris or beneath thick vegetation (Ayers *et al.* 1996; G. Pyke undated, pers. comm. cited in NSW DEC 2005a, S. Wassens undated, pers. comm. cited in NSW DEC 2005a). Radio-tracking of some individuals has suggested that the species winter under dense vegetation (S. Wassens undated, pers. comm. cited in NSW DEC 2005a).

Breeding Habitat

The Growling Grass Frog is dependent upon permanent freshwater lagoons for breeding. The ideal breeding habitat is the shallow part of lagoons (up to approximately 1.5 m) where there is generally a complex vegetation structure. Breeding sites in Tasmania often contain vegetation communities dominated by emergent plants such as water ribbons (*Triglochin*) and spikerush (*Eleocharis*) and submerged plants such as water milfoil (*Myriophyllum*), marsh-flower (Villarsia), and pondweed (*Potamogeton*). However, other plant communities can form equally suitable habitat (Threatened Species Unit 2001).

The variety of habitats this species utilises for refuge includes soil cracks, fallen timber, debris and dense vegetation on low, frequently inundated floodplains (Cogger 2000; S. Wassens undated, pers. comm. cited in NSW DEC 2005a).

Movement Patterns

The Growling Grass Frog is a highly mobile species, capable of moving up to one kilometre in 24 hours (K. Jervis undated, pers. comm. cited in Robertson et al. 2002; S. Wassens undated, per. comm. cited in NSW DEC 2005a). Recent research suggests that, in areas other than the semi-arid/riverine part of the species' range, there are interactions between neighbouring populations (Clemann and Gillespie 2004).

When the Growling Grass Frog is restricted to small, permanent waterbodies, dispersal is low indicating high levels of site fidelity with individuals tending to move shorter distances. When occupying ephemeral waterbodies, the Growling Grass Frog has significantly higher levels of dispersal, indicating lower site fidelity, with individuals moving large distances (Wassens 2005).'

The Range and Habitat descriptors for the species (FPA 2020) are -

Core Range	An arbitrary 2 km (radius) buffer centred on the known sites (with an accuracy of 2km or less). This range is also referred to as "important areas", which can include point locations for low precision records and polygons for known habitat patches such as named lagoons.
Potential Range	Is based on models of the current and historic distribution of the species.
Known Range	N/A
Potential habitat	Permanent and temporary waterbodies, usually with vegetation in or around them. Potential habitat includes features such as natural lagoons, permanently or seasonally inundated swamps and wetlands, farm dams, irrigation channels, artificial water-holding sites such as old quarries, slow-flowing stretches of streams and rivers and drainage features.
Significant Habitat	Is still or very slow flowing water bodies, with at least some vegetation, and a lack of obvious pollutants (oils, chemicals, etc). See FPA Fauna Technical Note 18 for further guidance on assessing significant habitat for the green and gold frog.

Survey Results

There is no wetland, swampy or dam habitat for this species in or adjacent to the Land.

Assessment of habitat and likely presence in Survey Area

There is no wetland, swampy or dam habitat for this species in or adjacent to the Land so the species is likely to not be present, even for over-wintering.

Conclusion

Significant habitat is absent from the Land.

B.2.7 Threatened Fauna Habitat Assessment – Reptiles

Tussock skink (*Pseudemoia pagenstecheri*)

In Tasmania, the Tussock Skink, a ground-dwelling lizard, occurs in grassland and grassy woodland habitats at a range of elevations. Records of the species in Tasmania are in small, disconnected patches of habitat in the Midlands, inland near Cradle Mountain and the eastern Bass Strait islands.

Habitat includes the following elements: treeless tussock grassland and grassy open woodland at virtually any elevation where suitable habitat is present; typical habitat in the warmer lowland part of the range is native grassland dominated by *Poa labillardierei* (tussock grass) and species of *Rytidosperma* (wallaby grasses), *Themeda triandra* (kangaroo grass) and *Microlaena stipoides* (weeping grass).

The Range and Habitat descriptors for the species (FPA 2020) are -

Core Range	Is a 500 m (radius) buffer centred on the known sites.
Potential Range	Includes the core range and specialist defined extensions of the core range that may support the species based on habitat characteristics but are as yet largely unsurveyed (includes the majority of mapped native lowland and highland grasslands throughout the Midlands, Fingal Valley and northwest grasslands).
Known Range	N/A
Potential habitat	Grassland and grassy woodland (including rough pasture with paddock trees), generally with a greater than 20% cover of native grass species, especially where medium to tall tussocks are present.
Significant Habitat	N/A

Survey Results

Marginally suitable habitat present in the form of a very small (<1 hectare) *Poa* grass (*Poa poiformis* and *P. labillardierei*) dominated understorey on the ridgeline of Vinegar Hill (most of the forest has a bracken-fern dominated understorey or there is no understorey).

Assessment of habitat and likely presence in Survey Area

There are no known locations within 500m of a known location, so core habitat is absent, but the Land is within the potential range. There is marginally suitable habitat present in the form of a very small (<1 hectare) *Poa* grass dominated understorey on the ridgeline of Vinegar Hill (most of the forest has a bracken-fern dominated understorey or there is no understorey).

Conclusion

The potential habitat of the species in the Land is limited to the very ridgeline of Vinegar Hill where there is localised *Poa* dominated areas.

B.3 SUMMARY

The natural values of significance on the Land are summarised in **Table 3**.

Table 3. Summary of significant natural values in the Survey Area

Value	Description
Threatened vegetation communities	*Eucalyptus viminalis* Furneaux forest and woodland
Threatened flora species	*Pterostylis sanguinea* – habitat and known locations *Pterostylis tunstallii* – habitat and known locations *Gyrostemon thesioides* – habitat and known locations *Asperula minima* – habitat and known locations
Threatened fauna species and their habitat	*Pseudemoia pagenstecheri* – potential habitat *Lathamus discolor* – foraging habitat

PART C – SCENIC PROTECTION AREA CODE

C.1 BACKGROUND

A portion of the Land is covered by a Scenic Protection overlay.

To aid any assessment, if one is required based on the intersection of a development and the overlay, a visual assessment was conducted of key vantage points where sections of Vinegar Hill can be seen, and what viewfields have existing structures that impact on that viewfield.

The visual assessment included an evaluation of the existing visual character of the Vinegar Hill landform and the surrounding landscape. The methodology for the visual assessment involved several stages, as discussed below.

STAGE 1 – CHARACTERISATION OF VINEGAR HILL

Vinegar Hill as a landform was briefly characterised to identify what the landform is, and what it supports in terms of infrastructure, land uses, adjacent land uses etc.

STAGE 2 - FIELD INVESTIGATIONS

Fieldwork involved the following:

- A drive around the Lady Barron township, along Lady Barron Road, Coast Road (Cooma and Ranga) and surrounding areas to determine potentially visual sensitive locations, and to ascertain the extent of views including prominent features and existing development and use.
- Photographs (from a digital SLR camera) were taken from selected locations shown in **Figure C-1** and are provided in **Attachment 6**.

STAGE 3 - ASSESSMENT

An assessment of the viewfields and information collected during the field work, in addition to the observations made during the ecological assessment of the hill landform and the vegetation and existing infrastructure is supports, were considered in developing an overlay.

C.2 CHARACTERISATION OF VINEGAR HILL

Vinegar Hill is a landform that attracts great affection by locals and visitors to the island due to its views from the summit and lookout. However, the landform is in private ownership and there is no public access to the summit of the informal lookout on land adjacent to the Land the subject of this Report.

The landform is a well weathered granite bedrock like other prominent hills and mountains in the area but on a much lesser scale – the hill is only 105 m ASL. An aeolian sand sheet exists on the northern side of the landform, which extends upslope to where it often sharply meets exposed granite bedrock. The sandsheet seems the thickest on the north-western side of the hill landform where a vineyard once existed and progressively lowers downslope as the hill is traversed eastwards. The source of the sands, given the spatial

occurrence of them, suggests the flats between Lady Barron and Lackrana when sea level was lower and conditions much drier – likely Pleistocene age, which is supported by geological mapping of the area.

Colluvial deposits formed by granite sediments (sands, gravels, rock, and clay) cover a very small section of the sands, which appear to have accumulated post sand sheet formation. The small band of 'sediment mixing' indicates a recent formation of the sands and/or slow weathering of the granite landform above. Recent fire (2017-18) on the slope has destabilised some of the vegetation (fire-killed, weakened trees) and this has led to localised movement downslope of granitic sediments as the trees fall over or from rain events washing sediment downslope due to the absence of soil-binding roots.

Exposed granite bedrock is intermittent on the northern slopes at around elevation 80-95 m ASL however these areas are poorly visible from a distance due to the vegetative cover (i.e., trees). The southern side of the landform supports sandsheets in the gullies and the vegetation is generally taller.

Images below provide a general overview of the landform including the type of views, existing infrastructure, and barriers to observations points –

Vinegar Hill when viewed from Coast Road. Development including houses extends upslope from Lady Barron Road.

Vinegar Hill in the distance when viewed from Martins Hill on Lady Barron Road.

There is no formal lookout or vehicle pullover area here and road conditions are not conducive to vehicles stopping.

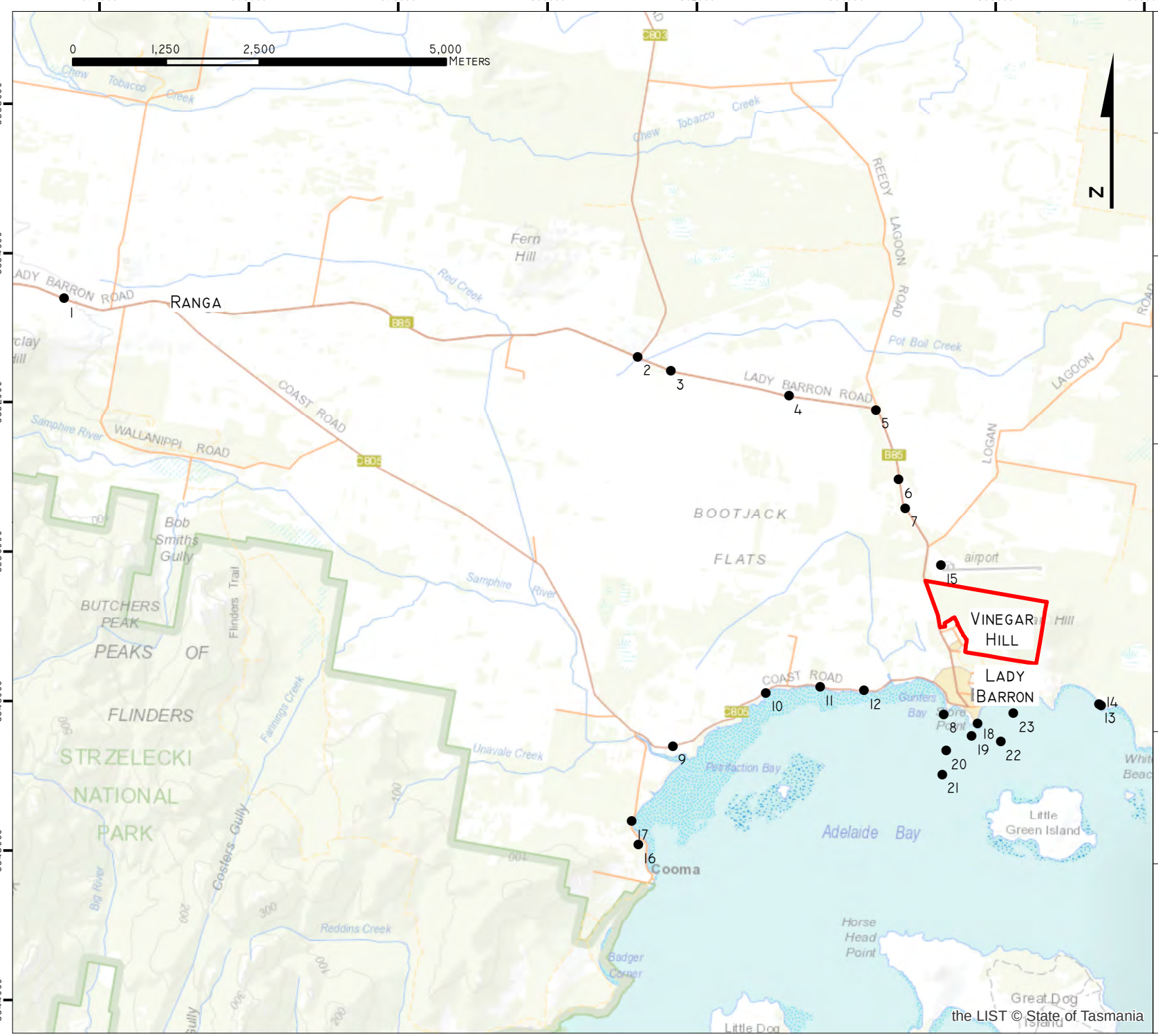
Large sections of Lady Barron Road provide no viewfield to Vinegar Hill due to the localised occurrence of visual barriers such as existing vegetation, shelterbelts, and buildings.

Vinegar Hill on the approach to the Lackrana turnoff. The elevated parts and ridgeline of the hill landform are prominent.

Vinegar Hill in the background with pasture and remnant native vegetation on the flats. The lower slopes and flats to the north-west of Vinegar Hill are not visible.

Vinegar Hill on the approach to Lady Barron township highlighting the upper slopes and ridgeline as prominent viewfield features.

Note the telecommunications tower on the ridgeline at left of the hill landform.



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Scenic and ecological assessments, Vinegar Hill

Vinegar Hill CT199735/1

Figure C1: Location of Landscape Assessment Viewpoints to Vinegar Hill

TASMAP:	LGA:
FISHER 5954	FLINDERS

- Viewing Locations
- CT 199735/1

Van Diemen Consulting
PO Box 1 New Town TAS 7008

DATUM: GDA94
GRID: MGA ZONE 55
SCALE: @A4 - NA

CLIENT:
FIFD PTY LTD

DATE: 16 MAY 2022

C.3 SUMMARY

The scenic values on the Land that should be considered in developing a Scenic Protection Area overlay for the Land are summarised in **Table 4**.

The scenic values, particularly what can and cannot actually be seen from key vantage locations, should be used to guide the assessment of development relative to the Code. For example, the flats at the north-western corner section of the survey area cannot be seen at any significant vantage point other that from the adjacent Lady Barron Road which is blocked by the vegetation itself – the hill formation is obscured by the vegetation along the frontage

Table 4. Summary of scenic values identified for Vinegar Hill

Value	Description
Ridgeline	Prominent and relatively intact vegetated ridgeline (forms a skyline from numerous viewing locations), especially when viewed from a distance. Low occurrence of sharp edges in the viewfield of the ridgeline due to the retention of vegetation (even though it is fire impacted) and careful placement of the existing road.
Elevated slope (southern slope)	Low to no visibility of the hill formation from Lady Barron township itself, with views increasing as distance is achieved from the township, especially eastwards to Yellow and White Beaches (Pot Boil Road which is a no through road system to the east) and along Coast Road. The upper slopes when viewed from Coast Road provide an aesthetic backdrop to the housing in the town and adjacent 'bush' setting (ie., the houses and building blocks at Cemetery Road and Vinegar Hill Road). The ridgeline is prominent from Adelaide Bay especially once passed southwards of Fisher Island.
Elevated slope (northern slope)	The upper slopes when viewed from Lady Barron Road (once Martins Hill is reached heading towards Lady Barron) provide an aesthetic viewfield albeit intermittent and fleeting due to the existence of barriers, road conditions (100 km/hr speed limit road) and lack of pullover areas for vehicles to stop and people to 'admire the view'. That is, there are no formalised viewing locations or scenic lookouts on Lady Barron Road that can enable or encourage people to stop and take in the Vinegar Hill landform. The elevated slopes and associated vegetated ridgeline are especially prominent from near the Lackrana turnoff from Lady Barron Road through to the waste transfer station, near the Logan Lagoon turnoff from Lady Barron Road.

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ATTACHMENTS

ATTACHMENT 1: BIODIVERSITY VALUES DATABASE (BVD) REPORT

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Threatened Fauna Range Boundaries Boundaries

Search Point 606410E,5549104N is within the following fauna range boundaries as at Sat Mar 12 2022 11:48:12 GMT+1100 (Australian Eastern Daylight Time)

Common name	Species name	Range Class	Habitat Description
grey goshawk	Accipiter novaehollandiae	Potential Range	Potential habitat for the grey goshawk is native forest with mature elements below 600 m altitude, particularly along watercourses. FPA's Fauna Technical Note 12 can be used as a guide in the identification of grey goshawk habitat. Significant habitat for the grey goshawk may be summarised as areas of wet forest, rainforest and damp forest patches in dry forest, with a relatively closed mature canopy, low stem density, and open understorey in close proximity to foraging habitat and a freshwater body (i.e. stream, river, lake, swamp, etc.). FPA's Fauna Technical Note 12 can be used as a guide in the identification of grey goshawk habitat.
chaostola skipper	Antipodia chaostola	Potential Range	Potential habitat for the Chaostola Skipper is dry forest and woodland supporting Gahnia radula (usually on sandstone and other sedimentary rock types) or Gahnia microstachya (usually on granite-based substrates).
wedge-tailed eagle	Aquila audax subsp. fleayi	Potential Range	Potential habitat for the wedge-tailed eagle comprises potential nesting habitat and potential foraging habitat. Potential foraging habitat is a wide variety of forest (including areas subject to native forest silviculture) and non-forest habitats. Potential nesting habitat is tall eucalypt trees in large tracts (usually more than 10 ha) of eucalypt or mixed forest. Nest trees are usually amongst the largest in a locality. They are generally in sheltered positions on leeward slopes, between the lower and mid sections of a slope and with the top of the tree usually lower than the ground level of the top of the ridge, although in some parts of the State topographic shelter is not always a significant factor (e.g. parts of the northwest and Central Highlands). Nests are usually not constructed close to sources of disturbance and nests close to disturbance are less productive. More than one nest may occur within a territory but only one is used for breeding in any one year. Breeding failure often promotes a change of nest in the next year. [see FPA's Fauna Technical Note 1 and FPA's Fauna Technical Note 6 for more information] Significant habitat for the wedge-tailed eagle is all native forest and native non-forest vegetation within 500 m or 1 km line-of-sight of known nest sites (where the nest tree is still present).
Dwarf galaxias	Galaxiella pusilla	Core Range	Potential habitat for the dwarf galaxiid is slow-flowing waters such as swamps, lagoons, drains or backwaters of streams, often with aquatic vegetation. It may also be found in temporary waters that dry up in summer for as long as 6-7 months, especially if burrowing crayfish burrows are present (although these will usually be connected to permanent water). Habitat may include forested swampy areas but does not include blackwood swamp forest. Juveniles congregate in groups at the water surface in pools free of vegetation. Significant habitat for the dwarf galaxiid is all potential habitat and a 30m stream-side reserve within the core range.
white-bellied sea-eagle	Haliaeetus leucogaster	Potential Range	Potential habitat for the White-Bellied Sea-eagle species comprises potential nesting habitat and potential foraging habitat. Potential foraging habitat is any large waterbody (including sea coasts, estuaries, wide rivers, lakes, impoundments and even large farm dams) supporting prey items (fish). Potential nesting habitat is tall eucalypt trees in large tracts (usually more than 10 ha) of eucalypt or mixed forest within 5 km of the coast (nearest coast including shores, bays, inlets and peninsulas), large rivers (Class 1), lakes or complexes of large farm dams. Scattered trees along river banks or pasture land may also be used. Significant habitat for the white-bellied sea-eagle is all native forest and native non-forest vegetation within 500 m or 1 km line-of-sight of known nest sites (where nest tree still present).
green and golden frog	Litoria raniformis	Core Range	Potential habitat for the green and gold frog is permanent and temporary waterbodies, usually with vegetation in or around them. Potential habitat includes features such as natural lagoons, permanently or seasonally inundated swamps and wetlands, farm dams, irrigation channels, artificial water-holding sites such as old quarries, slow-flowing stretches of streams and rivers and drainage features. Significant habitat for the green and gold frog is still or very slow flowing water bodies, with at least some vegetation, and a lack of obvious pollutants (oils, chemicals, etc). See FPA Fauna Technical Note 18 for further guidance on assessing significant habitat for the green and gold frog.
forty-spotted pardalote	Pardalotus quadragintus	Potential Range	Potential habitat for the 40-spotted pardalote is any forest and woodland supporting Eucalyptus viminalis (white gum) where the canopy cover of E. viminalis is greater than or equal to 10% or where E. viminalis occurs as a localised canopy dominant or codominant in patches exceeding 0.25 ha. Significant habitat for the 40-spotted Pardalote is all potential habitat associated with known colonies and such habitat within 500 m of known colonies.
australian grayling	Prototroctes maraena	Potential Range	Potential habitat for the Australian Grayling is all streams and rivers in their lower to middle reaches. Areas above permanent barriers (e.g. Prosser River dam, weirs) that prevent fish migration, are not potential habitat.
tussock skink	Pseudemoia pagenstecheri	Potential Range	Potential habitat for the tussock skink is grassland and grassy woodland (including rough pasture with paddock trees), generally with a greater than 20% cover of native grass species, especially where medium to tall tussocks are present.
new holland mouse	Pseudomys novaehollandiae	Potential Range	Potential habitat for the New Holland mouse is heathlands (mainly dry heathlands but also where dry heathlands form a mosaic with other heathland, moorland and scrub complexes), heathy woodlands (i.e. eucalypt canopy cover 5-20%), Allocasuarina-dominated forests on sandy substrates (not dolerite or basalt), and vegetated sand dunes. Key indicator plant species include (but are not restricted to) Aotus ericoides, Lepidosperma concavum, Hypolaena fastigiata and Xanthorrhoea spp. Significant habitat for the New Holland mouse is all potential habitat within the potential range of the species.

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Threatened Fauna Records

Fauna Records within 5000m of 606410E,5549104N at Sat Mar 12 2022 11:48:12 GMT+1100 (Australian Eastern Daylight Time)

Species name	Common name	Reported Position accuracy (m)	X	Y	Distance (m)	Obs. type	Obs. date	Date accuracy	Obs. state	Project code + Foreign id	NVA id
Litoria raniformis	green and gold frog	1000	607712	5550583	1970	Sighting	1989-11-14	Unknown	Present	anuran anuran:anuran:1104/1	NVA
Galaxiella pusilla	eastern dwarf galaxias	100	610112	5552183	4815	Sighting	1973-10-30	Unknown	Present	fish-pd cra-rfa:fish-pd:720/1	NVA
Limosa lapponica subsp. baueri	western alaskan bar-tailed godwit	2000	603613	5545802	4327	Sighting	1952-01-01	Unknown	Present	qvm-tc qvm-tc:qvm-tc:113/1	NVA
Haliaeetus leucogaster	white-bellied sea-eagle	5	607170	5544366	4799	Nest	2013-08-27	Day	Present	rnd 2122	NVA
Haliaeetus leucogaster	white-bellied sea-eagle	-1	605628	5547915	1423	Not Recorded	2018-01-02	Day	Present	dr2009	NVA
Haliaeetus leucogaster	white-bellied sea-eagle	-1	610242	5552231	4946	Not Recorded	2018-01-29	Day	Present	dr2009	NVA
Haliaeetus leucogaster	white-bellied sea-eagle	-1	610242	5552231	4946	Not Recorded	2018-03-11	Day	Present	dr2009	NVA

Showing 1 to 7 of 7 entries

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Threatened Flora Records

Flora Records within 2000m of 606410E, 5549104N at Sat Mar 12 2022 11:48:12 GMT+1100 (Australian Eastern Daylight Time)

Species name	Common name	Reported Position accuracy (m)	X	Y	Distance (m)	Obs. type	Obs. date	Date accuracy	Obs. state	NVA id
Scaevola albida	pale fanflower	10	606925	5550750	1725	Sighting	1997-12-11	Day	Present	NVA
Scaevola albida	pale fanflower	10	606925	5550750	1725	Sighting	2002-11-05	Day	Present	NVA
Pterostylis sanguinea	banded greenhood	25	606272	5548604	519	Sighting	1999-11-25	Day	Present	NVA
Pterostylis sanguinea	banded greenhood	100	606212	5549083	199	Sighting	1993-05-18	Unknown	Present	NVA
Pterostylis sanguinea	banded greenhood	100	606612	5549183	217	Sighting	1999-07-12	Day	Present	NVA
Pterostylis sanguinea	banded greenhood	50	606687	5549033	286	Sighting	1999-07-25	Day	Present	NVA
Pterostylis tunstallii	tunstalls greenhood	2000	606112	5549183	308	Sighting	1969-08-28	Unknown	Present	NVA
Pterostylis sanguinea	banded greenhood	50	606687	5549133	279	Sighting	1999-07-25	Day	Present	NVA
Caladenia australis	southern spider-orchid	5	606706	5548069	1076	Sighting	1968-11-09	Unknown	Present	NVA
Scaevola albida	pale fanflower	10	606925	5550750	1725	Sighting	2000-05-16	Day	Present	NVA
Asperula minima	mossy woodruff	50	606262	5548983	191	Sighting	2000-10-21	Day	Present	NVA
Caladenia pusilla	tiny fingers	100	605212	5550233	1646	Sighting	2000-10-18	Day	Present	NVA
Leucopogon affinis	lanceleaf beardheath	10	606943	5550794	1772	Sighting	2005-09-28	Day	Present	NVA
Scaevola albida	pale fanflower	10	606863	5550758	1715	Sighting	2005-09-28	Day	Present	NVA
Scaevola albida	pale fanflower	10	606927	5550749	1724	Sighting	2005-09-28	Day	Present	NVA
Spyridium parvifolium var. parvifolium	coast dustymiller	10	606950	5550828	1807	Sighting	2005-09-28	Day	Present	NVA
Spyridium parvifolium var. parvifolium	coast dustymiller	10	606937	5550765	1743	Sighting	2005-09-28	Day	Present	NVA
Scaevola albida	pale fanflower	10	606925	5550750	1725	Sighting	2007-01-13	Day	Present	NVA
Scaevola albida	pale fanflower	5	606920	5550750	1723	Sighting	2008-11-16	Day	Present	NVA
Scaevola albida	pale fanflower	5	606869	5550757	1716	Sighting	2008-11-16	Day	Present	NVA
Scaevola albida	pale fanflower	5	606778	5550774	1710	Sighting	2008-11-16	Day	Present	NVA
Scaevola albida	pale fanflower	5	606815	5550767	1712	Sighting	2008-11-16	Day	Present	NVA
Scaevola albida	pale fanflower	5	606927	5550749	1724	Sighting	2008-11-16	Day	Present	NVA
Scaevola albida	pale fanflower	5	606952	5550716	1701	Sighting	2008-11-16	Day	Present	NVA
Pterostylis sanguinea	banded greenhood	5	606088	5548541	649	Sighting	2010-08-12	Day	Present	NVA
Pterostylis sanguinea	banded greenhood	5	606171	5548465	682	Sighting	2010-08-12	Day	Present	NVA
Pterostylis tunstallii	tunstalls greenhood	5	606714	5549077	305	Sighting	2010-08-12	Day	Present	NVA
Hydrocotyle comocarpa	fringefruit pennywort	7	606662	5548004	1128	Sighting	2012-09-16	Day	Present	NVA
Leucopogon affinis	lanceleaf beardheath	25	606943	5550794	1772	Sighting	2005-09-28	Day	Present	NVA
Parietaria debilis	shade pellitory	1000	606363	5547445	1660	Sighting	1992-01-01	25 years	Present	NVA
Parietaria debilis	shade pellitory	1000	606363	5547445	1660	Sighting	1992-01-01	25 years	Present	NVA
Parietaria debilis	shade pellitory	1000	606363	5547445	1660	Sighting	1992-01-01	25 years	Present	NVA
Spyridium parvifolium var. molle	soft dustymiller	25	606937	5550765	1743	Sighting	2005-09-28	Day	Present	NVA
Gyrostemon thesioides	broom wheelfruit	2000	606389	5549295	192	Sighting	1974-01-01	Month	Present	NVA
Acacia uncifolia	coast wirilda	10	605069	5549502	1399	Sighting	2017-11-20	Day	Present	NVA
Acacia uncifolia	coast wirilda	10	605050	5549572	1438	Sighting	2017-11-20	Day	Present	NVA
Acacia uncifolia	coast wirilda	5	605069	5549502	1399	Taken under permit	2018-03-15	3 Months	Present	NVA
Gyrostemon thesioides	broom wheelfruit	5	606318	5549119	93	Sighting	2021-05-14	Day	Present	NVA
Gyrostemon thesioides	broom wheelfruit	5	606318	5549123	94	Sighting	2021-05-14	Day	Present	NVA
Gyrostemon thesioides	broom wheelfruit	5	606322	5549117	89	Sighting	2021-05-14	Day	Present	NVA
Gyrostemon thesioides	broom wheelfruit	5	606341	5549124	72	Sighting	2021-05-14	Day	Present	NVA
Gyrostemon thesioides	broom wheelfruit	5	606342	5549126	71	Sighting	2021-05-14	Day	Present	NVA
Gyrostemon thesioides	broom wheelfruit	5	606322	5549080	91	Sighting	2021-05-14	Day	Present	NVA
Gyrostemon thesioides	broom wheelfruit	5	606341	5549126	72	Sighting	2021-05-14	Day	Present	NVA

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Threatened Flora Survey Notes

SURVEY SKILL LEVEL

Refer to Threatened Flora Species Survey Notes (FPA 2016) for more information.

Survey skill level:

1: highly distinctive species – an FPO or forest planner can undertake surveys

2: distinctive species – a flora-competent forest planner can undertake surveys

3: non-distinctive species and species occupying specialised niches – only experienced field botanists can undertake surveys

PC Susceptibility Rating

Code	Description
Hs	Highly susceptible: expect >75% mortality of infected plants to be killed
Ms	Moderately susceptible: expect 25-75% mortality of infected plants
Prb	Probably highly or moderately susceptible but no records of Phytophthora infection
Ss	Slightly susceptible: symptomless but reduced vigour
S	Susceptible but unable to make a rating
Rh	Resistant host: Phytophthora persists but host shows no symptoms.
In	Susceptible habitat which may have flow on effect for species, and therefore species indirectly susceptible
Nc	Susceptible species, but habitat not conducive to disease

HABITAT DESCRIPTION

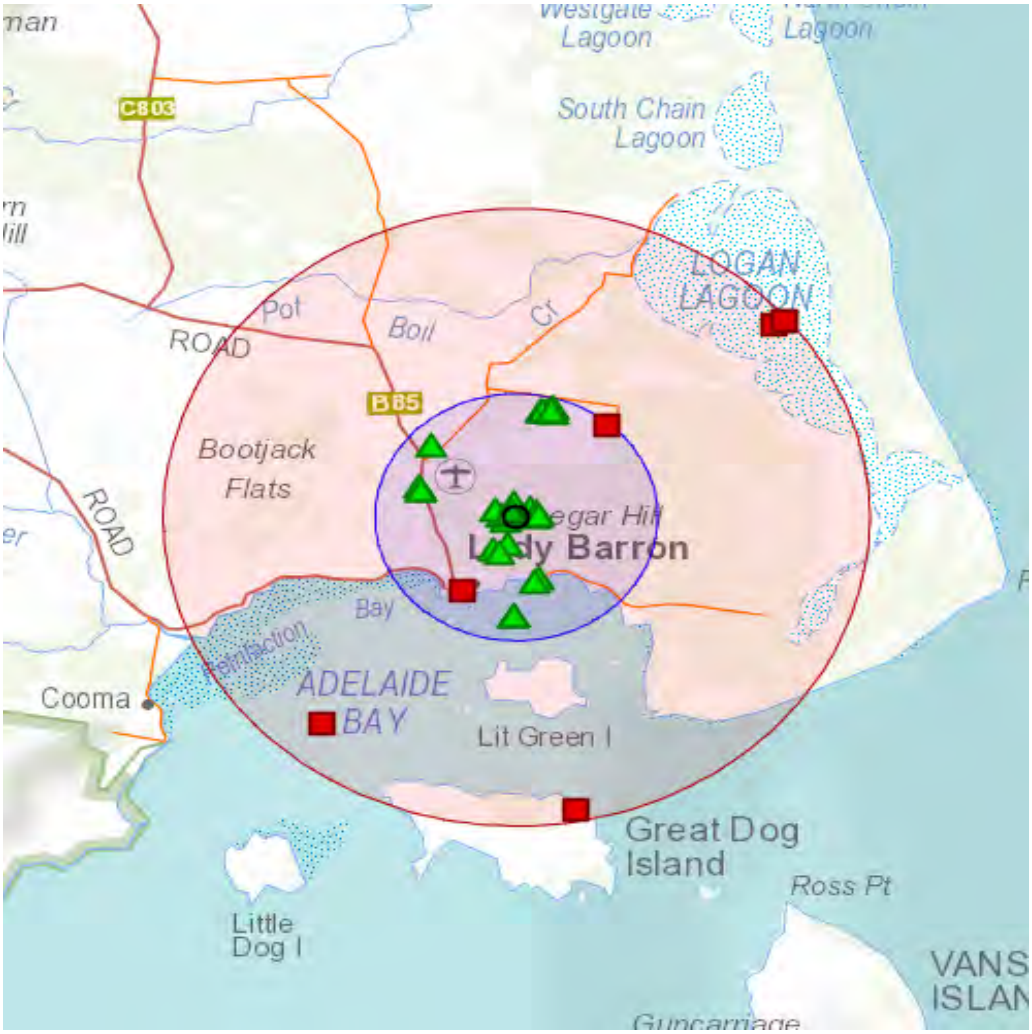
Refer to Habitat Descriptions of Threatened Flora in Tasmania (FPA 2016) for more information.

Species name	Common name	Life form	Status TSPA, EPBCA	Habitat description	Survey guidelines	Survey skill level	TPA Grouping	PC Susceptibility Rating
Acacia uncifolia	coast wirilda	shrub	r, -	Acacia uncifolia is thought to be restricted to the Furneaux Group. It is usually found on soils derived from calcareous limestone in coastal heath, heathy scrub and dry open woodland, sometimes with emergent Allocasuarina verticillata (drooping sheoak). Occurrences on mainland Tasmania are assumed to have originated from ornamental plantings. A population on King Island is of uncertain status.	This shrub to small tree flowers in summer to mid-autumn. It can be identified from its phyllodes (hooked tip). It can be difficult to detect amongst dense windswept coastal scrub but its foliage is quite distinct (flowering assists with detection).	1	Island Species	
Asperula minima	mossy woodruff	herb	r, -	Asperula minima occurs in a range of vegetation types, the common factor being locally impeded drainage. Habitats include near-coastal swamp forests, Melaleuca ericifolia swamp forest, Eucalyptus ovata sedgy forest, "old pasture" regenerating to sedges and rushes, and firebreaks adjacent to clearfelled forest.	Flowering of this herb is from October to December. Asperula minima can be distinguished from other Asperula by vegetative characteristics meaning surveys at any time of the year are possible.	3	Group 1	
Caladenia australis	southern spider-orchid	orchid	e, -	Caladenia australis is restricted to Flinders island, where it occurred in lowland coastal heathy scrub/woodland.	Flowers are required for the identification of this ground orchid, which dies back to subterranean tubers after flowering. Flowering period on mainland Australia is September to November. Known only from one collection in Tasmania (9 November 1968, Flinders Island). Late October to early November is likely to be a good time to search for the species here. More information on survey time can be found in Flowering Times of Tasmanian Orchids: A Practical Guide for Field Botanists.	3	Island Species	
Caladenia pusilla	tiny fingers	orchid	r, -	Caladenia pusilla occurs mainly in heathland, shrubland, woodland and open eucalypt forest in near-coastal areas. It has been recorded from sandy loam, sandy peat, granite gravel and rocky ground. It is most frequent on well-drained soils but can extend to sites with impeded drainage.	Flowers are required for the identification of this ground orchid, which dies back to subterranean tubers after flowering. The flowers of this tiny species may not always open fully before self-pollinating, and may be very hard to detect in the field. However, when detected, the short stiff scape and tiny buds are good diagnostic characteristics, although it is easily confused with small-flowered forms of species such as Caladenia fuscata. More information on survey time can be found in Flowering Times of Tasmanian Orchids: A Practical Guide for Field Botanists.	3	Group 2	
Gyrostemon thesioides	broom wheelfruit	shrub	r, -	Gyrostemon thesioides occurs predominately on dolerite or granite in Allocasuarina (sheoak) forest in the State's east and north-east, including the Furneaux Group.	Extension surveys for this short-lived species (less than 10 years) should focus on recently burnt areas as the species stores seed in the soil for long periods of time and germinates prolifically after fire, and then is often absent for long periods of no disturbance. Surveys in long-undisturbed potential habitat are likely to be unsuccessful.	3	Group 2	
Hydrocotyle comocarpa	fringefruit pennywort	annual herb	r, -	Hydrocotyle comocarpa has been recorded from Cape Barren, Flinders and Deal islands. Habitat descriptions include a ridge crest with shallow soil with other forbs surrounded by shrubs and Eucalyptus nitida, and for Deal Island on penguin pads, with some plants in bare soil.	Flowering of this herb is in spring, with most observations in September and early October. This species can be distinguished by its growth habit and fruit characteristics but appears to be very short-lived and detectable for a very short period only.	3	Island Species	
Leucopogon affinis	lance beardheath	shrub	r, -	Leucopogon affinis occurs in a broad range of habitats including tall scrub, mainly on stabilised dune sands and hinterlands, lagoon margins, and gullies and riverbanks in wet eucalypt forest, probably restricted to the Bass Strait islands. Observations near Devonport, Latrobe and Arthur River require confirmation.	This medium shrub can usually be identified in most parts of its range at any time of the year from leaf morphology. In some parts of the state it can be confused with L. parviflorus, though the combination of flowers and fruit combined with habitat is usually sufficient to confidently identify the species.	3	Island Species	Hs

Species name	Common name	Life form	Status TSPA, EPBCA	Habitat description	Survey guidelines	Survey skill level	TPA Grouping	PC Susceptibility Rating
Parietaria debilis	shade pellitory	herb	r, -	Parietaria debilis occurs around muttonbird rookeries, on cliffs/rocks in the salt spray zone, in moist shaded areas in dune scrubs, and under rock overhangs in forested gullies.	Flowers are not required for identification of this herb and do not aid significantly in detection. There is probably a flush of growth in spring-summer making detection of populations easier.	3	Group 2	
Pterostylis sanguinea	banded greenhood	orchid	r, -	Pterostylis sanguinea occurs in coastal eucalypt and sheoak woodland, teatree scrub and scrubby heathland on well-drained gravelly peat and sandy and clay loams.	Flowers are required for the identification and to aid detection of this ground orchid, which dies back to subterranean tubers after flowering. Most flowering is between June and September. More information on survey time can be found in Flowering Times of Tasmanian Orchids: A Practical Guide for Field Botanists.	3	Group 3	Prb
Pterostylis tunstallii	tunstalls greenhood	orchid	e, -	Pterostylis tunstallii is restricted to the eastern Bass Strait islands where it occurs in open forest and woodland, often in accumulated litter, on granite-derived gravelly and loamy soils.	Flowers are required for the identification of this ground orchid, which dies back to subterranean tubers after flowering. Recently fertilised flowers can be dissected and the labellum examined to make an identification. Observations from Tasmania have been made from July to early September. More information on survey time can be found in Flowering Times of Tasmanian Orchids: A Practical Guide for Field Botanists.	3	Island Species	
Scaevola albida	pale fanflower	herb	v, -	The habitat of Scaevola albida includes near-coastal scrubs, woodlands and grasslands, usually on calcareous sands, and it has also been observed colonising road margins. The elevation of known sites is 10-30 m above sea level, and the annual rainfall is about 500-700 mm. The potential habitat of Scaevola albida on Flinders Island is roughly delineated by areas of Quaternary sands with limestone deposits, in the Marshall Bay land system. The analogous system in north-western Tasmania is the Temma land system.	This low herb can be detected at any time but the pale flowers significantly aid detection and are required for identification (mainly spring-summer).	3	Group 3	Prb
Spyridium parvifolium var. molle	soft dustymiller	shrub	r, -	Spyridium parvifolium var. molle occurs in a range of vegetation types, mainly shrubby dry sclerophyll forests and woodlands. It can proliferate from soil-stored seed after disturbance.	Surveys for this erect much-branched shrub can be conducted throughout the year as identifiable features (including its hairy whitish floral leaves) are always present. Its greyish-green leaves with soft, velvety hairs allow it to be distinguished from var. parvifolium, although the two varieties merge into one another and are under review. It can proliferate from soil-stored seed after disturbance.	2	Group 1	
Spyridium parvifolium var. parvifolium	coast dustymiller	shrub	r, -	Spyridium parvifolium var. parvifolium mainly occurs in near-coastal areas in northern Tasmania. It occurs in a range of vegetation types, mainly shrubby dry sclerophyll forests and woodlands. It can proliferate from soil-stored seed after disturbance.	Surveys for this erect much-branched shrub can be conducted throughout the year as identifiable features (including its white floral leaves) are always present. Its green and relatively hairless leaves allow it to be distinguished from var. molle, although the two varieties merge into one another and are under review. It is most abundant in disturbed areas, as it can proliferate from soil-stored seed after disturbance.	2	Group 1	

Showing 1 to 13 of 13 entries

14.2.2 - March 2023



ATTACHMENT 2: NATURAL VALUES ATLAS (NVA) REPORT

Natural Values Atlas Report

Authoritative, comprehensive information on Tasmania's natural values.

Reference:
Requested For:
Report Type: Summary Report
Timestamp: 08:58:17 PM Saturday 12 March 2022

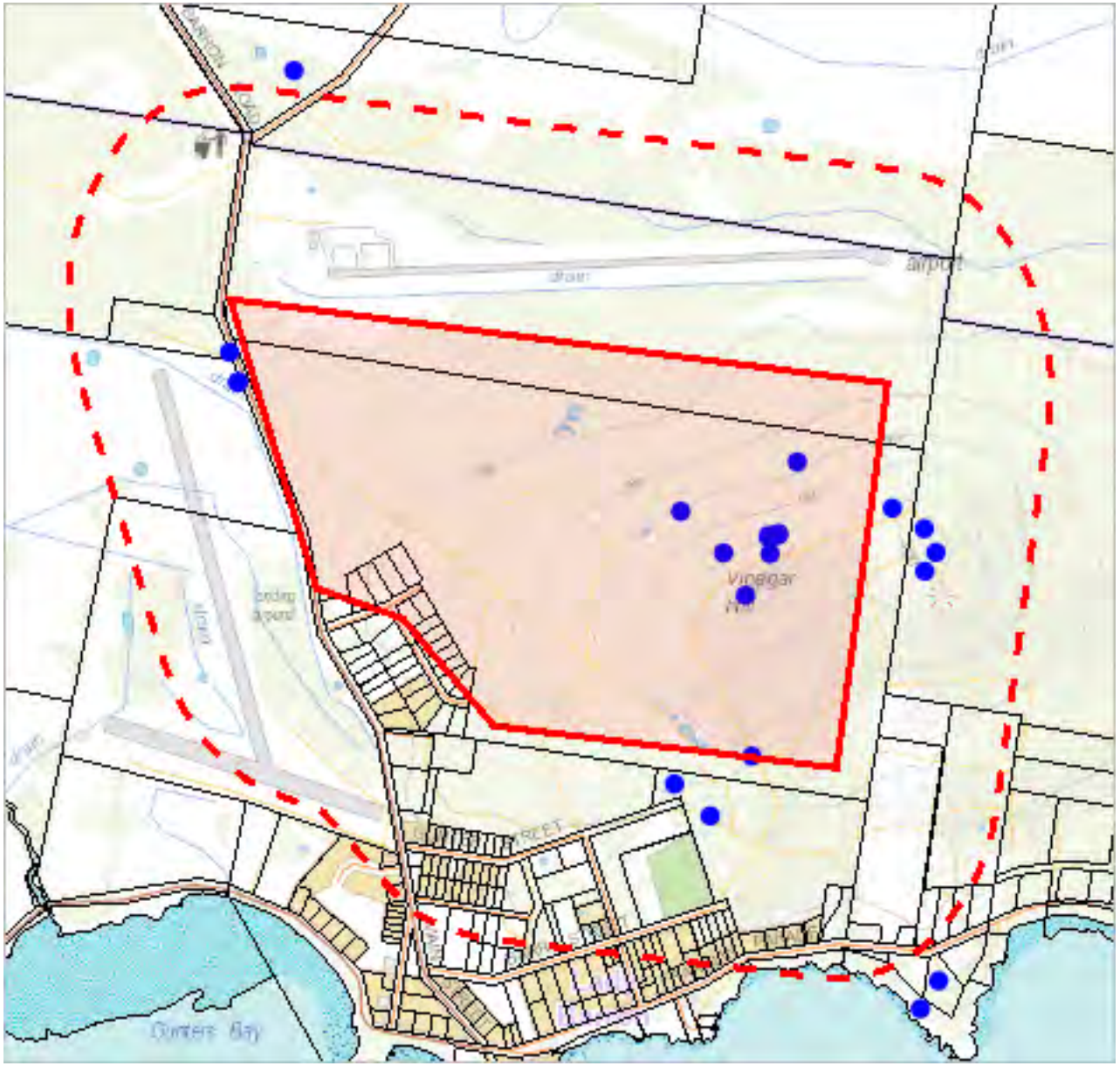
Threatened Flora: buffers Min: 500m Max: 5000m
Threatened Fauna: buffers Min: 500m Max: 5000m
Raptors: buffers Min: 500m Max: 5000m
TASVEG: buffer 1000m
Threatened Communities: buffer 1000m
Fire History: buffer 1000m

The centroid for this query GDA94: 605887.0, 5549160.0 falls within:

Property: 7840416

Threatened flora within 500 metres

607157, 5550403



604493, 5547869

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
Acacia uncifolia	coast wirilda	r		n	3	15-Mar-2018
Asperula minima	mossy woodruff	r		n	1	21-Oct-2000
Gyrostemon thesioides	broom wheelfruit	r		n	8	14-May-2021
Pterostylis sanguinea	banded greenhood	r		n	7	12-Aug-2010
Pterostylis tunstallii	tunstalls greenhood	e		n	2	12-Aug-2010

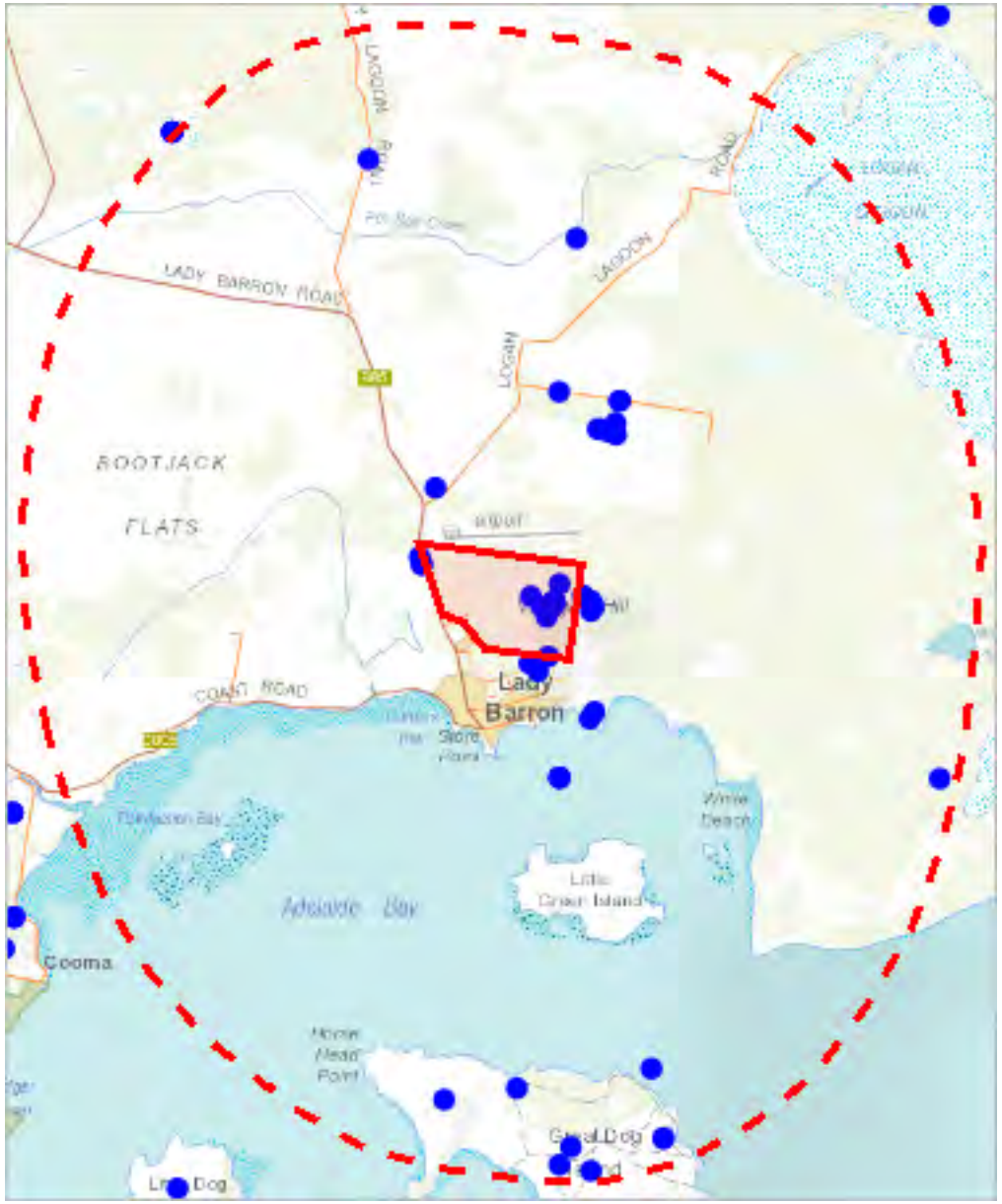
Unverified Records

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

610670, 5554927



600986, 5543338

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

Legend: Cadastral Parcels

Threatened flora within 5000 metres

14.2.2 - March 2023

Verified Records

Species	Common Name	SS	NS	Bio	Observation Count	Last Recorded
Acacia uncifolia	coast wirilda	r		n	3	15-Mar-2018
Asperula minima	mossy woodruff	r		n	1	21-Oct-2000
Caladenia australis	southern spider-orchid	e		n	1	09-Nov-1968
Caladenia pusilla	tiny fingers	r		n	1	18-Oct-2000
Chiloglottis trapeziformis	broadlip bird-orchid	e		n	2	10-Sep-1992
Gyrostemon thesioides	broom wheelfruit	r		n	8	14-May-2021
Hydrocotyle comocarpa	fringefruit pennywort	r		n	1	16-Sep-2012
Hydrorchis orbicularis	swamp onion-orchid	r		n	2	16-Nov-1992
Isopogon ceratophyllus	horny conebush	v		n	1	01-Jan-1993
Leucopogon affinis	lanceleaf beardheath	r		n	2	28-Sep-2005
Leucopogon esquamatus	swamp beardheath	r		n	1	01-Jan-1993
Microtidium atratum	yellow onion-orchid	r		n	1	01-Nov-1992
Parietaria debilis	shade pellitory	r		n	8	04-Nov-2002
Prasophyllum secutum	northern leek-orchid	e	EN	e	1	16-Nov-1992
Pterostylis sanguinea	banded greenhood	r		n	7	12-Aug-2010
Pterostylis tunstallii	tunstalls greenhood	e		n	3	12-Aug-2010
Scaevola albida	pale fanflower	v		n	14	16-Nov-2008
Senecio psilocarpus	swamp fireweed	e	VU	n	1	01-Jan-1970
Spyridium parvifolium var. molle	soft dustymiller	r		e	1	28-Sep-2005
Spyridium parvifolium var. parvifolium	coast dustymiller	r		n	3	28-Sep-2005
Stellaria multiflora subsp. nebulosa	nebulous rayless starwort	r		n	1	22-Sep-1978
Thelymitra malvina	mauvetuft sun-orchid	e		n	1	25-Oct-1992

Unverified Records

No unverified records were found!

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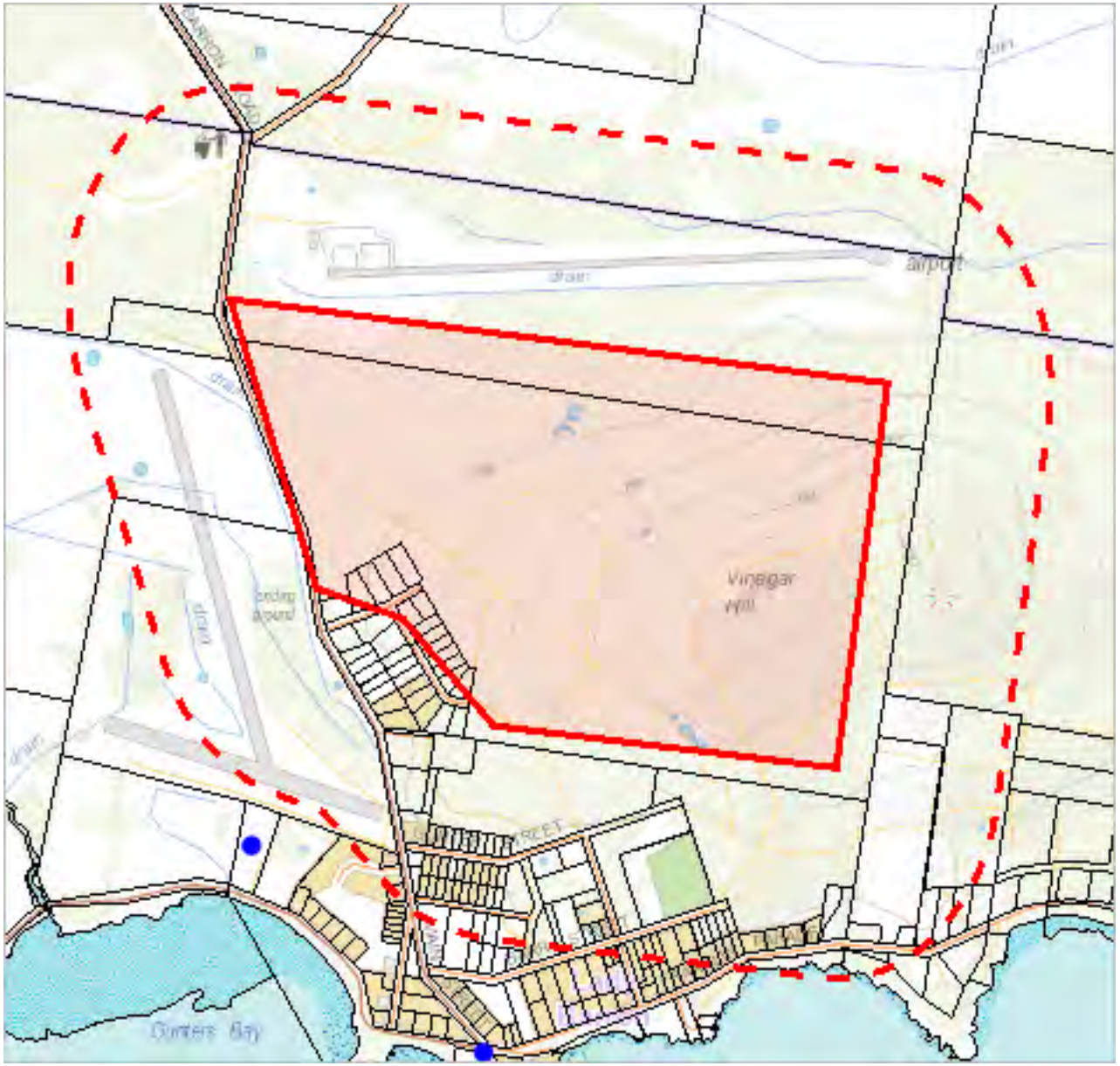
Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

Threatened fauna within 500 metres

607157, 5550403



604493, 5547869

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

Threatened fauna within 500 metres

Legend: Verified and Unverified observations

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

Legend: Cadastral Parcels

Threatened fauna within 500 metres

(based on Range Boundaries)

Species	Common Name	SS	NS	BO	Potential	Known	Core
Pseudomys novaehollandiae	new holland mouse	e	VU	n	1	0	0
Litoria raniformis	green and gold frog	v	VU	n	1	0	1
Prototroctes maraena	australian grayling	v	VU	ae	1	0	0
Antipodia chaostola	chaostola skipper	e	EN	ae	1	0	0
Pseudemoia pagenstecheri	tussock skink	v		n	1	0	0
Haliaeetus leucogaster	white-bellied sea-eagle	v		n	2	0	0
Limnodynastes peroni	striped marsh frog	e		n	1	0	0
Galaxiella pusilla	eastern dwarf galaxias	v	VU	n	1	0	1
Pardalotus quadragintus	forty-spotted pardalote	e	EN	e	1	0	0
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	e	EN	e	1	0	0

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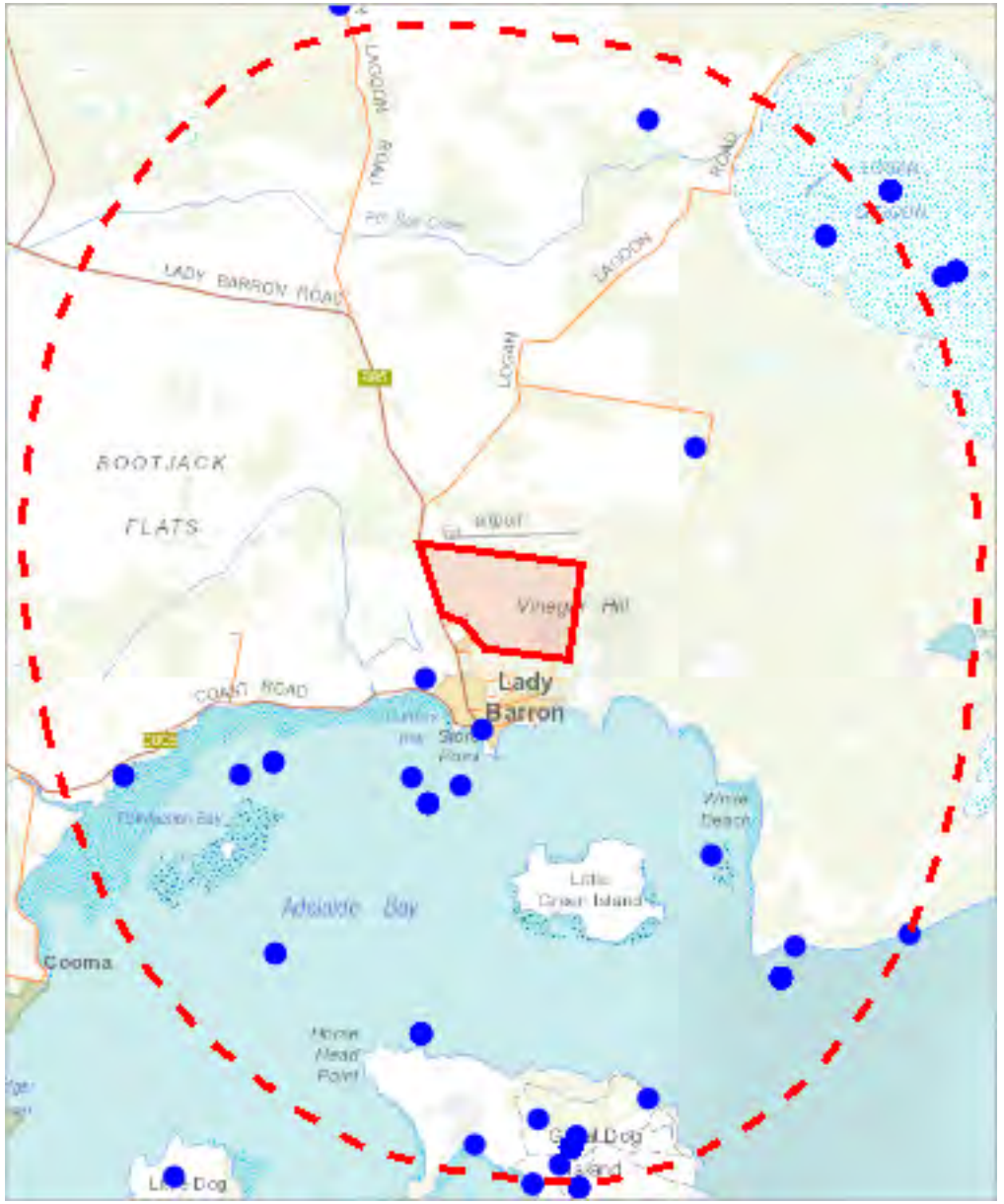
Threatened fauna within 5000 metres

610670, 5554927



600986, 5543338

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

Threatened fauna within 5000 metres

Legend: Verified and Unverified observations

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

Legend: Cadastral Parcels

Threatened fauna within 5000 metres

14.2.2 - March 2023

Verified Records

Species	Common Name	SS	NS	Bio	Observation Count	Last Recorded
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	e	EN	e	2	14-Nov-1981
Botaurus poiciloptilus	australasian bittern		EN	n	1	14-Jan-1979
Calidris canutus	red knot		EN	n	1	29-Jan-2018
Calidris ferruginea	curlew sandpiper		CR	n	15	11-Mar-2018
Galaxiella pusilla	eastern dwarf galaxias	v	VU	n	1	30-Oct-1973
Haliaeetus leucogaster	white-bellied sea-eagle	v		n	10	11-Mar-2018
Hirundapus caudacutus	white-throated needletail		VU	n	2	20-Feb-1981
Limosa lapponica subsp. baueri	western alaskan bar-tailed godwit		VU	n	2	07-Dec-1977
Litoria raniformis	green and gold frog	v	VU	n	1	14-Nov-1989
Macronectes giganteus	southern giant-petrel	v	EN	n	1	07-Dec-1977
Numenius madagascariensis	eastern curlew	e	CR	n	20	21-Feb-1999
Pteropus poliocephalus	grey-headed flying-fox		VU	n	2	10-Feb-2019
Sterna nereis subsp. nereis	fairy tern	pv	PVU		11	30-Nov-1981
Sterna striata	white-fronted tern	v		n	10	16-Dec-2008
Sternula albifrons subsp. sinensis	little tern	e		n	2	29-Nov-2000
Sternula nereis subsp. nereis	fairy tern	v	VU	n	7	10-Mar-2018
Thalassarche chrysostoma	grey-headed albatross	e	EN	n	1	25-Oct-1969
Thinornis cucullatus	hooded plover		PVU	n	3	03-Nov-2004
Thinornis rubricollis	hooded plover		VU	n	21	26-Feb-1999

Unverified Records

No unverified records were found!

Threatened fauna within 5000 metres

(based on Range Boundaries)

Species	Common Name	SS	NS	BO	Potential	Known	Core
Pseudomys novaehollandiae	new holland mouse	e	VU	n	1	0	0
Litoria raniformis	green and gold frog	v	VU	n	1	0	1
Prototroctes maraena	australian grayling	v	VU	ae	22	0	0
Antipodia chaostola	chaostola skipper	e	EN	ae	2	0	0
Pseudemoia pagenstecheri	tussock skink	v		n	1	0	0
Haliaeetus leucogaster	white-bellied sea-eagle	v		n	2	0	0
Limnodynastes peroni	striped marsh frog	e		n	1	0	0
Galaxiella pusilla	eastern dwarf galaxias	v	VU	n	22	0	1
Pardalotus quadragintus	forty-spotted pardalote	e	EN	e	1	0	0
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	e	EN	e	1	0	0

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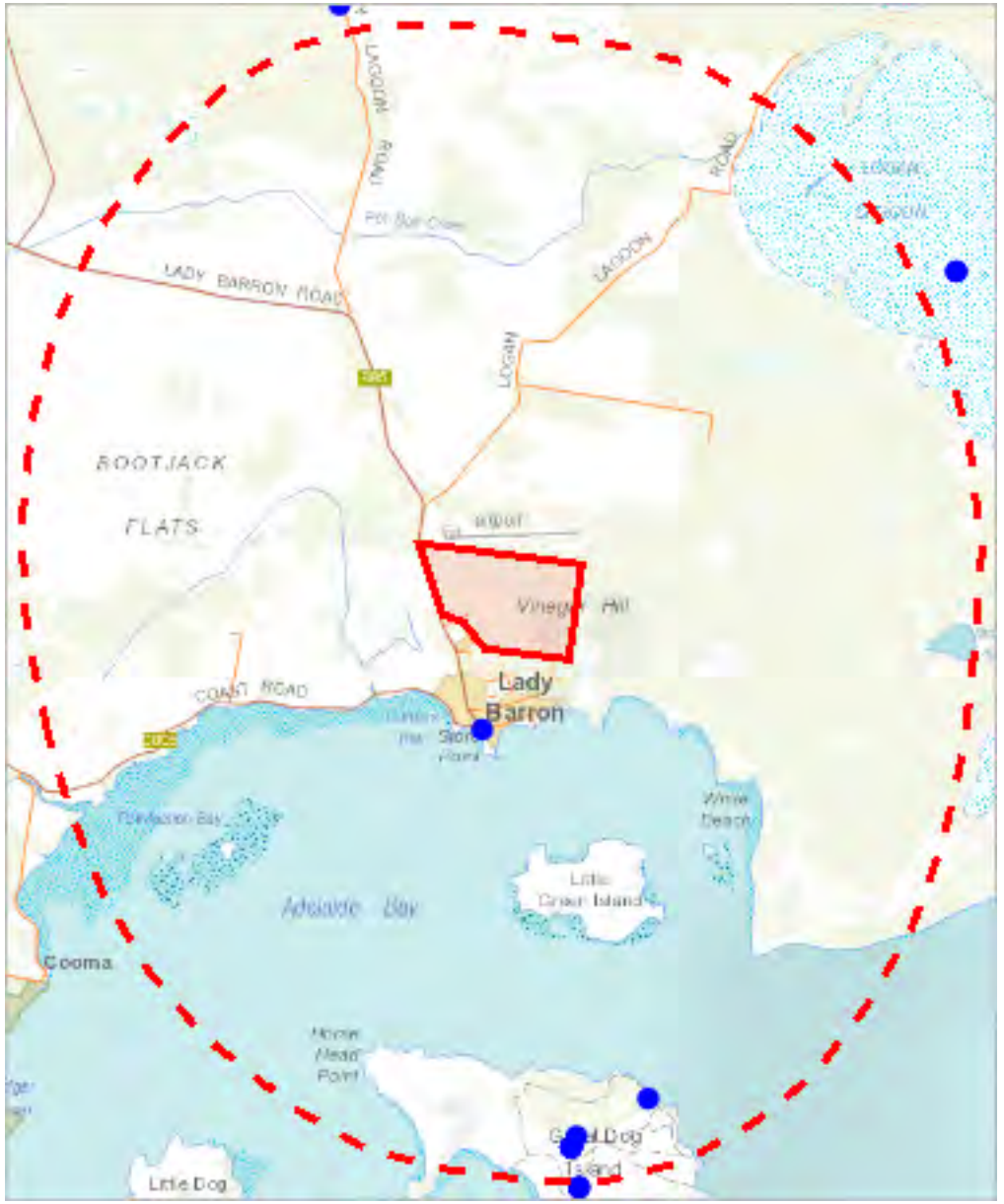
*** No Raptor nests or sightings found within 500 metres. ***

Raptor nests and sightings within 5000 metres

14.2.2 - March 2023

610670, 5554927



600986, 5543338

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

Raptor nests and sightings within 5000 metres

Legend: Verified and Unverified observations

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

Legend: Cadastral Parcels

Raptor nests and sightings within 5000 metres

Verified Records

Nest Id/Location Foreign Id	Species	Common Name	Obs Type	Observation Count	Last Recorded
2122	Haliaeetus leucogaster	white-bellied sea-eagle	Nest	1	27-Aug-2013
	Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	Sighting	2	14-Nov-1981
	Falco cenchroides	nankeen kestrel	Sighting	2	30-Nov-1981
	Falco peregrinus	peregrine falcon	Sighting	1	14-Jan-1979
	Haliaeetus leucogaster	white-bellied sea-eagle	Not Recorded	4	11-Mar-2018
	Haliaeetus leucogaster	white-bellied sea-eagle	Sighting	5	30-Nov-1981

Unverified Records

No unverified records were found!

Raptor nests and sightings within 5000 metres

(based on Range Boundaries)

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

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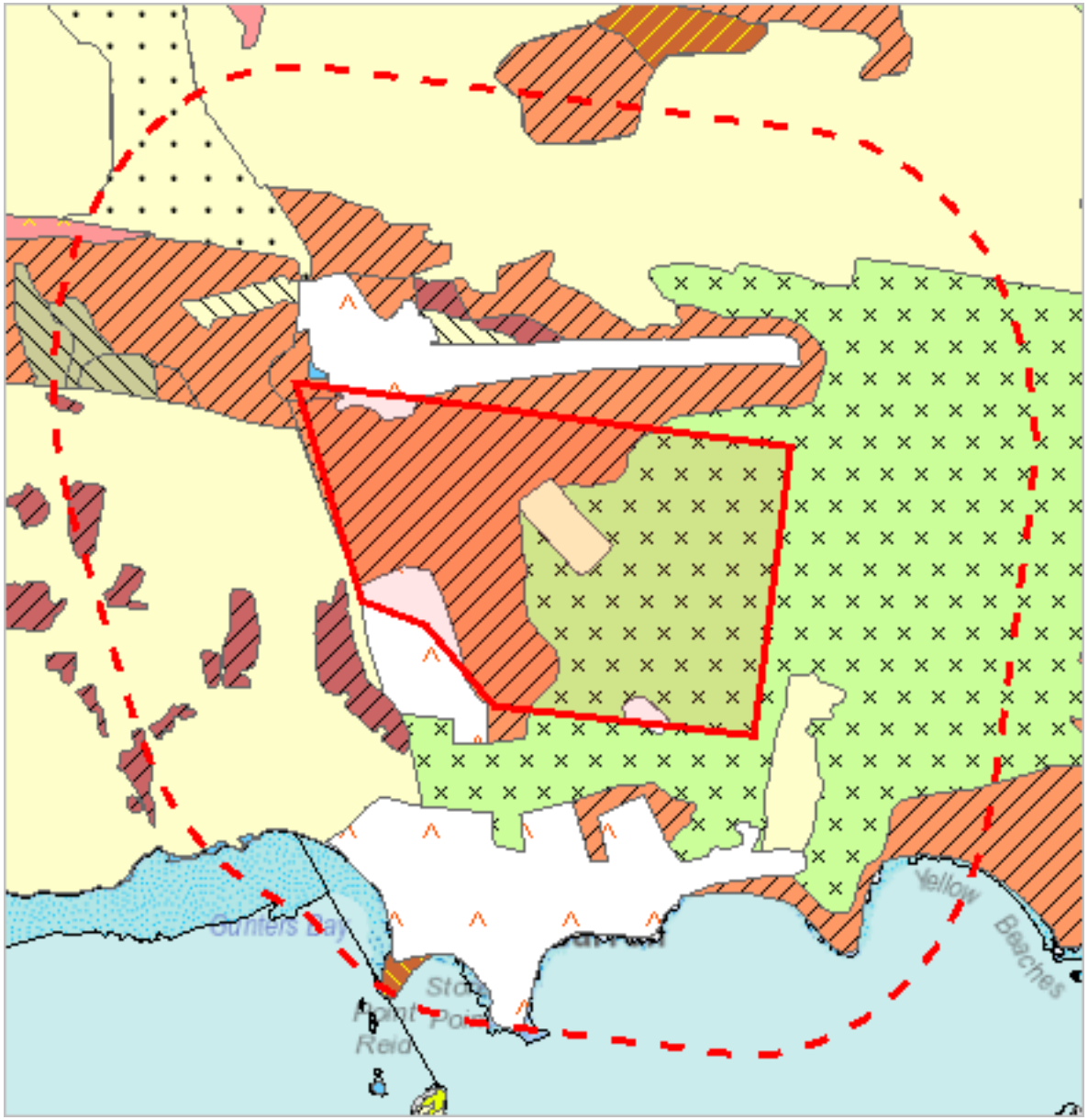
Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

TASVEG 4.0 Communities within 1000 metres

14.2.2 - March 2023

607547, 5550906



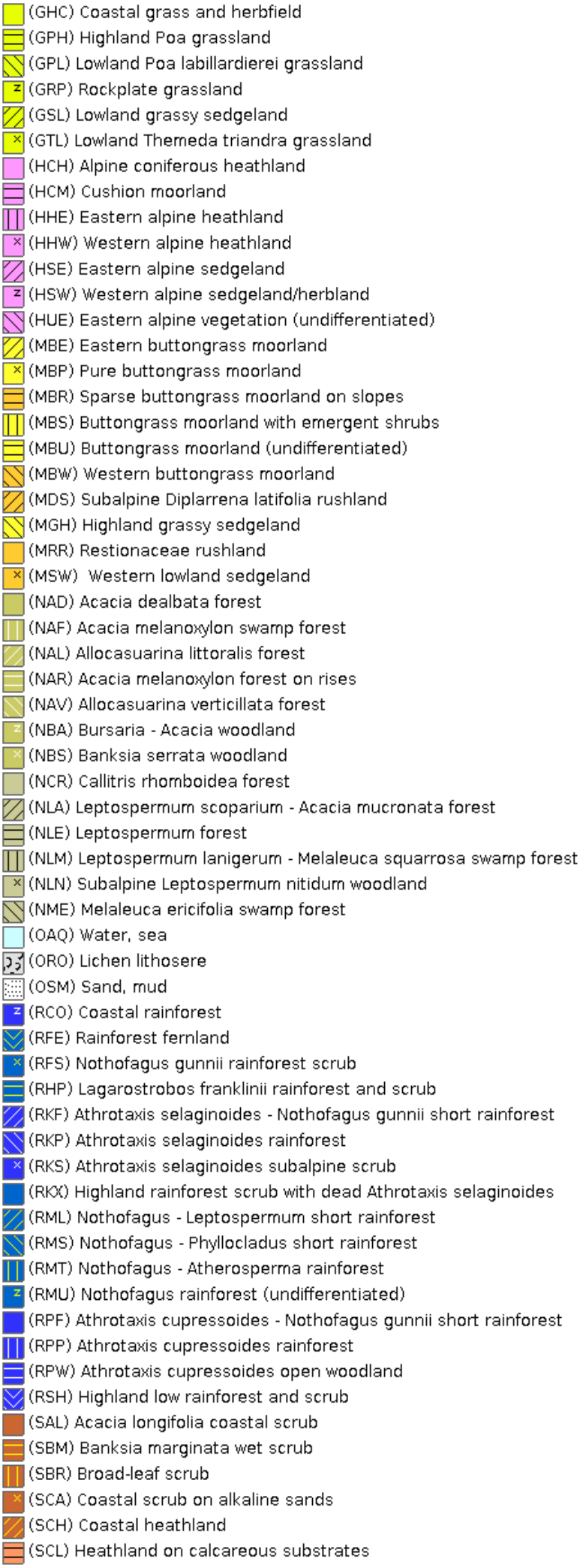
604103, 5547365

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

TASVEG 4.0 Communities within 1000 metres

14.2.2 - March 2023

Legend: TASVEG 4.0


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

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

Legend: Cadastral Parcels

TASVEG 4.0 Communities within 1000 metres

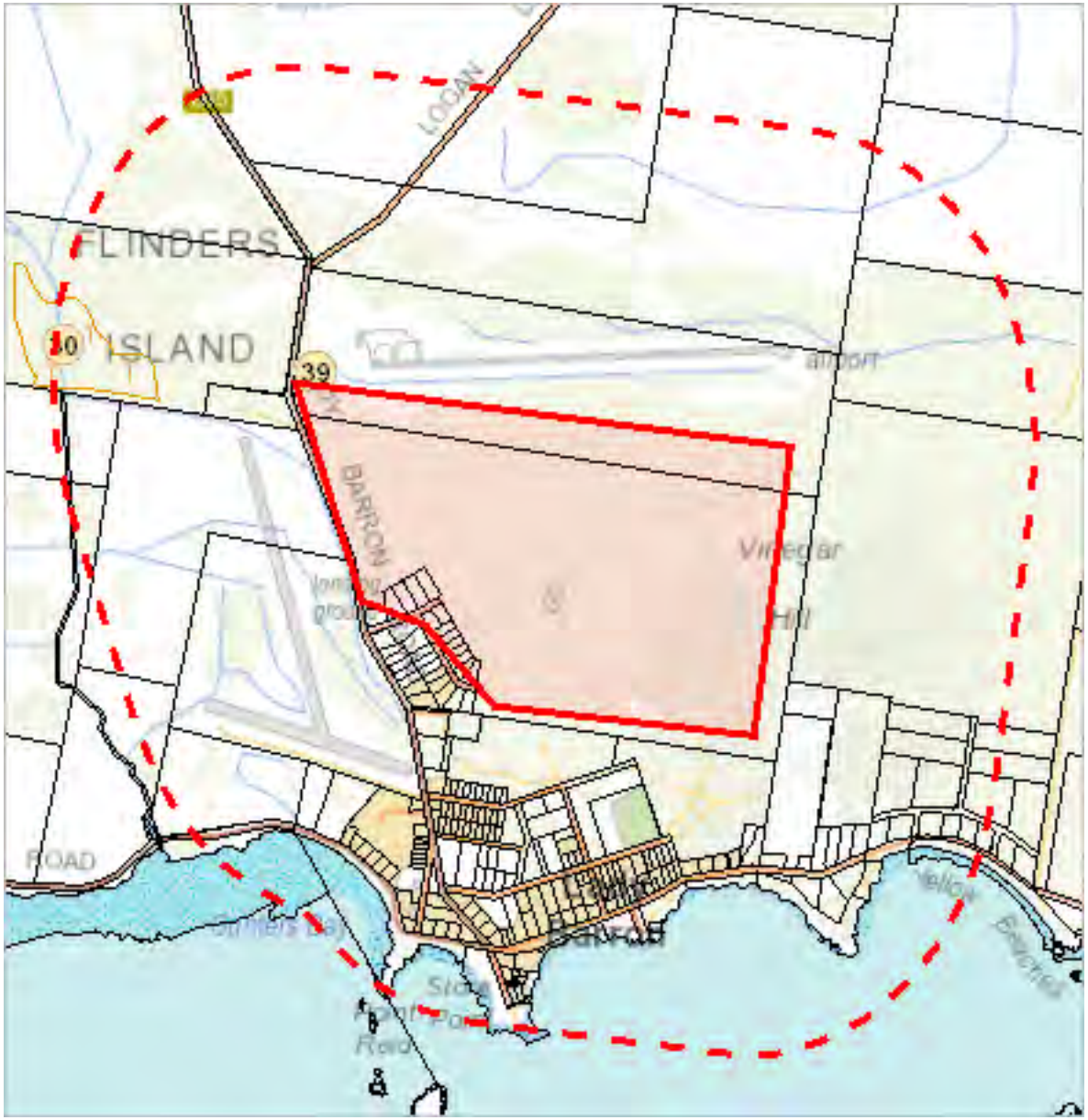
Code	Community	Canopy Tree
AHF	(AHF) Freshwater aquatic herbland	
ASS	(ASS) Succulent saline herbland	
DNI	(DNI) Eucalyptus nitida dry forest and woodland	
FAC	(FAC) Improved pasture with native tree canopy	
FAG	(FAG) Agricultural land	
FRG	(FRG) Regenerating cleared land	
FUR	(FUR) Urban areas	
NME	(NME) Melaleuca ericifolia swamp forest	EN
NME	(NME) Melaleuca ericifolia swamp forest	
SHW	(SHW) Wet heathland	
SLG	(SLG) Leptospermum glaucescens heathland and scrub	EN
SLG	(SLG) Leptospermum glaucescens heathland and scrub	
SMR	(SMR) Melaleuca squarrosa scrub	
SSC	(SSC) Coastal scrub	

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

Threatened Communities (TNVC 2020) within 1000 metres

14.2.2 - March 2023

607547, 5550906



604103, 5547365

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

Threatened Communities (TNVC 2020) within 1000 metres

Legend: Threatened Communities

- 1 - Alkaline pans
- 2 - Allocasuarina littoralis forest
- 3 - Athrotaxis cupressoides/Nothofagus gunnii short rainforest
- 4 - Athrotaxis cupressoides open woodland
- 5 - Athrotaxis cupressoides rainforest
- 6 - Athrotaxis selaginoides/Nothofagus gunnii short rainforest
- 7 - Athrotaxis selaginoides rainforest
- 8 - Athrotaxis selaginoides subalpine scrub
- 9 - Banksia marginata wet scrub
- 10 - Banksia serrata woodland
- 11 - Callitris rhomboidea forest
- 13 - Cushion moorland
- 14 -Eucalyptus amygdalina forest and woodland on sandstone
- 15 - Eucalyptus amygdalina inland forest and woodland on cainozoic deposits
- 16 - Eucalyptus brookeriana wet forest
- 17 - Eucalyptus globulus dry forest and woodland
- 18 - Eucalyptus globulus King Island forest
- 19 - Eucalyptus morrisbyi forest and woodland
- 20 - Eucalyptus ovata forest and woodland
- 21 - Eucalyptus risdonii forest and woodland
- 22 - Eucalyptus tenuiramis forest and woodland on sediments
- 23 - Eucalyptus viminalis - Eucalyptus globulus coastal forest and woodland
- 24 - Eucalyptus viminalis Furneaux forest and woodland
- 25 - Eucalyptus viminalis wet forest
- 26 - Heathland on calcareous substrates
- 27 - Heathland scrub complex at Wingaroo
- 28 - Highland grassy sedgeland
- 29 - Highland Poa grassland
- 30 - Melaleuca ericifolia swamp forest
- 31 - Melaleuca pustulata scrub
- 32 - Notelaea - Pomaderris - Beyeria forest
- 33 - Rainforest fernland
- 34 - Riparian scrub
- 35 - Seabird rookery complex
- 36 - Sphagnum peatland
- 36A - Spray zone coastal complex
- 37 - Subalpine Diplarrena latifolia rushland
- 38 - Subalpine Leptospermum nitidum woodland
- 39 - Wetlands

Legend: Cadastral Parcels

Threatened Communities (TNVC 2020) within 1000 metres

Scheduled Community Id	Scheduled Community Name
30	Melaleuca ericifolia swamp forest
39	Wetlands

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

Fire History (All) within 1000 metres

14.2.2 - March 2023

607547, 5550906

604103, 5547365

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)
232077	Lady Barron Road	01-Oct-2015	Bushfire	Undetermined	27.0077554
TFF310BU	Lady Barron North	23-Mar-2020	Planned Burn	Planned Burn	6.0473151
TFL101BU	Lady Barron	06-Apr-2018	Planned Burn	Planned Burn	179.60561817
	01AP	20-Apr-2015	Planned Burn	Planned Burn	13.7079095
	05AP East	20-Apr-2015	Planned Burn	Planned Burn	4.38254495
	05AP South West	21-Apr-2015	Planned Burn	Planned Burn	13.06498545

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

14.2.2 - March 2023

607547, 5550906

604103, 5547365

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)
232077	Lady Barron Road	01-Oct-2015	Bushfire	Undetermined	27.0077554
TFF310BU	Lady Barron North	23-Mar-2020	Planned Burn	Planned Burn	6.0473151
TFL101BU	Lady Barron	06-Apr-2018	Planned Burn	Planned Burn	179.60561817
	01AP	20-Apr-2015	Planned Burn	Planned Burn	13.7079095
	05AP East	20-Apr-2015	Planned Burn	Planned Burn	4.38254495
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ATTACHMENT 3: ASSESSMENT OF FLORA SPECIES OBSERVATIONS AND PREDICTED OCCURRENCES IN SURVEY AREA

Table 3.1 provides a listing of threatened flora from within 5,000 m of the study area (nominal buffer width usually used to discuss the potential of a particular study area to support various species listed in databases), with comments on whether potential habitat is present for the species, and possible reasons why a species was not recorded.

Table 3.1. Threatened flora species assessed based on observations/predicted occurrences.

Species listed below are listed as rare (r), vulnerable (v), endangered (e), or extinct (x) on the Tasmanian *Threatened Species Protection Act 1995* (TSPA); vulnerable (VU), endangered (EN), critically endangered (CR) or extinct (EX) on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA). Information below is sourced from the BVD (see Attachment 1). Habitat descriptions are taken from FPA (2016), FPA (2017) and Listing Statements and Notesheets except where otherwise indicated.

Species **Common name**	**TSPA/EPBC status**	**Comments about occurrence and habitat suitability**
Acacia uncifolia coast wirilda	r / -	Species recorded previously (NVA) near waste transfer station on Lady Barron Road. May be introduced to that location given it is a widely planted species in cultivation. Habitat is present on the Land, but the species was not observed, very unlikely to be overlooked – very distinctive growth habitat and phyllode form even when not in flower.
Asperula minima mossy woodruff	r / -	Known occurrence in the Land, near the telecommunications tower (Figure B-2). Plant at that location could not be found, but the species is likely to be present in the DVF forest community given the presence of well drained gravelly soils.
Caladenia australis southern spider orchid	e / -	In Tasmania, restricted to Flinders island, where it occurred in lowland coastal heathy scrub/woodland. Habitat is present, but the species has not been recorded since 1968 when it was first recorded near Lady Barron, possibly Holloway Park. Vinegar Hill has been the subject of several visits by botanists without any success of relocating the species.
Caladenia pusilla tiny fingers	r / -	Occurs mainly in heathland, shrubland, woodland and open eucalypt forest in near-coastal areas. It has been recorded from sandy loam, sandy peat, granite gravel and rocky ground. It is most frequent on well-drained soils but can extend to sites with impeded drainage. Species may be present but was not observed during the surveys.
Gyrostemon thesioides broom wheelfruit	r / -	**Present and observed during the survey (Figure B-2).** Occurs predominately on dolerite or granite in *Allocasuarina* (sheoak) forest in the State's east and north-east, including the Furneaux Group.

		Plants were observed, as they have been previously (NVA), on granite derived soils in association with the DVF forest community, with none extending to the acidic sands of the lowers lopes of Vinegar Hill.
Hydrocotyle comocarpa fringefruit pennywort	r / -	Recorded from Cape Barren, Flinders and Deal islands. Habitat descriptions include a ridge crest with shallow soil with other forbs surrounded by shrubs and *Eucalyptus nitida*, and for Deal Island on penguin pads, with some plants in bare soil. Habitat is present however the species was not observed. If present, it is likely to be associated with the granite ridgeline and rock plates associated with the DVF community.
Leucopogon affinis lanceleaf beardheath	r / -	Occurs in a broad range of habitats including tall scrub, mainly on stabilised dune sands and hinterlands, lagoon margins, and gullies and riverbanks in wet eucalypt forest, probably restricted to the Bass Strait islands. Habitat is absent on the Land, and it is very unlikely to have been overlooked – very distinctive growth habitat.
Parietaria debilis Shade pellitory	r / -	Occurs around mutton-bird rookeries, on cliffs/rocks in the salt spray zone, in moist shaded areas in dune scrubs, and under rock overhangs in forested gullies. Only rock overhangs/slopes are present in the Land, but these are very dry and exposed to sunlight and offer little moisture retention. Very distinctive species, unlikely to have been overlooked.
Pterostylis sanguinea banded greenhood	r / -	**Previously recorded based on NVA records (Attachment 2, Figure B-2).** Occurs in coastal eucalypt and sheoak woodland, teatree scrub and scrubby heathland on well-drained gravelly peat and sandy and clay loams. The NVA recorded occurrences of this species at Vinegar Hill overlap with the DVF community where the soils are derived from granitic gravels, and sands with occasional loam content and organic matter and accumulated leaf litter.
Pterostylis tunstallii Tunstalls greenhood	e / -	**Previously recorded based on NVA records (Attachment 2, Figure B-2).** Restricted to the eastern Bass Strait islands where it occurs in open forest and woodland, often in accumulated litter, on granite-derived gravelly and loamy soils. The NVA recorded occurrences of this species at Vinegar Hill (other than the 1968 recorded location, which has an accuracy of 2,000 m) overlap with the DVF community where the soils are derived from granitic gravels, and sands with occasional loam content and organic matter and accumulated leaf litter.
Scaevola albida pale fanflower	v / -	Habitat includes near-coastal scrubs, woodlands and grasslands, usually on calcareous sands, and it has also been observed colonising road

		margins. The elevation of known sites is 10-30 m above sea level, and the annual rainfall is about 500-700 mm. The potential habitat of *Scaevola albida* on Flinders Island is roughly delineated by areas of Quaternary sands with limestone deposits, in the Marshall Bay land system. The analogous system in north-western Tasmania is the Temma land system. The Land does not support Quaternary sands with limestone deposits.
Spyridium parvifolium* var. *parvifolium coast dustymiller	r / -	Mainly occurs in near-coastal areas in northern Tasmania. It occurs in a range of vegetation types, mainly shrubby dry sclerophyll forests and woodlands. It can proliferate from soil-stored seed after disturbance. Habitat is present on the Land, but the species was not observed, very unlikely to be overlooked – very distinctive growth habitat and phyllode form even when not in flower.

ATTACHMENT 4: PLANT SPECIES OBSERVED DURING SURVEY

INTRO	ENDEMIC	FAMCLASS	FAMILY	GENUS	SP1	RANK1	SP2
		Magnoliids	Lauraceae	Cassytha	glabella	f.	glabella
		Magnoliids	Lauraceae	Cassytha	pubescens		
		Eudicots	Adoxaceae	Sambucus	gaudichaudiana		
		Eudicots	Apiaceae	Xanthosia	pilosa		
		Eudicots	Apiaceae	Xanthosia	tridentata		
		Eudicots	Araliaceae	Hydrocotyle	hirta		
		Eudicots	Araliaceae	Hydrocotyle	sibthorpioides		
i		Eudicots	Asteraceae	Arctotheca	calendula		
		Eudicots	Asteraceae	Argentipallium	dealbatum		
	e	Eudicots	Asteraceae	Bedfordia	linearis	subsp.	linearis
	e	Eudicots	Asteraceae	Bedfordia	salicina		
i		Eudicots	Asteraceae	Carduus	pycnocephalus		
		Eudicots	Asteraceae	Cassinia	aculeata	subsp.	aculeata
i		Eudicots	Asteraceae	Chrysanthemoides	monilifera	subsp.	monilifera
		Eudicots	Asteraceae	Chrysocephalum	apiculatum	subsp.	apiculatum
i		Eudicots	Asteraceae	Cirsium	vulgare		
i		Eudicots	Asteraceae	Hypochaeris	radicata		
		Eudicots	Asteraceae	Lagenophora	stipitata		
i		Eudicots	Asteraceae	Leontodon	saxatilis		
		Eudicots	Asteraceae	Leptorhynchos	squamatus	subsp.	squamatus
		Eudicots	Asteraceae	Olearia	ramulosa		
		Eudicots	Asteraceae	Ozothamnus	thyrsoideus		
		Eudicots	Asteraceae	Senecio	linearifolius	var.	latifolius
		Eudicots	Asteraceae	Senecio	quadridentatus		
i		Eudicots	Asteraceae	Sonchus	asper		
		Eudicots	Boraginaceae	Cynoglossum	australe		
i		Eudicots	Brassicaceae	Brassica	rapa		
		Eudicots	Brassicaceae	Lepidium	desvauxii		
		Eudicots	Campanulaceae	Lobelia	anceps		
		Eudicots	Campanulaceae	Wahlenbergia	gracilis		
i		Eudicots	Caryophyllaceae	Cerastium	glomeratum		
		Eudicots	Caryophyllaceae	Scleranthus	biflorus		
i		Eudicots	Caryophyllaceae	Spergularia	marina		

INTRO	ENDEMIC	FAMCLASS	FAMILY	GENUS	SP1	RANK1	SP2
		Eudicots	Casuarinaceae	Allocasuarina	littoralis		
		Eudicots	Casuarinaceae	Allocasuarina	verticillata		
		Eudicots	Celastraceae	Stackhousia	monogyna		
		Eudicots	Convolvulaceae	Dichondra	repens		
		Eudicots	Crassulaceae	Crassula	sieberiana		
		Eudicots	Dilleniaceae	Hibbertia	procumbens		
		Eudicots	Dilleniaceae	Hibbertia	prostrata		
		Eudicots	Dilleniaceae	Hibbertia	riparia		
		Eudicots	Dilleniaceae	Hibbertia	sericea	var.	sericea
i		Eudicots	Dipsacaceae	Dipsacus	fullonum		
		Eudicots	Droseraceae	Drosera	macrantha	subsp.	planchonii
		Eudicots	Droseraceae	Drosera	peltata		
		Eudicots	Elaeocarpaceae	Tetratheca	labillardierei		
		Eudicots	Ericaceae	Acrotriche	serrulata		
		Eudicots	Ericaceae	Epacris	impressa		
		Eudicots	Ericaceae	Epacris	lanuginosa		
		Eudicots	Ericaceae	Epacris	obtusifolia		
		Eudicots	Ericaceae	Leucopogon	collinus		
		Eudicots	Ericaceae	Leucopogon	virgatus	var.	virgatus
		Eudicots	Ericaceae	Lissanthe	strigosa	subsp.	subulata
		Eudicots	Ericaceae	Monotoca	elliptica		
		Eudicots	Ericaceae	Sprengelia	incarnata		
		Eudicots	Ericaceae	Styphelia	adscendens		
		Eudicots	Euphorbiaceae	Amperea	xiphoclada	var.	xiphoclada
		Eudicots	Fabaceae	Acacia	genistifolia		
		Eudicots	Fabaceae	Acacia	longifolia	subsp.	sophorae
		Eudicots	Fabaceae	Acacia	melanoxylon		
	e	Eudicots	Fabaceae	Acacia	mucronata	subsp.	mucronata
		Eudicots	Fabaceae	Acacia	myrtifolia		
		Eudicots	Fabaceae	Acacia	terminalis		
		Eudicots	Fabaceae	Acacia	verticillata	subsp.	verticillata
		Eudicots	Fabaceae	Almaleea	subumbellata		
		Eudicots	Fabaceae	Aotus	ericoides		

INTRO	ENDEMIC	FAMCLASS	FAMILY	GENUS	SP1	RANK1	SP2
		Eudicots	Fabaceae	Bossiaea	cinerea		
		Eudicots	Fabaceae	Bossiaea	prostrata		
		Eudicots	Fabaceae	Daviesia	latifolia		
		Eudicots	Fabaceae	Daviesia	ulicifolia	subsp.	ulicifolia
		Eudicots	Fabaceae	Dillwynia	cinerascens		
		Eudicots	Fabaceae	Dillwynia	glaberrima		
i		Eudicots	Fabaceae	Genista	monspessulana		
		Eudicots	Fabaceae	Goodia	lotifolia		
		Eudicots	Fabaceae	Hovea	heterophylla		
		Eudicots	Fabaceae	Indigofera	australis	subsp.	australis
		Eudicots	Fabaceae	Kennedia	prostrata		
		Eudicots	Fabaceae	Platylobium	triangulare		
i		Eudicots	Fabaceae	Psoralea	pinnata		
		Eudicots	Fabaceae	Pultenaea	daphnoides		
		Eudicots	Fabaceae	Pultenaea	juniperina		
i		Eudicots	Gentianaceae	Centaurium	erythraea		
		Eudicots	Geraniaceae	Pelargonium	australe		
		Eudicots	Goodeniaceae	Goodenia	humilis		
		Eudicots	Goodeniaceae	Goodenia	lanata		
		Eudicots	Gyrostemonaceae	Gyrostemon	thesioides		
		Eudicots	Haloragaceae	Gonocarpus	micranthus	subsp.	micranthus
		Eudicots	Haloragaceae	Gonocarpus	tetragynus		
		Eudicots	Haloragaceae	Gonocarpus	teucrioides		
		Eudicots	Hypericaceae	Hypericum	gramineum		
		Eudicots	Lamiaceae	Ajuga	australis		
i		Eudicots	Lamiaceae	Prunella	vulgaris		
		Eudicots	Myrtaceae	Calytrix	tetragona		
		Eudicots	Myrtaceae	Eucalyptus	globulus	subsp.	globulus
	e	Eudicots	Myrtaceae	Eucalyptus	nitida		
		Eudicots	Myrtaceae	Eucalyptus	viminalis	subsp.	viminalis
		Eudicots	Myrtaceae	Kunzea	ambigua		
	e	Eudicots	Myrtaceae	Leptospermum	glaucescens		
		Eudicots	Myrtaceae	Leptospermum	laevigatum		

INTRO	ENDEMIC	FAMCLASS	FAMILY	GENUS	SP1	RANK1	SP2
		Eudicots	Myrtaceae	Leptospermum	lanigerum		
		Eudicots	Myrtaceae	Leptospermum	scoparium		
		Eudicots	Myrtaceae	Melaleuca	ericifolia		
		Eudicots	Myrtaceae	Melaleuca	gibbosa		
		Eudicots	Myrtaceae	Melaleuca	squarrosa		
		Eudicots	Onagraceae	Epilobium	billardiereanum	subsp.	billardiereanum
i		Eudicots	Oxalidaceae	Oxalis	corniculata	subsp.	corniculata
		Eudicots	Oxalidaceae	Oxalis	perennans		
		Eudicots	Phyllanthaceae	Phyllanthus	gunnii		
		Eudicots	Phyllanthaceae	Poranthera	microphylla		
	e	Eudicots	Pittosporaceae	Billardiera	longiflora		
		Eudicots	Pittosporaceae	Bursaria	spinosa	subsp.	spinosa
i		Eudicots	Plantaginaceae	Plantago	coronopus	subsp.	coronopus
i		Eudicots	Plantaginaceae	Plantago	lanceolata		
		Eudicots	Plantaginaceae	Plantago	varia		
i		Eudicots	Polygonaceae	Acetosella	vulgaris		
		Eudicots	Proteaceae	Banksia	marginata		
	e	Eudicots	Proteaceae	Hakea	epiglottis	subsp.	epiglottis
		Eudicots	Proteaceae	Hakea	teretifolia	subsp.	hirsuta
i		Eudicots	Resedaceae	Reseda	luteola		
		Eudicots	Rhamnaceae	Pomaderris	apetala	subsp.	apetala
		Eudicots	Rutaceae	Boronia	pilosa	subsp.	pilosa
	e	Eudicots	Rutaceae	Correa	lawrenceana	var.	lawrenceana
		Eudicots	Santalaceae	Exocarpos	cupressiformis		
		Eudicots	Solanaceae	Solanum	laciniatum		
		Eudicots	Stylidiaceae	Stylidium	graminifolium		
	e	Eudicots	Thymelaeaceae	Pimelea	nivea		
		Monocots	Asparagaceae	Lomandra	longifolia		
		Monocots	Asphodelaceae	Bulbine	glauca		
		Monocots	Cyperaceae	Carex	gaudichaudiana		
		Monocots	Cyperaceae	Eleocharis	sphacelata		
		Monocots	Cyperaceae	Gahnia	grandis		
		Monocots	Cyperaceae	Lepidosperma	concavum		

INTRO	ENDEMIC	FAMCLASS	FAMILY	GENUS	SP1	RANK1	SP2
		Monocots	Cyperaceae	Lepidosperma	filiforme		
		Monocots	Cyperaceae	Lepidosperma	longitudinale		
		Monocots	Cyperaceae	Schoenus	apogon		
		Monocots	Cyperaceae	Schoenus	lepidosperma	subsp.	lepidosperma
		Monocots	Hemerocallidaceae	Dianella	tasmanica		
		Monocots	Hypoxidaceae	Hypoxis	hygrometrica	var.	hygrometrica
		Monocots	Iridaceae	Patersonia	occidentalis	var.	occidentalis
		Monocots	Juncaceae	Juncus	kraussii	subsp.	australiensis
		Monocots	Juncaceae	Juncus	pallidus		
		Monocots	Juncaceae	Juncus	pauciflorus		
		Monocots	Poaceae	Australopyrum	pectinatum		
		Monocots	Poaceae	Austrostipa	stipoides		
		Monocots	Poaceae	Austrostipa	stuposa		
		Monocots	Poaceae	Dichelachne	inaequiglumis		
		Monocots	Poaceae	Distichlis	distichophylla		
		Monocots	Poaceae	Poa	labillardierei	var.	labillardierei
		Monocots	Poaceae	Poa	sieberiana	var.	sieberiana
		Monocots	Poaceae	Poa	tenera		
		Monocots	Restionaceae	Hypolaena	fastigiata		
		Monocots	Restionaceae	Leptocarpus	tenax		
i		Monocots	Typhaceae	Typha	latifolia		
		Monocots	Xanthorrhoeaceae	Xanthorrhoea	australis		
	e	Monocots	Xyridaceae	Xyris	tasmanica		
		Gymnosperms	Cupressaceae	Callitris	rhomboidea		
i		Gymnosperms	Pinaceae	Pinus	radiata		
		Pteridophytes	Blechnaceae	Blechnum	nudum		
		Pteridophytes	Dennstaedtiaceae	Pteridium	esculentum	subsp.	esculentum
		Pteridophytes	Gleicheniaceae	Gleichenia	microphylla		
		Pteridophytes	Lindsaeaceae	Lindsaea	linearis		
		Pteridophytes	Lycopodiaceae	Lycopodium	deuterodensum		
		Pteridophytes	Polypodiaceae	Microsorum	pustulatum	subsp.	pustulatum
		Pteridophytes	Selaginellaceae	Selaginella	uliginosa		

ATTACHMENT 5: THREATENED FLORA SPECIES NOTESHEETS

Gyrostemon thesioides

Scanned image by Eve Lazarus

FAMILY: GYROSTEMONACEAE

BOTANICAL NAME: *Gyrostemon thesioides* (Hook.f.) A.S.George, *Fl. Australia* 8: 392 (1982)

COMMON NAME: Broom wheelfruit

COMMONWEALTH STATUS (EPBC Act): Not Listed

TASMANIAN STATUS (TSP Act): rare

Description

Gyrostemon thesioides is small shrub or undershrub, 30 to 80 cm high. Its stems are hard and woody at the base, with many erect slender angular branches, simple or sparingly branched. Leaves are narrow linear-lanceolate, entire, 1 to 7 cm long; the lower leaves have short stalks, while the upper leaves are smaller and sessile. The species is dioecious, that is, male and female flowers occur on separate plants. Flowers are very small, are solitary in the axils of the upper leaves, and may occur at any time of year. Perianth c. 1 mm long, deeply and unevenly 4-lobed. Male flowers are usually turned to one side and nodding: they have 7 to 10 sessile anthers arranged in a single whorl. Female flowers have 2 orbicular carpels which are flattened and joined along their inner edges, each carpel containing a solitary ovule. The fruit is dry, c. 2 mm long and 4 mm broad, and dehiscent. Seeds are kidney-shaped, c. 2 mm long, reddish-brown, with a short white aril. (Description from Curtis 1967 and Harden 2000) **Confusing species**: *Gyrostemon thesioides* bears a superficial resemblance to some of the exotic brooms, eg, *Cytisus scoparius*, but may be readily distinguished by its flower and fruit.

Distribution and Habitat

On mainland Australia *Gyrostemon thesioides* occurs in New South Wales, Victoria, South Australia and Western Australia (Harden 2000). In Tasmania the species has been recorded from the central east and also the Furneaux Group of islands. Habitat includes low forest or scrub dominated by *Allocasuarina verticillata* (drooping sheoak), and also woodland dominated by 'half-barked' *Eucalyptus amygdalina* (black peppermint), the underlying geology being mostly Jurassic dolerite on mainland Tasmania and Devonian granite elsewhere. Associated species may include *Kunzea ambigua* (white kunzea) and, for occurrences on dolerite, *Scaevola aemula* (fairy fanflower).

Key Sites and Populations

Deal Island, Flinders Island, Cape Barren Island, Cataract Gorge, Apsley River, Cusicks Hill, Campbells Sugarloaf, Prosser Gorge.

Known Reserves

Buxton River Conservation Area, Douglas-Apsley National Park, Dry Creek East Nature Reserve, Freycinet National Park, Kent Group National Park, Killiecrankie Nature Recreation Area, Patriarchs Conservation Area.

Plates 1 & 2. *Gyrostemon thesioides* above the Apsley River in March 2008, six months after fire (images by Richard Schahinger)

Ecology and Management

*Gyrostemon thesioide*s is a 'fire-opportunist' (Harden 2000). Following fire it recruits from a soil-stored seed bank and may reach maturity within a matter of months. In favourable conditions it is capable of dominating the shrub layer over many kilometres, as observed in the past decade in the wake of the Bicheno and Cape Barren Island fires. Plants are believed to be relatively short-lived (less than 10 years), whereas the longevity of the soil-stored seed bank is likely to be in the order of decades.

The main threat to *Gyrostemon thesioide*s is loss of habitat through clearance. The species' transient nature means that its presence may not be detected in ecological surveys, so inadvertent clearance of habitat is a real possibility

Conservation Status Assessment

A re-assessment of the species' current status of 'rare' on the TSP Act may be warranted given the discovery of extensive populations in formal reserves since its original listing in 1995.

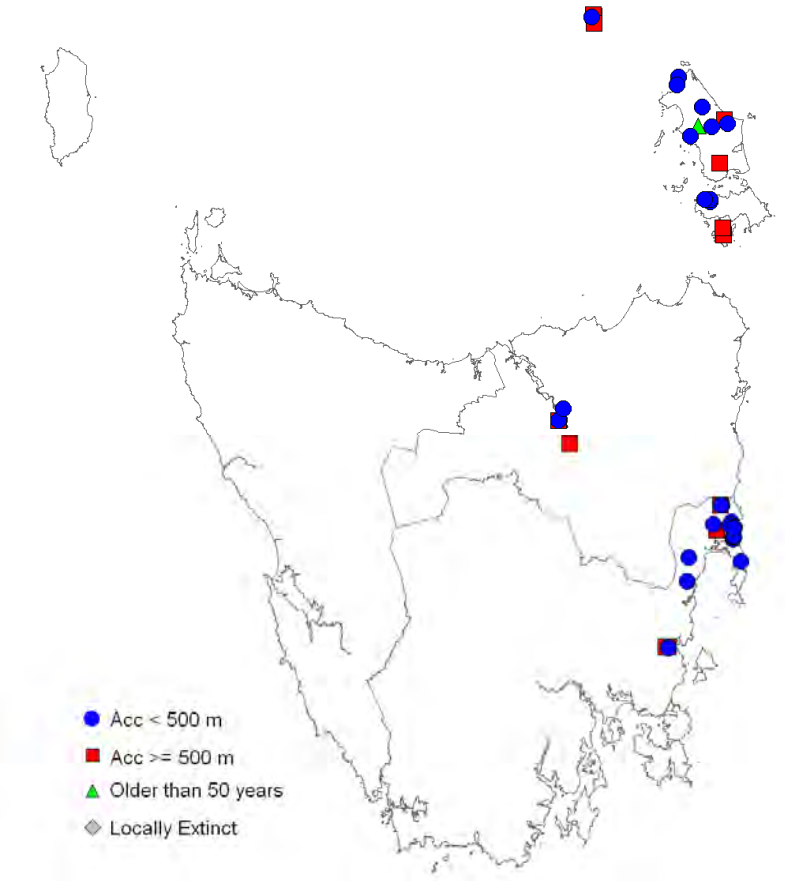
Further Information

Curtis, WM (1967). *The Student's Flora of Tasmania, Part 3*. Government Printer, Hobart.

Harden, G.J., (2000). *Flora of New South Wales: Revised Edition Volume 1*. University of New South Wales Press Ltd, Sydney.

Tasmanian Distribution

(As per Threatened Species and Marine Section records, April 2014)



1:25 000 Map Sheets

Anderson, Apslawn, Coles Bay, Friendly, Henry, Launceston, Leventhorpe, Lodi, Logan, Longford, Memana, Orford, Palana, Patriarchs, Preservation, Swansea, Tooms, Wingaroo.

Date last modified: 16/04/2014

View

http://www.dpipwe.tas.gov.au/threatenedspecieslists

Contact details

Threatened Species and Marine Section, Department of Primary Industries, Parks, Water and Environment, GPO Box 44, Hobart, Tasmania, Australia, 7001. Phone (03) 6165 4340; fax (03) 6233 3477.

Permit

It is an offence to collect, disturb, damage or destroy this species unless under permit.

Pterostylis sanguinea

Pterostylis sanguinea.
H & A Wapstra.

FAMILY: ORCHIDACEAE

BOTANICAL NAME: *Pterostylis sanguinea,* D.L.Jones & M.A.Clem., *Austral. Orchid Res*. 1: 126 (1989)

COMMON NAME: Banded greenhood

COMMONWEALTH STATUS: (*EPBC Act*) Not Listed

TASMANIAN STATUS: (*TSP Act*) rare

This species was previously known as *Pterostylis vittata* (*sensu* W.M. Curtis 1979). A listing statement is currently being compiled for this species. Please refer to page 239 of *'The Orchids of Tasmania'* by David Jones, Hans Wapstra, Peter Tonelli & Stephen Harris (1999) for further information.

Note: A taxonomic review of the greenhoods has split *Pterostylis* into several new genera. This species has been renamed *Urochilus sanguineus*. Until this change becomes widely accepted, for management purposes the Threatened Species Unit has chosen to continue dealing with this species as part of the *Pterostylis* genus.

THREATENED SPECIES LISTING STATEMENT

ORCHID **Tunstall's greenhood**

Pterostylis tunstallii D. L. Jones & M. A. Clem. 1989

Status

Tasmanian *Threatened Species Protection Act 1995*
……..……..……..……..……..endangered
Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*……..……..…....….....Not listed

Hans & Annie Wapstra

Description

Tunstall's greenhood belongs to a group of orchids commonly known as greenhoods because the dorsal sepal and petals are united to form a predominantly green, hood-like structure that dominates the flower. When triggered by touch, the labellum flips inwards towards the column, trapping any insect inside the flower, thereby aiding pollination as the insect struggles to escape. Greenhoods are deciduous terrestrials that have fleshy tubers, which are replaced annually. At some stage in their life cycle all greenhoods produce a rosette of leaves.

The rosette of Tunstall's greenhood can only be found on non-flowering plants. Tunstall's greenhood flowers from July to September. In flower, the plants are 25 to 50 cm tall with 5 or 6 dark green stem leaves, 25 to 60 mm long and 3 to 5 mm wide with a short, sharp point at the tips. They have 4 to 10 shiny, translucent green flowers. The hood is erect and has a wide, unobstructed opening. The two lateral sepals hang down, generally curving back towards the stem, and are fused with the tips remaining free for about 3 mm. The oblong labellum, which also hangs down, is dark brown with a blackish basal mound sloping backwards. The tip of the labellum is notched and curves upwards. In all, the flowers are 7 to 10 mm long and 5 to 7 mm wide.

Pterostylis tunstallii is a recently described species from a group of species known as the *Pterostylis longifolia* complex. It can be distinguished from the similar and closely related *Pterostylis williamsonii*, which has longer flowers, an ovate to oblong labellum that is prominently thickened at the base and has a shallowly notched apical tooth on the labellum. It is easily distinguishable from two other

greenhoods in this complex which have much longer labella. The labellum is deep green with a dark green central stripe in *Pterostylis stenochila* and yellowish to brown with a dark brown or black stripe in *Pterostylis melagramma.*

A taxonomic review of the greenhoods has split *Pterostylis* into several new genera. This species has been renamed *Bunochilus tunstallii*. Until this change becomes widely accepted, for management purposes the Threatened Species Unit has chosen to continue dealing with this species as part of the *Pterostylis* genus.

Distribution and Habitat

In Tasmania, Tunstall's greenhood is so far known only from the eastern Bass Strait Islands, occupying an area of approximately 2 hectares in total. It grows in open forest and woodland, often in accumulated litter, on granite-derived gravelly and loamy soils. It also occurs in New South Wales and Victoria.

Important Locations

Locality	1:25,000 mapsheet	Year last seen	Area (ha)	Number
Start of Strzelecki walking track, Flinders Island Private land and Strzelecki National Park	Loccota	1999	2	50
Lady Barron, Flinders Island	Fisher	1969	Possibly extinct	
Great Dog Island Aboriginal land	Fisher	1992	0.16	18
Vansittart Island Private land	Fisher	1973	Possibly extinct	
Swan Island Private land	Lyme Regis	1979		few

Threats, Limiting Factors and Management Issues

The only substantial known population of Tunstall's greenhood occurs at the start of the Strzelecki walking track. Most of the occurrence here is actually just outside the park boundary, on private land subject to grazing, in the vicinity of the right-of-way to give access to the park. Further up the walking track inside the boundary, the species tends to diminish and peter out after about 500 m. Grazing and inappropriate fire regimes are identifiable threats, but on the whole this population appears safe. The Strzelecki National Park management plan recommends the purchase of private land at the start of the Strzelecki walking track. This would place the whole population of Tunstall's greenhood in the park and facilitate management.

Tunstall's greenhood was recorded at Lady Barron on Flinders Island in 1969, but searches in suitable habitat on the Lady Barron foreshore and nearby Vinegar Hill in 1999 failed to locate the species here, although numerous specimens of the somewhat similar *Pterostylis melagramma* were located. The Lady Barron foreshore is a narrow strip, with adjacent housing and is heavily used by people, subject to rubbish dumping and infested with weeds. When the population on private land on Vansittard Island was discovered in 1973, it was in a remnant of scrub among ploughed land due to be developed further that year. If it still persists, clearing, ploughing and fertilisers are significant threats. Little is known about the occurrence on Swan Island.

Conservation Assessment

Population Estimate

Tunstall's greenhood has been confirmed from only 3 sites in recent years. Only one of these, at the start of the Strzelecki walking track on Flinders Island, could be described as a substantial population, with approximately 50 plants occurring in small loose groups over about 2 hectares.

Reservation Status

Tunstall's greenhood occurs in the Strzelecki National Park, although most plants in the population are found just outside the park boundary on private land in the vicinity of the right-of-way giving access to the park.

Assessment Criteria

Tunstall's greenhood meets the criteria for listing as endangered on the Tasmanian *Threatened Species Protection Act 1995* because

- there are less than 250 mature individuals in total
- it is severely restricted, occupying less than 10 hectares
- it occurs in 5 or less populations
- there is a continuing decline

Recovery Program

Objectives

- prevent the loss or degradation of known populations
- increase the number of known populations through survey

Existing Management

A draft management plan has been prepared for the Strzelecki National Park. The plan recommends the purchase of private land at the start of the Strzelecki walking track. This would place the whole population of Tunstall's greenhood in the park and facilitate management.

Actions Needed

- pursue management options with landowners/managers to protect populations of Tunstall's greenhood against possible changes in land use that would be detrimental to the species
- monitor known populations for threats and declines
- establish a mechanism to ensure management intervention when required
- further survey

Information Needed

- determine appropriate fire regimes for Tunstall's greenhood
- determine whether there are any more populations in existence

Management Advice

For the land owner/land manager

- protect open scrubland with Tunstall's greenhood from being grazed by stock
- if you own land on which the Tunstall's greenhood grows, consider some form of long-term protection, e.g. private nature reserve, management agreement, covenant, etc.

For everyone

- search for new populations from July to September when the plants are in flower
- help us to monitor known populations, particularly at flowering time

Further Information

Contact details: Threatened Species Unit, Department of Primary Industries, Water and Environment, GPO Box 44 Hobart Tasmania Australia 7001. Ph (03) 6233 6556 fax (03) 6233 3477.

Specialist Advice: Hans Wapstra, Vegetation Section, Department of Primary Industries, Water and Environment

Source Material

References

Jones, D. Wapstra, H., Tonelli, P. and Harris, S. 1999. *The Orchids of Tasmania*. Melbourne University Press.

Jones, D.L. 1998. Contributions to Tasmanian Orchidology –7: A Taxonomic Review of *Pterostylis* R. Br. in Tasmania, *Australian Orchid Research* 3: 135-177.

Statement Prepared: September 2000

Prepared by: Wendy Potts and Hans Wapstra

Review Date: 2005 or as new information is received.

Cite as: Threatened Species Unit 2000. Listing Statement Tunstall's greenhood *Pterostylis tunstallii*. Department of Primary Industries, Water and Environment, Tasmania.

View: http://www.dpiwe.tas.gov.au
& follow the links to Natural Environment, Threatened Species, then List of Threatened Species.

Permit: It is an offence to collect, possess or disturb this species unless under permit.

ATTACHMENT 6: LANDSCAPE IMAGES

Viewing Location 1

Viewing Location 2

Viewing Location 3

Viewing Location 4

Viewing Location 5

Viewing Location 6

Viewing Location 7

Viewing Location 8

Viewing Location 9

Viewing Location 10

Viewing Location 11

Viewing Location 12

Viewing Location 13

Viewing Location 14

Viewing Location 15

Viewing Location 16

Viewing Location 17

Viewing Location 18

Viewing Location 19

Viewing Location 20

Viewing Location 21

Viewing Location 22

Viewing Location 23

Viewing Location 24

Viewing Location 25