

Your ref: DOC/21/114571  
Our ref: 3219034

01 October 2021

Ann Cunningham  
Tasmanian Planning Commission  
Level 3, 144 Macquarie Street  
Hobart TAS 7001

Emailed to: [tpc@planning.tas.gov.au](mailto:tpc@planning.tas.gov.au)

**Response to West Tamar draft Local Provisions Schedule (LPS) - 5A Eiger Court Grindelwald (GHD Rep 7)**

Dear Ann,

Thank you for the letter and Directions Schedule, dated 28<sup>th</sup> September 2021, seeking a copy of the Natural Values Assessment (or equivalent) submitted relating to the recent amendment (AP-WTA-AMD-02-20) made to the *West Tamar Interim Planning Scheme 2013* (IPS) effective as of the 15 July 2021, for the land at 5A Eiger Court, Grindelwald.

The "Priority Habitat Overlay" that is currently applied to the land at 5A Eiger Court (the land) under the IPS was implemented under the Amendment AP-WTA-AMD-02-20.

The criteria that was used to create the overlay, as outlined in the attached *Craggy Ridge Investment Corporation, Botanical Survey and Fauna Habitat Assessment Report, October 2020* prepared by GHD (GHD report) was intentionally the same criteria that is used to map the 'Priority Vegetation Overlay' under the Natural Assets Code under the Tasmanian Planning Scheme (TPS). This was in the knowledge that the draft LPS was well advanced and in anticipation of the overlay being applied under the LPS.

The criteria is:

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

Should the Priority Vegetation Overlay, under the LPS, be applied to the land then the data and mapping would be the same as the mapping applied under the IPS. Page 59 – 60 of the attached GHD report provides both the criteria used to create the map and the recommended priority habitat overlay polygon that was applied under the AP-WTA-AMD-02-20 amendment.

It is our client's clear preference for the Low Density Residential Zone to be applied to this land through the Section 35KA process under the *Land Use Planning and Approvals Act 1993* (the Act). Noting the following:

This document is in draft form. The contents, including any opinions, conclusions or recommendations contained in, or which may be implied from, this draft document must not be relied upon. GHD reserves the right, at any time, without notice, to modify or retract any part or all of the draft document. To the maximum extent permitted by law, GHD disclaims any responsibility or liability arising from or in connection with this draft document.

- a. The current Priority Habitat Overlay under the IPS aligns with the Priority Vegetation Overlay under the LPS (if it were to be applied to land). Accordingly a direction to modify the draft LPS to apply the Priority Vegetation Overlay to the land will ensure the provisions correspond with the provisions of the LPS Criteria.
- b. The current Low Density Residential Zone under the IPS can be translated to the Low Density Residential Zone under the TPS and correspond with the provisions of the LPS Criteria; and
- c. To ensure consistency with the application of the Low Density Residential Zone on the adjacent land in Grindelwald it is anticipated that the Residential Supply and Density Specific Area Plan Grindelwald would extend to the land. This also ensure the lot sizes that were approved under the IPS amendment will be carried forward to the LPS. This should in effect meet the Planning Authority and community's expectations for the land.
- d. The Planning Commission and Planning Authority in consideration of the amendment AP-WTA-AMD-02-20 considered the land to be unsuitable for agriculture. This further supports the application of the Low Density Residential Zone to the land under the LPS. This is stated concisely in Part 19 of the Commission's decision:

*The Commission accepts the submissions that due to the constraints and characteristics the land is not suitable for agriculture*

- e. The Agriculture Zone would be an inappropriate application of the zone in light of the recent decision and consideration of the agricultural potential.
- f. GHD Planners have conferred with West Tamar Council Planners and agree the land should be included in the Low Density Residential Zone and that the Priority Vegetation Overlay as mapped in the IPS is also applied. Again the clear preference is for the modification to the LPS to be via Section 35KA of the Act and not as a substantial modification per Section 35KB. Council note in particular the amendment AP-WTA-AMD-02-20 included a 28 day public notification period and public involvement in the amendment process.

Please find attached with this cover letter a copy of the *Craggy Ridge Investment Corporation, Botanical Survey and Fauna Habitat Assessment Report, October 2020* prepared by GHD which is the Natural Values Assessment submitted in relation to the amendment AP-WTA-AMD-02-20.

If I can be of any further assistance then please contact me.

Regards



**David Cundall**  
Senior Planner

+61 3 62100679  
david.cundall@ghd.com

Copy to: Michelle Riley, West Tamar Council

Attachment: *Craggy Ridge Investment Corporation, Botanical Survey and Fauna Habitat Assessment Report, October 2020* prepared by GHD



**Craggy Ridge Investment Corporation**  
Botanical Survey and Fauna Habitat Assessment  
Report

October 2020

# Executive Summary

GHD Pty Ltd (GHD) was engaged by Craggy Ridge Investment Corporation to undertake a botanical survey and fauna habitat assessment for the proposed subdivision development at the “Craggy Ridge” site, near Grindelwald in northern Tasmania. This document underwent various updates and reviews prior to being submitted as part of a previous development application to the West Tamar Council, including updates based on comments provided by Povey (2013) who was engaged by West Tamar Council to review the natural values aspects of the project. Most recently, the document has been updated to comment on the potential impacts of the final proposed development layout on threatened flora and fauna.

This botanical survey and fauna habitat assessment forms part of the environmental assessments required to obtain approval for this project; this executive summary should only be read in the context of the whole report document.

Originally purchased by Craggy Ridge Estate Pty Ltd for an ecotourism venture, in 2014 the site was sold to Craggy Ridge Investment Corporation, who is the current site owner and development proponent. The current proposal is to develop a 15 lot subdivision at the site.

A GHD Senior Botanist and a GHD Ecologist conducted a botanical survey and fauna habitat assessment of the proposed development area on the 7 to 8 July 2010. A follow-up spring survey was conducted on 28 September 2010, and a targeted survey for the threatened green and golden frog (*Litoria raniformis*) was conducted from 22 to 23 November 2010. A further spring botanical survey, Tasmanian devil den and masked owl habitat survey was commissioned by Craggy Ridge Investment Corporation, and undertaken from 29 to 30 September 2015.

Further updates to this document were undertaken in August 2020 to review the effects of changes to the subdivision layout from 21 lots to 15 lots. However, a site visit was not undertaken as part of this 2020 review and final recommendations/conclusions are based on the assumption that overall site conditions (including vegetation communities) have not changed since 2019.

The surveys found:

- Three (3) threatened plant species, *Juncus amabilis* (gentle rush), *Hypoxis vaginata* subsp. *brevistigmata* (sheathing yellowstar), and *Ranunculus sessiliflorus* var. *sessiliflorus* (rockplate buttercup). Details on threatened species cover, abundance and location are provided in Section 3.1.2 of this document.
- Five (5) declared weed species, listed under the Tasmanian *Weed Management Act 1999*, of various degrees of infestation across the site.
- Nine (9) native vegetation communities, including the following threatened vegetation type:
  - Freshwater aquatic sedgeland and rushland (ASF), which is listed as vulnerable under the Tasmanian *Nature Conservation Act 2002*.
- Numerous fauna were observed and/or heard during the survey/s of the site including the threatened wedge tailed eagle (*Aquila audax* subsp. *fleayi*) and other bird, mammal and frog species. There were also an additional 15 threatened fauna species identified as potentially utilising the site.

- Three (3) fauna burrows were recorded in the steep south-eastern section of the site, these are potentially utilised by the Tasmanian devil, however the current use status and species utilising them is not confirmed.
- Three (3) hollow bearing/potential masked owl habitat trees were recorded on the plateau of the site. Again, the species utilising these trees has not been confirmed.

The following mitigation methods are recommended to minimise impacts to ecological values on site as a result of the 15 lot subdivision:

- Prepare a Construction Environmental Management Plan (CEMP) and a Post-Construction Rehabilitation Plan for the project that include provisions relevant to protecting ecological values within the site (such as described below). A Fire Management Plan should also be developed and implemented for the site that maintains native vegetation within the defendable space wherever possible (e.g. through mowing/slashing rather than replacement by exotic species). Particular care is required where threatened flora individuals occur within the Building Protection Zone, and hand-clearance avoiding any disturbance of ground layer species should occur to avoid any impacts to *Ranunculus sessiliflorus* var. *sessiliflorus* (rockplate buttercup) individuals recorded in this area.
- Surveys for potential Tasmanian devil dens and masked owl nest sites in 2015 identified a small number of both animal burrows suitable for devil use and hollows of a suitable size for the masked owl. It is not possible to confirm whether these are utilised by these species without further survey. If impacts to the mapped potential nest trees and burrows are likely to occur a camera survey over a period of two weeks is recommended to confirm whether are utilised by threatened fauna and therefore whether a permit to take is required under the TSPA.
- Should any flowering orchids be observed on site by the proponent and/or any contractors or consultants, it is recommended they be photographed and identified by a qualified botanist/ecologist in order to determine their species and rarity status.
- Avoid any unnecessary clearance and/or disturbance of native vegetation, threatened flora locations and flora and fauna habitat, and alterations to drainage on site. It is recommended that ecological values be clearly protected (with an appropriate buffer) from development as much as possible. Key values (e.g. threatened flora and hollow-bearing trees) should be clearly marked on ground for protection (fenced off 'no-go' zones) to ensure no impacts occur during construction works. Other marking, such as signage, is recommended post-works to ensure no later accidental impacts occur to these values.
- Revegetation and rehabilitation of native communities should occur in accordance with their local habitat characteristics to improve biodiversity values and the suitability of habitat for threatened flora and fauna. Only local native species should be used for revegetation (and only where appropriate), and for any amenity plantings wherever possible.
- Consider making the development a 'cat free' area, and prevent or restrict the ownership of cats (i.e. condition lots to restrict cats to within the boundaries of each lot), to further protect native wildlife.
- It is understood the Bushfire Protection Zone can accommodate the retention of the three mapped hollow bearing trees. It is recommended the lots containing these trees (lots 12 and 15, and the boundaries of lots 3-4) are positioned to prevent the removal of these high-quality habitat trees.

- Consider weed, disease and pest control in the detailed project planning either through incorporation of control measures in a site specific CEMP or preparation of a Weed Management/Hygiene Plan

It is envisaged that the recommendations outlined above and in Section 4 of this report will be reflected in the planning permit conditions for this project. However, additional permits, approvals and/or referrals may be required:

- Some of the vegetation on site may be classed as 'vulnerable land' under the Tasmanian *Forest Practices Act 1985* (FPA) due to the presence of threatened flora. Assessment and approval of this is undertaken by Council under the *Land Use Planning and Approvals Act 1993*, through the Development Application process for any vegetation clearance associated with future development on the proposed lots.
- Current plans for the subdivision indicate that the majority of high quality habitat (and habitat features such as burrows and hollow bearing trees) can be retained, therefore threatened fauna species are unlikely to be directly impacted by the project. As such a permit under the Tasmanian *Threatened Species Protection Act 1995* (TSPA) for disturbance to threatened fauna is unlikely to be required.
- Impacts to flora listed under the TSPA may occur, in particular *Hypoxis vaginata* var. *brevistigmata* (sheathing yellowstar) and *Juncus amabilis* (gentle rush). A Permit to Take will be required under the TSPA before any impacts to these species can occur. **Note that delisting of *J. amabilis* from state registers has recently been approved - should the proposal be initiated by Council, a Permit to Take for this species will not be required.**
- Although a small number of potential (not confirmed) Tasmanian devil layups/social dens were recorded on site, it is unlikely the area provides critical habitat for this species. In addition, the majority of potential habitat for species such as the eastern quoll and eastern barred bandicoot will be retained, and disturbance of the dens/burrows, and mapped hollow bearing trees is not proposed. Therefore, a referral under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* is unlikely to be required for potential impacts to Federally listed threatened fauna.

The above recommendations are based on current plans for the proposed Craggy Ridge Development (refer Figure 1), and may need to be revised if the development plans change.

# Table of Contents

Executive Summary .....	i
1. Introduction.....	6
1.1 Background.....	6
1.2 Purpose of the Study .....	6
1.3 Study Area .....	6
1.4 Acknowledgements.....	7
1.5 Qualifications .....	7
2. Methodology.....	10
2.1 Background Research .....	10
2.2 Field Assessment.....	10
2.3 Statement of Compliance .....	12
3. Biological Values.....	13
3.1 Native Flora.....	13
3.2 Introduced Plants .....	18
3.3 Vegetation Communities and Condition .....	22
3.4 Fauna Habitat Values .....	39
4. Potential Impacts and Recommendations .....	51
4.1 Native Vegetation.....	51
4.2 Significant Flora Impacts.....	54
4.3 Fauna Habitat .....	55
4.4 Introduced Plants, Pests and Pathogens.....	57
4.5 West Tamar Interim Planning Scheme 2013 Biodiversity Code.....	58
4.6 Bushfire Management Plan .....	59
5. Limitations .....	62
6. References .....	63

## Table Index

Table 1	Threatened Flora Previously Recorded within 5 km of the Study Area.....	13
Table 2	Threatened Flora Species Recorded within the Study Area.....	16
Table 3	Declared Weeds Recorded within the Study Area .....	19
Table 4	Threatened Fauna known to Occur or Predicted to Occur within 5 Kilometres of the Study Area .....	42

## Figure Index

Figure 1	Location and Boundary of Study Site .....	8
Figure 2	Proposed Site Plan .....	9
Figure 3	Vegetation Communities, Threatened Flora and Declared Weeds within the Study Area .....	37
Figure 4	Ecological Values and Subdivision Overlay.....	38
Figure 5	Vegetation to be Cleared .....	53

## Plate Index

Plate 1	Examples of Threatened Species found within the Study Area .....	17
Plate 2	Declared Weeds within the Study Area .....	20
Plate 3	Declared Weeds within the Study Area .....	21
Plate 4	Threatened Freshwater Aquatic Sedgeland and Rushland (ASF) Community Adjacent to a Dam on Site .....	23
Plate 5	Native Grassland Communities on Site .....	26
Plate 6	<i>Eucalyptus viminalis</i> Grassy Forest and Woodland (DVG) Community .....	27
Plate 7	Examples of <i>Acacia</i> Dominated Communities within the Study Area .....	29
Plate 8	Examples of Water Bodies (OAQ) within the Study Area .....	30
Plate 9	Communities Dominated by Regenerating Native Species within the Study Area .....	32
Plate 10	Examples of Agricultural Land (FAG) within the Study Area including an Area of Poor Drainage Dominated by Native Rush Species.....	34
Plate 11	Plantations for Silviculture (FPL) Community .....	35
Plate 12	Weed Infestation Communities within the Study Area.....	36
Plate 13	Examples of Fauna Habitat across the Study Area.....	41
Plate 14	Examples of Native Fauna and Utilised Hollows Observed during the Field Survey (2010) .....	47
Plate 15	Potential Evidence and Habitat of Threatened Fauna Occurring within the Study Area.....	50

## Appendices

Appendix A - Flora List

Appendix B - Legislation Summary

Appendix C - Green and Gold Frog Survey Report

Appendix D - Natural Values Atlas Report and Protected Matters Search Report

# 1. Introduction

## 1.1 Background

GHD Pty Ltd (GHD) was engaged by Craggy Ridge Investment Corporation to undertake a botanical survey and fauna habitat assessment for the proposed housing development at the “Craggy Ridge” site, near Grindelwald in northern Tasmania. This botanical survey and fauna habitat assessment forms part of the environmental assessments required to obtain approval for this project.

This report underwent various updates and reviews prior to being submitted as part of the development application to the West Tamar Council (document status at the end of the report). Previously the report had been updated following comments provided by Povey (2013), who was engaged by West Tamar Council to review the natural values aspects of information provided by the proponent about the proposed project. It was then updated based on a spring survey undertaken 29 September 2015, and now most recently to comment on the potential impacts of the final proposed development layout on threatened flora and fauna.

## 1.2 Purpose of the study

The purpose of this study was to:

- Describe the flora and fauna of the study area
- Identify threatened ecological values within the study area
- Evaluate the proposed Craggy Ridge Development against relevant environmental government legislation and policy
- Outline potential impacts of the proposed Craggy Ridge Development on ecological values
- Outline mitigation measures to minimise potential impacts
- Provide recommendations on permits or processes required

## 1.3 Study area

The land considered during the surveys is approximately 57 hectares on a dolerite substrate, and includes the following titles:

- Property ID 7370215, Title Reference 146283/1
- Property ID 2653734, Title Reference 144951/1
- Property ID 7370215, Title Reference 146284/1
- Property ID 1481918, Title Reference 106310/15

Proposed development plans for the site include a 15 lot housing subdivision and new access roads, as well as a bushfire protection buffer zone. The study area location is shown in Figure 1 (corresponds with the development area at the time the surveys were undertaken) and the current proposed site layout in Figure 1.

## **1.4 Acknowledgements**

We would like to recognise the assistance with plant identification of Matthew Baker and Marco Duretto at the Tasmanian Herbarium.

The Department of Primary Industries, Parks, Water and Environment (DPIPWE) is acknowledged for access to its Natural Values Atlas, and the Department of the Environment and Energy for access to its Protected Matters Search Tool.

## **1.5 Qualifications**

Updates to this report undertaken in August 2020 assume that no significant changes have occurred on the site since the last site visit in July 2019. Changes at the site may include:

- Removal of vegetation
- Fire and burning (localised) which may initiate germination of species not previously recorded
- Modification to drainage patterns, dams and creek lines



the LIST & copy State of Tasmania

Paper Size A3  
 0 25 50 100 150 200 250  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 55



LEGEND  
 Study Area  
 Highway/Road



Craggy Ridge Investment Corporation Pty Ltd  
 Craggy Ridge Estate

Job Number 32-1768402  
 Revision A  
 Date 30 Oct 2015

Location and Boundary of Study Site

Figure 1

**PLAN OF SUBDIVISION**

**NOTES**

This plan has been prepared only for the purpose of obtaining preliminary subdivision approval from the Council and the information shown hereon should be used for no other purpose. All measurements and areas are subject to final survey.

All lots are over 8000m<sup>2</sup> in size.

**Schedule of Easements**  
3 m wide easement over stormwater on lots.

**STAGING:**

- 1: Lots 1 - 8, Road 102
- 2: Lots 9 - 14, Road 101

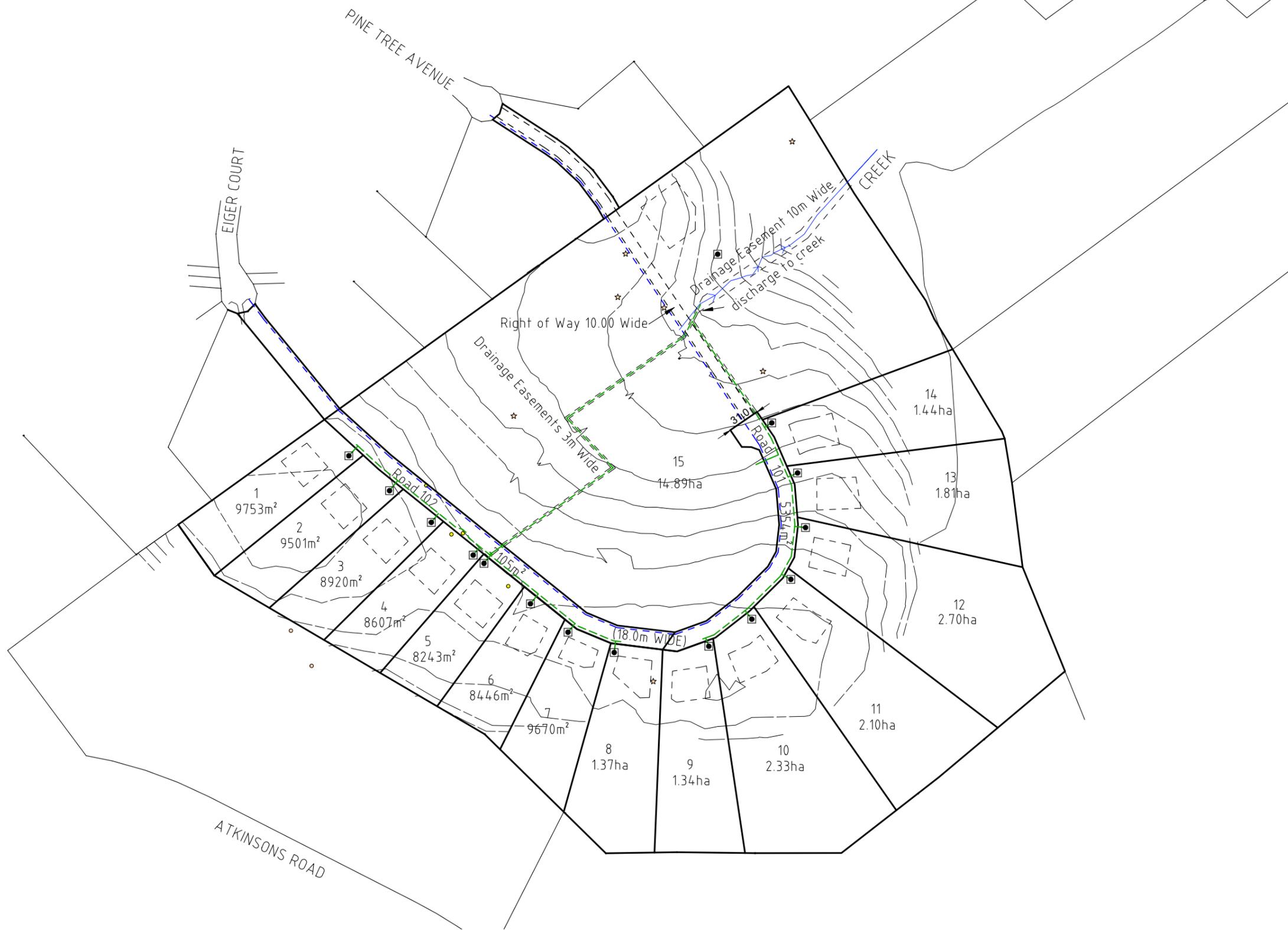
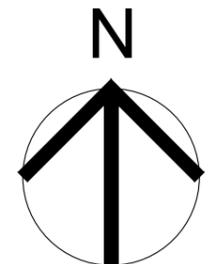
CONTOUR INTERVAL 1m

-  PROPOSED WATER
-  Piped stormwater
-  Open drain in road (rock lined on steeper slopes)

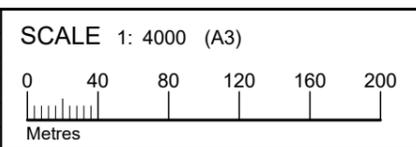
 Indicative Building Envelope

 Stormwater discharge point - Refer accompanying servicing report

Note:  
Subsoil Drainage will be installed parallel to stormwater drains as described in the accompanying servicing report



E				
D				
C				
B				
A				
REV	AMENDMENTS	DRAWN	DATE	APPR.



SURVEYOR	GEOCIVIL
SRL	41875
DRAWN	CHECKED
SRL & HYC	JWD
DATE	
	03 JULY 2020

**PLAN OF SUBDIVISION**  
EIGER COURT & PINE TREE AVENUE, GRINDLEWALD  
CRAGGY RIDGE INVESTMENT CORPORATION PTY.LTD.  
CT.169533/1



**PDA Surveyors**  
Surveying, Engineering & Planning  
ABN 71 217 806 325

Incorporating  
**WALTER SURVEYS**

3/23 Brisbane Street,  
Launceston, Tasmania, 7250  
www.pda.com.au  
Also at: Hobart, Kingston,  
Devenport & Burnie  
PHONE: +61 03 6331 4099  
FAX: +61 03 6334 3098  
EMAIL: pda.ltn@pda.com.au

SCALE	PAPER
1:4000	(A3)
JOB NUMBER	DRAWING
41875 - P09(1)	

## 2. Methodology

### 2.1 Background research

The primary data sources accessed during the background research include:

- Natural Values Atlas.<sup>1</sup> – a natural values report that identifies threatened fauna and flora records within 500 m and 5000 m of the study area. This was accessed prior to the field survey work undertaken in 2010, reviewed for any additional data in September 2015 and an updated version reviewed in July 2019. This version was not updated for the 2020 iteration of this report.
- *Tasmania's Threatened Fauna Handbook* (Bryant & Jackson 1999) – which was consulted for threatened species recorded from the Dilston map sheet (Tasmap 5042, Tasmania 1:25,000 series).
- The *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) 'Protected Matters Search Tool'<sup>2</sup> – which identifies any matters listed under the EPBCA within a 5 kilometre buffer around the study area.
- The LIST information database – which provides information on the location of vegetation communities according to the TASVEG 2013 and NRM Coastal Values Project 2006 mapping data, including the location of threatened vegetation.

### 2.2 Field assessment

A number of field assessments have been completed, including:

- A botanical survey and fauna habitat assessment by a GHD Senior Botanist and Ecologist from 7 to 8 July 2010. The study area was surveyed on foot, noting and collecting plant species as needed, for confirmation and final identification at the Tasmanian Herbarium. Please note that urban gardens and associated residential land was not surveyed in detail. All species observed were recorded along with fauna habitat values, native vegetation communities and weed infestations. Baseline surveys for native fauna were also undertaken each night (2 hours per night), using call playback and spotlighting techniques.
- A follow-up spring survey was undertaken on 28 September 2010, which focussed on identifying threatened flora expected to be fertile during spring, and clarifying vegetation boundaries.
- A targeted survey for the green and golden frog (*Litoria raniformis*) was undertaken by a GHD Ecologist and field assistant over two evenings from 22 to 23 November 2010 (refer GHD 2010).
- An additional targeted assessment for threatened species was undertaken on 29 and 30 September 2015 including surveys of:
  - Threatened flora to update mapped locations
  - The potential presence of Tasmanian devil dens
  - Possible masked owl nest sites (trees with suitably sized hollows). Call playback for the masked owl was also undertaken over two consecutive evenings

---

<sup>1</sup> Biodiversity Conservation Branch, DPIPWE, accessed 5 July 2010 and 20 December 2016.

<sup>2</sup> Commonwealth Government, Department of the Environment, Water, Heritage and the Arts. Available online at: <http://www.environment.gov.au>, accessed 20 December 2016.

## 2.3 Statement of compliance

Plant species were collected in accordance with Plant Collection Permit Number TFL 10107 (expiry: 30/06/2011) and DA 15127 (expiry date 31/05/2016) issued by DPIPWE.

All plants were identified in accordance with the *Census of Vascular Plants of Tasmania* (Buchanan 2009). Flora and fauna conservation significance was determined in accordance with the *Tasmanian Threatened Species Protection Act 1995* (TSPA) and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBCA).

Conservation significance of vegetation communities was assessed in accordance with the TASVEG 2005 and Regional Forestry Agreement (RFA) classification and associated criteria.

Potential Tasmanian devil dens were assessed as per the 'denning features' descriptions in Appendix 1 of the Survey Guidelines and Management Advice for Development Proposals that may impact on the Tasmanian Devil (*Sarcophilus harrisii*) (DPIPWE 2014).

A supplement to the 'Guidelines for Natural Values Surveys - Terrestrial Development Proposals'.

## 3. Biological values

### 3.1 Native flora

#### 3.1.1 Potentially threatened flora identified by desktop research

According to the Natural Values Atlas Report<sup>3</sup>, the only threatened plant species recorded within 500 metres of the study area are those recorded as part of the 2010 survey for this report (see Section 3.1.2). Additional plant species listed under the TSPA and the EPBCA have been recorded, or are predicted to occur, within 5 kilometres of the study area. These species and their likelihood of occurrence are listed in Table 1 below.

**Table 1 Threatened flora previously recorded within 5 km of the study area**

Species	Tasmanian TSPA Status	Commonwealth EPBCA Status	Brief Habitat Description and Likelihood of Occurrence within Study Area
<i>Arthropodium strictum</i> chocolate lily	Rare	Not Listed	Occurs in open forest, dry hillsides and grasslands. <b>Possible, some suitable habitat.</b>
<i>Austrostipa blackii</i> crested speargrass	Rare	Not Listed	Occurs in lowland open woodlands on the east coast. <b>Unlikely, outside of known habitat area.</b>
<i>Bolboschoenus caldwellii</i> sea clubsedge	Rare	Not Listed	Occurs in shallow, standing, sometimes brackish water, rooted in heavy black mud. <b>Unlikely, not detected during field survey.</b>
<i>Boronia hippopala</i> Velvet boronia	Vulnerable	Vulnerable	Occurs in the Eastern Tiers, at elevations between 400-550m asl. <b>Unlikely, outside of known range.</b>
<i>Brunonia australis</i> blue pincushion	Rare	Not Listed	Occurs in grassy woodlands, dry sclerophyll forests and in heathy and shrubby dry forests. <b>Possible, some suitable habitat.</b>
<i>Barbarea australis</i> native wintercress	Endangered	Critically Endangered	Occurs near river margins, creek beds and along flood channels adjacent to the river. <b>Unlikely, lack of suitable habitat.</b>
<i>Caladenia caudata</i> tailed spider-orchid	Vulnerable	Vulnerable	Occurs in heathy and grassy open eucalypt forest and woodland, often with she-oaks on sunny north facing slopes. <b>Unlikely, lack of suitable habitat.</b>
<i>Chiloglottis trapeziformis</i> broadlip bird-orchid	Endangered	Not Listed	Occurs in dry open eucalypt forest. <b>Possible, some suitable habitat.</b>
<i>Colobanthus curtisiae</i> grassland cupflower	Rare	Vulnerable	Occurs in grassland to grassy woodland in a wide variety of environmental conditions. <b>Possible, some suitable habitat.</b>
<i>Dianella amoena</i> matted flax-lily	Rare	Endangered	Occurs in native grasslands and grassy woodlands, mainly in the Midlands. <b>Possible, some suitable habitat.</b>
<i>Epacris exserta</i> South Esk heath	Endangered	Endangered	Occurs as a strictly riparian species in areas subject to periodic inundation, on alluvium amongst Jurassic dolerite boulders within dense riparian scrub, or occasionally in open rocky sites. <b>Unlikely, lack of suitable habitat.</b>

<sup>3</sup> Biodiversity Conservation Branch, DPIPW, accessed 5 July 2010 and 20 December 2016.

Species	Tasmanian TSPA Status	Commonwealth EPBCA Status	Brief Habitat Description and Likelihood of Occurrence within Study Area
<i>Glycine latrobeana</i> clover glycine	Vulnerable	Vulnerable	Occurs in dry sclerophyll forest, native grasslands and woodland. <b>Possible, some suitable habitat.</b>
<i>Hyalosperma demissum</i> moss sunray	Endangered	Not Listed	Occurs in shallow, stony soils (dry dolerite ridges) and rock plates in the eastern half of the State. <b>Possible, some suitable habitat.</b>
<i>Hypolepis muelleri</i> harsh groundfern	Rare	Not Listed	Occurs along watercourses or deep alluvial soils below 120 metres altitude. <b>Unlikely, lack of suitable habitat and not detected during field survey.</b>
<i>Hypoxis vaginata</i> sheathing yellowstar	Rare	Not Listed	Occurs in unimproved pastures and swampy or poorly drained situations from sea level to 200 metres altitude. <b>Present, detected during spring field survey.</b>
<i>Juncus amabilis</i> gentle rush	Rare – <b>delisting pending</b>	Not Listed	Occurs in moist habitats, generally areas of seepage confined to roadsides. <b>Present, detected during initial field survey.</b>
<i>Lepidium hyssopifolium</i> soft peppercress	Endangered	Endangered	Occurs in the growth suppression zone beneath large trees in grassy woodlands and under exotic trees on roadsides and farms, at an altitude range of 40 – 500m asl. <b>Possible, some suitable habitat however not detected during field surveys.</b>
<i>Leucochrysum albicans</i> var. <i>tricolor</i> grassland paperdaisy	Endangered	Endangered	Originally occurred in <i>Eucalyptus pauciflora</i> woodland and tussock grassland. Restricted to non-sandy soils. <b>Unlikely, lack of suitable habitat and outside of known population locations.</b>
<i>Prasophyllum apoxychilum</i> tapered leek-orchid	Endangered	Endangered	Found in coastal heathland or grassy and scrubby open eucalypt forest on sandy and clay loams, often among rocks. <b>Possible, some suitable habitat.</b>
<i>Pterostylis commutata</i> midland greenhood	Endangered	Critically Endangered	Occurs in native grassland and <i>Eucalyptus pauciflora</i> grassy woodland on well-drained sandy soils and basalt loams. <b>Unlikely, the study area far outside the species known range and lack of suitable habitat.</b>
<i>Prostanthera rotundifolia</i> roundleaf mintbush	Vulnerable	Not Listed	This shrub occurs along riverbanks and on rocky hillsides. <b>Unlikely, not detected during field survey.</b>
<i>Ruppia megacarpa</i> largefruit seatassel	Rare	Not Listed	Found growing in coastal creeks, estuaries and lagoons. <b>Unlikely, lack of suitable habitat.</b>
<i>Senecio squarrosus</i> leafy fireweed	Rare	Not Listed	Occurs in dry sclerophyll forest. <b>Possible, some suitable habitat.</b>
<i>Teucrium corymbosum</i> forest germander	Rare	Not Listed	Occurs in <i>Allocasuarina verticillata</i> coastal and inland woodlands and native grasslands. <b>Unlikely, lack of suitable habitat and not detected during field survey.</b>

Species	Tasmanian TSPA Status	Commonwealth EPBCA Status	Brief Habitat Description and Likelihood of Occurrence within Study Area
<i>Veronica plebeian</i> trailing speedwell	Rare	Not Listed	Occurs in wet sclerophyll forest, predominantly in the north of the State. <b>Unlikely, lack of suitable habitat.</b>
<i>Xanthorrhoea arenaria</i> sand grasstree	Vulnerable	Vulnerable	Occurs in coastal sandy heath from Bridport in the northeast to Coles Bay on the East Coast. <b>Highly unlikely, lack of suitable habitat and not recorded during field assessment.</b>
<i>Xanthorrhoea bracteata</i> shiny grasstree	Vulnerable	Vulnerable	Occurs in sandy soils, often acid and waterlogged, in coastal heathland. <b>Highly unlikely, lack of suitable habitat and not recorded during field assessment.</b>

**Note: Likelihood of occurrence of threatened flora is assessed on a 4-tier scale:**

1. **Present** – Individuals recorded within the study area during the field assessment or any previous assessment within the boundaries of study area.
2. **Possible** – Suitable habitat occurs within the study area.
3. **Unlikely** – Suitable habitat unlikely to occur within the study area, or suitable habitat substantially modified, or suitable habitat present but species not recorded for over 50 years within 5 kilometres of the site.
4. **Highly unlikely** – No suitable habitat present within the study area, and individuals not recorded within the study area during current or any previous assessment.

### 3.1.2 Threatened flora recorded within the study area

Three threatened plant species were confirmed within the study area during field surveys<sup>4</sup>:

- ***Hypoxis vaginata* var. *brevistigmata* (sheathing yellowstar)**: This species was also recorded during the spring surveys in 2010 and 2015, at four locations within the regenerating cleared land (FRG) community on the upper plateau area (refer Figure 3). Population estimates are provided in Table 2.
- ***Ranunculus sessiliflorus* var. *sessiliflorus* (rockplate buttercup)**: This species was recorded during the spring survey within the rockplate grassland (GRP) community, on the south-westerly facing slope at the edge of the upper plateau area. The species is shown in Plate 1b, and population estimates provided in Table 2. **This species was recorded in 2010 but was not detected in 2015 (however, no disturbance to the area so it is likely this species still occurs in this location).**
- ***Juncus amabilis* (gentle rush) (delisting pending)**: General locations for this species are considered and shown in Figure 2, with this species growing amongst other members of the genus in areas of poor drainage across the study site. The species is shown in Plate 1a, and population estimates are provided in Table 2. **This species was recorded in both 2010 and 2015.**

<sup>4</sup> ***Carex longibrachiata* (drooping sedge)**: A patch of potential *Carex longibrachiata* was also recorded growing along the edge of the drainage line flowing northeast from the large dam on site (refer Table 2 and Plate 1 below). These individuals were tentatively identified as this state rare species; however, without fertile material, identification remained unconfirmed. It is understood that another botanist has more recently assessed fertile material of these individuals (Povey 2013) and identified them as *Carex iynx* (tussock sedge) rather than the threatened *Carex longibrachiata* (drooping sedge).

**Table 2 Threatened flora species recorded within the study area**

Species Name	Common Name	Status	Approx. No. Individuals	Approx. Cover (m <sup>2</sup> )	Easting <sup>#</sup>	Northing <sup>#</sup>
<i>Juncus amabilis</i>	gentle rush	State rare	60	400	501364	5422090
<i>Juncus amabilis</i>	gentle rush	State rare	70	600	501466	5422206
<i>Juncus amabilis</i>	gentle rush	State rare	50	450	501474	5422248
<i>Juncus amabilis</i>	gentle rush	State rare	40	200	501511	5422196
<i>Juncus amabilis</i>	gentle rush	State rare	1	1	501518	5421838
<i>Juncus amabilis</i>	gentle rush	State rare	25	300	501606	5422135
<i>Juncus amabilis</i>	gentle rush	State rare	2	1	501634	5422355
<i>Ranunculus sessiliflorus</i> var. <i>sessiliflorus</i>	rockplate buttercup	State rare	>100*	4	501153	5421887
<i>Ranunculus sessiliflorus</i> var. <i>sessiliflorus</i>	rockplate buttercup	State rare	20*	4	501172	5421853
<i>Hypoxis vaginata</i> var. <i>brevistigmata</i>	sheathing yellowstar	State rare	20	100	501283	5422026
<i>Hypoxis vaginata</i> var. <i>brevistigmata</i>	sheathing yellowstar	State rare	1	1	501361	5421929
<i>Hypoxis vaginata</i> var. <i>brevistigmata</i>	sheathing yellowstar	State rare	20	25	501318	5421980
<i>Hypoxis vaginata</i> var. <i>brevistigmata</i>	sheathing yellowstar	State rare	15	25	501307	5421979

<sup>#</sup> Note: Coordinates have a +/- 10 metre location accuracy.

\* Difficult to estimate numbers due to the small size, and scrambling vegetative growth of the species.



**Plate 1** Examples of threatened species found within the study area

**a)** *Juncus amabilis* (gentle rush)

**b)** *Ranunculus sessiliflorus* var. *sessiliflorus* (rockplate buttercup)

The initial survey was undertaken in winter, which is considered a suboptimal time of year for conducting a survey for herbaceous annuals and grasses. Follow-up spring surveys were also undertaken in 2010 and 2015, which revealed additional threatened flora. However, no orchids were observed during either field assessment. It is recommended that if any orchids are subsequently observed on site, photographs be taken to enable identification (refer Section 2.1).

Due to the timing of the surveys and the vegetation types recorded, it is considered unlikely that additional threatened flora were overlooked.

## 3.2 Introduced plants

Five of the species recorded within the study area are listed as declared weeds under the Tasmanian *Weed Management Act 1999*. The locations of these species on site (data last updated in 2010) are shown in Figure 2 and the extent of their infestation is described in Table 3 and below.

- ***Carduus* species (thistle species)** – Individuals of this declared genus were recorded within the dense infestation of *Silybum marianum* (variegated thistle), at the southeast of the site within the *Eucalyptus viminalis* grassy forest and woodland (DVG) community (refer Plate 2a). All *Carduus* species in Tasmania are declared weeds. The infestation of *Silybum marianum* (variegated thistle) also occurred on the neighbouring property, although it is not known whether the *Carduus* species also extended across the boundary. *Carduus* individuals were scattered throughout the infestation but not dominant. Another infestation was noted during the spring survey throughout the lowland *Themeda triandra* grassland (GTL) community to the north of the site, with large numbers of *Carduus* individuals observed throughout, too numerous to map individually.
- ***Cytisus scoparius* (english broom)** – A patch of this species was recorded within the agricultural land (FAG) community at the southwest of the study area, as shown in Plate 2b.
- ***Genista monspessulana* (canary broom)** – This broom species was more common than the other, occurring down-slope of the access track travelling south at the south-eastern side of the study area. A patch was also recorded in the southwest of the site, within the agricultural land (FAG) community. An additional individual was recorded beneath the canopy of *Eucalyptus viminalis* (white gum) at the northern end of the site during the spring survey.
- ***Rubus fruticosus* aggregate (blackberry)** – This declared weed was sparse across the majority of the study area, although it occurred in two large infestations at opposite ends of the site. The south-western patch was the largest and thickest, extending into the agricultural land (FAG) community as well as upslope beneath native species. The other patch was less dense, growing with *Crataegus monogyna* (hawthorn) along the creek-line, and also extending along the fence-line to the north. Points on Figure 2 also show approximate locations where this weed is scattered beneath the canopy of *Eucalyptus viminalis* (white gum). It is important to note that a native *Rubus* species, *Rubus parvifolius* (native raspberry) can be inadvertently mistaken for this declared weed. Photographs distinguishing between these similar species are provided in Plate 3.
- ***Ulex europaeus* (gorse)**: Some patches of this declared weed have been mapped in **Error! Reference source not found.**, and additional points show where numerous other infestations were recorded (refer Plate 2c). Details on gorse numbers and locations are provided in Table 3 below.

**Table 3 Declared Weeds Recorded within the Study Area**

Species Name	Common Name	Approx. No. Individuals	Approx. Coverage (m <sup>2</sup> )	Easting <sup>#</sup>	Northing <sup>#</sup>
<i>Carduus</i> sp.*	thistle species	not counted <sup>^</sup>	10	501339	5421819
<i>Carduus</i> sp.*	thistle species	not counted <sup>^</sup>	100	501822	5422046
<i>Carduus</i> sp.*	thistle species	not counted <sup>^</sup>	scattered throughout grassland	501635	5422316
<i>Genista monspessulana</i>	canary broom	not counted <sup>^</sup>	100 & extended onto neighbouring property	501821	5422073
<i>Genista monspessulana</i>	canary broom	not counted <sup>^</sup>	50	501215	5421672
<i>Genista monspessulana</i>	canary broom	1	1	501633	5422333
<i>Rubus fruticosus</i> aggregate	blackberry	not counted <sup>^</sup>	9080	501025	5421839
<i>Rubus fruticosus</i> aggregate	blackberry	not counted <sup>^</sup>	small patches beneath canopy	501556	5422331
<i>Rubus fruticosus</i> aggregate	blackberry	not counted <sup>^</sup>	3700	501634	5422268
<i>Rubus fruticosus</i> aggregate	blackberry	not counted <sup>^</sup>	small patches beneath canopy	501803	5422058
<i>Ulex europaeus</i>	gorse	>100	2900	501358	5421638
<i>Ulex europaeus</i>	gorse	30	50	501080	5421743
<i>Ulex europaeus</i>	gorse	30	50	501215	5421672
<i>Ulex europaeus</i>	gorse	10	15	501240	5421654
<i>Ulex europaeus</i>	gorse	30	100	501257	5421768
<i>Ulex europaeus</i>	gorse	6	10	501291	5421615
<i>Ulex europaeus</i>	gorse	6	10	501339	5421819
<i>Ulex europaeus</i>	gorse	50	100	501500	5421774
<i>Ulex europaeus</i>	gorse	2	1	501518	5421838
<i>Ulex europaeus</i>	gorse	10	25	501522	5421784
<i>Ulex europaeus</i>	gorse	1	1	501539	5421983
<i>Ulex europaeus</i>	gorse	>100	330	501555	5421783
<i>Ulex europaeus</i>	gorse	1	1	501592	5421835
<i>Ulex europaeus</i>	gorse	100	900	501595	5421783
<i>Ulex europaeus</i>	gorse	6	4	501596	5421892
<i>Ulex europaeus</i>	gorse	100	1600	501815	5421858
<i>Ulex europaeus</i>	gorse	6	9	501833	5421913

\* All species of the *Carduus* genus are listed as declared weeds under the Tasmanian *Weed Management Act 1999*.

# Note: Coordinates have a +/- 10 metre location accuracy.

<sup>^</sup> Only gorse individuals were counted across the study site in order to give an idea of those areas of larger infestation and priority for control, due to the high number of patches of this declared weed across the site.



**Plate 2 Declared weeds within the study area**

- a) ***Carduus* sp. (thistle species)**
- b) ***Cytisus scoparius* (english broom)**
- c) ***Ulex europaeus* (gorse)**



**Plate 3** Declared weeds within the study area

- a) Introduced *Rubus fruticosus* aggregate (blackberry)
- b & c) Native *Rubus parvifolius* (native raspberry)
- d) *Rubus fruticosus* aggregate (blackberry) in the foreground, with *Rubus parvifolius* (native raspberry) in the background (centred)

### 3.3 Vegetation communities and condition

Nine native vegetation communities, six communities dominated by exotic vegetation, and two communities dominated by regenerating natives were identified and mapped within the study area (refer **Error! Reference source not found.**). One threatened community is listed as vulnerable under the Tasmanian *Nature Conservation Act 2002*, **Freshwater aquatic sedgeland and rushland (ASF)** (refer Plate 4 and description below).

The seventeen communities recorded on site are described below as defined by the document, *From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation* (Harris & Kitchener 2005):

- **Freshwater aquatic sedgeland and rushland (ASF)** – threatened
- Lowland *Poa labillardierei* grassland (GPL)
- Lowland *Themeda triandra* grassland (GTL)
- Rockplate grassland (GRP)
- *Eucalyptus viminalis* grassy forest and woodland (DVG)
- *Acacia melanoxylon* forest on rises (NAR)
- *Acacia dealbata* forest (NAD)
- *Bursaria-Acacia* woodland and scrub (NBA)
- Water, sea (OAQ)
- *Pteridium esculentum* fernland (FPF)
- Regenerating cleared land (FRG)
- Agricultural land (FAG)
- Plantations for silviculture (FPL)
- Extra-urban miscellaneous (FUM)
- Weed infestation (FWU)



**Plate 4 Threatened freshwater aquatic sedgeland and rushland (ASF) community adjacent to a dam on site**

Note that this dam has recently been drained via a cut through the wall, which in the longer term may modify water and drainage dynamics. Refer to Plate 5.



**Plate 5 Dam wall cut through**

### Freshwater aquatic sedgeland and rushland (ASF) - threatened

Salinity in this community can range from fresh to brackish, with the diversity and floristic composition of species heavily dependent on the frequency of inundation and soil characteristics of the site. This community is dominated by sedges and rushes from the genera *Juncus*, *Baumea*, *Carex*, *Cyperus*, *Eleocharis*, *Gahnia*, *Lepidosperma*, *Phragmites*, *Schoenus* and *Typha*. Although generally taller than 50 centimetres, the tallest stratum can vary from a few centimetres to over three metres in height, depending on the dominant species. A variety of smaller sedges and herbs commonly form a dense to sparse layer between and below the dominant sward.

This vegetation type is listed as a threatened community under Tasmania's *Nature Conservation Act 2002*. However, this area appears to be a remnant of agricultural dam improvements and has been mapped as ASF due to the presence of several *Juncus* species as it is considered the only appropriate TASVEG 3.0 mapping unit to allocate to the area. It is not considered to be of a quality that is considered ecologically significant under the provisions of the *Nature Conservation Act 2002*.

Within the study area, this community was dominated by *Juncus* species, including *Juncus pallidus* (pale rush), *Juncus procerus* (tall rush), *Juncus sarophorus* (broom rush) and *Juncus amabilis* (gentle rush), as shown in Plate 4. There was also a section along the drainage line running north-east from the large dam that was dominated by *Carex* species, including one potentially threatened species (status not confirmed due to the lack of fertile material at the time of the field surveys). This was a very poor example of this threatened community, with exotic pasture grasses observed throughout, and covered approximately 0.4 hectares of the site (refer Figure 2).

### Lowland *Poa labillardierei* grassland (GPL)

This community is dominated by tussocks of *Poa labillardierei* (silver tussockgrass) that form either a closed sward, or an open layer with smaller grasses and herbs between the tussocks. Species richness is relatively low, and weed species may occur throughout. The grassland is treeless or has a very light tree cover of scattered eucalypts such as *Eucalyptus ovata* (black gum), *Eucalyptus viminalis* subsp. *viminalis* (white gum) or *Eucalyptus pauciflora* subsp. *pauciflora* (cabbage gum). It usually occurs adjacent to or intermixed with *Eucalyptus ovata* grassy woodland communities.

Within the study area, tussocks of *Poa labillardierei* (silver tussockgrass) dominated this community, with some *Themeda triandra* (kangaroo grass) and *Microlaena stipoides* (weeping grass) also recorded. The introduced species *Bromus diandrus* (great brome) was also present. In areas of heavy browsing, where it appeared the herbivorous impacts of native fauna were concentrated; rocks and moss species dominated the ground cover. *Pteridium esculentum* (bracken) occurred throughout, and there was some *Rubus fruticosus* aggregate (blackberry) associated with the nearby weed invasion extending into the western-most patch on site.

### Lowland *Themeda triandra* grassland (GTL)

Although including subcoastal grasslands dominated by *Poa rodwayi* (velvet tussockgrass) in north-western Tasmania, this community primarily represents all natural and disturbance-induced native grasslands dominated by *Themeda triandra* (kangaroo grass). The grasslands are floristically diverse, including many inter-tussock herbs, and other common grass species such as *Austrodanthonia* (wallabygrass), *Austrostipa* (speargrass) and *Poa* species. Largely treeless, this community may have a high biodiversity of herbaceous species and threatened species values.

Within the study area, this community was dominated by *Themeda triandra* (kangaroo grass), and also included the native grasses *Microlaena stipoides* (weeping grass), *Austrodanthonia racemosa* (stiped wallabygrass) and the occasional *Poa labillardierei* (silver tussockgrass). The introduced species *Cirsium vulgare* (spear thistle), *Cynosurus echinatus* (rough dogstail), *Phalaris aquatica* (toowoomba canarygrass) and *Silybum marianum* (variegated thistle) were also invading a small area of this community, where erosion was evident against the northern property boundary.

### Rockplate grassland (GRP)

These grasslands occur on skeletal soils over rockplates and although species rich, are generally devoid of all woody species. Usually dominated by *Poa rodwayi* (velvet tussockgrass) or *Austrodanthonia* (wallabygrass) species in association with species of *Schoenus* (bogsedge) and *Themeda triandra* (kangaroo grass), this community also includes small patches of herbfield over exposed rockplate, and grasslands induced by eucalypt dieback of grassy woodlands. The latter instance mainly occurs on dry hilltops of *Eucalyptus viminalis* (white gum), *Eucalyptus amygdalina* (black peppermint) and *Eucalyptus pulchella* (white peppermint).

These areas within the study site were covered with mosses, liverworts, lichens and tiny herbaceous species (refer Plate 6c), with a species of *Breutelia*, *Polytrichum juniperinum* and a possible *Riccardia* species among the many bryophyte species that occurred on site. *Stellaria pungens* (prickly starwort) was common through the moss layer, and some *Themeda triandra* (kangaroo grass) was also observed. The patch at the western side of the study area also had *Cheilanthes austrotenuifolia* (green rockfern), *Viola hederacea* (ivy leaf violet), *Pelargonium australe* (southern storksbill) and *Poa labillardierei* (silver tussockgrass) throughout. The threatened species *Ranunculus sessiliflorus* var. *sessiliflorus* was recorded within this community during the spring survey.



**Plate 6 Native grassland communities on site**

- a) Lowland *Poa labillardierei* grassland (GPL)**
- b) Lowland *Themeda triandra* grassland (GTL)**
- c) Rockplate grassland (GRP)**

**Note:** *Lowland Native Grasslands of Tasmania* have been listed as critically endangered under the EPBCA; however, the grasslands on site are not considered to qualify (meet the condition thresholds) as the nationally listed community, primarily due to their species composition and/or weediness.

### ***Eucalyptus viminalis* grassy forest and woodland (DVG)**

This vegetation community is generally a low to medium height open forest dominated by *Eucalyptus viminalis* (white gum), *Eucalyptus rubida* (candlebark) and sometimes *Eucalyptus dalrympleana* (mountain white gum). Low shrubs may form a sparse layer, but the understorey is generally grassy.

This community covered a large proportion of the study area, with *Eucalyptus viminalis* (white gum) up to and occasionally over 30 metres in height dominating over a grassy groundcover of *Poa labillardierei* (silver tussockgrass), *Pteridium esculentum* (bracken), and the occasional *Rubus parvifolius* (native raspberry). There was also some *Dactylis glomerata* (cocksfoot), and localised *Rubus fruticosus* aggregate (blackberry) and *Ulex europaeus* (gorse) throughout. The occasional *Acacia dealbata* (silver wattle) up to six metres in height, *Bursaria spinosa* (prickly box) and *Cassinia aculeata* (dollybush) were also recorded, as well as regenerating *Eucalyptus viminalis* (white gum) individuals of around one metre in height. Some localised *Eucalyptus amygdalina* (black peppermint) individuals were also present across the plateau area.

The best quality example of this community was at the south-west of the site, with more *Acacia dealbata* (silver wattle) and *Bursaria spinosa* (prickly box) in the understorey, and *Lomandra longifolia* (sagg) throughout. Localised patches of the exotic species *Rubus fruticosus* aggregate (blackberry), *Ulex europaeus* (gorse) and *Crataegus monogyna* (hawthorn) were invading some areas of poorer quality, generally to the east of the plateau area. There were numerous examples of hollow bearing eucalypt individuals, and evidence of recent fire was noted with charcoal observed on tree trunks. This *Eucalyptus viminalis* grassy forest and woodland (DVG) community was replaced by the *Acacia melanoxylon* forest on rises (NAR) community on the steeper, more protected southerly aspect of the site (refer Plate 7).



**Plate 7** *Eucalyptus viminalis* grassy forest and woodland (DVG) community

### **Acacia melanoxyton forest on rises (NAR)**

Regrowth *Acacia melanoxyton* (blackwood) trees of even height dominate this community, typically forming a closed forest over a diversity of understorey species ranging from relatively open to dense. Characterised by the almost complete dominance of even aged *Acacia melanoxyton* following fire in rainforests and mixed forests, this community may also be co-dominated by eucalypts such as *Eucalyptus obliqua* (stringybark) or *Eucalyptus nitida* (western peppermint). Rainforest or wet sclerophyll species such as *Nematolepis squamea* (satinwood), *Pomaderris apetala* (common dogwood), *Nothofagus cunninghamii* (myrtle beech), *Atherosperma moschatum* (sassafras), *Eucryphia lucida* (leatherwood) and *Leptospermum* species may be present, over a fern-dominated ground layer. Occurring on slopes with soils of moderate to high fertility this community may be structurally and floristically similar to *Acacia melanoxyton* swamp forest (NAF), and intergrades with and is replaced by *Acacia dealbata* forest (NAD) on fertile substrates.

In the study area, this community was dominated by *Acacia melanoxyton* (blackwood) over a relatively sparse understorey of *Pteridium esculentum* (bracken), *Polystichum proliferum* (mother shieldfern) and some *Poa labillardierei* (silver tussockgrass). There were some emergent *Eucalyptus viminalis* (white gum) throughout, with the boundary with the *Eucalyptus viminalis* grassy forest and woodland (DVG) community coinciding with the change in slope to a southerly aspect. As this community extended onto the south-west facing slope it became somewhat drier, with a thicker grassy understorey of *Poa labillardierei* (silver tussockgrass), some *Senecio odoratus* (scented groundsel) and more *Pteridium esculentum* (bracken). Bryophytes and fungi were also common throughout, especially where exposed rocky outcrops occurred within this community.

### **Acacia dealbata forest (NAD)**

This successional community occurs on disturbed sites such as stream banks, riparian corridors subject to flood disturbance and old areas of improved pasture. It may also replace wet or damp sclerophyll forests after fire. *Acacia dealbata* (silver wattle) occurs in a canopy of variable cover and up to 20 metres in height, over an understorey of various species depending on the disturbance situation. *Pteridium esculentum* (bracken) and shrub species are typical of disturbed sites, which can be replaced by regenerating wet forest species such as *Olearia argophylla* (musk daisybush) or rainforest species such as *Nothofagus cunninghamii* (myrtle beech), depending on the vegetation present prior to disturbance.

Within the study area, this community was dominated by *Acacia dealbata* (silver wattle) grading with *Acacia melanoxyton* (blackwood) in the canopy where this vegetation type bordered the *Acacia melanoxyton* forest on rises (NAR). The understorey was primarily a thick grassy understorey of *Poa labillardierei* (silver tussockgrass), with some *Senecio odoratus* (scented groundsel) and *Pteridium esculentum* (bracken) throughout, as well as the declared weed *Rubus fruticosus* aggregate (blackberry) encroaching from the neighbouring weed infestation.

### **Bursaria-Acacia woodland and scrub (NBA)**

This community is usually dominated by small trees and shrubs such as *Bursaria spinosa* (prickly box), *Dodonaea viscosa* (broadleaf hopbush), *Acacia dealbata* (silver wattle), *Acacia mearnsii* (black wattle), *Acacia melanoxyton* (blackwood) and *Acacia verticillata* (prickly moses), over a grassy ground cover. Scattered eucalypt trees may also occur in the understorey, and the floristic diversity varies markedly.

This community was characterised by regenerating *Acacia dealbata* (silver wattle) of around six metres in height amongst *Bursaria spinosa* (prickly box) and some emergent *Eucalyptus viminalis* (white gum) and *Acacia melanoxyton* (blackwood). The ground cover varied from a

thick cover of *Poa labillardierei* (silver tussockgrass) with *Microlaena stipoides* (weeping grass) throughout, to a heavily grazed marsupial lawn including bryophyte species. Moss and lichens were also common along many animal tracks through this community. Some *Cirsium vulgare* (spear thistle) was also noted in the understorey.



**Plate 8** Examples of *Acacia* dominated communities within the study area

- a) *Acacia melanoxylon* forest on rises (NAR)
- b) *Acacia dealbata* forest (NAD)
- c) *Bursaria-Acacia* woodland and scrub (NBA)

### Water, sea (OAQ)

These mapping units are areas of fresh or saline water with no emergent aquatic plants (OAQ), in artificial impoundments, lakes or inlets of the sea.

Within the study area there were various water bodies that have been mapped as this unit. The largest dam on site provided the best aquatic habitat, with emergent and surrounding vegetation (refer Plate 9a). The dam adjacent to the regenerating cleared land (FRG) community also had emergent *Eleocharis sphacelata* (tall spike sedge) growing in the centre, although lacked equivalent native vegetation on its margins (refer Plate 9b).



**Plate 9** Examples of water bodies (OAQ) within the study area

### ***Pteridium esculentum* fernland (FPF)**

Dominated by *Pteridium esculentum* (bracken) on well drained soils, this community is either treeless or has a sparse eucalypt canopy of less than 5% crown density. The species often invades unimproved cleared land or degraded pasture over a wide range of rock types and altitudes. It is also found around the edges of heathy forest and open woodland where it may dominate as an understorey species, and may dominate and replace heathland and shrubland communities on coastal dunes subject to very high fire frequencies.

Within the study site there was a mappable area where *Pteridium esculentum* (bracken) was regenerating and dominating the vegetation. This species extended outward from beneath the *Eucalyptus viminalis* (white gum) canopy in the neighbouring native community to dominate above those exotic grasses dominating the adjacent agricultural land (FAG) community (refer below). It was noted that a large portion of this community had been slashed prior to the follow-up spring survey.

### **Regenerating cleared land (FRG)**

An area of cleared land dominated by exotic pasture where there has been significant recolonisation by native species is mapped as the regenerating cleared land (FRG) community. It is typically characterised by an invasion of exotic pasture by native species, including graminoid species such as *Lomandra longifolia* (sagg), *Isolepis nodosa* (knobby club rush) and *Juncus* (rush) species. Small native shrubs may be present during latter colonisation, and scattered shrubs of *Tasmannia lanceolata* (mountain pepper), *Senecio linearifolius* (fireweed groundsel) and *Cassinia aculeata* (dollybush) are common recolonising species of pasture in the north-west of the state. Insignificant amounts of *Austrodanthonia* (wallabygrass) or *Austrostipa* (speargrass) species may also be included within this category.

Within the study area, regenerating vegetation was dominated by *Poa labillardierei* (silver tussockgrass) and localised *Pteridium esculentum* (bracken) patches, beneath the occasional *Eucalyptus viminalis* (white gum) and *Acacia dealbata* (silver wattle). Other native grasses included *Themeda triandra* (kangaroo grass) and *Microlaena stipoides* (weeping grass). Some more exotic grassy areas also included the introduced species *Cynosurus echinatus* (rough dogstail), and *Cirsium vulgare* (spear thistle). The threatened species *Hypoxis vaginata* var. *brevistigmata* (sheathing yellowstar) was recorded in two locations within this community during the spring survey.



**Plate 10** Communities dominated by regenerating native species within the study area

- a) *Pteridium esculentum* fernland (FPF)
- b) Regenerating cleared land (FRG)

### Agricultural land (FAG)

This vegetation type generally includes improved pastures, cropland and orchards, with numerous exotic species dominating, although minor occurrences of native species such as those in the genera *Austrodanthonia* (wallabygrass) and *Austrostipa* (speargrass) may also be present.

The introduced grass *Dactylis glomerata* (cocksfoot) dominated most areas of agricultural land across the study area, and *Cirsium vulgare* (spear thistle) was common throughout. Other introduced species included *Cynosurus echinatus* (rough dogstail), *Acetosella vulgaris* (sheep sorrel), and *Silybum marianum* (variegated thistle), and the native species *Poa labillardierei* (silver tussockgrass), *Austrodanthonia racemosa* (stiped wallabygrass) and *Pteridium esculentum* (bracken) also occurred in localised patches. *Agrostis capillaris* (browntop bent) was also common in the area of agricultural land to the south-west of the site adjacent to Atkinsons Road, and the declared weed *Rubus fruticosus* aggregate (blackberry) was invading from the bordering weed infestation. Regenerating *Acacia melanoxylon* (blackwood) and *Acacia dealbata* (silver wattle) extended into this community through the weed infestation and from native vegetation upslope. A patch of eroding soil on the south slope near Atkinsons Road was also noted within this community, and additional declared weeds were common in this area, with *Ulex europaeus* (gorse), *Genista monspessulana* (canary broom) and *Cytisus scoparius* (english broom) all mapped along the south-western boundary of the site. *Ulex europaeus* (gorse) also occurred in localised patches throughout this community on the upper plateau area.

### Agricultural land – poor drainage (FAG – PD)

Areas of poor drainage within the study site that were primarily dominated by exotic species, and therefore could not be classed as a native wetland community, have been delineated from the other areas of agricultural land in the mapping. This community included the exotic species *Cynosurus echinatus* (rough dogstail), *Cynosurus cristatus* (crested dogstail) and *Agrostis capillaris* (browntop bent), although with heavy browsing occurring on site it was difficult to delineate between grass species. These areas also included patches of *Juncus procerus* (tall rush), *Juncus sarophorus* (broom rush) and *Juncus amabilis* (gentle rush), as well as the native grass *Poa labillardierei* (silver tussockgrass).



**Plate 11 Examples of agricultural land (FAG) within the study area including an area of poor drainage dominated by native rush species**

### Plantations for silviculture (FPL)

This mapping unit includes commercial tree farms of species such as *Eucalyptus nitens* (shining gum) above 600 metres, and *Pinus radiata* (radiata pine) and *Eucalyptus globulus* (Tasmanian blue gum) below 600 metres altitude. Plantations can occur on a variety of land tenures, and large restoration plantings are also included within this community.

A small patch of *Pinus radiata* (radiata pine) has been planted near the northern boundary of the study area. These trees are less than 15 metres in height and are over a thick layer of pine needles, with some rock and *Dactylis glomerata* (cocksfoot) throughout.



**Plate 12 Plantations for Silviculture (FPL) Community**

### Extra-urban miscellaneous (FUM)

This community represents unvegetated areas that originated as a result of various human activities, including open cut mines, dam developments, some timber loading bays in forestry areas, and quarries. Although very sparse herbs and grasses may be present, the predominant absence of vegetation is a diagnostic feature of this mapping unit.

Those areas within the study site that comprise houses and surrounding gardens have been mapped as this community. This community also included a paddock for domestic livestock, adjacent to the house and part of the block shown north-west of the site in Figure 4.

This community was not closely surveyed, as it has been considerably altered and impacted by human activities and domestic grazing, and is not likely to include any natural botanical values. A new road off Eiger Court was constructed through this community prior to the follow-up survey, and was utilised as the access route for the spring survey.

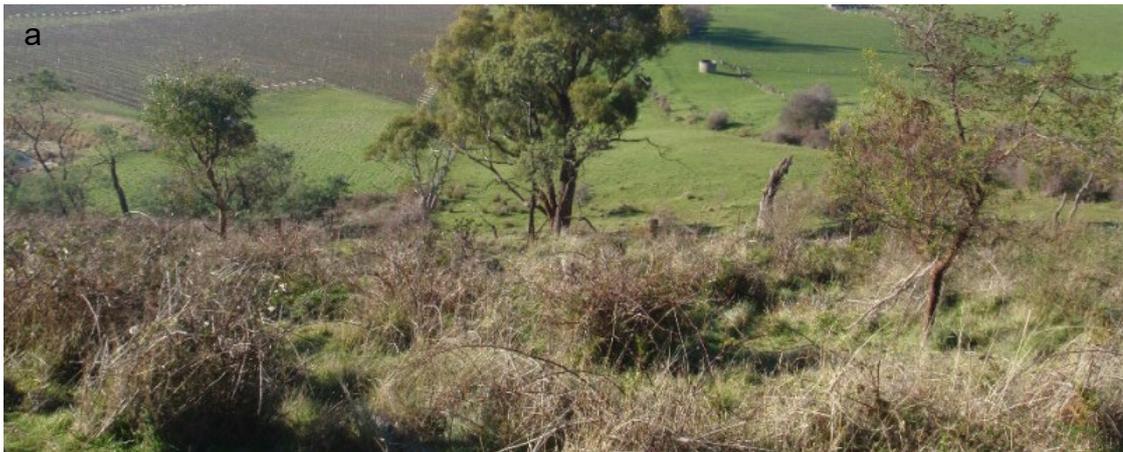
### Weed infestation (FWU)

Dense occurrences of weeds are mapped as this vegetation community, and include large infestations of *Ulex europaeus* (gorse), *Rubus fruticosus* aggregate (blackberry), *Lycium ferocissimum* (African boxthorn), *Salix fragilis* (crack willow), *Cirsium vulgare* (spear thistle) and significant plantings or escapees of other exotic species.

A number of weeds were identified across the study site, including declared weed species. There were also two species that dominated areas of weed infestation across the study site, and these have been mapped separately and outlined below.

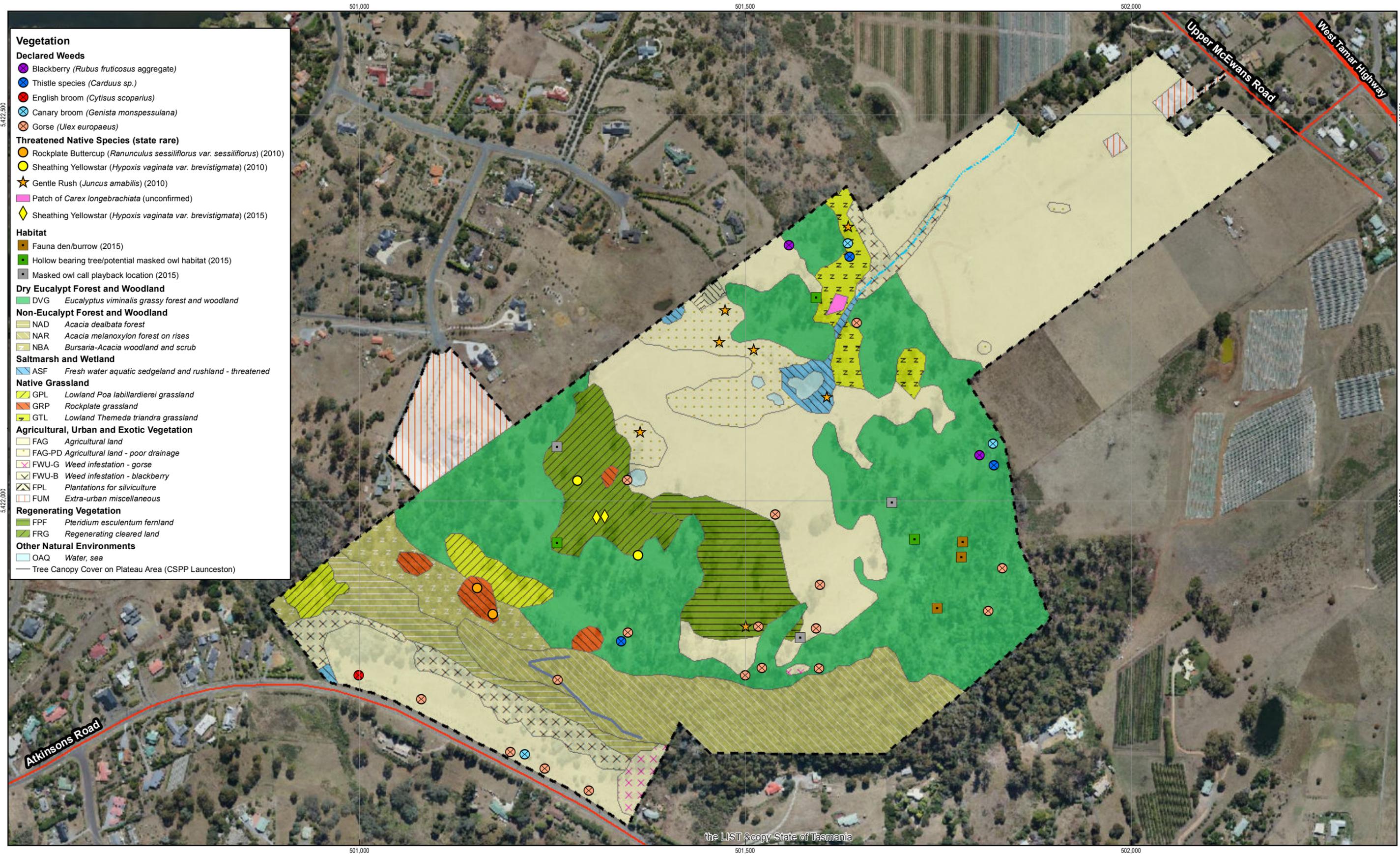
**Weed infestation – blackberry (FWU – B)** – There were two areas dominated by an infestation of this declared weed, the largest of which occurred along the south-western side of the study area. *Rubus fruticosus* aggregate (blackberry) dominated this community, and *Pteridium esculentum* (bracken) was also common throughout. The smaller patch of this community occurred along the creek-line to the north-western end of the site, where the declared weed had invaded beneath *Eucalyptus viminalis* (white gum) and *Bursaria spinosa* (prickly box), with another weed species *Crataegus monogyna* (hawthorn).

**Weed infestation – gorse (FWU – G)** – There were two areas with enough individuals to map as weed infestations within the study site. Dominated by *Ulex europaeus* (gorse) these sites were areas where the invasive species have spread to such an extent as to exclude almost all other species. Other points across the site, shown in Figure 3, have the potential to be mapped as this exotic community, especially if control is not undertaken to eradicate the species.



**Plate 13 Weed infestation communities within the study area**

- a) Weed infestation – blackberry (FWU – B)**
- b) Weed infestation – gorse (FWU – G)**



- Vegetation**
- Declared Weeds**
- ⊗ Blackberry (*Rubus fruticosus* aggregate)
  - ⊗ Thistle species (*Carduus* sp.)
  - ⊗ English broom (*Cytisus scoparius*)
  - ⊗ Canary broom (*Genista monspessulana*)
  - ⊗ Gorse (*Ulex europaeus*)
- Threatened Native Species (state rare)**
- Rockplate Buttercup (*Ranunculus sessiliflorus* var. *sessiliflorus*) (2010)
  - Sheathing Yellowstar (*Hypoxis vaginata* var. *brevistigmata*) (2010)
  - ★ Gentle Rush (*Juncus amabilis*) (2010)
  - Patch of *Carex longebrachiata* (unconfirmed)
  - ◆ Sheathing Yellowstar (*Hypoxis vaginata* var. *brevistigmata*) (2015)
- Habitat**
- Fauna den/burrow (2015)
  - Hollow bearing tree/potential masked owl habitat (2015)
  - Masked owl call playback location (2015)
- Dry Eucalypt Forest and Woodland**
- DVG *Eucalyptus viminalis* grassy forest and woodland
- Non-Eucalypt Forest and Woodland**
- NAD *Acacia dealbata* forest
  - NAR *Acacia melanoxylon* forest on rises
  - NBA *Bursaria-Acacia* woodland and scrub
- Saltmarsh and Wetland**
- ASF Fresh water aquatic sedgeland and rushland - threatened
- Native Grassland**
- GPL Lowland *Poa labillardierei* grassland
  - GRP Rockplate grassland
  - GTL Lowland *Themeda triandra* grassland
- Agricultural, Urban and Exotic Vegetation**
- FAG Agricultural land
  - FAG-PD Agricultural land - poor drainage
  - FWU-G Weed infestation - gorse
  - FWU-B Weed infestation - blackberry
  - FPL Plantations for silviculture
  - FUM Extra-urban miscellaneous
- Regenerating Vegetation**
- FPF *Pteridium esculentum* fernland
  - FRG Regenerating cleared land
- Other Natural Environments**
- OAQ Water, sea
  - Tree Canopy Cover on Plateau Area (CSPP Launceston)

the LIST & copy State of Tasmania

Paper Size A3  
0 25 50 100 150  
Metres  
Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 55



**LEGEND**

- Drainage
- Old Track
- Highway/Road
- Study Area



Craggy Ridge Investment Corporation Pty Ltd  
Craggy Ridge Estate

Job Number 32-1768402  
Revision B  
Date 30 Oct 2015

**Vegetation Communities,  
Threatened Flora & Declared  
Weeds Within The Study Area**

**Figure 3**



- Vegetation**
- Declared Weeds**
- ⊗ Blackberry (*Rubus fruticosus* aggregate)
  - ⊗ Thistle species (*Carduus* sp.)
  - ⊗ English broom (*Cytisus scoparius*)
  - ⊗ Canary broom (*Genista monspessulana*)
  - ⊗ Gorse (*Ulex europaeus*)
- Threatened Native Species (state rare)**
- Rockplate Buttercup (*Ranunculus sessiliflorus* var. *sessiliflorus*) (2010)
  - Sheathing Yellowstar (*Hypoxis vaginata* var. *brevistigmata*) (2010)
  - ★ Gentle Rush (*Juncus amabilis*) (2010)
  - ◆ Sheathing Yellowstar (*Hypoxis vaginata* var. *brevistigmata*) (2015)
  - Fauna den/burrow (2015)
  - Hollow bearing tree/potential masked owl habitat (2015)
  - Masked owl call playback location (2015)
  - Patch of *Carex longibrachiata* (unconfirmed)
- Dry Eucalypt Forest and Woodland**
- DVG *Eucalyptus viminalis* grassy forest and woodland
- Non-Eucalypt Forest and Woodland**
- NAD *Acacia dealbata* forest
  - NAR *Acacia melanoxylon* forest on rises
  - NBA *Bursaria-Acacia* woodland and scrub
- Saltmarsh and Wetland**
- ASF Fresh water aquatic sedgeland and rushland - threatened
- Native Grassland**
- GPL Lowland *Poa labillardierei* grassland
  - GRP Rockplate grassland
  - GTL Lowland *Themeda triandra* grassland
- Agricultural, Urban and Exotic Vegetation**
- FAG Agricultural land
  - FAG-PD Agricultural land - poor drainage
  - FWU-G Weed infestation - gorse
  - FWU-B Weed infestation - blackberry
  - FPL Plantations for silviculture
  - FUM Extra-urban miscellaneous
- Regenerating Vegetation**
- FPF *Pteridium esculentum* fernland
  - FRG Regenerating cleared land
- Other Natural Environments**
- OAQ Water, sea

1:4500 @ A3  
 0 25 50 100 150  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 55



- ⬜ Site Boundary
  - ⬜ Study Area
  - Lot boundaries
  - Building envelopes
  - Drainage
  - Old tracks
  - Highway/Road
- West Tamar Interim Planning Scheme**
- ⬜ Proposed priority habitat area under the WTIPS



Craggy Ridge Investment Corporation Pty Ltd  
 Craggy Ridge Estate  
 Job Number 32-19034  
 Revision M  
 Date 26 Oct 2020

**Ecological Values and Subdivision Overlay**

**Figure 4**

G:\3219034\GIS\Maps\Deliverables\3219034\_04\_BuildingEnvelopesEcoValues\_A3L\_RevM.mxd  
 © 2020. Whilst every care has been taken to prepare this map, GHD make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.  
 Data source: ESRI, imagery, 2019; CSPP Tree Canopy 2010; Navigate, Highways/Roads 2010; GHD, vegetation survey with TASVEG Classification and field survey points, 2010 and 2015; CRIC, building envelopes, site boundary, lot boundaries 2020. Created by: tdoates

## 3.4 Fauna habitat values

### 3.4.1 Fauna recorded within the study area

There were a number of different fauna species observed and/or heard during the surveys of the site. Of the bird species recorded, most were both seen and heard, with only the golden whistler (*Pachycephala pectoralis*) and grey shrike-thrush (*Colluricincla harmonica*) heard calling but not observed directly. Other native and introduced bird species recorded included the following:

- Australian magpie (*Gymnorhina tibicen*)
- Australian wood duck (*Chenonetta jubata*), also observed using a tree hollow on site
- Black-faced cuckoo-shrike (*Coracina novaehollandiae*)
- Brown falcon (*Falco berigora*)
- Common starling (*Sturnus vulgaris*) - 'introduced (i)'
- Eastern rosella (*Platycercus eximius*)
- European goldfinch (*Carduelis carduelis*) - 'i'
- Fan-tailed cuckoo (*Cacomantis flabelliformis*)
- Forest raven (*Corvus tasmanicus*)
- Green rosella (*Platycercus caledonicus*)
- Grey fantail (*Rhipidura fuliginosa*)
- Laughing kookaburra (*Dacelo novaeguineae*) - 'i'
- Masked lapwing (*Vanellus miles*)
- Noisy miner (*Manorina melancephala*)
- Sulphur-crested cockatoo (*Cacatua galerita*)
- Superb fairy-wren (*Malurus cyaneus*)
- Tasmanian native hen (*Gallinula mortierii*)
- Tasmanian scrubwren (*Sericornis humilis*)
- Yellow wattlebird (*Anthochaera paradoxa*)

During the 2010 spring survey three wedge-tailed eagles (*Aquila audax* subsp. *fleayi*) were also observed flying over the site, and it appeared two adults were flying with a younger juvenile of the species. It is considered likely there is a nest nearby, although no nest was observed within the project site.

In addition to the bird species, numerous Bennetts (red-necked) wallabies (*Macropus rufogriseus*) were observed feeding during daylight hours (refer Plate 15a-b), and a common brushtail possum (*Trichosurus vulpecula*) and short-beaked echidna (*Tachyglossus aculeatus*) were both observed within tree hollows on site (the latter species within a hollow at ground level – refer Plate 15d-f). Scats from the common brushtail possum (*Trichosurus vulpecula*), Bennetts (red-necked) wallaby (*Macropus rufogriseus*) and Tasmanian pademelon (*Thylogale billardierii*) were also observed. Characteristic diggings from both the introduced rabbit (*Oryctolagus cuniculus*) and a native bandicoot species, either the southern brown bandicoot (*Isodon obesulus*) or threatened eastern barred bandicoot (*Perameles gunnii*), were also observed across site. There was also whitewash observed within the *Acacia melanoxylon* forest on rises

(NAR) community, possibly from an owl species, in at least three different locations on the ground, and on rocks and logs beneath the canopy.

Three frog species were heard calling during the survey/s, namely the common froglet (*Crinia signifera*), smooth froglet (*Geocrinia laevis*) and brown tree frog (*Litoria ewingii*). These frogs, and additional mammal and bird species were observed and/or heard during the night surveys (refer below).

Horses were also present within a paddock in the Extra-urban miscellaneous (FUM) community.

### **3.4.2 Fauna habitat recorded within the study area**

#### **General habitat values**

The study area provides very good habitat values for a variety of fauna, with lots of woody debris, some thick groundcover, standing stags and a large number of habitat trees across the site. The site is largely remnant vegetation isolated from larger tracts of native vegetation by roads and urban housing, but does provide refuge habitat for fauna within the landscape.

The habitat trees included reasonably young individuals with a diameter at breast height of only 60 centimetres that still provided hollows of up to 30 cm diameter. The habitat trees were *Eucalyptus viminalis* (white gum) individuals, which occurred over much of the study area (see Plate 13a).

In 2015 there were three fauna burrow sites also recorded, all within the steep south-eastern section of the site (*Eucalyptus viminalis* grassy forest and woodland). Diggings from bandicoots observed on site also indicate the value of the area as habitat for these species.

There were numerous animal tracks observed throughout the thick *Poa labillardierei* (silver tussockgrass) across the site, particularly on the steep south-west facing slope beneath the communities dominated by *Acacia* species (see Plate 13b). It is likely the thick infestation of blackberries at the base of the slope (refer Figure 2) is providing shelter and habitat for native fauna, who travel upslope to forage. There were considerably higher numbers of Bennetts (red-necked) wallabies (*Macropus rufogriseus*) observed foraging in those areas of better quality *Eucalyptus viminalis* grassy forest and woodland (DVG) and the native grassland communities, particularly toward the south-western edge of the plateau area.

The water bodies and poor drainage areas were providing habitat for the Australian wood duck (*Chenonetta jubata*), with numerous individuals observed on the water and signs of night roosting evident along dam banks. The associated aquatic areas, including the creek flowing north-east from the large dam, could also be providing habitat for aquatic fauna such as fish, and frogs are known to be present in the surrounding wetland vegetation.

There were also a number of rock piles observed across the site (see Plate 13c), and these areas, as well as the rocky outcrops within the *Acacia melanoxylon* forest on rises (NAR) community provide cover and habitat for reptile species, including snakes. A neighbouring property owner reported the incidental observation of either tiger snakes (*Notechis scutatus*) or lowland copperheads (*Austrelaps superbus*) on the site.



**Plate 14** Examples of fauna habitat across the study area

### 3.4.3 Potential threatened fauna identified by desktop research

According to the Natural Values Atlas Report<sup>5</sup>, one threatened fauna species has previously been recorded within 500 metres of the study area, with the Tasmanian devil (*Sarcophilus harrisii*) recorded in 2007 and 2010. Additional species have been recorded, or are predicted to occur based on habitat mapping, within 5 kilometres of the site according to the Natural Values Atlas Report and the EPBCA Protected Matters Search Tool. These species (except listed and migratory marine species) and their likelihood for occurrence within the study site are shown in Table 4.

**Table 4 Threatened fauna known to occur or predicted to occur within 5 kilometres of the study area**

Species	Tasmanian TSPA Status	Commonwealth EPBCA Status	Brief Habitat Description and Likelihood of Occurrence within Study Area
<b>Mammals</b>			
<i>Dasyurus maculatus</i> subsp. <i>maculatus</i> spotted-tailed quoll	Rare	Vulnerable	Most commonly inhabit cool temperate rainforest, wet sclerophyll forest, and coastal scrub. <b>Unlikely, lack of suitable habitat.</b>
<i>Dasyurus viverrinus</i> eastern quoll	Not listed but of high conservation significance	Endangered	Found in a range of vegetation types including open grassland (including farmland), tussock grassland, grassy woodland, dry eucalypt forest, coastal scrub and alpine heathland, but is typically absent from large tracts of wet eucalypt forest and rainforest. <b>Possible, some suitable habitat.</b>
<i>Perameles gunnii</i> eastern barred bandicoot	Not listed but of high conservation significance	Vulnerable	Usually occurs in open grassy areas, with some form of thick ground cover for shelter and nesting. <b>Possible, bandicoot diggings observed on site.</b>
<i>Pseudomys novaehollandiae</i> New Holland mouse	Endangered	Not Listed	Known to inhabit open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes. <b>Unlikely, lack of suitable habitat.</b>
<i>Sarcophilus harrisii</i> Tasmanian devil	Endangered	Endangered	May occur in a variety of forest types including coastal heath, open dry sclerophyll forest, and mixed sclerophyll rainforest. <b>Possible, some suitable habitat.</b>
<b>Birds</b>			
<i>Accipiter novaehollandiae</i> grey goshawk	Endangered	Not Listed	Occurs in closed forests, with high priority nesting habitat along watercourses with blackwoods. May otherwise nest in melaleuca, myrtle, teatree and eucalypt species, occasionally up to 100 metres from a watercourse. <b>Possible, may overfly the site but no nests observed during field survey.</b>
<i>Aquila audax</i> subsp. <i>fleayi</i> wedge-tailed eagle	Endangered	Endangered	Nest in old growth trees, and common in areas with a mosaic of forest, farmland and waterways. <b>Present, observed overflying the site during the spring survey, but no nests observed during field assessments.</b>
<i>Ardea alba</i> great egret	Not Listed	Migratory	Found in areas with (preferably) shallow, flowing water. Can also occur in damp grasslands. <b>Possible, some suitable habitat.</b>
<i>Ardea ibis</i> cattle egret	Not Listed	Migratory	Prefer pasture among grazing stock, especially in poor drainage areas, and are sometimes found in shallow wetlands.

<sup>5</sup> Biodiversity Conservation Branch, DPIPWE, accessed 5 July 2010 and 20 December 2012.

Species	Tasmanian TSPA Status	Commonwealth EPBCA Status	Brief Habitat Description and Likelihood of Occurrence within Study Area
			<b>Possible, some suitable habitat.</b>
<i>Botaurus poiciloptilus</i> australasian bittern	Not Listed	Endangered	Mainly occurs in densely vegetated freshwater wetlands and, rarely, in estuaries or tidal wetlands. Formerly widespread in Tasmania, now appears confined to coastal regions in the northeast and on the Bass Strait islands. <b>Possible, some suitable habitat.</b>
<i>Gallinago hardwickii</i> Latham's snipe	Not Listed	Migratory	Occurs in freshwater wetlands and some river banks. <b>Unlikely, lack of suitable habitat.</b>
<i>Ceyx azureus</i> subsp. <i>Diemenensis</i> azure kingfisher	Endangered	Endangered	Inhabits thick vegetation surrounding freshwater rivers, lakes, billabongs and swamps. <b>Unlikely, lack of suitable habitat.</b>
<i>Haliaeetus leucogaster</i> white-bellied sea-eagle	Vulnerable	Migratory	Generally nest and forage near the coast; however, also occur near large rivers and inland lakes. Require old growth trees for nesting. <b>Possible, may overfly the site but no nests observed during field survey.</b>
<i>Hirundapus caudacutus</i> white-throated needletail	Not Listed	Migratory	In Australia this species is almost entirely aerial. Occurs most often above wooded areas and heathland, but can occur over farmland and remnant vegetation at the edge of paddocks. <b>Possible, may overfly the site.</b>
<i>Lathamus discolor</i> swift parrot	Endangered	Endangered	Feed on the nectar of <i>Eucalyptus globulus</i> and <i>E. ovata</i> . Nest in tree hollows in eastern Tasmania, usually near the coast in dry forests. <b>Unlikely, lack of suitable habitat.</b>
<i>Myiagra cyanoleuca</i> satin flycatcher	Not Listed	Migratory	Prefer tall, wet dense forest, in particular heavily forested gullies, often at high altitudes. <b>Unlikely, lack of suitable habitat.</b>
<i>Podiceps cristatus</i> great crested grebe	Vulnerable	Not Listed	Occurs in large deep open bodies of freshwater such as rivers, lagoons, lakes, swamps, reservoirs, estuaries and bays. <b>Unlikely, lack of suitable habitat. However, is known from nearby Tamar River.</b>
<i>Sternula nereis</i> subsp. <i>nereis</i> fairy tern	Vulnerable	Vulnerable	Nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. <b>Highly unlikely, lack of suitable habitat.</b>
<i>Tyto novaehollandiae</i> subsp. <i>Castanops</i> masked owl (Tasmanian)	Endangered	Not Listed	Usually found in lowland dry sclerophyll forest; however, can occur in wet sclerophyll forest, non-eucalypt dominated forest, scrub and urban environments. <b>Possible, some suitable habitat.</b>
<b>Reptiles</b>			
<i>Pseudemoia pagenstecheri</i> tussock skink	Vulnerable	Not Listed	Restricted to lowland tussock grassland and woodland, with a good cover of medium to tall tussocks. <b>Possible, some suitable habitat.</b>
<b>Fish and Amphibians</b>			
<i>Galaxias fontanus</i> swan galaxias	Endangered	Endangered	Known only from the Swan and Macquarie River catchments of eastern Tasmania, and not found within the distribution of the introduced brown trout ( <i>Salmo trutta</i> ). <b>Unlikely, outside known habitat area.</b>

Species	Tasmanian TSPA Status	Commonwealth EPBCA Status	Brief Habitat Description and Likelihood of Occurrence within Study Area
<i>Galaxiella pusilla</i> eastern dwarf galaxias	Vulnerable	Vulnerable	This species habitat appears associated with sand, gravel and alluvium deposits, and favours a stagnant, swampy environment with abundant aquatic vegetation. Typically found in shallow (often < 30 cm), still waters such as swamps, drains, and backwaters of creeks and streams, the species can collect in marginal vegetation on the edge of larger pools. Waters inhabited by this species are often temporary, drying up partially or completely during summer. <b>Possible, some suitable habitat.</b>
<i>Limnodynastes peroni</i> striped marsh frog	Endangered	Not Listed	Occurs in rainforests, wet and dry forests, woodlands, shrublands, and open and disturbed areas, where they frequent swamps, flooded grasslands, pools and ponds. <b>Possible, some suitable habitat.</b>
<i>Litoria raniformis</i> green and gold frog	Vulnerable	Vulnerable	Occurs in permanent or temporary water bodies, generally dominated by <i>Triglochin</i> or a species of <i>Juncus</i> or sedge. <b>Possible, known from nearby area (Legana ~ 2 km).</b>
<i>Prototroctes maraena</i> australian grayling	Vulnerable	Vulnerable	Occurs in middle to lower reaches of rivers and streams. <b>Unlikely, lack of suitable habitat.</b>
<b>Invertebrates</b>			
<i>Antipodia chaostola</i> subsp. <i>Leucophaea</i> chaostola skipper	Endangered	Endangered	Larvae live and feed in looped leaves of <i>Gahnia radula</i> (thatch sawsedge) and <i>G. microstachya</i> (slender sawsedge) that occur on relatively infertile substrates derived from sandstones, mudstones, siltstones, granites or windblown sands. The sedges are often found as minor understorey species in open eucalypt forest. <b>Unlikely, lack of suitable habitat.</b>
<i>Catadromus lacordairei</i> green-lined ground beetle	Vulnerable	Not Listed	Occurs in open grassy woodland associated with wetlands at low elevations, with adults found beneath stones and woody debris, or sheltering and hunting within fissures of basaltic clay soils, in these habitats. <b>Possible, some suitable habitat.</b>
<i>Engaeus orramakunna</i> Mt. Arthur burrowing crayfish	Vulnerable	Vulnerable	Known from a range of approx. 300 km <sup>2</sup> centred on Mt. Arthur in northeast Tasmania. Favours wet, muddy areas and seepages, where burrows exhibit characteristic chimneys of pelleted soil. <b>Unlikely, outside of known species range.</b>
<i>Pasmaditta jungermanniae</i> snail (Cataract Gorge)	Vulnerable	Not Listed	Only known from the Cataract Gorge in Tasmania, with a range of around 2 km <sup>2</sup> . Occurs in rocky wet forest, scrub and on mossy cliff faces. <b>Unlikely, outside known species range.</b>

**Note: Likelihood of occurrence of threatened flora is assessed on a 4-tier scale:**

- Present** – Individuals recorded within the study area during the field assessment or any previous assessment within the boundaries of study area.
- Possible** – Suitable habitat occurs within the study area.
- Unlikely** – Suitable habitat unlikely to occur within the study area, or suitable habitat substantially modified, or suitable habitat present but species not recorded for over 50 years within 5 kilometres of the site.
- Highly unlikely** – No suitable habitat present within the study area, and individuals not recorded within the study area during current or any previous assessment.

The EPBCA Protected Matters Search Tool also identified a number of other migratory marine and coastal bird species as matters of national significance that may overfly the area. The present survey was confined to the terrestrial and freshwater aquatic habitats for vertebrate species within the study area, and as such overfly species were not considered in detail.

## Night survey

### 2010

Call playback was undertaken for three owl species, the southern boobook (*Ninox novaehollandiae*), tawny frogmouth (*Podargus strigoides*) and the threatened Tasmanian masked owl (*Tyto novaehollandiae*), as well as the threatened green and golden frog (*Litoria raniformis*). There was no response to any calls. However, spotlighting revealed numerous Bennetts (red-necked) wallabies (*Macropus rufogriseus*) and Tasmanian pademelons (*Thylogale billardierii*), and a very high number of common brushtail possums (*Trichosurus vulpecula*), with at least nine different individuals observed within a small area on one of the survey nights. Some individuals of the introduced rabbit (*Oryctolagus cuniculus*) were also seen by spotlight at the site. The second night survey also recorded three small to medium sized owls roosting on a *Eucalyptus viminalis* (white gum) branch near a large hollow. However, due to their distance from ground level, these could not be identified to a species level.

### 2015

Call playback was undertaken for the masked owl (*Tyto novaehollandiae*) over two evenings at three locations within the study area, there was no response to any calls.

## Green and Golden Frog survey

Full details of the results of this survey can be found in Appendix C (GHD 2010). Key findings of the survey included:

- A number of frog species were detected during the survey:
  - Spotted marsh frog (*Limnodynastes tasmaniensis*)
  - Brown tree frog (*Litoria ewingi*)
  - Eastern banjo frog (*Limnodynastes dumerili*)
  - Smooth froglet (*Geocrinia laevis*)
  - Common froglet (*Crinia signifera*)
- No green and golden frogs (*Litoria raniformis*) or striped marsh frogs (*Limnodynastes peroni*) were detected during the survey. There was no response to call playback (only undertaken for the green and golden frog), and no individuals of either species were encountered during active searching around the waterbodies on site.
- The waterbodies within the study area and the drainage lines present on site provide good habitat values for frogs, with five different common frog species (listed above) recorded on site.





**Plate 15 Examples of native fauna and utilised hollows observed during the field survey (2010)**

#### Threatened fauna habitat

Sixteen threatened fauna species listed in Table 4 have been identified as potentially occurring on site based on habitat values or were recorded within the study area during the field surveys:

- **Eastern barred bandicoot (*Perameles gunnii*)** – Areas of agricultural land and native grasslands provide suitable habitat for both nesting and foraging. Bandicoot diggings, potentially by the eastern barred bandicoot were also observed on site during the field survey (see Plate 16a). The site may be providing good habitat for this threatened species.
- **Eastern quoll (*Dasyurus viverrinus*)** – The site provides good quality potential foraging and denning habitat for the Eastern quoll. The forest areas, native and agricultural grasslands may all be utilised by this species. No direct evidence of the quoll was observed during the field surveys and the species has not been previously recorded within 500 m of the site.
- **Tasmanian devil (*Sarcophilus harrisii*)** – The devil has previously been recorded within 500 m of the site (in 2007 and 2010). It is possible this threatened species may utilise the area for foraging and movement between other suitable habitat areas. The site is, however, not well connected to larger tracts of suitable habitat, with corridors interrupted by housing and roads. The relative small size of the site (approximately 57 ha/0.57 km<sup>2</sup>) also suggests if the devil is present, the site is too small to provide a satisfactory home range. Home range size is defined as a mean of 13 km<sup>2</sup> and a range of 4-27 km<sup>2</sup> (DPIPWE 2014).

- There were three potential layup/social den<sup>6</sup> locations on site (referred to as 'burrows' in this document as they are not confirmed dens). They were well excavated, deep, and had defensible entrances. Further survey, such as camera surveillance of the fauna burrows, would be necessary to confirm whether they are used by this species as a layup or social den.
- **Grey goshawk (*Accipiter novaehollandiae*)** – Considering the situation of the site, within close proximity to the Tamar River which is a known locality for this threatened species, it is possible the site provides habitat for this threatened species. However, grey goshawks are considered unlikely to nest on site due to the fragmented nature of the vegetation, and distance from watercourses with the preferred riparian blackwood forest. No nests were observed during the field assessment.
- **Wedge-tailed eagle (*Aquila audax subsp. fleayi*)** – During the spring survey, three individuals were observed flying over the site. These appeared to be two adults with a younger juvenile. However, no nests were observed during the field survey, and it is unlikely this species nests on site. Nevertheless, the species was observed foraging on site, from the nest of a pair of masked lapwings (*Vanellus miles*) within the agricultural land (FAG) community near Upper McEwans Road.
- **Great egret (*Ardea alba*)** – The great egret may occur within suitable habitat in the study area, but due to its migratory habit and the degraded nature of potential habitat, it is considered unlikely the site provides critical habitat for this species.
- **Cattle egret (*Ardea ibis*)** – The cattle egret may also occur within suitable habitat within the study area, but similarly, due to its migratory nature and the degraded nature of potential habitat, it is considered unlikely the site provides critical habitat for this species.
- **Australasian bittern (*Botaurus poiciloptilus*)** – Suitable habitat for the Australasian bittern occurs within the study area, although is generally of a degraded nature. It is considered possible that this threatened species may utilise the site for foraging, although is unlikely to breed within the study area with more suitable breeding habitat occurring along the Tamar River nearby.
- **White-bellied sea-eagle (*Haliaeetus leucogaster*)** – As described for the wedge-tailed eagle, no nests were observed during the field survey and it is unlikely the white-bellied sea-eagle nests on site, although the species may overfly the study area.
- **White-throated needletail (*Hirundapus caudacutus*)** – This species may overfly the site, but due to its migratory and aerial nature, it is unlikely the study area provides critical habitat for this species.
- **Tasmanian masked owl (*Tyto novaehollandiae subsp. castanops*)** – In 2010 the study site was noted to provide habitat trees that may be habitat for this threatened owl species (see example in Plate 16c). There was also potential whitewash observed beneath *Acacia melanoxyton* (blackwood) individuals within the study area, that may be evidence of the presence of this bird species (refer Plate 16b). Further survey in 2015 detected three suitable nest trees, however the presence of the masked owl is not confirmed and camera surveillance of these trees, or more intrusive techniques such as hollow checks would be required to confirm whether this species is present.

---

<sup>6</sup> As defined by denning features descriptions under 'definitions' in Appendix 1 of DPIPWE 2014

- **Tussock skink (*Pseudemoia pagenstecheri*)** – This species requires a good cover of medium to tall tussocks in grassland and woodland, as occurs across the study site. It is considered possible that this species occurs within those areas dominated by a ground cover of native grass species, across the plateau on site.
- **Eastern dwarf galaxias (*Galaxiella pusilla*)** – This species may be present on site, as it is known to occur in degraded habitat such as occurs within the study area. The freshwater aquatic sedgeland and rushland (ASF) community may provide habitat for this species, as well as the more degraded areas of poor drainage across the study site.
- **Striped marsh frog (*Limnodynastes peroni*)** – This species is known to occur in habitats similar to those present within the study area, including the freshwater aquatic sedgeland and rushland (ASF) community, associated areas of poor drainage, and waterbodies mapped on site. Although not detected during the targeted green and golden frog survey, it is possible that this species may occur within the study area.
- **Green and golden frog (*Litoria raniformis*)** – The green and golden frog is known from nearby and similar habitat to the study area, and may occur within the freshwater aquatic sedgeland and rushland (ASF) community or associated areas of poor drainage (currently mapped as agricultural land) and water bodies on site. Furthermore, there are numerous large water bodies that appear to be connected by remnant vegetation within 10 kilometres of the site, and may provide dispersal and breeding opportunities for this species within the study site and surrounding area. Although there was no response to call playback by this species, it was not an ideal time of year for identifying its presence, with surveys during the breeding period more likely to reveal the occurrence of green and golden frog individuals (November to February).
- **Green-lined ground beetle (*Catadromus lacordairei*)** – It is considered possible that this species occurs within the study site, with the green-lined ground beetle having a preferred habitat of open grassy woodland associated with wetlands. Surveying for invertebrate species was outside the scope of the current assessment, but should any further survey occur for this species it should focus on woody debris and stones (such as those shown in 13c) within the grassy woodland across the study site, where adult individuals may be detected.



**Plate 16 Potential evidence and habitat of threatened fauna occurring within the study area**

# 4. Potential impacts and recommendations

## 4.1 Native vegetation

It is understood that (in addition to impacts from the building envelopes) some clearance of vegetation will occur where it is required for safety reasons (fire in previous years has destabilised a number of the mature trees on site). Clearance to create a Bushfire Protection Zone of approximately 41 m from the forest vegetation is also required.

Therefore, the proposed Craggy Ridge Subdivision may impact on the following vegetation types:

- **Freshwater aquatic sedgeland and rushland (ASF) – threatened:** approximately 0.40 hectares (ha) of this vulnerable community protected under State legislation on site.
- Lowland *Poa labillardierei* grassland (GPL): approx. 0.89 ha on site.
- Lowland *Themeda triandra* grassland (GTL): approx. 1.06 ha on site.
- Rockplate Grasslands (GRP): approx. 0.38 ha on site.
- *Eucalyptus viminalis* grassy forest and woodland (DVG): approx. 16.3 ha on site. Some clearance of this area (approximately 7.38 ha or 45%) will occur to allow for the subdivision blocks and building envelopes, as well as access roads and bushfire protection zone.
- *Acacia melanoxylon* forest on rises (NAR): approx. 5.11 ha on site.
- *Acacia dealbata* forest (NAD): approx. 1.46 ha on site.
- *Bursaria-Acacia* woodland and scrub (NBA): approx. 1.35 ha on site.
- Water, sea (OAQ): approx. 0.18 ha on site.
- *Pteridium esculentum* fernland (FPF): approx. 2.06 ha on site.
- Regenerating cleared land (FRG): approx. 2.00 ha on site.

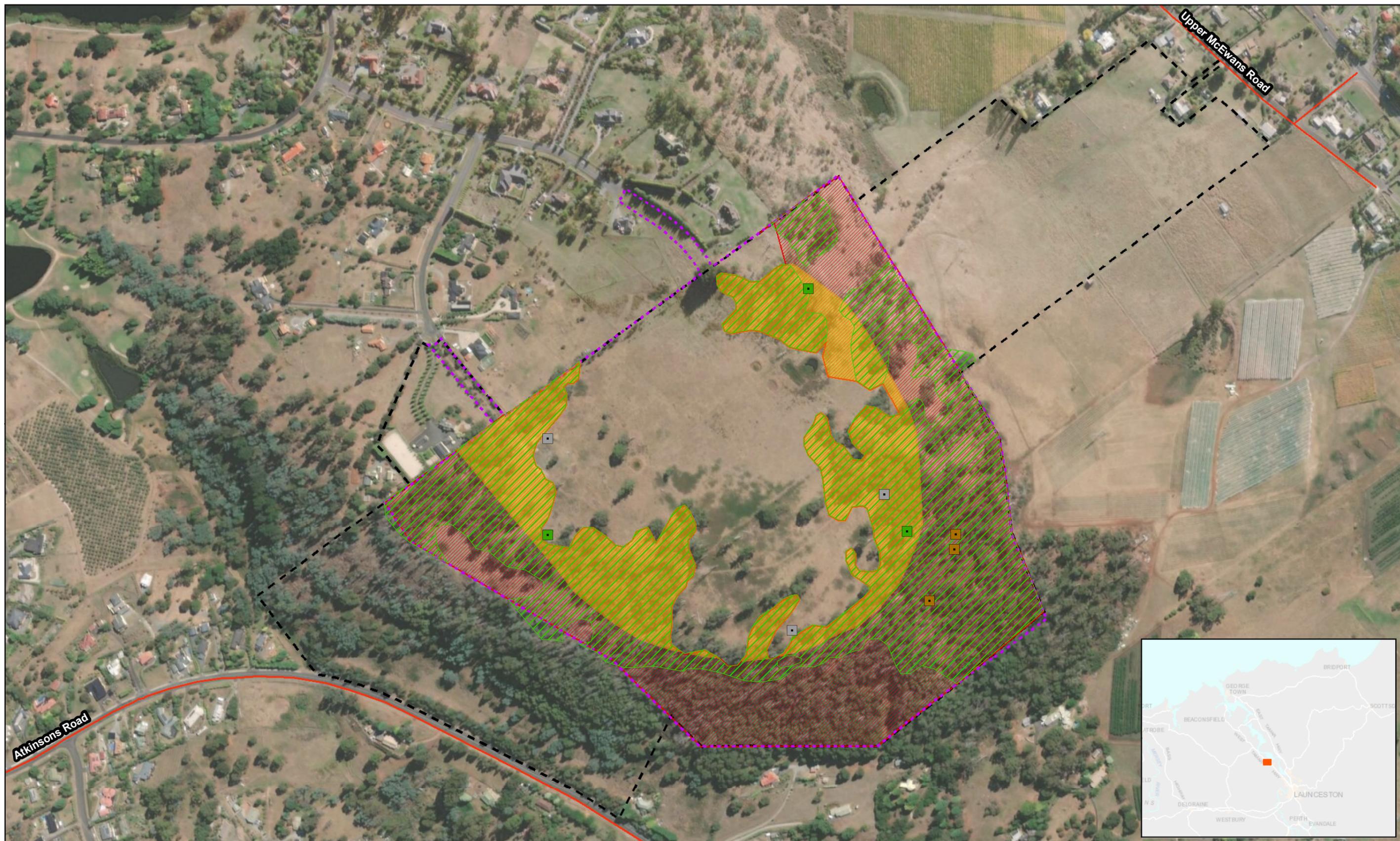
The following recommendations are made to minimise impacts to vegetation communities:

- Prepare a Construction Environmental Management Plan for the project that includes provisions relevant to protecting native vegetation within the site (such as described below).
- Avoid any unnecessary clearance and/or disturbance of native vegetation, including both trees and understorey vegetation (e.g. native grassland). Development should be directed to degraded areas (e.g. where exotic species dominate the understorey) ahead of those areas of better quality.
- Minimise the size of the building envelopes to restrict the amount of vegetation clearance permitted within each block and/or condition the lots to obtain the advice of a qualified ecologist in the siting of houses within each block, to further minimise native vegetation and habitat impacts.

- There were some areas of the *Eucalyptus viminalis* grassy forest and woodland (DVG) community that were of better quality and value when compared with areas where exotic species had invaded and in some places dominated the understorey. If revegetation is possible in these areas (after house construction, creation of bushfire protection zone) Appendix A details species such as shrubs, grasses and sedges suitable for use in a revegetation project within this community.
- The rockplate grasslands community provides habitat for a threatened flora species, *Ranunculus sessiliflorus* subsp. *sessiliflorus* (rockplate buttercup). Current plans indicate these locations are predominantly outside of lot boundaries. In addition, to maintain community integrity and the suitability of habitat for *Ranunculus sessiliflorus* subsp. *sessiliflorus* (rockplate buttercup), no planting of trees should occur within this community (the shallow soils of this community are unsuitable for trees regardless).
- Dieback of eucalypts and a general lack of eucalypt regeneration were observed across the site. It is suggested the *Tree Decline Toolbox* being developed by Dr. Neil Davidson be utilised to manage eucalypt dieback on the site (refer CRC 2009).
- It is recommended a Fire Management Plan be developed and implemented for the site. Native grasses occurring within the defensible space required around infrastructure should be slashed and/or mowed rather than introducing exotic pasture grasses to the site, which allows for the retention of local biodiversity at the site.
- Utilise the current track through mainly agricultural land (FAG) at the eastern side of the site for routing the proposed main access road if practical.
- IF there is a proposed stormwater retention basin situated in the area that currently is mapped as ASF (lot 15) it is recommended that once the basin is constructed, revegetation of the area should be in accordance with appropriate species that will provide an equivalent floristic structure to that of the current area. An appropriate species list is provided in appendix A. An appropriately experienced native revegetation expert should design the revegetation of the area. An ongoing monitoring program of the area should be undertaken to ensure that weeds and exotic species are managed until the native species have established within the area.
- Use local native plants for amenity plantings wherever possible, and do not plant invasive species, such as those listed in the pamphlet *A Guide to Garden Plants that are Going Bush and Becoming Environmental Weeds in the Tamar Region*, available through DPIPW Regional Weed Management Officers. Note that no amenity plantings should occur within the native grassland areas unless suitable native species typical of these communities are used.

With these recommendations in place the following permits, approvals and/or referrals may be required:

- Approval is likely to be required under the Tasmanian *Forest Practices Act 1985* (FPA), in order to clear any vegetation that may be classed as 'vulnerable land' under the FPA; that is *any land that consists of, or contains, a threatened native vegetation community, and any land inhabited by a threatened species*. Assessment and approval of this is undertaken by Council under the *Land Use Planning and Approvals Act 1993*, through the Development Application process.



1:4500 @ A3  
 0 25 50 100 150  
 Metres

Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 55



- Site Boundary
- Study Area
- Highway/Road
- DVG - Dry Eucalypt Forest and Woodland
- Proposed Priority Habitat
- Priority Habitat to be cleared

- Habitat**
- Fauna den/burrow (2015)
  - Hollow bearing tree/potential masked owl habitat (2015)
  - Masked owl call playback location (2015)



Craggy Ridge Investment Corporation Pty Ltd Job Number 32-19034  
 Craggy Ridge Estate Revision A  
 Date 26 Oct 2020

**Vegetation to be Cleared**

**Figure 5**

G:\3219034\GIS\Maps\Deliverables\3219034\_Figure5\_VegClearance\_A3L\_RevA.mxd  
 © 2020. Whilst every care has been taken to prepare this map, GHD make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.  
 Data source: ESRI, imagery, 2019; CSPP Tree Canopy 2010; Navigate, Highways/Roads 2010; GHD, vegetation survey with TASVEG Classification and field survey points, 2010 and 2015; CRIC, building envelopes, site boundary, lot boundaries 2020. Created by: tdoates

## 4.2 Significant flora impacts

Three threatened plant species were found on site, as well as one possibly threatened *Carex* species:

- ***Ranunculus sessiliflorus* subsp. *sessiliflorus* (rockplate buttercup)** – There were approximately 120 individuals of this species observed on site, within the rockplate grassland (GRP) community. The two locations where this species was recorded are mapped in Figure 2. This species occurs at the boundary of lot 3, and just beyond lot 4, which may require vegetation clearance for bushfire protection within a Bushfire Protection Zone. However, if clearing works in this area can be undertaken by hand, with the intent being to avoid any impacts to ground layer species, it should be possible to avoid impacts to *Ranunculus sessiliflorus* subsp. *sessiliflorus* (rockplate buttercup) individuals.
- ***Hypoxis vaginata* var. *brevistigmata* (sheathing yellowstar)** – There were 56 individuals of this lily species recorded within the regenerating cleared land (FRG) community on the upper plateau area. According to the current site layout, it is highly likely impacts to this species will occur (species locations mapped Figure 2).
- ***Juncus amabilis* (gentle rush)** – Population estimates have been provided in Table 2 above, and general locations are mapped in Figure 2. Current subdivision plans indicate this species is unlikely to be impacted by building envelope locations within lots.

The following recommendations are made to minimise impacts to listed flora:

- Prepare a Construction Environmental Management Plan for the project that includes provisions relevant to protecting threatened flora within the site (such as described below).
- Avoid impacts to the rockplate grassland (GRP) community, which is providing habitat for a threatened flora species, *Ranunculus sessiliflorus* subsp. *sessiliflorus* (rockplate buttercup), and if possible, avoid impacts to the locations where the threatened *Hypoxis vaginata* var. *brevistigmata* (sheathing yellowstar) was recorded (refer **Error! Reference source not found.**).
- If possible, consider adjusting the boundary location for lot 4 to avoid direct disturbance of *Hypoxis vaginata* (sheathing yellowstar) if possible.
- Try to minimise disturbance of threatened flora where vegetation removal is required for bushfire protection. Hand-slashing only should occur in the relevant area/s, with no vehicles and/or other machinery used and care taken to avoid any ground disturbance (e.g. do not drag felled-trees across the sensitive areas), to ensure minimal or no impacts to *Ranunculus sessiliflorus* subsp. *sessiliflorus* (rockplate buttercup) individuals on site. If this is not possible, a permit to take under the *Threatened Species Protection Act 1995* will be required.
- Should any flowering orchids be observed on site by the proponent and/or any contractors or consultants, it is recommended they be photographed and identified by a qualified botanist/ecologist in order to determine their species and rarity status.
- it is suggested that *Juncus amabilis* (gentle rush) be planted and/or used in revegetation projects within suitable wetland habitat (ASF) on the site to maintain biodiversity values.

Current plans indicate threatened flora are likely to be directly impacted by the project. It is recommended that modifications to the development siting be made to avoid these species. If this is not possible, permit/s for State-listed threatened flora under the Tasmanian *Threatened Species Protection Act 1995*, obtained from the Policy and Conservation Advice Branch of DPIPW, will be required.

Issuing of an approval under Section 57 of the *Land Use Planning and Approvals Act 1993* would not negate the need to obtain such permit/s, and the Local Government Authority (West Tamar Council) may reinforce this requirement under the terms of a planning permit.

### 4.3 Fauna habitat

The study site contains good quality habitat values for a number of listed fauna. Current plans for a 15 lot subdivision, access roads and a bushfire protection zone will result in a proportion of this habitat being impacted, as follows:

- There is 22.34 ha of priority habitat present within the site - the majority of this habitat will not be disturbed (up to 7.66 ha of the 22.34 ha will be impacted).
- There is approximately 16.3 ha of the *Eucalyptus viminalis* forest and woodland (DVG) on site, up to 7.38 ha (or 45%) of this will be cleared.
- There is approximately 5.11 ha of *Acacia melanoxylon* forest on rises, none of which is proposed to be impacted.
- Three fauna burrows were recorded in the steep south-eastern section of the site, current plans indicate these burrows will not be directly impacted.
- Three hollow bearing/potential masked owl habitat trees were recorded on the plateau of the site (utilisation status is not confirmed). It is understood the Bushfire Protection Plan permits up to 5% eucalypt canopy within the lots, therefore it is anticipated these trees can be retained.

It was identified that the site provides good quality habitat for a number of fauna species, including the **eastern barred bandicoot (*Perameles gunnii*)**, **eastern quoll (*Dasyurus viverrinus*)** and **Tasmanian masked owl (*Tyto novaehollandiae* subsp. *castanops*)**, and general habitat values for species such as the **eastern dwarf galaxias (*Galaxiella pusilla*)** and **green and golden frog (*Litoria raniformis*)**, although a survey was undertaken in November 2010 for the latter species which did not identify the species on site. The threatened **wedge-tailed eagle (*Aquila audax* subsp. *fleayi*)** was also observed using the site for foraging.

To minimise impacts to these and other fauna species, the following recommendations are made:

- Prepare a Construction Environmental Management Plan for the project that includes provisions relevant to protecting fauna species and fauna habitat within the site (such as described below).
- Surveys for potential Tasmanian devil dens and masked owl nest sites in 2015 identified a small number of both animal burrows (possible devil layups/social dens) and hollows of a suitable size for the masked owl. It is not possible to confirm whether these are utilised by these species without further survey. A camera survey over a period of two weeks is recommended if this data is required by Council and/or if impacts to the mapped potential nest trees and burrows are likely to occur.

- Avoid any unnecessary clearance and/or disturbance of native vegetation. Development should be directed to degraded areas (e.g. where there are no trees with hollows) ahead of those areas of better quality (e.g. with hollow-bearing trees).
- Where mature trees need to be removed for safety reasons, revegetate these locations with similar species. If trees are removed from the bushfire defendable space, younger trees should be removed in preference to habitat trees with hollows which should be retained where possible. In addition, utilise the wood from this removal to further enhance the fauna habitat at the site, by laying logs and crowns on the ground.
- If any revegetation is to occur, include local eucalypt species [*Eucalyptus amygdalina* (black peppermint) and *E. viminalis* (white gum)] and local understorey species, including dense ground covers, in revegetation plantings to provide shelter and habitat for mammal species such as the threatened eastern barred bandicoot (*Perameles gunnii*).
- Consider making the development a 'cat free' area and prevent or restrict the ownership of cats (i.e. condition lots to restrict cats to within the boundaries of each lot), to further protect native wildlife.
- It is understood the Bushfire Protection Zone can accommodate the retention of the three mapped hollow bearing trees. It is recommended the lots containing these trees (lots 12 and 15, and the boundaries of lots 3-4) are positioned to prevent the removal of these high-quality habitat trees.
- If conditioning of the lots discussed above is not implemented, and future development applications for houses within the lots propose the removal of these trees, it is recommended a pre-clearance survey is conducted by a suitably qualified ecologist to ensure native fauna are not present in the trees at the time of removal. Such a survey would also confirm whether a permit under the Tasmanian *Threatened Species Protection Act 1995* was required for removal of the trees (depending on which species, if any, is utilising them).
- Should works to or in the vicinity of the wetland area occur, all planning, development and rehabilitation must occur in conjunction with a qualified ecologist with the relevant expertise for such work. Care needs to be taken to ensure drainage and vegetation is not altered to the detriment of threatened fauna and that provision is made for potential habitat of threatened frog species, including the green and golden frog (*Litoria raniformis*).
- To minimise impacts on amphibian populations, the following actions are recommended:
  - Development of a Post-Construction Rehabilitation Plan
  - The retention of the drainage lines and rehabilitation of any disturbed habitat
  - Avoidance of any unnecessary clearance and/or disturbance of native vegetation
  - Avoidance of vegetation and wetland clearance during frog breeding seasons
  - Implementing the use of sediment control devices such as silt traps and sediment fencing during the construction period
  - Weed control and native riparian plantings should occur within the drainage lines to improve natural filtering and habitat corridors

With these recommendations in place the following permits, approvals and/or referrals may be required:

- Although a small number of potential Tasmanian devil layups/social dens were recorded on site, it is unlikely the area provides critical habitat for this species. In addition, the majority of potential habitat for species such as the eastern quoll and eastern barred bandicoot will be retained, and disturbance of the dens/burrows, and mapped hollow bearing trees is not proposed. Therefore, a referral under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* is unlikely to be required for potential impacts to Federally listed threatened fauna.
- As impacts to the mapped hollow bearing trees are not proposed, a permit under the Tasmanian *Threatened Species Protection Act 1995* for potential impacts to State-listed threatened fauna, is unlikely to be required.

#### **4.4 Introduced plants, pests and pathogens**

Five declared weed species were found on the study site. The proposed development may have the potential to distribute existing weeds to other parts of the study site or to areas outside of proposed works, via vehicles, soil, machinery or human traffic. In addition, the development has the potential to result in the introduction of new weeds into the study site.

It is recommended that weed, disease and pest control be considered in the detailed project planning either through incorporation of control measures in a site-specific Construction Environmental Management Plan (CEMP) or preparation of a Weed Management/Hygiene Plan. This documentation should include:

- Control of weeds prior to construction where appropriate
- Washdown and inspection of vehicles, machinery and boots before leaving/entering the site to ensure no viable plant materials or large clods of soil are transported
- Washdown to be conducted in accordance with the *Tasmanian Washdown Guidelines For Weed and Disease Control* (DPIPWE 2004)
- Control of material brought onto the site, to ensure it is free from weed seeds or diseases

Weed control in or near aquatic habitat, or areas of poor drainage, must consider the presence of frog species, with manual removal preferable. Otherwise low-toxicity non-residual herbicides registered as suitable in watercourses (e.g. Roundup Bioactive®) may be appropriate for use in a targeted manner such as spot spraying. Care also needs to be taken in order to avoid impacting native species during any weed control, including the native *Rubus parvifolius* (native raspberry), *Juncus amabilis* (gentle rush) individuals and potentially threatened *Carex* species.

The above recommendations are based on current plans for the proposed development and may need to be revised if the development plans are changed.

#### **4.5 West Tamar Interim Planning Scheme 2013 Biodiversity Code**

Comment on compliance of the proposal with the West Tamar Interim Planning Scheme 2013 Biodiversity Code E8 is made in Table 5.

**Table 5 West Tamar Planning Scheme 2013 Biodiversity Code - E8.6.1  
Habitat and Vegetation Management**

Objective		
To ensure that:		
<p>a. <b>vegetation identified as having conservation value as habitat has priority for protection and is appropriately managed to protect those values; and</b></p> <p>b. <b>the representation and connectivity of vegetation communities is given appropriate protection when considering the impacts of use and development.</b></p>		
Acceptable Solution	Performance Criteria	Comment
<p><b>A1.1</b> Clearance or disturbance of priority habitat is in accordance with a certified Forest Practices Plan; or</p> <p><b>A1.2</b> Clearance does not clear or disturb native vegetation within areas identified as priority habitat</p>	<p><b>P1</b> Clearance or disturbance of native vegetation within priority habitat may be allowed where a flora and fauna report prepared by a suitably qualified person demonstrates that development does not unduly compromise the representation of species or vegetation communities in the bioregion having regard to the:</p> <p>a) quality and extent of the vegetation or habitat affected by the proposal, including the maintenance of species diversity and its value as a wildlife corridor; and</p> <p>b) means of removal; and</p> <p>c) value of riparian vegetation in protecting habitat values; and</p> <p>d) impacts of siting of development (including effluent disposal) and vegetation clearance or excavations, in proximity to habitat or vegetation; and</p> <p>e) need for and adequacy of proposed vegetation or habitat management; and</p> <p>f) conservation outcomes and long-term security of any offset in accordance with the <i>General Offset Principles</i> for the RMPS, Department of Primary Industries, Parks, Water and Environment</p>	<p><b>The majority of priority habitat on site will be retained, in particular:</b></p> <ul style="list-style-type: none"> <li>- <b>There is approximately 22.34 ha of priority habitat present within the site and the majority of this habitat will not be disturbed (7.66 ha of 22.34 ha will be impacted - ~33%).</b></li> <li>- <b>Of this 7.66 ha (33%), the majority is low quality representation with cleared under story and weed infestation.</b></li> <li>- <b>A large majority of the vegetation identified as good quality habitat within priority habitat zones occurs outside of the area of proposed clearance – Potential Masked Owl habitat can be conserved as part of the bushfire protection zone.</b></li> <li>- <b>Native vegetation communities within the proposed area of clearance are well represented throughout the site and study area.</b></li> <li>- <b>Clearance of vegetation within priority habitat zones as a result of the subdivision boundaries will be minimised and is not considered to be significant.</b></li> </ul> <p><b>The proposal will therefore not unduly compromise the quality or representation of species or vegetation communities in the bioregion and is considered to satisfy the performance criteria P1</b></p>

## Objective

To ensure that:

- a. vegetation identified as having conservation value as habitat has priority for protection and is appropriately managed to protect those values; and
- b. the representation and connectivity of vegetation communities is given appropriate protection when considering the impacts of use and development.

Acceptable Solution	Performance Criteria	Comment
<b>A2</b> Clearance or disturbance of native vegetation is in accordance with a certified Forest Practices Plan.	<b>P2.1</b> Clearance or disturbance of native vegetation must be consistent with the purpose of this Code and not unduly compromise the representation of species or vegetation communities of significance in the bioregion having regard to the:  a) quality and extent of the vegetation or habitat affected by the proposal, including the maintenance of species diversity and its value as a wildlife corridor; and  b) means of removal; and  c) value of riparian vegetation in protecting habitat values; and  d) impacts of siting of development (including effluent disposal) and vegetation clearance or excavations, in proximity to habitat or vegetation; and  e) need for and adequacy of proposed vegetation or habitat management; and  f) conservation outcomes and long-term security of any offset in accordance with the <i>General Offset Principles</i> for the RMPS, Department of Primary Industries, Parks, Water and Environment.	<b>The majority of native vegetation on site will be retained. In particular:</b> <ul style="list-style-type: none"><li>- There will be no impacts to the threatened ASF community.</li><li>- There is approximately 16.3 ha of the <i>Eucalyptus viminalis</i> forest and woodland (DVG) on site, up to 7 ha (or 43%) of this will be cleared.</li><li>- Of this 7 ha, the majority is low quality representation with cleared under story and weed infestation.</li><li>- There is approximately 5.11 ha of <i>Acacia melanoxylon</i> forest on rises, none of which is proposed to be impacted</li></ul> <b>The proposal design (including bushfire protection zones) has been modified to incorporate retention of the majority of native vegetation, including minimising building envelopes and retaining key fauna habitat features. If the recommendations in this report are implemented the proposal is considered to satisfy the performance criteria P2.1</b>

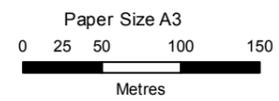
### 4.5.1 Recommendation

Modify the “priority habitat” overlay as suggested in Figure 4-2. The suggested polygon is based on the findings of the ecological assessment and takes into account the four criteria detailed for Priority Vegetation which are:

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



the LIST & copy State of Tasmania



- LEGEND**
- Site Boundary
  - Study Area
  - Recommended Priority Habitat Overlay Polygon



Craggy Ridge Investment Corporation Pty Ltd	Job Number	32-19034
Craggy Ridge Estate	Revision	B
	Date	26 Jul 2019

## Recommended Priority Habitat Overlay Polygon

Figure 4-2

## **4.6 Bushfire Management Plan**

The current Bushfire Management Plan indicates Lots 1-15 (which contain priority habitat) will be impacted by the clearance to create a 41 m buffer from the forest edge, or from forest on the lot. This clearance will impact 7.66 ha of the priority habitat for threatened fauna. With careful hand clearance in the vicinity of mapped threatened flora, it should be possible to avoid impacts to many of the known threatened flora locations. If this is not possible a permit to take under the TSPA will be required before clearing of this zone occurs.

## 5. Limitations

This ecological investigation report considering the proposed development of an ecotourism venue at the Craggy Ridge site near Grindelwald in northern Tasmania by Craggy Ridge Investment Corporation:

- Has been prepared pursuant to a contract with Craggy Ridge Investment Corporation
- Has been prepared based on information provided up to 09 July 2019
- Is for the sole use of Craggy Ridge Investment Corporation for the sole purpose of understanding the ecological attributes applicable to the site
- Must not be used (1) by any other person/entity other than Craggy Ridge Investment Corporation or (2) for a purpose other than for understanding the ecological attributes applicable to the site
- Must not be copied without the prior written permission of GHD

Neither GHD, its servants, employees nor officers accepts responsibility for any person/entity other than Craggy Ridge Investment Corporation in connection with this document. GHD has prepared the report on the basis of information provided by Craggy Ridge Investment Corporation and provided by people identified in the acknowledgements and consultation sections of this report, which GHD has not independently verified or checked.

This ecological assessment covers vascular plant species (ferns, conifers and flowering plants), terrestrial and migratory vertebrate fauna.

Non-vascular flora (e.g. mosses, liverworts, lichens, and fungi), marine fauna habitat and invertebrate habitat were not formally surveyed as part of this assessment.

The study area was initially assessed in winter, which is a suboptimal time for assessing herbaceous annuals and grass species. However, a follow up survey was undertaken in spring, during which additional threatened flora were recorded. Due to the timing of the surveys and the vegetation types recorded, it is considered unlikely that further threatened flora (excluding orchids if present) have been overlooked.

No detailed fauna field survey was undertaken (i.e. trapping) at the study area. The fauna investigation instead focused on fauna habitat, and evidence of animals (e.g. scats, tracks, feathers). It also included two brief spotlighting sessions at the site, and brief call playback sessions for owl and frog species. A targeted survey for the green and golden frog was also undertaken.

## 6. References

- Buchanan, A.M., (Ed.) (2009): *A Census of the Vascular Plants of Tasmania*. Tasmanian Herbarium, Tasmanian Museum & Art Gallery, Hobart. Available online at: <http://tmag.tas.gov.au/file.aspx?id=4439> (accessed 23 July 2010).
- Bryant, S. & Jackson, J. (1999): *Tasmania's Threatened Fauna Handbook: what, where and how to protect*. Threatened Species Unit, Parks & Wildlife, Hobart.
- CRC for Forestry (cited as CRC) (2009): *Tree Decline Toolbox*. Biobuzz Issue Ten, December 2009. Described online at: <http://www.crcforestry.com.au/view/index880e.html?id=56040> (accessed 20 May 2013).
- Department of Environment, Water, Heritage and the Arts (2010): *EPBC Act List of Threatened Fauna*. Species Profiles available online at: <http://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=fauna> (accessed 23 July 2010).
- Department of Primary Industries, Parks, Water and Environment (2014): Survey Guidelines and Management Advice for Development Proposals that may impact on the Tasmanian Devil (*Sarcophilus harrisii*): .A supplement to the 'Guidelines for Natural Values Surveys - Terrestrial Development Proposals
- Department of Primary Industries, Parks, Water and Environment (2009): *Threatened Species List – Vascular Plants*. Notesheets and Listing Statements available online at: <http://www.dpiw.tas.gov.au/inter.nsf/WebPages/SLen-5P27QC?open> (accessed 23 July 2010).
- Department of Primary Industries, Parks, Water and Environment (2009): *Threatened Species List – Vertebrate Animals*. Recovery Plans and Listing Statements available online at: <http://www.dpiw.tas.gov.au/inter.nsf/WebPages/SJON-58K8WK?open> (accessed 23 July 2010).
- Department of Primary Industries, Parks, Water and Environment (cited as DPIPWE) (2004): *Tasmanian Washdown Guidelines for Weed and Disease Control. Edition 1*. Forestry Tasmania, Agricultural Contractors, Nature Conservation Branch, Tasmania. Available online at: [http://www.dpiw.tas.gov.au/inter.nsf/Attachments/LJEM-5ZM43C/\\$FILE/Washdown%20Guidelines%20Edition%201.pdf](http://www.dpiw.tas.gov.au/inter.nsf/Attachments/LJEM-5ZM43C/$FILE/Washdown%20Guidelines%20Edition%201.pdf) (accessed 23 July 2010).
- Forest Practices Authority (2005): *Fauna Value Database*. Information on threatened species available online at: <http://www.fpa.tas.gov.au/index.php?id=82> (accessed 23 July 2010).
- GHD Pty Ltd (cited as GHD) (2010): *Green and Gold Frog Survey*. Unpublished report prepared for Craggy Ridge Estate Pty Ltd and issued in December 2010, provided in Appendix C.
- Harris, S. & Kitchener, A. (2005): *From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation*, Department of Primary Industries, Parks, Water and Environment, Printing Authority of Tasmania, Hobart.
- Povey, A. (2013): *Natural Values Review of Craggy Ridge Estate Development Application*. Unpublished report prepared for West Tamar Council and issued 30 January 2013.
- Richardson, F.J., Richardson, R.G. & Shepherd, R.C.H. (2007): *Weeds of the South-East – An Identification Guide for Australia*. R.G. and F.J. Richardson, Victoria, Australia.
- Simpson, K. and Day, N. (2004): *Field Guide to the Birds of Australia*, 7<sup>th</sup> edition, Penguin Group, Australia.
- University of Tasmania, (2009): *Key to Tasmanian Vascular Plants*. Available online at: <http://www.utas.edu.au/dicotkey/dicotkey/key.htm> (accessed 23 July 2010).
- Wapstra, H., Wapstra, A. & Gilfedder, L. (2005): *The Little Book of Common Names for Tasmanian Plants*. Available online at: [http://www.dpiw.tas.gov.au/inter.nsf/Attachments/LJEM-6K8W4N/\\$FILE/Common\\_names\\_booklet.pdf](http://www.dpiw.tas.gov.au/inter.nsf/Attachments/LJEM-6K8W4N/$FILE/Common_names_booklet.pdf) (accessed 23 July 2010).

## **Appendices**

## Appendix A - Flora List

<b>Job No</b>	321555801 / 321555810 / 321768402
<b>Project</b>	Craggy Ridge Development
<b>Client</b>	Craggy Ridge Investment Corporation
<b>Site</b>	Titles accessed via 11 Upper McEwans Road, Legana, and via a new access road of Eiger Court during the spring survey: 146283/1; 144951/1; 146284/1; and 106310/15.
<b>Area</b>	Approximately 57 hectares
<b>Grid Reference</b>	Midpoint of the study area at approximately GDA94 E 501500, N 5422000
<b>Surveyed By</b>	John Davies, Senior Botanist GHD Hobart Anneka Ferguson, Ecologist GHD Hobart James Hill, Senior Ecologist GHD Hobart
<b>Date of Survey</b>	7-8 July 2010; 28 September 2010; 29-30 September 2015
<b>Plant Collection Permit No.</b>	TFL 10107 Expiry date: 30 June 2011 DA 15127 (expiry date: 31 May 2016)

Key	
State Legislation	
r	rare – Tasmanian TSPA
v	vulnerable – Tasmanian TSPA
e	endangered – Tasmanian TSPA
Commonwealth Legislation	
VU	vulnerable – Commonwealth EPBCA
EN	endangered – Commonwealth EPBCA
CR	critically endangered – Commonwealth EPBCA
Introduced Species	
i	introduced
P	planted
D	declared weed – Tasmanian <i>Weed Management Act 1999</i>
Suggestions of Native Species for use in Revegetation Project/s on Site (REVEG)	
DVG	Species suitable for use in a revegetation project within the DVG community
ASF	Species suitable for use in a revegetation project within the ASF community

## Vascular Flora Recorded Within the Study Area

Status	Species Name	Common Name	REVEG
<b>Indigenous Species</b>			
	<i>Acacia dealbata</i> subsp. <i>dealbata</i>	silver wattle	
	<i>Acacia melanoxylon</i>	blackwood	DVG
	<i>Acaena novae-zelandiae</i>	common buzzy	
	<i>Adiantum aethiopicum</i>	common maidenhair	ASF
	<i>Asplenium flabellifolium</i>	necklace fern	ASF
	<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	stiped wallabygrass	
	<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	prickly box	
	<i>Carex appressa</i>	tall sedge	ASF
	<i>Carex breviculmis</i>	shortstem sedge	ASF
r	<i>Carex longebrachiata</i> (more likely <i>C. iynx</i> )	drooping sedge	ASF
	<i>Cassinia aculeata</i>	dollybush	DVG
	<i>Cheilanthes austrotenuifolia</i>	green rockfern	
	<i>Clematis aristata</i>	mountain clematis	DVG
	<i>Clematis microphylla</i>	small-leaf clematis	
	<i>Coprosma quadrifida</i>	native currant	DVG
	<i>Crassula peduncularis</i>	purple stonecrop	
	<i>Crassula sieberiana</i>	rock stonecrop	
	<i>Dichondra repens</i>	kidneyweed	
	<i>Drosera peltata</i> subsp. <i>peltata</i>	pale sundew	
	<i>Eleocharis sphacelata</i>	tall spikesedge	ASF
	<i>Elymus scaber</i> subsp. <i>scaber</i>	rough wheatgrass	
	<i>Eucalyptus amygdalina</i>	black peppermint	DVG
	<i>Eucalyptus viminalis</i>	white gum	DVG
	<i>Euchiton</i> sp.	cottonleaf species	
	<i>Exocarpos cupressiformis</i>	common native-cherry	
	<i>Galium</i> sp.	bedstraw species	
	<i>Geranium potentilloides</i> (not confirmed)	mountain cranesbill	
r	<i>Hypoxis vaginata</i> var. <i>brevistigmata</i>	sheathing yellowstar	DVG
r	<i>Juncus amabilis</i>	gentle rush	ASF
	<i>Juncus australis</i> (not confirmed)	southern rush	ASF
	<i>Juncus pallidus</i>	pale rush	ASF
	<i>Juncus planifolius</i>	broadleaf rush	ASF
	<i>Juncus procerus</i>	tall rush	ASF
	<i>Juncus sarophorus</i>	broom rush	ASF
	<i>Lachnagrostis filiformis</i>	common blowgrass	
	<i>Lomandra longifolia</i>	sagg	DVG

## Vascular Flora Recorded Within the Study Area

Status	Species Name	Common Name	REVEG
	<i>Lythrum hyssopifolia</i>	small loosestrife	
	<i>Microlaena stipoides</i> var. <i>stipoides</i>	weeping grass	
	<i>Montia fontana</i>	waterblinks	
	<i>Oxalis perennans</i>	grassland woodsorrel	
	<i>Pelargonium australe</i>	southern storksbill	
	<i>Poa labillardierei</i>	silver tussockgrass	DVG
	<i>Polystichum proliferum</i>	mother shieldfern	ASF
	<i>Pteridium esculentum</i>	bracken	
r	<i>Ranunculus sessiliflorus</i> var. <i>sessiliflorus</i>	rockplate buttercup	
	<i>Rubus parvifolius</i>	native raspberry	DVG
	<i>Rumex brownii</i> (not confirmed)	slender dock	
	<i>Sambucus gaudichaudiana</i>	white elderberry	
	<i>Senecio odoratus</i>	scented groundsel	DVG
	<i>Solanum laciniatum</i>	kangaroo apple	DVG
	<i>Stellaria pungens</i>	prickly starwort	
	<i>Themeda triandra</i>	kangaroo grass	DVG
	<i>Urtica incisa</i>	scrub nettle	
	<i>Viola hederacea</i>	ivyleaf violet	
<b>Introduced Species</b>			
i	<i>Acetosella vulgaris</i>	sheep sorrel	
i	<i>Agrostis capillaris</i>	browntop bent	
i	<i>Aira</i> sp.	hairgrass species	
i	<i>Anagallis arvensis</i>	scarlet pimpernel	
i	<i>Aphanes arvensis</i>	parsley piert	
i	<i>Arctotheca calendula</i>	capeweed	
i	<i>Bromus diandrus</i>	great brome	
i	<i>Bromus hordeaceus</i> (not confirmed)	soft brome	i
i	<i>Cardamine hirsuta</i>	hairy bittercress	i
i, D	<i>Carduus</i> sp.	thistle species	i, D
i	<i>Centaureum erythraea</i>	common centaury	i
i	<i>Cerastium glomeratum</i>	sticky mouse-ear	i
i	<i>Cirsium vulgare</i>	spear thistle	
i	<i>Cotula coronopifolia</i>	water buttons	
i	<i>Crataegus monogyna</i>	hawthorn	
i	<i>Cynosurus cristatus</i>	crested dogstail	
i	<i>Cynosurus echinatus</i>	rough dogstail	
i, D	<i>Cytisus scoparius</i>	english broom	
i	<i>Dactylis glomerata</i>	cocksfoot	

## Vascular Flora Recorded Within the Study Area

Status	Species Name	Common Name	REVEG
i	<i>Dipsacus fullonum</i>	wild teasel	
i	<i>Erodium moschatum</i>	musky heronsbill	
i	<i>Euonymus europaeus</i>	european spindle	
i	<i>Euphorbia peplus</i>	petty spurge	
i	<i>Galium aparine</i>	cleavers	
i	<i>Galium murale</i>	small bedstraw	
i, D	<i>Genista monspessulana</i>	canary broom	
i	<i>Holcus lanatus</i>	yorkshire fog	
i	<i>Hypochoeris radicata</i>	rough catsear	
i	<i>Isolepis setacea</i>	bristle clubsedge	
i	<i>Lolium perenne</i>	perennial ryegrass	
i	<i>Lotus uliginosus</i> (not confirmed)	greater birdsfoot-trefoil	
i	<i>Moenchia erecta</i>	erect chickweed	
i	<i>Myriophyllum aquaticum</i>	parrotfeather	
i	<i>Phalaris aquatica</i>	toowoomba canarygrass	
i	<i>Pinus radiata</i>	radiata pine	
i	<i>Poa annua</i>	winter grass	
i	<i>Polycarpon tetraphyllum</i>	fourleaf allseed	
i	<i>Reseda luteola</i>	cutleaf mignonette	
i	<i>Romulea rosea</i>	lilac oniongrass	
i, D	<i>Rubus fruticosus</i> aggregate	blackberry	
i	<i>Rumex crispus</i>	curled dock	
i	<i>Sherardia arvensis</i>	field madder	
i	<i>Silybum marianum</i>	variegated thistle	
i	<i>Solanum nigrum</i>	blackberry nightshade	
i	<i>Sonchus oleraceus</i>	common sowthistle	
i	<i>Trifolium repens</i>	white clover	
i	<i>Trifolium subterraneum</i>	subterranean clover	
i	<i>Typha latifolia</i>	great reedmace	
i, D	<i>Ulex europaeus</i>	gorse	
i	<i>Vicia sativa</i>	narrowleaf vetch	
i	<i>Vulpia</i> sp.	fescue species	

# Appendix B - Legislation Summary

## Legislative Implications

Activities that may impact upon threatened species or vegetation communities are regulated under both State and Federal legislation. The control of declared invasive species is also mandatory under State legislation. This includes but is not limited to:

- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA)
- Tasmanian *Threatened Species Protection Act 1995* (TSPA)
- Tasmanian *Weed Management Act 1999*
- Tasmanian *Regional Forestry Agreement 1997*
- Tasmanian *Nature Conservation Act 2002*

## Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) applies to developments and associated activities that have the potential to significantly impact on matters protected under this Act. The EPBCA also applies to environmental impact on Commonwealth Land or activities undertaken by the Commonwealth on other lands. The Australian Government Department of Sustainability, Environment, Water, Population and Communities administers the EPBCA.

Under the EPBCA, unless exempt, actions require approval from the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities if they have, may have, or are likely to have a significant impact on a 'matter of national environmental significance'. There are seven matters of national significance:

- World Heritage sites
- National heritage places
- Nationally listed threatened species and ecological communities
- Listed migratory species
- Ramsar wetlands of international significance
- Commonwealth marine areas
- Nuclear actions (including uranium mining)

Listed threatened species and ecological communities are recognised as matters of national environmental significance. Consequently, any action that may be likely to have a significant impact on listed species and ecological communities under the EPBCA must be referred to the Minister for determination on whether EPBCA approval is required. The referral process generally takes 20 business days to process, after which the Minister makes a determination on the need or otherwise for EPBCA assessment and approval. If approval is deemed to be necessary a formal assessment and approval process commences.

## Tasmanian Threatened Species Protection Act 1995

The *Threatened Species Protection Act 1995* (TSPA) is used to protect Tasmania's threatened flora and fauna. This Act classifies and lists threatened flora and fauna in Tasmania according to their level of risk as rare, vulnerable, endangered or extinct.

The objective of the TSPA is to identify, classify and protect threatened flora and fauna species in Tasmania. According to the TSPA it is an offence to knowingly disturb listed flora or fauna without a permit from the Biodiversity Conservation Branch of DPIPWE.

If a development involves direct impact to an individual of a listed flora or fauna species a permit is required under the TSPA (pending some exemptions). This applies to flora and fauna but does not include habitat for listed species, which is protected through the Forest Practices Legislation.

## Tasmanian Weed Management Act 1999

The *Weed Management Act 1999* is the central legislation controlling eradication of significant weeds in Tasmania. This Act aims to minimise the deleterious effect of weeds on productive capacity and natural values, promote strategic and sustainable eradication approaches, encourage community involvement and promote sharing of the responsibility for weed eradication.

Under the *Weed Management Act 1999* and associated Weed Management Plans, landowners and managers must take all reasonable measures to control the impact and spread of a declared weed.

Declared weeds are listed on the Department of Primary Industries, Parks, Water and Environment (DPIPWE) website (<http://www.dpiw.tas.gov.au>).

## Forest Practices Act 1985

The *Forest Practices Act 1985* and associated documentation control land clearing on both public and private land in Tasmania. This Act applies to forest vegetation and threatened non-forest vegetation communities. Forest vegetation is described as native trees or other woody plants, including any seedlings that have the potential to grow to a height of five metres or more. There are no controls under the *Forest Practices Act 1985* on clearing of non-forest vegetation that is not threatened.

A certified Forest Practices Plan is required to authorise land clearing (clearing trees or clearing and converting threatened native vegetation) where the clearance is greater than one hectare (ha) or involves vulnerable land (with some exemptions).

Clearance and conversion of threatened native vegetation communities is generally not permitted unless exceptional circumstances (as defined under the *Forest Practices Act 1985*) exist. The *Forest Practices Regulations 2007* provide some exemptions from the requirement to have a Forest Practices Plan to authorise land clearing. These include:

- Small scale clearing provided the land is less than 1 ha, the landowner has given consent, vegetation is not listed as 'vulnerable land', and timber volumes cleared do not exceed 100 tonnes.
- Clearing necessary to provide a reasonable buffer for existing infrastructure or for public safety.
- Clearing native vegetation regrowth (containing no more than 20 eucalypts more than 2 metres tall within a 0.5 hectare) on previously cleared land and converted land.

- Clearing associated with:
  - Dam works authorised by a dam permit.
  - Easements for the construction and maintenance of electricity infrastructure and associated access tracks, where in accordance with an environmental management system endorsed by the Forest Practices Authority.
  - Construction and maintenance of gas pipelines and public roads.
- Clearing in accordance with a conservation covenant, vegetation management agreement, or fire management program of a kind approved by the Forest Practices Authority.
- Clearing carried out for mining or mineral exploration activities that are authorised under a permit under the *Land Use Planning and Approvals Act 1993* or a licence or lease under the *Mineral Resources Development Act 1995*.
- Clearing carried out for the purposes of constructing buildings or associated developments, but only where they have been authorised under a permit issued under the *Land Use Planning and Approvals Act 1993*.
- Clearing for railways within the meaning of the *Rail Infrastructure Act 2007*.

Vulnerable land is defined as land that:

- Is within a 10 metre buffer of a stream bank or 40 metres from a river; or
- Slopes steeper than 11-19 degrees (depending on rock type); or
- Is within a high or very high soil erodibility class; or
- Contains a threatened community; or
- Is inhabited by a threatened species; or
- Contains vulnerable karst soils; or
- Contains an area of trees reserved from harvesting or clearing under an expired Forest Practices Plan.

### **Nature Conservation Act 2002**

The *Nature Conservation Act 2002* makes provisions with respect to the conservation and protection of the fauna, flora and geological diversity of Tasmania and provides the declaration of national parks and other reserved within the State.

The *Nature Conservation Act 2002* lists native vegetation communities. The status of these communities are established through scientific assessment against the criteria for 'rare' (a total range of less than 1,000 hectares), 'vulnerable' (70% of original area cleared) and 'endangered' (90% of original area cleared). The communities listed under this Act are protected under the *Forest Practices Act 1985*. The Act also defines the covenants under which offset areas are protected.

### **Wildlife Regulations Act 1999**

The *Wildlife Regulations Act 1999* also protects many native animal species. Under this Act the taking, buying, selling or possession of specially protected wildlife is prohibited without a permit. Protected wildlife includes most native vertebrate fauna.

# **Appendix C** - Green and Gold Frog Survey Report

# **Appendix D** - Natural Values Atlas Report and Protected Matters Search Report

# Natural Values Atlas Report

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

Reference: Craggy Ridge

Requested For: GHD

Report Type: Summary Report

Timestamp: 03:00:48 PM Tuesday 25 June 2019

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

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

Raptors: buffers Min: 500m Max: 5000m

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

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

Geoconservation: buffer 1000m

Acid Sulfate Soils: buffer 1000m

TASVEG: buffer 1000m

Threatened Communities: buffer 1000m

Fire History: buffer 1000m

Tasmanian Reserve Estate: buffer 1000m

Biosecurity Risks: buffer 1000m

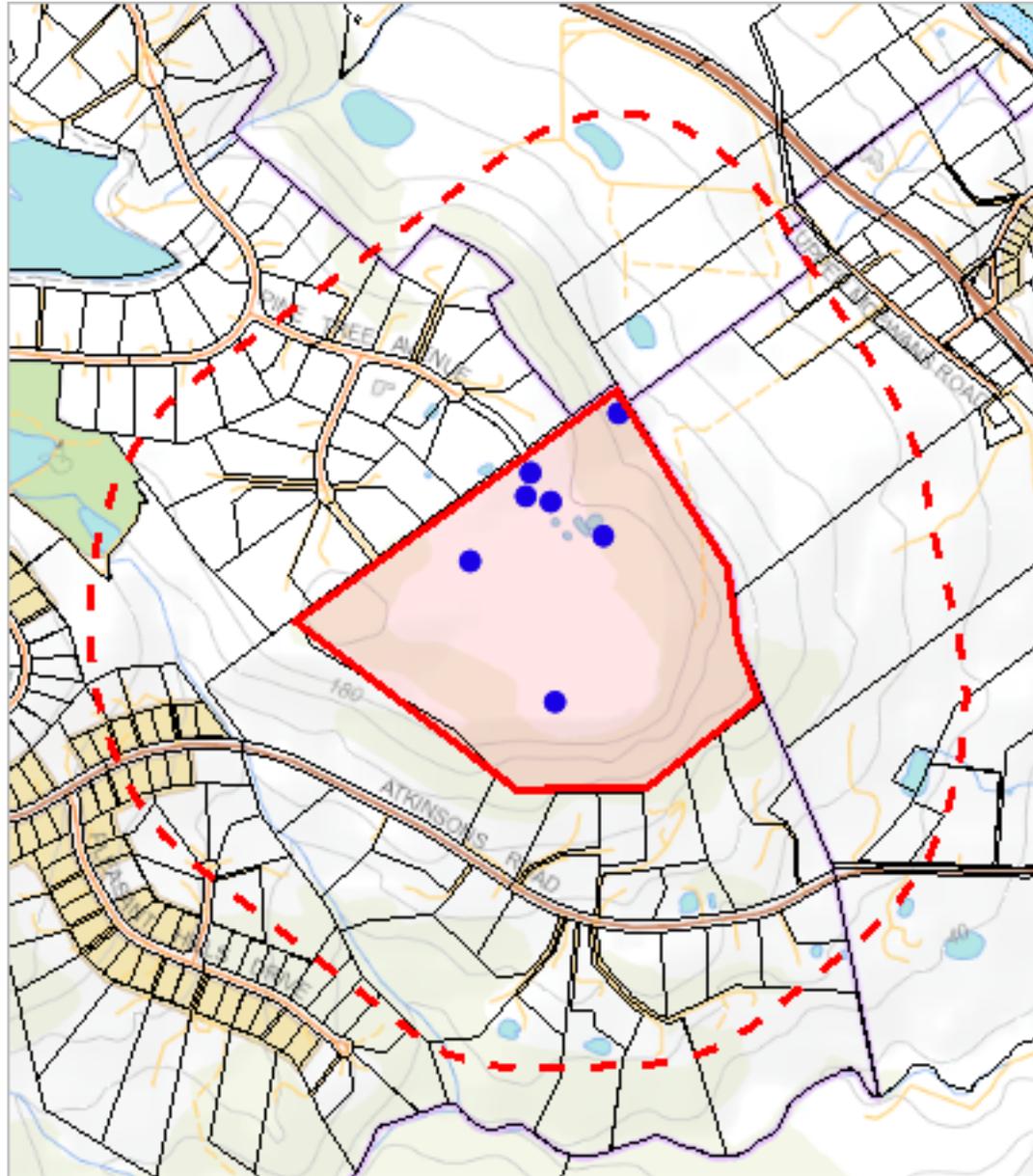


The centroid for this query GDA94: 501523.0, 5421989.0 falls within:

Property: 3601231

# Threatened flora within 500 metres

502414, 5423093



500524, 5420980

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
Juncus amabilis	gentle rush	r?		n	7	08-Jul-2010

## Unverified Records

No unverified records were found!

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

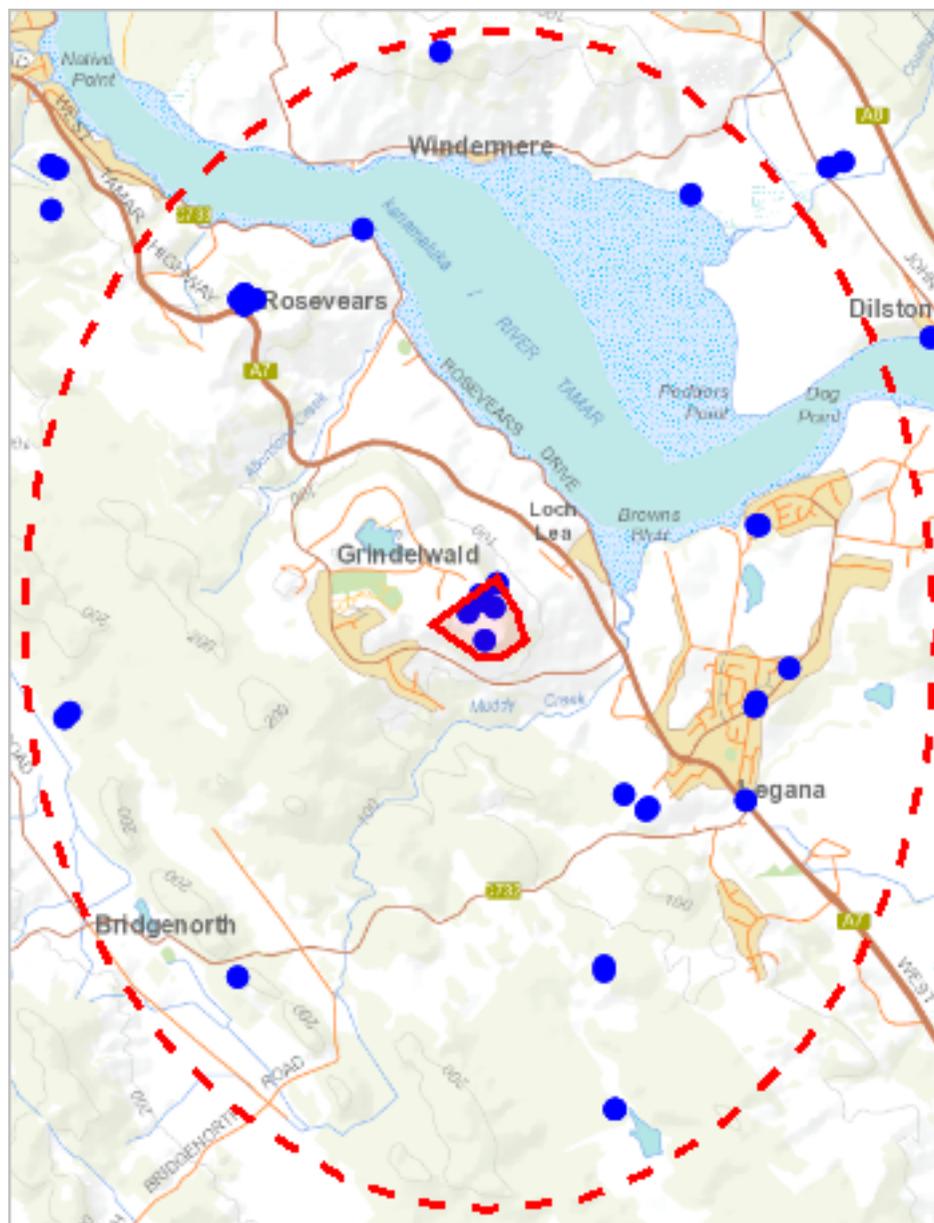
Telephone: 1300 368 550

Email: [ThreatenedSpecies.Enquiries@dipwe.tas.gov.au](mailto:ThreatenedSpecies.Enquiries@dipwe.tas.gov.au)

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

# Threatened flora within 5000 metres

505807, 5427572



497145, 5416481

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

# Threatened flora within 5000 metres

Legend: Verified and Unverified observations

● Point Verified

● Point Unverified

— Line Verified

— Line Unverified

□ Polygon Verified

□ Polygon Unverified

Legend: Cadastral Parcels



# Threatened flora within 5000 metres

## Verified Records

Species	Common Name	SS	NS	Bio	Observation Count	Last Recorded
<i>Austrostipa blackii</i>	crested speargrass	r		n	1	01-Nov-1984
<i>Bolboschoenus caldwellii</i>	sea clubsedge	r		n	2	30-Mar-2006
<i>Brunonia australis</i>	blue pincushion	r		n	14	31-Aug-2009
<i>Chiloglottis trapeziformis</i>	broadlip bird-orchid	e		n	1	01-Nov-1970
<i>Hyalosperma demissum</i>	moss sunray	e		n	1	01-Jan-1878
<i>Hypolepis muelleri</i>	harsh groundfern	r		n	1	01-Aug-1998
<i>Juncus amabilis</i>	gentle rush	r?		n	8	08-Jul-2010
<i>Prostanthera rotundifolia</i>	roundleaf mintbush	v		n	5	28-Oct-2009
<i>Ruppia megacarpa</i>	largefruit seatassel	r		n	1	19-Jan-1843
<i>Senecio squarrosus</i>	leafy fireweed	r		n	1	01-Nov-1984
<i>Veronica plebeia</i>	trailing speedwell	r		n	1	21-Jul-2010

## Unverified Records

No unverified records were found!

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

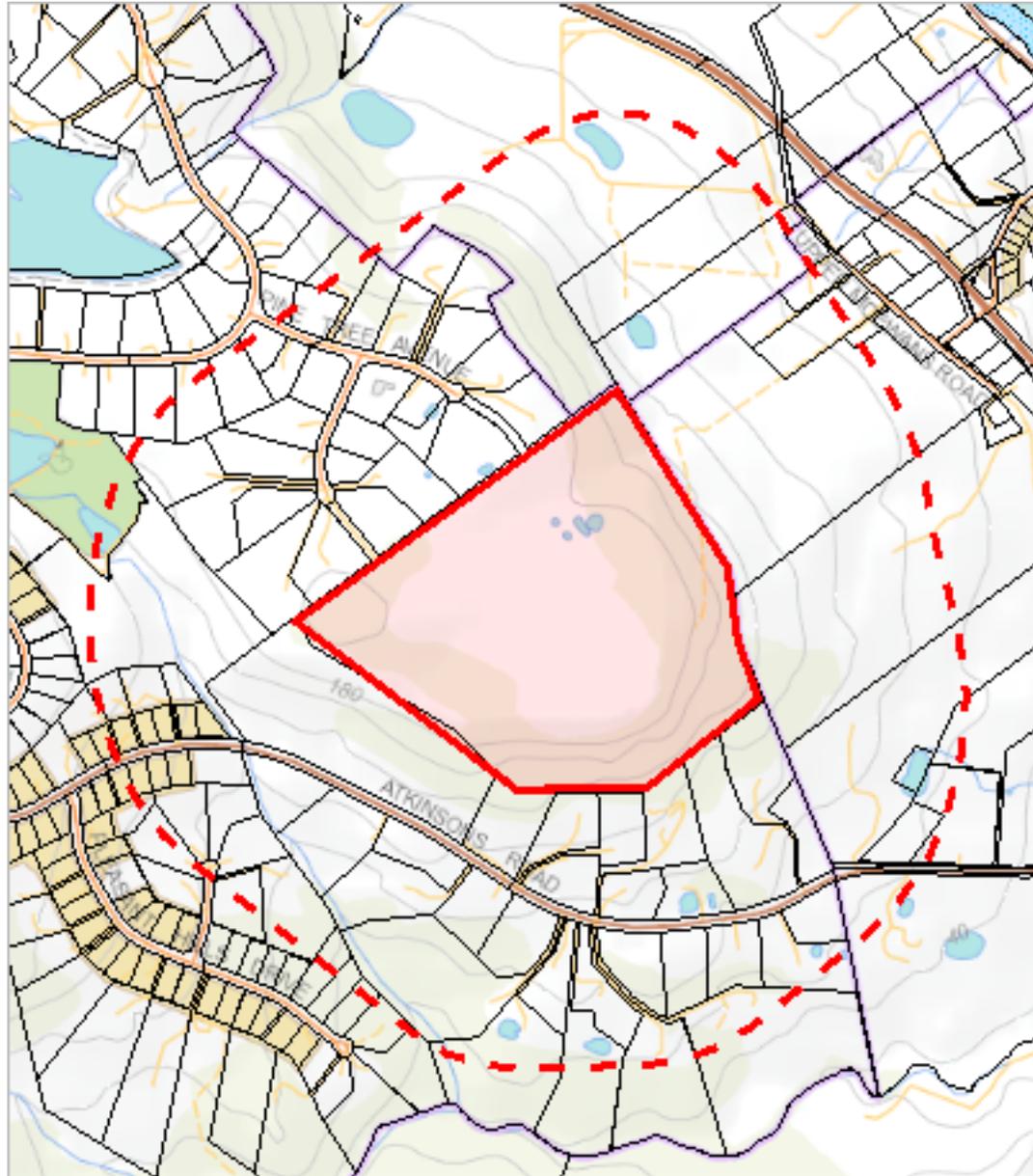
Telephone: 1300 368 550

Email: [ThreatenedSpecies.Enquiries@dpiwve.tas.gov.au](mailto:ThreatenedSpecies.Enquiries@dpiwve.tas.gov.au)

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

# Threatened fauna within 500 metres

502414, 5423093



500524, 5420980

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

## Threatened fauna within 500 metres (based on Range Boundaries)

Species	Common Name	SS	NS	BO	Potential	Known	Core
<i>Litoria raniformis</i>	green and gold frog	v	VU	n	1	0	1
<i>Pseudemoia pagenstecheri</i>	tussock skink	v		n	1	0	0
<i>Aquila audax subsp. fleayi</i>	tasmanian wedge-tailed eagle	e	EN	e	1	0	0
<i>Antipodia chaostola</i>	chaostola skipper	e	EN		1	0	0
<i>Limnodynastes peroni</i>	striped marsh frog	e		n	1	0	0
<i>Tyto novaehollandiae subsp. castanops</i>	masked owl (tasmanian)	e	VU	e	1	0	1
<i>Perameles gunnii</i>	eastern barred bandicoot		VU	n	1	0	1
<i>Pasmaditta jungermanniae</i>	Cataract Gorge Pinhead Snail	v		e	1	0	0
<i>Dasyurus maculatus subsp. maculatus</i>	spotted-tail quoll	r	VU	n	1	0	0
<i>Dasyurus viverrinus</i>	eastern quoll		EN	n	0	0	1
<i>Lathamus discolor</i>	swift parrot	e	CR	mbe	1	0	0
<i>Sarcophilus harrisi</i>	tasmanian devil	e	EN	e	1	0	0
<i>Accipiter novaehollandiae</i>	grey goshawk	e		n	1	0	0
<i>Prototroctes maraena</i>	australian grayling	v	VU	ae	1	0	0
<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle	v		n	2	0	0

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

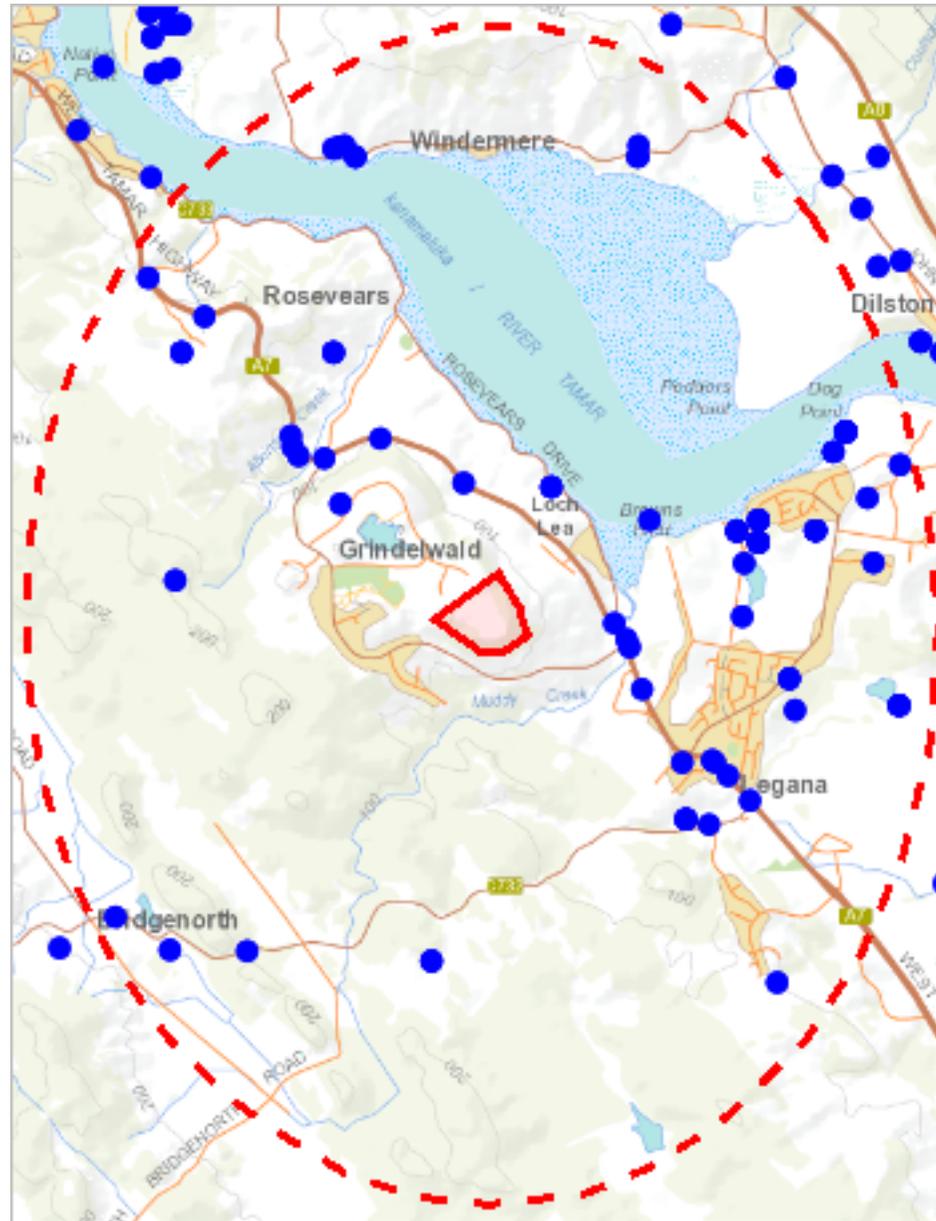
Telephone: 1300 368 550

Email: [ThreatenedSpecies.Enquiries@dpipwe.tas.gov.au](mailto:ThreatenedSpecies.Enquiries@dpipwe.tas.gov.au)

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

# Threatened fauna within 5000 metres

505807, 5427572



497145, 5416481

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

## Verified Records

Species	Common Name	SS	NS	Bio	Observation Count	Last Recorded
<i>Accipiter novaehollandiae</i>	grey goshawk	e		n	1	01-Jan-1993
<i>Aquila audax</i> subsp. <i>fleayi</i>	tasmanian wedge-tailed eagle	e	EN	e	2	29-Nov-2010
<i>Botaurus poiciloptilus</i>	australasian bittern		EN	n	7	01-Dec-2010
<i>Calidris ferruginea</i>	curlew sandpiper		CR	n	1	06-Nov-1991
<i>Dasyurus maculatus</i>	spotted-tail quoll	r	VU	n	6	20-Jul-2018
<i>Dasyurus maculatus</i> subsp. <i>maculatus</i>	spotted-tail quoll	r	VU	n	5	07-May-2013
<i>Dasyurus viverrinus</i>	eastern quoll		EN	n	2	01-Jan-1996
<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle	v		n	10	29-Sep-1993
<i>Lathamus discolor</i>	swift parrot	e	CR	mbe	14	08-Nov-1995
<i>Litoria raniformis</i>	green and gold frog	v	VU	n	13	04-Mar-2017
<i>Perameles gunnii</i>	eastern barred bandicoot		VU	n	18	16-Jul-2018
<i>Perameles gunnii</i> subsp. <i>gunnii</i>	eastern barred bandicoot		VU		2	24-Dec-2018
<i>Podiceps cristatus</i>	great crested grebe	v		n	1	01-Jan-1983
<i>Polioccephalus cristatus</i> subsp. <i>australis</i>	great crested grebe	pv			2	01-Jan-1983
<i>Sarcophilus harrisi</i>	tasmanian devil	e	EN	e	6	21-Jan-2010
<i>Thylacinus cynocephalus</i>	thylacine	x	EX	ex	1	01-Jan-1960
<i>Tyto novaehollandiae</i>	masked owl	pe	PVU	n	4	25-Feb-1987

## 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
<i>Litoria raniformis</i>	green and gold frog	v	VU	n	1	0	1
<i>Pseudomys novaehollandiae</i>	new holland mouse	e	VU	n	2	0	0
<i>Pseudemoia pagenstecheri</i>	tussock skink	v		n	1	0	0
<i>Aquila audax</i> subsp. <i>fleayi</i>	tasmanian wedge-tailed eagle	e	EN	e	1	0	0
<i>Antipodia chaostola</i>	chaostola skipper	e	EN		3	0	0
<i>Limnodynastes peroni</i>	striped marsh frog	e		n	1	0	0
<i>Tyto novaehollandiae</i> subsp. <i>castanops</i>	masked owl (tasmanian)	e	VU	e	1	0	1
<i>Galaxiella pusilla</i>	eastern dwarf galaxias	v	VU	n	1	0	0
<i>Galaxias fontanus</i>	swan galaxias	e	EN	e	1	0	0
<i>Perameles gunnii</i>	eastern barred bandicoot		VU	n	1	0	1
<i>Pasmaditta jungermanniae</i>	Cataract Gorge Pinhead Snail	v		e	1	0	0
<i>Dasyurus maculatus</i> subsp. <i>maculatus</i>	spotted-tail quoll	r	VU	n	1	0	0
<i>Dasyurus viverrinus</i>	eastern quoll		EN	n	0	0	1
<i>Lathamus discolor</i>	swift parrot	e	CR	mbe	1	0	0
<i>Accipiter novaehollandiae</i>	grey goshawk	e		n	1	0	2
<i>Sarcophilus harrisi</i>	tasmanian devil	e	EN	e	1	0	0
<i>Prototroctes maraena</i>	australian grayling	v	VU	ae	1	0	0
<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle	v		n	2	0	0
<i>Catadromus lacordairei</i>	Green-lined ground beetle	v		n	1	0	0

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

Telephone: 1300 368 550

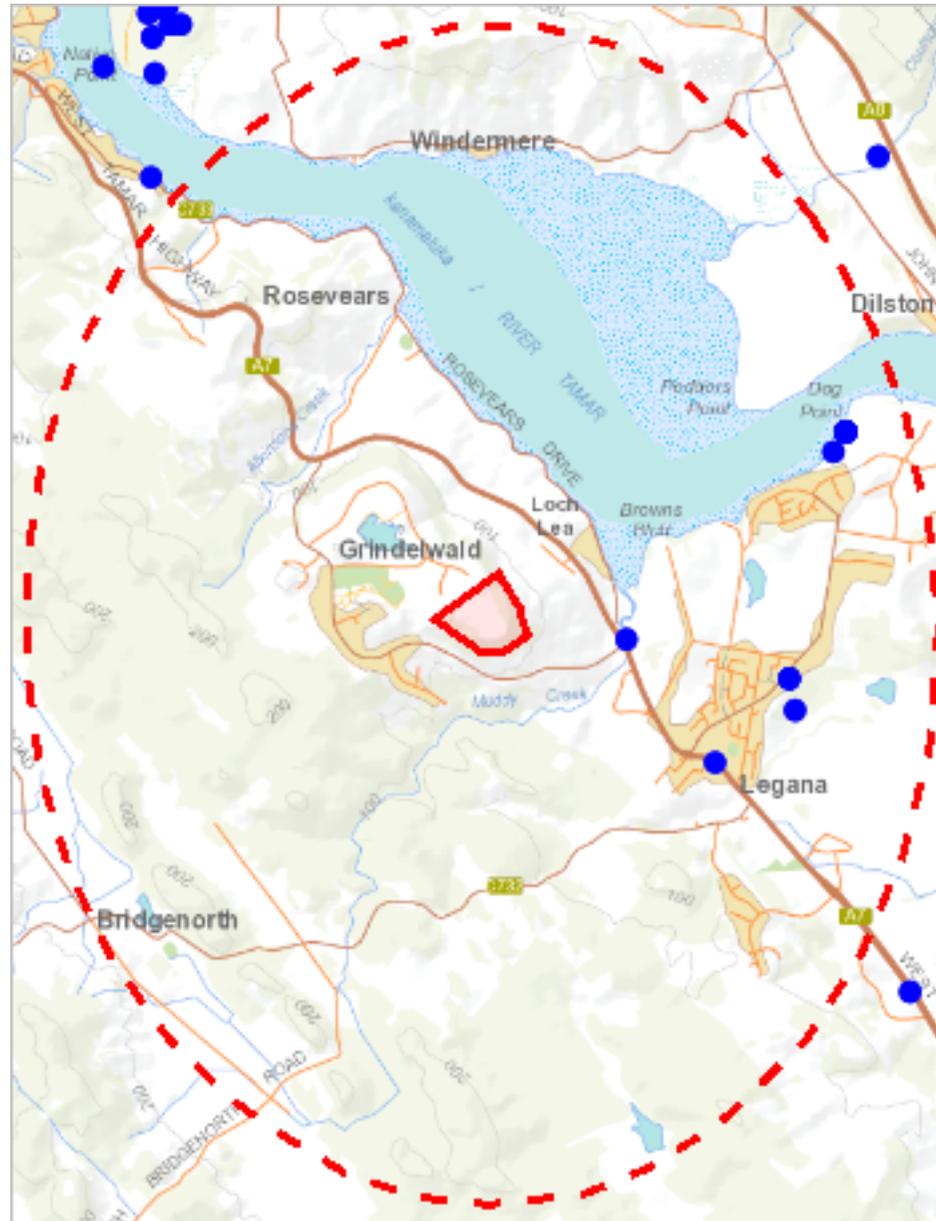
Email: [ThreatenedSpecies.Enquiries@dPIPWE.tas.gov.au](mailto:ThreatenedSpecies.Enquiries@dPIPWE.tas.gov.au)

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

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

# Raptor nests and sightings within 5000 metres

505807, 5427572



497145, 5416481

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
1944	Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	Nest	1	29-Nov-2010
	Accipiter novaehollandiae	grey goshawk	Sighting	1	01-Jan-1993
	Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	Sighting	1	27-Apr-1996
	Falco peregrinus	peregrine falcon	Sighting	3	04-Jan-1994
	Haliaeetus leucogaster	white-bellied sea-eagle	Sighting	10	29-Sep-1993
	Tyto novaehollandiae	masked owl	Sighting	4	25-Feb-1987

## 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
Accipiter novaehollandiae	grey goshawk	e		1	0	2

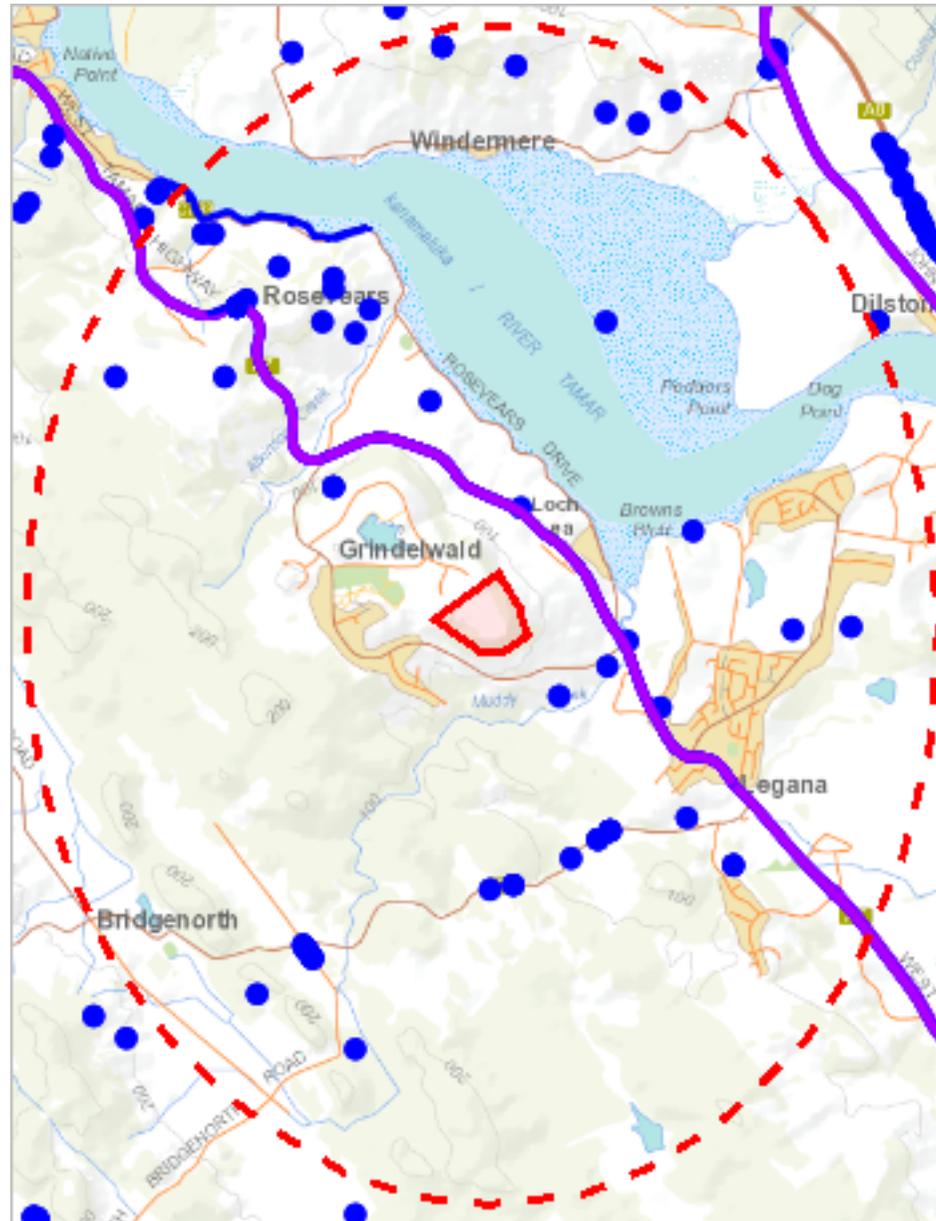
For more information about raptor nests, please contact Threatened Species Enquiries.

Telephone: 1300 368 550

Email: [ThreatenedSpecies.Enquiries@dpiwve.tas.gov.au](mailto:ThreatenedSpecies.Enquiries@dpiwve.tas.gov.au)

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

\*\*\* No Tas Management Act Weeds found within 500 metres \*\*\*



497145, 5416481

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

# Tas Management Act Weeds within 5000 m

Legend: Verified and Unverified observations

● Point Verified

● Point Unverified

▬ Line Verified

▬ Line Unverified

□ Polygon Verified

□ Polygon Unverified

Legend: Cadastral Parcels



# Tas Management Act Weeds within 5000 m

## Verified Records

Species	Common Name	Observation Count	Last Recorded
<i>Anthemis cotula</i>	stinking chamomile	1	01-Jan-1911
<i>Carduus pycnocephalus</i>	slender thistle	1	06-Dec-1984
<i>Carduus tenuiflorus</i>	winged thistle	1	01-Nov-1984
<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	boneseed	12	07-Dec-2009
<i>Cirsium arvense</i> var. <i>arvense</i>	creeping thistle	1	07-Dec-2009
<i>Cortaderia selloana</i>	silver pampasgrass	1	21-Apr-1985
<i>Cortaderia</i> sp.	pampas grass	1	08-Jul-2012
<i>Echium plantagineum</i>	patersons curse	2	26-Oct-1985
<i>Erica lusitanica</i>	spanish heath	8	21-Mar-2019
<i>Erica scoparia</i>	twig heath	31	18-Jul-2014
<i>Foeniculum vulgare</i>	fennel	4	07-Dec-2009
<i>Genista monspessulana</i>	montpellier broom	4	07-Dec-2009
<i>Nassella tenuissima</i>	mexican feather grass	3	08-Apr-2011
<i>Rubus fruticosus</i>	blackberry	14	11-Nov-2015
<i>Salix x fragilis</i> nothovar. <i>fragilis</i>	crack willow	1	31-Oct-2003
<i>Senecio jacobaea</i>	ragwort	16	07-Dec-2009
<i>Ulex europaeus</i>	gorse	13	21-Mar-2019

## Unverified Records

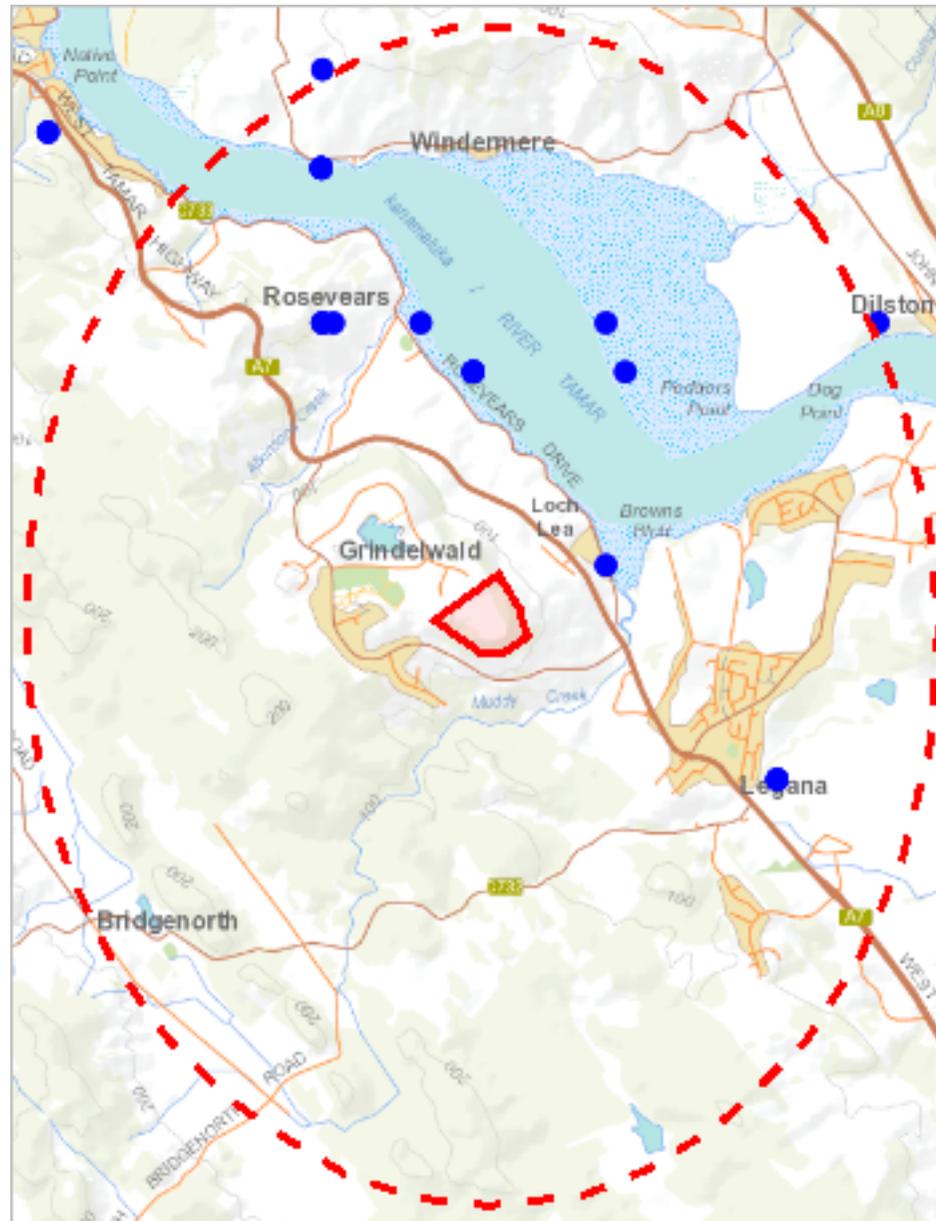
For more information about introduced weed species, please visit the following URL for contact details in your area:

<http://dpipwe.tas.gov.au/invasive-species/weeds>

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

# Priority Weeds within 5000 m

505807, 5427572



497145, 5416481

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

# Priority Weeds within 5000 m

Legend: Verified and Unverified observations

● Point Verified

● Point Unverified

▬ Line Verified

▬ Line Unverified

▭ Polygon Verified

▭ Polygon Unverified

Legend: Cadastral Parcels



# Priority Weeds within 5000 m

## Verified Records

Species	Common Name	Observation Count	Last Recorded
Acacia baileyana	cootamundra wattle	1	28-Oct-2009
Grevillea rosmarinifolia	rosemary grevillea	2	28-Oct-2009
Spartina anglica	common cordgrass	19	18-Dec-1982

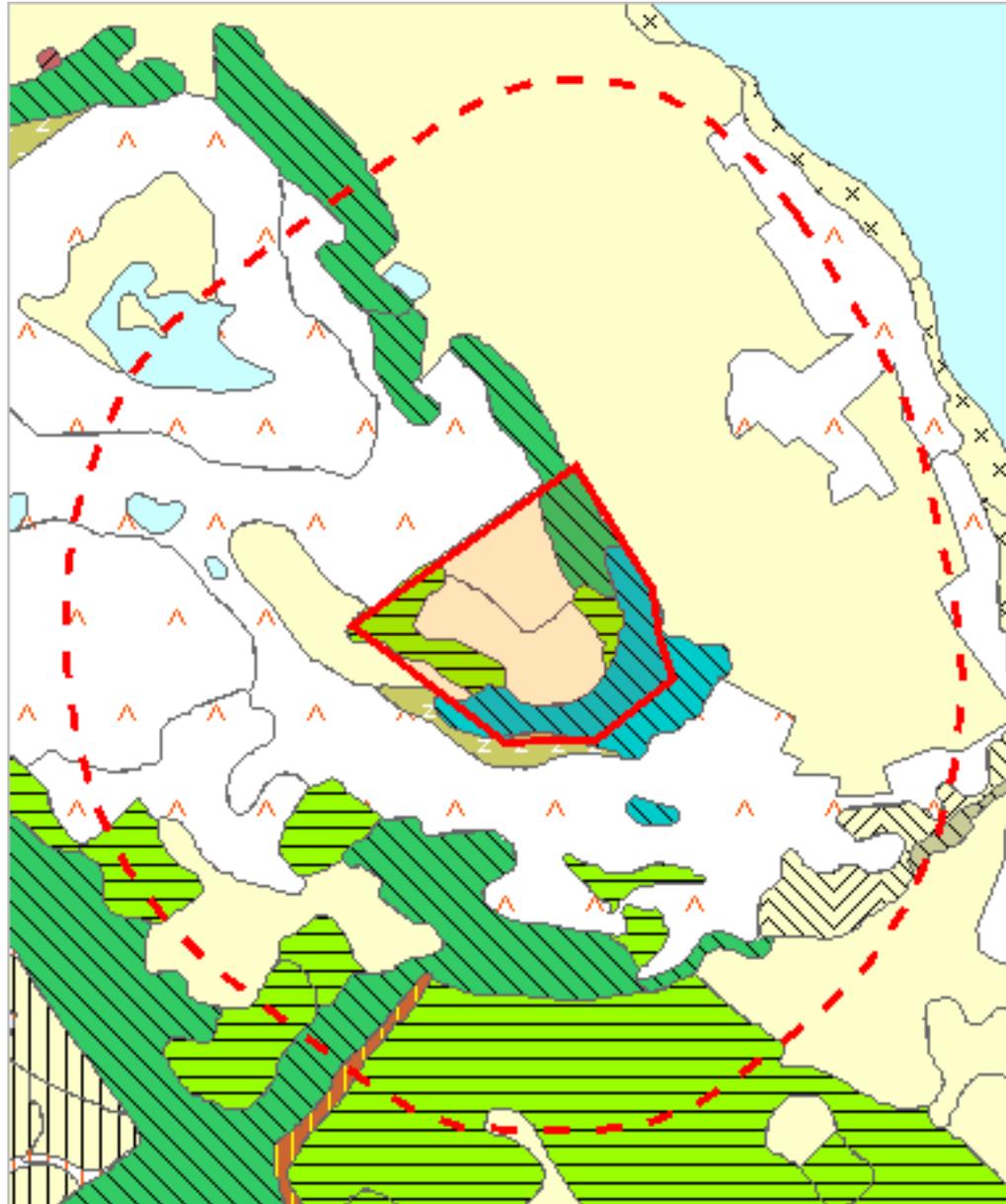
## Unverified Records

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

<http://dpiwpe.tas.gov.au/invasive-species/weeds>

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

\*\*\* No Acid Sulfate Soils found within 1000 metres \*\*\*



500149, 5420480

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

# TASVEG 3.0 Communities within 1000 metres

## Legend: TASVEG 3.0

	DAC - <i>Eucalyptus amygdalina</i> coastal forest and woodland
	DAD - <i>Eucalyptus amygdalina</i> forest and woodland on dolerite
	DAS - <i>Eucalyptus amygdalina</i> forest and woodland on sandstone
	DAM - <i>Eucalyptus amygdalina</i> forest on mudstone
	DAZ - <i>Eucalyptus amygdalina</i> inland forest and woodland on Cainozoic deposits
	DSC - <i>Eucalyptus amygdalina</i> - <i>Eucalyptus obliqua</i> damp sclerophyll forest
	DBA - <i>Eucalyptus barberi</i> forest and woodland
	DCO - <i>Eucalyptus coccifera</i> forest and woodland
	DCR - <i>Eucalyptus cordata</i> forest
	DDP - <i>Eucalyptus dalrympleana</i> - <i>Eucalyptus pauciflora</i> forest and woodland
	DDE - <i>Eucalyptus delegatensis</i> dry forest and woodland
	DGL - <i>Eucalyptus globulus</i> dry forest and woodland
	DGW - <i>Eucalyptus gunnii</i> woodland
	DMO - <i>Eucalyptus morrisbyi</i> forest and woodland
	DNI - <i>Eucalyptus nitida</i> dry forest and woodland
	DNF - <i>Eucalyptus nitida</i> Furneaux forest
	DOB - <i>Eucalyptus obliqua</i> dry forest
	DOV - <i>Eucalyptus ovata</i> forest and woodland
	DOW - <i>Eucalyptus ovata</i> heathy woodland
	DPO - <i>Eucalyptus pauciflora</i> forest and woodland not on dolerite
	DPD - <i>Eucalyptus pauciflora</i> forest and woodland on dolerite
	DPE - <i>Eucalyptus perriniana</i> forest and woodland
	DPU - <i>Eucalyptus pulchella</i> forest and woodland
	DRI - <i>Eucalyptus risdonii</i> forest and woodland
	DRO - <i>Eucalyptus rodwayi</i> forest and woodland
	DSO - <i>Eucalyptus sieberi</i> forest and woodland not on granite
	DSG - <i>Eucalyptus sieberi</i> forest and woodland on granite
	DTD - <i>Eucalyptus tenuiramis</i> forest and woodland on dolerite
	DTG - <i>Eucalyptus tenuiramis</i> forest and woodland on granite
	DTO - <i>Eucalyptus tenuiramis</i> forest and woodland on sediments
	DVF - <i>Eucalyptus viminalis</i> Furneaux forest and woodland
	DVG - <i>Eucalyptus viminalis</i> grassy forest and woodland
	DVC - <i>Eucalyptus viminalis</i> - <i>Eucalyptus globulus</i> coastal forest and woodland
	DKW - King Island <i>Eucalypt</i> woodland
	DMW - Midlands woodland complex
	WBR - <i>Eucalyptus brookeriana</i> wet forest
	WDA - <i>Eucalyptus dalrympleana</i> forest
	WDL - <i>Eucalyptus delegatensis</i> forest over <i>Leptospermum</i>
	WDR - <i>Eucalyptus delegatensis</i> forest over rainforest
	WDB - <i>Eucalyptus delegatensis</i> forest with broad-leaf shrubs
	WDU - <i>Eucalyptus delegatensis</i> wet forest (undifferentiated)
	WGK - <i>Eucalyptus globulus</i> King Island forest
	WGL - <i>Eucalyptus globulus</i> wet forest
	WNL - <i>Eucalyptus nitida</i> forest over <i>Leptospermum</i>
	WNR - <i>Eucalyptus nitida</i> forest over rainforest
	WNU - <i>Eucalyptus nitida</i> wet forest (undifferentiated)
	WOL - <i>Eucalyptus obliqua</i> forest over <i>Leptospermum</i>
	WOR - <i>Eucalyptus obliqua</i> forest over rainforest
	WOB - <i>Eucalyptus obliqua</i> forest with broad-leaf shrubs
	WOU - <i>Eucalyptus obliqua</i> wet forest (undifferentiated)
	WRE - <i>Eucalyptus regnans</i> forest
	WSU - <i>Eucalyptus subcrenulata</i> forest and woodland
	WVI - <i>Eucalyptus viminalis</i> wet forest
	RPF - <i>Athrotaxis cupressoides</i> - <i>Nothofagus gunnii</i> short rainforest
	RPW - <i>Athrotaxis cupressoides</i> open woodland
	RPP - <i>Athrotaxis cupressoides</i> rainforest
	RKF - <i>Athrotaxis selaginoides</i> - <i>Nothofagus gunnii</i> short rainforest
	RKP - <i>Athrotaxis selaginoides</i> rainforest
	RKS - <i>Athrotaxis selaginoides</i> subalpine scrub

# TASVEG 3.0 Communities within 1000 metres

	RCO - Coastal rainforest
	RSH - Highland low rainforest and scrub
	RKX - Highland rainforest scrub with dead Athrotaxis selaginoides
	RHP - Lagarostrobos franklinii rainforest and scrub
	RMT - Nothofagus - Atherosperma rainforest
	RML - Nothofagus - Leptospermum short rainforest
	RMS - Nothofagus - Phyllocladus short rainforest
	RFS - Nothofagus gunnii rainforest and scrub
	RMU - Nothofagus rainforest (undifferentiated)
	RFE - Rainforest fernland
	NAD - Acacia dealbata forest
	NAR - Acacia melanoxylon forest on rises
	NAF - Acacia melanoxylon swamp forest
	NAL - Allocasuarina littoralis forest
	NAV - Allocasuarina verticillata forest
	NBS - Banksia serrata woodland
	NBA - Bursaria - Acacia woodland and scrub
	NCR - Callitris rhomboidea forest
	NLE - Leptospermum forest
	NLM - Leptospermum lanigerum - Melaleuca squarrosa swamp forest
	NLA - Leptospermum scoparium - Acacia mucronata forest
	NME - Melaleuca ericifolia swamp forest
	NLN - Subalpine Leptospermum nitidum woodland
	AHF - Fresh water aquatic herbland
	ASF - Freshwater aquatic sedgeland and rushland
	AHL - Lacustrine herbland
	AHS - Saline aquatic herbland
	ARS - Saline sedgeland/rushland
	AUS - Saltmarsh (undifferentiated)
	ASS - Succulent saline herbland
	AWU - Wetland (undifferentiated)
	SAL - Acacia longifolia coastal scrub
	SBM - Banksia marginata wet scrub
	SBR - Broad-leaf scrub
	SCH - Coastal heathland
	SSC - Coastal scrub
	SCA - Coastal scrub on alkaline sands
	SRE - Eastern riparian scrub
	SED - Eastern scrub on dolerite
	SCL - Heathland on calcareous substrates
	SKA - Kunzea ambigua regrowth scrub
	SLG - Leptospermum glaucescens heathland and scrub
	SLL - Leptospermum lanigerum scrub
	SLS - Leptospermum scoparium heathland and scrub
	SLW - Leptospermum scrub
	SRF - Leptospermum with rainforest scrub
	SMP - Melaleuca pustulata scrub
	SMM - Melaleuca squamea heathland
	SMR - Melaleuca squarrosa scrub
	SRH - Rookery halophytic herbland
	SSK - Scrub complex on King Island
	SSZ - Spray zone coastal complex
	SHS - Subalpine heathland
	SWR - Western regrowth complex
	SSW - Western subalpine scrub
	SWW - Western wet scrub
	SHW - Wet heathland
	HCH - Alpine coniferous heathland
	HCM - Cushion moorland
	HHE - Eastern alpine heathland
	HSE - Eastern alpine sedgeland

# TASVEG 3.0 Communities within 1000 metres

-  HUE - Eastern alpine vegetation (undifferentiated)
-  HHW - Western alpine heathland
-  HSW - Western alpine sedgeland/herbland
-  MAP - Alkaline pans
-  MBU - Buttongrass moorland (undifferentiated)
-  MBS - Buttongrass moorland with emergent shrubs
-  MBE - Eastern buttongrass moorland
-  MGH - Highland grassy sedgeland
-  MBP - Pure buttongrass moorland
-  MRR - Restionaceae rushland
-  MBR - Sparse buttongrass moorland on slopes
-  MSP - Sphagnum peatland
-  MDS - Subalpine Diplarrena latifolia rushland
-  MBW - Western buttongrass moorland
-  MSW - Western lowland sedgeland
-  GHC - Coastal grass and herbfield
-  GPH - Highland Poa grassland
-  GCL - Lowland grassland complex
-  GSL - Lowland grassy sedgeland
-  GPL - Lowland Poa labillardierei grassland
-  GTL - Lowland Themeda triandra grassland
-  GRP - Rockplate grassland
-  FAG - Agricultural land
-  FUM - Extra-urban miscellaneous
-  FMG - Marram grassland
-  FPE - Permanent easements
-  FPL - Plantations for silviculture
-  FPF - Pteridium esculentum fernland
-  FRG - Regenerating cleared land
-  FSM - Spartina marshland
-  FPU - Unverified plantations for silviculture
-  FUR - Urban areas
-  FWU - Weed infestation
-  QCS - Coastal slope complex
-  QCT - Coastal terrace mosaic
-  QKB - Kelp beds
-  QAM - Macquarie alpine mosaic
-  QMI - Mire
-  QST - Short tussock grassland/rushland with herbs
-  QTT - Tall tussock grassland with megaherbs
-  ORO - Lichen lithosere
-  OSM - Sand, mud
-  OAQ - Water, sea

Legend: Cadastral Parcels



## TASVEG 3.0 Communities within 1000 metres

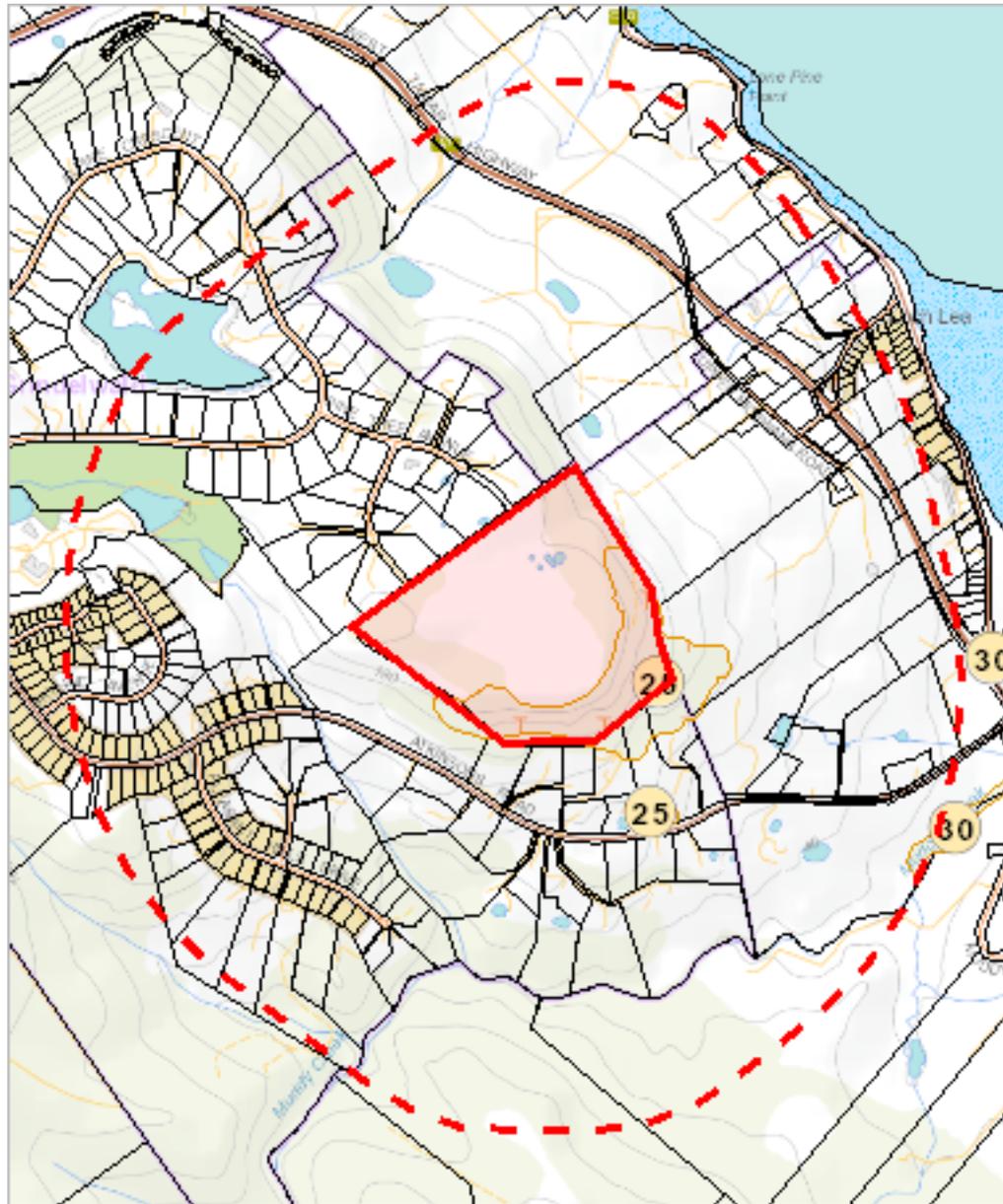
Code	Community	Emergent Species
DAD	(DAD) Eucalyptus amygdalina forest and woodland on dolerite	EV
DAD	(DAD) Eucalyptus amygdalina forest and woodland on dolerite	
DVG	(DVG) Eucalyptus viminalis grassy forest and woodland	
FAG	(FAG) Agricultural land	EA
FAG	(FAG) Agricultural land	
FUR	(FUR) Urban areas	
FWU	(FWU) Weed infestation	
NBA	(NBA) Bursaria - Acacia woodland and scrub	
NME	(NME) Melaleuca ericifolia swamp forest	
OAQ	(OAQ) Water, sea	
SBR	(SBR) Broad-leaf scrub	
WVI	(WVI) Eucalyptus viminalis wet forest	

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

Telephone: (03) 6165 4320

Email: [TVMMPsupport@dipw.tas.gov.au](mailto:TVMMPsupport@dipw.tas.gov.au)

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



500149, 5420480

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

# Threatened Communities (TNVC 2014) 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 gunni 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 sedge land
- 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 2014) within 1000 metres

Scheduled Community Id	Scheduled Community Name
25	Eucalyptus viminalis wet forest
30	Melaleuca ericifolia swamp forest

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

Telephone: (03) 6165 4320

Email: [TVMMPsupport@dpiwve.tas.gov.au](mailto:TVMMPsupport@dpiwve.tas.gov.au)

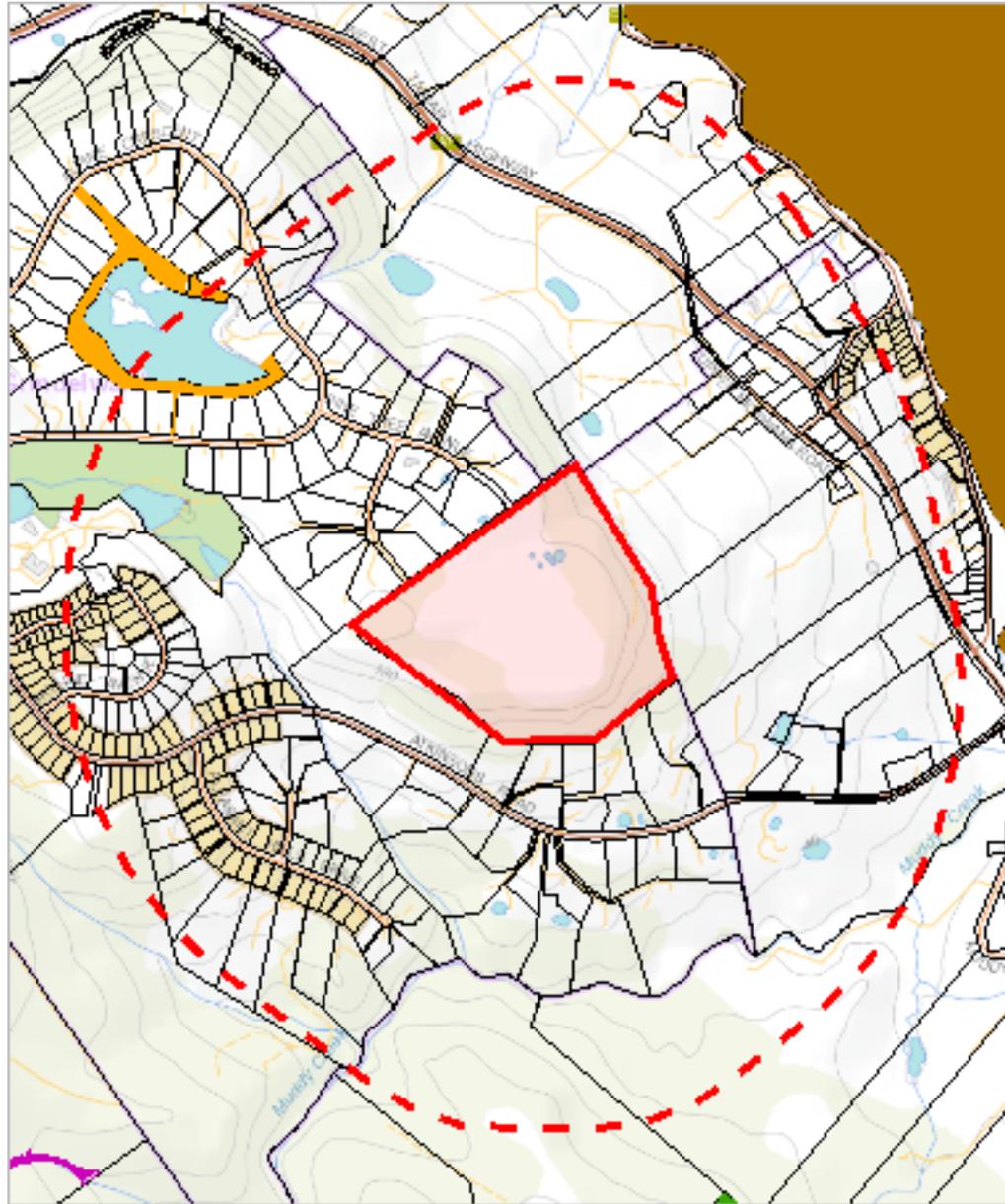
Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

\*\*\* No Fire History (All) found within 1000 metres \*\*\*

\*\*\* No Fire History (Last Burnt) found within 1000 metres \*\*\*

# Reserves within 1000 metres

502791, 5423591



500149, 5420480

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

# Reserves within 1000 metres

## Legend: Tasmanian Reserve Estate

-  Conservation Area
-  Conservation Area and Conservation Covenant (NCA)
-  Game Reserve
-  Historic Site
-  Indigenous Protected Area
-  National Park
-  Nature Reserve
-  Nature Recreation Area
-  Regional Reserve
-  State Reserve
-  Wellington Park
-  Public authority land within WHA
-  Future Potential Production Forest
-  Informal Reserve on Permanent Timber Production Zone Land or STT managed land
-  Informal Reserve on other public land
-  Conservation Covenant (NCA)
-  Private Nature Reserve and Conservation Covenant (NCA)
-  Private Sanctuary and Conservation Covenant (NCA)
-  Private Sanctuary
-  Private land within WHA
-  Management Agreement
-  Management Agreement and Stewardship Agreement
-  Stewardship Agreement
-  Part 5 Agreement (Meander Dam Offset)
-  Other Private Reserve

## Legend: Cadastral Parcels



## Reserves within 1000 metres

Name	Classification	Status	Area (HA)
	Informal Reserve on other public land	Informal Reserve	0.334515
	Informal Reserve on other public land	Informal Reserve	4.94921

For more information about the Tasmanian Reserve Estate, please contact the Sustainable Land Use and Information Management Branch.

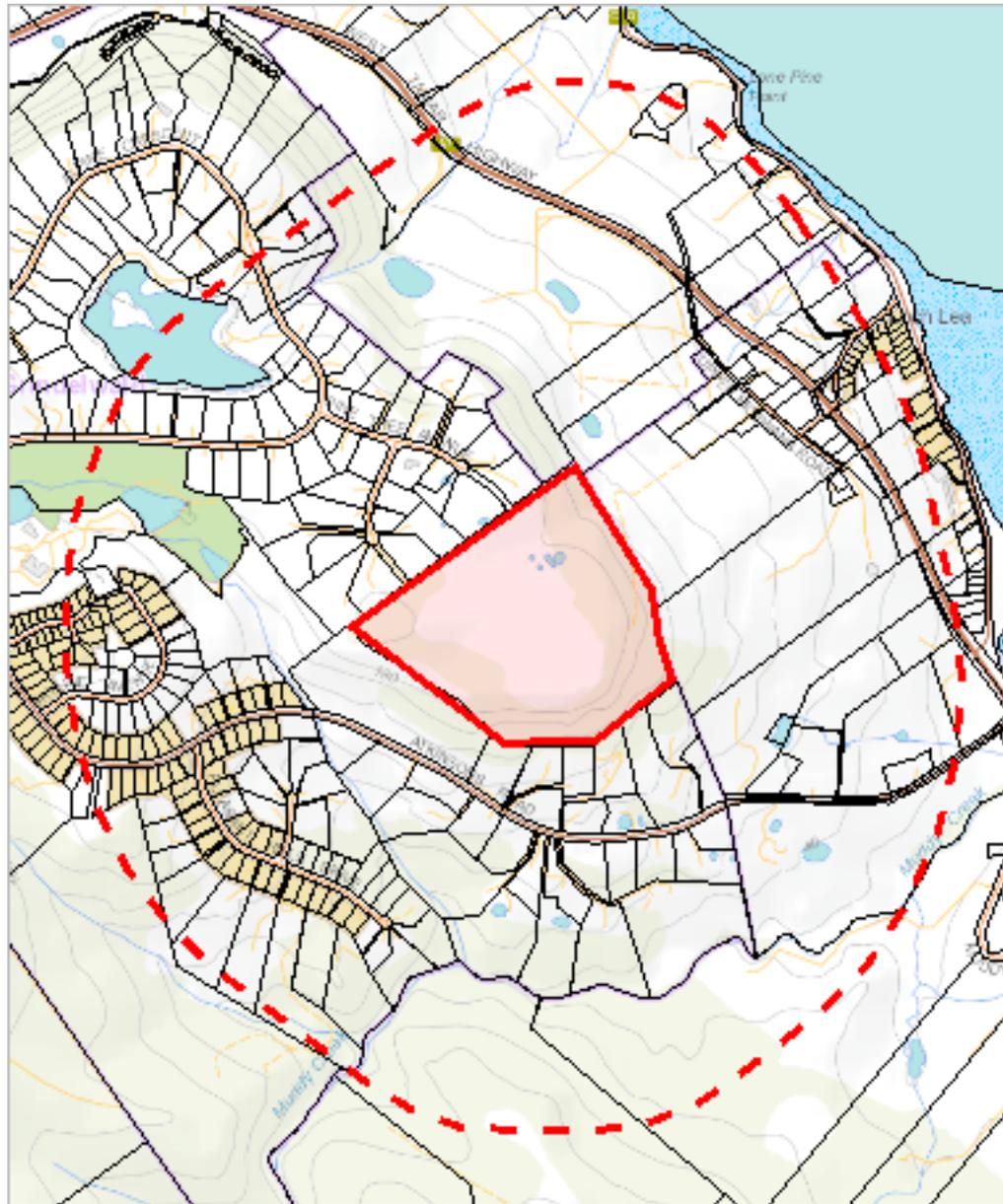
Telephone: (03) 6777 2224

Email: [LandManagement.Enquiries@dpiwpe.tas.gov.au](mailto:LandManagement.Enquiries@dpiwpe.tas.gov.au)

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

# Known biosecurity risks within 1000 meters

502791, 5423591



500149, 5420480

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

# Known biosecurity risks within 1000 meters

## Legend: Biosecurity Risk Species

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

## Legend: Hygiene infrastructure

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

## Legend: Cadastral Parcels



# Known biosecurity risks within 1000 meters

## Verified Species of biosecurity risk

No verified species of biosecurity risk found within 1000 metres

## Unverified Species of biosecurity risk

No unverified species of biosecurity risk found within 1000 metres

## Generic Biosecurity Guidelines

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

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

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

Apply controls relevant to the area / activity:

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

## Hygiene Infrastructure

No known hygiene infrastructure found within 1000 metres

GHD

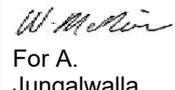
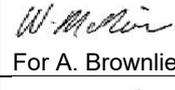
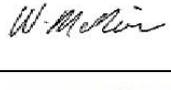
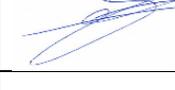
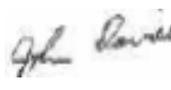
2 Salamanca Square Hobart 7000  
GPO Box 667 Hobart 7001  
T: 03 6210 0600 F: 03 6210 0601 E: hbamail@ghd.com

© GHD 2015

This document is and shall remain the property of GHD. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

N:\AU\Launceston\Projects\32\17684\WP\22251.docx

Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	A. Ferguson	W. McMinn & J. B. Davies		A. Jungalwalla	 For A. Jungalwalla	04/08/2010
1	A. Ferguson	J.B. Davies & W. McMinn		A. Brownlie	 For A. Brownlie	11/11/2010
2	A. Ferguson	W. McMinn		S. Lukies		10/12/2010
3	H. Kerr	S. Lukies		B. Taplin		21/12/2012
4	A. Ferguson	J.B. Davies		A. Brownlie	 Alex Braumli	17/06/2013
5	W. McMinn	A. Jungalwalla		S. Fitzgerald		08/12/2015
6	W. McMinn	S. Lukies		S. Fitzgerald		20/12/2016

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
7	W. McMinn	James Hill		S. Fitzgerald		05/05/2017
8	James Hill	Willow McMinn				09/07/2019
9	James Hill	Willow McMinn		Alice Johnson		27/08/2019
10	Tim Coates	Simon Lukies		Alex Brownlie		07/04/2019
11	Tim Coates	Simon Lukies		Alex Brownlie		23/09/2020

[www.ghd.com](http://www.ghd.com)

