NATURAL VALUES ASSESSMENT OF 218 TALBOTS ROAD (PID 9033694; C.T. 240577/1; LPI GTR43), SANDFLY, TASMANIA

Environmental Consulting Options Tasmania (ECO*tas*) for Lydia Moore & Michael Welling

27 June 2023

Mark Wapstra

ABN 83 464 107 291

28 Suncrest Avenue
Lenah Valley, TAS 7008

email: mark@ecotas.com.au
web: www.ecotas.com.au

phone: (03) 62 283 220
mobile: 0407 008 685

CITATION

This report can be cited as:

ECO*tas* (2023). *Natural Values Assessment of 218 Talbots Saddle Road (PID 9033694; C.T. 240577/1; LPI GTR43), Sandfly, Tasmania.* Report by Environmental Consulting Options Tasmania (ECO*tas*) for Lydia Moore & Michael Welling, 27 June 2023.

AUTHORSHIP

Field assessment: Mark Wapstra

Report production: Mark Wapstra

Habitat and vegetation mapping: Mark Wapstra

Base data for mapping: LISTmap

Digital and aerial photography: Mark Wapstra, GoogleEarth, LISTmap

DISCLAIMER

Except where otherwise stated, the opinions and interpretations of legislation and policy expressed in this report are made by the author(s) and do not necessarily reflect those of the relevant agency. The client should confirm management prescriptions with the relevant agency before acting on the content of this report. This report and associated documents do not constitute legal advice.

Note that any reference to the Department of Primary Industries, Parks, Water & Environment (DPIPWE) now refers to the Department of Natural Resources and Environment Tasmania.

ACKNOWLEDGEMENTS

Lydia Moore & Michael Welling (owners) & Brendan O'Connor (Skookom Building & Design) provided background information on the land use proposal. Braedon White (Woolcott Surveys) and Emily Wapstra (ECO*tas*) provided surveying and tree measuring support, respectively.

COVER ILLUSTRATION

View along existing track through *Eucalyptus obliqua* wet sclerophyll forest.

Please note: the blank pages in this document are deliberate to facilitate double-sided printing.

CONTENTS

SUMMARY

General

Lydia Moore & Michael Welling (owners) engaged Environmental Consulting Options Tasmania (ECO*tas*) to undertake a natural values assessment of 218 Talbots Saddle Road (PID 9033694; C.T. 240577/1; LPI GTR43), Sandfly, Tasmania, primarily to ensure that the requirements of the identified natural values are appropriately considered during any further project planning under local, State and Commonwealth government approval protocols.

Site assessment

An initial assessment of the natural values of the study area was undertaken by Mark Wapstra (ECO*tas*) on 15 Feb. 2023. This was followed by a more detailed assessment of the proposed access route by Mark Wapstra (ECO*tas*) in combination with Woolcott Surveys (tree survey) on 24 May 2023.

Summary of key findings

Threatened flora

- No plant species listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) and/or the Tasmanian *Threatened Species Protection Act 1995* (TSPA) were detected, or are known from database information, from the study area.

Threatened fauna

- No fauna species listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) and/or the Tasmanian *Threatened Species Protection Act 1995* (TSPA) were detected, or are known from database information, from the study area.
- The study area supports potential habitat for the following species:
  - Tasmanian devil (*Sarcophilus harrisii*);
  - spotted-tailed quoll (*Dasyurus maculatus* subsp. *maculatus*);
  - eastern quoll (*Dasyurus viverrinus*);
  - eastern barred bandicoot (*Perameles gunnii* subsp. *gunnii*);
  - masked owl (*Tyto novaehollandiae* subsp. *castanops*); and
  - grey goshawk (*Accipiter novaehollandiae*);
  - swift parrot (*Lathamus discolor*);
  - wedge-tailed eagle (*Aquila audax* subsp. *fleayi*); and
  - Mt Mangana stag beetle (*Lissotes menalcas*).

Vegetation types

- The study area supports the following TASVEG mapping units:

  - *Eucalyptus obliqua* forest with broad-leaf shrubs (TASVEG code: WOB); and
  - *Eucalyptus pulchella* forest and woodland (TASVEG code: DPU).

- Occurrences of WOB & DPU do not equate to threatened vegetation communities listed on Schedule 3A of the Tasmanian *Nature Conservation Act 2002.*
- Occurrences of WOB & DPU do not equate to threatened ecological communities under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA).
- As vegetation types, WOB & DPU are classified as low priority biodiversity values under Table E10.1 of the Biodiversity Code of the *Kingborough Interim Planning Scheme 2015*.

Weeds

- No plant species classified as declared weeds within the meaning of the Tasmanian *Weed Management Act 1999* (*Biosecurity Act 2019*) were detected from the study area.

Plant disease

- No evidence of *Phytophthora cinnamomi* (PC, rootrot) was recorded from the study area.
- No evidence of myrtle wilt was recorded from the study area.
- No evidence of myrtle rust was recorded from the study area.

Animal disease (chytrid)

- The study area does not support habitat types strongly associated with amphibian species.

Individual trees

- Several individual trees that meet the criteria for high or very high conservation value within the intent of Table E10.1 of the Biodiversity Code of the *Kingborough Interim Planning Scheme 2015* were found within the surveyed route.

Recommendations

The recommendations provided below are a summary of those provided in relation to each of the natural values described in the main report. The main text of the report provides the relevant context for the recommendations.

Vegetation types

In general terms, minimising the extent of "clearance and conversion" and/or "disturbance" of native vegetation is recommended, acknowledging constraints imposed by the logical use of the existing track, slope and contemporary bushfire hazard management requirements.

Threatened flora

Not applicable – no threatened flora present.

Threatened fauna

Apart from the generic recommendation to minimise the extent of "clearance and conversion" and/or "disturbance" to native vegetation, it is recommended that, wherever practical (and acknowledging constraints imposed by site features, engineering design standards and

contemporary bushfire hazard management requirements), loss of individuals of high and very high conservation value trees is minimised.

Weed and disease management

Any works will provide an opportunity for weed establishment by mobilising soil-stored seed and providing fresh bare ground ideal for seedling establishment. "Starting clean" is good practice (i.e. machinery, vehicle and equipment hygiene prior to entering the site).

Owner-occupation is the most likely practical means of achieving good long-term weed management outcomes through vigilance and control.

Legislative and policy implications

A permit under Section 51 of the Tasmanian *Threatened Species Protection Act 1995* (TSPA) should not be required.

A formal referral to the relevant Commonwealth agency under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) should not be required.

Initial review of the relevant provisions of the Environmental Living zone and the Biodiversity Code of the *Kingborough Interim Planning Scheme 2015* indicates several matters that will require addressing as part of any planning application including:

- an "environmental management plan" with the following minimal inclusions:
    - site plan showing that maximum utility has been made of the existing access;
    - site plan showing extent of native vegetation to be impacted by works (this will involve some calculations/estimates of the area of native vegetation impacted – suggest this be undertaken by measuring the length of the route from where the forest starts and ends = 460 m and assuming a minimum of 2 m clearing each side because the existing track is probably an average of 2 m wide and ca. 4 m is likely to be needed = 460 m x 2 m x 2 m = 1,840 m^2; if 1 passing bay is needed (assume 20 m length x an extra 3 m width = 60 m^2), the total area of impact to native vegetation is estimated at 1,900 m^2);
    - site plan showing location of high and very conservation value trees, including their Tree Root Zones (TPZs) showing which will be retained and removed ("significant" justification will need to be provided for this aspect of management of high and very high conservation value trees);
    - mitigation measures to minimise impacts on high and very conservation value trees (may require input from suitably qualified arborist); and
    - weed and hygiene measures (suggest indicating high pressure washdown for any machinery entering the site during construction).

INTRODUCTION

Purpose

Lydia Moore & Michael Welling (owners) engaged Environmental Consulting Options Tasmania (ECO*tas*) to undertake a natural values assessment of 218 Talbots Saddle Road (Lydia Moore & Michael Welling (owners) engaged Environmental Consulting Options Tasmania (ECO*tas*) to undertake a natural values assessment of 218 Talbots Saddle Road (PID 9033694; C.T. 240577/1; LPI GTR43), Sandfly, Tasmania, primarily to ensure that the requirements of the identified natural values are appropriately considered during any further project planning under local, State and Commonwealth government approval protocols.

3), Sandfly, Tasmania, primarily to ensure that the requirements of the identified natural values are appropriately considered during any further project planning under local, State and Commonwealth government approval protocols.

Scope

This report relates to:

- flora and fauna species of conservation significance, including a discussion of listed threatened species (under the Tasmanian *Threatened Species Protection Act 1995* and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*) potentially present, and other species of conservation significance/interest;
- vegetation types (forest and non-forest, native and exotic) present, including a discussion of the distribution, condition, extent, composition and conservation significance of each community;
- plant and animal disease management issues;
- weed management issues; and
- a discussion of some of the policy and legislative implications of the identified natural values.

This report follows the government-produced *Guidelines for Natural Values Surveys – Terrestrial Development Proposals* (DPIPWE 2015) in anticipation that the report (or extracts of it) may be required as part of various approval processes.

The report format should also be applicable to other assessment protocols as required by the relevant Commonwealth agency (for any referral/approval that may be required under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*), which is unlikely to be required in this case.

More specifically, this assessment and report have been prepared to address specific provisions of the *Kingborough Interim Planning Scheme 2015*, with particular reference to the natural values/biodiversity provisions of the Environmental Living zone and Biodiversity Code.

Limitations

The natural values assessments were undertaken on 15 Feb. 2023 & 24 May 2023. Many plant species have ephemeral or seasonal growth or flowering habits, or patchy distributions (at varying scales), and it is possible that some species were not recorded for this reason. However, every

effort was made to sample the range of habitats present in the survey area to maximise the opportunity of recording most species present (particularly those of conservation significance). Late spring and into summer is usually regarded as the most suitable period to undertake most botanical assessments. While some species have more restricted flowering periods, a discussion of the potential for the site to support these is presented. In this case, I believe that the survey was appropriately timed to detect the species with a highest priority for conservation management in this part of the State, particularly with respect to the understorey features of the site.

The survey was also limited to vascular species: species of mosses, lichens and liverworts were not recorded. However, a consideration is made of threatened species (vascular and non-vascular) likely to be present (based on habitat information and database records) and reasons presented for their apparent absence.

Surveys for threatened fauna were largely limited to an examination of "potential habitat" (i.e. comparison of on-site habitat features to habitat descriptions for threatened fauna), and detection of tracks, scats and other signs.

The survey was not limited by access from end of Talbots Road and the narrow band (access route) requiring assessment along an existing open track.

Permit

Any plant material was collected under DNRET permit TFL 22382 (in the name of Mark Wapstra). Relevant data will be entered into DNRET's *Natural Values Atlas* database by the author. Some plant material may be lodged at the Tasmanian Herbarium by the author.

No vertebrate or invertebrate material was collected. A permit is not required to undertake the type of habitat-level assessment described herein.

STUDY AREA

Overview – cadastral details

The study area mainly comprises part of the private title of 218 Talbots Road, Sandfly, Tasmania (Figures 1-3), with the following cadastral details:

- PID: 9033694;
- C.T.: 240577/1; and
- LPI: GTR43.

LISTmap data indicates a computed area of 521,659 m^2 and a measured area of 527,100 m^2 (i.e. ca. 52.71 ha). However, for the purposes of assessment and reporting, the study area was further refined to the proposed access route from the end of Talbots Road to where the existing bush track enters the open old paddocks on Sam Smiths Hill within the title. Part of the study area therefore includes parts of 215 Talbots Road (PID 7583499; C.T. 48437/1) through which a right-of-way will be created, where the existing track does not adhere to an existing road title (Figures 2 & 3). That is, the study area is defined as access route through 215 & 218 Talbots Road.

Land tenure and other categorisations of the study area are as follows:

- Kingborough municipality, with the subject titles zoned as Environmental Living pursuant to the *Kingborough Interim Planning Scheme 2015* (Figure 4) and subject to the following

overlays with relevance to management of natural values (other overlays are present but are not the subject of this report):

- Biodiversity Protection Area – both titles wholly subject to this overlay (Figure 5);
- Waterway and Coastal Protection Area – wholly outside proposed development area (Figure 5);
- Bushfire Prone Areas – both titles wholly subject to this overlay (not mapped); and
- Scenic Landscape Area – both titles wholly subject to this overlay (not mapped).

- Southern Ranges Bioregion, according to the IBRA 7 bioregions used by most government agencies.

Other site features

The title has a complex configuration with the southern part including Sam Smith Hill and the balance slopes associated with this hill and ridgeline that extends north-northeast with gentle to steep slopes of variable aspects. The main access route is an existing track (Plates 1-6) through the forest, generally following a contour (ca. 400-420 m a.s.l.).


Plates 1 & 2. Start of access at end of Talbots Road with 213 Talbots Road to the west (right hand side of images) and 215 Talbots Road to the east (left hand side of images) with the track here following a road title (right-of-way)


Plates 3 & 4. Continuation of existing track through *Eucalyptus obliqua* forest with broad-leaf shrubs (wet sclerophyll on southeast-facing slopes)

Plate 5. (LHS) Continuation of existing track through *Eucalyptus pulchella* forest and woodland (dry sclerophyll on broader gentle ridgeline)

Plate 6. (RHS) Looking back at existing track from start of old paddock into *calyptus pulchella* forest and woodland (dry sclerophyll on broader gentle ridgeline)

LISTmap's Fire History layer indicates the study area and surrounds were subject to the Feb. 1967 bushfire event (Figure 6), which accords with observations on site (generally even-aged regrowth forest with a now quite densely long unburnt understorey (in both wet and dry forest types), limited coarse woody debris and some larger trees with basal/trunk fire scars (Plates 7-10).

Plates 7-10. Examples of evidence of 1967 bushfire in the form of nurnt out tree bases (in trees that were present at the time of the fire) and collapsed burnt stumps (remnants of burnt trees)

There is also evidence that the forested slopes were selectively logged, probably in the 1930s to 1950s (i.e. pre-1967 bushfire), with evidence of shoe-and-board harvesting (Plates 11 & 12).

Plates 11 & 12. Evidence of historical selective harvesting (circled shoe marks), which also partly explains the regrowth structure of the forest (historical removal of larger trees)

The geology of the study area is important to consider because it can have a strong influence on the classification of vegetation and the potential occurrence of threatened flora (and to a lesser extent, threatened fauna). In this case, the 1:250,000 scale geological mapping (Figure 7) indicates the whole study area and surrounds are on Jurassic-age "dolerite (tholeiitic) with locally developed granophyre" (geocode: Jd). Site assessment confirmed this geology by reference to outcropping rocks throughout (Plates 13-16).

Plates 13-16. Examples of outcropping dolerite throughout study area

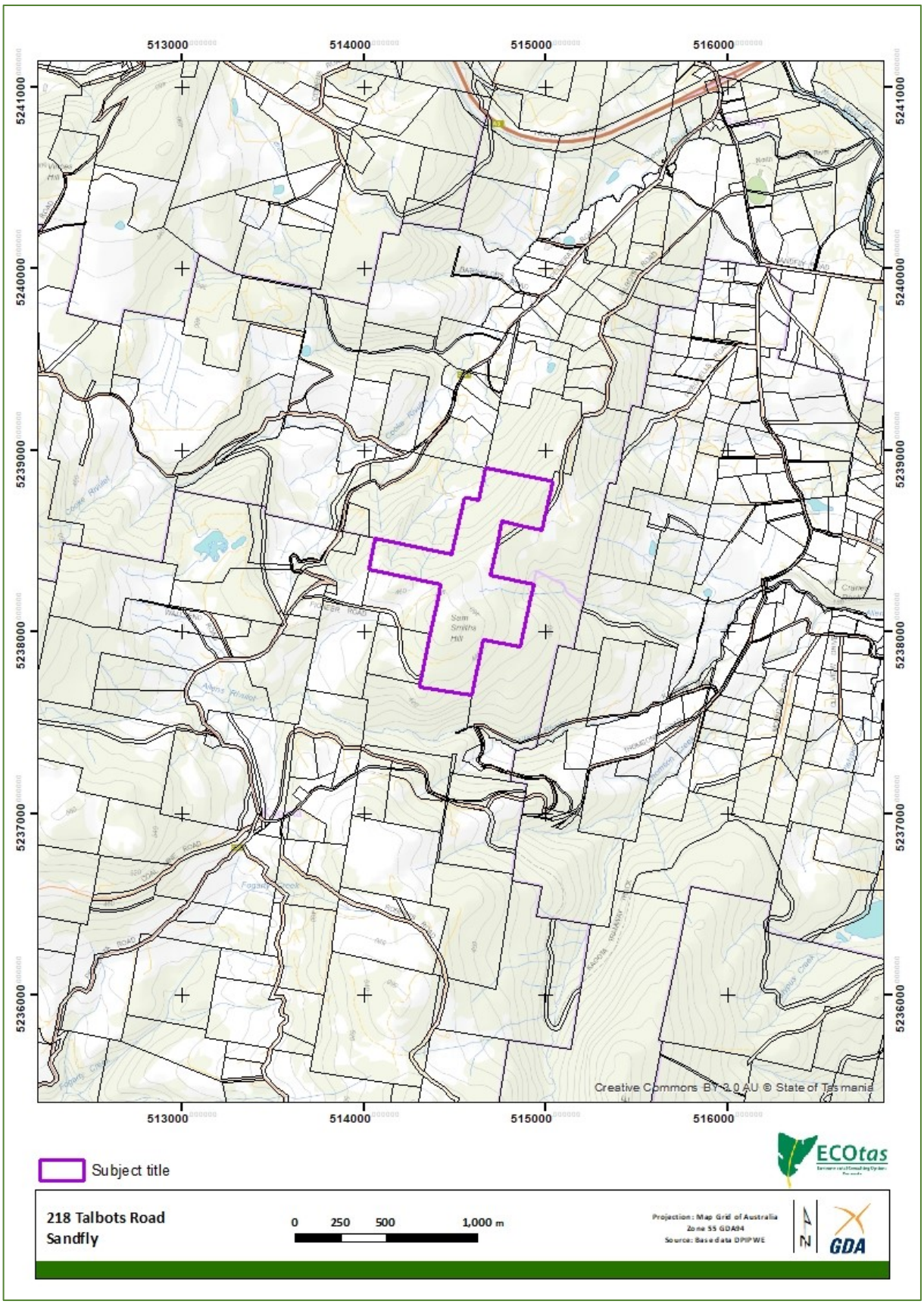

Figure 1. General location of study area

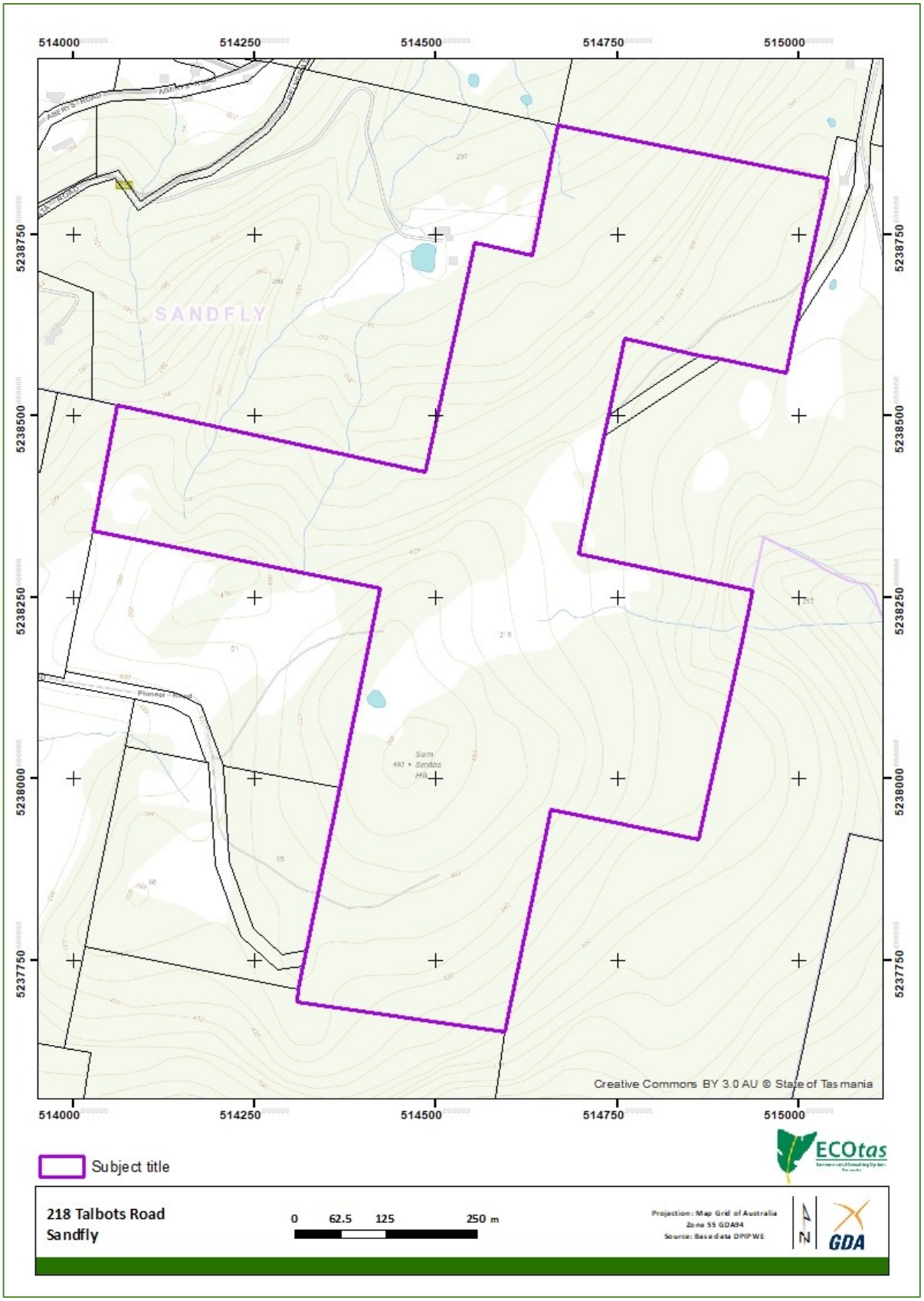

Figure 2. Detailed location of study area showing general topographic and cadastral features – note the grey line showing approximate location of existing track (red line in Figure 3)

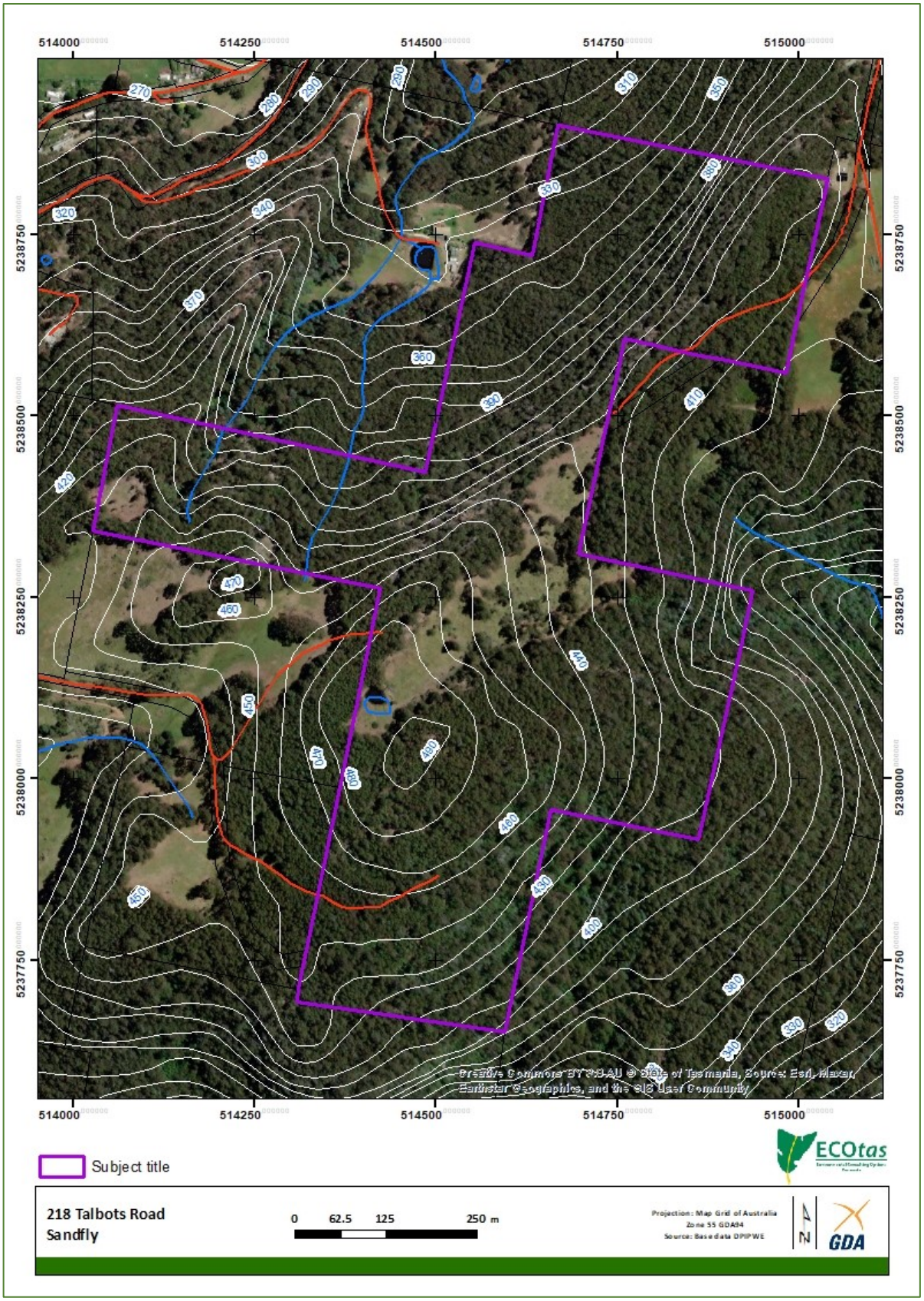

Figure 3. Detailed location of study area showing recent aerial imagery – note the red line indicating approximate location of the existing bush track from the end of Talbots Road to the old paddock

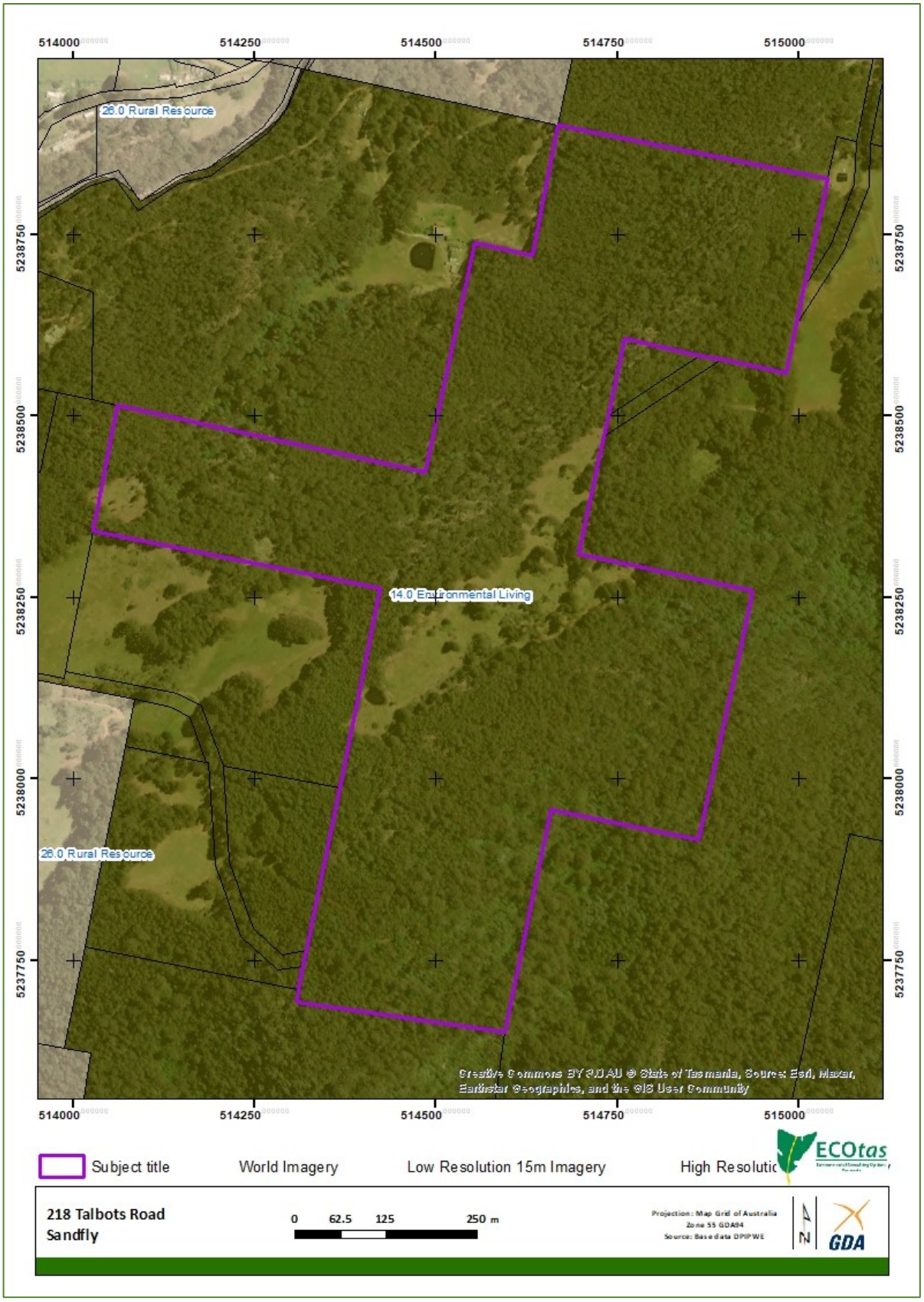

Figure 4. Current zoning of study area and surrounds pursuant to *Kingborough Interim Planning Scheme 2015*

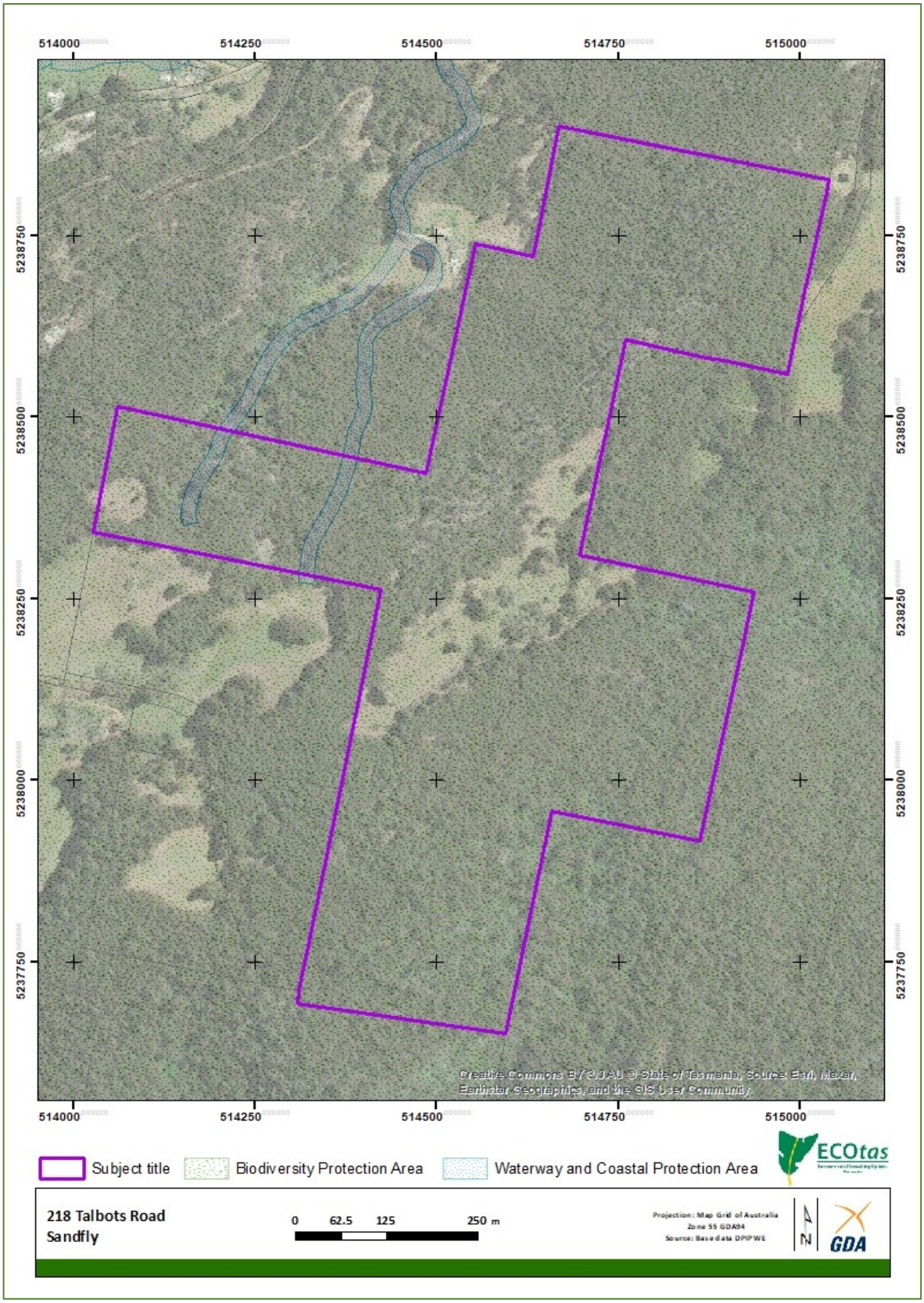

Figure 5. Current extent of Biodiversity Protection Area overlay (green stippling – whole area) and Waterway and Coastal Protection Area overlay (blue stippling – no part of specific study area) within study area and surrounds pursuant to *Kingborough Interim Planning Scheme 2015*

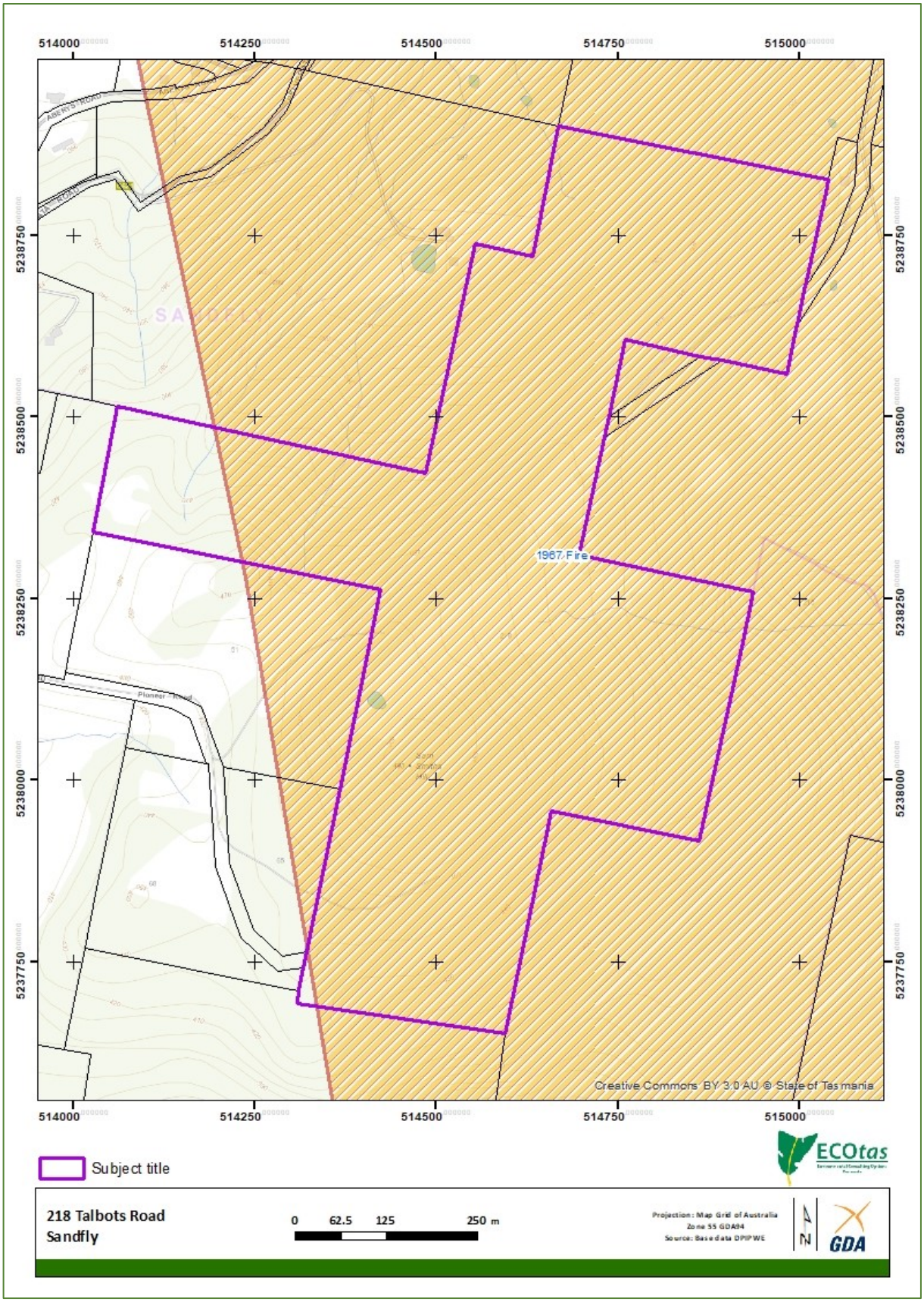

Figure 6. Fire history for study area and surrounds

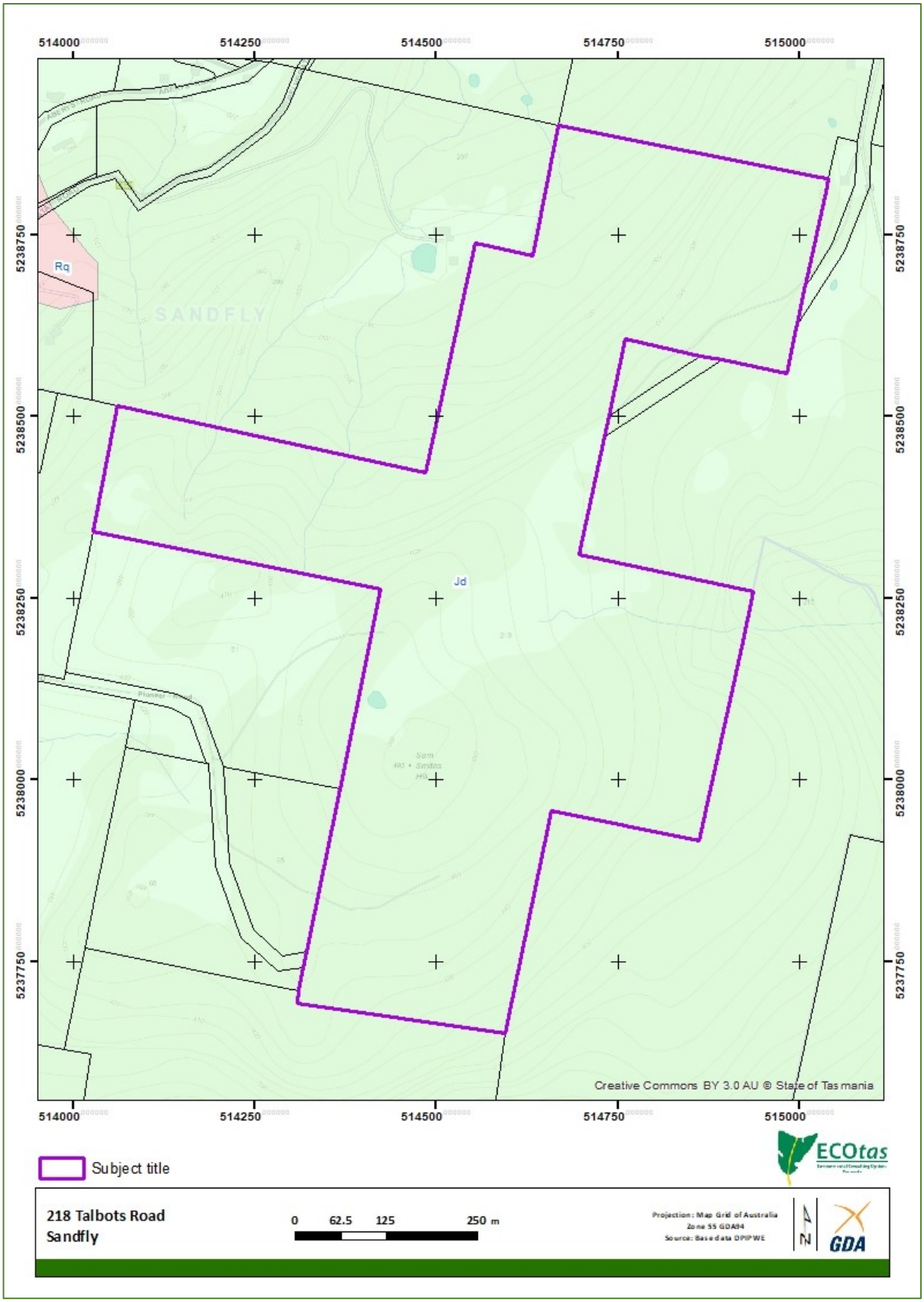

Figure 7. Geology (1:250,000 scale) of the study area and surrounds (refer to text for code)

METHODS

Nomenclature

All grid references in this report are in GDA94, except where otherwise stated.

Vascular species nomenclature follows de Salas & Baker (2022) for scientific names and Wapstra et al. (2005+) for common names. Fauna species scientific and common names follow the listings in the cited *Natural Values Atlas* report (DNRET 2023a).

Vegetation classification follows TASVEG 4.0, as described in *From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation (*Kitchener & Harris 2013+).

Preliminary investigation

Available sources of previous reports, threatened flora records, vegetation mapping and other potential environmental values were interrogated. These sources include:

- Tasmanian Department of Natural Resources and Environment Tasmania's *Natural Values Atlas* records for threatened flora and fauna (GIS coverage maintained by the author current as at date of report);
- Tasmanian Department Natural Resources and Environment Tasmania's *Natural Values Atlas* report ECOtas_218TalbotsRoad for a polygon defining the study area (centred on 514595mE 5238287mN), buffered by 5 km, dated 15 Feb. 2023 (DNRET 2023a) – Appendix E;
- Forest Practices Authority's *Biodiversity Values Database* report, specifically the species' information for grid reference centroid 514595mE 5238287mN (i.e. a point defining the centre of the NVA report), buffered by 5 km and 2 km for threatened fauna and flora records, respectively, hyperlinked species' profiles and predicted range boundary maps, dated 15 Feb. 2023 (FPA 2023) – Appendix F;
- Commonwealth *Protected Matters Report* for a polygon defining the study area, buffered by 5 km, dated 15 Feb. 2023 (CofA 2022) – Appendix G;
- TASVEG vegetation coverages (as available through GIS coverage and via LISTmap);
- GoogleEarth and LISTmap aerial orthoimagery; and
- other sources listed in tables and text as indicated.

Field assessment

The natural values assessments were undertaken on 15 Feb. 2023 & 24 May 2023 by Mark Wapstra. The initial assessment considered the proposed access route. The follow-up assessment was undertaken as a combined survey by ECO*tas* (Mark Wapstra) and Woolcott Surveys (Braedon White) specifically to pinpoint high and very high conservation value trees within the access route and within ca. 15 m this route (see Individual trees for more details).

Cadastral data uploaded to the iGIS application guided the in-field assessment. Hand-held GPS (Garmin GPSMAP 66sr) was used to waypoint any natural values features apart from individual trees, which were formally surveyed (see Individual trees for more details). Assessment was not limited in any significant manner with the survey area defined by the corridor of the existing bush

track, which was easily traversed on foot. Adjacent vegetation, while shrubby, did not significantly hinder assessment.

Vegetation classification

Vegetation was classified by waypointing vegetation transitions for later comparison to aerial imagery. The structure and composition of the vegetation types were described using a nominal 30 m radius plot at a representative site within the vegetation types.

Threatened flora

With reference to the threatened flora, the survey included consideration of the most likely habitats for such species. Further methods are not provided as no such species were detected.

Threatened fauna

Surveys for threatened fauna were largely limited to an examination of "potential habitat" (i.e. comparison of on-site habitat features to habitat descriptions for threatened fauna), and detection of tracks, scats and other signs.

Weed and hygiene issues

The study area was assessed with respect to plant species classified as declared weeds under the Tasmanian *Weed Management Act 1999* (*Biosecurity Act 2019*), Weeds of National Significance (WoNS) or "environmental weeds" (author opinion and as included in *A Guide to Environmental and Agricultural Weeds of Southern Tasmania*, NRM South 2017).

The site was assessed with respect to potential impacts of plant and animal pathogens, by reference to habitat types and field symptoms.

Individual trees

Under Table E10.1 of the Biodiversity Code of the *Kingborough Interim Planning Scheme 2015*, moderate priority biodiversity values include "high conservation value trees". It is most usual for the planning authority to require a detailed survey of every tree over ca. 25 cm DBHOB (diameter at breast height over bark, measured with a diameter tape to the nearest cm) within ca. 15 m of any possible development. In this case, this was interpreted as meaning any tree on the verge of the existing track that will define the proposed right-of-way and from within ca. 15 m of this.

In this case, formal survey equipment (Braedon White, Woolcott Surveys and assistant with ECO*tas* staff) was used to waypoint individual trees. All trees were characterised to species and the girth of native trees measured by a diameter tape (diameter at breast height, ca. 1-3-1.4 m from base of tree, in centimetres). Multi-trunked trees are allocated a diameter via https://www.treetec.net.au/tree-arborist-victoria/tpz_srz_dbh_calculator/. Trees were then allocated a conservation status (low; high and very high) according to the *Kingborough Biodiversity Offset Policy 6.10, Nov. 2016*.

FINDINGS

Vegetation types

Comments on TASVEG mapping

This section, which comments on the existing TASVEG mapping for the study area, is included to highlight the differences between existing mapping and the more recent mapping from the present study to ensure that any parties assessing land use proposals (via this report) do not rely on existing mapping. Note that TASVEG mapping, which was mainly a desktop mapping exercise based on aerial photography, is often substantially different to ground-truthed vegetation mapping, especially at a local scale. An examination of existing vegetation mapping is usually a useful pre-assessment exercise to gain an understanding of the range of habitat types likely to be present and the level of previous botanical surveys.

There are three relevant versions of TASVEG that can be considered as part of this review. TASVEG Live is the most up-to-date version, available online via LISTmap. It is generally very similar to TASVEG 4.0, especially at a local lot-level scale, but can include localised and/or project-based updates that can be informative. TASVEG 3.0, the immediately preceding version of the vegetation mapping layer, is in theory superseded by TASVEG 4.0. However, examination of this layer can be useful because it was the primary source of information that was included in the Regional Ecosystem Model that guided the priority vegetation area overlay of the *Tasmanian Planning Scheme* in several municipalities. It was also the base layer used by some councils (e.g. Kingborough Council) to develop their own vegetation mapping layer, and can explain the source of requests for assessments.

In this case, apart from minor differences, TASVEG 3.0 (Figure 8) and TASVEG 4.0 (Figure 9) are very similar (and TASVEG 4.0 is ideal to TASVEG Live with respect to the study area and immediate surrounds), mapping the study area as:

- *Eucalyptus obliqua* dry forest (TASVEG code: DOB)

DOB is mapped virtually identically in TASVEG 3.0 & 4.0 across most of the forested parts of the title and surrounds, the only difference being a re-coding of DOB to agricultural land (TASVEG code: FAG) around the house site on 213 Talbots Road.

- *Eucalyptus pulchella* forest and woodland (TASVEG code: DPU)

DPU is mapped extensively to the northwest of the study area and a polygon impinges marginally into the northwest corner of the subject title.

- *Eucalyptus globulus* wet forest (TASVEG code: DGL)

Several polygons of WGL are mapped around the subject title, some of these extending on to the most sheltered slopes of the subject title.

- *Acacia dealbata* forest (TASVEG code: NAD)

A small polygon of NAD cuts across the northwestern part of the title's boundary.

- agricultural land (TASVEG code: FAG) & regenerating cleared land (TASVEG code: FRG)

The main cleared area of the subject title is mapped as FAG. A small part of the right-of-way and the adjacent paddock on 215 Talbots Road was mapped in TASVEG 3.0 as FRG and then re-coded in TASVEG 4.0 to FAG, this extending to the house site on 213 Talbots Road.

Vegetation mapping maintained by Kingborough Council (Figure 10) is appears to be based largely on TASVEG 3.0 but either re-codes the polygons of WGL to DOB or substantially reduces their extent into DOB. The basis for this is not understood given topography (sheltered steeper slopes).

Vegetation types recorded as part of the present study

The vegetation types have been classified according to TASVEG mapping units, as described in *From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation* (Kitchener & Harris 2013+). Table 1 provides information on the mapping units identified from the study area (Figure 11). Refer to Appendix A for a more detailed description of the native vegetation mapping units identified from the part of the title proposed for development (access route). For convenience, the existing track is mapped as WOB or DPU (see below) rather than excised as a modified land mapping unit but it is acknowledge that it is ca., 1.5-3 m wide along its whole length.

Table 1. Vegetation mapping unit present in study area

[conservation status: NCA – as per Schedule 3A of the Tasmanian *Nature Conservation Act 2002*, using units described by Kitchener & Harris (2013+), relating to TASVEG mapping units (DNRET 2023b); EPBCA – as per the listing of ecological communities on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, relating to communities as described under that Act, but with equivalencies to TASVEG units]

TASVEG equivalent (Kitchener & Harris 2013+)	**Conservation priority** TASVEG *EPBCA*	**Comments**
Wet eucalypt forest and woodland		
Eucalyptus obliqua forest with broad-leaf shrubs (WOB)	not threatened *not threatened*	WOB occurs on the moister east- to southeast-facing slopes. On the track, the slopes are mostly quite gentle but these drop off somewhat sharply to the east of the track but are generally still quite gentle above the track to the west. The long period since fire has allowed a shrubby wet sclerophyll understorey to develop, with a typically quite low diversity. Coarse woody debris (especially large logs) is notable for its scarcity. Rock cover is generally low (occasional moss-covered small outcropping rocks). Aerial imagery is only partly indicative of the separation of DPU & WOB. WOB is in good ecological condition, regrowth-structured (post-1967 bushfire) with occasional over-topping "fire survivors". No weeds or symptoms of *Phytophthora cinnamomi* were noted.
Dry eucalypt forest and woodland		
Eucalyptus pulchella forest and woodland (DPU)	not threatened *not threatened*	DPU occurs on the ridgeline topography and associated upper slope, well-defined to the west of the track (due to high insolation and rock cover) but less well-defined to the east of the track where it transitions into WOB (due to lower rock cover and higher moisture levels of the more sheltered slopes). The long period since fire has allowed a shrubby understorey to develop, with a higher diversity than the nearby WOB, partly reflective of typical dry forest but also because of the transition between wet and dry forest meaning species from both facies are preset. Coarse woody debris (especially large logs) is notable for its scarcity. Rock cover is much higher than in WOB, especially east of the track. Aerial imagery is only partly indicative of the separation of DPU & WOB. DPU is in good ecological condition, regrowth-structured (post-1967 bushfire) with occasional over-topping "fire survivors". No weeds or symptoms of *Phytophthora cinnamomi* were noted.
Modified land		
urban areas (FUR)	not threatened *not threatened*	FUR is mapped for the house at 213 Talbots Road and the associated driveway to this property plus 215 Talbots Road and the subject title's right-of-way that is wholly cleared and fenced on either side.
agricultural land (FAG)	not threatened *not threatened*	FAG is mapped on the edge of the right-of-way (simply because a 15 m buffer was applied to the mid-point of the existing track, noting that the right-of-way will probably only extend to the existing fenceline) and at the end of the track where it enters the existing old paddock.

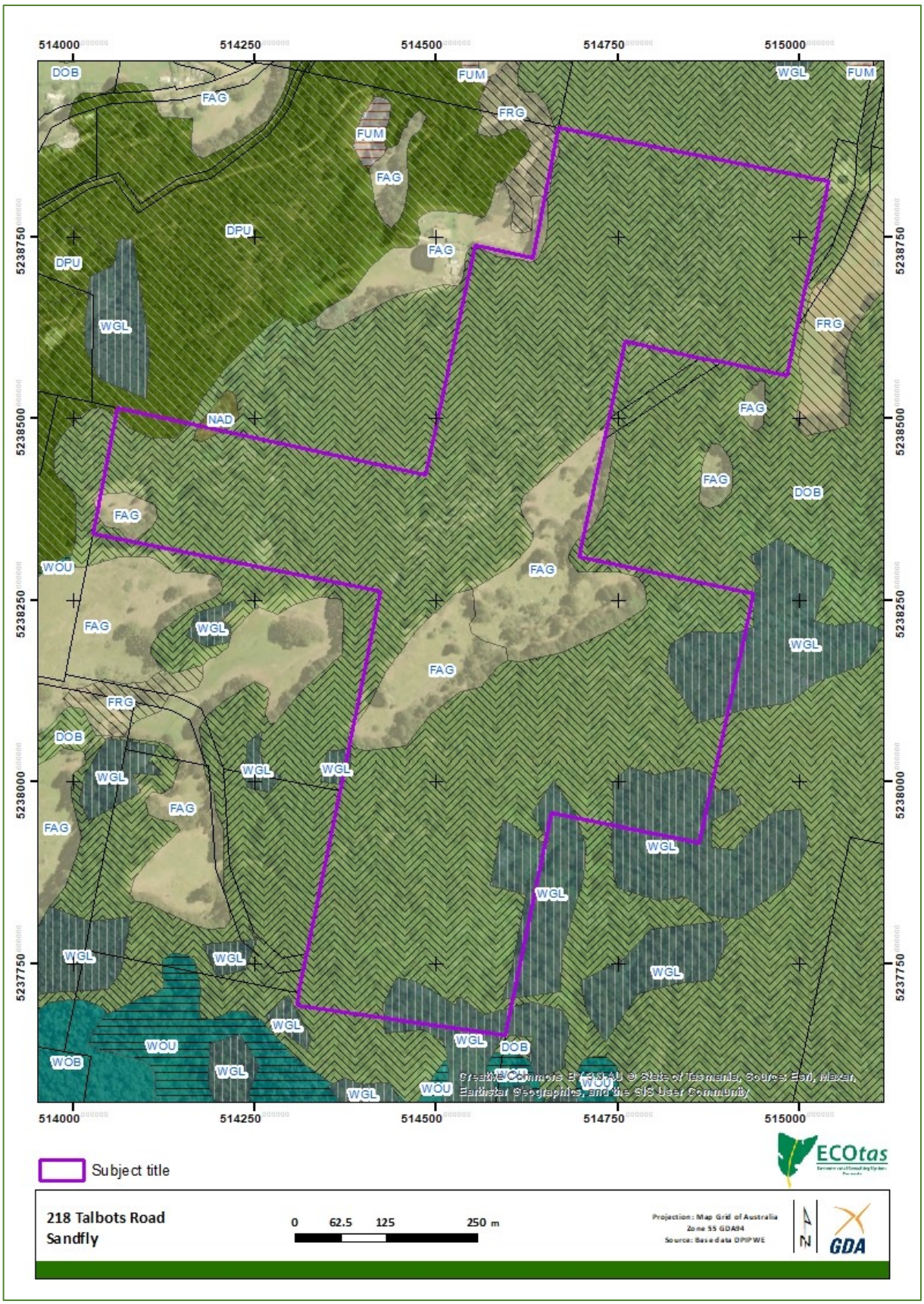

Figure 8. Study area and surrounds showing existing TASVEG 3.0 vegetation mapping (see text for codes)

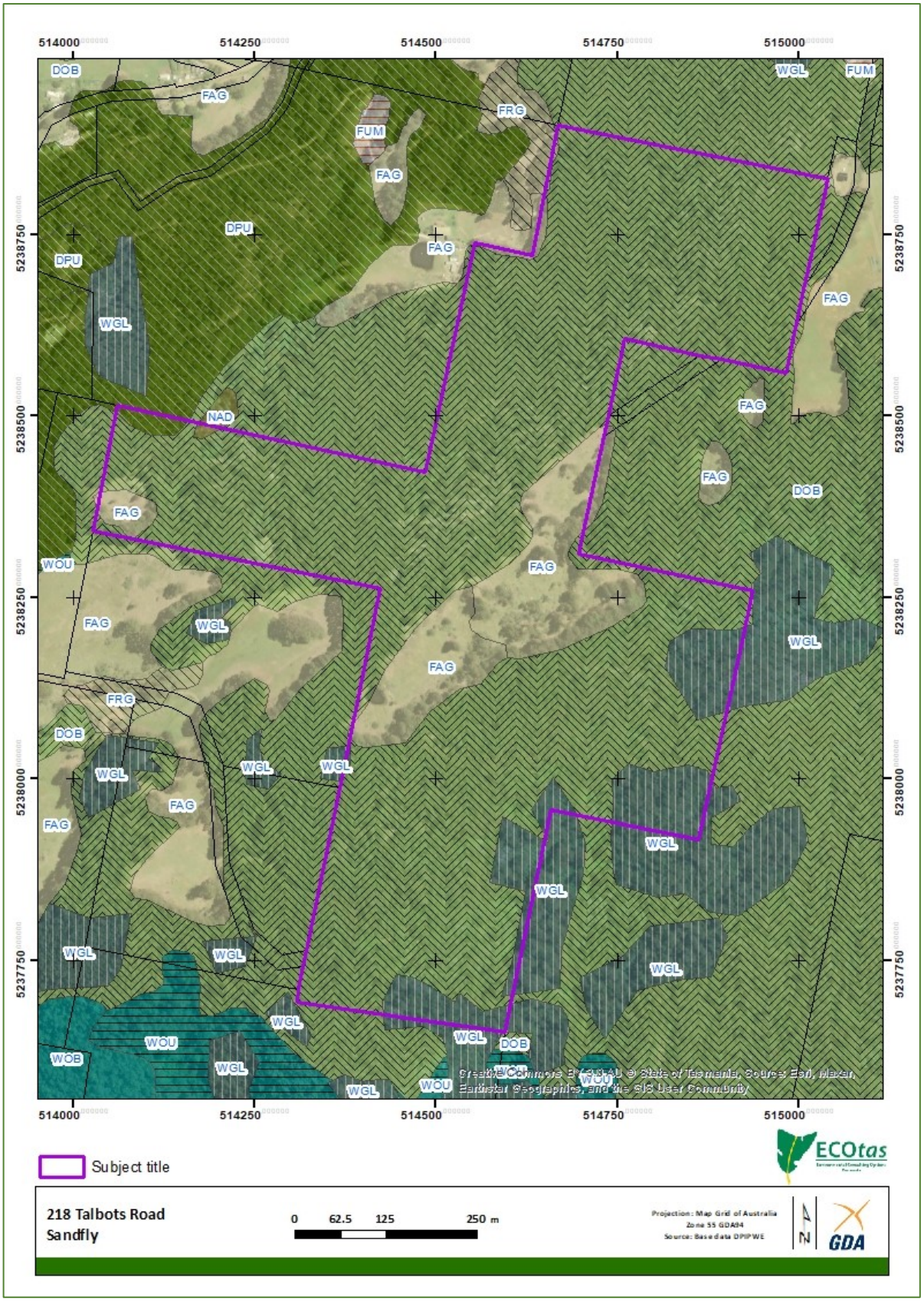

Figure 9. Study area and surrounds showing existing TASVEG 4.0/Live vegetation mapping (see text for codes)

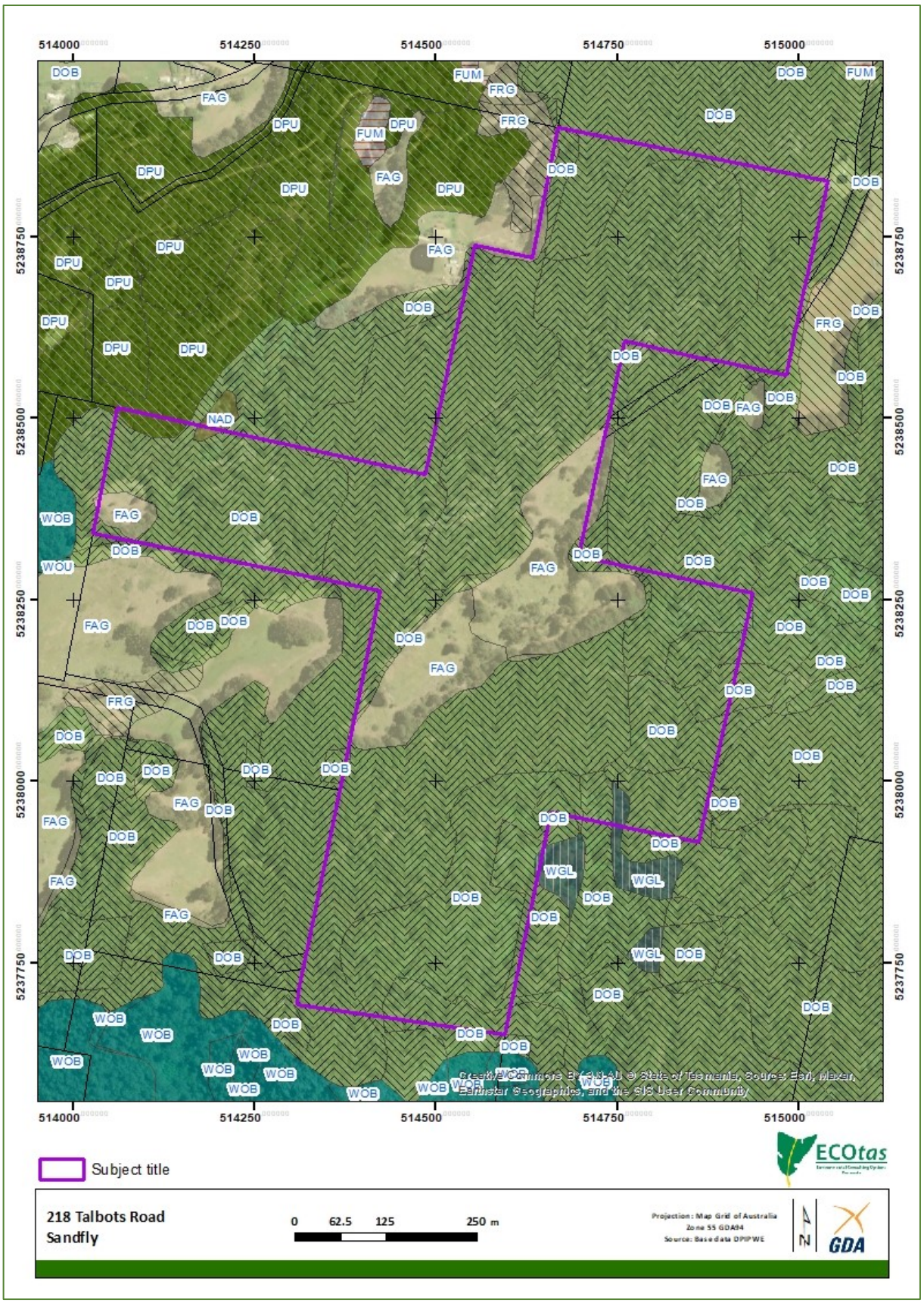

Figure 10. Study area and surrounds showing council-maintained vegetation mapping (see text for codes)

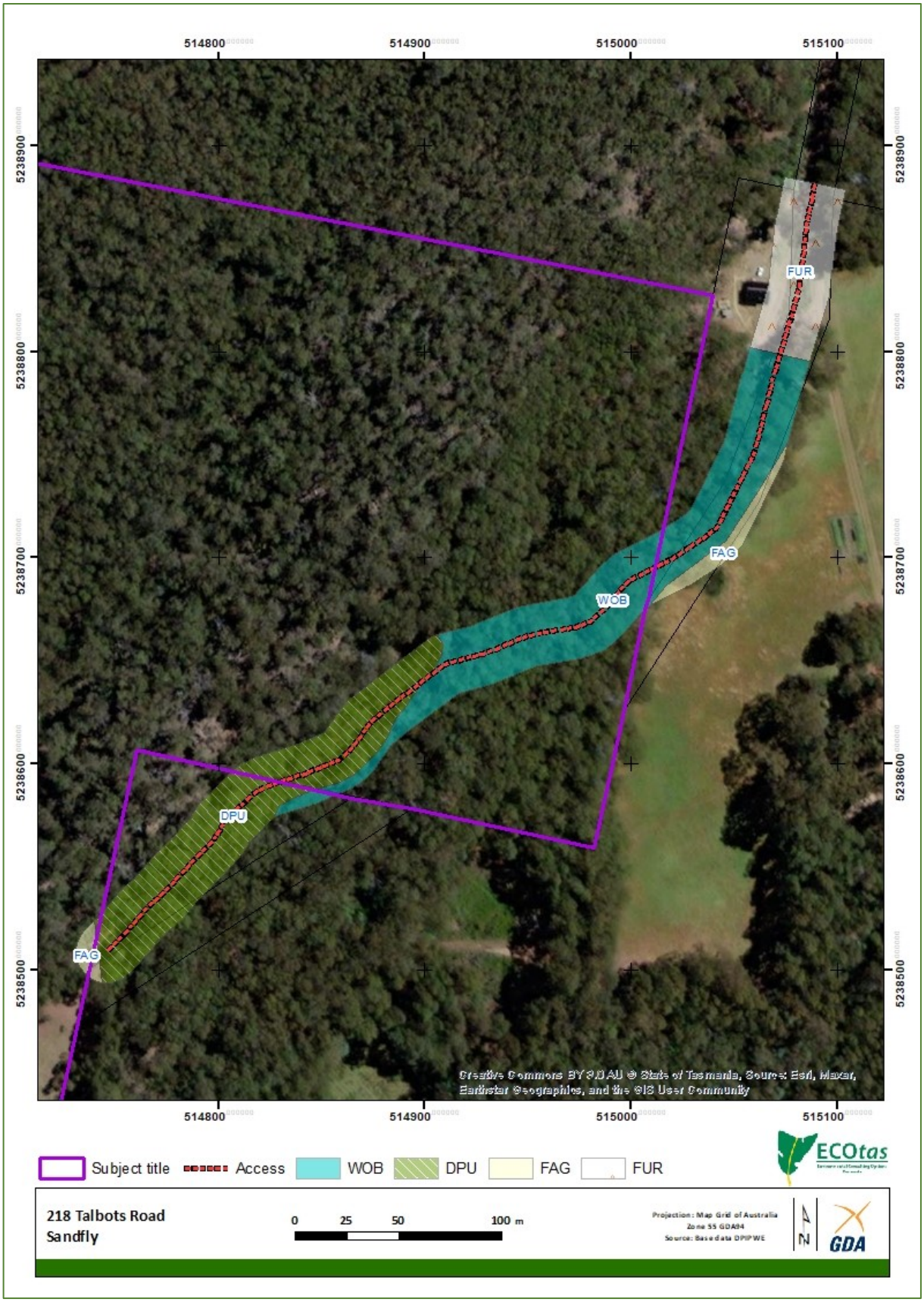

Figure 11. Revised vegetation mapping for study area (see text for codes)

FINDINGS *Vegetation types* continued…

Conservation significance of identified vegetation types

Occurrences of DPU & WOB do not equate to threatened vegetation communities listed on Schedule 3A of the Tasmanian *Nature Conservation Act 2002*.

Occurrences of DPU & WOB do not equate to threatened ecological communities under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA).

As vegetation types, DPU & WOB are classified as low priority biodiversity values under Table E10.1 of the Biodiversity Code of the *Kingborough Interim Planning Scheme 2015* (see **DISCUSSION *Legislative and policy implications*** for a more detailed consideration of Table E10.1).

Plant species

General information

A total of 60 vascular plant species were recorded from the study area (Appendix B), comprising 45 dicotyledons (including 8 endemic species), 13 monocotyledons (including 1 endemic species) and 2 pteridophytes (both native). The absence of naturalised species is notable. The low diversity is typical of the types of forest identified, especially given the long unburnt status.

Additional surveys at different times of the year may detect additional short-lived herbs and grasses but a follow-up survey is not considered warranted because of the low likelihood of species with a high priority for conservation management being present.

Threatened flora

No flora species listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) and/or the Tasmanian *Threatened Species Protection Act 1995* (TSPA) are known from database information (Figure 12), or were detected as a consequence of the field survey, from the study area.

Figure 12 indicates threatened flora species near to the study area and Table C1 (Appendix C) provides a listing of threatened flora from within 5,000 m of the study area (nominal buffer width usually used to discuss the potential of a particular study area to support various species listed in databases), with comments on whether potential habitat is present for the species, and possible reasons why a species was not recorded.

Threatened fauna

No fauna species listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) and/or the Tasmanian *Threatened Species Protection Act 1995* (TSPA) are known from database information (Figure 13a & 13b), or were detected as a consequence of the field survey, from the study area.

Figures 13a & 13b indicate threatened fauna species near to the study area and Table D1 (Appendix D) provides a listing of threatened fauna from within 5,000 m of the study area (nominal buffer width usually used to discuss the potential of a particular study area to support various species listed in databases), with comments on whether potential habitat is present for the species, and possible reasons why a species was not recorded.

Site assessment indicated that the study area supports ubiquitous potential habitat for a suite of threatened fauna species. This includes potential habitat of species such as *Sarcophilus harrisii* (Tasmanian devil), *Dasyurus maculatus* subsp. *maculatus* (spotted-tailed quoll), *Dasyurus viverrinus* (eastern quoll), *Perameles gunnii* subsp. *gunnii* (eastern barred bandicoot), *Tyto novaehollandiae* (masked owl), *Accipiter novaehollandiae* (grey goshawk) and *Aquila audax* (wedge-tailed eagle).

With specific reference to marsupial carnivores, the site does not provide potential denning habitat because of the lack of dense understorey patches, large hollow logs, wombat/rabbit burrows or rocky outcrops/overhangs. It is notable that two assessments several months apart did not record scats of any marsupial species along the length of the track. In my opinion, the species should not require further consideration.

With specific reference to *Antipodia chaostola* tax. *leucophaea* (chaostola skipper), potential habitat is absent because *Gahnia radula* (thatch sawsedge) is not present. In my opinion, the species should not require further consideration.

With specific reference to *Lissotes menalcas* (Mt Mangana stag beetle), the site is partly dry sclerophyll forest with a generally quite understorey and effectively no coarse woody debris (this area mapped as DPU – not considered potential habitat), and partly wet forest (mapped as WOB). This wet forest area is regrowth-structured (post-1967 bushfire) with limited coarse woody debris. The density of coarse woody debris is such that it was possible to survey the scattered logs. Most were suspended above the ground or barely embedded (due to rock cover in places) and barely decaying. Of the few larger logs with somewhat more advanced decay (but nowhere near the usually required "mudguts" type of decay associated with the beetle), none supported the Mt Mangana stag beetle. All surveys only impacted on ca. 30-50% of any particular log and all pulled apart material was replaced as closely as possible. In my opinion, the species should not require further consideration.

With specific reference to *Accipiter novaehollandiae* (grey goshawk), while the species can nest in regrowth-structured forest, this is almost always of a structure that also includes more typical wet sclerophyll elements such as trunked and ground ferns suggestive of more mature regrowth on more fertile substrates, often in closer association with steeper slopes and gullies along creeklines. Searches of trees with binoculars failed to detect any nests. In my opinion, the species should not require further consideration.

With specific reference to *Pardalotus quadragintus* (forty-spotted pardalote), the key habitat species of *Eucalyptus viminalis* (white gum) is a very minor component of the canopy. It is notable that FPA (2023) does not include the study area within the core or potential range of the forty-spotted pardalote. In my opinion, the species should not require further consideration.

With specific reference to *Aquila audax* subsp. *fleayi* (wedge-tailed eagle), no novel nests were located as a consequence of survey and none are known from within 1,000 m of the study area (Figures 12a-c). While there is some marginally higher potential nesting habitat modelled nearby (Figure 12c), I do not consider this as warranting a targeted survey because of the context (close to roads, houses, rural activities, etc.). In my opinion, the species should not require further consideration.

With specific respect to *Tyto novaehollandiae* (masked owl), the study area provides potential foraging and roosting (at least temporary) habitat. Potential nesting habitat is limited because of the regrowth structure of the forest meaning there are limited large trees with large hollows. All larger trees with potential hollows have been mapped and are afforded a status of very high

conservation value trees (see **FINDINGS *Other natural values*** Individual trees for more details – see also Figure 14). The trees in question are 94 (*E. pulchella*, 91 cm DBH, hollows), 95 (dead tree, 123 cm DBH, 20 m tall, hollows), 96 (*E. pulchella*, 101 cm DBH, hollows), 105 (*E. pulchella*, 102 cm DBH, hollows) & 126 (*E. pulchella*, 139 cm DBH, hollows, burnt base). There is no proposal to remove any such trees and current planning authority guidelines require any such trees to be managed according to a recognised standard such that the impact to the Tree Protection Zone is either avoided or minimised. Provided that this management of the high and very high conservation value trees is implemented, in my opinion, the species should not require further consideration.

With specific respect to *Lathamus discolor* (swift parrot), the most detailed description of potential habitat is provided by FPA (2023), although it is reiterated that the description and associated planning tools (including technical notes on habitat identification and decision-support systems such as the *Threatened Fauna Adviser*) have been developed for commercial wood production settings, not for minor upgrades to existing bush tracks in a local government planning context. That is, the descriptions are used to guide assessing a particular site with respect to the swift parrot but then site-specific management is undertaken on a merit-based case-by-case approach.

FPA (2023) describes potential breeding habitat of the swift parrot to "comprise potential foraging habitat and potential nesting habitat, and is based on definitions of foraging and nesting trees (see Table A in swift parrot habitat assessment Technical Note)". Further to this, "potential foraging habitat comprises *E. globulus* or *E. ovata* trees that are old enough to flower" and "for management purposes potential nesting habitat is considered to comprise eucalypt forests that contain hollow-bearing trees". FPA (2023) indicates that "significant habitat is all potential breeding habitat within the SE potential breeding range and the NW breeding areas" The study area is within the core breeding range and specifically the Channel SPIBA (Swift Parrot Important Breeding Area).

The study area supports WOB and DPU vegetation types, dominated by *Eucalyptus obliqua* (stringybark) and *Eucalyptus pulchella* (white peppermint), respectively, with very minor occurrences of *Eucalyptus viminalis* (white gum) in both vegetation types, and variable contributions from *Eucalyptus globulus* (blue gum) in both vegetation types: *Eucalyptus ovata* (black gum) is absent. On this basis, the study area is considered to provide some foraging opportunities for the swift parrot, although these are almost certainly likely to be intermittent and opportunistic, simply because of the low density of *Eucalyptus globulus*. Any individuals of *Eucalyptus globulus* >40<70 cm DBH and any >70 cm DBH are allocated a status of high or very high conservation value tree, respectively (see **FINDINGS *Other natural values*** Individual trees for more details). The intention will be to avoid removing any such trees but where removal is required, an appropriate offset would be provided.

The study area supports several trees that could be construed as potential nesting trees by virtue of their girth alone (irrespective of whether hollows are visible from the ground or not) or because of the obvious presence of hollows. Aside from the aforementioned trees 94, 985, 96, 105 & 126 (see discussion under masked owl), several trees are afforded a status of very high conservation tree because of the combination of forest type and girth (wet forest threshold 100 cm DBH; dry forest threshold: 70 cm DBH) – see **FINDINGS *Other natural values*** Individual trees for more details. The intention will be to avoid removing any such trees but where removal is required, an appropriate offset would be provided.

In my opinion, the provision of an access to the main cleared part of the subject title will have some impact to potential habitat of several species of threatened fauna. However, the proposal is to utilise the existing bush track that is between ca. 1.5-3 m wide. This will need widening to ca. 4 m wide with a managed/cleared area of ca. 0.5 m each side (so ca. 5 m in effect) and vertical clearance of ca. 5 m to satisfy contemporary bushfire hazard management requirements. Site assessment clearly indicated that upgrading the existing track is far preferable than creating a new track, which would inevitably impact on a far greater number of trees (and result in the clearance and conversion of a much larger area of native vegetation).

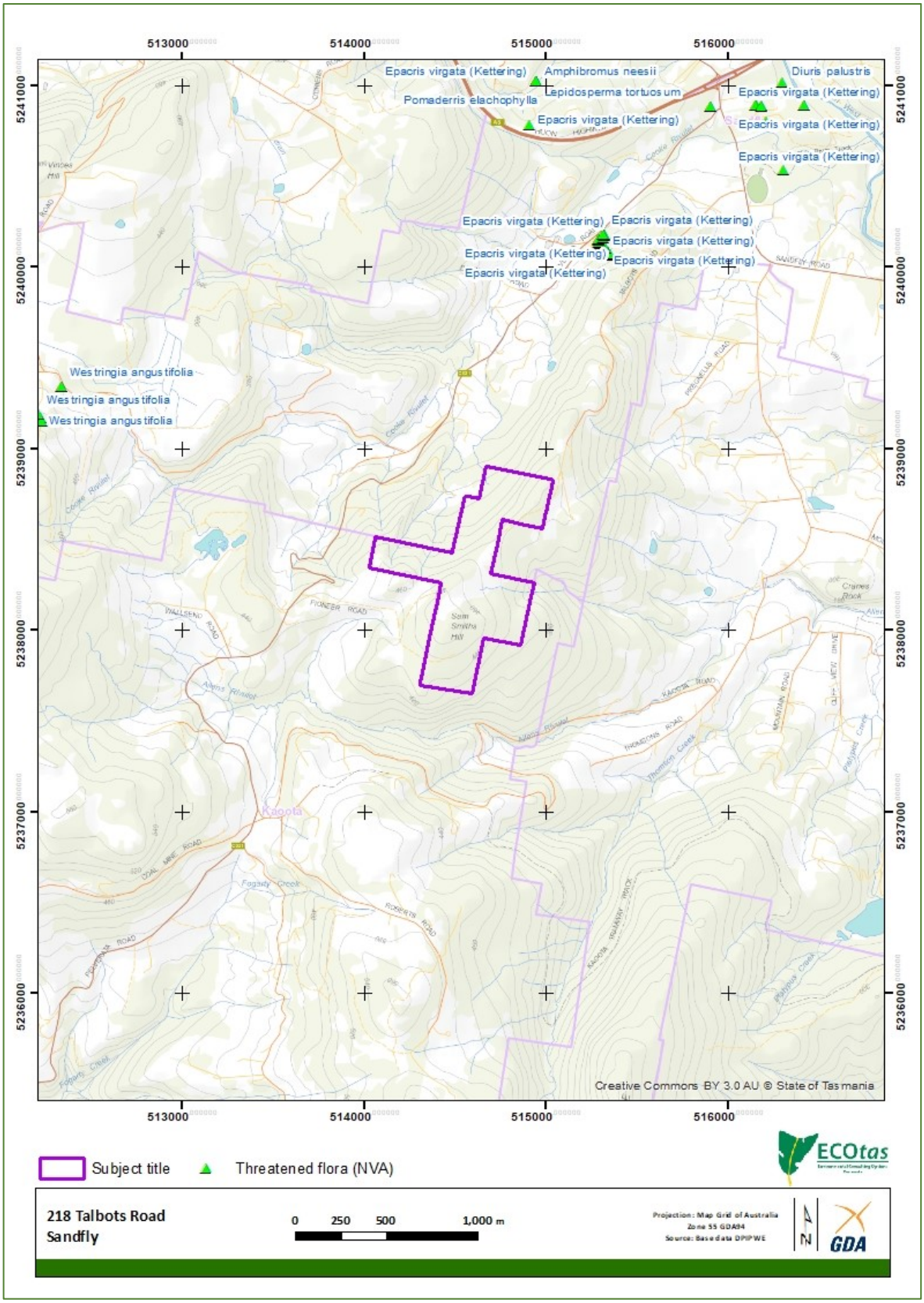

Figure 12. Distribution of threatened flora close to the study area (overview): note that this map incudes records of "*Epacris virgata* Kettering" because the database report (DNRET 2023a) was run prior to the redetermination of these records as the non-threatened *Epacris tasmanica*

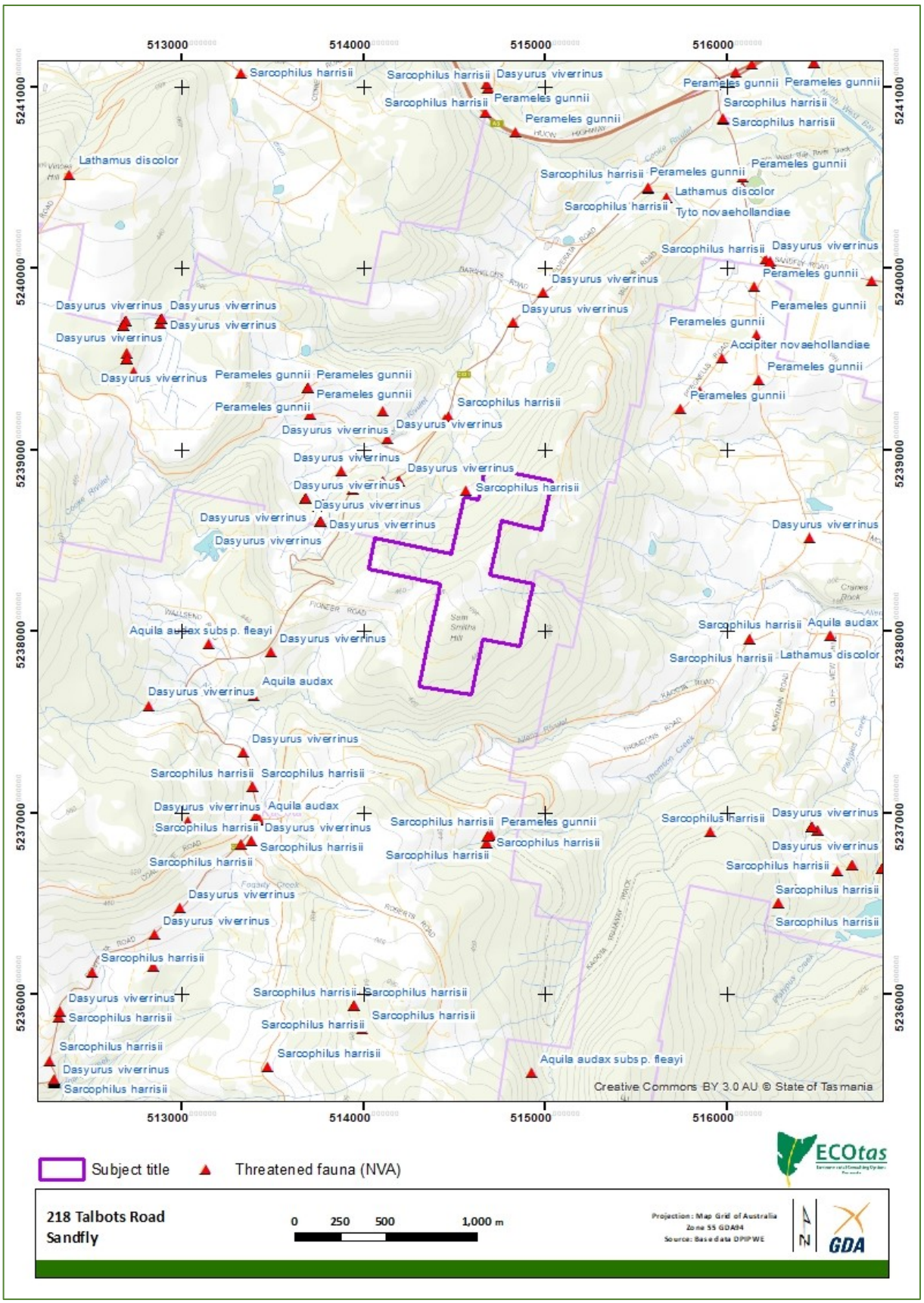

Figure 13a. Distribution of threatened fauna close to the study area (overview)

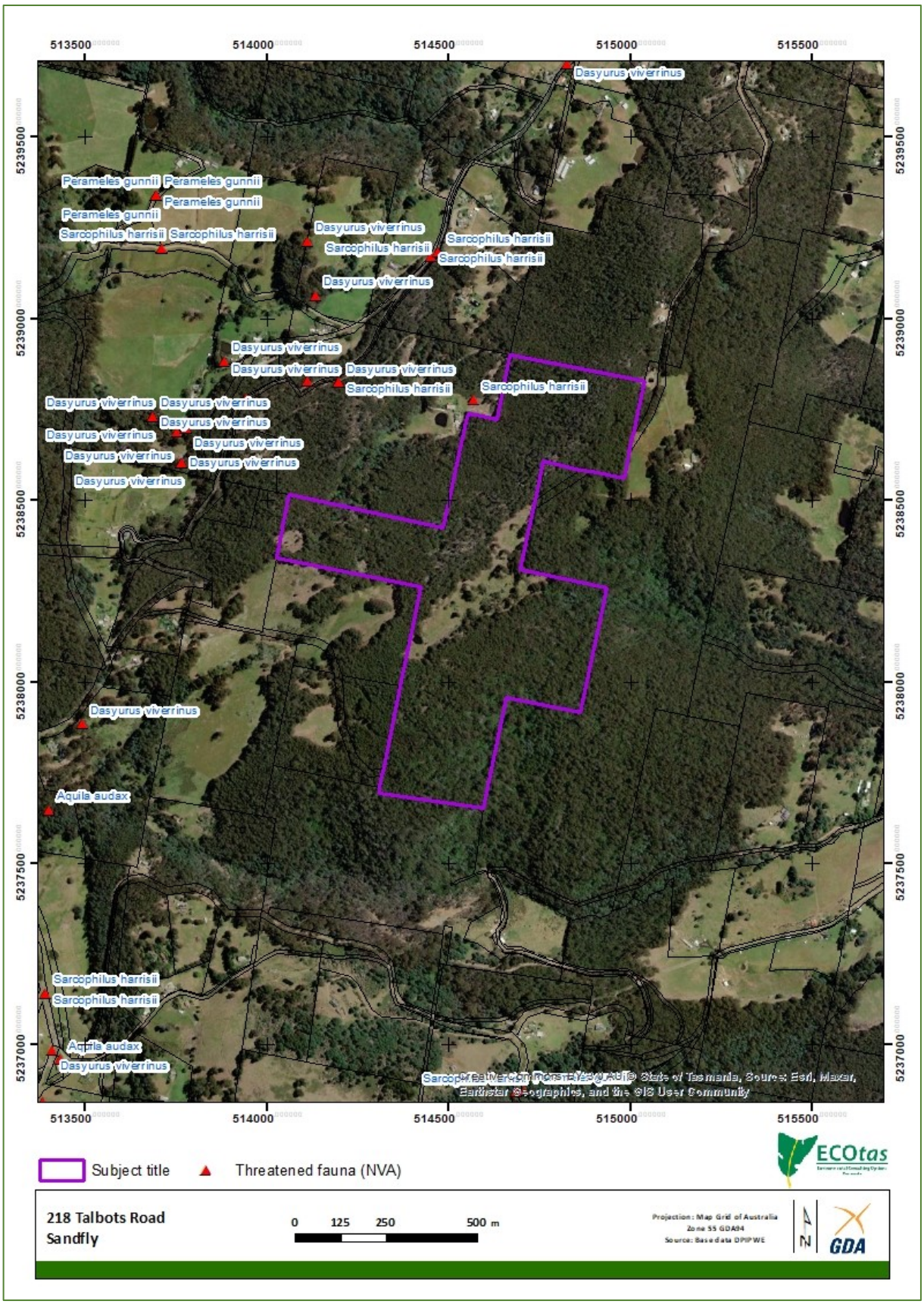

Figure 13b. Distribution of threatened fauna close to the study area (detail)

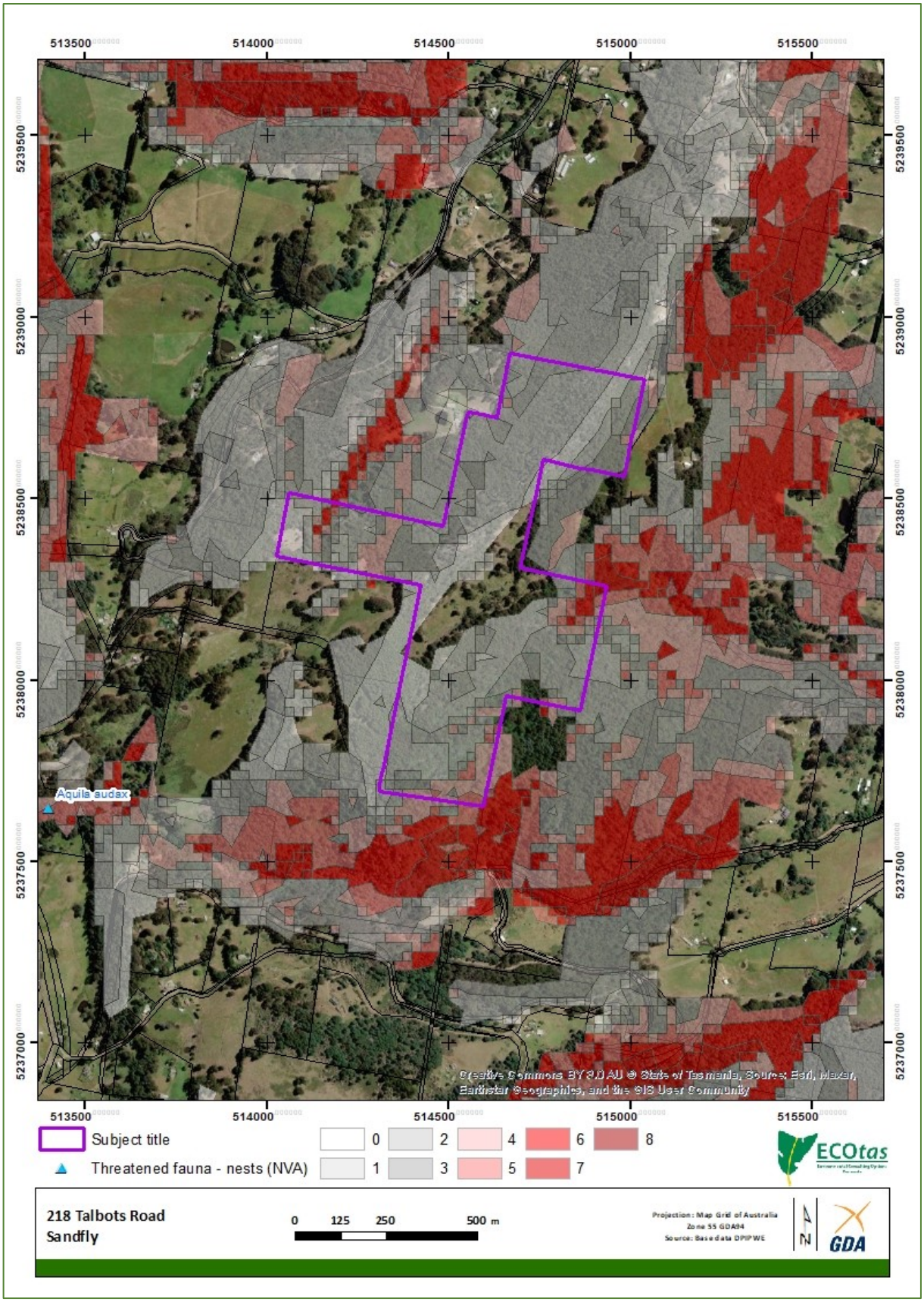

Figure 13c. Eagle nesting habitat model for study area and surrounds showing nearest known nest

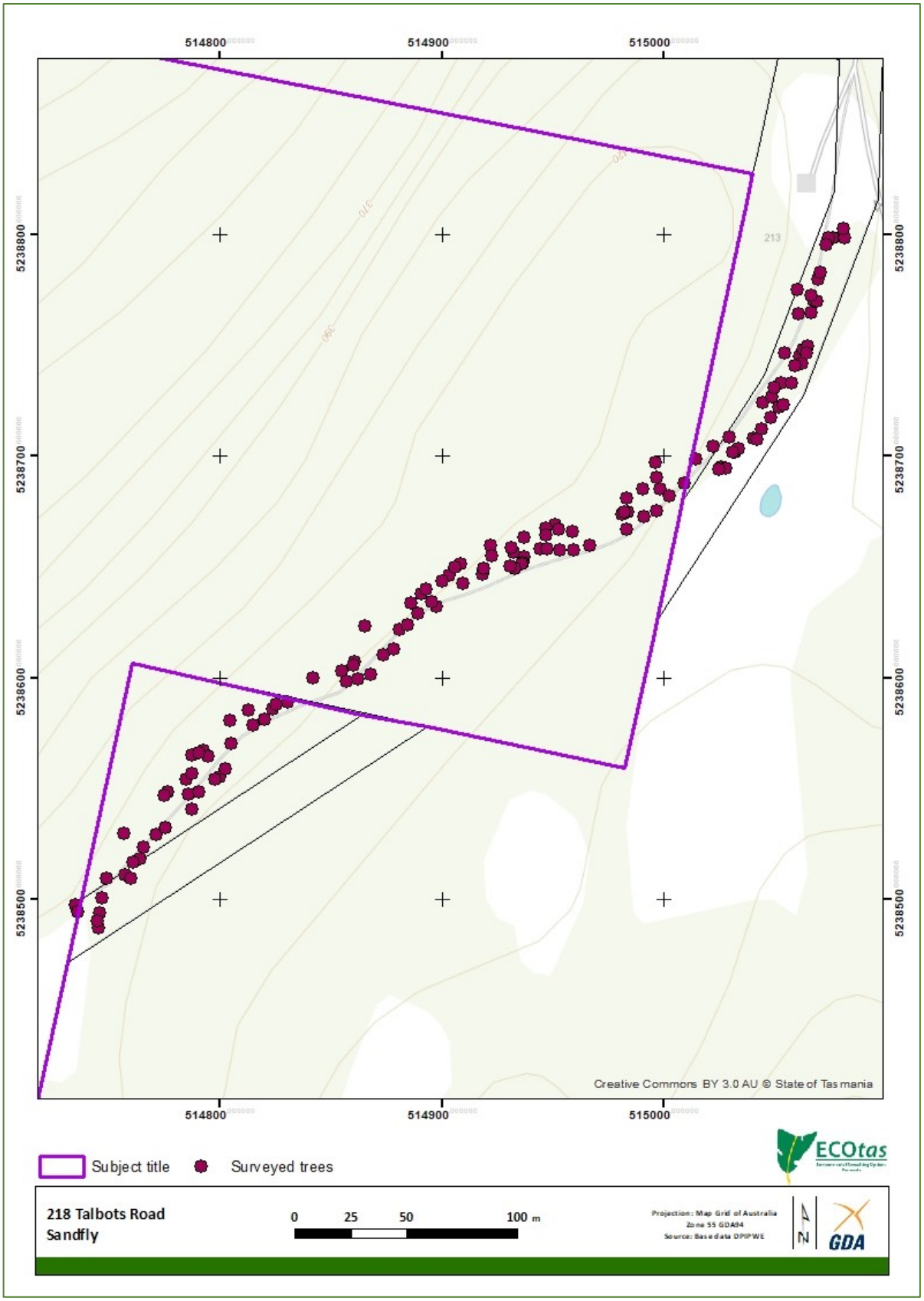

Figure 14a. Distribution of all surveyed trees: all trees (impractical to show tree numbers at this scale, refer to supplied .shp, .dwg or .xlsx file)

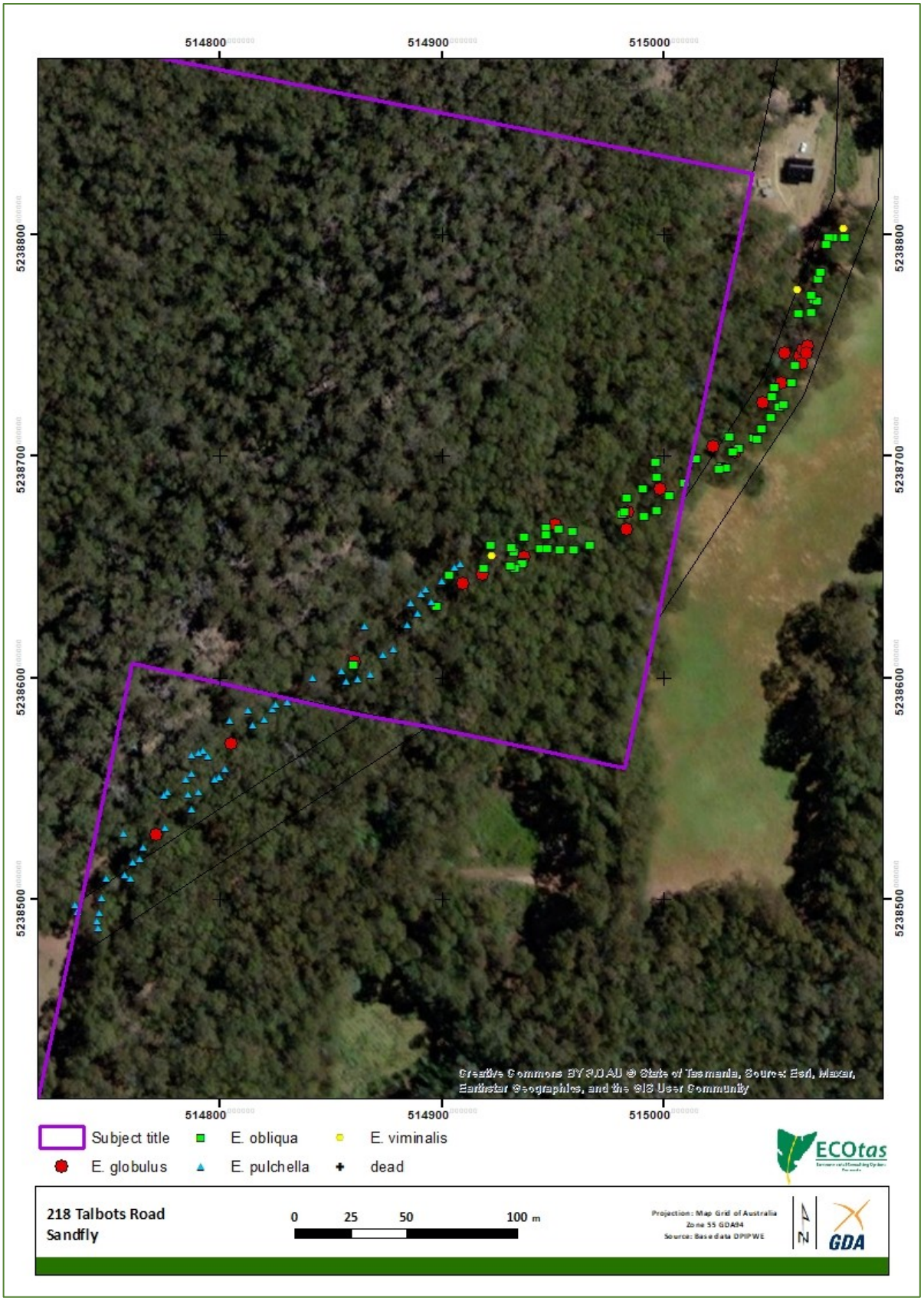

Figure 14b. Distribution of all surveyed trees: trees by species (impractical to show tree numbers at this scale, refer to supplied .shp, .dwg or .xlsx file)

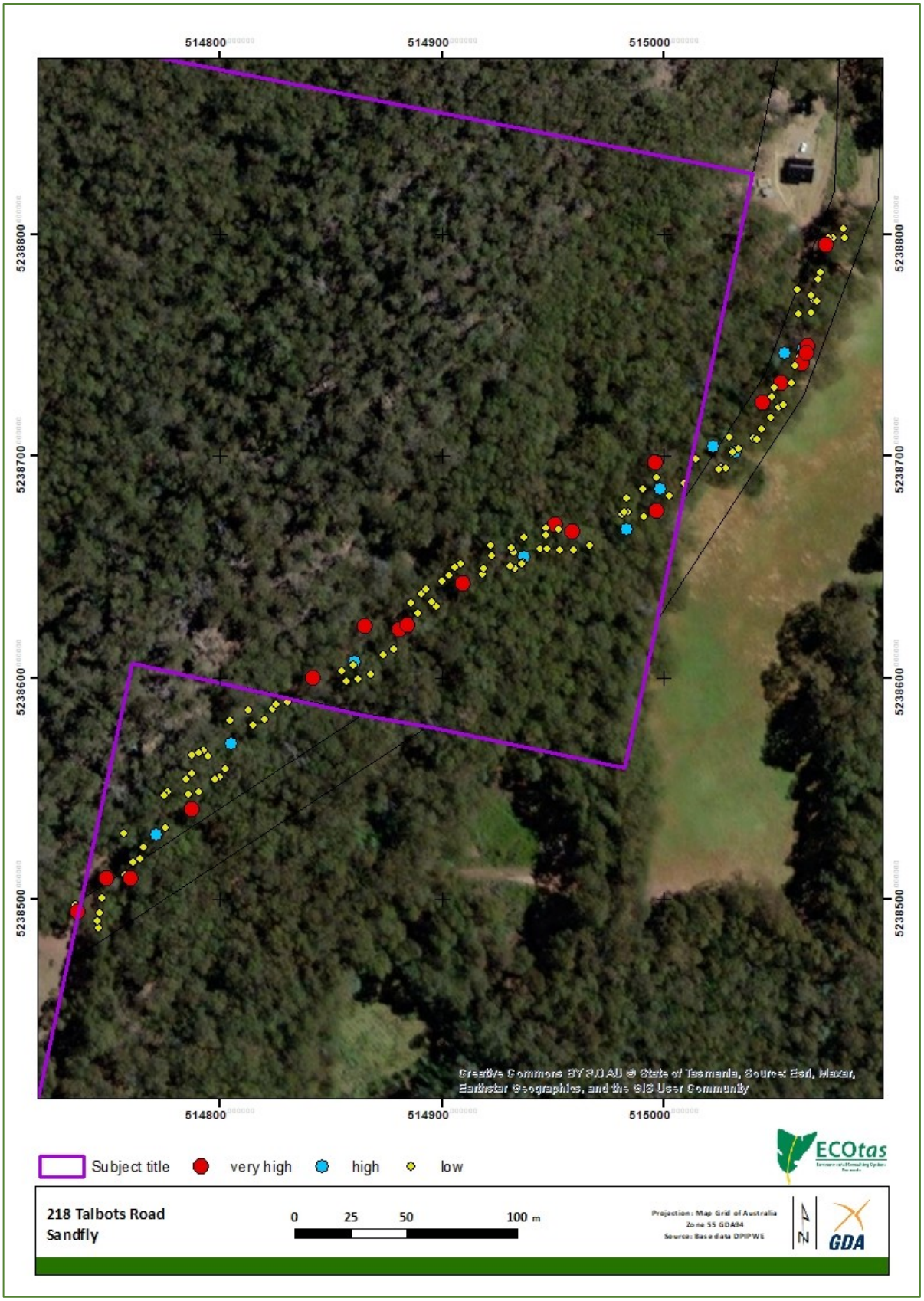

Figure 14c. Distribution of all surveyed trees: conservation status indicated (impractical to show tree numbers at this scale, refer to supplied .shp, .dwg or .xlsx file)

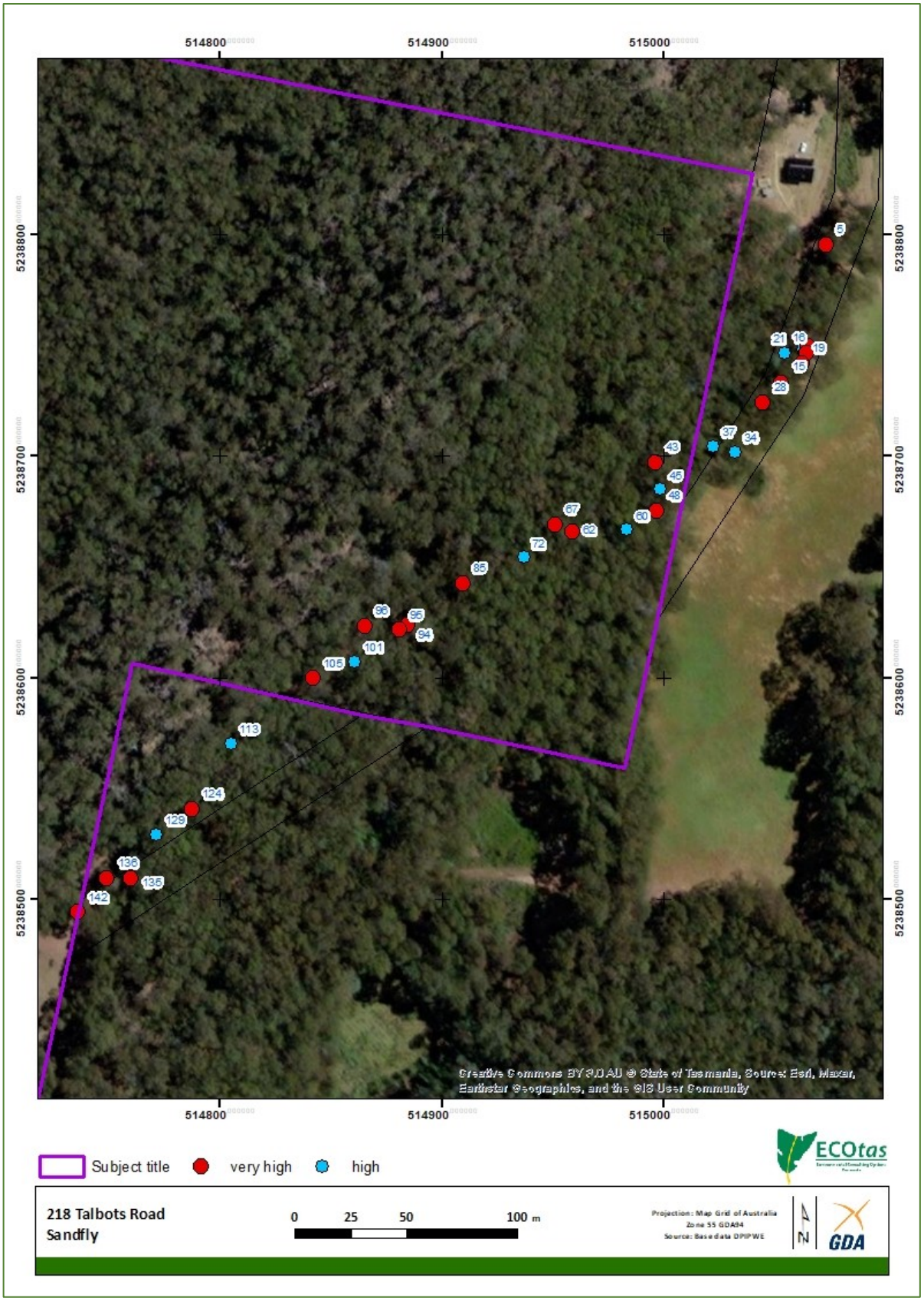

Figure 14d. Distribution of all surveyed trees: high and very high conservation value trees only (label cross-references to Table 2 and supplied .shp, .dwg or .xlsx file)

Other natural values

Weed species

No plant species classified as declared weeds within the meaning of the Tasmanian *Weed Management Act 1999* (*Biosecurity Act 2019*) or considered as potential environmental weeds (author opinion) were detected from the study area.

Any works, especially access and service provision, will provide an opportunity for weed establishment by mobilising soil-stored seed and providing fresh bare ground ideal for seedling establishment. "Starting clean" is good practice (i.e. machinery, vehicle and equipment hygiene prior to entering the site) but noting that special management should not be required in relation to weeds because of the weed-free status and access will be from the well-formed and sealed Saddle Road and an internal well-drained gravel road.

Owner-occupation is the most likely practical means of achieving good long-term weed management outcomes through vigilance and control, if any declared (or environmental) weeds are detected.

Several planning manuals provide guidance on appropriate management actions, which can be referred to develop site-specific prescriptions for any proposed works in the study area. These manuals include:

- Allan, K. & Gartenstein, S. (2010). *Keeping It Clean: A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens*. NRM South, Hobart;
- Rudman, T. (2005). *Interim* Phytophthora cinnamomi *Management Guidelines*. Nature Conservation Report 05/7, Biodiversity Conservation Branch, Department of Primary Industries, Water & Environment, Hobart;
- Rudman, T., Tucker, D. & French, D. (2004). *Washdown Procedures for Weed and Disease Control*. Edition 1. Department of Primary Industries, Water & Environment, Hobart; and
- DPIPWE (2015). *Weed and Disease Planning and Hygiene Guidelines – Preventing the Spread of Weeds and Diseases in Tasmania*. Department of Primary Industries, Parks, Water & Environment, Hobart.

Rootrot pathogen, *Phytophthora cinnamomi*

Phytophthora cinnamomi (PC) is widespread in lowland areas of Tasmania, across all land tenures. However, disease will not develop when soils are too cold or too dry. For these reasons, PC is not a threat to susceptible plant species that grow at altitudes higher than about 700 m or where annual rainfall is less than about 600 mm (e.g. Midlands and Derwent Valley). Furthermore, disease is unlikely to develop beneath a dense canopy of vegetation because shading cools the soils to below the optimum temperature for the pathogen. A continuous canopy of vegetation taller than about 2 m is sufficient to suppress disease. Hence PC is not considered a threat to susceptible plant species growing in wet sclerophyll forests, rainforests (except disturbed rainforests on infertile soils) and scrub e.g. teatree scrub (Rudman 2005; FPA 2009).

The vegetation types identified from the study area are not usually recognised as being particularly susceptible to PC in most circumstances. Site assessment did not record any field symptoms (dead and/or dying susceptible plant species), such that special management should not be required in relation to PC, especially given that access will be from the well-formed Talbots Road.

Myrtle wilt

Myrtle wilt, caused by a wind-borne fungus (*Chalara australis*), occurs naturally in rainforest where myrtle beech (*Nothofagus cunninghamii*) is present. The fungus enters wounds in the tree, usually caused by damage from wood-boring insects, wind damage and forest clearing. The incidence of myrtle wilt often increases forest clearing events such as windthrow and wildfire. The study area does not support *Nothofagus cunninghamii*, such that special management is not required.

Myrtle rust

Myrtle rust is a disease limited to plants in the Myrtaceae family. This plant disease is a member of the guava rust complex caused by *Austropuccinia psidii*, a known significant pathogen of Myrtaceae plants outside Australia. Infestations are currently limited to NSW, Victoria, Queensland and Tasmania (DPIPWE 2015).

No evidence of myrtle rust was noted (several possible indicator species present). The longer-term management issue for the site is to ensure that any ornamental plantings source plants from a reputable nursery free from the pathogen (such businesses are already subject to strict biosecurity conditions).

Chytrid fungus and other freshwater pathogens

Native freshwater species and habitat are under threat from freshwater pests and pathogens including *Batrachochytrium dendrobatidis* (chytrid frog disease), *Mucor amphibiorum* (platypus mucor disease) and the freshwater algal pest *Didymosphenia geminata* (didymo) (Allan & Gartenstein 2010). Freshwater pests and pathogens are spread to new areas when contaminated water, mud, gravel, soil and plant material or infected animals are moved between sites. Contaminated materials and animals are commonly transported on boots, equipment, vehicles tyres and during road construction and maintenance activities. Once a pest pathogen is present in a water system it is usually impossible to eradicate. The manual *Keeping it Clean – A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens* (Allan & Gartenstein 2010) provides information on how to prevent the spread of freshwater pests and pathogens in Tasmanian waterways wetlands, swamps and boggy areas.

The part of the study area proposed for development does not support habitat of amphibian species, except in a very general sense. Special management should not be warranted.

Additional "Matters of National Environmental Significance" – Threatened Ecological Communities

CofA (2023) indicates that the following threatened ecological communities listed on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) are likely to, or may, occur within the area:

- Alpine Sphagnum Bogs and Associated Fens [Endangered];
- Tasmanian Forests and Woodlands dominated by Black Gum or Brookers Gum (*Eucalyptus ovata* / *E. brookeriana*) [Critically Endangered]; and
- Tasmanian White Gum (*Eucalyptus viminalis*) Wet Forest [Critically Endangered].

Existing vegetation mapping (Figures 8-10) and revised vegetation mapping (Figure 11) indicates that no EPBCA-listed threatened ecological communities are present within or adjacent to the study area.

Individual trees

Under Table E10.1 of the Biodiversity Code of the *Kingborough Interim Planning Scheme 2015*, moderate priority biodiversity values include "high conservation value trees". It is most usual for the planning authority to require a detailed survey of every tree over ca. 25 cm DBHOB (diameter at breast height over bark, measured with a diameter tape to the nearest cm) within ca. 15 m of any possible development (i.e. in this case being on and either side of the access). While the *Kingborough Biodiversity Offset Policy 6.10, November 2016* (the *Policy*) is not explicit on how dead trees are dealt with but I have taken a conservative approach and treated the one dead tree as if it were alive (species indeterminate) and allocated it a very high conservation value because of girth and presence of visible hollows.

A total of 135 trees were surveyed (Table 2, Figure 14). Of these, 19 very high and 10 high conservation value trees were identified.

Table 2. Details on all surveyed trees

[tree = cross-reference to Figure 14 and .shp/.dwg/.xlsx file provided; TPZ = Tree Protection Zone: 12 x DBH; notes = DBH of multi-trunked trees; status = status as per *Kingborough Biodiversity Offset Policy 6.10, November 2016*; bold = high and very high conservation value trees]

Tree	Species	setting	DBH (cm)	TPZ (m)	Notes	Status	Rationale
1	*E. obliqua*	WOB (wet forest)	58	6.96	43, 25, 29	low	wet forest, any species, <100 cm DBH
2	*E. obliqua*	WOB (wet forest)	42	5.04		low	wet forest, any species, <100 cm DBH
3	*E. viminalis*	WOB (wet forest)	30	3.6		low	wet forest, any species, <100 cm DBH; *E. viminalis* outside 40-spot habitat
4	*E. obliqua*	WOB (wet forest)	43	5.16		low	wet forest, any species, <100 cm DBH
5	***E. obliqua***	**WOB (wet forest)**	**102**	12.24		**very high**	**wet forest, any species, >100 cm DBH**
6	*E. obliqua*	WOB (wet forest)	43	5.16		low	wet forest, any species, <100 cm DBH
7	*E. obliqua*	WOB (wet forest)	42	5.04		low	wet forest, any species, <100 cm DBH
8	*E. obliqua*	WOB (wet forest)	81	9.72		low	wet forest, any species, <100 cm DBH
9	*E. obliqua*	WOB (wet forest)	32	3.84		low	wet forest, any species, <100 cm DBH
10	*E. obliqua*	WOB (wet forest)	35	4.2		low	wet forest, any species, <100 cm DBH
11	*E. viminalis*	WOB (wet forest)	59	7.08	44, 39	low	wet forest, any species, <100 cm DBH; *E. viminalis* outside 40-spot habitat
12	*E. obliqua*	WOB (wet forest)	66	7.92		low	wet forest, any species, <100 cm DBH
13	*E. obliqua*	WOB (wet forest)	32	3.84		low	wet forest, any species, <100 cm DBH
15	***E. globulus***	**WOB (wet forest)**	**75**	9		**very high**	***E. globulus*, >70 cm DBH**
16	***E. globulus***	**WOB (wet forest)**	**99**	11.88		**very high**	***E. globulus*, >70 cm DBH**
17	***E. globulus***	**WOB (wet forest)**	**41**	4.92		**high**	***E. globulus*, >40<70 cm DBH**

Tree	Species	setting	DBH (cm)	TPZ (m)	Notes	Status	Rationale
18	*E. globulus*	WOB (wet forest)	27	3.24		low	wet forest, any species, <100 cm DBH; *E. globulus* <40 cm DBH
19	***E. globulus***	**WOB (wet forest)**	**70**	8.4		**very high**	***E. globulus*, >70 cm DBH**
20	*E. obliqua*	WOB (wet forest)	46	5.52		low	wet forest, any species, <100 cm DBH
21	***E. globulus***	**WOB (wet forest)**	**47**	5.64		**high**	***E. globulus*, >40<70 cm DBH**
22	*E. obliqua*	WOB (wet forest)	27	3.24		low	wet forest, any species, <100 cm DBH
23	***E. globulus***	**WOB (wet forest)**	**74**	8.88		**very high**	***E. globulus*, >70 cm DBH**
24	*E. obliqua*	WOB (wet forest)	46	5.52	36, 28	low	wet forest, any species, <100 cm DBH
25	*E. obliqua*	WOB (wet forest)	44	5.28		low	wet forest, any species, <100 cm DBH
26	*E. obliqua*	WOB (wet forest)	78	9.36		low	wet forest, any species, <100 cm DBH
27	*E. obliqua*	WOB (wet forest)	30	3.6		low	wet forest, any species, <100 cm DBH
28	***E. globulus***	**WOB (wet forest)**	**128**	15.36		**very high**	**wet forest, any species, >100 cm DBH; *E. globulus* >70 cm DBH**
29	*E. obliqua*	WOB (wet forest)	46	5.52		low	wet forest, any species, <100 cm DBH
30	*E. obliqua*	WOB (wet forest)	43	5.16		low	wet forest, any species, <100 cm DBH
31	*E. obliqua*	WOB (wet forest)	33	3.96		low	wet forest, any species, <100 cm DBH
32	*E. obliqua*	WOB (wet forest)	46	5.52		low	wet forest, any species, <100 cm DBH
33	*E. obliqua*	WOB (wet forest)	71	8.52		low	wet forest, any species, <100 cm DBH
34	***E. globulus***	**WOB (wet forest)**	**65**	7.8		**high**	***E. globulus*, >40<70 cm DBH**
35	*E. obliqua*	WOB (wet forest)	80	9.6	67, 43	low	wet forest, any species, <100 cm DBH
36	*E. obliqua*	WOB (wet forest)	66	7.92		low	wet forest, any species, <100 cm DBH
37	***E. globulus***	**WOB (wet forest)**	**40**	4.8		**high**	***E. globulus*, >40<70 cm DBH**
38	*E. obliqua*	WOB (wet forest)	66	7.92		low	wet forest, any species, <100 cm DBH
39	*E. obliqua*	WOB (wet forest)	49	5.88		low	wet forest, any species, <100 cm DBH
40	*E. obliqua*	WOB (wet forest)	71	8.52		low	wet forest, any species, <100 cm DBH
41	*E. obliqua*	WOB (wet forest)	55	6.6		low	wet forest, any species, <100 cm DBH
42	*E. obliqua*	WOB (wet forest)	77	9.24		low	wet forest, any species, <100 cm DBH
43	***E. obliqua***	**WOB (wet forest)**	**107**	12.84		**very high**	**wet forest, any species, >100 cm DBH**
44	*E. obliqua*	WOB (wet forest)	27	3.24		low	wet forest, any species, <100 cm DBH
45	***E. globulus***	**WOB (wet forest)**	**62**	7.44		**high**	***E. globulus*, >40<70 cm DBH**

Tree	Species	setting	DBH (cm)	TPZ (m)	Notes	Status	Rationale
46	*E. obliqua*	WOB (wet forest)	69	8.28		low	wet forest, any species, <100 cm DBH
47	*E. obliqua*	WOB (wet forest)	79	9.48		low	wet forest, any species, <100 cm DBH
48	***E. obliqua***	**WOB (wet forest)**	**107**	12.84		**very high**	**wet forest, any species, >100 cm DBH**
49	*E. obliqua*	WOB (wet forest)	57	6.84		low	wet forest, any species, <100 cm DBH
50	*E. obliqua*	WOB (wet forest)	53	6.36		low	wet forest, any species, <100 cm DBH
51	*E. globulus*	WOB (wet forest)	28	3.36		low	wet forest, any species, <100 cm DBH; *E. globulus* <40 cm DBH
52	*E. obliqua*	WOB (wet forest)	50	6	44, 24	low	wet forest, any species, <100 cm DBH
53	*E. obliqua*	WOB (wet forest)	27	3.24		low	wet forest, any species, <100 cm DBH
60	***E. globulus***	**WOB (wet forest)**	**45**	5.4		**high**	***E. globulus*, >40<70 cm DBH**
61	*E. obliqua*	WOB (wet forest)	58	6.96		low	wet forest, any species, <100 cm DBH
62	***E. obliqua***	**WOB (wet forest)**	**102**	12.24		**very high**	**wet forest, any species, >100 cm DBH**
63	*E. obliqua*	WOB (wet forest)	41	4.92		low	wet forest, any species, <100 cm DBH
64	*E. obliqua*	WOB (wet forest)	52	6.24		low	wet forest, any species, <100 cm DBH
65	*E. obliqua*	WOB (wet forest)	38	4.56		low	wet forest, any species, <100 cm DBH
66	*E. obliqua*	WOB (wet forest)	33	3.96		low	wet forest, any species, <100 cm DBH
67	***E. globulus***	**WOB (wet forest)**	**107**	12.84		**very high**	**wet forest, any species, >100 cm DBH; *E. globulus* >70 cm DBH**
68	*E. obliqua*	WOB (wet forest)	38	4.56		low	wet forest, any species, <100 cm DBH
69	*E. obliqua*	WOB (wet forest)	45	5.4		low	wet forest, any species, <100 cm DBH
70	*E. obliqua*	WOB (wet forest)	43	5.16		low	wet forest, any species, <100 cm DBH
71	*E. obliqua*	WOB (wet forest)	37	4.44		low	wet forest, any species, <100 cm DBH
72	***E. globulus***	**WOB (wet forest)**	**41**	4.92		**high**	***E. globulus*, >40<70 cm DBH**
73	*E. obliqua*	WOB (wet forest)	31	3.72		low	wet forest, any species, <100 cm DBH
74	*E. obliqua*	WOB (wet forest)	37	4.44		low	wet forest, any species, <100 cm DBH
75	*E. obliqua*	WOB (wet forest)	42	5.04		low	wet forest, any species, <100 cm DBH
76	*E. obliqua*	WOB (wet forest)	51	6.12		low	wet forest, any species, <100 cm DBH
77	*E. obliqua*	WOB (wet forest)	26	3.12		low	wet forest, any species, <100 cm DBH
78	*E. obliqua*	WOB (wet forest)	34	4.08		low	wet forest, any species, <100 cm DBH
79	*E. viminalis*	WOB (wet forest)	47	5.64		low	wet forest, any species, <100 cm DBH; *E. viminalis* outside 40-spot habitat

Tree	Species	setting	DBH (cm)	TPZ (m)	Notes	Status	Rationale
80	*E. obliqua*	WOB (wet forest)	72	8.64		low	wet forest, any species, <100 cm DBH
81	*E. obliqua*	WOB (wet forest)	44	5.28		low	wet forest, any species, <100 cm DBH
82	*E. globulus*	WOB (wet forest)	38	4.56		low	wet forest, any species, <100 cm DBH; *E. globulus* <40 cm DBH
83	*E. pulchella*	DPU (dry forest)	26	3.12		low	dry forest, any species, <70 cm DBH
84	*E. pulchella*	DPU (dry forest)	56	6.72		low	dry forest, any species, <70 cm DBH
85	***E. globulus***	**DPU (dry forest)**	**72**	8.64		**very high**	**dry forest, any species, >70 cm DBH; *E. globulus* >70 cm DBH**
86	*E. obliqua*	DPU (dry forest)	27	3.24		low	dry forest, any species, <70 cm DBH
87	*E. pulchella*	DPU (dry forest)	29	3.48		low	dry forest, any species, <70 cm DBH
88	*E. pulchella*	DPU (dry forest)	29	3.48		low	dry forest, any species, <70 cm DBH
89	*E. obliqua*	DPU (dry forest)	47	5.64		low	dry forest, any species, <70 cm DBH
90	*E. pulchella*	DPU (dry forest)	36	4.32		low	dry forest, any species, <70 cm DBH
91	*E. pulchella*	DPU (dry forest)	34	4.08		low	dry forest, any species, <70 cm DBH
92	*E. pulchella*	DPU (dry forest)	41	4.92	22, 35	low	dry forest, any species, <70 cm DBH
93	*E. pulchella*	DPU (dry forest)	35	4.2		low	dry forest, any species, <70 cm DBH
94	***E. pulchella***	**DPU (dry forest)**	**91**	10.92	**massive tree, hollows**	**very high**	**dry forest, any species, >70 cm DBH**
95	**dead**	**DPU (dry forest)**	**123**	14.76	**dead tree, 20 m tall, hollows**	**very high**	**dry forest, any species (inc. dead), >70 cm DBH**
96	***E. pulchella***	**DPU (dry forest)**	**101**	12.12	**massive tree, big hollows**	**very high**	**dry forest, any species, >70 cm DBH**
97	*E. pulchella*	DPU (dry forest)	47	5.64		low	dry forest, any species, <70 cm DBH
98	*E. pulchella*	DPU (dry forest)	41	4.92		low	dry forest, any species, <70 cm DBH
99	*E. pulchella*	DPU (dry forest)	49	5.88		low	dry forest, any species, <70 cm DBH
100	*E. pulchella*	DPU (dry forest)	34	4.08		low	dry forest, any species, <70 cm DBH
101	***E. globulus***	**DPU (dry forest)**	**68**	8.16		**high**	***E. globulus*, >40<70 cm DBH**
102	*E. obliqua*	DPU (dry forest)	32	3.84		low	dry forest, any species, <70 cm DBH
103	*E. pulchella*	DPU (dry forest)	43	5.16		low	dry forest, any species, <70 cm DBH
104	*E. pulchella*	DPU (dry forest)	58	6.96		low	dry forest, any species, <70 cm DBH
105	***E. pulchella***	**DPU (dry forest)**	**102**	12.24	**massive tree, hollows**	**very high**	**dry forest, any species, >70 cm DBH**

Tree	Species	setting	DBH (cm)	TPZ (m)	Notes	Status	Rationale
106	*E. pulchella*	DPU (dry forest)	28	3.36		low	dry forest, any species, <70 cm DBH
107	*E. pulchella*	DPU (dry forest)	35	4.2		low	dry forest, any species, <70 cm DBH
108	*E. pulchella*	DPU (dry forest)	33	3.96		low	dry forest, any species, <70 cm DBH
109	*E. pulchella*	DPU (dry forest)	36	4.32		low	dry forest, any species, <70 cm DBH
110	*E. pulchella*	DPU (dry forest)	41	4.92		low	dry forest, any species, <70 cm DBH
111	*E. pulchella*	DPU (dry forest)	40	4.8		low	dry forest, any species, <70 cm DBH
112	*E. pulchella*	DPU (dry forest)	36	4.32		low	dry forest, any species, <70 cm DBH
113	***E. globulus***	**DPU (dry forest)**	**54**	6.48		**high**	***E. globulus*, >40<70 cm DBH**
114	*E. pulchella*	DPU (dry forest)	42	5.04		low	dry forest, any species, <70 cm DBH
115	*E. pulchella*	DPU (dry forest)	46	5.52		low	dry forest, any species, <70 cm DBH
116	*E. pulchella*	DPU (dry forest)	42	5.04		low	dry forest, any species, <70 cm DBH
117	*E. pulchella*	DPU (dry forest)	58	6.96		low	dry forest, any species, <70 cm DBH
118	*E. pulchella*	DPU (dry forest)	39	4.68		low	dry forest, any species, <70 cm DBH
119	*E. pulchella*	DPU (dry forest)	62	7.44	52, 34	low	dry forest, any species, <70 cm DBH
120	*E. pulchella*	DPU (dry forest)	43	5.16		low	dry forest, any species, <70 cm DBH
121	*E. pulchella*	DPU (dry forest)	44	5.28		low	dry forest, any species, <70 cm DBH
122	*E. pulchella*	DPU (dry forest)	36	4.32		low	dry forest, any species, <70 cm DBH
123	*E. pulchella*	DPU (dry forest)	46	5.52		low	dry forest, any species, <70 cm DBH
124	***E. pulchella***	**DPU (dry forest)**	**78**	9.36		**very high**	**dry forest, any species, >70 cm DBH**
125	*E. pulchella*	DPU (dry forest)	43	5.16		low	dry forest, any species, <70 cm DBH
126	*E. pulchella*	DPU (dry forest)	35	4.2		low	dry forest, any species, <70 cm DBH
127	*E. pulchella*	DPU (dry forest)	47	5.64		low	dry forest, any species, <70 cm DBH
128	*E. pulchella*	DPU (dry forest)	59	7.08	43, 40	low	dry forest, any species, <70 cm DBH
129	***E. globulus***	**DPU (dry forest)**	**60**	7.2		**high**	***E. globulus*, >40<70 cm DBH**
130	*E. pulchella*	DPU (dry forest)	66	7.92	25, 61	low	dry forest, any species, <70 cm DBH
131	*E. pulchella*	DPU (dry forest)	37	4.44		low	dry forest, any species, <70 cm DBH
132	*E. pulchella*	DPU (dry forest)	56	6.72		low	dry forest, any species, <70 cm DBH
133	*E. pulchella*	DPU (dry forest)	59	7.08		low	dry forest, any species, <70 cm DBH
134	*E. pulchella*	DPU (dry forest)	63	7.56		low	dry forest, any species, <70 cm DBH

Tree	Species	setting	DBH (cm)	TPZ (m)	Notes	Status	Rationale
135	***E. pulchella***	**DPU (dry forest)**	**77**	9.24		**very high**	**dry forest, any species, >70 cm DBH**
136	***E. pulchella***	**DPU (dry forest)**	**139**	16.68	**burnt base, hollows**	**very high**	**dry forest, any species, >70 cm DBH**
137	*E. pulchella*	DPU (dry forest)	34	4.08		low	dry forest, any species, <70 cm DBH
138	*E. pulchella*	DPU (dry forest)	25	3		low	dry forest, any species, <70 cm DBH
139	*E. pulchella*	DPU (dry forest)	38	4.56		low	dry forest, any species, <70 cm DBH
140	*E. pulchella*	DPU (dry forest)	32	3.84		low	dry forest, any species, <70 cm DBH
141	*E. pulchella*	DPU (dry forest)	50	6		low	dry forest, any species, <70 cm DBH
142	***E. pulchella***	**DPU (dry forest)**	**96**	11.52	**burnt base, no hollows**	**very high**	**dry forest, any species, >70 cm DBH**

The intent of the tree survey was to facilitate production of a "tree plan" as per a set of guidelines provided by this planning authority. Until a detailed site plan is produced that identifies all such trees, further commentary on the extent of impact is not possible. However, note that the "tree plan" guidelines issued by the planning authority refer to "significant justification" for the loss of any high or very high conservation value trees and consideration of the tree protection zone (TPZ, defined as a radius of 12 x DBH), which may require an assessment by a suitably qualified arborist under an Australian standard where high and very high conservation value trees are proposed for retention. Refer to **DISCUSSION *Legislative and policy implications*** for more details.

DISCUSSION

Summary of key findings

Threatened flora

- No plant species listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) and/or the Tasmanian *Threatened Species Protection Act 1995* (TSPA) were detected, or are known from database information, from the study area.

Threatened fauna

- No fauna species listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) and/or the Tasmanian *Threatened Species Protection Act 1995* (TSPA) were detected, or are known from database information, from the study area.
- The study area supports potential habitat for the following species:
  - Tasmanian devil (*Sarcophilus harrisii*);
  - spotted-tailed quoll (*Dasyurus maculatus* subsp. *maculatus*);
  - eastern quoll (*Dasyurus viverrinus*);
  - eastern barred bandicoot (*Perameles gunnii* subsp. *gunnii*);

- masked owl (*Tyto novaehollandiae* subsp. *castanops*); and
- grey goshawk (*Accipiter novaehollandiae*);
- swift parrot (*Lathamus discolor*);
- wedge-tailed eagle (*Aquila audax* subsp. *fleayi*); and
- Mt Mangana stag beetle (*Lissotes menalcas*).

Vegetation types

- The study area supports the following TASVEG mapping units:
  - *Eucalyptus obliqua* forest with broad-leaf shrubs (TASVEG code: WOB); and
  - *Eucalyptus pulchella* forest and woodland (TASVEG code: DPU).
- Occurrences of WOB & DPU do not equate to threatened vegetation communities listed on Schedule 3A of the Tasmanian *Nature Conservation Act 2002.*
- Occurrences of WOB & DPU do not equate to threatened ecological communities under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA).
- As vegetation types, WOB & DPU are classified as low priority biodiversity values under Table E10.1 of the Biodiversity Code of the *Kingborough Interim Planning Scheme 2015*.

Weeds

- No plant species classified as declared weeds within the meaning of the Tasmanian *Weed Management Act 1999* (*Biosecurity Act 2019*) were detected from the study area.

Plant disease

- No evidence of *Phytophthora cinnamomi* (PC, rootrot) was recorded from the study area.
- No evidence of myrtle wilt was recorded from the study area.
- No evidence of myrtle rust was recorded from the study area.

Animal disease (chytrid)

- The study area does not support habitat types strongly associated with amphibian species.

Individual trees

- Several individual trees that meet the criteria for high or very high conservation value within the intent of Table E10.1 of the Biodiversity Code of the *Kingborough Interim Planning Scheme 2015* were found within the surveyed route.

Legislative and policy implications

Some commentary is provided below with respect to the key threatened species, vegetation management and other relevant legislation. Note that there may be other relevant policy instruments in addition to those discussed. The following information does not constitute legal advice and it is recommended that independent advice is sought from the relevant agency/authority.

Tasmanian *Threatened Species Protection Act 1995*

Threatened flora and fauna on this Act are managed under Section 51, as follows:

51. Offences relating to listed taxa

(1) Subject to subsections (2) and (3), a person must not knowingly, without a permit –

(a) take, keep, trade in or process any specimen of a listed taxon of flora or fauna; or

(b) disturb any specimen of a listed taxon of flora or fauna found on land subject to an interim protection order; or

(c) disturb any specimen of a listed taxon of flora or fauna contrary to a land management agreement; or

(d) disturb any specimen of a listed taxon of flora or fauna that is subject to a conservation covenant entered into under Part 5 of the *Nature Conservation Act 2002*; or

(e) abandon or release any specimen of a listed taxon of flora or fauna into the wild.

(2) A person may take, keep or process, without a permit, a specimen of a listed taxon of flora in a domestic garden.

(3) A person acting in accordance with a certified forest practices plan or a public authority management agreement may take, without a permit, a specimen of a listed taxon of flora or fauna, unless the Secretary, by notice in writing, requires the person to obtain a permit.

(4) A person undertaking dam works in accordance with a Division 3 permit issued under the *Water Management Act 1999* may take, without a permit, a specimen of a listed taxon of flora or fauna.

The simplest interpretation of this is that any activity that results in a specimen (i.e. individual) of listed flora or fauna being "knowingly taken" would require a permit to be issued through Conservation Assessments (Department of Natural Resources and Environment Tasmania), through a formal application process. Note that the Act does not make reference to "potential habitat" such that activities that result in loss of/disturbance to potential habitat (but not known sites) – which mainly refers to threatened fauna – would not require a permit.

No known sites of threatened flora or fauna will be impacted by any proposed development so a permit should be not required under this Act.

Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

Under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* an action will require approval from the minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance.

Matters of national environmental significance considered under the EPBCA include:

- listed threatened species and communities
- listed migratory species;
- Ramsar wetlands of international importance;
- Commonwealth marine environment;
- world heritage properties;
- national heritage places;
- the Great Barrier Reef Marine Park;
- nuclear actions; and
- a water resource, in relation to coal seam gas development and large coal mining development.

The relevant Commonwealth agency provides a policy statement titled *Matters of National Environmental Significance: Significant Impact Guidelines 1.1* (CofA 2013, herein the *Guidelines*), which provides overarching guidance on determining whether an action is likely to have a significant impact on a matter protected under the EPBCA.

The *Guidelines* define a **significant impact** as:

> *"…an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts"*

and note that:

> *"…all of these factors [need to be considered] when determining whether an action is likely to have a significant impact on matters of national environmental significance".*

The *Guidelines* provide advice on when a significant impact may be likely:

> *"To be 'likely', it is not necessary for a significant impact to have a greater than 50% chance of happening; it is sufficient if a significant impact on the environment is a real or not remote chance or possibility.*
>
> *If there is scientific uncertainty about the impacts of your action and potential impacts are serious or irreversible, the precautionary principle is applicable. Accordingly, a lack of scientific certainty about the potential impacts of an action will not itself justify a decision that the action is not likely to have a significant impact on the environment".*

The *Guidelines* provide a set of Significant Impact Criteria, which are "intended to assist…in determining whether the impacts of [the] proposed action on any matter of national environmental significance are likely to be significant impacts". It is noted that the criteria are "intended to provide general guidance on the types of actions that will require approval and the types of actions that will not require approval…[and]…not intended to be exhaustive or definitive".

Listed ecological communities

The study area does not support any such communities.

Threatened flora

The study area does not support populations of EPBCA-listed flora, nor significant potential habitat of such species.

Threatened fauna

The study area may support populations of threatened fauna listed on the Act, most notably the Tasmanian devil, spotted-tailed quoll, eastern quoll and eastern barred bandicoot. Note that the study area is within the range of several other species listed on the Act but it is unlikely that any proposal will result in a significant impact on these species (this includes wide-ranging species such as the wedge-tailed eagle, swift parrot and masked owl – refer to **FINDINGS *Threatened fauna*** and Appendix D for more details).

The *Guidelines* consider a "significant impact" to comprise loss that is likely to lead to a long-term decrease in the size of an important population of a species; reduce the area of occupancy of an important population; fragment an existing important population into two or more populations (unlikely); adversely affect habitat critical to the survival of a species; disrupt the breeding cycle of an important population; modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline; result in invasive species that are

harmful to a threatened species becoming established in the threatened species' habitat; introduce disease that may cause the species to decline; or interfere substantially with the recovery of the species.

It is highly unusual for a development of this scale, even within the range of the aforementioned species where potential habitat has been identified, to trigger a formal referral to the relevant Commonwealth agency.

Tasmanian *Forest Practices Act 1985* and associated *Forest Practices Regulations 2017*

The *Regulations* provide the following relevant circumstances in which a Forest Practices Plan (FPP) is not required.

> 4. Circumstances in which forest practices plan, &c., not required
>
> For the purpose of section 17(6) of the Act, the following circumstances are prescribed:
>
> (a) the harvesting of timber or the clearing of trees, with the consent of the owner of the land, if the land is not vulnerable land and –
>
> (i) the volume of timber harvested or trees cleared is less than 100 tonnes for each area of applicable land per year; or
>
> (ii) the total area of land on which the harvesting or clearing occurs is less than one hectare for each area of applicable land per year –
>
> whichever is the lesser;
>
> (j) the harvesting of timber or the clearing of trees on any land, or the clearance and conversion of a threatened native vegetation community on any land, for the purpose of enabling –
>
> (i) the construction of a building within the meaning of the *Land Use Planning and Approvals Act 1993* or of a group of such buildings; or
>
> (ii) the carrying out of any associated development –
>
> if the construction of the buildings or carrying out of the associated development is authorised by a permit issued under that Act.

On this basis, development subject to a planning permit issued under the relevant planning scheme should not require an FPP.

Tasmanian *Nature Conservation Act 2002*

Schedule 3A of the Act lists native vegetation communities classified as threatened within Tasmania. The proposed development areas does not support any such vegetation communities.

Tasmanian *Weed Management Act 1999* (*Biosecurity Act 2019*)

No plant species classified as declared weeds within the meaning of the Tasmanian *Weed Management Act 1999* (*Biosecurity Act 2019*) were detected from area proposed for development, such that the Act has limited direct application.

Tasmanian *Land Use Planning and Approvals Act 1993*

The applicable planning scheme for the project area is the *Kingborough Interim Planning Scheme 2015*. Note that the following is my interpretation of the provisions of the *Scheme* and may not necessarily represent the views of Kingborough Council. The following does not constitute legal advice. It is recommended that formal advice be sought from the relevant agency prior to acting on any aspect of this statement.

The proposed development area is zoned as Environmental Living (Figure 4) and wholly subject to the Biodiversity Protection Area overlay (Figure 5).

Environmental Living zone

While several provisions of the zone may have application, below I examine the two that I believe have greatest relevance to the findings.

14.4 Development Standards for Buildings and Works

14.4.3 Design

Objective:

To ensure that the location and appearance of buildings and works minimises adverse impact on natural values and on the landscape.

Acceptable Solutions

A1

The location of buildings and works must comply with any of the following:

(a) be located within a building area, if provided on the title;

(b) be an addition or alteration to an existing building;

(c) be located on a site that does not require the clearing of native vegetation and is not on a skyline or ridgeline.

Performance Criteria

P1

The location of buildings and works must satisfy all of the following:

(a) be located in an area requiring the clearing of native vegetation only if:

  (i) there are no sites clear of native vegetation and clear of other significant site constraints such as access difficulties or excessive slope;

  (ii) the extent of clearing is the minimum necessary to provide for buildings, associated works and associated bushfire protection measures;

  (iii) the location of clearing has the least environmental impact;

(b) be located on a skyline or ridgeline only if:

  (i) there are no other sites suitable for development due to access difficulties or excessive slope;

  (ii) there is no significant impact on the rural landscape;

  (iii) building height is minimised;

  (iv) any screening vegetation is maintained.

(c) be consistent with any Desired Future Character Statements provided for the area or, if no such statements are provided, have regard to the landscape.

In response to A1(a), this is presumed to not be satisfied because there is not a building area shown on title.

In response to A1(b), this will not be satisfied because the project is for a new development (upgrade to existing track).

In response to A1(c), this may be partially satisfied by use of the existing track but its is likely that works may extend outside the immediately cleared area of track to satisfy contemporary bushfire hazard management requirements. While it is outside my area of specific expertise, I do not believe the site is on a skyline or ridgeline (simply by reference to topographic maps and site assessment) such that this aspect of A1(c) would be satisfied. On the basis that A1(c) cannot be wholly satisfied, the Performance Criteria must be examined.

Of the Performance Criteria P1 clauses, P1(b) & P1(c) do not appear to have direct application.

In specific relation to P1(a), the proposal is for an upgrade to the existing track to facilitate access to teg balance of the title. I acknowledge that the most logical route of the access follows the existing track that is well-defined and generally follows the contours with a suitable grade. Alternative routes would involve steeper slopes and the need to clear a new route through native vegetation. To my interpretation, P1(a) is satisfied.

A bushfire hazard management plan certified by an accredited practitioner should satisfy P1(a)(ii), if such is required for this phase of development i.e. upgrade to an existing track. Logically, any such works should take account of the longer-term hazard management requirements (i.e. horizontal width, vertical clearance, passing bays, etc.) such that the upgraded access satisfies contemporary bushfire hazard management requirements.

With respect to P1(a)(iii), demonstrating that the "location of clearing has the least environmental impact" will probably involve a combination of showing how access width has been minimised (acknowledging bushfire hazard management constraints) and how individuals trees with high and very high conservation value have been avoided as far as practical (or that management has been appropriately guided by advice from a suitably qualified arborist under a recognised Australian standard).

> 14.4 Development Standards for Buildings and Works
>
> 14.4.5 Environmental Values
>
> Objective:
>
> To ensure development maintains and enhances environmental values.
>
> Acceptable Solutions
>
> A1
>
> Development must be located within a building area on a plan of subdivision.
>
> Performance Criteria
>
> P1
>
> The application is accompanied by an environmental management plan for the whole site, setting out measures to be put in place to protect flora and fauna habitats, riparian areas, any environmental values identified as part of a site analysis, and identify measures to be used to mitigate and offset adverse environmental impacts.

The objective statement uses the phrase "maintains **and** enhances" [my emphasis]. In literal terms, this is challenging to meet because any development that results in the loss of biodiversity values cannot be regarded as "enhancing environmental values". In a more practical sense, meeting the intent of this objective usually requires demonstration that impacts to natural values have been minimised as far as practicable.

As the title does not include a "building area on a plan of subdivision", the Acceptable Solution A1 cannot be met and the Performance Criteria P1 must be satisfied. This calls for an "environmental management plan". P1 does not specify the format of such a plan, nor who can produce the plan. The planning authority issues some guidelines for such plans for "simple" cases (e.g. where impact to native vegetation will be limited and/or restricted to low priority biodiversity values only). In this case, in noting that the planning application cannot be valid unless it "is accompanied by an environmental management plan for the whole site", it is recommended that an environmental management plan be produced with the following minimal inclusions:

- site plan showing that maximum utility has been made of the existing access;
- site plan showing extent of native vegetation to be impacted by works (this will involve some calculations/estimates of the area of native vegetation impacted – suggest this be undertaken by measuring the length of the route from where the forest starts and ends = 460 m and assuming a minimum of 2 m clearing each side because the existing track is probably an average of 2 m wide and ca. 4 m is likely to be needed = 460 m x 2 m x 2 m = 1,840 m^2; if 1 passing bay is needed (assume 20 m length x an extra 3 m width = 60 m^2), the total area of impact to native vegetation is estimated at 1,900 m^2);
- site plan showing location of high and very conservation value trees, including their Tree Root Zones (TPZs) showing which will be retained and removed ("significant" justification will need to be provided for this aspect of management of high and very high conservation value trees);
- mitigation measures to minimise impacts on high and very conservation value trees (may require input from suitably qualified arborist); and
- weed and hygiene measures (suggest indicating high pressure washdown for any machinery entering the site during construction).

Biodiversity Code

The purpose of the Biodiversity Code is stated below:

> E10.1 Purpose
>
> E10.1.1
>
> The purpose of this provision is to:
>
> (a) minimise loss of identified threatened native vegetation communities and threatened flora species;
>
> (b) conserve identified threatened fauna species by minimising clearance of important habitat and managing environmental impact;
>
> (c) minimise loss of other biodiversity values that are recognised as locally significant by the Planning Authority.

No part of the proposed development area supports threatened vegetation or threatened flora, such that E10.1.1(a) will not have direct application.

At least some part of the proposed development area may support "important habitat…[for]…threatened fauna species", such that E10.1.1(b) may have direct application. This is also considered in more detail under the review of Table E10.1.

At least some part of the proposed development area may support "other biodiversity values that are recognised as locally significant by the Planning Authority" (most notably individual trees). Note that the detailed elements of high, moderate and low priority biodiversity values included in Table E10.1 are explored in detail below.

The application of the Biodiversity Code is stated below:

> E10.2 Application
>
> This code applies to development involving clearance and conversion or disturbance of native vegetation within a Biodiversity Protection Area.

"Native vegetation" is defined under the *Scheme* as:

> "plants that are indigenous to Tasmania including trees, shrubs, herbs and grasses that have not been planted for domestic or commercial purposes".

The proposed development area is wholly covered by the Biodiversity Protection Area overlay and is wholly mapped as native vegetation (WOB & DPU), although it is noted that due to the scale of mapping the existing track was not excised as a TASVEG modified land mapping unit.

"Clearance and conversion" means:

> "the process of removing native vegetation from an area of land and: (a) leaving the area of land, on a permanent or extended basis, in a state predominantly unvegetated with native vegetation; or (b) replacing the native vegetation so removed, on a permanent or extended basis, with residential, commercial, mining, agriculture or other non-agricultural development".

"Disturbance" means:

> "the alteration of the structure and species composition of a native vegetation community through actions including cutting down, felling, thinning, logging, removing or destroying of a native vegetation community".

These concepts are wholly linked to the concept of "native vegetation". "Clearance and conversion" will occur i.e. widening of existing access including provisions of a parking bay (one presumed). "Disturbance" is somewhat more challenging to interpret because the definition requires the "alteration of the structure **and** species composition of a native vegetation community…" [my emphasis] – this is unlikely to be undertaken for the access upgrade.

The application requirements under the Biodiversity Code are stated below:

> E10.5 Application Requirements
>
> E10.5.1
>
> In addition to any other application requirements, the planning authority may require the applicant to provide a natural values determination if considered necessary to determine compliance with acceptable solutions.
>
> E10.5.2
>
> In addition to any other application requirements, the planning authority may require the applicant to provide any of the following information if considered necessary to determine compliance with performance criteria:
>
> (a) a natural values determination;
>
> (b) a natural values assessment;
>
> (c) a report detailing how impacts on priority biodiversity values will be avoided, minimised, and/or mitigated;
>
> (d) a special circumstances justification report;
>
> (e) a biodiversity offsets plan.
>
> A "natural values assessment" (a higher level of assessment than a "natural values determination") is defined as:
>
> "an ecological assessment, generally consistent with the Guidelines for Natural Values Assessment (DPIPWE July 2009), by a suitably qualified person (biodiversity) to identify and convey:

(a) the location of priority biodiversity values affecting the site;

(b) the significance of priority biodiversity values, with particular reference to Table E10.1;

(c) any likely impact on these priority biodiversity values including existing activities on the site, nearby land uses, weeds, pests, pathogens and the degree of connectivity with other land with natural values;

(d) the likely impact of the proposed development or use on these priority biodiversity values;

(e) recommendations for the design and siting of the proposed development or use to avoid or minimise the identified impacts;

(f) recommendations for the mitigation or management of any residual impacts.

The preceding report on the natural values and this review of the provisions of the Biodiversity Code should meet the intent and specifics of a "natural values assessment" under the Biodiversity Code.

There are several exemptions to the Code

E10.4 Development Exempt from this Code

E10.4.1

The following development is exempt from this code:

(j) works within 2 m of existing infrastructure including roads, tracks, footpaths, cycle paths, drains, sewers, pipelines and telecommunications facilities for the maintenance, repair, upgrading or replacement of such infrastructure;

E10.4.1(j) makes specific reference to "existing…tracks…" without specifying whether these are those that have been subject to a planning permit or not. In this case, older maps and LISTmap digital data indicates the presence of the "existing track", which has now been surveyed in. If works are restricted to within 2 m of the edge of this track, in my opinion the only logical interpretation of E10.4.1(j) is that the works would be exempt from the Code. I will review the balance of the Code's provisions, however, on the basis that this may not be the view of the planning authority (it is also noted that even if the works, in part or whole, are exempt from the Biodiversity Code, other provisions (including those under the Environmental Living zone) will apply.

The Development Standards for Buildings and Works have the following objective:

E10.7 Development Standards

E10.7.1 Buildings and Works

Objective:

To ensure that development for buildings and works that involves clearance and conversion or disturbance within a Biodiversity Protection Area does not result in unnecessary or unacceptable loss of priority biodiversity values.

This is a difficult objective to meet in literal terms because it is subjective and terms such as "unnecessary" and "unacceptable" are not defined, particularly in relation to a proposed use that is acceptable (albeit discretionary) under the zoning (i.e. provision of an access to a development site). This objective will be further tested by reference to the Acceptable Solutions and Performance Criteria.

The Acceptable Solution is stated as:

A1

Clearance and conversion or disturbance must be within a Building Area on a plan of subdivision approved under this planning scheme.

To the best of my knowledge, there is no "Building Area on a plan of subdivision approved under this planning scheme" such that A1 cannot be met.

To address the Performance Criteria, it is necessary to categorise the significance of the "priority biodiversity values" present as "low", "moderate" or "high", as the category affects the manner in which the criteria are addressed.

"High priority biodiversity values" are defined as (taken from Table E10.1 with author commentary below each):

> Native vegetation communities listed as threatened under the *Nature Conservation Act 2002*.

The proposed development site does not support a threatened native vegetation community.

> Significant habitat for and/or areas known to contain threatened species listed under the *Threatened Species Protection Act 1995* or the *Environment Protection and Biodiversity Conservation Act 1999* that are:
>
> (a) recognised as endangered or vulnerable; or
>
> (b) largely confined in their total distribution to the municipal area; or
>
> (c) have most of their range within the municipal area.

"Significant habitat" is defined under the *Scheme* as:

> "Native vegetation determined from published literature and/or agreed by the Threatened Species Section (DPIPWE) in consultation with species specialist, and/or endorsed by the Threatened Species Scientific Advisory Committee (TSSAC) as habitat within the range of a threatened or vulnerable flora or fauna species that: (i) is known to be of high priority for the maintenance of breeding populations throughout the species' range; and/or (ii) if converted to non-native vegetation is considered to result in a long term negative impact on breeding populations of the species. It may include areas that do not currently support breeding populations of the species but that need to be maintained to ensure the long-term future of the species".

In relation to threatened flora, the part of the title proposed for development does not support such species, nor significant potential habitat of such species.

In relation to threatened fauna, the proposed development area provides ubiquitous potential habitat for species such as the Tasmanian devil, spotted-tailed quoll, eastern quoll, eastern barred bandicoot, wedge-tailed eagle, masked owl and grey goshawk but the preceding report has demonstrated that it is not reasonable to consider this part of the title as "significant" for these species (else we would also need to start to classify massive parts of the municipality as such because many of these species occupy undisturbed and disturbed habitats, such as pastures, plantations and various other anthropogenic habitats, equally, if not take advantage of such habitats preferentially).

I would usually restrict application of the concept of "significant habitat" to those types of vegetation and/or site features very strongly associated with threatened fauna. If the descriptions of potential habitat of a species such as the swift parrot provided in FPA (2023) are taken literally, I believe that the planning authority will conclude that the whole of the access route supports potential foraging and nesting habitat for the species because of the presence of *Eucalyptus globulus* (potential foraging habitat) and a relatively high density of larger girthed trees (potential nesting habitat). My consideration of potential foraging habitat for the swift parrot was as follows: "the study area is considered to provide some foraging opportunities for the swift parrot, although these are almost certainly likely to be intermittent and opportunistic, simply because of the low density of *Eucalyptus globulus*". My consideration of potential nesting habitat for the swift parrot was as follows: "Potential nesting habitat is limited because of the regrowth structure of the forest

meaning there are limited large trees with large hollows. All larger trees with potential hollows have been mapped and are afforded a status of very high conservation value trees (see **FINDINGS *Other natural values*** Individual trees for more details). The trees in question are 94 (*E. pulchella*, 91 cm DBH, hollows), 95 (dead tree, 123 cm DBH, 20 m tall, hollows), 96 (*E. pulchella*, 101 cm DBH, hollows), 105 (*E. pulchella*, 102 cm DBH, hollows) & 126 (*E. pulchella*, 139 cm DBH, hollows, burnt base). There is no proposal to remove any such trees and current planning authority guidelines require any such trees to be managed according to a recognised standard such that the impact to the Tree Protection Zone is either avoided or minimised. Provided that this management of the high and very high conservation value trees is implemented, in my opinion, the species should not require further consideration". On this basis, and the fact that individual trees that may form part of the concept of potential foraging and/or nesting habitat of the swift parrot are dealt with under moderate priority biodiversity values ("high conservation value trees"), I do not regard the proposed development area as meeting the intent of high priority biodiversity value.

> Native vegetation communities with a distribution on a bioregional basis having contracted to less than 10% of its former area.

There is no notion that WOB or DPU has been so reduced (see also Table 3).

> Native vegetation communities with a total area on a bio-regional basis generally being less than 1,000 ha.

WOB & DPU are two of the most widespread and well-reserved native vegetation communities at a Statewide, bioregional and municipal level with far in excess of 1,000 ha in the Southern Ranges bioregion (Table 3).

Table 2. Spatial extent (and reservation levels) of WOB & DPU at different scales [source: https://nre.tas.gov.au/conservation/development-planning-conservation-assessment/planning-tools/tasmanian-reserve-estate-spatial-layer]

scale	WOB [1]: Area (reservation level)	DPU: Area (reservation level)
Statewide	120,200 ha (44% reserved)	134,400 ha (37% reserved)
Southern Ranges bioregion	37,600 ha (38% reserved)	8,100 ha (23% reserved)
Kingborough	3,700 ha (37% reserved)	6,700 ha (19% reserved)

[1] note that wet forests dominated by *Eucalyptus obliqua* are separated into four TASVEG mapping units – in southern Tasmania, much of the area currently allocated to *Eucalyptus obliqua* wet forest (undifferentiated) (TASVEG code; WOU) can be assigned to WOB – this would probably close to double the estimated area of WOB at the indicated levels

> Remnants occurring on land systems components which have been more than 90% cleared of their native vegetation.

Examination of aerial imagery clearly indicates that the subject title is in no manner a remnant, forming part of an extensive area of forested slopes.

"Moderate priority biodiversity values" are defined as (taken from Table E10.1 with author commentary below each):

> Significant habitat for and/or areas known to contain threatened species listed under the *Threatened Species Protection Act 1995* or the *Environment Protection and Biodiversity Conservation Act 1999* that are:

(a) recognised as rare; and

(b) are not specific to the municipal area.

Of the threatened fauna species identified as potentially present, only the spotted-tailed quoll is listed as "rare" but has a landscape-scale distribution and the site did not support particular habitat elements strongly associated with the species. No species recognised as specific to the municipal area have been identified.

> Potential habitat for threatened species listed under the *Threatened Species Protection Act 1995* or the *Environment Protection and Biodiversity Conservation Act 1999*.

"Potential habitat" is defined under the *Scheme* as:

> "All vegetation types within the potential range of a threatened flora or fauna species that are likely to support that species in the short and/or long term. It may not include habitats known to be occupied intermittently. Potential habitat is determined from published and unpublished scientific literature and/or via expert opinion, is agreed by the Threatened Species Section (DPIPWE) in consultation with species specialist, and/or endorsed by the Threatened Species Scientific Advisory Committee (TSSAC) under the *Threatened Species Protection Act 1995*".

In relation to threatened flora, the proposed development area does support potential habitat (very marginally) but no populations were identified, so this is reasonably regarded as not being applicable.

See comments in preceding section under high priority biodiversity values in regard to threatened fauna species. Because this definition of "potential habitat" now includes the extremely nebulous concept of "…likely to support that species in the short and/or long term", it becomes almost impossible to discount any area of "native vegetation" (however modified), or even many patches of modified land such as pasture, regenerating cleared land, plantations, etc., within the municipality as not being "moderate priority biodiversity value", which is clearly not the intent. The definition does, however, include the concept of "may not include habitats known to be occupied intermittently", which means species such as the Tasmanian devil, spotted-tailed quoll, eastern quoll, eastern barred bandicoot, wedge-tailed eagle, masked owl, grey goshawk, forty-spotted pardalote and swift parrot that may "pass through" (but not permanently occupy) the site would not qualify the site as "moderate priority biodiversity value". Refer also to **FINDINGS *Threatened fauna*** and Appendix D for a more detailed analysis of this.

> Native vegetation communities approaching a reduction in areal extent of 70% within a bioregional context.

There is no notion that WOB or DUP have been so reduced (see also Table 3).

> Other priority species that are not listed but are considered of conservation significance in the municipal area.

"Priority species" are defined under the *Scheme* as:

> "…non-listed taxa identified in the Tasmanian RFA (Commonwealth of Australia and State of Tasmania 1997, as amended) as requiring some of form or protection or further research, non-listed species identified as poorly reserved in Tasmania, type locations and edge-of-range populations".

The site does not support such values. None of the RFA-listed non-listed taxa are present (note that the RFA has essentially been updated such that the list of priority species is now consistent with formally legislated lists). It is recognised that this municipal authority also now recognises *Eucalyptus rubida* (candlebark) as "priority species" due to its highly localised distribution in the municipality. This species is not present within or adjacent to the subject title. Poorly-reserved

species have attempted to be defined and described at various times by DPIPWE (now NRE Tas) but the lists are of limited value because they lack rigour and rely on out-of-date data. This means that "poorly-reserved" taxa are best considered on a case-by-case basis by a suitably qualified person in relation to a specific development proposal and/or site. The site does not include any species that could reasonably be categorised as poorly-reserved. The site does not support any type locations of any taxa. The site does not include any edge-of range populations of any taxa.

High conservation value trees.

The *Scheme* defines a "high conservation value tree" as:

> "a tree that is of a species that is listed in the *Threatened Species Protection Act 1995* or the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and/or provide potential or significant habitat for a threatened species listed in either of those acts".

The *Scheme* defines a "high conservation value tree" to mean "a tree that is of a species that is listed in the *Threatened Species Protection Act 1995* or the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* and/or provide potential or significant habitat for a threatened species listed in either of those acts".

None of the tree species present are listed as threatened on either of the mentioned acts. None provide "potential or significant habitat for a threatened species", except at a very general level (i.e. a species such as the swift parrot may forage in any tree species but is most strongly associated with *Eucalyptus globulus* and *Eucalyptus ovata*).

That is, I do not believe that "high conservation value trees" are present, if the phrasing in Table E10.1 is interpreted literally. However, the usual interpretation of the planning authority of "high conservation value trees" under Table E10.1 is by reference to *Kingborough Biodiversity Offset Policy 6.10, Nov. 2016*. The survey of the trees along the proposed access route indicated that 19 very high and 10 high conservation value trees are present (Table 2, Figure 14). These individual comprise, in my opinion, moderate priority biodiversity values.

"Low priority biodiversity values" are defined as (taken from Table E10.1 with author commentary below each):

All other native vegetation communities.

Applicable to WOB & DPU vegetation types.

On the basis of the above analysis, the site proposed for development is considered to support moderate priority biodiversity values (in the form of high and very high conservation value trees) and low priority biodiversity values (in the form of WOB & DPU vegetation).

The Performance Criteria for moderate priority biodiversity values are stated below, noting that those related to low are also considered:

P1

Clearance and conversion or disturbance must satisfy the following:

(b) if moderate priority biodiversity values:

(i) development is designed and located to minimise impacts, having regard to constraints such as topography or land hazard and the particular requirements of the development;

(ii) impacts resulting from bushfire hazard management measures are minimised as far as reasonably practicable through siting and fire-resistant design of habitable buildings;

(iii) remaining moderate priority biodiversity values on the site are retained and improved through implementation of current best practice mitigation strategies and ongoing management measures designed to protect the integrity of these values;

(iv) residual adverse impacts on moderate priority biodiversity values not able to be avoided or satisfactorily mitigated are offset in accordance with the *Guidelines for the Use of Biodiversity Offsets in the Local Planning Approval Process, Southern Tasmanian Councils Authority 2013* and Kingborough Biodiversity Offset Policy 6.10, November 2016;

To satisfy P1(b)(i) – or P1(a)(i), any application will need to demonstrate how impacts have been minimised. In my opinion, the use of the existing track (which may require minor widening only) partly addresses the intent of this provision. Further, as far as practical, minimising impact (in terms of direct loss but also peripheral impacts to the Tree Protection Zone) to individual trees of high and very high conservation value should further address the intent of this provision.

To satisfy P1(b)(ii) – or P1(a)(ii), any application will need to demonstrate how impacts have been minimised with respect to bushfire hazard management requirements. While this may not be necessary for the proposed development (upgrade of any existing track), indicating that the extent of track widening and provision of passing bays is limited to that required by a bushfire hazard management plan prepared by an accredited bushfire practitioner.

To satisfy P1(b)(iii), the remaining moderate priority biodiversity values need to be "retained and improved" in some manner. Note again, the provision refers to "retained **and** improved" [my emphasis]. The remaining moderate priority biodiversity values would refer to those trees that are not removed. A site plan can indicate how these are to be "retained". An arborist may be able to development management prescriptions to indicate how the trees can be managed to minimise risk of their loss (whether this meets the intent of "…and improved" is open to interpretation.

P1(b)(iv) refers to "residual impacts not able to be avoided or satisfactorily mitigated are offset in accordance with the *Guidelines for the Use of Biodiversity Offsets in the Local Planning Approval Process, Southern Tasmanian Councils Authority 2013* and *Kingborough Biodiversity Offset Policy 6.10, November 2016*". In relation to moderate priority biodiversity values, the residual impact will be the loss of any high and very high conservation value trees, as indicated in a "tree plan" and where "significant justification" has been accepted for their removal.

The hierarchy under the offset policy for offsetting is in-situ protection, ex-situ protection and then alternatives such as financial offsets. The *Biodiversity Offset Policy 6.10* allows a financial offset to be contributed on a per tree basis (at a rate of up to $250/tree for a high conservation value tree and up to $500/tree for a very high conservation value tree).

Recommendations

The recommendations provided below are a summary of those provided in relation to each of the natural values described in the main report. The main text of the report provides the relevant context for the recommendations.

Vegetation types

In general terms, minimising the extent of "clearance and conversion" and/or "disturbance" of native vegetation is recommended, acknowledging constraints imposed by the logical use of the existing track, slope and contemporary bushfire hazard management requirements.

Threatened flora

Not applicable – no threatened flora present.

Threatened fauna

Apart from the generic recommendation to minimise the extent of "clearance and conversion" and/or "disturbance" to native vegetation, it is recommended that, wherever practical (and acknowledging constraints imposed by site features, engineering design standards and contemporary bushfire hazard management requirements), loss of individuals of high and very high conservation value trees is minimised.

Weed and disease management

Any works will provide an opportunity for weed establishment by mobilising soil-stored seed and providing fresh bare ground ideal for seedling establishment. "Starting clean" is good practice (i.e. machinery, vehicle and equipment hygiene prior to entering the site).

Owner-occupation is the most likely practical means of achieving good long-term weed management outcomes through vigilance and control.

Legislative and policy implications

A permit under Section 51 of the Tasmanian *Threatened Species Protection Act 1995* (TSPA) should not be required.

A formal referral to the relevant Commonwealth agency under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) should not be required.

Initial review of the relevant provisions of the Environmental Living zone and the Biodiversity Code of the *Kingborough Interim Planning Scheme 2015* indicates several matters that will require addressing as part of any planning application including:

- an "environmental management plan" with the following minimal inclusions:
    - site plan showing that maximum utility has been made of the existing access;
    - site plan showing extent of native vegetation to be impacted by works (this will involve some calculations/estimates of the area of native vegetation impacted – suggest this be undertaken by measuring the length of the route from where the forest starts and ends = 460 m and assuming a minimum of 2 m clearing each side because the existing track is probably an average of 2 m wide and ca. 4 m is likely to be needed = 460 m x 2 m x 2 m = 1,840 m^2; if 1 passing bay is needed (assume 20 m length x an extra 3 m width = 60 m^2), the total area of impact to native vegetation is estimated at 1,900 m^2);
    - site plan showing location of high and very conservation value trees, including their Tree Root Zones (TPZs) showing which will be retained and removed ("significant" justification will need to be provided for this aspect of management of high and very high conservation value trees);
    - mitigation measures to minimise impacts on high and very conservation value trees (may require input from suitably qualified arborist); and
    - weed and hygiene measures (suggest indicating high pressure washdown for any machinery entering the site during construction).

REFERENCES

Allan, K. & Gartenstein, S. (2010). *Keeping It Clean: A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens.* NRM South, Hobart.

APG (Angiosperm Phylogeny Group) (2016). An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV. *Botanical Journal of the Linnean Society* 181(1): 1–20.

Bryant, S.L. & Jackson, J. (1999). *Tasmania's Threatened Fauna Handbook: What, Where and How to Protect Tasmania's Threatened Animals*. Threatened Species Unit, Parks & Wildlife Service, Hobart.

CofA (Commonwealth of Australia) (2013). *EPBC Act Policy Statement 1.1: Significant Impact Guidelines – Matters of National Environmental Significance*. Commonwealth of Australia, Canberra.

CofA (Commonwealth of Australia) (2023). *Protected Matters Report* for a polygon defining the study area, buffered by 5 km, dated 15 Feb. 2023 – Appendix G.

de Salas, M.F. (Ed.) (2023+). *Flora of Tasmania Online*. Tasmanian Herbarium, Hobart.

de Salas, M.F. & Baker, M.L. (2022). *A Census of the Vascular Plants of Tasmania, including Macquarie Island*. Tasmanian Herbarium, Hobart.

DNRET (Department of Natural Resources and Environment Tasmania) (2023a). ECOtas_218TalbotsRoad for a polygon defining the study area (centred on 514595mE 5238287mN), buffered by 5 km, dated 15 Feb. 2023 – Appendix E.

DNRET (Department of Natural Resources and Environment Tasmania) (2023b). Threatened Native Vegetation Communities List, as per Schedule 3A of the Tasmanian *Nature Conservation Act 2002*. https://nre.tas.gov.au/conservation/threatened-species-and-communities/threatened-native-vegetation-communities.

DPIPWE (Department of Primary Industries, Parks, Water & Environment) (2015). *Weed and Disease Planning and Hygiene Guidelines – Preventing the Spread of Weeds and Diseases in Tasmania*. Department of Primary Industries, Parks, Water & Environment, Hobart.

DPIPWE (Department of Primary Industries, Parks, Water & Environment) (2015). *Guidelines for Natural Values Surveys – Terrestrial Development Proposals*. Department of Primary Industries, Parks, Water & Environment, Hobart.

DPIPWE (Department of Primary Industries, Parks, Water & Environment) (2015). *Biosecurity Factsheet: Myrtle Rust*. Department of Primary Industries, Parks, Water & Environment, Hobart.

FPA (Forest Practices Authority) (2009). *Management of* Phytophthora cinnamomi *in Production Forests. Flora Technical Note No. 8*. Forest Practices Authority, Hobart.

FPA (Forest Practices Authority) (2016). *Habitat Descriptions of Threatened Flora in Tasmania*. Forest Practices Authority, Hobart.

FPA (Forest Practices Authority) (2017). *Threatened Flora Species Survey Notes*. Forest Practices Authority, Hobart.

FPA (Forest Practices Authority) (2023). *Biodiversity Values Database* report, specifically the species' information for grid reference centroid 514595mE 5238287mN (i.e. a point defining the centre of the NVA report), buffered by 5 km and 2 km for threatened fauna and flora records, respectively, hyperlinked species' profiles and predicted range boundary maps, dated 15 Feb. 2023 – Appendix E.

Kitchener, A. & Harris, S. (2013+). *From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation*. Edition 2 (online edition). Department of Primary Industries, Parks, Water & Environment, Hobart.

McNab, A. (2022). *The Guide to Tasmanian Wildlife*. [Second Edition] Forty South Publishing Pty Ltd, Hobart.

NRM South (2017). *A Guide to Environmental and Agricultural Weeds of Southern Tasmania*. NRM South, Hobart.

Rudman, T. (2005). *Interim* Phytophthora cinnamomi *Management Guidelines*. Nature Conservation Report 05/7, Biodiversity Conservation Branch, Department of Primary Industries, Water & Environment, Hobart.

Rudman, T., Tucker, D. & French, D. (2004). *Washdown Procedures for Weed and Disease Control*. Edition 1. Department of Primary Industries, Water & Environment, Hobart.

TSS (Threatened Species Section) (2003+). *Notesheets* and *Listing Statements for* various threatened species. Department of Primary Industries, Parks, Water & Environment, Hobart.

TSSC (Threatened Species Scientific Committee) (2011). *Commonwealth Conservation Advice on* Botaurus poiciloptilus *(Australasian Bittern)*. Department of Sustainability, Environment, Water, Population & Communities. Canberra.

Wapstra, H., Wapstra, A., Wapstra, M. & Gilfedder, L. (2005+, updated online at www.nre.tas.gov.au). *The Little Book of Common Names for Tasmanian Plants*. Department Primary Industries, Parks, Water & Environment, Hobart.

APPENDIX A. Vegetation community structure and composition

The tables below provide information on the structure and composition of the native vegetation mapping units identified from the study area.

***Eucalyptus obliqua* forest with broad-leaf shrubs (TASVEG code: WOB)**
WOB occurs on the moister east- to southeast-facing slopes. On the track, the slopes are mostly quite gentle but these drop off somewhat sharply to the east of the track but are generally still quite gentle above the track to the west. The long period since fire has allowed a shrubby wet sclerophyll understorey to develop, with a typically quite low diversity. Coarse woody debris (especially large logs) is notable for its scarcity. Rock cover is generally low (occasional moss-covered small outcropping rocks). Aerial imagery is only partly indicative of the separation of DPU & WOB. WOB is in good ecological condition, regrowth-structured (post-1967 bushfire) with occasional over-topping "fire survivors". No weeds or symptoms of *Phytophthora cinnamomi* were noted.

Views of WOB on slope

Stratum	**Height (m)** **Cover (%)**	**Species** (underline = dominant, parentheses = sparse; + = present only)
Trees	40-50 m 5-10%	*Eucalyptus obliqua, (Eucalyptus globulus)*
Trees	18-25 m 30-40%	*Eucalyptus obliqua, (Eucalyptus globulus), (Eucalyptus viminalis), (Eucalyptus pulchella), Acacia dealbata*
Tall shrubs	3-10 m 20-30%	*Pomaderris apetala, Bedfordia salicina, Olearia argophylla, Notelaea ligustrina, Exocarpos cupressiformis, Coprosma quadrifida, Notelaea ligustrina*
Low shrubs	0.5-3 m 5-10%	*Pultenaea juniperina, Correa lawrenceana, Olearia viscosa, Epacris impressa, Acacia verticillata, Goodenia ovata, Lomatia tinctoria*
Graminoids	variable	*Lepidosperma elatius, Dianella tasmanica, Gahnia grandis*
Grasses	+	*Microlaena stipoides, Poa tenera*
Ground ferns	<5%	*Pteridium esculentum, Polystichum proliferum*
Herbs	+	*Geranium potentilloides, Pterostylis pedunculata, Hydrocotyle hirta*
Climbers	+	*Billardiera longiflora*

***Eucalyptus pulchella* forest and woodland (TASVEG code: DPU)**

DPU occurs on the ridgeline topography and associated upper slope, well-defined to the west of the track (due to high insolation and rock cover) but less well-defined to the east of the track where it transitions into WOB (due to lower rock cover and higher moisture levels of the more sheltered slopes). The long period since fire has allowed a shrubby understorey to develop, with a higher diversity than the nearby WOB, partly reflective of typical dry forest but also because of the transition between wet and dry forest meaning species from both facies are preset.

Coarse woody debris (especially large logs) is notable for its scarcity. Rock cover is much higher than in WOB, especially east of the track.

Aerial imagery is only partly indicative of the separation of DPU & WOB.

DPU is in good ecological condition, regrowth-structured (post-1967 bushfire) with occasional over-topping "fire survivors". No weeds or symptoms of *Phytophthora cinnamomi* were noted.

Views of DPU on broad ridgeline

Stratum	**Height (m)** **Cover (%)**	**Species** (underline = dominant, parentheses = sparse; + = present only)
Trees	30-40 m 5%	*Eucalyptus pulchella, (Eucalyptus globulus)*
Trees	10-25 m 30-40%	*Eucalyptus pulchella, (Eucalyptus globulus), (Eucalyptus obliqua)*
Tall shrubs	5-12 m <5%	*Exocarpos cupressiformis*
Low shrubs	0.5-4 m 20-30%	*Bursaria spinosa, Bedfordia salicina, Pultenaea juniperina, Correa reflexa, Leptospermum scoparium, Olearia viscosa, Epacris impressa, Veronica formosa, Acacia genistifolia, Acacia verticillata, Exocarpos strictus, Banksia marginata, Leptophylla divaricata, Goodenia ovata*
Graminoids	<5%	*Lepidosperma laterale, Lomandra longifolia, Dianella tasmanica, Gahnia grandis*
Grasses	+	*Microlaena stipoides*
Ground ferns	+	*Pteridium esculentum*
Herbs	+	*Geranium potentilloides, Poranthera microphylla, Acianthus caudatus, Pterostylis* spp.
Climbers	+	*Comesperma volubile, Cassytha pubescens*

APPENDIX B. Vascular plant species recorded from study area

Botanical nomenclature follows *A Census of the Vascular Plants of Tasmania* (de Salas & Baker 2022), with family placement updated to reflect the nomenclatural changes recognised in the *Flora of Tasmania Online* (de Salas 2023+) and APG (2016); common nomenclature follows *The Little Book of Common Names of Tasmanian Plants* (Wapstra et al. 2005+, updated online at www.nre.tas.gov.au).

Table B1. Summary of vascular species recorded from study area

	ORDER			
STATUS	**DICOTYLEDONAE**	**MONOCOTYLEDONAE**	**GYMNOSPERMAE**	**PTERIDOPHYTA**
	37	12	-	2
e	8	1	-	-
i	-	-	-	
Sum	**45**	**13**	**0**	**2**
TOTAL	**60**			

	DICOTYLEDONAE		
	APIACEAE		
	Hydrocotyle hirta	hairy pennywort	+
	ASTERACEAE		
e	*Bedfordia salicina*	tasmanian blanketleaf	+
	Cassinia aculeata subsp. *aculeata*	common dollybush	+
	Lagenophora stipitata	blue bottledaisy	+
	Olearia argophylla	musk daisybush	+
	Olearia stellulata	sawleaf daisybush	+
	Olearia viscosa	viscid daisybush	+
	Ozothamnus ferrugineus	tree everlastingbush	+
	Senecio linearifolius var. *linearifolius*	common fireweed groundsel	+
	DILLENIACEAE		
	Hibbertia appressa	southern guineaflower	+
	ERICACEAE		
	Epacris impressa	common heath	+
e	*Leptecophylla divaricata*	spreading pinkberry	+
	EUPHORBIACEAE		
	Poranthera microphylla	small poranthera	+
	FABACEAE		
	Acacia dealbata subsp. *dealbata*	silver wattle	+
	Acacia genistifolia	spreading wattle	+
	Acacia leprosa var. *graveolens*	varnish wattle	+
	Acacia verticillata subsp. *verticillata*	prickly moses	+
	Pultenaea juniperina	prickly beauty	+
	GERANIACEAE		
	Geranium potentilloides var. *potentilloides*	mountain cranesbill	+
	GOODENIACEAE		
	Goodenia ovata	hop native-primrose	+
	LAURACEAE		
	Cassytha pubescens	downy dodderlaurel	+
	MYRTACEAE		
	Eucalyptus globulus subsp. *globulus*	tasmanian blue gum	+
	Eucalyptus obliqua	stringybark	+
e	*Eucalyptus pulchella*	white peppermint	+
	Eucalyptus viminalis subsp. *viminalis*	white gum	+
	Leptospermum scoparium	common teatree	+
	Melaleuca pallida	yellow bottlebrush	+
	OLEACEAE		
	Notelaea ligustrina	native olive	+
	OXALIDACEAE		
	Oxalis perennans	grassland woodsorrel	+

	PITTOSPORACEAE		
e	*Billardiera longiflora*	purple appleberry	+
	Bursaria spinosa subsp. *spinosa*	prickly box	+
	Pittosporum bicolor	cheesewood	+
	POLYGALACEAE		
	Comesperma volubile	blue lovecreeper	+
	PROTEACEAE		
	Banksia marginata	silver banksia	+
e	*Lomatia tinctoria*	guitarplant	+
	RHAMNACEAE		
	Pomaderris apetala subsp. *apetala*	common dogwood	+
e	*Pomaderris elliptica* var. *diemenica*	tasmanian yellow dogwood	+
	ROSACEAE		
	Acaena novae-zelandiae	common buzzy	+
	RUBIACEAE		
	Coprosma quadrifida	native currant	+
	Galium australe	coast bedstraw	+
	RUTACEAE		
e	*Correa lawrenceana* var. *ferruginea*	rusty correa	+
	Correa reflexa var. *reflexa*	common correa	+
	SANTALACEAE		
	Exocarpos cupressiformis	common native-cherry	+
	Exocarpos strictus	pearly native-cherry	+
	SCROPHULARIACEAE		
e	*Veronica formosa*	common speedwell bush	+
	MONOCOTYLEDONAE		
	AMARYLLIDACEAE		
	Dianella tasmanica	forest flaxlily	+
	ASPARAGACEAE		
	Lomandra longifolia	sagg	+
	CYPERACEAE		
	Gahnia grandis	cutting grass	+
	Lepidosperma elatius	tall swordsedge	+
	Lepidosperma laterale	variable swordsedge	+
	JUNCACEAE		
	Juncus pallidus	pale rush	+
	ORCHIDACEAE		
	Acianthus caudatus	mayfly orchid	+
	Pterostylis pedunculata	maroonhood	+
e	*Pterostylis williamsonii*	brownlip greenhood	+
	POACEAE		
	Agrostis venusta	graceful bent	+
	Microlaena stipoides var. *stipoides*	weeping grass	+
	Poa labillardierei var. *labillardierei*	silver tussockgrass	+
	Poa tenera	scrambling tussockgrass	+
	PTERIDOPHYTA		
	DENNSTAEDTIACEAE		
	Pteridium esculentum subsp. *esculentum*	bracken	+
	DRYOPTERIDACEAE		
	Polystichum proliferum	mother shieldfern	+

APPENDIX C. Analysis of database records of threatened flora

Table C1 provides a listing of threatened flora from within 5,000 m of the study area (nominal buffer width usually used to discuss the potential of a particular study area to support various species listed in databases), with comments on whether potential habitat is present for the species, and possible reasons why a species was not recorded.

Table C1. Threatened flora records from within 5,000 m of boundary of study area

Species listed below are listed as rare (r), vulnerable (v), endangered (e), or extinct (x) on the Tasmanian *Threatened Species Protection Act 1995* (TSPA); vulnerable (VU), endangered (EN), critically endangered (CR) or extinct (EX) on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA). Information below is sourced from DNRET's *Natural Values Atlas* (DNRET 2023a) and other sources where indicated. Habitat descriptions are taken from FPA (2016), FPA (2017) and TSS (2003+), except where otherwise indicated. Species marked with # are listed in CofA (2023).

Scientific name **Common name**	**Status** TSPA EPBCA	**Tasmanian habitat description (and distribution)**	**Comments on study area and database records**
Allocasuarina duncanii conical sheoak	r -	*Allocasuarina duncanii* is strongly associated with dolerite rock plates or shallow soils over dolerite, where it occurs in monotypic stands or in association with *Eucalyptus delegatensis* or *E. coccifera*. Two small sites are on quarzitic sandstone. The species is found from 230-1,000 m elevation with most sites above 500 m.	Potential habitat present. Species not detected (no seasonal constraint on detection and/or identification).
Amphibromus neesii southern swampgrass	r -	*Amphibromus neesii* is found in damp ground around marshes, lagoons, river flats, pools and streams.	Potential habitat absent (wholly atypical of all reported sites).
Caladenia caudata tailed spider-orchid	v VU # only	*Caladenia caudata* has highly variable habitat, which includes the central north: *Eucalyptus obliqua* heathy forest on low undulating hills; the northeast: *E. globulus* grassy/heathy coastal forest, *E. amygdalina* heathy woodland and forest, *Allocasuarina* woodland; and the southeast: *E. amygdalina* forest and woodland on sandstone, coastal *E. viminalis* forest on deep sands. Substrates vary from dolerite to sandstone to granite, with soils ranging from deep windblown sands, sands derived from sandstone and well-developed clay loams developed from dolerite. A high degree of insolation is typical of many sites.	Potential habitat absent (wholly atypical of all reported sites).
Colobanthus curtisiae grassland cupflower	r VU # only	*Colobanthus curtisiae* occurs in lowland grasslands and grassy woodlands but is also prevalent on rocky outcrops and margins of forest on dolerite on the Central Highlands (including disturbed sites such as log landings and snig tracks).	Potential habitat absent (wholly atypical of all reported sites).
Dianella amoena grassland flaxlily	r EN # only	*Dianella amoena* occurs mainly in the northern and southern Midlands, where it grows in native grasslands and grassy woodlands.	Potential habitat absent (wholly atypical of all reported sites).

Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on study area and database records
Diuris palustris swamp doubletail	e -	*Diuris palustris* occurs in coastal areas in grassy open eucalypt forest, sedgy grassland and heathland with *Leptospermum* (teatree) and *Melaleuca* (paperbark) on poorly- to moderately-drained sandy peat and loams, usually in sites that are wet in winter.	Potential habitat absent (wholly atypical of all reported sites).
Epacris virgata twiggy heath	v EN # only	*Epacris virgata* is restricted to a small area of undulating terrain in the foothills of the Dazzler Range near Beaconsfield, where it occurs on serpentinite-derived soils in dry sclerophyll forest at an elevation of 40-80 m a.s.l.	The taxon formally referred to in DNRET (2023a) as *Epacris virgata* Kettering has recently been removed from the *Natural Values Atlas* because all specimens of what was previously referred to as *Epacris virgata* outside the Beaconsfield area have been re-determined as *Epacris tasmanica*, a widespread, well-reserved and non-threatened species (M. de Salas – Tasmanian Herbarium & J. Quarmby – DNRET pers. comm.). On this basis, the study area does not support potential habitat of *Epacris virgata*, which is restricted to soils derived from ultramafic substrates in the Beaconsfield area. Technically, the study area does support potential habitat of the taxon erroneously referred to as "*Epacris virgata* Kettering". Site survey did not result in detection of *Epacris tasmanica* (the correct name for "*Epacris virgata* Kettering").
Lepidium hyssopifolium soft peppercress	e EN # only	The native habitat of *Lepidium hyssopifolium* is the growth suppression zone beneath large trees in grassy woodlands and grasslands (e.g. over-mature black wattles and isolated eucalypts in rough pasture). *Lepidium hyssopifolium* is now found primarily under large exotic trees on roadsides and home yards on farms. It occurs in the eastern part of Tasmania between sea-level to 500 m a.s.l. in dry, warm and fertile areas on flat ground on weakly acid to alkaline soils derived from a range of rock types.	Potential habitat absent (wholly atypical of all reported sites).
Lepidosperma tortuosum twisting rapiersedge	r -	*Lepidosperma tortuosum* occurs in heathland and heathy woodland, in lowland sites, mainly in eastern parts of the State. It often occurs in the sedgier (peatier) parts of dry heathland. It can occur on a range of substrates.	Potential habitat absent (atypical of all recorded sites).
Leucochrysum albicans subsp. *tricolor* grassland paperdaisy	e EN # only	*Leucochrysum albicans* subsp. *tricolor* occurs in the west and on the Central Plateau and the Midlands, mostly on basalt soils in open grassland. This species would have originally occupied *Eucalyptus pauciflora* woodland and tussock grassland, though most of this habitat is now converted to improved pasture or cropland.	Potential habitat absent (wholly atypical of all reported sites).

Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on study area and database records
Poa mollis soft tussockgrass	r -	*Poa mollis* is relatively widespread in the eastern half of the State, in dry sclerophyll forest and woodland (often dominated by *Eucalyptus amygdalina, E. viminalis* or *Allocasuarina verticillata*). Sites are often steep and rocky (e.g. Cataract Gorge).	Potential habitat absent (wholly atypical of all reported sites).
Pomaderris elachophylla small-leaf dogwood	v -	*Pomaderris elachophylla* occurs in a range of forested habitats from shrubby riparian forests along major rivers (e.g. Derwent River) and heathy/shrubby forests in the northeast on granitic soils. It can proliferate on disturbed sites such as firebreaks, tracks and powerline easements.	Potential habitat absent (wholly atypical of all reported sites).
Prasophyllum [syn. *Paraprasophyllum*] *amoenum* dainty leek-orchid	v EN # only	*Prasophyllum amoenum* has been recorded from Snug Tiers and Mt Wellington. At Snug Tiers the species occurs in sedgy buttongrass moorland and heath, and also in openings in eucalypt woodland and scrub on damp stony loam. On Mt Wellington the species is found in and near cushion plants in alpine moorland.	Potential habitat absent (wholly atypical of all reported sites).
Prasophyllum [syn. *Paraprasophyllum*] *apoxychilum* tapered leek-orchid	v EN # only	*Prasophyllum apoxychilum* is restricted to eastern and northeastern Tasmania where it occurs in coastal heathland or grassy and scrubby open eucalypt forest on sandy and clay loams, often among rocks. It occurs at a range of elevations and seems to be strongly associated with dolerite in the east and southeast of its range.	Potential habitat very marginally present in the DPU forest (not within the WOB forest) While the survey was conducted well outside the flowering period of the species (Wapstra 2018), a further timed-targeted survey is not considered warranted because of the statistically low likelihood of occurrence. The species has a naturally disjunct distribution and usually highly localised occurrence, which combined with the site features (marginal habitat only), means that occurrence is highly unlikely. It is also noted that records of this species away from coastal and near-coastal areas and outside heathland or heathy woodland habitats almost certainly refer to the non-threatened *Paraprasophyllum truncatum* (M. Wapstra pers. obs. of records from Randalls Bay and Knocklofty, for example).
Pseudocephalozia paludicola liverwort	- VU # only	*Pseudocephalozia paludicola* occurs on wet ground in subalpine grassland in the west of the State and on its central and eastern mountains. Species of *Pseudocephalozia* mostly occur on permanently damp mineral soil or over peat and are frequently found in moorland and sphagnous areas.	Potential habitat absent (wholly atypical of all reported sites).

Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on study area and database records
Thelymitra inflata inflated sun-orchid	e -	*Thelymitra inflata* is known from only two locations at Leslie Hill and Ridgeway, near Hobart. *Thelymitra inflata* occurs in dry to moist *Eucalyptus* woodlands and open *Eucalyptus* forests, often in disturbed, winter-wet sites on clay loam soils.	Potential habitat absent (wholly atypical of all reported sites).
Westringia angustifolia narrowleaf westringia	r -	*Westringia angustifolia* occurs mainly in mid elevations, always on dolerite (but can be close to dolerite-sediment contact zones), in dry to wet sclerophyll forest on broad ridges, slopes and dense riparian shrubberies.	Potential habitat present. Species not detected (no seasonal constraint on detection and/or identification).
Xerochrysum palustre swamp everlasting	v VU # only	*Xerochrysum palustre* has a scattered distribution with populations in the northeast, east coast, Central Highlands and Midlands, all below about 700 m elevation. It occurs in wetlands, grassy to sedgy wet heathlands and extends to associated heathy *Eucalyptus ovata* woodlands.	Potential habitat absent (wholly atypical of all reported sites).

APPENDIX D. Analysis of database records of threatened fauna

Table D1 provides a listing of threatened fauna from within 5,000 m of the study area (nominal buffer width usually used to discuss the potential of a particular study area to support various species listed in databases), with comments on whether potential habitat is present for the species, and possible reasons why a species was not recorded.

Table D1. Threatened fauna records from 5,000 m of boundary of study area

Species listed below are listed as rare (r), vulnerable (v), endangered (e), or extinct (x) on the Tasmanian *Threatened Species Protection Act 1995* (TSPA); vulnerable (VU), endangered (EN), critically endangered (CR) or extinct (EX) on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA). Information below is sourced from the DNRET's *Natural Values Atlas* (DNRET 2023a), Bryant & Jackson (1999), McNab (2022) and FPA (2023); marine, wholly pelagic and littoral species such as marine mammals, fish and offshore seabirds are excluded. Species marked with # are listed in CofA (2023).

Scientific name **Common name**	**Status** TSPA EPBCA	**Tasmanian habitat description (and distribution)**	**Comments on project area and database records**
Accipiter novaehollandiae grey goshawk	e -	Potential habitat is native forest with mature elements below 600 m altitude, particularly along watercourses. Significant habitat for the grey goshawk may be summarised as areas of wet forest, rainforest and damp forest patches in dry forest, with a relatively closed mature canopy, low stem density, and open understorey in close proximity to foraging habitat and a freshwater body.	Potential habitat present, albeit as relatively homogenous even-aged regrowth (post-1967 bushfire) with only very occasional larger trees. The latter were assessed by binoculars and no nests detected. The species may occasionally utilise the greater study area but development as proposed (i.e. formalising an existing track) should not have a significant impact on the species.
Ammoniropa vigens [syn. *Discocharopa vigens*] ammonite pinwheel snail	e CR # only	Potential habitat is dry and wet eucalypt forests on dolerite in the Hobart lowlands (all below 400 m a.s.l).	Potential habitat considered to be absent as the study area is highly unlike the sites around Hobart. This species should not require further consideration.
Antipodia chaostola tax. *leucophaea* chaostola skipper	e EN #	Potential habitat is dry forest and woodland supporting *Gahnia radula* (usually on sandstone and other sedimentary rock types) or *Gahnia microstachya* (usually on granite-based substrates).	Potential habitat absent, as both species of *Gahnia* are not present.
Apus pacificus fork-tailed swift	- - # only	Seasonal migrant (December through March) with habitat open skies over any habitat, more commonly associated with forested hills and mountains (McNab 2022).	Potential habitat widespread but this is a species that flies at high altitude, very fast and highly mobile, feeding on the wing and virtually never perches (McNab 2022). This species should not require further consideration.
Aquila audax subsp. *fleayi* wedge-tailed eagle	e EN #	Potential nesting habitat is tall eucalypt trees in large tracts (usually more than 10 ha) of eucalypt or mixed forest. Nest trees are usually amongst the largest in a locality. They are generally in sheltered positions on leeward slopes, between the lower and mid sections of a slope and with the top of the tree usually lower than the ground level of	Potential nesting habitat effectively absent because of the even-aged regrowth structure of the forest. No known nests within 1,000 m of subject title (Figure 12b). Surrounding forest of relatively low potential, especially when considered within context of nearby roads, houses and open pasture (Figure 12b).

Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on project area and database records
		the top of the ridge, although in some parts of the State topographic shelter is not always a significant factor (e.g. parts of the northwest and Central Highlands).	The species may occasionally utilise the greater study area but development as proposed (i.e. formalising an existing track) should not have a significant impact on the species.
Botaurus poiciloptilus Australasian bittern	- EN # only	Potential habitat is comprised of wetlands with tall dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water. It favours permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and reeds or cutting grass growing over a muddy or peaty substrate (TSSC 2011).	Potential habitat absent. Wetlands are absent.
Bubulcus coromandus [syn. *B. ibis*, *Ardea ibis*] cattle egret	- - # only	Seasonal migrant (April through October) with habitat agricultural lands, crops, dams, pastures, particularly those with cattle, mudflats and wetlands (McNab 2022).	Potential habitat absent.
Ceyx azureus subsp. *diemenensis* [syn. *Alcedo azurea* subsp. *diemenensis*] Tasmanian azure kingfisher	e EN # only	Potential foraging habitat is primarily freshwater (occasionally estuarine) waterbodies such as large rivers and streams with well-developed overhanging vegetation suitable for perching and water deep enough for dive-feeding. Potential breeding habitat is usually steep banks of large rivers (a breeding site is a hole (burrow) drilled in the bank).	Potential habitat absent. No permanent or ephemeral waterbodies or drainage features present within or adjacent to area proposed for development.
Dasyurus maculatus subsp. *maculatus* spotted-tailed quoll	r VU #	Potential habitat is coastal scrub, riparian areas, rainforest, wet forest, damp forest, dry forest and blackwood swamp forest (mature and regrowth), particularly where structurally complex and steep rocky areas are present, and includes remnant patches in cleared agricultural land.	Potential habitat present. No evidence (e.g. scats) of the species was observed. The part of the title proposed for development has rocky hard soils with limited coarse woody debris, no signs of wombat/rabbit burrows and no rocky outcrops/overhangs (i.e. dens are exceedingly unlikely). The species may occasionally utilise the greater study area but development as proposed (i.e. formalising an existing track) should not have a significant impact on the species.
Dasyurus viverrinus eastern quoll	- EN #	Potential habitat is a variety of habitats including rainforest, heathland, alpine areas and scrub. However, it seems to prefer dry forest/native grassland mosaics which are bounded by agricultural land.	Potential habitat present. See under spotted-tailed quoll.
Gallinago hardwickii Lathams snipe	- - # only	Seasonal migrant that prefers brackish, fresh and saline habitats including lagoons, lakes, marshes, swamps, wet grasslands and paddocks and wetlands with tussockgrasses (McNab 2022).	Potential habitat absent, except in the most general of senses. This species should not require further consideration.
Haliaeetus leucogaster white-bellied sea-eagle	v -	Potential habitat comprises potential nesting habitat and potential foraging habitat. Potential foraging habitat is any large waterbody (including sea coasts,	See under wedge-tailed eagle.

Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on project area and database records
		estuaries, wide rivers, lakes, impoundments and even large farm dams) supporting prey items (fish). Potential nesting habitat is tall eucalypt trees in large tracts (usually more than 10 ha) of eucalypt or mixed forest within 5 km of the coast (nearest coast including shores, bays, inlets and peninsulas), large rivers (class 1), lakes or complexes of large farm dams.	
Hirundapus caudacutus white-throated needletail	- VU #	Seasonal migrant (December through March) with habitat open skies over any habitat, more commonly associated with forested hills and mountains (McNab 2022).	Potential habitat widespread but this is a species that flies at high altitude, very fast and highly mobile, feeding on the wing and virtually never perches (McNab 2022). This species should not require further consideration.
Lathamus discolor swift parrot	e CR #	Potential foraging habitat comprises *E. globulus* or *E. ovata* trees that are old enough to flower. Potential nesting habitat is considered to comprise eucalypt forests that contain hollow-bearing trees.	Potential habitat present, albeit considered marginal. See also **FINDINGS *Threatened fauna*** for more details. See also **FINDINGS *Other natural values*** Individual trees for more details.
Lissotes menalcas Mt Mangana stag beetle	v -	Potential habitat is any eucalypt forest that contains rotting logs (often numerous, and usually greater than about 40 cm diameter at mid-log length) below about 650 m a.s.l. (generally moist habitats that have not been subject to high intensity or frequent fires in about the last 20 years). The species has a patchy distribution within areas of potential habitat. Some rainforest will support the species, although in low densities as the species has an apparent preference for eucalypt logs.	Potential habitat present, albeit considered marginal. See also **FINDINGS *Threatened fauna*** for more details.
Litoria raniformis green and golden frog	v VU #	Potential habitat is permanent and temporary waterbodies, usually with vegetation in or around them, including features such as natural lagoons, permanently or seasonally inundated swamps and wetlands, farm dams, irrigation channels, artificial water-holding sites such as old quarries, slow-flowing stretches of streams and rivers and drainage features.	Potential habitat absent. No permanent or ephemeral waterbodies or drainage features present within or adjacent to area proposed for development.
Myiagra cyanoleuca satin flycatcher	- - # only	Seasonal migrant (November through march) with habitat scrub, wet and dry sclerophyll forests, woodlands and creeklines (McNab 2022).	Potential habitat present. The species may occasionally utilise the greater study area but development as proposed (i.e. formalising an existing track) should not have a significant impact on the species. This species should not require further consideration.

Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on project area and database records
Neophema chrysostoma blue-winged parrot	- VU # only	Seasonal migrant (October through April) with habitat agricultural lands, crops, dams, paddocks, coastal scrub, open grassy woodlands, heathland and saltmarshes (McNab 2022).	See under satin flycatcher.
Pardalotus quadragintus forty-spotted pardalote	e EN #	Potential habitat is any forest and woodland supporting *E. viminalis* where the canopy cover of *E. viminalis* is greater than or equal to 10% or where *E. viminalis* occurs as a localised canopy dominant or co-dominant in patches exceeding 0.25 ha.	Potential habitat absent. *Eucalyptus viminalis* is present but not as indicated (i.e. only as scattered trees). This species should not require further consideration. See also **FINDINGS *Other natural values*** Individual trees for more details.
Perameles gunnii subsp. *gunnii* eastern barred bandicoot	- VU #	Potential habitat is open vegetation types including woodlands and open forests with a grassy understorey, native and exotic grasslands, particularly in landscapes with a mosaic of agricultural land and remnant bushland. Significant habitat is dense tussock grass-sagg-sedge swards, piles of coarse woody debris and denser patches of low shrubs (especially those that are densely branched close to the ground providing shelter) within the core range of the species.	Potential habitat present. The species may occasionally utilise the greater study area but development as proposed (i.e. formalising an existing track) should not have a significant impact on the species. This species should not require further consideration.
Prototroctes maraena Australian grayling	v VU #	Potential habitat is all streams and rivers in their lower to middle reaches. Areas above permanent barriers (e.g. dams, weirs) that prevent fish migration, are not potential habitat.	Potential habitat absent. No permanent or ephemeral waterbodies or drainage features present within or adjacent to area proposed for development.
Pseudemoia pagenstecheri tussock skink	v -	Potential habitat comprises native grasslands dominated by tussock-forming grasses.	Potential habitat absent. Native grassland is absent.
Sarcophilus harrisii Tasmanian devil	e EN #	Potential habitat is all terrestrial native habitats, forestry plantations and pasture. Devils require shelter (e.g. dense vegetation, hollow logs, burrows or caves) and hunting habitat (open understorey mixed with patches of dense vegetation) within their home range (4-27 km^2). Potential denning habitat is areas of burrowable, well-drained soil, log piles or sheltered overhangs such as cliffs, rocky outcrops, knolls, caves and earth banks, free from risk of inundation and with at least one entrance through which a devil could pass.	Potential habitat present. See under spotted-tailed quoll.
Tyto novaehollandiae subsp. *castanops* masked owl	e VU #	Potential habitat is all areas with trees with large hollows (≥15 cm entrance diameter). Remnants and paddock trees (in any dry or wet forest type) in agricultural areas may constitute potential habitat. Significant habitat is native dry forest with trees over 100 cm dbh with large hollows (≥15 cm entrance diameter).	Potential nesting habitat absent from study area, although there are some larger trees with larger hollows adjacent to the study area. The species may occasionally utilise the greater study area but development as proposed (i.e. formalising an existing track) should not have a significant impact on the species.

Scientific name Common name	Status TSPA EPBCA	Tasmanian habitat description (and distribution)	Comments on project area and database records
			This species should not require further consideration. See also **FINDINGS *Other natural values*** Individual trees for more details.

APPENDIX E. DNRET's *Natural Values Atlas* report for study area

Appended as pdf file.

APPENDIX F. Forest Practices Authority's *Biodiversity Values Atlas* report for study area

Appended as pdf file.

APPENDIX G. CofA's *Protected Matters* report for study area

Appended as pdf file.

ATTACHMENTS

- .shp file of revised vegetation mapping
- .shp file of surveyed trees