



30 Holland Court,
Howrah
Rezoning and Subdivision

Natural Values Assessment

06 January 2023

For JMG
JMG026

A faint, light green background illustration. On the left, there is a sketch of a plant with long, thin leaves and two small flowers. To the right of the plant is a large, light green oval shape, similar to the one in the logo, which contains a circular emblem with a Tasmanian tiger. Below the oval is a dark green circle, also containing a Tasmanian tiger emblem.

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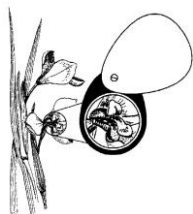
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Address	30 Holland Court, Howrah, TAS 7018
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Tasmanian Planning Scheme	
Rezoning	8 General Residential
Current Zone	27 Community Purpose
Applicable Overlays	Priority Vegetation Area Relevant Code – Natural Assets
	Bushfire Prone Area Relevant Code – Bushfire E1
	Flood-prone Area Relevant Code – Flood-prone Hazard Areas Code
	Landslip Hazard Area - low Relevant Code – Landslip Hazard Code
Proposal	Subdivision to 8 lots, 2 parcels of public open space and road (extension to Holland Court)
Threatened flora	Cut leaf New Holland daisy – <i>Vittadinia muelleri</i> – Lot 1 <i>Rare Threatened Species Protection Act 1995</i>
Impact	<i>V. muelleri</i> - approx 20 plants (Lot 1)
Threatened fauna and habitat	9 x <i>Eucalyptus ovata</i> - black gums > 40cm DBH Foraging habitat for swift parrot
Impact	Lot 1 – 2 trees
Threatened vegetation	<i>E. ovata</i> dry forest (DOV) – 1111 sqm (0.1 ha) <i>Threatened Nature Conservation Act 2002</i>
Impact	Lot 1 – 675 sqm Lot 2 – 20 sqm Road – 20 sqm POS – 400 sqm
Native vegetation	<i>E. viminalis</i> dry forest (DVG) – 5140sqm
Impact	Lots 3-8 & Road – 495 sqm POS – 200 sqm

Natural Assets Code E27	<p>The Priority Vegetation Area extends over parts of Lots 3-7 and marginally in Lot 8. It does not include threatened vegetation, threatened fauna habitat or threatened flora all of which occur outside the PVA.</p> <p>Conforms to P1.1 (c) Subdivision in General Residential Zone.</p> <p>Partially conforms to P1.2 with adequate controls</p>
EPBC Act	No significant impact to MNES
TSP Act	A permit to take required for <i>Vittadinia muelleri</i>
NCA Act	No permit to take product of wildlife required
Weed Management Act	<p>Declared weeds present in project area including:</p> <p>Zone A</p> <ul style="list-style-type: none"> • Patersons curse - A significant infestation in Lots 5-7 • White weed - Lot 1 <p>Zone B –</p> <ul style="list-style-type: none"> • Blackberry • Boneseed • Slender thistle • African boxthorn

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1 INTRODUCTION

1.1 Background

30 Holland Court is zoned as Community Purpose (Zone 27) under the Tasmanian Planning Scheme. The proponents propose to rezone the land to General Residential (Zone 8) to allow a subdivision of part of the land to form seven new residential lots, Public Open Space, Road Reserve as an extension to Holland Court and the balance that would retain the existing Church of Christ building. (Figure 1)

This report provides ecological assessment of the property and considers implications for the Natural Assets Code of the Tasmanian Planning Scheme to inform the appropriateness of the proposal.

1.2 Study area

The study area is in Howrah in south-eastern Tasmania (Figure 2). It is in the Tasmanian South East bioregion¹ in the Clarence City Council and is approximately 1.52ha in extent. The site is currently zoned as Community Purpose and is subject to the Natural Assets Code (E27) under the Tasmanian Planning Scheme.

The site is at 50-70 m above sea level and is located on the lower slopes of an unnamed drainage line immediately south of Rokeby Road.

Approximately a third of the site is developed with a church, car park and managed lawn. There are also the remnants of an abandoned vegetable garden.

There are remnants of native vegetation, albeit in a modified and degraded state which are connected by a narrow sliver of bushland to extensive native forested areas on the upper slopes of Rokeby Hills to the south.

The geology is Permian siltstone and sandstone to the north, with Jurassic dolerite to the south.

¹ IBRA 7 (2012)

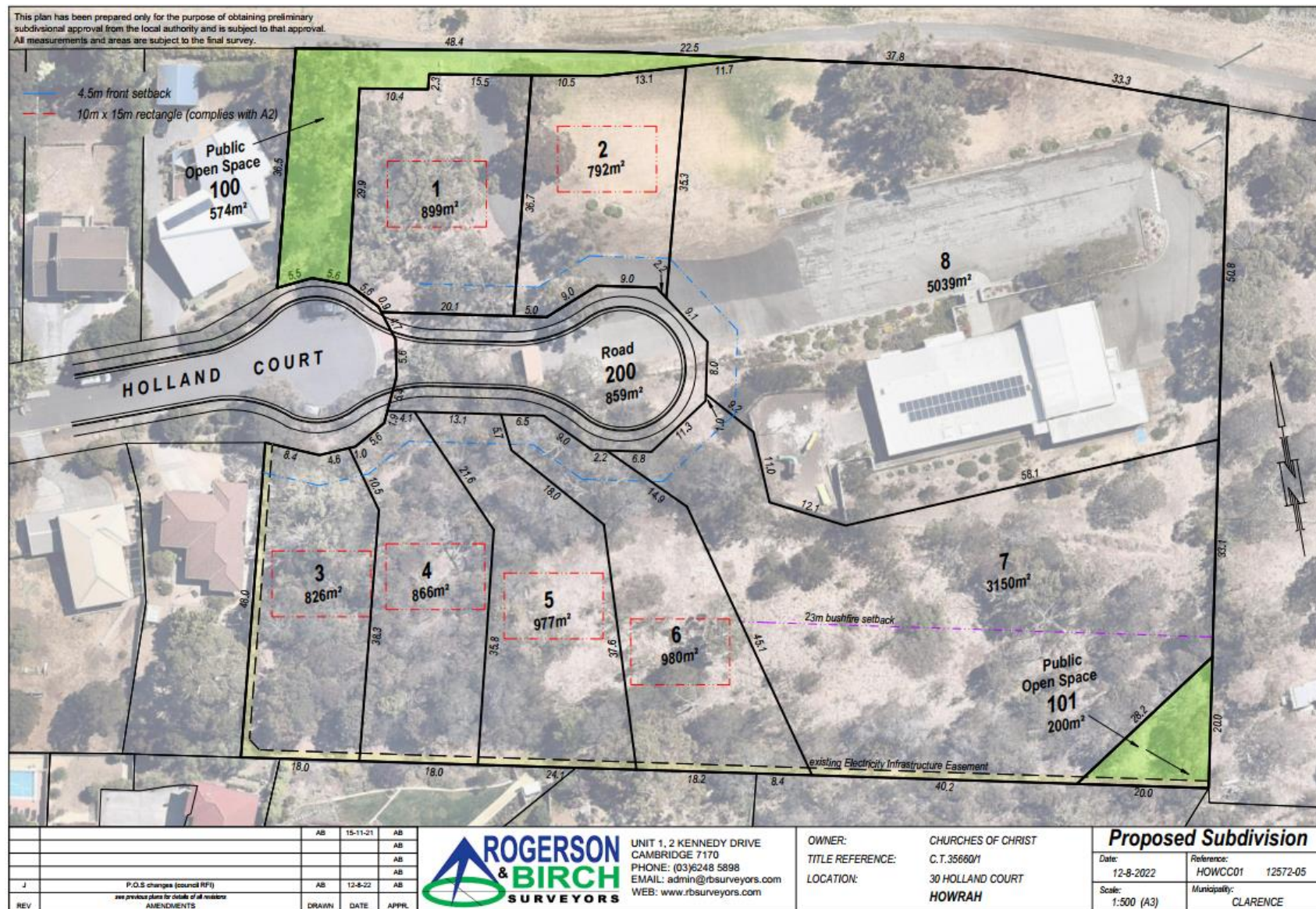


Figure 1: 30 Holland Court subdivision proposal

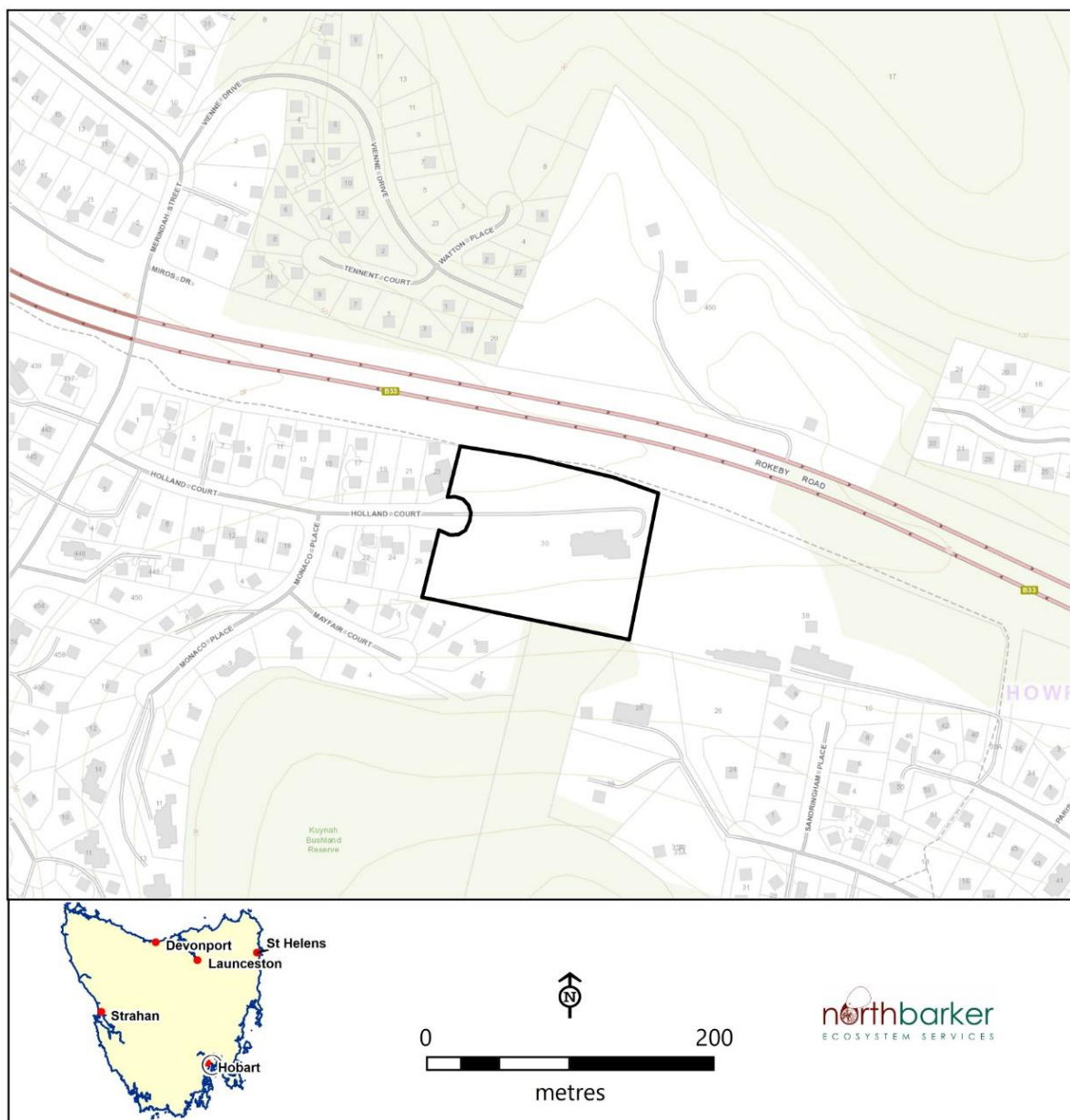


Figure 2: 30 Holland Court Location

2 METHODS

The following sources were used for biological records for the region:

- TASVEG version 4.0 digital layer²,
- Natural Values Atlas (NVA) - all threatened species records within 5 km of the study area and threatened fauna considered possible to occur in suitable habitat³,
- EPBCA Matters of National Environmental Significance database - a 5 km buffer was used to search for potential values⁴.

² DPIPWE (2020)

³ DPIPWE Natural Values Atlas Report (2020) report #: nvr_3_29-Jan-2020

⁴ Commonwealth of Australia, EPBC Protected Matters Search Tool Report (2020) report #: PMST_L297YT

2.1 Botanical Survey

This assessment was undertaken in accordance with the 'Guidelines for Natural Values Surveys – Terrestrial Development Proposals'⁵. The survey was conducted over 2 visits in May 2020.

Native vegetation is mapped in accordance with units defined in TASVEG 4⁶. Vascular plants were recorded in accordance with the current census of Tasmanian plants⁷. The site was mapped using a meandering area search technique⁸. Particular attention was given to habitats suitable for threatened species under the Tasmanian *Threatened Species Protection Act 1995* (TSPA) and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA), and to 'declared' weeds under the Tasmanian *Weed Management Act 1999* (WMA)⁹.

2.2 Fauna survey

The survey was carried out in accordance with DPIPWE's 'Guidelines for Natural Values Surveys – Terrestrial Development Proposals'¹⁰.

The study area was searched for the potential presence, habitat, and sign (e.g. scats, tracks, nests), threatened fauna concurrently with the botanical survey.

2.3 Limitations

Due to various limitations (e.g. variations in species presence and detectability), no biological survey can guarantee that all species will be recorded during a single visit. The field survey was undertaken in summer, so seasonal and ephemeral species/habitat may have been overlooked or are seasonally absent, including summer flowering species or winter ponds. However, we are confident the surveys sufficiently captured community level diversity. We compensate for survey limitations in part by considering all listed threatened species from data from the Tasmanian *Natural Values Atlas* (NVA) and Commonwealth's *EPBCA Protected Matters Search Tool* (MNES)¹¹. These data include records of all threatened species known to occur, or with the potential to occur, up to 5 km from the study area.

3 RESULTS - BIOLOGICAL VALUES

A full inventory of all vascular plant species recorded on site is included in Appendix A.

A total of 73 species were recorded including (39 native and 34 introduced).

3.1 Vegetation communities

TASVEGv4.0 identifies the vast majority of the site as non-native (FUR – Urban Areas) with *E. viminalis* grassy forest (DVG) just extending across the southern boundary.

Our assessment has identified a much more extensive area of DVG plus a small patch of *E. ovata* forest (DOV) (Figure 3).

DOV is listed as a threatened community under the Tasmanian *Nature Conservation Act 2002*.

The northern portion of the site supporting DOV has been maintained in a low fuel state (Plate 1). It retains the canopy but has a cleared understorey. The ground surface is predominantly

⁵ DPIPWE (2015)

⁶ Kitchener and Harris (2013)

⁷ de Salas and Baker (2019)

⁸ Goff *et al.* (1982)

⁹ Tasmanian State Government 1995; Commonwealth of Australia 1999; Tasmanian State Government 1999

¹⁰ DPIPWE (2015)

¹¹ DPIPWE Natural Values Atlas Report (2021) report #: nvr_2_9-March-2021

made up of grasses, native and exotic, with various prostrate native herbs persisting in the layer.

The southern DVG includes a denser secondary shrub layer and understorey although the latter is generally sparse due to shading from the shrubs, notably black wattle *Acacia mearnsii*, drooping sheoak *Allocasuarina verticillata* and hop bush *Dodonaea viscosa*. It also includes a range of native sedges, grasses and herbs.



Plate 1: POS - *Eucalyptus ovata* forest and swift parrot foraging habitat



Plate 2: Understorey of *E. viminalis* forest DVG - Lot 3



Plate 3: Cleared land with remnant *E. viminalis* – Lots 5 & 6

3.2 Threatened Plants

One species of threatened flora listed on the Tasmanian *Threatened Species Protection Act 1995* are present (Figure 3).

- Cut leaf new holland daisy *Vittadinia muelleri*

20 small plants are scattered over a small area close to the turning circle of the cul-de-sac. These are predominantly in Lot 1 although a small number may extend into the adjacent POS.

Vittadinia muelleri is not uncommon in Clarence. There are records of 15 separate observations within 500m of the study area and 158 within 5km. Some of these include very large numbers of plants measured in the thousands. The population at this site is not significant when considered in that context.

Twelve other species of threatened flora have been recorded within 500 m and over 40 within 5 km. These are reviewed in Appendix B. Of these all but nine are considered to have no likelihood of occurrence, due to habitat requirements being absent from site. Of those with low potential to occur the likelihood of their being overlooked or the site providing significant habitat for these species is extremely remote.

3.3 Threatened Fauna Habitat

There are nine black gums (*Eucalyptus ovata*) with trunk diameters (DBH) greater than 40 cm with the largest trees occurring in the large balance lot with DBH of 60 cm.

These provide a potential foraging resource for the endangered nectivorous swift parrot (*Lathamus discolor*). There are no trees supporting hollows likely to be utilised by this species for nesting.

Sixteen other species of threatened fauna have been recorded within 500 m and over 50 within 5 km. These are reviewed in Appendix C. Of these most are considered to have no likelihood of occurrence, due to habitat requirements being absent from site. Of those with low potential to occur the likelihood of their being overlooked or the site providing significant habitat for these species is extremely remote.

One other species is considered to have a moderate likelihood of occurrence. The eastern barred bandicoot *Perameles gunnii* favours the mixed complex of open grassy areas for foraging with vegetated shelter.

The eastern barred bandicoot is not listed under State legislation (TSPA). Its inclusion on the EPBC listing is due to its extreme rarity on mainland Australia where it has suffered predation to European foxes. Bandicoots are not uncommon in urban bushlands around Greater Hobart. Animals may stray onto the property and may also utilise cover in the upper slopes.

There are just two records from within 500 m, the last in 1985. The impact to this species resulting from the proposed subdivision is not significant.



Plate 4: Threatened flora *Vittadinia muelleri* on Lot 1

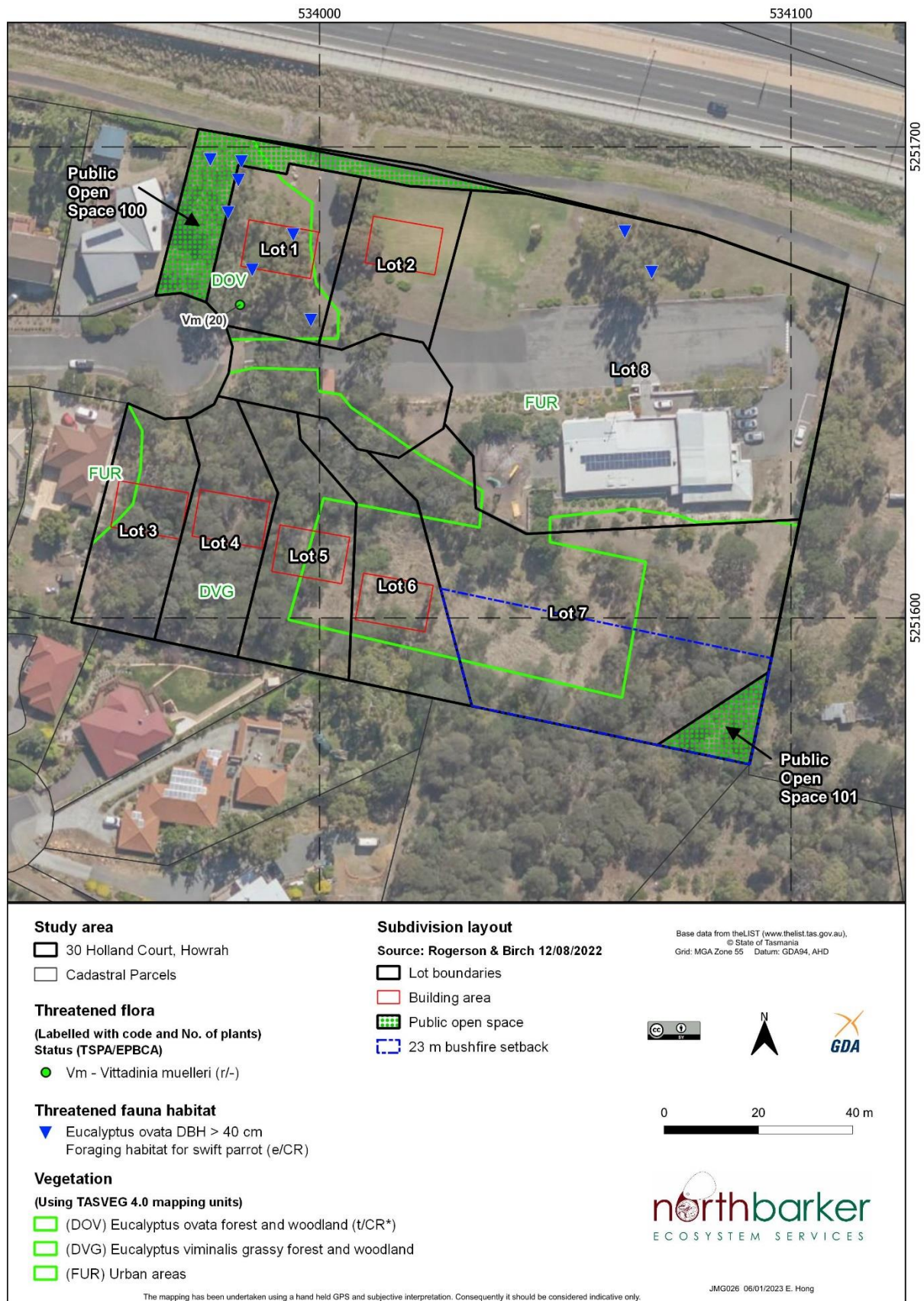


Figure 3: Natural Values

3.4 Declared weeds

Six species of declared weeds listed under the Tasmanian Weed management Act 1999 were recorded (Figure 4).

- African boxthorn *Lycium ferocissimum*

Occasional plant in edge of cleared land in DVG.

- Boneseed *Chrysanthemoides monilifera*

Scattered in bushland site. Most plants are seedlings and young plants. There is likely to be a significant seed bank in disturbed sections.

- Blackberry *Rubus fruticosus* agg.

Several dense patches throughout

- Slender thistle *Carduus pycnocephalus*

Seedlings in disturbed areas in DVG including one extensive patch.

- Patersons curse *Echium plantagineum*

One very dense infestation in old garden area surrounded by DVG. This is the most significant weed infestation on site.

- White weed *Lepidium draba*

Localised to grassland in POS.

The statutory weed management plans for these species identify Clarence as Zone A for Patersons curse and white weed for which the principal management objective is 'eradication'. It is listed as a Zone B for all others where the objective is 'control'.



Plate 5: Zone A weed: Paterson curse plant



Plate 6: Zone A weed: Paterson curse infestation Lots 6 & 7



Plate 7: Zone A weed : white weed *Lepidium draba* POS



Plate 8: Zone B weed blackberry *Rubus fruticosus* agg.



Plate 9: Zone B weed slender thistle *Carduus pycnocephalus*



Plate 10: Zone B weed: boneseed *Chrysanthemoides monilifera*

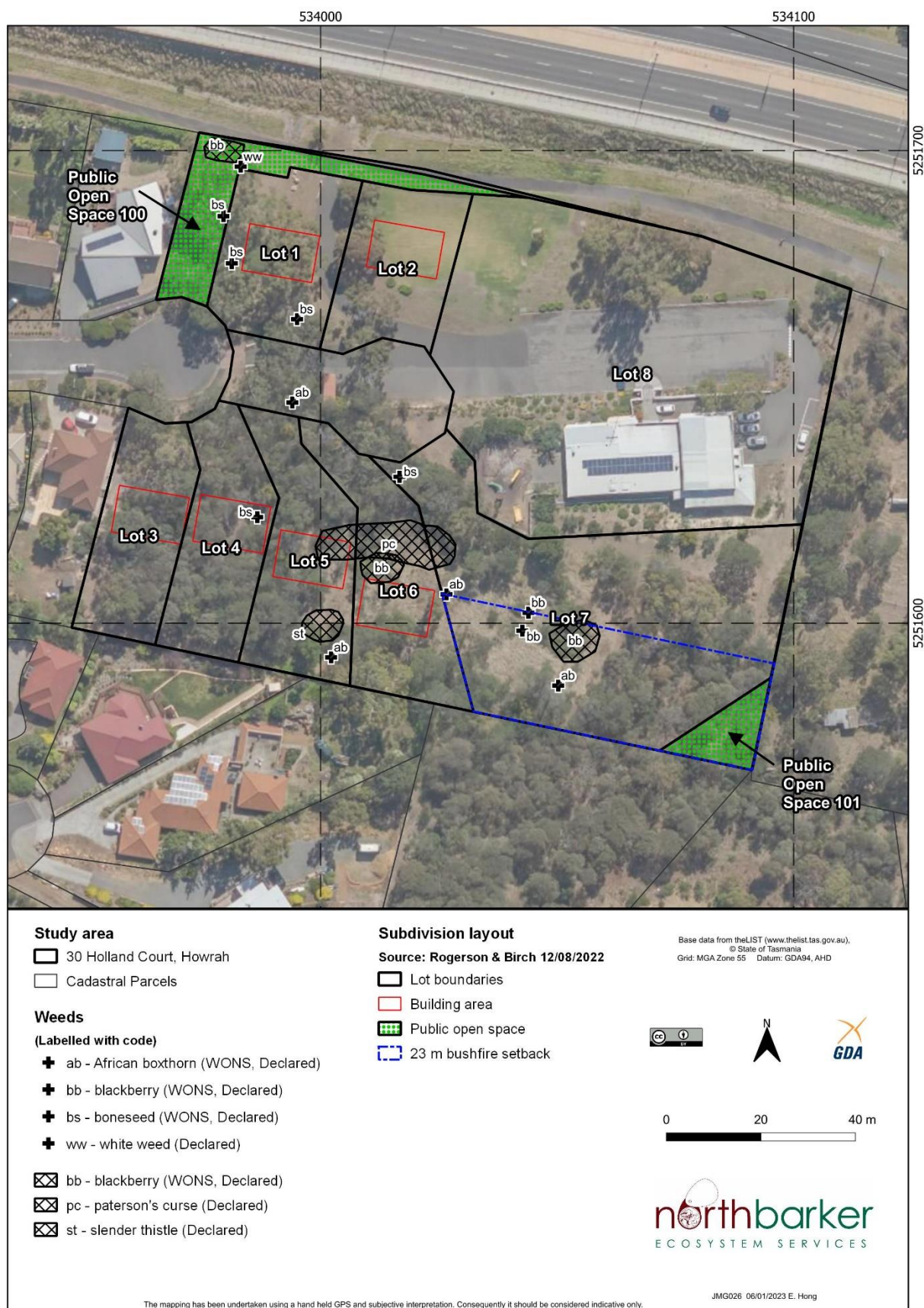


Figure 4: Weeds

4 IMPACT ASSESSMENT and MITIGATION

It is anticipated that the proposal will result in the loss of several habitat trees in Lot 1, although there may be opportunity to retain the trees close or on the boundary of the POS. Such an outcome is evident from the retention of occasional trees on residential lots to the west.

Limited potential for retention of vegetation is likely elsewhere other than large trees on Lot 8.

4.1 Vegetation communities

The high priority vegetation community *Eucalyptus ovata* forest (DOV) is confined to a small patch centred around Lot 1 and adjoining POS. This is highly modified through mowing of understorey but could potentially be retained in the POS.

The vegetation community in Lots 3-7 is not a priority vegetation. The *E. viminalis* grassy forest (DVG) is generally in moderate to poor condition. The central part of it was cleared and established as a vegetable garden resulting in the introduction of weeds that have spread into the surrounding bushland.

4.2 Threatened plants

One threatened plant species is present on Lot 1 where a localised patch of 20 or so plants of cut leaf new holland daisy (*Vittadinia muelleri*) were recorded. It should be expected that the persistence of these plants is very unlikely with anticipated intensification of use following the establishment of a residence and likely gardens.

4.3 Threatened fauna habitat

Black gums (*Eucalyptus ovata*) provide a potential foraging resource for the endangered swift parrot. There are seven *E. ovata* clustered in and around Lot 1. At least three are within the Lot are likely to be lost. One is in POS and three are on the boundary. These could be retained and ideally would be within the POS. The locations of these trees would need to be more accurately surveyed to determine which side of the boundary they occur. Two additional trees occur in the Balance (Lot 8) that need not be impacted.

4.4 Mitigation

There are limited opportunities to apply mitigation measures. Any trees within the POS can be retained subject to Council compliance. Controls could be placed through permit conditions or Part 5 Agreement to require retention of select habitat trees on Lots 1 and 8.

Any development approval would benefit from a weed management plan that:

- Treats all occurrences of declared weeds prior to works.
- Ensures best practice construction hygiene is practiced to prevent the spread of weed propagules in contaminated soil. This should involve cleaning all machinery before leaving the works area, as well as not bringing dirty machinery into the site.
- Follows up weed control implemented 6-12 months after works to treat any individuals that have colonised/recolonised the area.
- Includes provision to eradicate the Paterson's curse from Lots 5-7.

5 LEGISLATIVE REQUIREMENTS

5.1 Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The EPBCA is structured for self-assessment; the proponent must determine whether or not the project is likely to have a significant impact on a matter of national environmental significance (MNES) such as a listed threatened species or community. If this is likely then the Department

of Environment and Energy may consider the proposed activity is a 'controlled action' which would require approval from the Commonwealth Minister.

Habitat for one MNES - the critically endangered swift parrot will be impacted should any *E. ovata* trees be removed as is expected. However, the scale of loss is not likely to constitute a significant impact.

5.2 Tasmanian Threatened Species Protection Act 1995

A permit to take plants of the cut-leaf New Holland daisy (*Vittadinia muelleri*) from Lot 1 will be required. Considering the proximity to Holland Court there is potential risk of impact during civil works so the permit should be sought prior to the commencement of these activities.

5.3 Tasmanian Nature Conservation Act 2002

Threatened vegetation communities are listed under Schedule 3A on the NCA.

E. ovata forest (DOV) is listed as a threatened community.

The NCA does not regulate impacts to these communities but informs relevant criteria in the Natural Assets Code of the Tasmanian Planning Scheme (refer 5.5).

5.4 Tasmanian Weed Management Act 1999

Clarence is a Zone B municipality for four of the species of declared weed observed on site (blackberry, African boxthorn, slender thistle and boneseed). According to the provisions of the *Weed Management Act 1999*, Zone B municipalities are those which host widespread infestations where control and prevention of spread is the principle aim.

Clarence is Zone A for patersons curse and white weed for which the principle aim is eradication.

The *Clarence Weed Management Strategy*¹² provides a process and set of priorities for managing weeds throughout Clarence. This reflects the management priorities of the Weed Management Act. The Strategic Management objective 4 specifically relates to "strengthening assessment of weeds under the planning scheme" whereby permit conditions include measures to fund and implement weed management in alignment with the priorities of the Strategy.

¹² Clarence City Council 2016

5.5 Tasmanian Planning Scheme

The proposed rezoning has significant implications for the regulation of priority vegetation. Under the Tasmanian Planning Scheme the Natural Assets Code applies within the Community Purpose Zone for development. However for the General Residential Zone it only applies for subdivision (C7.2(c)xii).

It is therefore important to appreciate that the implications for future development need to be considered at the subdivision stage.

The application of the Natural Assets Code is severely constrained for 30 Holland Court by way that the priority vegetation overlay only covers small proportion of the property (Figure 4) completely missing the three types of priority vegetation that occur on the property.

A literal interpretation of the Natural Assets Code would therefore mean it does not apply to impacts to priority vegetation on the property thus failing to meet the Code Purpose. Considering the application is for a rezoning there would be good sense in having the overlay amended to capture all of the property to ensure it responds appropriately to the priority vegetation (threatened vegetation, threatened fauna habitat and threatened flora) that is present.

The following consideration of the Development Standards for Subdivision(C7.7) is based on the assumption that it is all within a priority vegetation area.

Natural C7.7.2 - Subdivision within a priority vegetation area

A1 – The Acceptable Solution - None of the criteria apply

P1.1 – Following rezoning to General residential clause (c) is met.

P1.2 Works association with subdivision within a priority vegetation area must minimise adverse impacts on priority vegetation, having regard to all of the following:

(a) the design and location of any works, future development likely to be facilitated by the subdivision, and any constraints such as topography or land hazards.

(b) any particular requirements for the works and future development likely to be facilitated by the subdivision;

(c) the need to minimise impacts resulting from bushfire hazard management measures through siting and fire-resistant design of any future habitable buildings;

Adverse impact to threatened vegetation (DOV) is partly minimised through provision of POS100 which captures xx sq m representing xx %. The greatest loss of threatened vegetation is a result of Lot 1

Adverse Impact to threatened flora is not minimised with a very likely loss of *V. muelleri* which is located within Lt 1 and possibly the road extension. NB the population is barely viable at this site.

Adverse impact to Threatened fauna habitat (black gums) is partially minimised by capturing at least 2 trees in POS.

To further minimise adverse impacts the POS100 would need to be extended into much of Lot 1.

(d) any mitigation measures implemented to minimise the residual impacts on priority vegetation;

Mitigation could be achieved through controls to retain *E. ovata* trees in Lot 1 on POS/Lot 1 boundary and on Lot 8.

Weed management across the site will reduce risk of weed spread associated with intensification of activities on site but also reduce the threat weed pose of retained vegetation on site and also to vegetation on adjoining reserve to the south.

(e) any on-site biodiversity offsets.

Opportunities for biodiversity offsets on site are limited. Some limited on-site biodiversity offset could be achieved through the establishment of strict management controls that would ensure any priority vegetation within the POS is managed and protected.

(f) any existing cleared areas on the site.

The consideration of this clause is really only applicable when dealing with large lots where building envelopes could be located in areas already cleared allowing the retention of priority vegetation within the surrounding land. This is not applicable at the scale of lot sizes created by the subdivision.

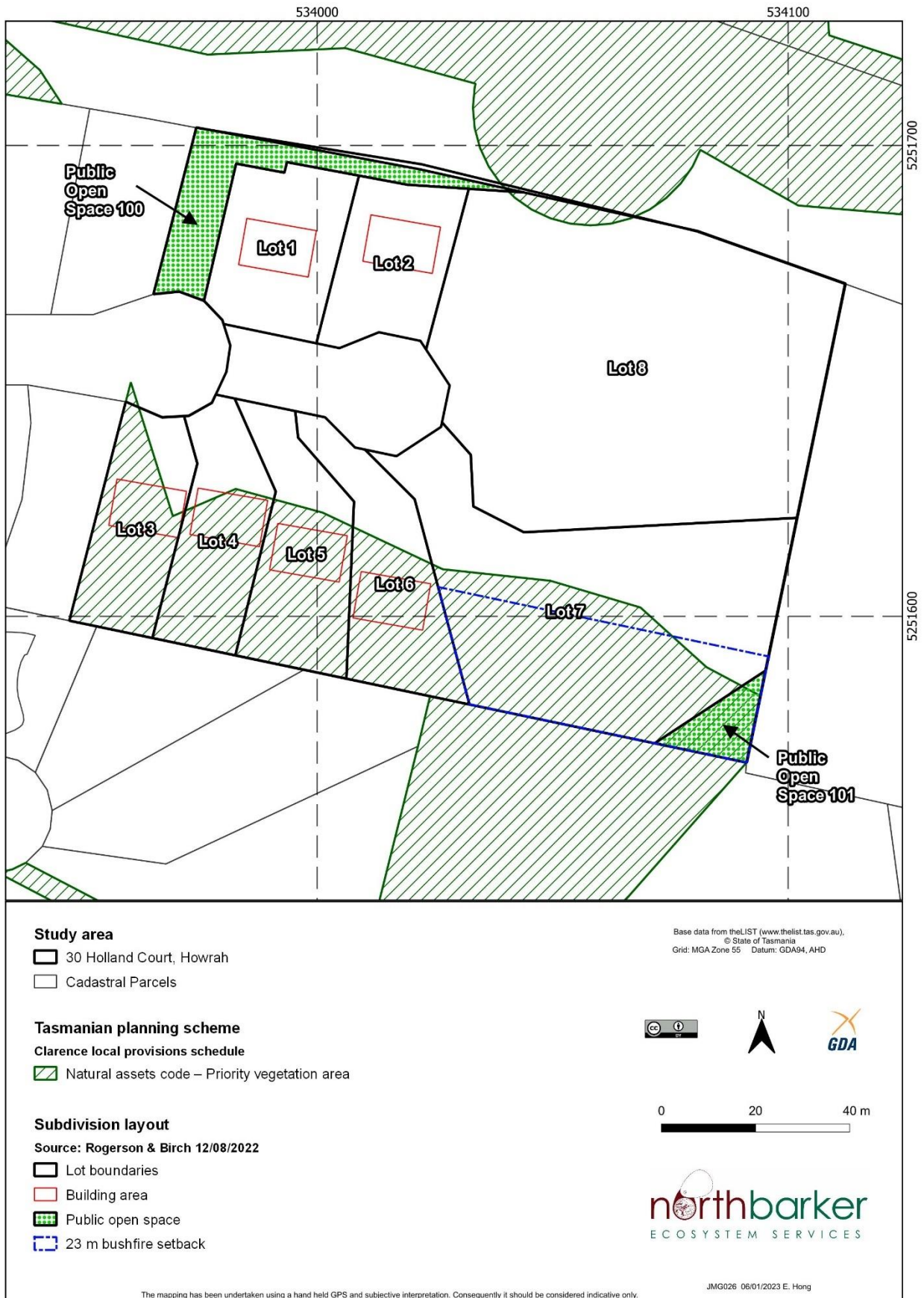


Figure 5: Priority Vegetation

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Appendix A: Vascular Plant Species List

30 Holland Court, Howrah

Status codes:

ORIGIN

i - introduced

d - declared weed WM Act

en - endemic to Tasmania

t - within Australia, occurs only in Tas.

NATIONAL SCHEDULE

EPBC Act 1999

CR - critically endangered

EN - endangered

VU - vulnerable

STATE SCHEDULE

TSP Act 1995

e - endangered

v - vulnerable

r - rare

Sites:

1 DVG - E. viminalis dry forest - E533990, N5251620

2 DOV Eucalyptus ovata dry forest - E533980, N5251680

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Site	Name	Common name	Status
DICOTYLEDONAE			
AIZOACEAE			
1	<i>Carpobrotus rossii</i>	native pigface	
1	<i>Mesembryanthemum cordifolium</i> <i>cordifolium</i>	heartleaf iceplant	i
ASTERACEAE			
1	<i>Carduus pycnocephalus</i>	slender thistle	d
2	<i>Cassinia aculeata</i> subsp. <i>aculeata</i>	dollybush	
2	<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	boneseed	d
2	<i>Chrysocephalum apiculatum</i>	common everlasting	
1	<i>Cirsium vulgare</i>	spear thistle	i
1 2	<i>Cotula australis</i>	southern buttons	
1 2	<i>Dimorphotheca fruticosa</i>	trailing daisy	i
1	<i>Leontodon saxatilis</i>	hairy hawkbit	i
2	<i>Senecio glomeratus</i>	shortfruit purple fireweed	
1	<i>Silybum marianum</i>	variegated thistle	i
1	<i>Sonchus asper</i>	prickly sowthistle	i
2	<i>Sonchus oleraceus</i>	common sowthistle	i
2	<i>Taraxacum officinale</i>	common dandelion	i
2	<i>Vittadinia muelleri</i>	narrowleaf new-holland-daisy	r
BORAGINACEAE			
1 2	<i>Cynoglossum suaveolens</i>	sweet houndstongue	
1	<i>Echium plantagineum</i>	patersons curse	d
BRASSICACEAE			
1	<i>Hirschfeldia incana</i>	hoary mustard	i
1	<i>Lepidium didymum</i>	lesser swinecress	i
2	<i>Lepidium draba</i>	hoary cress	d
2	<i>Lepidium pseudotasmanicum</i>	shade peppergrass	
CARYOPHYLLACEAE			
1	<i>Polycarpon tetraphyllum</i>	fourleaf allseed	i
1	<i>Stellaria media</i>	garden chickweed	i
CASUARINACEAE			
1 2	<i>Allocasuarina verticillata</i>	drooping sheoak	
CHENOPODIACEAE			
1 2	<i>Einadia nutans</i> subsp. <i>nutans</i>	climbing saltbush	
CRASSULACEAE			
1	<i>Crassula</i> sp.		i
ERICACEAE			
2	<i>Astroloma humifusum</i>	native cranberry	
1	<i>Lissanthe strigosa</i> subsp. <i>subulata</i>	peachberry heath	

EUPHORBIACEAE			
1	<i>Euphorbia peplus</i>	petty spurge	i
FABACEAE			
2	<i>Acacia howittii</i>	howitt's wattle	i
1 2	<i>Acacia mearnsii</i>	black wattle	
2	<i>Pultenaea pedunculata</i>	matted bushpea	
1	<i>Vicia tetrasperma</i>	smooth vetch	i
FUMARIACEAE			
1	<i>Fumaria sp.</i>	fumitory	i
GERANIACEAE			
1	<i>Erodium cicutarium</i>	common heronsbill	i
HEMEROCALLIDACEAE			
1 2	<i>Dianella revoluta</i>	spreading flaxlily	
LINACEAE			
2	<i>Linum marginale</i>	native flax	
MALVACEAE			
1	<i>Malva sp.</i>	mallow	i
MYRTACEAE			
1	<i>Eucalyptus amygdalina</i>	black peppermint	en
1 2	<i>Eucalyptus ovata var. ovata</i>	black gum	
1	<i>Eucalyptus viminalis subsp. viminalis</i>	white gum	
OXALIDACEAE			
1	<i>Oxalis perennans</i>	grassland woodsorrel	
PITTOSPORACEAE			
1	<i>Billardiera heterophylla</i>	bluebell creeper	i
1	<i>Bursaria spinosa subsp. spinosa</i>	prickly box	
2	<i>Pittosporum undulatum</i>	sweet pittosporum	i
1	<i>Pittosporum undulatum subsp. undulatum</i>	sweet pittosporum	i
PLANTAGINACEAE			
2	<i>Plantago lanceolata</i>	ribwort plantain	i
RHAMNACEAE			
1	<i>Pomaderris pilifera</i>	hairy dogwood	
ROSACEAE			
1 2	<i>Acaena echinata</i>	spiny sheeps burr	
1	<i>Rosa rubiginosa</i>	sweet briar	i
1 2	<i>Rubus fruticosus</i>	blackberry	d
RUBIACEAE			
2	<i>Galium gaudichaudii</i>	rough bedstraw	
SANTALACEAE			
1 2	<i>Exocarpos cupressiformis</i>	common native-cherry	
SAPINDACEAE			
1 2	<i>Dodonaea viscosa subsp. spatulata</i>	broadleaf hopbush	
SOLANACEAE			
1 2	<i>Lycium ferocissimum</i>	african boxthorn	d
1	<i>Solanum nigrum</i>	blackberry nightshade	i
URTICACEAE			
1	<i>Urtica incisa</i>	scrub nettle	
MONOCOTYLEDONAE			
ASPARAGACEAE			
1 2	<i>Lomandra longifolia</i>	sagg	

CYPERACEAE		
2	<i>Carex breviculmis</i>	shortstem sedge
1	<i>Lepidosperma curtisiae</i>	little sword sedge
JUNCACEAE		
1	<i>Juncus pallidus</i>	pale rush
POACEAE		
1	<i>Anthosachne scabra</i>	rough wheatgrass
2	<i>Austrostipa flavescens</i>	yellow speargrass
1	<i>Austrostipa mollis</i>	soft speargrass
1	<i>Austrostipa sp.</i>	speargrass
1	<i>Dactylis glomerata</i>	cocksfoot
1 2	<i>Ehrharta erecta</i>	panic veldtgrass
2	<i>Poa rodwayi</i>	velvet tussockgrass
2	<i>Rytidosperma caespitosum</i>	common wallabygrass
1	<i>Rytidosperma sp.</i>	wallabygrass
1	<i>Themeda triandra</i>	kangaroo grass

Appendix B: Flora species of conservation significance known to occur within a 5 km radius of the study area¹³

Species	Status TSPA / EPBCA ¹⁴	Potential to occur in study area	Observations and preferred habitat
Known from within 500 m			
<i>Asperula scoparia</i> subsp. <i>scoparia</i> prickly woodruff	Rare/ -	Low	<i>Asperula scoparia</i> subsp. <i>scoparia</i> is widespread in Tasmania and is mainly found in native grasslands and grassy forests, often on fertile substrates such as dolerite-derived soils. Forested sites are usually dominated by <i>Eucalyptus globulus</i> and <i>E. viminalis</i> (lower elevations) and <i>E. delegatensis</i> (higher elevations).
<i>Atriplex suberecta</i> sprawling saltbush	Vulnerable/ -	None	<i>Atriplex suberecta</i> occurs in a wide range of habitats on most soil types, including saline areas, but is most commonly found in disturbed areas.
<i>Austrostipa bigeniculata</i> doublejointed speargrass	Rare/ -	Low	<i>Austrostipa bigeniculata</i> is found mainly in the south-east and Midlands in open woodlands and grasslands on fertile soils, where it is often associated with <i>Austrostipa nodosa</i> .
<i>Austrostipa blackii</i> crested speargrass	Rare/ -	None	The habitat of <i>Austrostipa blackii</i> is poorly understood because of confusion with other species. In its "pure" form (i.e. long coma), <i>A. blackii</i> is a species of very near-coastal sites such as the margins of saline lagoons, creek outfalls and vegetated dunes. Further inland, where it seems to grade into other species, it occurs in open grassy woodlands.
<i>Bolboschoenus caldwellii</i> sea clubssedge	Rare/ -	None	<i>Bolboschoenus caldwellii</i> is widespread in shallow, standing, sometimes brackish water, rooted in heavy black mud.
<i>Caladenia filamentosa</i> daddy longlegs	Rare / -	None	<i>Caladenia filamentosa</i> occurs in lowland heathy and sedgy eucalypt forest and woodland on sandy soils and finer grained sediments such as mudstones.
<i>Dianella amoena</i> grassland flaxlily	Rare / ENDANGERED	None	<i>Dianella amoena</i> occurs mainly in the northern and southern Midlands, where it grows in native grasslands and grassy woodlands.
<i>Eucalyptus risdonii</i> risdon peppermint	Rare / -	None	<i>Eucalyptus risdonii</i> is restricted to the greater Hobart area (particularly the Meehan Range), with an outlying population at Mangalore and on South Arm. It occurs on mudstone, with an altitudinal range from near sea level to 150 m above sea level. It can occur as a dominant in low open forest with a sparse understorey on dry, insulated ridgelines and slopes (e.g. with a north-west aspect), and individuals can extend into other forest types typically dominated by <i>E. tenuiramis</i> or <i>E. amygdalina</i> (but occasionally by other species) on less exposed sites.

¹³ DPIPWE Natural Values Atlas Report (2021) report #: nvr_2_9-March-2021

¹⁴ Tasmanian *Threatened Species Protection Act 1995* and Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*

Species	Status TSPA / EPBCA ¹⁴	Potential to occur in study area	Observations and preferred habitat
<i>Scleranthus fasciculatus</i> spreading knawel	Vulnerable/ -	Low	<i>Scleranthus fasciculatus</i> is only recorded from a few locations in the Midlands and south-east. The vegetation at most of the sites is Poa grassland/grassy woodland. <i>Scleranthus fasciculatus</i> appears to need gaps between the tussock spaces for its survival and both fire and stock grazing maintain the openness it requires. Often found in areas protected from grazing such as in the shelter of fallen trees and branches.
<i>Senecio squarrosus</i> leafy fireweed	Rare / -	Low	<i>Senecio squarrosus</i> occurs in a wide variety of habitats. One form occurs predominantly in lowland damp tussock grasslands. The more widespread and common form occurs mainly in dry forests (often grassy) but extends to wet forests and other vegetation types.
<i>Sirophysalis trinodis</i> three-node seaweed	Rare / -	None	Marine environments
<i>Stenopetalum lineare</i> narrow threadpetal	Endangered/ -	None	The prime habitat for <i>Stenopetalum lineare</i> appears to be grass-covered low dunes but it also extends to scrub-covered dunes (coast wattle) and there is one inland site on a rocky outcrop in dry sclerophyll forest.
<i>Vittadinia muelleri</i> narrowleaf new-holland-daisy	Rare / -	Present	<i>Vittadinia muelleri</i> occurs in dry native grasslands and grassy woodlands particularly in open areas with lighter grass cover and patches of bare ground such as rock plates. It freely colonises disturbed sites such as roadside cuttings. It is widely dispersed through the Midlands and South East.
Known from within 5 km and not listed above			
<i>Acacia ulicifolia</i> Juniper wattle	Rare/-	None	<i>Acacia ulicifolia</i> is found in sandy coastal heaths and open heathy forest and woodland in the north and east of Tasmania. Populations are often sparsely distributed and most sites are near-coastal but it can occasionally extend inland (up to 30 km).
<i>Austroparmelia whinrayi</i> lichen	Rare / -	None	Foliose lichen known from very few sites in scrub and woodland dispersed around coastal Tasmania
<i>Caladenia caudata</i> tailed spider-orchid	Vulnerable/ VULNERABLE	Low	<i>Caladenia caudata</i> has highly variable habitat, which includes the central north: <i>Eucalyptus obliqua</i> heathy forest on low undulating hills; the north-east: <i>E. globulus</i> grassy/heathy coastal forest, <i>E. amygdalina</i> heathy woodland and forest, <i>Allocasuarina</i> woodland; and the south-east: <i>E. amygdalina</i> forest and woodland on sandstone, coastal <i>E. viminalis</i> 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
<i>Calocephalus citreus</i> lemon beautyheads	Rare / -	None	<i>Calocephalus citreus</i> inhabits disturbed dry grasslands and is found from a few locations in the south-east of the State.

Species	Status TSPA / EPBCA ¹⁴	Potential to occur in study area	Observations and preferred habitat
<i>Carex longebrachiata</i> drooping sedge	Rare / -	None	<i>Carex longebrachiata</i> grows along riverbanks, in rough grassland and pastures, in damp drainage depressions and on moist slopes amongst forest, often dominated by <i>Eucalyptus viminalis</i> , <i>E. ovata</i> or <i>E. rodwayi</i> .
<i>Comesperma defoliatum</i> leafless milkwort	Rare / -	None	The habitat of <i>Comesperma defoliatum</i> includes wet heathland/sedgeland, buttongrass moorland, coastal low scrub and on the crests of dunes. It has also been recorded from flat alkaline pans. The predominant substrates include peat, quartzite and sand.
<i>Cotula vulgaris</i> var. <i>australasica</i> slender buttons	Rare / -	None	<i>Cotula vulgaris</i> var. <i>australasica</i> habitat includes saline herbfields, rocky coastal outcrops, and wet or brackish swamps.
<i>Cuscuta tasmanica</i> golden dodder	Rare / -	None	<i>Cuscuta tasmanica</i> is known from saline areas and brackish marshes often, but not exclusively, on plants of <i>Wilsonia backhousei</i> (narrowleaf wilsonia).
<i>Damasonium minus</i> starfruit	Rare / -	None	<i>Damasonium minus</i> occupies swampy habitat and farm dams and prefers slow-flowing or stationary water.
<i>Eryngium ovium</i> blue devil	Vulnerable/ -	None	<i>Eryngium ovium</i> occurs in a range of lowland vegetation types most often on fertile heavy clay soils derived from dolerite. Vegetation types include open grasslands usually dominated by <i>Themeda triandra</i> (kangaroo grass), grassy forests and woodlands on slopes, ridges and broad flats, and also roadside verges (representing remnant populations).
<i>Eucalyptus morrisbyi</i> morrisbys gum	Endangered/ ENDANGERED	None	<i>Eucalyptus morrisbyi</i> occurs in coastal, dry sclerophyll woodland on gentle to hilly slopes with poor drainage. It tends to be restricted to gullies that offer some relief in this drought-prone, low rainfall area. It is associated with poor soils. The Calverts Hill subpopulation and associated remnant stands occurring on recent sands overlying dolerite and the Risdon subpopulation on Permian mudstone.
<i>Eutaxia microphylla</i> spiny bushpea	Rare / -	None	On Flinders Island, <i>Eutaxia microphylla</i> mainly occurs in windswept coastal heathland on calcarenite. On mainland Tasmania, the species usually occurs in low open coastal shrubbery and on cliff edges (various substrates). The local record is of a historic collection – 1931 from Cambridge
<i>Haloragis heterophylla</i> variable raspwort	Rare / -	Low	<i>Haloragis heterophylla</i> occurs in poorly-drained sites (sometimes only marginally so), which are often associated with grasslands and grassy woodlands with a high component of <i>Themeda triandra</i> (kangaroo grass). It also occurs in grassy/sedgy <i>Eucalyptus ovata</i> forest and woodland, shrubby creek lines, and broad sedgy/grassy flats, wet pasture and margins of farm dams.
<i>Hyalosperma demissum</i> moss sunray	Endangered/ -	None	<i>Hyalosperma demissum</i> grows on rock pavements or shallow sandy soils in some of Tasmania's driest regions, and also in scalded patches in <i>Eucalyptus amygdalina</i> heathy/grassy woodland. The underlying substrate is mostly Jurassic dolerite, with occasional occurrences on

Species	Status TSPA / EPBCA ¹⁴	Potential to occur in study area	Observations and preferred habitat
			Triassic sandstone and also Cainozoic sediments with a laterite lag. The elevation range of recorded sites in Tasmania is 30-470 m above sea level, with an annual rainfall range of less than 600 mm.
<i>Isolepis stellata</i> star clubsedge	Rare / -	None	<i>Isolepis stellata</i> has been recorded from near-coastal areas in the State's north and east, and also in the Northern Midlands near Conara. Habitat includes the margins of sedgy wetlands, wet soaks and seasonally inundated heathy sedgeland; the altitude of recorded sites in Tasmania ranges from close to sea level to elevations of 240 m above sea level.
<i>Lachnagrostis robusta</i> tall blowgrass	Rare / -	None	<i>Lachnagrostis robusta</i> occurs in saline situations such as the margins of coastal and inland saline lagoons.
<i>Lepidium hyssopifolium</i> soft peppergrass	Endangered/ ENDANGERED	Low	The native habitat of <i>Lepidium hyssopifolium</i> 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). <i>Lepidium hyssopifolium</i> 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 metres above sea level in dry, warm and fertile areas on flat ground on weakly acid to alkaline soils derived from a range of rock types. It can also occur on frequently slashed grassy/weedy roadside verges where shade trees are absent.
<i>Lepilaena patentifolia</i> spreading watermat	Rare / -	None	<i>Lepilaena patentifolia</i> occurs in coastal lagoons, creeks, inlets and estuaries and brackish inland lagoons.
<i>Lepilaena preissii</i> slender watermat	Rare / -	None	<i>Lepilaena preissii</i> occurs in fresh and brackish lagoons, and estuaries.
<i>Limonium australe</i> var. <i>australe</i> yellow sea-lavender	Rare / -	None	<i>Limonium australe</i> var. <i>australe</i> occurs in succulent or graminoid saltmarsh close to the high water mark, typically near small brackish streams.
<i>Lobelia pratioides</i> poison lobelia	Vulnerable/ -	None	<i>Lobelia pratioides</i> occurs in seasonally inundated to waterlogged soils at the margins of swamps, wetlands and drainage lines, and also in damp depressions within grassland and grassy woodland.
<i>Olearia hookeri</i> crimsontip daisybush	Rare / -	None	<i>Olearia hookeri</i> is found on dry hills around Hobart in the State's south and also along the central east coast. It grows within eucalypt woodlands with a mixed grassy-shrubby understorey, favouring north-north-westerly slopes on mudstone (except for an atypical occurrence on dolerite at Templestowe flats near Seymour). In the south of the State the habitat is dominated by <i>Eucalyptus amygdalina</i> , <i>Eucalyptus risdonii</i> or <i>Eucalyptus tenuiramis</i> ; in the central east near Mt Peter the habitat is dominated by <i>Eucalyptus sieberi</i> over a very sparse understorey.

Species	Status TSPA / EPBCA ¹⁴	Potential to occur in study area	Observations and preferred habitat
<i>Poa mollis</i> soft tussockgrass	Rare / -	None	<i>Poa mollis</i> is relatively widespread in the eastern half of the State, in dry sclerophyll forest and woodland (often dominated by <i>Eucalyptus amygdalina</i> , <i>E. viminalis</i> or <i>Allocasuarina verticillata</i>). Sites are often steep and rocky (e.g. Cataract Gorge).
<i>Pterostylis wapstrarum</i> fleshy greenhood	Endangered/ CRITICALLY ENDANGERED	None	<i>Pterostylis wapstrarum</i> is restricted to the Midlands and south-east of Tasmania where it occurs in native grassland and possibly grassy woodland. It has been reported from basalt soils.
<i>Ranunculus pumilio</i> var. <i>pumilio</i> ferny buttercup	Rare / -	None	<i>Ranunculus pumilio</i> var. <i>pumilio</i> occurs mostly in wet places (e.g. broad floodplains of permanent creeks, "wet pastures") from sea level to altitudes of 800-900 m above sea level.
<i>Ruppia megacarpa</i> largefruit seatassel	Rare / -	None	<i>Ruppia megacarpa</i> occurs in estuaries and lagoons along the east and south-east coasts, and brackish lagoons in the Midlands; there is also an historic record from the Tamar estuary in the States' north.
<i>Ruppia tuberosa</i> tuberous seatassel	Rare / -	None	<i>Ruppia tuberosa</i> has been recorded from the State's south-east at Ralphs Bay and Blackman Bay, where it grows in holes and channels in saltmarshes.
<i>Scleranthus diander</i> tufted knawel	Vulnerable/ -	None	<i>Scleranthus diander</i> is found from the Central Midlands area to Hobart with most of the records from the Ross and Tunbridge areas. This species inhabits grassy woodland and is associated with dolerite and basalt substrates. Local record is dubious - unsubstantiated observation from Mt Rumney
<i>Stuckenia pectinata</i> fennel pondweed	Rare / -	None	<i>Stuckenia pectinata</i> is found in fresh to brackish/saline waters in rivers, estuaries and inland lakes. It forms dense stands or mats, particularly in slow-flowing or static water. The species grows in water of various depth.
<i>Teucrium corymbosum</i> forest germander	Rare / -	Low	<i>Teucrium corymbosum</i> occurs in a wide range of habitats from rocky steep slopes in dry sclerophyll forest and <i>Allocasuarina</i> (sheoak) woodland, riparian flats and forest.
<i>Thelymitra bracteata</i> leafy sun-orchid	Endangered/ -	None	<i>Thelymitra bracteata</i> occurs in open grassy and heathy forest/woodland on mudstone and sandstone. At Rosny Hill site, <i>Thelymitra bracteata</i> is most abundant on the top of the hill on open ground with dense exotic grasses and sparse in a remnant patch of native grass close to <i>Allocasuarina verticillata</i> woodland. At Conningham, the species occurs in a canopy gap created by a rough track amongst heathy <i>Eucalyptus amygdalina</i> forest on Triassic sandstone.
<i>Triglochin minutissima</i> tiny arrowgrass	Rare / -	None	<i>Triglochin minutissima</i> inhabits fresh or brackish mudflats or margins of swamps in lowland, mostly coastal areas.
<i>Velleia paradoxa</i> spur velleia	Vulnerable/ -	Low	<i>Velleia paradoxa</i> is known from the Hobart and Launceston areas, and the Midlands and the Derwent Valley, where it occurs in grassy woodlands or grasslands on dry sites. It has been recorded up to 550 m above sea level at sites with an annual rainfall range of 450-750 mm.

Species	Status TSPA / EPBCA ¹⁴	Potential to occur in study area	Observations and preferred habitat
<i>Vittadinia cuneata</i> var. <i>cuneata</i> fuzzy new-holland-daisy	Rare / -	Low	<i>Vittadinia cuneata</i> var. <i>cuneata</i> occurs in native grassland and grassy woodland on fertile soils, typically overlying basalt. It is confined to the Derwent Valley, Central Midlands and central East Coast on areas of lowest rainfall in Tasmania.
<i>Vittadinia gracilis</i> woolly new-holland-daisy	Rare / -	Low	<i>Vittadinia gracilis</i> occurs in dry grassy habitats, often in relatively degraded grasslands and grassy woodlands. It has been found to occur in low- rainfall areas, on a range of substrates.
<i>Wilsonia rotundifolia</i> roundleaf wilsonia	Rare / -	None	<i>Wilsonia rotundifolia</i> is found in coastal and inland saltmarshes in the eastern part of the State.
<i>Xerochrysum palustre</i> swamp everlasting	- (v pending)/ VULNERABLE	None	<i>Xerochrysum palustre</i> has a scattered distribution with populations in the north-east, 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 <i>Eucalyptus ovata</i> woodlands. Sites are usually inundated for part of the year.

Appendix C: Fauna species of conservation significance previously recorded, or which may potentially occur, within 5 km of the study area¹⁵

Species	Status ¹⁶ TSPA/EPBCA	Potential to occur in study area	Observations and preferred habitat ¹⁷
Known from 500 m			
MAMMALS			
<i>Eubalaena australis</i> Southern right whale	Endangered/ ENDANGERED	None	Marine species
<i>Megaptera novaeangliae</i> Humpback whale	Endangered/ VULNERABLE	None	Marine species
<i>Mirounga leonina subsp. Macquariensis</i> Southern elephant seal	Endangered/ VULNERABLE	None	Marine species
<i>Perameles gunnii gunnii</i> Eastern-barred bandicoot	-/VULNERABLE	Moderate	Inhabits grassy woodlands, native grasslands, and mosaics of pasture and shrubby ground cover favouring open grassy areas for foraging with thick vegetation cover for shelter and nesting. It has a widely dispersed range with concentrations in SE, NE and NW Tasmania and some areas of the State from where it is absent or in very low densities. It extends into the urban fringe where it can survive in large gardens and bushland reserves. It favours a mosaic of open grassy areas for foraging and thick vegetation cover for shelter and nesting.
<i>Pteropus poliocephalus</i> Grey-headed flying-fox	-/VULNERABLE	None	Vagrant
BIRDS			
<i>Accipiter novaehollandiae</i> Grey goshawk	Endangered/ -	Low	Inhabits large tracts of wet forest and swamp forest, particularly patches with closed canopies above an open understorey, but with dense stands of prey habitat nearby. Mature trees provide the best nesting sites. Most nests have been recorded from blackwoods and occasional myrtle beech.
<i>Aquila audax fleayi</i> Wedge-tailed eagle	Endangered/ ENDANGERED	Low	Wedge-tailed eagles nest in a range of old growth native forests and the species is dependent on forest for nesting. Territories can contain up to five alternate nests usually close to each other but

¹⁵ DPIPWE Natural Values Atlas Report (2021) report #: nvr_2_9-March-2021

¹⁶ Tasmanian *Threatened Species Protection Act 1995* and Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*, which includes ROKAMBA, JAMBA, CAMBA and Migratory species.

¹⁷ Bryant & Jackson 1999

Species	Status ¹⁶ TSPA/EPBCA	Potential to occur in study area	Observations and preferred habitat ¹⁷
			may be up to 1 km apart where habitat is locally restricted. Wedge-tailed eagles prey and scavenge on a wide variety of fauna including fish, reptiles, birds and mammals.
<i>Haliaeetus leucogaster</i> White-bellied Sea Eagle	Vulnerable/-	Low	Requires large trees for nesting and is sensitive to disturbance during the breeding season. Occurs in coastal habitats and large inland waterways.
<i>Lathamus discolor</i> Swift parrot	Endangered/ CRITICALLY ENDANGERED	Moderate	The Swift Parrot spends its winter in south-eastern mainland Australian before migrating to Tasmania in late winter/early spring to breed. During the breeding season, nectar from Tasmanian blue gum (<i>Eucalyptus globulus</i>) and black gum (<i>Eucalyptus ovata</i>) flowers is the primary food source for the species. These eucalypts are patchily distributed and their flowering patterns are erratic and unpredictable, often leading to only a small proportion of Swift Parrot habitat being available for breeding in any one year. Swift Parrots breed in tree hollows in mature eucalypts within foraging range of a flower source.
<i>Podiceps cristatus</i> Great crested grebe	Vulnerable/-	None	The Great Crested Grebe inhabits wetlands, deep lakes, rivers and swamps and prefers a combination of open water and dense reedbeds. This species is relatively rare in Tasmania but can have minor irruptions and periods of regular sightings in some areas.
<i>Thinornis rubricollis</i> rubricollis Hooded Plover	-/VULNERABLE	None	Widely distributed in Tasmania. Inhabits sandy ocean beaches. Nests on or near beaches, with nests located on flat beaches above the high tide mark, on stony terraces adjacent to beaches, or on the sides of sparsely vegetated dunes.
<i>Tyto novaehollandiae</i> <i>castanops</i> Tasmanian masked owl	Endangered/ VULNERABLE	None	Found in a range of habitats which contain some mature hollow-bearing forest, usually below 600 m altitude. This includes native forests and woodlands as well as agricultural areas with a mosaic of native vegetation and pasture. Significant habitat is limited to large eucalypts within dry eucalypt forest in the core range.
AMPHIBIAN			
<i>Litoria raniformis</i> Green and gold frog	Vulnerable/ VULNERABLE	None	In Tasmania is found in lowland areas, primarily coastal. They require permanent or temporary water bodies for survival and tend to inhabit ones containing emergent plants such as <i>Triglochin procera</i> or species of <i>Juncus</i> or sedge. They are rarely seen in open water and spend most of their time in vegetation at the water's edges. They depend upon permanent fresh water for breeding, which occurs in Spring and Summer. The green and gold frog is not known to occur in the very low fertility habitats to be found in wetlands associated with the western moorland of quartzite derivation. They generally prefer more fertile habitats
REPTILE			
<i>Caretta caretta</i> Loggerhead turtle	Endangered/ ENDANGERED	None	Marine species.
FISH			

Species	Status ¹⁶ TSPA/EPBCA	Potential to occur in study area	Observations and preferred habitat ¹⁷
<i>Brachionichtys hirsustus</i> Spotted handfish	Endangered/ CRITICALLY ENDANGERED	None	The Spotted Handfish is found in parts of the Derwent Estuary, as well as Frederick Henry, Ralphs and North West Bays. They occur in a limited number of colonies on soft substrates often in shallow depressions or near rocks or other projections. Found at depths of 2 to 30 m. Spawning from Sep-Oct.
<i>Seriotelella brama</i> Blue Warehou	-/Conservation Dependent	None	Known from Australian and New Zealand Waters. Occurs at depths between 3 and 550 m, though is more abundant in waters shallower than 200 m.
GASTROPOD			
<i>Gazameda gunnii</i> Gunn's Screwshell	Vulnerable/-	None	Lives subtidally and offshore on sand. Widespread in Tasmanian waters but only locally common as a beached shell.
Potential to occur based on habitat mapping only			
MAMMALS			
<i>Dasyurus maculatus</i> <i>maculatus</i> Spotted-tailed quoll	Rare /VULNERABLE	Very low	This naturally rare forest-dweller most commonly inhabits rainforest, wet forest and blackwood swamp forest. It forages and hunts on farmland and pasture, travelling up to 20 km at night, and shelters in logs, rocks or thick vegetation. Important habitat includes large patches of forest containing adequate denning sites and high densities of mammalian prey.
<i>Dasyurus viverrinus</i> Eastern quoll	-/ENDANGERED	Very low	This species was previously widespread in mainland south-eastern Australia, but is now restricted to Tasmania. Records from the Tasmanian Natural Values Atlas indicate that the eastern quoll occurs in most parts of Tasmania, but is recorded infrequently in the wetter western third of the state. The species' distribution is positively associated with areas of low rainfall and cold winter minimum temperatures. Within this distribution, it is found in a range of vegetation types including open grassland (including farmland), tussock grassland, grassy woodland, dry eucalypt forest, coastal scrub and alpine heathland, but is typically absent from large tracts of wet eucalypt forest and rainforest.
<i>Sarcophilus harissii</i> Tasmanian devil	Endangered/ ENDANGERED	Very low	The Tasmanian devil occupies a wide range of habitats across Tasmania and exploits landscapes with a mosaic of pasture and forest with elevated prey densities and is attracted to roadkill hotspots with concentrated scavenging resource. Populations have declined substantially since the first observations of the infectious cancer Devil Facial Tumour Disease (DFTD). DFTD has now spread across much of Tasmania. The reduced population is also likely to be more sensitive to additional threats such as death by roadkill, competition with cats and foxes, and loss or disturbance of areas surrounding traditional dens where young are raised. The protection of breeding opportunities is particularly important for the species due to the mortalities from demographic pressures.
BIRDS			
<i>Pardalotus quadragintus</i> Forty-spotted pardalote	Endangered/ ENDANGERED	Very low	The forty-spotted pardalote is endemic to Tasmania and occurs in only a few small areas within the State. It is relatively restricted to dry grassy forest and woodland along the east coast containing

Species	Status ¹⁶ TSPA/EPBCA	Potential to occur in study area	Observations and preferred habitat ¹⁷
			mature white gum (<i>Eucalyptus viminalis</i>). [1] Cooper and Clemens et al. (2012); Reid and Park (2003)
REPTILES			
<i>Pseudemonia pagenstecheri</i> Tussock skink	Vulnerable/-	None	A ground-dwelling lizard, occurring in grassland and grassy woodland habitats at a range of elevations. Records in Tasmania a few disconnected patches of habitat from Midlands, inland Cradle Coast, and eastern Bass Strait islands.
FISH			
<i>Prototroctes maraena</i> Australian Grayling	Vulnerable/ VULNERABLE	None	In Tasmania, the diadromous Australian Grayling has been found in northern, eastern, and western rivers. Little is known of the population size. The major threat to the species is the construction of barriers than prevent adult fish moving upstream and juveniles downstream.
INVERTEBRATES			
<i>Antipodia chaostola</i> Chaostola skipper	Endangered/ ENDANGERED	None	The Chaostola skipper is restricted to dry forest and woodland supporting sedges of the <i>Gahnia</i> genus, and occurs in isolated populations in south-eastern and eastern Tasmania
<i>Chrysolarentia decisaria</i> Tunbridge looper moth	Endangered/-	None	Saltmarsh species
Known from 5 km			
MAMMALS			
<i>Arctocephalus forsteri</i> Long-nosed fur seal	Rare /-	None	Marine species
<i>Arctocephalus tropicalis</i> Subantarctic Fur Seal	Endangered/ VULNERABLE	None	Marine species
BIRDS			
<i>Botaurus poiciloptilus</i> Australasian bittern	-/ENDANGERED	None	Australasian bitterns are a highly cryptic species, utilising wetlands and lakes with a dense cover of vegetation. Whilst once common on Tasmania's north/east coasts, the numbers of Australasian bitterns in the state during the last two decades have declined significantly in both their range and numbers due to habitat loss and extended periods of dryness
<i>Calidris canutus</i> Red knot	-/ENDANGERED	None	Coastal species
<i>Calidris ferruginea</i> Curlew sandpiper	-/CRITICALLY ENDANGERED	None	The curlew sandpiper was once a common visitor to Tasmania, but their numbers have declined significantly since the 1950's. It frequents intertidal mudflats in sheltered coastal areas, with the most important sites for them in Tasmanian centred on the north and east coast of Tasmania. However, they are also occasionally recorded inland, along the open edges of ephemeral and permanent lakes and other water bodies.

Species	Status ¹⁶ TSPA/EPBCA	Potential to occur in study area	Observations and preferred habitat ¹⁷
<i>Charadrius leschenaultia</i> Greater sand plover	-/VULNERABLE	None	Coastal species
<i>Hirundapus caudacutus</i> White-throated needletail	-/VULNERABLE	None	The white-throated needletail is a migratory species, breeding in central and north-eastern Asia in Siberia, Mongolia, northern-eastern China and northern Japan. It migrates south through eastern China, Korea and Japan spending its non-breeding season in eastern and south-eastern Australia including Tasmania. This species is almost exclusively aerial, occurring over most types of habitat with a preference to wooded areas, open forests, heathland and rainforests.
<i>Limosa lapponica</i> subsp. <i>Baueri</i> Western Alaskan bar- tailed godwit	-/VULNERABLE	None	Coastal species
<i>Numenius madagascariensis</i> Eastern curlew	Endangered/ CRITICALLY ENDANGERED	None	Much like the curlew sandpiper, the eastern curlew was once a common visitor to Tasmania, but their numbers have declined significantly since the 1950's. It frequents intertidal mudflats in sheltered coastal areas, with the most important sites for them in Tasmanian centred on the north and east coast of Tasmania. However, they are also occasionally recorded inland, along the open edges of ephemeral and permanent lakes and other water bodies.
<i>Pterodroma lessonii</i> White-headed Petrel	Vulnerable/-	None	The White-headed petrel breeds in colonies on subantarctic islands including Australia's Macquarie Island. They are a pelagic species foraging between the subantarctic and Antarctic convergence zones. At sea this species is mostly solitary.
<i>Sterna nereis nereis</i> Fairy Tern	Vulnerable/ VULNERABLE	None	The fairy tern nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. It has been found in a variety of habitats including offshore, estuarine or lacustrine (lake) islands, wetlands and coastlines. The bird roosts on beaches at night.
<i>Tyto novaehollandiae castanops</i> Tasmanian masked owl	Endangered/ VULNERABLE	Very low	Found in a range of habitats which contain some mature hollow-bearing forest, usually below 600 m altitude. This includes native forests and woodlands as well as agricultural areas with a mosaic of native vegetation and pasture. Significant habitat is limited to large eucalypts within dry eucalypt forest in the core range.
REPTILE			
<i>Pseudemonia pagenstecheri</i> Tussock skink	Vulnerable/-	None	A ground-dwelling lizard, occurring in grassland and grassy woodland habitats at a range of elevations. Records in Tasmania a few disconnected patches of habitat from Midlands, inland Cradle Coast, and eastern Bass Strait islands.
AMPHIBIAN			
<i>Litoria raniformis</i> Green and gold frog	Vulnerable/ VULNERABLE	None	In Tasmania is found in lowland areas, primarily coastal. They require permanent or temporary water bodies for survival and tend to inhabit ones containing emergent plants such as <i>Triglochin procera</i> or species of <i>Juncus</i> or sedge. They are rarely seen in open water and spend most of their time in vegetation at the water's edges. They depend upon permanent fresh water for breeding,

Species	Status ¹⁶ TSPA/EPBCA	Potential to occur in study area	Observations and preferred habitat ¹⁷
			which occurs in Spring and Summer. The green and gold frog is not known to occur in the very low fertility habitats to be found in wetlands associated with the western moorland of quartzite derivation. They generally prefer more fertile habitats
INVERTEBRATES			
<i>Amelora acoustica</i> Chevron looper moth	Vulnerable/-	None	Obligate saltmarsh species
<i>Dasybela achroa</i> Saltmarsh looper moth	Vulnerable/-	None	Obligate saltmarsh species
<i>Parvulastra vivipara</i> Live-bearing seastar	Vulnerable / VULNERABLE	None	Confined to rocky substrates on the upper littoral zone on low energy shores in south east Tasmania. Range from just below the highwater mark to 1.2m at high water. Recorded under both dolerite and sandstone rocks on gently sloping shores.
<i>Theclines thes</i> <i>serpentata</i> subsp. <i>lavara</i> Chequered Blue	Rare/-	None	Coastal environments with larval foodplant coastal saltbush – <i>Rhagodia candolleana</i> and species of <i>Atriplex</i> .
Potential to occur in 5km based on habitat mapping only			
MAMMAL			
BIRD			
<i>Ceyx azures</i> <i>diemenensis</i> Tasmanian azure kingfisher	Endangered/ ENDANGERED	None	The azure kingfisher is found along rivers in the south, west, north and northwest of Tasmania with outlying occurrences in the northeast, east, centre and Bass Strait islands. This species occurs in the forested margins of major river systems where it perches on branches overhanging rivers waiting for prey items such as small fish, insects and freshwater crayfish to come down the river.
FISH			
<i>Thymichthys politus</i> Red Handfish	Endangered/ CRITICALLY ENDANGERED	None	
INVERTEBRATES			
<i>Antipodia chaostola</i> subsp. <i>Leucophaea</i> Chaostola skipper	Endangered/ ENDANGERED	None	The Chaostola skipper is restricted to dry forest and woodland supporting sedges of the <i>Gahnia</i> genus, and occurs in isolated populations in south-eastern and eastern Tasmania
<i>Orphnino trichia</i> <i>maculata</i> Caddis fly (wedge river)	Rare/-	None	Aquatic habitats.

Species	Status ¹⁶ TSPA/EPBCA	Potential to occur in study area	Observations and preferred habitat ¹⁷
<i>Lissotes menalcas</i> Mount Mangana stag beetle	Vulnerable/-	None	This occurs in south east Tasmania including parts of the Wellington range, South Bruny and the Forester and Tasman Peninsulas. Confined to wet forest with large logs although much of potential habitat is unoccupied.
<i>Pseudalmenus chlorinda</i> <i>myrsilus</i> Tasmanian hairstreak (butterfly)	Rare/-	Low	Dry forest and woodland associated with species of wattle including <i>A. dealbata</i> and <i>A. mearnsii</i> . Confined to occasional sites in south east Tasmania. Habitat is present although scarcity of records suggest presence is very unlikely.
GASTROPOD			
Ammonite Pinwheel Snail <i>Discocharopa vicens</i>	Endangered/ CRITICALLY ENDANGERED	None	This snail has been recorded from the following seven locations in the Hobart metropolitan area: Mount Wellington, Mount Nelson, The Domain, Hillgrove, Grasstree Hill, South Hobart and Austins Ferry. Species is thought to be extinct from Mt Nelson. Habitat of the species includes dry and wet eucalypt forests below 400 m in altitude. To date the species has only been found under dolerite rocks.