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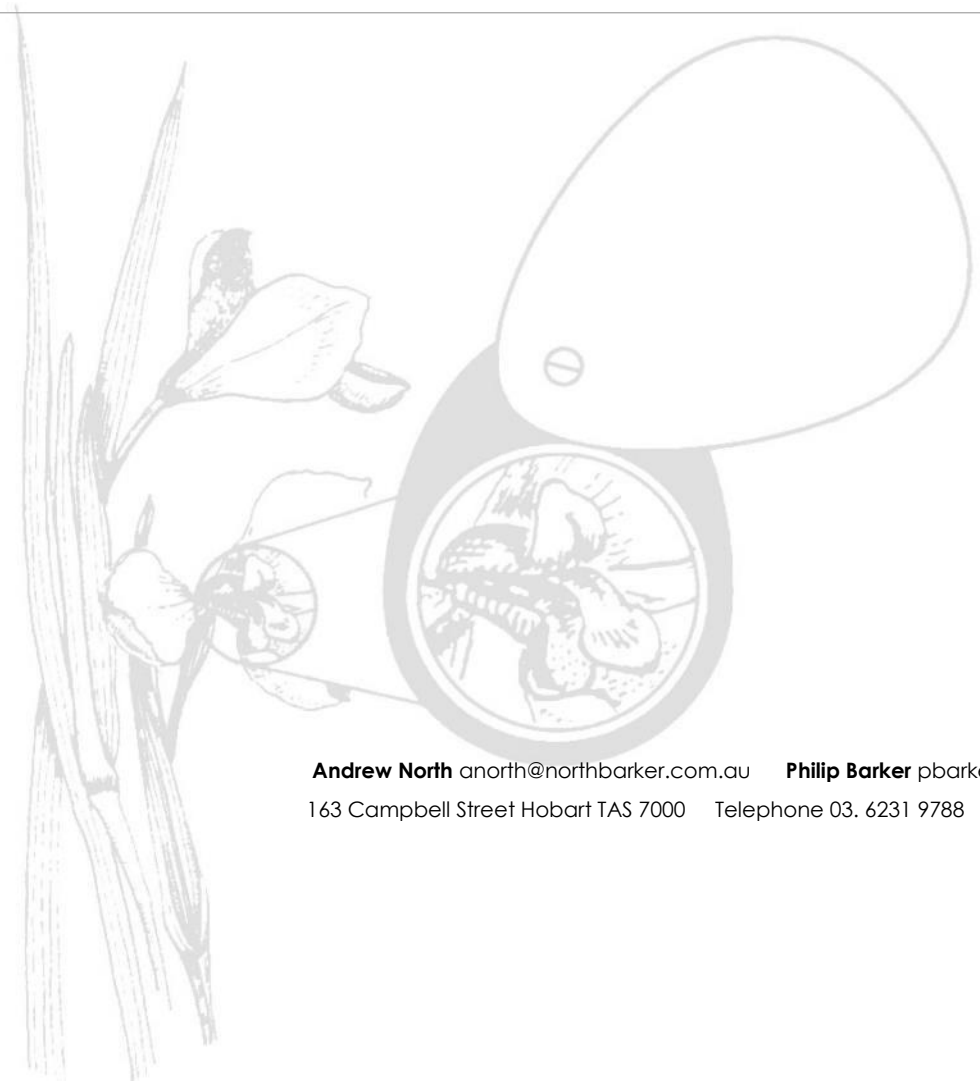
ECOSYSTEM SERVICES

South Brighton Development Precinct

Natural Values Assessment

18 March 2021

For Brighton Council
BRI006



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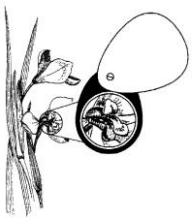

Summary

Background

A residential development precinct and associated masterplan is being produced by the Brighton Council for an approximate 60 ha area of land immediately south of the township of Brighton.

This report presents the findings of preliminary field investigations into ecological values on the land in question, including commentary on assessment and approval pathways relating to potential impacts to significant flora or fauna values.

Vegetation

Native vegetation within the study area that is largely within an agricultural and peri urban environment comprised of a mix of forest and non-forest vegetation types including the following TASVEG classifications:

- *Allocasuarina verticillata* forest (NAV)
- *Bursaria – Acacia* woodland (NBA)
- Lowland *Themeda triandra* grassland (GTL)
- Lowland grassland complex (GCL)

Areas not supporting native vegetation have been allocated to non-native TASVEG classifications:

- Disturbed sites [Extra-urban miscellaneous (FUM) & Agricultural land (FAG)]

Some areas of both the NBA and GTL communities (totalling approximately 1.8 ha) located on 69 Brighton Road qualify as the ecological community 'Lowland Native Grasslands of Tasmania' (LNGT) which is listed as Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA).

Threatened Flora

Four species of threatened flora are present within the study area:

- *Dianella amoena* (matted flaxlily) – localised patches found on 69 Brighton Road, the fenceline at 1 Melinda Court (adjacent William St) and the council land adjacent the Midland Highway.

- *Austrostipa bigeniculata* (double-jointed spear grass) – localised patches including 10s-100s on plants located on 69 Brighton Road in areas of NBA.

- *Vittadinia muelleri* (narrowleaf new-holland-daisy) – widely scattered in relatively low numbers throughout areas of NBA and GCL.

- *Calocephalus citreus* (lemon beautyheads) – localised patches on council and private land parcels (13 Dylan St & 8 Melinda Court).

Dianella amoena is listed as endangered under the EPBCA and rare on the Tasmanian *Threatened Species Protection Act 1995*.

Austrostipa bigeniculata, Vittadinia muelleri and *Calocephalus citreus* are all listed as rare under the TSPA.

Potential habitat for additional ephemeral flowering threatened flora (including species listed under the TSPA & EPBCA) is present within the study area and requires further investigation

during the optimal flowering period (Oct/Nov) to determine presence/absence of these species.

Threatened Fauna

No threatened fauna species were observed or previously known to occur within the survey area.

Potential habitat for threatened fauna exists within the study area including habitat for species such as eastern barred bandicoot, eastern quoll, green and gold frog and tussock skink, however no significant habitat for any of these species was identified. As such, no specific habitat management or further species-specific investigations are warranted for threatened fauna in this case.

Weeds

Eight declared weed species were recorded throughout the survey area including African boxthorn, blackberry, whiteweed, slender thistle, gorse, fennel, willow and horehound. All these species are identified as Zone B weeds within the Brighton Municipality for which control rather than eradication is the management objective.

These species have a potential to spread throughout the Brighton Municipality and more widely and should be managed under a site-specific or municipality-based weed management strategy which adopts the principles of DPIPWE's Weed and Disease Planning and Hygiene Guidelines.

Contents

1 INTRODUCTION

1.1 Background

North Barker Ecosystem Services has been engaged by the Brighton Council to undertake a field investigation of ecological values (flora & fauna) associated with the planned South Brighton Development Precinct (SBDP). This site has been identified by Council for potential rezoning to allow for a higher density of residential land development. The information in this report will be utilised for the development of a subdivision masterplan and does not relate to the conditions or development approval requirements for any individual parcel of land.

1.2 Study area

The study area is located immediately south of the township of Brighton and captures 33 Elderslie Road as well as the full extents of properties on Dylan Street and Melinda Court, south of William Street. The study area also captures the northern portion of the property at 69 Brighton Road (Figure 1).

The study area is approximately 60 ha in extent and falls within the Tasmanian South East Bioregion[1]. It sits entirely within the municipality of the Brighton Council and includes three zoning types according to the Brighton Interim Planning Scheme 2015 (General Residential, Rural Living and Rural Resource). There are no planning scheme overlays which relate specifically to biodiversity values in this case (Bushfire Prone Areas and Landslide Hazard Area the only overlays present).

The site is largely flat with some low rolling hills of agricultural and semi-urban land. South and east of Dylan St there exist two ephemeral drainage channels and a large dam which feed into the Jordan River. Altitude ranges throughout the study area from approximately 110 m a.s.l at the western extent through to a low of 40 m a.s.l at the southern end of Dylan St where a drain passes under the Midland Highway.

Most of the study area supports previously cleared land which historically is likely to have supported dry forest, grassy woodland, and native grassland vegetation. Some farmland/paddocks display evidence of conversion to improved pasture whilst others exist as native grassland communities including derived grasslands. Most trees throughout the study area are amenity or shelter plantings within gardens or along boundaries of small holdings with very few remnants of native trees present (apart from the native vegetation on 69 Brighton Road).

Geologies throughout the study area are comprised predominantly of basalt and dolerite with a section of land on 33 Elderslie Road derived from sandstone/mudstone.

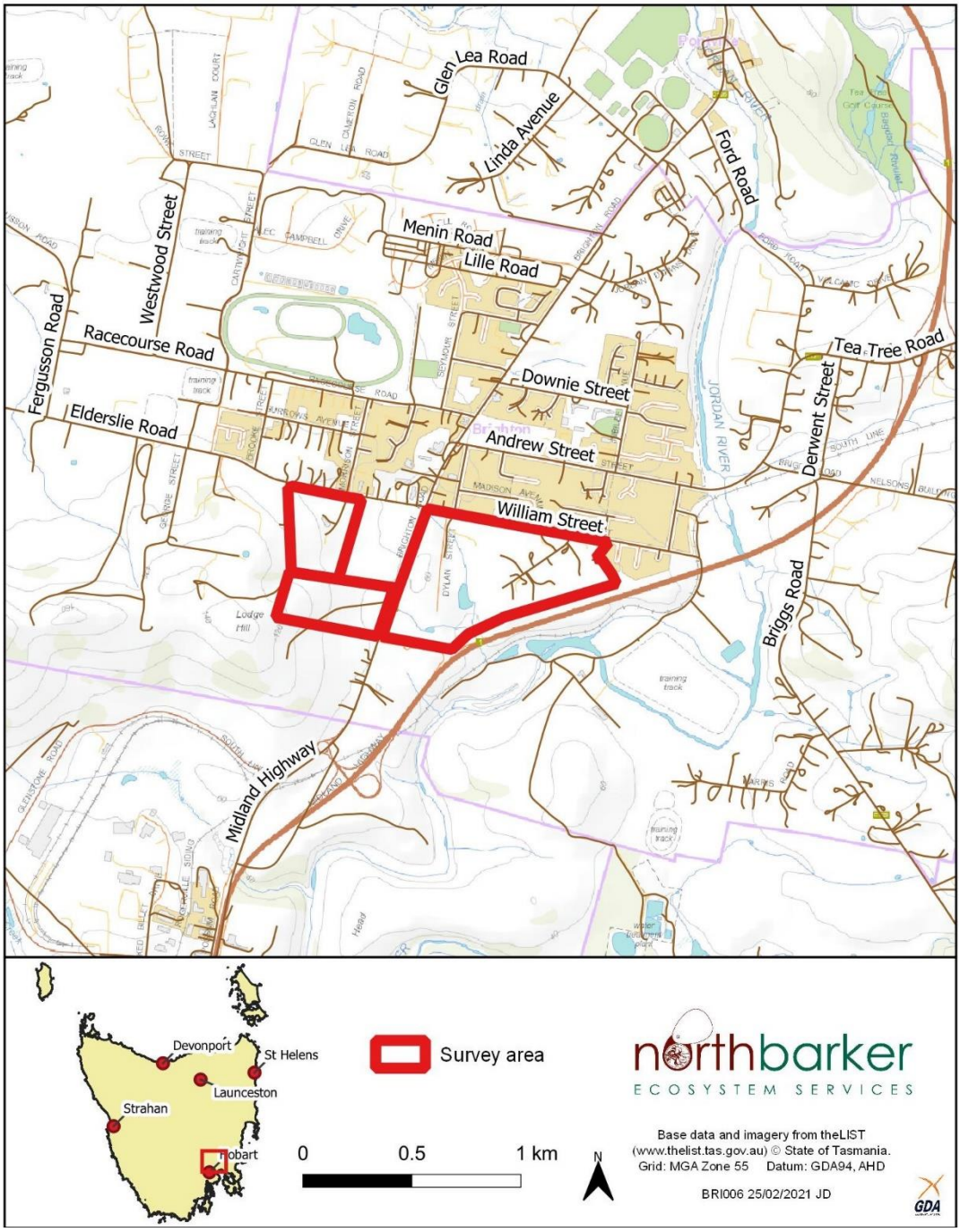

Figure 1: Location of the South Brighton Development Precinct study area

2 METHODS

This assessment was undertaken in accordance with the 'Guidelines for Natural Values Surveys – Terrestrial Development Proposals'[1].

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

- TASVEG version 4.0 digital layer[2],
- Natural Values Atlas (NVA) - all threatened species records within 5 km of the study area and threatened fauna considered possible to occur in suitable habitat[3],

2.1 Botanical Survey

Native vegetation was mapped in accordance with units defined in TASVEG 4.0[4]. Vascular plants were recorded in accordance with the current census of Tasmanian plants[5]. The site was mapped using a meandering area search technique[6]. 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)[7].

2.2 Fauna survey

The study area was searched for the potential presence, habitat, and signs (e.g. scats, tracks, nests) of threatened fauna concurrently with the botanical survey. No targeted fauna surveys were conducted with attention given to the identification of potential habitat.

2.3 Limitations

Due to natural limitations (e.g. variations in species presence and detectability), no biological survey can guarantee that all species will be recorded during a single visit. Field surveys were directed to likely native remnant vegetation through review of aerial photography and reconnaissance from public roads. Ground surveys were conducted on foot by one ecologist and over several days. Given the size of the study area, limitations on survey coverage exist, however we are confident that all vegetation communities have been identified and mapped sufficiently.

The field survey was undertaken in late summer, so seasonal and ephemeral species/habitat may have been overlooked or are seasonally absent. 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). 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.

Identification and distinction between agricultural land (FAG) and the native lowland grassland complex (GCL) can be influenced by survey timing and extent of grazing/slashing present at any given time. As such some areas mapped as GCL in this study may be more accurately classified as FAG and vice versa under different seasonal/land management conditions. This issue however does not hold any significant bearing on the conservation status of either of these vegetation communities.

[1] DPIPWE (2015)
[2] Kitchener and Harris (2013)
[3] DPIPWE Natural Values Atlas Report (2021) report 17 February 2021
[4] DPIPWE (2020)
5 de Salas and Baker (2020)
[6] Goff *et al.* (1982)
[7] Tasmanian State Government 1995; Commonwealth of Australia 1999; Tasmanian State Government 1999

3 RESULTS - BIOLOGICAL VALUES

A full inventory of all vascular plant species recorded on site is included in Appendix A. Separate plots were recorded in each discernible vegetation community (Appendix B), along with 'running' species list from incidental observation recorded elsewhere on the property.

A total of 93 vascular plant species were recorded during the survey, 31 of which are introduced species. Eight of the introduced species are listed as 'declared' weeds under the Tasmanian *Weed Management Act 1999* (WMA). Four species listed as rare under the TSPA were recorded (including one species listed as Endangered under the EPBCA).

No threatened fauna species were observed; however, the site has potential habitat qualities for some threatened fauna species.

3.1 Vegetation Communities

Vegetation within the study area is comprised of a mix of forest and non-forest vegetation types including four native and two non-native TASVEG vegetation communities (Table 1, Figure 3):

- *Allocasuarina verticillata* forest (NAV)
- *Bursaria – Acacia* woodland (NBA)
- Lowland *Themeda triandra* grassland (GTL)
- Lowland grassland complex (GCL)
- Disturbed sites [Extra-urban miscellaneous (FUM) & Agricultural land (FAG)]

Sections within two of these communities (NBA & GTL) qualify as 'Lowland Native Grasslands of Tasmania' under the EPBCA.

Table 1: Vegetation Communities

Community	EPBCA Status	NCA Status	Area (ha)
Native Vegetation			
Allocasuarina verticillata forest (NAV)		-	2.08
Bursaria – Acacia woodland (NBA)	Potentially Critically Endangered	-	2.27
Lowland *Themeda triandra* grassland (GTL)		-	0.85
Lowland grassland complex (GCL)		-	22.29
Non-native Vegetation			
Extra-urban miscellaneous (FUM) & Agricultural land (FAG)]		-	34.53
TOTAL		-	62.02

Lowland grassland complex (GCL) is not listed under the NCA, however if certain criteria are met, this community can qualify as the EPBCA critically endangered *Lowland Native Grasslands of Tasmania*, which is determined from criteria listed in the Policy Statement 3.18 of the EPBCA[8] (Appendix C).

Vegetation types across the survey area are summarised in text below. Distribution of TASVEG native vegetation communities is presented in Figure 3, with patch floristics in Appendix B.

3.1.1 *Allocasuarina verticillata* forest (NAV)

This community occurs on the higher ground within the northern half of 69 Brighton Road property. It is characterised by a dense canopy of *Allocasuarina verticillata* with occasional *Bursaria spinosa*. The community has limited structural and floristic diversity but supports an understorey with several native grass species including *Austrostipa stuposa*, *A. scabra*, *A. nodosa*, *Anthosachne scabra* and *Rytidosperma caespitosum*. The eastern half of this community is more open with less canopy cover and grades into the adjacent NBA vegetation. The threatened grass *A. bigeniculata* was recorded within this NAV community.

Allocasuarina verticillata forest (NAV) is not listed under the Tasmanian NCA or EPBCA. There are 17,700 ha of NAV in Tasmania of which approximately 6,500 ha is protected within the Tasmanian Reserve Estate. In the SE Bioregion there is 2,800 ha (1,700 ha reserved) and within Brighton Municipality there are 50 ha (20 ha reserved)[10].

Plate 1: *Allocasuarina verticillata* forest (NAV)

[8] Commonwealth of Australia 2009 – Lowland Native Grasslands of Tasmania Policy Statement 3.18

3.1.2 *Bursaria – Acacia* woodland (NBA)

This community occurs on the upper slopes of 69 Brighton Road and is characterised by an overstorey of *Bursaria spinosa* with an open grassy understorey. In places the community has excellent ecological conditions and shares close floristic affinities with areas of pure *Themeda* grassland, whereas other patches are of lesser ecological condition and share closer affinities to agricultural land and rough grazing areas of lowland grassland complex (GCL). The areas of better condition NBA support and mix of native grasses including *Themeda triandra, Anthosachne scabra, Austrostipa bigeniculata, Austrostipa nodosa, Austrostipa scabra, Dichelachne crinita, Lachnagrostis sp., Rytidosperma caespitosum* as well as native shrubs (*Astroloma humifusum, Hibbertia hirsuta, Pimelea humilis)* and herbs *(Asperula conferta, Chrysocephalum apiculatum, Convolvulus angustissimus* subsp. *angustissimus, Cynoglossum suaveolens, Dianella revoluta, Euchiton involucratus, Ptilotus spathulatus,)* In areas of poorer condition NBA many of the native shrub an herb species are absent and introduced species are more prevalent such as *Rosa rubiginosa, Dactylis glomerata, Hirschfeldia incarnata, Plantago lanceolata, Reseda luteola* and *Sanguisorba minor*.

Bursaria – Acacia woodland (NBA) is not listed under the Tasmanian NCA but better condition areas with less than 30% *Bursaria spinosa* cover can qualify as Lowland Native Grasslands of Tasmania under the EPBCA (see Figure 4). There are 19,100 ha of NBA in Tasmania of which approximately 2,400 ha is protected within the Tasmanian Reserve Estate. In the SE Bioregion there is 10,600 ha (600 ha reserved) and within Brighton Municipality there are 600 ha (40 ha reserved)[10].

Plate 2: *Bursaria – Acacia* woodland (NBA)

3.1.3 Lowland *Themeda Triandra* grassland (GTL)

This community occurs on gentle slopes close association with nearby areas of NBA and has been mapped as a small but distinct vegetation community of approximately 0.85 (ha). Small areas of this community (<0.25 ha) have been subsumed in the vegetation mapping within the greater areas of NBA where they meet the ecological condition requirements of the EPBCA Lowland Native Grasslands of Tasmania.

GTL is characterised by <5% cover of *Bursaria spinosa* and the dominance of native grass species such as *Themeda triandra, Austrostipa stuposa, Anthosachne scabra, Austrostipa bigeniculata, Austrostipa nodosa, Austrostipa scabra, Lachnagrostis sp.* and *Rytidosperma caespitosum.* The community also includes a few shrub species such as *Astroloma humifusum, Hibbertia hirsuta, Pimelea humilis* as well as numerous herbs such as *Asperula conferta, Chrysocephalum apiculatum, Convolvulus angustissimus subsp. angustissimus, Cynoglossum suaveolens, Euchiton involucratus, Ptilotus spathulatus, Solenogyne dominii* and *Vittadinia muelleri.*

The community is mostly in good ecological condition with a diversity of native species and a low number of introduced species.

Plate 3: Good condition Lowland *Themeda triandra* grassland (GTL) - an example EPBCA-listed Lowland Native Grasslands of Tasmania (LNGT)

Lowland *Themeda triandra* grassland (GTL) is not listed under the Tasmanian NCA but better condition areas of the community qualify as Lowland Native Grasslands of Tasmania under the EPBCA (see Figure 4). There are 7,400 ha of GTL in Tasmania of which approximately 2,200 ha is protected within the Tasmanian Reserve Estate. In the SE Bioregion there is 1,800 ha (100 ha reserved) and within Brighton Municipality there are 300 ha (20 ha reserved)[10].

3.1.4 Lowland Grassland Complex (GCL)

This community occurs widely throughout the study area on slopes and flats with a history of some disturbance. Most areas of GCL were observed to be under some form of utilisation for farming/agricultural use (predominantly animal husbandry/stock grazing). A number of the paddocks mapped as GCL had recently been slashed making their classification a challenge and as such some of these areas may be better classified as agricultural land (FAG) if inspected under optimal conditions. Some of the dry rocky slopes (paddocks at the southern end of Dylan St) were currently under an intensive grazing regime but were mapped as GCL based of remnant species identification. Species composition reflects management history with many areas dominated by native grasses that have recolonised previously developed and ploughed pasture. Other areas with surfacing bedrock will not have been ploughed but have been intensively grazed. Here there is greater potential for native herbs to persist. The long lived low native shrub native tree violet – *Melicytus angustifolius* was observed at one site where there is potential for other significant flora to occur (Plate 6).

The community varies somewhat throughout the study area in species dominance but includes the native grasses such as *Themeda triandra, Rytidosperma caespitosum, Austrostipa stuposa, A. nodosa, and A. scabra*.

Lowland grassland complex (GCL) is not listed as a threatened community under the NCA; however, it can qualify under the EPBCA if certain criteria are met. There are 70,000 ha in Tasmania, 39,900 ha in the SE Bioregion and just 1200 ha in Brighton of which 70 20 ha is secured in reserves[9].

In this case all the patches of GCL fail to qualify for EPBCA listing under the criteria in Policy 3.18 of the EPBCA[10] (Appendix C). These patches do not have the necessary floristics of *Themeda/Poa rodwayi* and native herb cover to qualify (Appendix C).

Areas of GCL within the study area (excluding 33 Elderslie Rd) possess a moderate to high potential of supporting ephemeral flowering threatened flora, particular the rocky grassland areas at the southern end of Dylan St as shown in Plate 8.

Plate 4: Slashed GCL on 33 Elderslie Road dominated by *Rytidosperma* and *Austrostipa* species

[9] TASVEG_3_0_areaBYvegcode_June 2014. (spreadsheet provided by DPIPWE)
[10] Commonwealth of Australia 2009 – Lowland Native Grasslands of Tasmania Policy Statement 3.18

Plate 5: Recently slashed GCL on 33 Elderslie Road (noting green/red patches of *Themeda triandra*)

Plate 6: Intensively grazed rocky hillslopes (GCL) at the southern end of Dylan Street (high potential for ephemeral threatened flora species)

3.1.5 Extra-urban miscellaneous (FUM) & Agricultural Land (FAG)

Large areas of vegetation within the study area meet the Tasveg description of Extra-urban miscellaneous (FUM) or Agricultural Land (FAG). For the purposes of this study mapping units for FUM and FAG types have been combined into a single unit for 'modified land' as they are ecologically equivalent to each other in terms of there general disturbance history and relative lack of significant biodiversity values. It should be noted that within the modified land areas there are small remnant areas of native grassland (GCL) which can be identified at the scale of 0.5 ha or less. Such sites are predominantly disturbance-induced forms of the GCL community and have a low-moderate potential for supporting threatened flora species.

Plate 7: Examples of Agricultural Land (above) and Extra-urban miscellaneous (below)

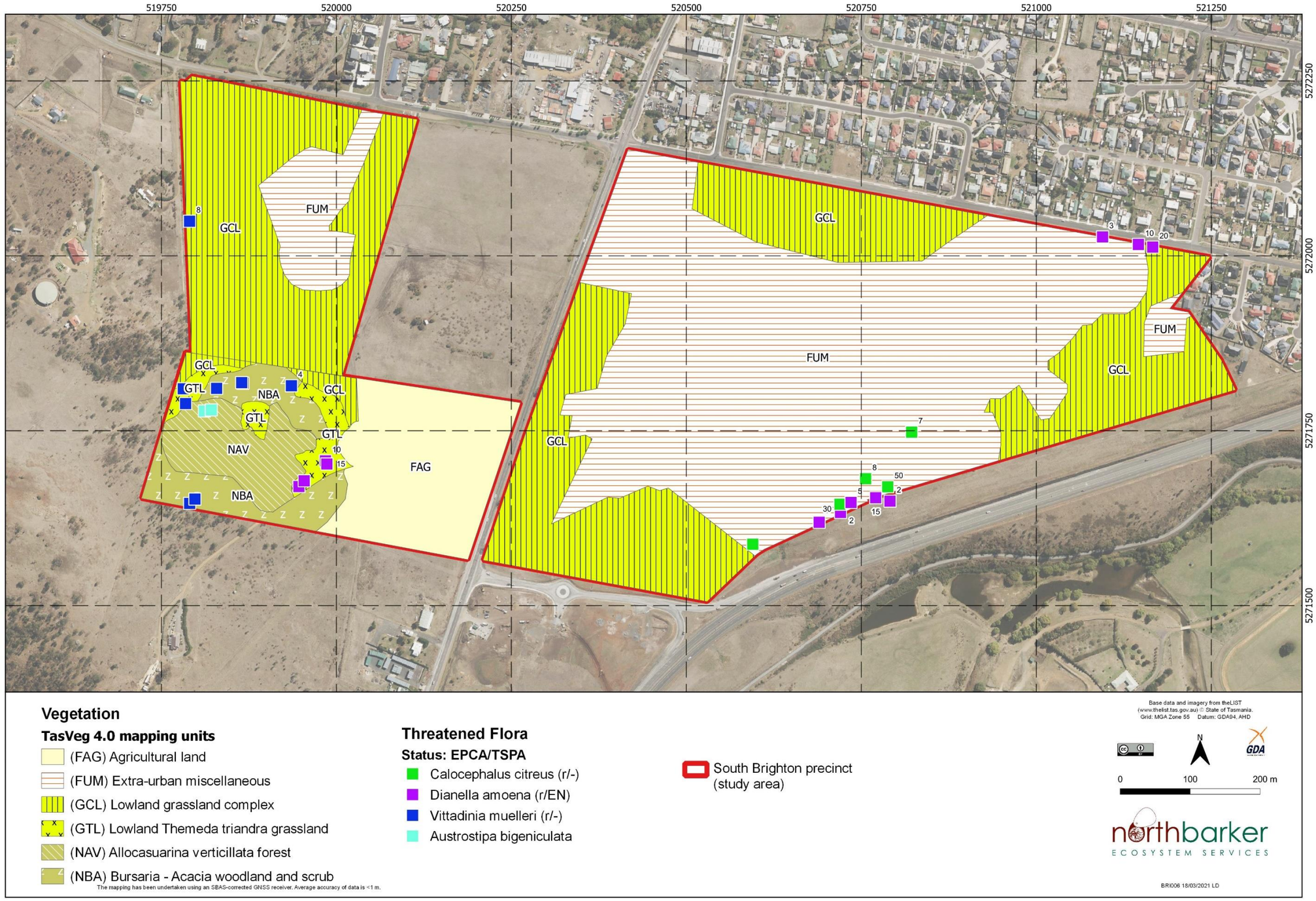

Figure 2: Vegetation communities and threatened species

3.2 Flora of Conservation Significance

3.2.1 Threatened Flora Recorded in Survey

- *Dianella amoena (matted flaxlily) – TSPA (rare), EPBCA (Endangered)*

Dianella amoena (Plate 5) occurs in dry native grasslands and grassy woodlands in the southern half of the state. The species was identified at three patches including on 69A Brighton Road, the fenceline at 1 Melinda Court (adjacent William St) and the council land adjacent the Midland Highway. The species was not widespread and was limited to localised clumps and patches generally 4-10m^2 in size.

Plate 8: *Dianella amoena* – matted flaxlily. Plants located along William St fenceline in rough grazed GCL

Plate 9: *Dianella amoena* - matted flaxlily. Individuals located on council land near the Midland Highway growing remnant GCL/modified land

- *Austrostipa bigeniculata* (double-jointed spear grass) – TSPA (rare)

Austrostipa bigeniculata (Plate 10) occurs predominantly in southeast Tasmanian and the Midlands in grassy woodlands and grasslands. The species was found at two sites within grassy *Allocasuarina* and *Bursaria* forests on 69 Brighton Road with an estimated 300 plants found in an area of approximately 100m^2. It is possible that the species may be more widespread throughout the study area but could not be observed due to current land management practices (ie slashing/grazing).

Plate 10: Austrostipa bigeniculata - double-jointed spear grass. Several hundred mature plants associated with NBA

- *Vittadinia muelleri (narrowleaf new-holland-daisy) - TSPA (rare)*

Vittadinia muelleri is a widespread species throughout the Midlands and southeast of the state in grasslands and grassy woodlands including relatively degraded remnants and modified sites. Localised occurrences of the species were found on 69 Brighton Road and on 33 Elderslie Rd in association within dry grassland/woodland vegetation. The largest patch was found on 69 Brighton Rd in a strip of approximately 30 m long and 5 m wide along the properties main access road.

Plate 11: *Vittadinia muelleri* – narrowleaf new-holland daisy

- *Calocephalus citreus (lemon beautyheads) – TSPA (rare)*

Calocephalus citreus is found to southeast Tasmania in native grassland habitats including disturbed dry grassland environments. The species was found in the south of the study area on council -owned land and well as on adjacent private lands to the east and west. The species was identified on sites associated with some disturbance and was recorded as individual plants through to consolidated patches of up to 50 plants.

Plate 12: *Calocephalus citreus* – lemon beautyheads

3.3 Introduced Flora

Surveys of the study area recorded 31 introduced plant species including 8 declared weeds (Table 2). These include several environmental weeds found within areas of modified land (Table 2 and Figure 4).

Table 2: Declared weeds within survey area

Species	Comment	WONS[11]	Zone within Brighton Council
Rubus fruticosus blackberry	Localised patches throughout survey area	YES	Zone B Containment
Carduus pycnocephalus slender thistle	Localised patches of dead plants. Potential to be more widespread throughout survey area.		Zone B Containment
Foeniculum vulgare fennel	Clumps (including slashed areas) in agricultural land west of Dylan St		Zone B containment
Lepidium draba white weed	Localised patch mixed with horehound on dam wall		Zone B Containment
Lycium ferocissimum African boxthorn	Localised plants throughout FUM and FAG		Zone B Containment

[11] Weeds of National Significance

Species	Comment	WONS[11]	Zone within Brighton Council
Marrubium vulgare horehound	Clumps and patches in FAG		Zone B Containment
Ulex europaeus gorse	Prominent patches on Council land within survey area. Very few occurrences elsewhere.	YES	Zone B Containment
Salix sp willow	Limited to fenceline plantings and the drainage depression running N/S east of Dylan St.	YES	Zone B Containment

Slender thistle - *Carduus pycnocephalus*

Whiteweed – *Lepidium draba*

Fennel – *Foeniculum vulgare*

Gorse – *Ulex europeus*

African boxthorn - *Lycium ferocissimum*

Horehound - *Marrubium vulgare*

Willow – *Salix sp.*

Plate13: Declared weeds

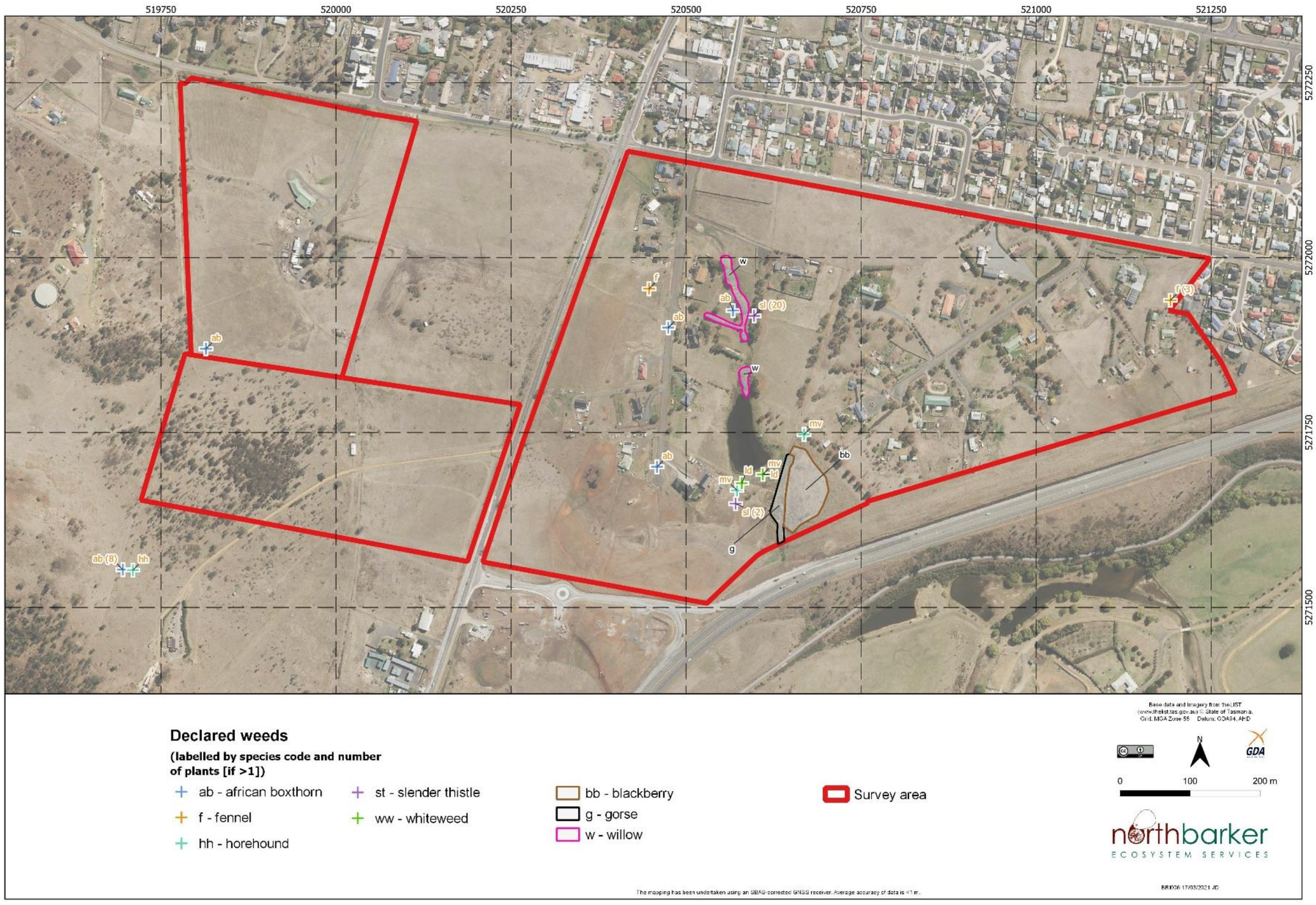

Figure 3 : Declared weeds identified within the study area

3.4 Threatened Fauna and Habitat

Very few areas of potential threatened fauna habitat were observed throughout the study area. This is primarily an artefact of historical land clearing which has occurred over most of the area in question.

Swift Parrot

The survey area falls within the core range of this species with the nearest known record of swift parrots approximately 1 km southwest of the survey area at the northern end of the Brighton Transport Hub. Within the study area, however, there was very little swift parrot habitat identified. Two small *E. ovata* trees (<40cm DBH) were identified in the drainage line east of Dylan St and occasional larger *E. globulus* trees (thought to be native remnants and >40 cm DBH) present along boundaries or within gardens within Melinda Court. Some gardens and yards within Melinda Court also support ornamental plantings of flowering eucalypts species such as *E. sideroxylon* and *E. leucoxylon* which can also be opportunistically used for swift parrots foraging. Overall, the extent of swift parrot habitat within the study area is limited.

Masked Owl

The survey area falls within the core range of the masked owl and a known roadkill record of the species exists to the south on the Midland Highway. No suitable nesting habitat for this species was observed within the survey area (large trees with large hollows absent) and it is likely that the survey area presents foraging habitat only for this species.

Eastern Quoll/Eastern Barred Bandicoot

Potential habitat for both these species is present within the study area in the form of dry grasslands and modified land which is common throughout the survey area and surrounding non-developed land. Consequently, it is highly likely that eastern barred bandicoots are present.

Green & Gold Frog

One large farm dam with aquatic vegetation was identified as potential habitat for this species within the survey area. Green and Gold Frogs were not detected at the time of survey and they are unlikely to be present as the species is likely to be extinct in the southeast is Tasmania apart from known sites near Richmond.

Tussock Skink

This species is known from the Brighton area, particularly near the old Pontville Small Arms Complex firing ranges and to public reserves managed by the Department of State Growth near the Brighton Transport Hub south of Lodge Hill. These support *Themeda triandra* and *Poa labillardierei* grasslands. Such habitat is restricted within the survey area to the better condition areas of native grassland (GTL) and *Bursaria – Acacia* woodland (NBA) on 69 Brighton Rd.

4 LEGISLATIVE REQUIREMENTS

4.1 Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The EPBCA is structured for self-assessment; the proponent of a development must determine whether 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.

Impacts to EPBC listed threatened flora and vegetation communities within the study area will require an assessment against the MNES Significant Impact criteria to determine if a referral under this Act is warranted. Substantial clearance of the grassland and woodland in the north west corner of 69 Brighton Road is likely to warrant a referral to the Department of Agriculture water and the Environment.

4.2 Tasmanian *Threatened Species Protection Act 1995*

Any impact on threatened plant species listed under the TSPA will require a 'permit to take' from the Policy and Conservation Assessments Branch (PCAB) at the Department of Primary Industries, Parks, Wildlife and the Environment (DPIPWE).

Potential impacts to State-listed flora present within the development precinct area may trigger a permit to take requirement under this Act for several species.

4.3 Tasmanian *Nature Conservation Act 2002*

No threatened vegetation communities listed under Schedule 3A on the NCA have been identified within the development precinct area.

The NCA does not regulate impacts to these communities but informs relevant criteria in some of the local Planning Schemes.

4.4 Tasmanian *Weed Management Act 1999*

The eight declared weeds recorded through the development precinct area are listed as Zone B species within the Brighton Council Municipality. 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 principal aim.

4.5 Brighton Interim Planning Scheme 2015

The following planning scheme Codes are relevant to the study area as follows:

- Landslide Hazard Area
- Bushfire Prone Areas

Neither of these overlays have any specific bearing on the management of ecological values documented in this report.

5 Conclusions and Recommendations

NBES have completed a preliminary natural values assessment of the proposed South Brighton Development Precinct (SBDP) site. Key findings and recommendations in relation to the identified values are as follows:

5.1 Vegetation Communities

The majority of the SBDP area supports agricultural and peri-urban modified lands as well as patches of remnant native grasslands currently utilised for grazing. Native grasslands throughout 33 Elderslie Road and the properties of Dylan Street and Melinda Court have been classified as 'Lowland grassland complex' or GCL under the TASVEG classification system and in this case none of these areas qualify as the EPBCA-listed community 'Lowland Native Grasslands of Tasmania'.

A section in the western portion of 69 Brighton Road, however, supports significant vegetation values including the EPBCA-listed community 'Lowland Native Grasslands of Tasmania'. Further investigations are being undertaken of this site to determine the legislative implications of developing some of this area.

5.2 Flora of Conservation Significance

Four threatened flora species were recorded during the natural values assessment including the EPBCA-listed *Dianella amoena* and the TSPA-listed species *Austrostipa bigeniculata*, *Vittadinia muelleri* and *Calocephalus citreus*.

The locations of these threatened species should be noted and taken into consideration in future design of the development precinct with the aim of avoiding impacts to these species wherever possible. Where impacts to *Dianella amoena* are unavoidable, a review against the EPBCA Matters of National Environmental Significance impact assessment criteria will be required and depending on the scale of impacts a referral under that Act may be warranted. Where impacts to TSPA-listed flora are unavoidable, a 'permit to take' will need to be obtained from DPIPWE.

Areas within the SBDP which support GCL (Lowland grassland complex) also support potential habitat for additional threatened flora which have not been accounted for in this assessment. This is due to seasonal requirements for identifying these species (ie Spring/Summer flowering orchids and lilies) and the current intensive grazing regimes which exist on parts of the land (particularly the rocky paddocks at the southern end of Dylan St - as shown in Plate 8). To ensure that a complete assessment of all potential threatened flora is performed throughout the SBDP, it is recommended that areas of GCL are reinspected during an optimal time (Oct/Nov) to confirm the presence/absence of these species. Optimal surveying conditions for these flora would also require the exclusion of stock grazing from these sites for a period of 4-6 months prior to reinspection.

Areas of rocky grasslands (Appendix G) have a high likelihood of supporting a threatened lichen (*Xanthoparmelia vicariella.)* with existing records of the species from the Brighton area in similar habitat conditions. Any substantial development throughout the southern portion of the SBDP would require further investigations to determine presence/absence of threatened lichen species.

5.3 Introduced Flora

Eight WMA listed 'declared' weeds were found throughout the SDBP. All these species are identified as Zone B weeds within the Brighton Municipality. It would benefit the future development of the SBDP to establish a weed management plan as a guide to controlling and containing these species within the proposed development areas within the requirements of the WMA.

5.4 Threatened Fauna and Habitat

The SBDP in general does not support large areas of significant habitat for threatened fauna however there are some wide-ranging species such as the Eastern Barred Bandicoot and the Eastern Quoll which are expected to utilise the area for foraging and in some instances breeding where the limited opportunities for denning exist. Overall, however, these species are relatively adaptable and benefit from an availability of large areas of potential habitat in the Brighton area as well as more broadly through the southern Midlands and southeast Tasmania. As such the development of the SBDP will not result in any meaningful decline in the availability of habitat for these species.

Areas of native grassland within the SBDP provide potential habitat for the Tussock Skink and the species is known from reliable observations on the northern side of Brighton near Ford Road and Rifle Range Road. Good quality potential habitat for this species (including key indicator habitat plants such as Themeda and Poa tussocks) is found on the northwestern portion of 69 Brighton Road. Any substantial development within this specific location would require further target surveys to determine the presence/absence of the Tussock Skink.

Remaining areas of native grassland throughout the SBDP (ie areas of GCL) are generally lacking these key habitat features and are not connected to any nearby consolidated areas of optimal grassland habitat. As such, the habitat potential for Tussock Skink throughout the remainder of the SBDP (including areas mapped as GCL) is deemed to be low.

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APPENDIX A: Vascular Plant Species

Status codes:

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

Name		Common name	Status
	DICOTYLEDONAE		
	AMARANTHACEAE		
3 4	*Ptilotus spathulatus*	pussytails	
	APIACEAE		
2	*Foeniculum vulgare*	fennel	d
	ASTERACEAE		
2	*Calocephalus citreus*	lemon beautyheads	r
1 3	*Carduus pycnocephalus*	slender thistle	d
4	*Chrysocephalum apiculatum*	common everlasting	
2 5	*Cirsium vulgare*	spear thistle	i
3 4	*Euchiton involucratus*	star cottonleaf	
2	*Helminthotheca echioides*	bristly oxtongue	i
2 3 4 5	*Hypochaeris radicata*	rough catsear	i
1	*Leontodon saxatilis*	hairy hawkbit	i
1 2	*Olearia ramulosa*	twiggy daisybush	
2	*Ozothamnus ferrugineus*	tree everlastingbush	
1 2 5	*Senecio quadridentatus*	cotton fireweed	
4	*Solenogyne dominii*	smooth flat-herb	
2	*Sonchus oleraceus*	common sowthistle	i
1 3 5	*Sonchus asper*	prickly sowthistle	i
3 4 5	*Vittadinia muelleri*	narrowleaf new-holland-daisy	r
	BORAGINACEAE		
4 5	*Cynoglossum suaveolens*	sweet houndstongue	
	BRASSICACEAE		
1 5	*Hirschfeldia incana*	hoary mustard	i
2	*Lepidium draba*	hoary cress	d
3	*Lepidium pseudotasmanicum*	shade peppercress	
	CARYOPHYLLACEAE		
1	*Cerastium sp.*	mouse-ear chickweed	i
1	*Petrorhagia sp.*	pink	i
4	*Polycarpon tetraphyllum*	fourleaf allseed	i
4	*Silene gallica var. gallica*	french catchfly	i
	CASUARINACEAE		
1 3	*Allocasuarina verticillata*	drooping sheoak	
	CHENOPODIACEAE		
2	*Einadia nutans subsp. nutans*	climbing saltbush	
3	*Chenopodium glaucum*	pale goosefoot	i
	CONVOLVULACEAE		
1 4 5	*Convolvulus angustissimus subsp. angustissimus*	blushing bindweed	
3	*Convolvulus arvensis*	field bindweed	i
3	*Dichondra repens*	kidneyweed	
	DILLENIACEAE		
2 4	*Hibbertia hirsuta*	hairy guineaflower	

	ERICACEAE		
1 3 4	*Astroloma humifusum*	native cranberry	
	FABACEAE		
1 2	*Acacia dealbata subsp. dealbata*	silver wattle	
1	*Acacia mearnsii*	black wattle	
1 4	*Bossiaea prostrata*	creeping bossiaea	
1 2	*Lotus corniculatus*	bird's-foot trefoil	i
2	*Ulex europaeus*	gorse	d
	GERANIACEAE		
1 2 3	*Erodium sp.*	Storksbill	
	HEMEROCALLIDACEAE		
4	*Dianella revoluta*	spreading flaxlily	
	LAMIACEAE		
5	*Marrubium vulgare*	white horehound	d
	LINACEAE		
1 3 5	*Linum trigynum*	french flax	i
	MYRTACEAE		
1 2	*Eucalyptus viminalis subsp. viminalis*	white gum	
	OXALIDACEAE		
1	*Oxalis sp.*	woodsorrel	
	PITTOSPORACEAE		
1 3 4 5	*Bursaria spinosa subsp. spinosa*	prickly box	
	PLANTAGINACEAE		
2 3 4 5	*Plantago lanceolata*	ribwort plantain	i
2	*Veronica gracilis*	slender speedwell	
	PRIMULACEAE		
1	*Lysimachia arvensis*	scarlet pimpernel	i
	RESEDACEAE		
3 5	*Reseda luteola*	weld	i
	ROSACEAE		
1	*Acaena echinata*	spiny sheeps burr	
1	*Acaena ovina*	hairy sheepsburr	
2 5	*Rosa rubiginosa*	sweet briar	i
2	*Rubus fruticosus*	blackberry	d
2 4	*Sanguisorba minor*	salad burnet	i
	RUBIACEAE		
4	*Asperula conferta*	common woodruff	
	SALICACEAE		
2	*Salix sp.*	willow	d
	SAPINDACEAE		
1	*Dodonaea viscosa subsp. spatulata*	broadleaf hopbush	
	SOLANACEAE		
2	*Lycium ferocissimum*	african boxthorn	d
	THYMELAEACEAE		
1 4	*Pimelea humilis*	dwarf riceflower	

MONOCOTYLEDONAE

	ASPARAGACEAE		
2	*Lomandra longifolia*	sagg	
1	*Lomandra nana*	dwarf mat-rush	

	CYPERACEAE		
1 4	*Carex breviculmis*	shortstem sedge	
1 4	*Lepidosperma gunnii*	narrow swordsedge	
1 4	*Lepidosperma laterale*	variable swordsedge	
2	*Schoenus apogon*	common bogsedge	
	LAXMANNIACEAE		
1	*Arthropodium milleflorum*	pale vanilla-lily	
	JUNCACEAE		
4	*Juncus amabilis*	gentle rush	
5	*Juncus pallidus*	pale rush	
2	*Juncus kraussii*	sea rush	
	POACEAE		
1	*Aira caryophyllea*	silvery hairgrass	i
3 4 5	*Anthosachne scabra*	rough wheatgrass	
1	*Austrodanthonia carphoides var. angustior*	short wallabygrass	
4	*Austrostipa bigeniculata*	doublejointed speargrass	r
3 4 5	*Austrostipa nodosa*	knotty speargrass	
1	*Austrostipa pubinodis*	tall speargrass	
3 4 5	*Austrostipa scabra*	rough spear grass	
1 3 5	*Austrostipa stuposa*	corkscrew speargrass	
1 4	*Avena sp.*	oat	i
1	*Briza minor*	lesser quaking-grass	i
1	*Bromus diandrus*	great brome	i
4	*Bromus hordeaceus*	soft brome	i
1	*Cynosurus echinatus*	rough dogstail	i
3 5	*Dactylis glomerata*	cocksfoot	i
4	*Danthonia decumbens*	heath grass	i
3	*Deyeuxia sp.*	bent grass	
4	*Dichelachne crinita*	longhair plumegrass	
3	*Dichelachne sp.*	plume-grass	
1 4	*Lachnagrostis sp.*	blown grass	
2	*Phalaris sp.*	canarygrass	i
1 5	*Poa rodwayi*	velvet tussockgrass	
1 3 4 5	*Rytidosperma caespitosum*	common wallabygrass	
1	*Rytidosperma racemosum var. racemosum*	stiped wallabygrass	
1 4 5	*Themeda triandra*	kangaroo grass	
1	*Vulpia sp.*	fescue	i

APPENDIX B: Vascular Plants Within Vegetation Communities

Community: NAV – *Allocasuarina verticillata* forest

Low Shrubs:	*Astroloma humifusum*
Herbs:	*Euchiton involucratus, Lepidium pseudotasmanicum, Ptilotus spathulatus, Vittadinia muelleri*
Grasses:	*Anthosachne scabra, Austrostipa nodosa, Austrostipa scabra, Austrostipa stuposa, Deyeuxia sp., Dichelachne sp., Rytidosperma caespitosum*
Weeds:	*Carduus pycnocephalus, Dactylis glomerata, Hypochaeris radicata, Linum trigynum, Plantago lanceolata, Reseda luteola, Sonchus asper*

Community: NBA – *Bursaria – Acacia* woodland and scrub / GTL – Lowland *Themeda triandra* grassland

Tall Shrubs:	*Bursaria spinosa subsp. spinosa*
Shrubs:	*Bossiaea prostrata*
Low Shrubs:	*Astroloma humifusum, Hibbertia hirsuta, Pimelea humilis*
Herbs:	*Asperula conferta, Chrysocephalum apiculatum, Convolvulus angustissimus subsp. angustissimus, Cynoglossum suaveolens, Dianella revoluta, Euchiton involucratus, Microtis sp., Ptilotus spathulatus, Solenogyne dominii, Vittadinia muelleri*
Graminoids:	*Carex breviculmis, Juncus amabilis, Lepidosperma gunnii, Lepidosperma laterale*
Grasses:	*Anthosachne scabra, Austrostipa bigeniculata, Austrostipa nodosa, Austrostipa scabra, Dichelachne crinita, Lachnagrostis sp., Rytidosperma caespitosum, Themeda triandra*
Weeds:	*Avena sp., Bromus hordeaceus, Danthonia decumbens, Hypochaeris radicata, Plantago lanceolata, Polycarpon tetraphyllum, Sanguisorba minor, Silene gallica var. gallica, Silene gallica var. quinquevulnera*

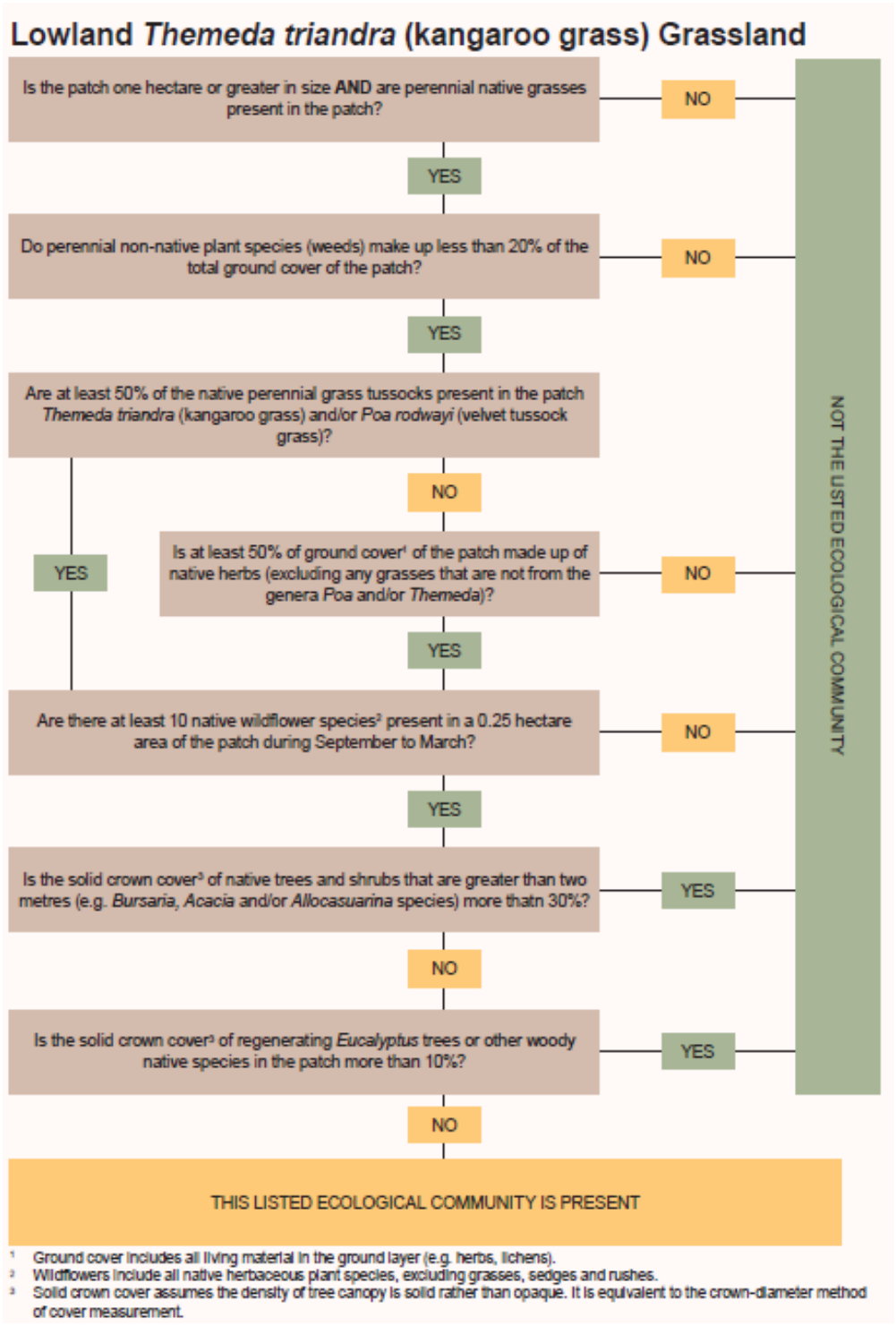
Community: GCL – Lowland grassland complex

Tall Shrubs:	*Bursaria spinosa subsp. Spinosa*
Low Shrubs:	*Melicytus angustifolius*
Herbs:	*Convolvulus angustissimus subsp. angustissimus, Cynoglossum suaveolens, Senecio quadridentatus, Vittadinia muelleri*
Grasses:	*Anthosachne scabra, Austrostipa nodosa, Austrostipa scabra, Austrostipa stuposa, Poa rodwayi, Rytidosperma caespitosum, Themeda triandra*
Weeds:	*Cirsium vulgare, Dactylis glomerata, Hirschfeldia incana, Hypochaeris radicata, Linum trigynum, Marrubium vulgare, Plantago lanceolata, Reseda luteola, Rosa rubiginosa, Sonchus asper*

Community: FUM/FAG – Modified/Agricultural land

Herbs:	*Calocephalus citreus, Erodium sp.*
Graminoids:	*Carex tasmanica, Juncus kraussii subsp. australiensis, Schoenoplectus pungens, Schoenus apogon*
Grasses:	*Austrostipa nodosa, Poa rodwayi, Rytidosperma caespitosum, Themeda triandra*
Weeds:	*Carduus pycnocephalus, Cirsium vulgare, Dactylis glomerata, Foeniculum vulgare, Helminthotheca echioides, Hirschfeldia incana, Holcus lanatus, Hypochaeris radicata, Lepidium draba, Lolium perenne, Lotus corniculatus, Lycium ferocissimum, Marrubium vulgare, Phalaris aquatica, Plantago coronopus, Plantago lanceolata, Polygonum aviculare, Reseda luteola, Rosa rubiginosa, Rubus fruticosus, Rumex obtusifolius, Salix sp., Sanguisorba minor,*

APPENDIX C: Lowland Native Grasses of Tasmania EPBCA Listing Criteria



APPENDIX D: Threatened Flora within 5 km of the study area

Species	National Status EPBCA	State Status TSPA	Records within 500m	Records within 5km	Habitat	Likelihood of Occurrence	Commentary
Asperula scoparia subsp. scoparia prickly woodruff		Rare	2	5	Occurs in grassland and grassy forest and woodland on poorly drained sites.	**LOW**	Suitable habitat present (grassland/grassy woodland) but species was not observed.
Austrostipa bigeniculata double-jointed spear grass		Rare	1	89	Recorded in significant numbers in roadsides and paddocks not subject to intensive grazing. Best examples are in sites lacking grazing.	**PRESENT**	Suitable habitat present and species identified on 69 Brighton Road and nearby grassland areas outside of the study area. Small potential to have been overlooked due to relatively late timing of survey.
Austrostipa blackii crested spear grass		Rare	2	2	Occurs in native grasslands usually on fertile substrates which are present. Species not observed.	**MODERATE**	Potential habitat present. May have been overlooked if present in small numbers.
Bolboschoenus caldwellii Sea clubsedge		Rare	-	1	Typically associated with saline rushland and sedgeland.	**NONE**	No suitable habitat for this species identified within study area.
Brachyscome rigidula cutleaf daisy		Vulnerable	-	1	Rough pasture, grassland and grassy woodland on dry rocky hills and flats.	**LOW**	Low potential to occur within study area based on limited records in the area but may have been overlooked due to timing of survey.
Calocephalus citreus lemon beautyheads		Rare	18	145	Occurs in grassland on fertile soils or heavy clays.	**PRESENT**	Species found in southern end of the study area in native grassland remnants within modified land.

Species	National Status EPBCA	State Status TSPA	Records within 500m	Records within 5km	Habitat	Likelihood of Occurrence	Commentary
Calocephalus lacteus lemon beautyheads		Rare	1	7	Occurs in grassland on fertile soils.	**LOW**	Visually distinct species unlikely to have been overlooked.
Carex gunniana mountain sedge		Rare	-	2	Occurs in wet eucalypt forest and sandy heathlands near water or on wet sites	**VERY LOW**	No suitable habitat for this species present within study area.
Colobanthus curtisiae grassland cupflower	Vulnerable	Rare	-	1	Occurs in stony grassland and dry grassy woodlands on fertile soils.	**LOW**	Not observed within study area. Unlikely to have been overlooked if present.
Cryptandra amara pretty pearl flower		Endangered	-	12	Occurs in stony grassland on fertile soils (ie basalt)	**LOW**	Not observed. Largely dry/rocky dolerite substrates within study area.
Desmodium varians slender ticktrefoil		Endangered	-	4	Occurs in open grassland and grassy shrublands.	**LOW**	Not recorded though potentially overlooked if present in low numbers.
Dianella amoena grassland flaxlily	Endangered	Rare	25	569	Occurs in grassy habitat on fertile soils.	**PRESENT**	Recorded from nearby areas and confirmed present within study area in native grasslands/remnants.
Discaria pubescens spiky anchorplant		Endangered	-	1	Found sporadically in the Midlands and Central Highlands in drier sites including dry dolerite woodlands, rough pasture sites and roadsides.	**NONE**	Visually distinct species unlikely to be present.
Eryngium ovinum blue devil		Vulnerable	-	36	Occurs in grassy forests and open grassy woodlands on clay soils derived from dolerite.	**LOW**	Small areas of potential habitat present but largely too dry throughout study area. Unlikely to have been overlooked.
Eucalyptus risdonii risdon peppermint		Rare	-	63	Dry forest and woodland on mudstone.	**NONE**	Not present within study area.

Species	National Status EPBCA	State Status TSPA	Records within 500m	Records within 5km	Habitat	Likelihood of Occurrence	Commentary
Glycine latrobeana clover glycine	Vulnerable	Vulnerable	-	14	Occurs mostly in grassy/heathy forests and woodlands and native grasslands.	**LOW**	A small and easily overlooked species if not in flower. Not identified in the study area.
Gratiola pubescens hairy brooklime		Rare	-	1	Occurs in marshes, wetland verges and moist pasture/grasslands	**VERY LOW**	Not observed from study area and habitat largely unsuitable.
Haloragis aspera rough raspwort		Vulnerable	-	1	Occurs in open grasslands	**LOW**	Potential habitat present within study area but species not observed.
Haloragis heterophylla variable raspwort		Rare	-	24	Occurs in grasslands and dry grassy woodlands.	**HIGH**	Identified in the southern portion of 69 Brighton Road associated with rough GCL/FAG
Hibbertia basaltica basalt guineaflower	Endangered	Endangered	33	140	Occurs in grassland on basalt soils where it is confined to the slopes of the Jordan River from Pontville to Bridgewater.	**LOW**	Recorded from nearby areas of intact native grassland. Not observed during field assessment. Potential to detect species reduced by grazing intensity at certain sites.
Isoetopsis graminifolia grass cushion		Vulnerable	-	129	Tiny ephemeral annual daisy which is associated with fertile soils.	**MODERATE**	Survey conducted outside of species flowering period. Potentially overlooked.
Lepidium hyssopifolium soft peppercress	Endangered	Endangered	-	4	Occurs on dry fertile soils in growth suppression zone.	**LOW**	Limited suitable habitat for this species observed throughout study area.
Lythrum salicaria purple loosestrife		Vulnerable	-	1	Species if found in swamps, streams and riverbanks mainly in the north of the state.	**VERY LOW**	Not observed within study area and unlikely to have been overlooked.
Pellaea calidirupium hot rock fern		Rare	-	11	Occurs on basalt rock outcrops and in gullies.	**VERY LOW**	Limited suitable habitat available within study area.

Species	National Status EPBCA	State Status TSPA	Records within 500m	Records within 5km	Habitat	Likelihood of Occurrence	Commentary
Pterostylis wapstrarum fleshy greenhood	Critically Endangered	Endangered	-	6	Occurs in dry grassland on fertile soils.	**LOW**	Some potential habitat present but unable to be surveyed for due to timing of survey and intensity of grazing regimes.
Pterostylis ziegeleri grassland greenhood	Vulnerable	Vulnerable	-	38	Occurs in dry grassland on fertile soils.	**MODERATE**	Some potential habitat present but unable to be surveyed for due to timing of survey and intensity of grazing regimes.
Pultenaea prostrata slender curved flower		Vulnerable	-	43	Occurs in grassy woodlands and grasslands.	**LOW**	Some potential habitat observed within study area but species unlikely to have been overlooked.
Rumex bidens mud dock		Vulnerable	-	1	Occurs at the margins of lakes, swamps, slow moving streams and drainage channels.	**VERY LOW**	One large dam within the study area but species not observed at this location.
Schoenoplectus tabernaemontani river club sedge		Rare	-	1	Occurs in riparian rushland and sedgeland.	**VERY LOW**	*Schoenoplectus pungens* observed in areas of potential habitat but not *S. tabernaemontani*
Scleranthus diander tufted knawel		Vulnerable	-	1	This species inhabits grassy woodland and is associated with dolerite and basalt substrates.	**VERY LOW**	One recent record from east of the study area, possibly erroneous as thought to be limited to the Tunbridge area. Occurs in dry fertile grasslands. Some potential habitat, although unlikely to survive intense grazing pressure.
Scleranthus fasciculatus spreading knawel		Vulnerable	-	2	This is a species of rough grassland and grassy woodland.	**LOW**	Limited potential habitat but species not observed.

Species	National Status EPBCA	State Status TSPA	Records within 500m	Records within 5km	Habitat	Likelihood of Occurrence	Commentary
Senecio squarrosus leafy fireweed		Rare	-	2	Occurs in dry, grassy forests and other vegetation types.	**LOW**	Not observed within study area and unlikely to have been overlooked.
Stackhousia subterranea grassland candles		Endangered	-	6	Occurs in native grasslands and grassy woodlands/forests, often associated with fertile soils derived from basalt.	**MODERATE**	Surveyed outside of species key flowering period (Sept – Nov). Moderate potential to have been overlooked if present.
Stuckenia pectinata fennel pondweed		Rare	-	1	Occurs in fresh to brackish waters in rivers, estuaries and inland lakes.	**VERY LOW**	Species not observed. Limited potential habitat within study area.
Teucrium corymbosum forest germander		Rare	-	2	Occurs in riparian flats but also extends into dry sclerophyll forest and woodland	**LOW**	Species not observed. Study area largely unsuitable for species.
Triptilodiscus pygmaeus dwarf sunray		Vulnerable	-	47	Occurs in dry grassland on fertile soils.	**MODERATE**	Surveyed outside of species key flowering period (Sept – Nov). Moderate potential to have been overlooked if present.
Vallisneria australis ribbon weed		Rare	2	19	Occurs in riverine aquatic habitat.	**VERY LOW**	No suitable habitat within study area.
Velleia paradoxa spurred velleia		Vulnerable	1	5	Occurs in dry stony grasslands	**LOW**	Species not observed, but more readily observed in early summer flowering period.
Vittadinia burbidgeae smooth new-holland daisy		Rare	-	5	Occurs in native grassland and grassy woodland.	**MODERATE**	Species not recorded but potential habitat present. Closely related *V. muelleri* recorded at multiple sites.
Vittadinia cuneata fuzzy new-holland daisy		Rare	1	11	Occurs in dry grasslands	**LOW**	Species not recorded but potential habitat present.

Species	National Status EPBCA	State Status TSPA	Records within 500m	Records within 5km	Habitat	Likelihood of Occurrence	Commentary
Vittadinia gracilis woolly new-holland daisy		Rare	11	63	Occurs in dry grasslands	**LOW**	Species not recorded but potential habitat present. All Vittadinia species within study area attributed to *V. muelleri*.
Vittadinia muelleri narrowleaf new-holland daisy		Rare	54	253	Occurs in dry grasslands	**PRESENT**	Species present at numerous locations throughout study area.
Xanthoparmelia amphixantha		Endangered	-	49	Occurs on basalt soils in native grassland where soil crust is retained.	**LOW**	Potential habitat heavily degraded
Xanthoparmelia mannumensis		Vulnerable	-	3	Occurs on sandstone and basalt rock outcrops	**VERY LOW**	Rocky outcrop habitat absent from study area.
Xanthoparmelia molliuscula		Endangered	-	11	Occurs on basalt soils in native grassland where soil crust is retained.	**LOW**	Potential habitat heavily degraded
Xanthoparmelia vicariella		Rare	-	15	Occurs on basalt and dolerite rocks in native grassland.	**MODERATE**	Potential to occur within study area within rocky grasslands. Further investigations required.

APPENDIX E – Threatened Fauna within 5 km of the study area

Species	Status TSPA / EPBCA	Records in 500m / 5km	Potential to occur	Observations and Preferred Habitat[12]
MAMMALS				
Dasyurus maculatus maculatus Spotted-tail quoll	Rare / VULNERABLE	0 / 1	Denning: NONE Foraging: LOW	This naturally rare forest-dweller most commonly inhabits wet forest but also occurs in dry forest. It forages and hunts on farmland and pasture, travelling up to 20 km at night, and shelters in logs, rocks or thick vegetation. There haven't been any recorded sightings of this species in the immediate vicinity. The study area provides some foraging and shelter habitat. No burrows were found on site. The species is expected to occasionally utilise the study area for foraging.
Dasyurus viverrinus Eastern quoll	Endangered / ENDANGERED	1 / 3	Denning: LOW Foraging: MODERATE	Occurs in most parts of Tasmania but is recorded infrequently in the wetter western third of the state. This species' distribution is associated with areas of low rainfall and cold winter minimum temperatures. It is found in a range of vegetation types including open grassland (including farmland), tussock grassland, grassy woodland, dry eucalypt forest, coastal scrub and alpine heathland, but is typically absent from large tracts of wet eucalypt forest and rainforest. Predominantly foraging habitat throughout study area with limited sheltering/denning opportunities.
Sarcophilus harrisii Tasmanian devil	Endangered / ENDANGERED	0 / 16	Denning: NONE Foraging: MODERATE	Inhabits forest, woodland and agricultural areas. They are nocturnal hunters and scavengers. During the day they shelter in caves, old burrows and thick scrub. Devil facial tumour disease is the main threat to this species. The protection of maternal dens is important to assist recovery.

[12] Forest Practices Authority and Threatened Species Section (2016)

Species	Status TSPA / EPBCA	Records in 500m / 5km	Potential to occur	Observations and Preferred Habitat[12]
				The study area provides foraging and some sheltering habitat. No burrows were found on site.
Perameles gunnii Eastern barred bandicoot	-/Vulnerable	2 /33	Denning: MODERATE Foraging: MODERATE	Inhabits 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. Wide-ranging and adaptable species. Likely to utilise study area predominantly for foraging.
BIRDS				
Accipiter novaehollandiae Grey goshawk	Endangered / -	0 / 1	Nesting: NONE Foraging: LOW	Inhabits large tracts of wet forest. No suitable habitat is present in the immediate vicinity. Mature blackwood (*Acacia melanoxylon*) is the preferred nesting tree for this species. Juveniles or non-breeding adults may visit the area on occasion.
Aquila audax fleayi Wedge-tailed eagle	Endangered / ENDANGERED	0 / 12	Nesting: NONE Foraging: HIGH	Requires tracts of large old growth trees in sheltered areas for nesting and is highly sensitive to disturbance during the breeding season. There are no known nests within 3.5 km of the site and no suitable nesting habitat is present although it may forage in the vicinity.
Haliaeetus leucogaster White-belled sea-eagle	Vulnerable / -	0 / 9	Nesting: NONE Foraging: MODERATE	Similar habitat requirement to the wedge-tailed eagle but this is primarily a coastal species whose main foraging habitat is around open water. There are no known nests within 3.5 km of the site and no suitable nesting habitat present.
Lathamus discolor Swift parrot	Endangered / ENDANGERED	0 / 10	Nesting: NONE Foraging: LOW	Requires tree hollows for nesting and feeds on the nectar of blue gum (E. globulus) and black gum (E. ovata) flowers. No potential nest trees identified within study area. Six potential foraging trees present – ornamental eucalypt plantings within gardens also present some foraging habitat. Very little potential foraging habitat identified overall. The site is within core breeding range (SPIBAs).

Species	Status TSPA / EPBCA	Records in 500m / 5km	Potential to occur	Observations and Preferred Habitat[12]
Tyto novaehollandiae castanops Masked owl	Endangered / -	1 / 5	Nesting: UNLIKELY Foraging: HIGH	Requires large old-growth hollow-bearing trees for nesting. Core nesting range includes the east coast but on the other side of Great Oyster Bay. No suitable hollows bearing trees present within study area.
Pardalotus quadragintus Forty-spotted pardalote	Endangered / ENDANGERED	0 / 0	LOW	Inhabits forest and woodland supporting *Eucalyptus viminalis (*white gum) where the canopy cover of *E. viminalis* is greater than or equal to 10% or where E. viminalis occurs as a localised canopy dominant or co-dominant in patches exceeding 0.25 ha. *E.viminalis* present within the southern extent of 69 Brighton Road but not present within the study area in question. 2 isolated white gums present on the boundary of 12 Dylan Street near Brighton Road. No important/significant habitat for this species identified.
REPTILES				
Pseudemoia pagenstecheri tussock skink	Vulnerable / -	0 / 5	MODERATE - HIGH	Inhabits grassland and grassy woodland (including rough pasture with paddock trees), generally with a greater than 20% cover of native grass species, especially where medium to tall *Themeda/Poa* tussocks are present. Rough paddocks and GCL throughout study area considered sub-optimal habitat although grasslands on 69 Brihton Road are of good quality.
AMPHIBIANS				
Litoria raniformis Green and gold frog	Vulnerable / VULNERABLE	0 / 0	VERY LOW	Occurs in heavily vegetated wetlands and requires permanent freshwater for breeding. Species is probably extinct from the southeast of the State apart from known sites near Richmond. Potential habitat present in the form of a large dam located on 11 Dylan St. Smaller ephemeral dam on 17 Dylan St lacking vegetation and considered largely unsuitable. Not recorded in vicinity.

Species	Status TSPA / EPBCA	Records in 500m / 5km	Potential to occur	Observations and Preferred Habitat[12]
INVERTEBRATES				
Antipodia chaostola subsp leucophyla Chaostola skipper	Endangered / -	0 / 0	NONE	This species is uncommon and localised in its distribution. It is thought to prefer dry open eucalypt forest containing *Gahnia radula* or G. microstachya which are the larval food plants within which they construct shelters.. No suitable habitat for this species present within study area.
FISH				
Prototroctes maraena Australian grayling	Vulnerable / VULNERABLE	0 / 4	NONE	Inhabits streams and rivers in their lower to middle reaches. Areas above permanent barriers (e.g. dams and weirs) that prevent fish migration are not potential habitat. No suitable habitat present within study area.

APPENDIX G – Potential habitat for threatened lichen species within areas of GCL south of Dylan Street.