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Ecological Assessment

120 Russells Road, Mount Duneed

**Prepared for:
St Quentin Consulting**



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Document Information

Ecological Assessment for 120 Russells Road, Mount Duneed

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Summary

Okologie Consulting Pty Ltd was engaged by St Quentin Consulting to undertake an ecological assessment for the property at 120 Russells Road, Mount Duneed.

The property is proposed for development as a Residential Alcohol and Drug Rehabilitation Centre. The ecological assessment was undertaken to determine the extent of native vegetation and ascertain the presence/absence of any threatened flora or fauna species or associated habitats within the project area.

The project area was highly modified from agriculture use and comprised areas of exotic dominated grassland, interspersed with planted exotic trees present along the property boundary. Native vegetation consisted of two scattered trees and several modified patches of Grassy Woodland within the property and along Russells Road reserve. A revegetation area is partially located within the project area and extends onto the adjacent property to the east.

No listed threatened flora or fauna species were recorded and none are considered likely to occur due to the absence of suitable of habitat. An *Environment Protection Biodiversity Conservation Act 1999* referral will not be required, as no Matters of National Environmental Significance are present, or likely to be significantly impacted by future works within the project area. A *Flora and Fauna Guarantee Act 1988* permit will be required if any protected flora species (Golden Wattle) are proposed for removal along Russells Road reserve.

The removal, destruction or lopping of any native vegetation will require a permit under Clause 52.17 (Native Vegetation) of the Greater Geelong Planning Scheme. A permit to remove native vegetation within the property will also be required under Environmental Significance Overlay – Schedule 1.

Russells Road reserve is subject to Vegetation Protection Overlay – Schedule 1, and it is recommended that future access design through Russells Road reserve review the provision to the overlay to determine the requirement for a permit to remove native vegetation.

The proposed removal of any patches of Plains Grassy Woodland or scattered indigenous trees will require a biodiversity application and associated offsets in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*.

It is recommended that the development design applies the principles of ‘avoid and minimise’ to reduce impacts to native vegetation (wherever practicable) during the planning phase. The effort to avoid and minimise impacts to native vegetation should focus on areas of native vegetation that have the most value.



1 Introduction

1.1 Project Background

Okologie Consulting Pty Ltd was engaged by St Quentin Consulting to undertake an ecological assessment for the property at 120 Russells Road, Mount Duneed.

The property is proposed for development as a Residential Alcohol and Drug Rehabilitation Centre. The ecological assessment was undertaken to determine the extent of native vegetation and ascertain the presence/absence of any threatened flora or fauna species or associated habitats within the project area.

This report details the findings of the assessment and discusses environmental legislation and policy implications associated with future proposed development.

1.2 Objectives

The objectives of the assessment were to:

- Assess terrestrial ecological values (i.e. vegetation communities, flora and fauna species and associated habitats) within the project area.
- Ensure ecological values are identified in the early planning phase.
- Identify environmental legislation and policy requirements.

1.3 Site Description

The project area comprises property at 120 Russells Road, Mount Duneed (Allot. L2 Sec. 21 Parish Of Duneed) and Russells Road reserve (Figure 1). It is bound by Russells Road to the north and the Mount Duneed Recreation Reserve to the south, east and west.

The topography consists of low undulating slopes. The project area was previously used for agriculture, and sections of the property comprise a modified landform and substrate. The surrounding land use includes agriculture and recreation. The site contains a revegetation area and planted exotic trees on the western and northern boundaries.


The project area occurs within the Victorian Volcanic Plain bioregion, the Corangamite Catchment Management Authority boundary and the City of Greater Geelong municipality (DELWP 2018a). The Native Vegetation Location mapping shows the project area occurs within Location 1 and 2 (DELWP 2018b).

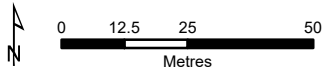


The project area is zoned Farming Zone (FZ) and is subject to Environmental Significance Overlay – Schedule 1 (ESO1), and is within a Designated Bushfire Prone Area. Russells Road reserve is subject to Vegetation Protection Overlay – Schedule 1 (VPO1) under the Greater Geelong Planning Scheme (DELWP 2018c).

Figure 1
Site Location
Russells Road, Mt
Duneed

Legend

 Subject Site



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2 Methodology

2.1 Species Information

Scientific and common names of flora species follow the Australian Plant Census (Australian National Botanic Gardens 2018). The names of terrestrial vertebrate fauna follow the Victorian Biodiversity Atlas (VBA) (DELWP 2018d). Vegetation communities follow the Ecological Vegetation Class (EVC) bioregion benchmarks (DELWP 2018a).

Native flora and fauna referred to as 'threatened' include species:

- Listed as critically endangered, endangered or vulnerable under the *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act) (DoEE 2018).
- Listed as Threatened under the *Flora and Fauna Guarantee Act 1988* (FFG Act) (DELWP 2015).
- Listed as critically endangered, endangered, vulnerable or rare on Victoria's rare or threatened flora and fauna advisory lists (DEPI 2014; DSE 2013).

2.2 Desktop Assessment

A desktop assessment was undertaken of relevant databases and other resources, including:

- NatureKit for modelled biodiversity data (DELWP 2018a).
- Native Vegetation Information Management system (NVIM) (DELWP 2018b).
- Planning Schemes Online for planning information (DELWP 2018c).
- The VBA for threatened flora and fauna species records (DELWP 2018d).
- The Protected Matters Search Tool (PMST) for information relating to Matters of National Environmental Significance (MNES) (listed species and communities) under the EPBC Act (DoEE 2018).
- Relevant environmental legislation, policies and strategies.

2.3 Field Assessment

The field assessment was undertaken on 18 October 2018. The project area was traversed on foot to determine the extent of native vegetation and ascertain the presence of any listed threatened flora or fauna species or associated habitats. The extent of native vegetation was mapped using a Trimble Juno differential GPS (accuracy \pm one metre post processing), with coordinates recorded to GDA 94 (WGS 84). EVCs were determined by reference to the relevant bioregion pre-1750 and extant EVC mapping and benchmarks descriptions (DELWP 2018a), and review of remnant vegetation in the local area.



Additional site based information collected during the field assessment included *the extent of native vegetation, large trees, native vegetation condition, Ecological Vegetation Class (EVC) and sensitive wetlands and coastal areas* (where present):

- The extent of native vegetation is the area of land covered by a patch and/or a scattered tree, and is measured in hectares.
- A large tree can be either a large scattered tree or a large tree contained within a patch. It is a native canopy tree with a Diameter at Breast Height (DBH) greater than or equal to the large tree benchmark for the relevant bioregional EVC.
- Native vegetation condition is a value based on a 'Habitat score' of between 0 and 1 that describes how close native vegetation is to its mature natural state.
- An Ecological Vegetation Class (EVC) is a native vegetation type classified on the basis of a combination of its floristics, lifeforms, and ecological characteristics, and follow the relevant bioregion benchmarks.
- Sensitive wetlands and coastal areas consist of
 - wetlands designated under the Convention on Wetlands of International Importance (the Ramsar Convention).
 - wetlands listed in the Directory of Important Wetlands of Australia.
 - Internationally important sites for Migratory Shorebirds of the East Asian-Australasian Flyway (DELWP 2017).

2.4 Assessment Guidelines

The *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines) (DELWP 2017) has been incorporated into the Victoria Planning Provisions and all planning schemes in Victoria. The purpose of the Guidelines is to set out, and describe the application of Victoria's statewide policy in relation to assessing and compensating for the removal of native vegetation in response to permit applications under Clause 52.16 or 52.17.

Native vegetation is defined in Clause 72 of the Victoria Planning Provisions as *plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses*. Plants from other states or overseas are not native and the permitted clearing regulations do not apply if they are being removed (DELWP 2017).

The Guidelines considers the biodiversity value of native vegetation by measuring the following two components:

- Site-based information that can be measured or observed at a site.
- Landscape scale information that cannot be measured or observed at the site and is included in maps and models (DELWP 2017).

Under the Guidelines native vegetation is classified as a *patch* or *scattered tree*.



A patch of native vegetation is:

- An area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native¹; or
- Any area with three or more native canopy trees² where the drip line³ of each tree touches the drip line of at least one other tree, forming a continuous canopy; or
- Any mapped wetland included in the Current wetlands map.

A scattered tree is:

- A native canopy tree that does not form part of a patch (DELWP 2017).

The assessment pathway for an application to remove native vegetation reflects its potential impact on biodiversity and is determined from the location and extent of the native vegetation to be removed. The three assessment pathways are:

- Basic – limited impacts on biodiversity.
- Intermediate – could impact on large trees, endangered EVCs, and sensitive wetlands and coastal areas.
- Detailed – could impact on large trees, endangered EVCs, sensitive wetlands and coastal areas, and could significantly impact on habitat for rare or threatened species.

The assessment pathway of an application is determined in accordance with the requirements in Table 1.

Table 1: Assessment pathways

Extent of native vegetation	Location Category		
	Location 1	Location 2	Location 3
Less than 0.5 hectares and not including any large trees	Basic	Intermediate	Detailed
Less than 0.5 hectares and including one or more large trees	Intermediate	Intermediate	Detailed
0.5 hectares or more	Detailed	Detailed	Detailed

Source: DELWP (2017).

¹ Plant cover is the proportion of the ground that is shaded by vegetation foliage when lit from directly above. Areas that include non-vascular vegetation (such as mosses and lichens) but otherwise support no native vascular vegetation are not considered to be a patch for the purposes of the Guidelines. However, when non-vascular vegetation is present with vascular vegetation, it does contribute to cover when determining the percentage of perennial understorey plant cover.

² A native canopy tree is a mature tree (i.e. it is able to flower) that is greater than 3 metres in height and is normally found in the upper layer of the relevant vegetation type.

³ The drip line is the outermost boundary of a tree canopy (leaves and/or branches) where the water drips on to the ground (DELWP 2017).



2.5 Limitations

The preferred survey period for undertaking vegetation assessments in Victoria is spring, which maximises the likelihood of detecting all flora species within a site. Flora surveys provide a valuable 'snapshot' of vegetation at a point in time; however, the limitations of seasonal influence on the presence/absence of flora species (particularly annuals or cryptic species) must be considered. The short duration of the assessment limited the opportunity to observe migratory, transitory or uncommon fauna species.

The information outlined in this report relies on the accuracy of ecological database information, GIS layers and spatial imagery. To minimise potential errors, the most current available data was obtained from relevant sources.

The Department of Environment, Land, Water and Planning (DELWP) bioregion and EVC mapping are subject to inherently broad environmental and ecological parameters used in the mapping process. Where the observed EVC was not reflective of what would be expected from EVC mapping and classification, it was attributed to the most appropriate EVC based on combination of its floristic, life form and ecological characteristics, and particular environmental conditions.



3 Results

3.1 Ecological Vegetation Classes

NatureKit modelling identifies the pre-1750 EVC mapping for the project area would have predominantly comprised of Plains Grassland (EVC 132), with Grassy Woodland (EVC 175) in the immediate surrounds. Extant (2005) EVC mapping shows a modified cover of Plains Grassland (DELWP 2018a).

Remnant vegetation within the project area was attributed to Grassy Woodland based on floristic, life form and ecological characteristics, and soil type.

3.2 Vegetation Condition

The project area was highly modified from agriculture use and comprised areas of exotic dominated grassland, interspersed with planted exotic trees present along the property boundary. Native vegetation consisted of two scattered trees and several modified patches of Grassy Woodland within the property, and along Russells Road reserve. The revegetation area is partially located within the project area and extends onto the adjacent property to the east (Figure 2).

Grassy Woodland

Grassy Woodland is described as *variable open eucalypt woodland to 15 metres tall or occasionally Sheoak/Acacia woodland to 10 metres tall over a diverse ground layer of grasses and herbs. The shrub component is usually sparse. It occurs on gentle slopes or undulating hills on a range of geologies* (DELWP 2018a).

The project area comprised numerous modified patches of Grassy Woodland dominated by Hedge Wattle *Acacia paradoxa*, with Sweet Bursaria *Bursaria spinosa* also present. The ground layer included a modified cover of indigenous Kangaroo Grass *Themeda triandra*, Kneed Spear-grass *Austrostipa bigeniculata*, Common Wallaby-grass *Rytidosperma caespitosum*, Bristly Wallaby-grass *Rytidosperma setaceum*, Variable Sword-sedge *Lepidosperma laterale*, Wattle Mat Rush *Lomandra filiformis*, Chocolate Lily *Arthropodium strictum* and Bidgee-Widgee *Acaena novae-zelandiae*. Exotic species included Sweet Vernal-grass *Anthoxanthum odoratum*, Cocksfoot *Dactylis glomerata*, Perennial Ryegrass *Lolium perenne*, Couch Grass *Cynodon dactylon*, Onion Grass *Romulea rosea*, Panic Veldt-grass *Ehrharta erecta* and Paspalum *Paspalum dilatatum*. Several Sugar Gum *Eucalyptus cladocalyx* trees were also present (Plates 1 and 2). Two scattered Drooping Sheoak *Allocasuarina verticillata* trees were also present.

Patches of Grassy Woodland along Russells Road reserve comprised a modified cover of Golden Wattle *Acacia pycnantha* and Hedge Wattle shrubs, with an understorey of



Soft Spear-grass *Austrostipa mollis*, Kneed Spear-grass, Common Wallaby-grass and Striped Wallaby-grass *Rytidosperma racemosum*. Exotic Perennial Veldt-grass *Ehrharta calycina*, Soursob *Oxalis pes-caprae* Yorkshire Fog-grass *Holcus lanatus*, Panic Veldt-grass *Ehrharta erecta*, Cocksfoot, Galenia *Galenia pubescens*, Bridal Creeper *Asparagus asparagoides*, Wild Radish *Raphanus raphanistrum* and Ribwort *Plantago lanceolata* were also present (Plates 3 and 4).

Planted Vegetation

Planted native trees and shrubs in the revegetation area included Sugar Gum, Swamp Gum *Eucalyptus ovata*, Black Wattle *Acacia mearnsii* and Silver Wattle *Acacia dealbata* (Plate 5). Planted exotic Radiata Pine *Pinus radiata* trees were present along the western and northern boundaries over an exotic dominated ground layer (Plate 6).

Predominantly Introduced Vegetation

Areas of exotic dominated grassland throughout the project area typically comprised Brown-top Bent *Agrostis capillaris*, Kikuyu *Cenchrus clandestinus*, Toowoomba Canary-grass *Phalaris aquatica*, Prairie Grass *Bromus catharticus*, Sweet Vernal-grass, Yorkshire Fog-grass, Perennial Ryegrass, Cocksfoot, Onion Grass, Couch Grass, Cape Weed *Arctotheca calendula* and Cat's Ear *Hypochoeris radicata*. A sparse cover (<5% overall perennial cover) of indigenous Bristly Wallaby-grass, Striped Wallaby-grass and Kangaroo Grass were occasionally present (Plates 7 and 8). This vegetation has been mapped as predominantly introduced vegetation (Figure 2).

3.3 Threatened Flora Species

No threatened flora species were recorded during the field assessment. The VBA (DELWP 2018d) contains records of five listed threatened flora species in local area (within a five kilometre radius of the project area). The PMST (DoEE 2018) identified 13 EPBC Act listed flora species or species habitats as likely to occur within the local area (Appendix 3; Figure 3). There is a low likelihood of occurrence for any listed threatened flora species due to the highly modified condition of habitat.

3.4 Fauna Survey Results

Twelve fauna species were recorded during the field assessment, comprising 10 native and two introduced species (all birds). Species observed included Wedge-tailed Eagle *Aquila audax*, Australian Magpie *Cracticus tibicen*, Australian Raven *Corvus coronoides*, Magpie-lark *Grallina cyanoleuca*, Superb Fairy-wren *Malurus cyaneus*, Grey Shrike-thrush *Colluricincla harmonica*, Welcome Swallow *Hirundo neoxena*, Willie Wagtail *Rhipidura leucophrys*, Grey Fantail *Rhipidura albiscapa*, and Australasian Pipit *Anthus novaeseelandiae*, as well as exotic Common Blackbird *Turdus merula* and European Skylark *Alauda arvensis*. The paucity of fauna species



recorded during the assessment was attributed to the highly modified condition of habitat.

3.5 Threatened Fauna Species

No listed threatened fauna species were recorded during the field assessment. The VBA (DELWP 2018d) contains records of 15 listed threatened fauna species in the local area. The PMST (DoEE 2018) identified 23 EPBC Act listed fauna species or species habitats (terrestrial) as likely to occur within the local area. There is a low likelihood of occurrence for any listed threatened fauna species due to the absence of suitable habitat (Appendix 4; Figure 4).

3.6 Fauna Habitat

The project area supports three main habitat types: shrubland, planted trees and shrubs, and exotic grassland.

Shrubland habitat typically provides perching, roosting and foraging habitat for smaller passerine bird species such as Brown Thornbill, Grey Fantail, New Holland Honeyeater, Grey Shrike-thrush and Superb Fairy-wren. Planted trees (i.e. Sugar Gum) provide habitat for common birds associated with modified habitats, including Australian Raven, Magpie-lark, Australian Magpie and Grey Shrike-thrush. Planted shrubs provide habitat for smaller birds such as Grey Fantail and Brown Thornbill. Areas of exotic grassland provides habitat for species such as Australasian Pipit, Galah, Welcome Swallow and Willie Wagtail.

3.7 Threatened Ecological Communities

Review of the PMST (DoEE 2018) identified four EPBC Act listed ecological communities may or are known to occur within the local area:

- *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* (Critically Endangered).
- *Natural Temperate Grassland of the Victorian Volcanic Plain* (Critically Endangered).
- *Natural Damp Grassland of the Victorian Coastal Plains* (Critically Endangered).
- *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (Critically Endangered).

Native vegetation within the project area does not meet the criteria or condition thresholds for any EPBC Act listed ecological communities.



3.8 Biodiversity Value of Native Vegetation

A summary of the biodiversity values within the project area is as follows:

- The project area supports 0.168 hectares of Grassy Woodland and two large scattered trees.
- Grassy Woodland has a bioregional conservation status of Endangered in the Victorian Volcanic Plain bioregion.
- The native vegetation condition modelling indicates areas of moderate value with condition scores of 0.41-0.60.
- The strategic biodiversity value modelling indicates areas of higher value with scores of 0.61-0.80 (DELWP 2018b).



Plate 1: Modified Grassy Woodland within the property



Plate 2: Modified Grassy Woodland within the property



Plate 3: Modified Grassy Woodland along Russells Road reserve



Plate 4: Modified Grassy Woodland along Russells Road reserve



Plate 5: Revegetation area



Plate 6: Planted exotic trees along the western boundary









Plate 7: Exotic dominated vegetation

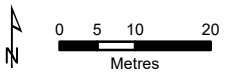
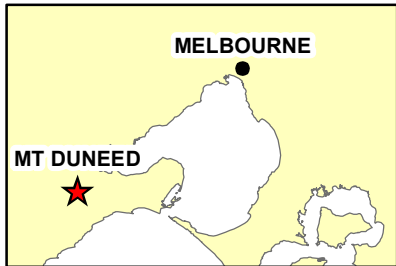


Plate 8: Exotic dominated vegetation

Figure 2
Ecological Values
120 Russells Road,
Mt Duneed

Legend

-  Subject Site
-  Grassy Woodland
-  Planted Vegetation
-  Revegetation Area
-  Predominantly Introduced Vegetation
-  Large Scattered Tree



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4 Environmental Legislation and Policy Implications

4.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act provides a process for assessment of proposed actions that may have a significant impact on a MNES, which includes EPBC Act listed flora, fauna and ecological communities (DoE 2013).

The EPBC Act affects any group or individual (including companies) whose actions (i.e. proposal or project) are assessed for environmental impacts under the EPBC Act. An action requires approval from the Commonwealth Environment Minister if it is considered likely to have a significant impact on a MNES (DoE 2013).

No EPBC Act listed threatened flora or fauna species were recorded within the project area, and none are considered likely to occur due to the absence of suitable habitat resulting from previous agricultural use. Native vegetation within the project area does not meet the criteria for any EPBC Act listed ecological communities.

An EPBC Act referral to the Commonwealth Environment Minister is not required as no MNES are present or likely to be significantly impacted by future development of the project area.

4.2 Flora and Fauna Guarantee Act 1988

The FFG Act is the key Victorian legislation for the conservation of threatened species and communities and for the management of potentially threatening processes.

A permit is required from DELWP to 'take' (kill, injure, disturb or collect) listed flora species, flora species that are members of listed threatened communities or protected flora from public land. Protected flora species includes all members of the following plant families Asteraceae (Daisies), Epacridaceae (Heaths) and Orchidaceae (Orchids), all clubmosses, ferns and fern allies (excluding *Pteridium esculentum*). All species of the following genera are also protected: *Acacia* (excluding *Acacia dealbata*, *Acacia decurrens*, *Acacia implexa*, *Acacia melanoxylon* and *Acacia paradoxa*), *Baeckea*, *Calytrix*, *Correa*, *Darwinia*, *Eremophila*, *Eriostemon*, *Gompholobium*, *Grevillea*, *Prostanthera*, *Sphagnum*, *Thryptomene*, *Thysanotus* and *Xanthorrhoea* (DELWP 2015).

One FFG Act listed protected flora species (Golden Wattle) was recorded along Russells Road reserve and within the property. An FFG Act permit will be required if any Golden Wattle shrubs are proposed for removal along Russells Road reserve. An FFG Act permit is generally not required for removal of protected flora species on private property.



4.3 Planning and Environment Act 1987

The purpose of the *Planning and Environment Act 1987* is to establish a framework for planning the use, development and protection of land in Victoria. Native vegetation clearance is managed under the Act and through municipal planning schemes (DELWP 2018c).

A permit is required under Clause 52.17 (Native Vegetation) to remove, destroy or lop native vegetation, including dead vegetation, unless the action is exempt. A permit application must be categorised as a basic, intermediate or detailed assessment pathway as specified in the Guidelines (DELWP 2017a). Each assessment pathway has specific application requirements and decision guidelines that must be considered by the responsible authority.

Clause 66 (Referral and Notice Provisions) requires that the following applications to remove native vegetation be referred to the Secretary to DELWP:

- To remove, destroy or lop native vegetation in the Detailed Assessment Pathway
- To remove, destroy or lop native vegetation if a Property Vegetation Plan applies to the site.
- To remove, destroy or lop native vegetation on Crown land, which is occupied or managed by the responsible authority (DELWP 2017a).

Clause 52.17 – Native Vegetation

The project area supports 0.168 hectares of Grassy Woodland and two scattered indigenous trees (Figure 2). Areas of exotic pasture that contain scattered indigenous grasses (<5% overall perennial cover) do not meet the cover threshold for a patch under the Guidelines (DELWP 2017).

The proposed removal, destruction or lopping of any native vegetation will require a permit under Clause 52.17 (Native Vegetation) of the Greater Geelong Planning Scheme (DELWP 2018c). The proposed removal of any patches of native vegetation (Grassy Woodland) or scattered indigenous trees will require a biodiversity application in accordance with the Guidelines (DELWP 2017). The project area is mapped as Location 1 and 2, which requires either a basic, intermediate or detailed biodiversity application, depending on the location and extent of native vegetation proposed for removal (DELWP 2018a).

It is recommended that the development design applies the principles of ‘avoid and minimise’ to reduce impacts to native vegetation (where practicable) during the planning phase. The effort to avoid and minimise impacts to native vegetation should focus on areas of native vegetation that have the most value (refer to Section 3.8).



Environmental Significance Overlay – Schedule 1

The property is subject to ESO1 (Areas Of Flora And Fauna Habitat And Of Geological And Natural Interest). The provision to ESO1 specifies a permit is not required to remove, destroy or lop vegetation that is:

- Listed within the incorporated document: Environmental Weeds, City of Greater Geelong, September 2008.
- Exotic and native vegetation if within 10 metres of a dwelling on a lot exceeding 0.4 hectares.

A permit will be required to removal vegetation (native or exotic) under ESO1 in this instance, as the permit exemption will not apply to the proposed development.

Vegetation Protection Overlay – Schedule 1

Russells Road reserve is subject to VPO1 (Significant Roadsides And Linear Reserves). The provision to VPO1 specifies a permit is required to remove, destroy or lop any vegetation except where:

- The removal of vegetation is carried out in conjunction with an approved development in accordance with an endorsed plan.
- The removal of vegetation is to enable the formation of a single crossing and access driveway with a maximum width of 4.2 metres. Consultation is still required with the responsible authority to minimise the loss of significant indigenous vegetation.
- The vegetation presents an immediate risk of personal injury or damage to property including the culling of single trees within 3 metres of a dwelling or outbuilding.
- Any tree or branch of a tree impairs the access of motor vehicles along any existing or approved access track, provided that such access track has a width no greater than 4 metres.
- It is not native vegetation or listed within the incorporated document Environmental Weeds, City of Greater Geelong, September 2008

It is recommended that future access design through Russells Road reserve review the provision to VPO1 to determine the requirement for a permit to remove native vegetation.



5 Conclusion

The project area was highly modified from agriculture use and comprised areas of exotic dominated grassland, interspersed with planted exotic trees present along the property boundary. Native vegetation consisted of several modified patches of Grassy Woodland within the property and along Russells Road reserve. The revegetation area is partially located within the project area and extends onto the adjacent property to the east.

No listed threatened flora or fauna species were recorded and none are considered likely to occur due to the absence of suitable of habitat. An EPBC Act referral will not be required, as no MNES are present, or likely to be significantly impacted by future works within the project area. A FFG Act permit will be required if any protected flora species (Golden Wattle) are proposed for removal along Russells Road reserve.

The removal, destruction or lopping of any native vegetation will require a permit under Clause 52.17 (Native Vegetation). A permit to remove native vegetation within the property will also be required under ESO1 of the Greater Geelong Planning Scheme. It is recommended that future access design through Russells Road reserve review the provisions under VPO1 to determine the requirement for a permit to remove native vegetation.

The removal of any patches of Grassy Woodland or scattered indigenous trees will also require a biodiversity application and associated offsets in accordance with the Guidelines.

It is recommended that the development design applies the principles of 'avoid and minimise' to reduce impacts to native vegetation (where practicable) during the planning phase. The effort to avoid and minimise impacts to native vegetation should focus on areas of native vegetation that have the most value.



6 References

Australian National Botanic Gardens 2018. Australian Plant Census.

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Appendices

Appendix 1 – Likelihood of Occurrence

One or more of the following criteria was used to establish the likelihood of occurrence for threatened flora and fauna species within the project area.

Present: Recorded during the field survey.

High likelihood:

- Previously recorded within the site.
- Likely to visit the site during seasonal movements.
- Frequently recorded within the local area.
- Known or likely to maintain resident populations in the local area.
- Presence of preferred habitat within the site.

Moderate likelihood:

- May regularly move through or visit the site as a seasonal visitor.
- Previous records within the local area.
- Some characteristics of a species preferred habitat is present although in a modified condition.
- Unlikely to maintain a population within the site.

Low Likelihood:

- Species likely to occur as a rare or opportunistic visitor.
- Few previous records within the local area.
- Habitat within the site is highly modified and does not represent the species preferred habitat.

Unlikely:

- No suitable habitat present on the site or in the surrounding area.
- No species records in the local area.
- Beyond the species natural distribution or considered locally extinct.

The outcome of the assessment of likelihood of occurrence for threatened flora is Appendix 3 and Appendix 4 for threatened fauna.



Appendix 2 – Flora Species Recorded

Table 2: Flora species recorded during the field assessment

Scientific Name	Common Name
<i>Acacia dealbata</i>	Silver Wattle#
<i>Acacia mearnsii</i>	Black Wattle#
<i>Acacia paradoxa</i>	Hedge Wattle
<i>Acacia pycnantha</i>	Golden Wattle
<i>Acaena echinata</i>	Sheep's Burr
<i>Acaena novae-zelandiae</i>	Bidgee-widgee
<i>Agrostis capillaris</i>	Brown-top Bent*
<i>Aira caryophyllea</i> subsp. <i>caryophyllea</i>	Silvery Hair-grass*
<i>Allocasuarina verticillata</i>	Drooping Sheoak
<i>Arthropodium strictum</i>	Chocolate Lily
<i>Arctotheca calendula</i>	Cape Weed*
<i>Austrostipa bigeniculata</i>	Kneed Spear-grass
<i>Austrostipa mollis</i>	Soft Spear-grass
<i>Avena fatua</i>	Wild Oat*
<i>Brassica fruticulosa</i>	Twiggy Turnip*
<i>Bromus catharticus</i>	Prairie Grass*
<i>Bromus hordeaceus</i> subsp. <i>hordeaceus</i>	Soft Brome*
<i>Bursaria spinosa</i>	Sweet Bursaria
<i>Chenopodium murale</i>	Sowbane*
<i>Cirsium vulgare</i>	Spear Thistle**
<i>Cynodon dactylon</i> var. <i>dactylon</i>	Couch*
<i>Dactylis glomerata</i>	Cocksfoot*
<i>Dianella admixta</i>	Black-anther Flax-lily
<i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass*
<i>Eucalyptus camaldulensis</i>	River Red-gum#
<i>Eucalyptus cladocalyx</i>	Sugar Gum#
<i>Eucalyptus ovata</i>	Swamp Gum#
<i>Eucalyptus</i> spp.	Eucalyptus #
<i>Galenia pubescens</i> var. <i>pubescens</i>	Galenia*
<i>Genista monspessulana</i>	Cape Broom**
<i>Helminthotheca echioides</i>	Ox-tongue*
<i>Holcus lanatus</i>	Yorkshire Fog*
<i>Hordeum murinum</i>	Barley-grass*
<i>Hypochaeris radicata</i>	Flatweed*
<i>Juncus subsecundus</i>	Finger Rush
<i>Lachnagrostis filiformis</i>	Common Blown-grass
<i>Lepidosperma laterale</i>	Variable Sword-sedge
<i>Lolium perenne</i>	Perennial Rye-grass*



Scientific Name	Common Name
<i>Lomandra filiformis</i>	Wattle Mat Rush
<i>Lycium ferocissimum</i>	African Boxthorn**
<i>Medicago polymorpha</i>	Burr Medic*
<i>Nassella trichotoma</i>	Serrated Tussock**
<i>Oxalis pes-caprae</i>	Soursob**
<i>Paspalum dilatatum</i>	Paspalum*
<i>Paspalum distichum</i>	Water Couch*
<i>Phalaris aquatica</i>	Toowoomba Canary-grass*
<i>Plantago coronopus</i>	Buck's-horn Plantain*
<i>Plantago lanceolata</i>	Ribwort*
<i>Pinus radiata</i>	Radiata Pine*
<i>Rosa rubiginosa</i>	Briar Rose**
<i>Romulea rosea</i>	Onion Grass*
<i>Rumex crispus</i>	Curled Dock*
<i>Rytidosperma caespitosum</i>	Common Wallaby-grass
<i>Rytidosperma racemosum</i> var. <i>racemosum</i>	Slender Wallaby-grass
<i>Rytidosperma setaceum</i>	Bristly Wallaby-grass
<i>Sonchus asper</i> s.l.	Rough Sow-thistle*
<i>Sonchus oleraceus</i>	Common Sow-thistle*
<i>Themeda triandra</i>	Kangaroo Grass
<i>Trifolium angustifolium</i> var. <i>angustifolium</i>	Narrow-leaf Clover*
<i>Trifolium striatum</i>	Knotted Clover*
<i>Trifolium subterraneum</i>	Subterranean Clover*
<i>Vulpia bromoides</i>	Squirrel-tail Fescue*
<i>Vulpia myuros</i>	Rat's-tail Fescue*

Notes: *Exotic species; #Planted species; **Listed noxious weed;



Appendix 3 – Threatened Flora Records

Table 3. Threatened flora records

Scientific Name	Common Name	Status	Records#	Likely Occurrence	Comments
<i>Eucalyptus X studleyensis</i>	Studley Park Gum	en	1	U	No suitable habitat present
<i>Cladium procerum</i>	Leafy Twig-sedge	r	4	U	No suitable habitat present
<i>Coronidium gunnianum</i>	Pale Swamp Everlasting	vu	1	U	No suitable habitat present
<i>Eucalyptus leucoxylon</i> subsp. <i>connata</i>	Melbourne Yellow-gum	vu X	88	U	No suitable habitat present
<i>Eucalyptus leucoxylon</i> subsp. <i>bellarinensis</i>	Bellarine Yellow-gum	en L	5	U	No suitable habitat present

Notes: Threatened species records were sourced from the VBA (DELWP 2018d), within a 5 km radius of the project area. Likelihood of occurrence: P = Present; H = High likelihood; M = Moderate likelihood; L = Low likelihood; U = Unlikely to occur (Appendix 1).

EPBC Act listed species (DoEE 2018)

Cr Critically Endangered

En Endangered

V Vulnerable

FFG Act listed species (DELWP 2015)

L Listed as Threatened

DEPI listed species (DEPI 1014):

cr Critically endangered

e Endangered

v Vulnerable

r Rare



Appendix 4 – Threatened Fauna Records

Table 4. Threatened fauna records

Scientific Name	Common Name	Status	Records#	Likely Occurrence	Comments
<i>Porzana pusilla</i>	Baillon's Crake	vu L	1	U	Absence of suitable habitat
<i>Sternula nereis</i>	Fairy Tern	VU en L	1	U	Absence of suitable habitat
<i>Grus rubicunda</i>	Brolga	vu L	2	U	Absence of suitable habitat
<i>Ardea alba</i>	Great Egret	vu L	6	U	Absence of suitable habitat
<i>Botaurus poiciloptilus</i>	Australasian Bittern	EN en L	1	U	Absence of suitable habitat
<i>Aythya australis</i>	Hardhead	vu	2	U	May flyover occasionally
<i>Oxyura australis</i>	Blue-billed Duck	en L	1	U	May flyover occasionally
<i>Biziura lobata</i>	Musk Duck	vu	1	U	May flyover occasionally
<i>Accipiter novaehollandiae</i>	Grey Goshawk	vu L	2	U	Absence of suitable habitat
<i>Ninox connivens</i>	Barking Owl	en L	2	U	Absence of suitable habitat
<i>Ninox strenua</i>	Powerful Owl	vu L	1	U	Absence of suitable habitat
<i>Lathamus discolor</i>	Swift Parrot	CR en L	1	U	Absence of suitable habitat
<i>Hirundapus caudacutus</i>	White-throated Needletail	vu	2	U	May flyover occasionally
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	VU vu L	1	U	Absence of suitable habitat
<i>Litoria raniformis</i>	Growling Grass Frog	VU en L	1	U	Absence of suitable habitat

Notes: Threatened species records were sourced from the VBA (DELWP 2018d), within a 5 km radius of the project area. Likelihood of occurrence: H = High likelihood; M = Moderate likelihood; L = Low likelihood; U = Unlikely to occur (Appendix 1).

EPBC Act listed species (DoEE 2018)

Cr Critically Endangered

En Endangered

V Vulnerable

FFG Act listed species (DELWP 2015)

L Listed as Threatened

DEPI listed species (DSE 2013):

cr Critically endangered

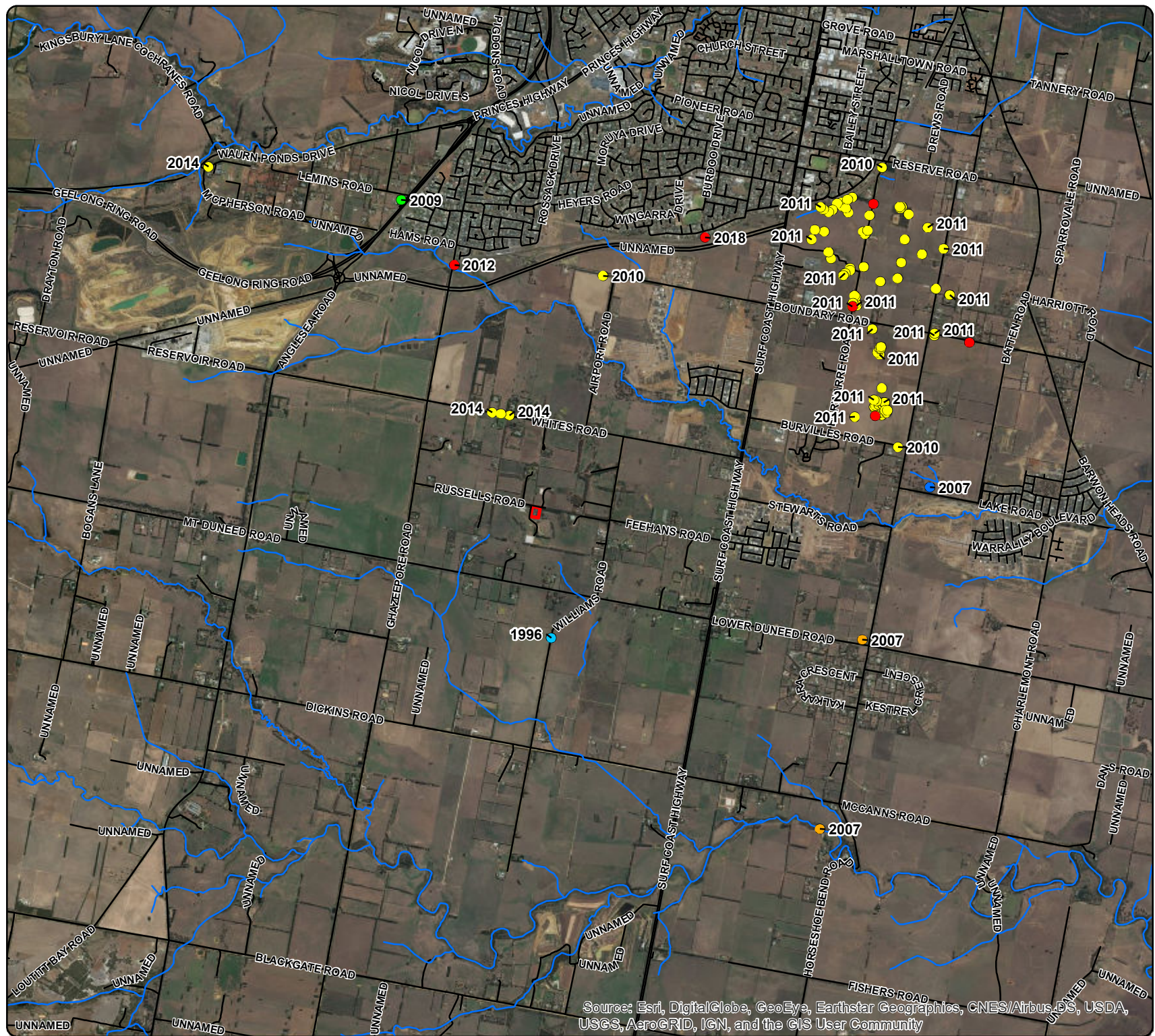
e Endangered

v Vulnerable

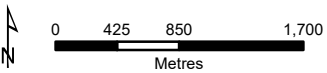
r Rare

Figure 3
Threatened Flora Species
 within 5km of Subject Site
 Russells Road, Mt Duneed

- Legend**
- Subject Site
 - Bellarine Yellow-gum
 - Leafy Twig-sedge
 - Melbourne Yellow-gum
 - Mugga
 - Pale Swamp Everlasting
 - Studley Park Gum



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

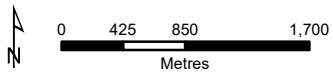


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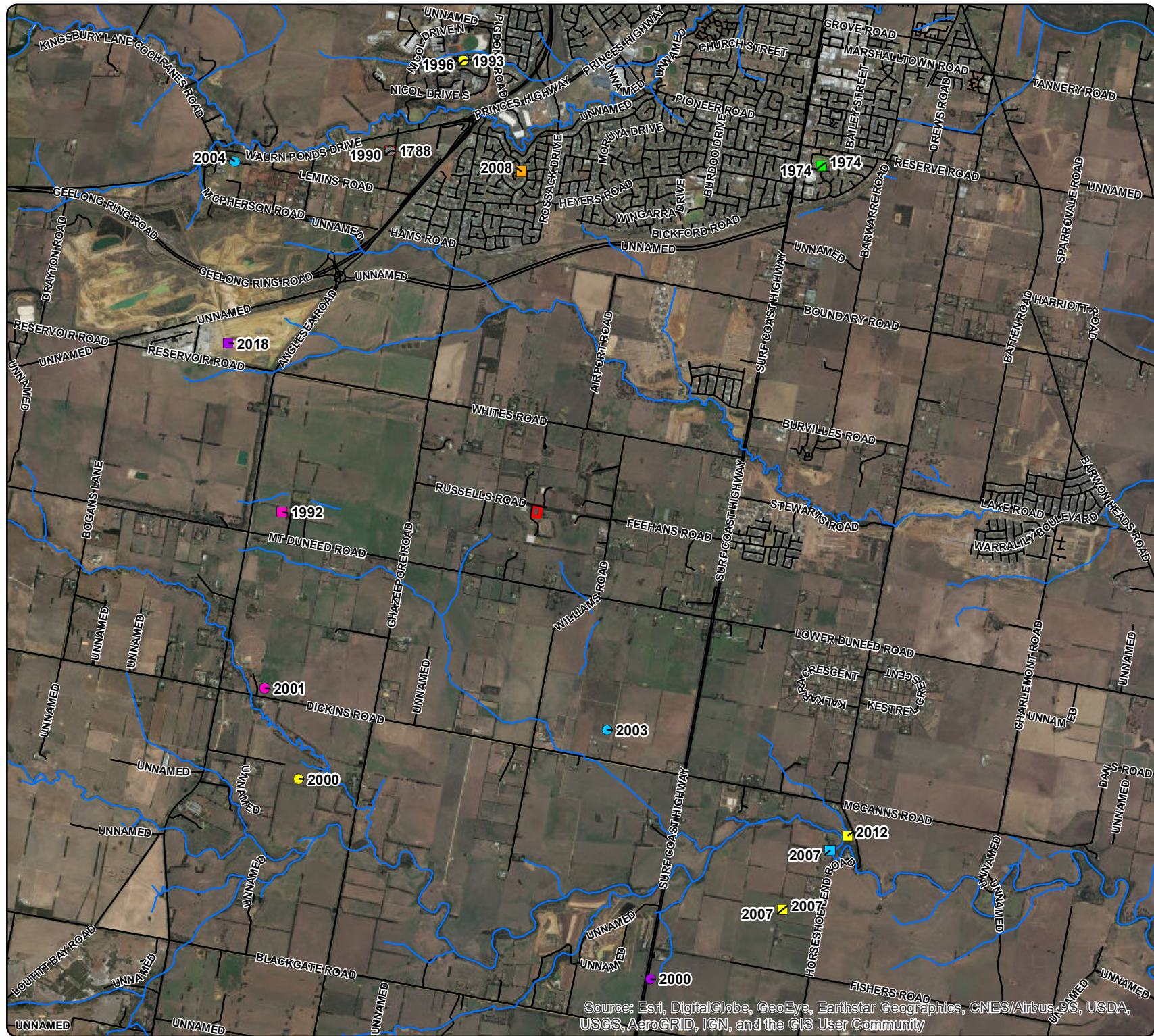
Figure 4
 Threatened Fauna Species
 within 5km of Subject Site
 Russells Road, Mt Duneed

Legend

- Subject Site
- Australasian Bittern
- Baillon's Crake
- Barking Owl
- Blue-billed Duck
- Brolga
- Fairy Tern
- Great Egret
- Grey Goshawk
- Grey-headed Flying-fox
- Growling Grass Frog
- Hairy Burrowing Crayfish
- Hardhead
- Musk Duck
- Powerful Owl
- Swift Parrot
- Tussock Skink
- White-throated Needletail



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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community