ecology & heritage partners

Final Report

Biodiversity Assessment: Proposed Tailings Dams (TSF5 and TSF6) within Fosterville Gold Mine, Fosterville, Victoria

Prepared for

Kirkland Lake Gold Ltd

July 2021

Ecology and Heritage Partners Pty Ltd

MELBOURNE: 292 Mt Alexander Road, Ascot Vale VIC 3032 **GEELONG:** 230 Latrobe Terrace, Geelong West VIC 3218
BRISBANE: Level 22, 127 Creek Street, Brisbane QLD 4000 **ADELAIDE**: 78 Edmund Avenue, Unley SA 5061
CANBERRA: 19-23 Moor Street, Turner ACT 2612 **SYDNEY:** Level 5, 616 Harris Street, Ultimo NSW 2007
www.ehpartners.com.au | 1300 839 325

DOCUMENT CONTROL

Assessment type	Biodiversity Assessment
Address	Proposed Tailings Dams (TSF5 and TSF6) within Fosterville Gold Mine, Fosterville, Victoria
Project number	15293 (formerly 12858)
Project manager	Elyse Harrison (Consultant Botanist)
Report reviewer	Shannon LeBel (Associate Ecologist / Geelong Resource Manager)
Other EHP staff	Anneke Martin (Consultant Botanist)
Mapping	Sanda Pannipitiya (GIS Officer); Monique Elsley (GIS Coordinator)
File name	15293_EHP_TSF5andTSF6_FostervilleGoldMine_Final_12072021
Client	Kirkland Lake Gold Ltd
Bioregion	Goldfields
Catchment Management Authority	North Central
Council	City of Greater Bendigo

VERSION CONTROL

Report versions	Comments	Comments made by:	Date submitted
Draft (PN 12858)	Report sent to the client for review	EH	01/10/2019
Final (PN 12858)	Report updated based on comments from client	EH	04/11/2019
Draft (PN 15293)	Report sent to client for review	EH	07/07/2021
Final (PN 15293)	Report updated based on comments from client	EH	13/07/2021

CONTENTS

SUMMARY OF CLAUSE 52.17 APPLICATION REQUIREMENTS

Table S1. Application requirements for a permit to remove native vegetation (Victoria Planning Provisions Clause 52.17; DELWP 2017)

No.	Application Requirement	Response
Application requirements under the Detailed Assessment Pathway		
1	Information about the native vegetation to be removed, including: • The assessment pathway and reason for the assessment pathway; • A description of the native vegetation to be removed; • Maps showing the native vegetation and property in context; and • The offset requirement that will apply if the native vegetation is approved to be removed.	Refer to Section 3.1, Section 3.3 and Appendix 3 (NVR Report)
2	Topographic and land information relating to the native vegetation to be removed, showing ridges, crests and hilltops, wetlands and waterways, slopes of more than 20 percent, drainage lines, low lying areas, saline discharge areas, and areas of existing erosion, as appropriate.	Refer to Section 1.2 and Figure 1
3	Recent dated photographs of the native vegetation to be removed.	Refer to Section 3.1
4	Details of any other native vegetation that was permitted to be removed on the same property with the same ownership as the native vegetation to be removed, where the removal occurred in the five year period before the application to remove native vegetation is lodged.	20.254 hectares of native vegetation has been removed within the property within the past five years.
5	An avoid and minimise statement. The statement describes any efforts to avoid the removal of and minimise the impacts on the biodiversity and other values of native vegetation, and how these efforts focussed on areas of native vegetation that have the most value.	Refer to Section 5.1
6	A copy of any Property Vegetation Plan contained within an agreement made pursuant to section 69 of the *Conservation, Forests and Lands Act 1987* that applies to the native vegetation to be removed.	Not applicable
7	Where the removal of native vegetation is to create defendable space, a written statement explaining why the removal of native vegetation is necessary. This statement must have regard to other available bushfire risk mitigation measures. This statement is not required when the creation of defendable space is in conjunction with an application under the Bushfire Management Overlay.	Not applicable as the vegetation clearance is not for defendable space
8	If the application is under Clause 52.16, a statement that explains how the proposal responds to the Native Vegetation Precinct Plan considerations at decision guideline 8.	Not applicable.
9	An offset statement providing evidence that an offset that meets the offset requirements for the native vegetation to be removed has been identified and can be secured in accordance with the Guidelines.	Refer to Section 5.3

No.	Application Requirement	Response
10	A site assessment report of the native vegetation to be removed, including: • A habitat hectare assessment of any patches of native vegetation, including the condition, extent (in hectares), Ecological Vegetation Class and bioregional conservation status. • The location, number, circumference (in centimetres measured at 1.3 metres above ground level) and species of any large trees within patches. • The location, number, circumference (in centimetres measured at 1.3 metres above ground level) and species of any scattered trees, and whether each tree is small or large.	Refer to Figure 2, Appendix 1.2 (habitat hectares assessment) and Appendix 1.3 (tree information)
11	Information about impacts on rare or threatened species habitat, including the relevant section of the Habitat importance map for each rare or threatened species requiring a species offset.	Refer to Appendix 3 (NVR Report)

1 INTRODUCTION

1.1 Background

Ecology and Heritage Partners Pty Ltd was commissioned by Kirkland Lake Gold Ltd to prepare a Biodiversity Assessment for the Proposed Tailings Dams (TSF5 and TSF6) within Fosterville Gold Mine, Fosterville, Victoria.

Ecology and Heritage Partners have previously undertaken a Biodiversity Assessment for the proposed Brine Ponds (Ecology and Heritage Partners 2017; our ref: 9352), which was in accordance with Victoria's *Permitted clearing of native vegetation – Biodiversity assessment guidelines* (the BAG) (DEPI 2013). In December 2017, the BAG was replaced by the Guidelines for the *Removal, Destruction or Lopping of Native Vegetation* (the Guidelines) (DELWP 2017).

As such, the previous report was required to be updated to reflect the current vegetation policy outlined in the Guidelines (DELWP 2017). These report updates were previously undertaken by Ecology and Heritage Partners in 2019 (Ecology and Heritage Partners 2019; our ref: 12858).

Since the updated report was completed, Kirkland Lake Gold Ltd has been requested to provide further information regarding the potential for the nationally significant Grey Box (*Eucalyptus microcarpa*) Grassy Woodland and Derived Native Grasslands of South-Eastern Australia ecological community, and potential habitat for the EPBC Act listed Swift Parrot *Lathamus discolor* to be present on site.

As such, the purpose of this assessment was to determine the presence of any Matters of National Environmental Significance (MNES). This report presents the results of the assessment and discusses the potential ecological and legislative implications associated with the proposed action.

1.2 Study Area

The study area is located at Proposed Tailings Dams (TSF5 and TSF6) within Fosterville Gold Mine, Fosterville and is approximately 25 kilometres east of the Bendigo Central Business District (Figure 1). The Fosterville Gold Mine is located at McCormicks Road, Fosterville, and is bound by Axedale-Goornong Road to the east, Mount Sugarloaf Conservation Reserve to the west, and bushland and paddocks to the north and south (Figure 1). Specifically, the study area encompasses two areas, known as TSF5 and TSF6, approximately 23 hectares and 38 hectares in size, respectively (Figures 1 and 2).

The study area encompasses pasture paddocks on relatively flat plains, and disturbed mining land (old heap leach pads, process water storage dams and topsoil piles). Slopes of more than 20 percent gradient are present within the study area, the majority of which are absent of vegetation cover. There is a drainage line that goes through the study area, which is an old stock and domestic channel where water was supplied from Coliban Water to landholders north of Campaspe Road. Fosterville Gold Mine has received permission to construct infrastructure over the old channel provided they continued to supply the farmers with water via a pipeline instead. The pipeline is now located to the west of the study area.

The majority of the study area is privately owned, although a public road reserve (McCormicks Road) runs south, through the centre of the study area.

According to the Department of Environment, Land, Water and Planning (DELWP) NatureKit Map (DELWP 2021a), the study area is located within the Goldfields bioregion, North Central Catchment Management Authority (CMA) and City of Greater Bendigo.

2 METHODS

2.1 Desktop Assessment

Relevant literature, online-resources and databases were reviewed to provide an assessment of flora and fauna values associated with the study area. The following information sources were reviewed:

- The DELWP NatureKit Map (DELWP 2021a) and Native Vegetation Information Management (NVIM) Tool (DELWP 2021b) for:
    - Modelled data for location risk, native vegetation patches, scattered trees and habitat for rare or threatened species; and,
    - The extent of historic and current Ecological Vegetation Classes (EVCs).
- EVC benchmarks (DELWP 2021c) for descriptions of EVCs within the relevant bioregion;
- The Victorian Biodiversity Atlas (VBA) for previously documented flora and fauna records within the project locality (DELWP 2021d);
- The Illustrated Flora Information System of Victoria (IFLISV) (Gullan 2017) and Atlas of Living Australia (ALA) (ALA 2021) for assistance with the distribution and identification of flora species;
- Birdlife Australia (2021) for detailed descriptions and distributions of birds (both native and exotic);
- The Commonwealth Department of Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (PMST) for matters of National Environmental Significance (NES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (DAWE 2021);
- Grey Box (*Eucalyptus microcapra*) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia: A guide to the identification, assessment and management of a nationally threatened ecological community Environment Protection and Biodiversity Conservation Act 1999 (DSEWPaC 2012);
- Conservation Advice for Swift Parrot *Lathamus discolour* (TSSC 2016);
- Relevant listings under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act), including the latest Threatened (DELWP 2019a) and Protected (DELWP 2019b) Lists;
- The online VicPlan Map (DELWP 2021e) to ascertain current zoning and environmental overlays in the study area;
- Aerial photography of the study area; and
- Previous ecological assessments relevant to the study area; including;
    - Biodiversity Assessment – Proposed Tailings Dams TSF5 and TSF6 within Fosterville Goldmine. Ecology and Heritage Partners 2017.
    - Biodiversity Assessment – Proposed Tailings Dams TSF5 and TSF6 within Fosterville Goldmine. Ecology and Heritage Partners 2019.

In addition, Ecology and Heritage Partners consulted with Erin Simpson (former Senior Environment and Community Advisor, Fosterville Gold Mine Pty Ltd), to understand the recent history of the study area, including any past disturbances or rehabilitation works that may be relevant to the assessment.

2.2 Field Assessment

A field assessment was undertaken on 6 September 2017 to obtain information on flora and fauna values within the study area. The study area was walked, with all commonly observed vascular flora and fauna species recorded, significant records mapped and the overall condition of vegetation and habitats noted. Ecological Vegetation Classes (EVCs) were determined with reference to DELWP pre-1750 and extant EVC mapping (DELWP 2021a) and their published descriptions (DELWP 2021c).

Where native vegetation was identified a habitat hectare assessment was undertaken following methodology described in the Vegetation Quality Assessment Manual (Department of Sustainability and Environment (DSE) 2004).

In addition, a further field assessment was undertaken on 11 September 2019 to map individual Large Old Trees in accordance with the Guidelines (DELWP 2017).

2.3 Removal, Destruction or Lopping of Native Vegetation (the Guidelines)

The clearing of native vegetation for mining and extractive industries is exempt from the requirement for a planning permit under the Planning and Environment Act 1987 subject to an assessment as part of the work plan approval process (Mineral Resources [Sustainable Development] Act 1990). The removal of native vegetation for the Earth Resources Industry (ERI) is regulated through the Mining and Extractive Industry Work Approvals Process. A Memorandum of Understanding (MoU) between the former Department of Sustainability and Environment (DSE) and Department of Primary Industries (DPI) recognises that native vegetation should be offset in accordance with the relevant environmental policy. As such the requirements for removing native vegetation within the study area was assessed against Victoria's Guidelines for the removal, destruction or lopping of native vegetation (the Guidelines) (DELWP 2017).

2.3.1 Assessment Pathway

The Guidelines manage the impacts on biodiversity from native vegetation removal using an assessment-based approach. Two factors – extent risk and location category – are used to determine the risk associated with an application for a permit to remove native vegetation. The location category (1, 2 or 3) has been determined for all areas in Victoria and is available on DELWP's NVIM Tool (DELWP 2021b). Determination of assessment pathway is summarised in Table 1.

Table 1. Assessment pathways for applications to remove, destroy or lop native vegetation (DELWP 2017).

Extent		Location		
		1	2	3
	Less than 0.5 hectares and not including any large trees	Basic	Intermediate	Detailed

Native Vegetation	Less than 0.5 hectares and including one or more large trees	Intermediate	Intermediate	Detailed
	0.5 hectares or more	Detailed	Detailed	Detailed

Notes: For the purpose of determining the assessment pathway of an application to remove native vegetation the extent includes any other native vegetation that was permitted to be removed on the same contiguous parcel of land with the same ownership as the native vegetation to be removed, where the removal occurred in the five year period before an application to remove native vegetation is lodged.

2.3.2 Vegetation Assessment

Native vegetation (as defined in Table 2) is assessed using two key parameters: extent (in hectares) and condition. For the purposes of this assessment, both condition and extent were determined as part of the habitat hectare assessment.

Table 2. Determination of a patch of native vegetation (DELWP 2017).

Category	Definition	Extent	Condition
Patch of native vegetation	An area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native; OR An area with three or more native canopy trees where the drip line 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*, available in DELWP systems and tools.	Measured in hectares. Based on hectare area of the native patch.	Vegetation Quality Assessment Manual (DSE 2004). Modelled condition for *Current Wetlands*.
Scattered tree	A native, mature canopy tree that does not form part of a native patch and is greater than three metres in height.	Measured in hectares. Each Large scattered tree is assigned an extent of 0.071 hectares (15m radius). Each Small scattered tree is assigned a default extent of 0.031 hectares (10 metre radius)	Scattered trees are assigned a default condition score of 0.2 (outside a patch).

Notes: Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses'.

2.3.3 Impact Avoidance and Minimisation

All applications to remove native vegetation must demonstrate the three-step approach of avoid, minimise and offset. This is a precautionary approach that aims to ensure that the removal of native vegetation is restricted to what is reasonably necessary, and that biodiversity is appropriately compensated for any native vegetation removal that is approved.

2.3.4 *Offsets*

Biodiversity offsets are required to compensate for the permitted removal of native vegetation. Offset obligations and offset site criteria are determined in accordance with the Guidelines (DELWP 2017) and are divided into two categories, being General Habitat Units and Species Habitat Units.

The offset requirements for native vegetation removal are calculated by DELWP and presented in a Native Vegetation Removal (NVR) Report, which are based on the vegetation condition scores determined during the biodiversity assessment.

2.4 Likelihood of Occurrence Assessment

Relevant biological databases, literature and expert advice were used to identify all species records of national, State and regional conservation significance within 10 kilometres of the study area. The proximity, number, dispersion and date of known locality records (assuming over-dispersed and random patterns of locality records being more likely to occur in the study area) were considered to determine a species' likelihood of occurrence within the study area.

Additional factors also taken into consideration include: the known biogeographical distribution of the species; underlying geology of existing locality records; and, vegetation and habitat associations. The decision guidelines for determining the likelihood of occurrence of flora and fauna species are presented in Table 3 and Table 4, respectively.

The results of the likelihood of occurrence assessment for listed flora and fauna species are provided in Appendices 1.4 and 2, respectively.

All significant flora and fauna species considered to have the highest likelihood of occurrence within potential habitats within the study area are discussed in the body of this report.

Table 3. Decision guidelines for determining a flora species likelihood of occurrence within the study area.

Likelihood of occurrence	Ecology and Heritage Partners Decision Criteria
1 – Known occurrence	Recorded within the study area recently (i.e. within ten years).
2 - High	Previous records of the species in the local vicinity; and/or, the study area contains areas of high-quality habitat.
3 – Moderate	Limited previous records of the species in the local vicinity; and/or, the study area contains some characteristics of the species' preferred habitat.
4 – Low	Poor or limited habitat for the species however other evidence (such as a lack of records or environmental factors) indicates there is a very low likelihood of presence.
5 – Unlikely	No suitable habitat and/or outside the species range.

Table 4. Decision guidelines for determining fauna species likelihood of occurrence within the study area.

Likely presence or use of the study area	Ecology and Heritage Partners Decision Criteria
1 - High	Known resident in the study area based on site observations, database records, or expert advices; and/or, recent records (i.e. within five years) of the species in the local area; and/or, the study area contains the species' preferred habitat.
2 - Moderate	The species is likely to visit the study area regularly (i.e. at least seasonally); and/or, previous records of the species in the local area; and/or, the study area contains some characteristics of the species' preferred habitat.
3 - Low	The species may visit the study area occasionally or opportunistically whilst en route to more suitable sites; and/or, there are only limited or historical records of the species in the local area (i.e. more than 20 years old); and/or, the study area contains few or no characteristics of the species' preferred habitat.
4 - Unlikely	No previous records of the species in the local area; and/or, the species may fly over the study area when moving between areas of more suitable habitat; and/or, out of the species' range; and/or, no suitable habitat present.

2.5 Assessment Qualifications and Limitations

This report has been written based on the quality and extent of the ecological values and habitat considered to be present or absent at the time of the desktop and/or field assessments being undertaken.

The 'snapshot' nature of a standard biodiversity assessment meant that migratory, transitory or uncommon fauna species may have been absent from typically occupied habitats at the time of the field assessment. In addition, annual or cryptic flora species such as those that persist via underground tubers may also be absent.

A comprehensive list of all terrestrial flora and fauna present within the study area was not undertaken as this was not the objective of the assessment. Rather a list of commonly observed species was recorded to inform the habitat hectare assessment and assist in determining the broader biodiversity values present within the study area.

Ecological values identified within the study area were recorded using a hand-held GPS or tablet with an accuracy of +/-5 metres. This level of accuracy is considered to provide an accurate assessment of the ecological values present within the study area; however, this data should not be used for detailed surveying purposes.

The terrestrial flora and fauna data collected during the field assessment and information obtained from relevant desktop sources is considered to adequately inform an accurate assessment of the ecological values present within the study area.

3 RESULTS

3.1 Vegetation Condition

The majority of the vegetation within the study area has previously been cleared as a result of agricultural use and mining activity, and was dominated by introduced flora and pasture grasses, or comprised bare ground.

However, several patches of native vegetation and scattered native trees were recorded within the study area.

A list of all flora species recorded during the field assessment are provided in Appendix 1.1.

3.1.1 Patches of Native Vegetation

Native vegetation in the study area is representative of one EVC: Box Ironbark Forest (EVC 61). The presence of this EVC is generally consistent with the modelled pre-1750s native vegetation mapping (DELWP 2021c). Specific details relating to the observed EVC are provided below.

The results of the habitat hectare assessment are provided in Appendix 1.2.

Box Ironbark Forest

Box Ironbark Forest is characterised by an open overstorey to 20 metres tall consisting of a variety of eucalypts, often including one of the Ironbark species. The mid storey typically forms a dense to open small tree or shrub layer over an open ground layer ranging from a sparse to well-developed suite of herbs and grasses (DELWP 2021c).

Box Ironbark Forest within the study area supported an overstorey dominated by Waxy Yellow Gum *Eucalyptus leucoxylon* subsp. *pruinosa,* Grey Box *Eucalyptus microcarpa* and Yellow Box *Eucalyptus melliodora*. The understorey was generally sparse, but included Gold-dust Wattle *Acacia acinacea*, Drooping Cassinia *Cassinia arcuata*, Berry Saltbush *Atriplex semibaccata*, Saloop *Einadia hastata*, Spear-grasses *Austrostipa* spp. and Wallaby-grasses *Rytidosperma* spp. (Plates 1-4).

Waxy Yellow Gum was regenerating within former pasture paddocks within the study area (Plate 5; Plate 6), which is likely to have occurred within the first five years since the land parcel was purchased by Fosterville Gold Mine and stock removed. This regeneration did not meet the minimum size thresholds to be classed as scattered trees (> 3 metres in height and mature) (Table 2).

Plate 1. Native vegetation (Box Ironbark Forest) within the study area (Ecology and Heritage Partners Pty Ltd 6/9/2017).

Plate 2. Native vegetation (Box Ironbark Forest) within Mc Cormicks Road reserve (Ecology and Heritage Partners Pty Ltd 6/9/2017).

Plate 3. Native vegetation (Box Ironbark Forest) within Mc Cormicks Road reserve (Ecology and Heritage Partners Pty Ltd 6/9/2017).

Plate 4. Native vegetation (Box Ironbark Forest) within the study area (Ecology and Heritage Partners Pty Ltd 6/9/2017).

Plate 5. Regeneration within the study area (Ecology and Heritage Partners Pty Ltd 6/9/2017).

Plate 6. Regeneration within the study area (Ecology and Heritage Partners Pty Ltd 6/9/2017).

3.1.2 *Large Trees in Patches*

A total of 67 Large Trees (LTs) in Box Ironbark patches were present (Figure 2). Most of these specimens were Grey Box, with occasional Waxy Yellow-gum and Yellow Box present (Plate 7; Plate 8; Appendix 1.3).

One large tree was also located in a patch of otherwise planted vegetation (Figure 2).

Plate 7. Large tree within the study area (Ecology and Heritage Partners Pty Ltd 11/09/2019).

Plate 8. Large tree within the study area (Ecology and Heritage Partners Pty Ltd 11/09/2019).

3.1.3 *Scattered Trees*

A total of 28 scattered trees (Grey Box, Waxy Yellow-gum and Yellow Box) were recorded within the study area, which consisted of 18 large and 10 small scattered trees (Figure 2; Appendix 1.3). These trees would have once formed part of the Box Ironbark EVC; however, the understorey vegetation contained predominantly introduced species (mainly exotic pasture grasses) and the trees no longer formed a patch of native vegetation (Plate 9; Plate 10).

3.1.4 *Introduced and Planted Vegetation*

Areas not supporting native vegetation had a high cover (>90%) of exotic grass species, many of which were direct-seeded for use as pasture. Scattered native grasses were generally present in these areas, however they did not have the required 25% relative cover to be considered a patch.

A range of exotic grasses and herbs were present in low to moderate abundance, including Panic Veldt-grass *Ehrharta erecta*, Barley Grass *Hordeum leporinum*, Soft Brome *Bromus hordeaceus*, Toowoomba Canary-grass *Phalaris aquatica*, Black Nightshade *Solanum nigrum*, Cape Weed *Arctotheca calendula* and Mallow of Nice *Malva nicaeensis*.

No noxious weeds, as defined under the CaLP Act, were present within the study area.

Plate 9. Scattered Tree within the study area (Ecology and Heritage Partners Pty Ltd 6/9/2017).

Plate 10. Scattered Tree within the study area (Ecology and Heritage Partners Pty Ltd 6/9/2017).

Two areas of planted indigenous vegetation (Waxy Yellow Gum, Grey Box, Yellow Box and Gold-dust Wattle) were recorded within the study area (Figure 2; Plates 11-13). Evidence of the trees being planted includes tree guards, tree stakes, regular location of trunks in rows and/or location of trees on modified earth mounds. The trees are also denoted as 'planted' on historical tree planting maps previously prepared by Fosterville Gold Mine. The patch of planted trees to the south of the study area have been planted by Fosterville Gold Mine as site rehabilitation following mining activities (Plate 12). The patch of planted trees toward the centre of the study area were considered to have been planted as a windrow for animal husbandry and/or amenity (Plate 11-13). The removal of planted native vegetation for these purposes is exempt under Clause 52.17-7 of the Greater Bendigo planning scheme (planted vegetation). As such, vegetation offsets for removal of planted trees within the study area is not required.

Plate 11. Planted trees within the study area on a constructed earth mound (Ecology and Heritage Partners Pty Ltd 6/9/2017).

Plate 12. Planted trees within the study area, within a windrow (Ecology and Heritage Partners Pty Ltd 6/9/2017).

Plate 13. Evidence of tree guards along planted windrow (Ecology and Heritage Partners Pty Ltd 6/9/2017).

3.2 Fauna Habitat

The patches of Box Ironbark Forest within the study area provide potential resources for birds and other arboreal fauna. Eucalypt and Wattle trees provide foraging habitat for nectivores (nectar-eating) and frugivorous (fruit-eating) bird species. Many eucalypts are mature and have the potential to provide an array of small, medium and large hollows, bark fissures and crevices. These are likely to be used for shelter and nesting by a range of hollow-dependent fauna including parrots, microbats, possums, gliders and owls.

The open paddock areas, which contain improved exotic pastures, are likely to be used as a foraging resource by common generalist bird species which are tolerant of modified open areas, as well as a grazing resource for kangaroos.

Fauna observed using this habitat included; Australian Magpie *Cracticus tibicen*, Galah *Eolophus roseicapilla,* Willie Wagtail *Rhipidura leucophrys*, Eastern Grey Kangaroo *Macropus giganteus,* and the introduced European Rabbit *Oryctolagus cuniculus*.

3.3 Removal, Destruction or Lopping of Native Vegetation (the Guidelines)

The below clearing scenario is based on the development plan as provided by Kirkland Lake Gold Ltd.

The construction of the proposed tailings dams will result in the removal of all native vegetation within the study area.

The total extent of native vegetation to be removed also includes past removals (removals within the past five years). Past removals include approximately 17.17 hectares of native vegetation patches and 3.33 hectares of Scattered Trees.

Previously planted and regenerating vegetation will be avoided and the location of the tailings dams will be constrained to areas of existing or former mining activities where possible.

3.3.1 *Vegetation proposed to be removed*

The study area is within Location 2, with 34.027 hectares of native vegetation proposed to be removed, including 20.254 hectares of past removal. As such, the permit application falls under the Detailed assessment pathway (Table 5).

Condition scores for vegetation proposed to be removed are provided in Appendix 1.2.

Table 5. Removal of Native Vegetation (the Guidelines) (DELWP 2017).

Assessment pathway	Detailed
Location Category	2
Total Extent (past and proposed) (ha)	34.027
Extent of past removal (ha)	20.254
Extent of proposed removal (ha)	13.773
Large Trees (scattered and in patches) to be removed (no.)	85
Small scattered trees to be removed (no.)	10
EVC Conservation Status of vegetation to be removed	Depleted (Box Ironbark Forest)

3.3.2 *Offset Targets*

The offset requirement for native vegetation removal is 5.428 General Habitat Units and 85 Large Trees.

A summary of proposed vegetation losses and associated offset requirements is presented in Table 6 and the Native Vegetation Removal (NVR) report is presented in Appendix 3.

Table 6. Offset Targets.

General Offsets Required	5.428 General Habitat Units
Large Trees	85
Vicinity (catchment/council)	North Central CMA / City of Greater Bendigo
Minimum Strategic Biodiversity Value*	0.272

***The minimum Strategic Biodiversity Value is 80% of the weighted average score across habitat zones where a General offset is required.

3.4 Significance Assessment

3.4.1 *Flora*

The VBA contains records of two nationally significant, seven State significant and 10 regionally significant flora species previously recorded within 10 kilometres of the study area (DELWP 2021d) (Figure 3). The PMST nominated an additional six nationally significant species which have not been previously recorded but have the potential to occur in the locality (DAWE 2021) (Figure 3; Appendix 1.4).

However, none of these species have previously been, or were recorded within the study area during the current assessments. Of these species, nine have a low likelihood of occurring within the study area based on

limited previous records of these species within the local vicinity and poor or limited habitat observed throughout the site (Appendix 1.4).

Records of the nationally significant Clover Glycine *Glycine latrobeana* and Spiny Rice-flower *Pimelea spinescens subsp. spinescens* have previously been recorded in areas of higher quality and intact habitat further south of the study area such as the Mount Sugarloaf Nature Conservation Reserve (Figure 3). These species are known to occur within relatively undisturbed native grasslands, dry sclerophyll forests, woodlands and low open woodlands with a grassy ground layer (DEWHA 2009). However, ground cover within the study area is highly disturbed, predominantly comprising pasture paddocks on relatively flat plains, and disturbed mining land (old heap leach pads, process water storage dams and topsoil piles). As such, the study area is considered highly unlikely to provide suitable habitat for these species. For these reasons, ground-dwelling herbs and graminoids such as the State Significant Yellow-tongue Daisy *Brachyscome chrysoglossa* and the regionally significant Cane Spear-grass *Austrostipa breviglumis* and Sand Rush *Juncus psammophilus* are also considered unlikely to be present within the study area.

Golden Wattle *Acacia pycnantha*, Gold-dust Wattle *Acacia acinaceae* and Drooping Cassinia *Cassinia arcuata*, all protected under the *Flora and Fauna Guarantee Act* (FFG Act), were recorded within the study area. Given the presence of Golden Wattle and Gold-dust Wattle within the study area, and the limited previous records within 10 kilometres of the study area, there is a moderate potential for Ausfeld's Wattle *Acacia ausfeldii* and Bent-leaf Wattle *Acacia flexifolia* to also be present in the study area. However, these species were not observed during either of the previous site assessments. This was also the case for the State-significant Buloke *Allocasuarina luehmannii.*

Based on the modified nature of the study area, landscape context and the proximity of previous records, any other significant flora species are considered unlikely to occur within the study area due to the high levels of disturbance and absence of suitable habitat.

3.4.2 Fauna

The VBA contains records of four nationally significant, 13 State significant and five regionally significant fauna species previously recorded within 10 kilometres of the study area (DELWP 2021d) (Figure 4). The PMST nominated an additional 14 nationally significant species which have not been previously recorded but have the potential to occur in the locality (DAWE 2021) (Figure 4; Appendix 2.1).

However, none of these previous records occurred the study area. Although, of these species, five are considered to have a moderate likelihood of occurring within the study area. That is, the species are likely to visit the study area regularly, there are previous records of the species in the local area, and/or the study area contains some characteristics of the species' preferred habitat (Appendix 2.1). These species include several woodland bird species have previously been recorded within close proximity to the study area and are likely to utilise habitat within the study area, for foraging or breeding purposes (Table 7).

However, given the degraded nature of the study area, and its close proximity to large areas of higher quality habitat (i.e. Mount Sugarloaf Nature Conservation Reserve), it is considered unlikely that habitat within the study area provides critical or limiting habitat for these fauna species.

Table 7. Fauna Species with a moderate likelihood of occurring within the study area

Species Name	Significance	Habitat Attributes	Distance to closest record
Swift Parrot *Lathamus discolor*	Nationally Significant	Overwintering habitat consists of eucalypt forests and woodlands consisting primarily Grey Box, Red Ironbark, Mugga Ironbark, Yellow Gum and White Box.	Approx. 1 km
Chestnut-rumped Heathwren *Calamanthus pyrrhopygius*	State Significant	Inhabits heathlands and woodlands with dense shrub and/or ground-layer vegetation.	Approx. 5 km
Diamond Firetail *Stagonopleura guttata*	State Significant	Typically found in grassy eucalypt woodlands, where it feeds exclusively on the ground, on grass and herb seeds and green leaves, and insects	Approx. 1 km
White-throated Needletail *Hirundapus caudacutus*	State Significant	Occur over most types of habitat, however are recorded most often above wooded areas, including open forest. The species roosts in trees amongst dense foliage in the canopy or in hollows	Approx. 5 km
Black-eared Cuckoo *Chrysococcyx osculans*	Regionally Significant	Typically inhabits dry open woodlands and forests.	Approx. 1 km

Swift Parrot *Lathamus discolor*

There are 20 records of the nationally significant Swift Parrot *Lathamus discolor* within 10 kilometres of the study area, the most recent of which is from 2005 (Figure 4). The Swift Parrot is a non-breeding winter migrant to the mainland from Tasmania. It has a restricted breeding area in the east of Tasmania, arriving on the mainland in autumn to spend the winter period in foraging groups inhabiting forests and woodlands in south-east Australia (DSE 2004b). During the winter migration period, flowering eucalypts in woodlands and forests (particularly box-ironbark forests through central Victoria), provide suitable foraging habitat for this species, including the threatened ecological community Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (Threatened Species Scientific Committee, 2016). A major cause of decline is the continual loss of mainland winter-flowering eucalypts on which the over-wintering birds are dependent (DSE 2004b).

Swift Parrot typically inhabits eucalypt forests and woodlands consisting of the winter-flowering Grey Box *Eucalyptus microcarpa,* Red Ironbark *Eucalyptus tricarpa*, Yellow Gum *Eucalyptus leucoxylon* and White Box *Eucalyptus albens,* whereby they feed on nectar when the eucalypts are in blossom (DSE 2004b). Given the presence of Grey Box and (Waxy) Yellow-gum within the study area and the close proximity of the Mount Sugarloaf Nature Conservation Reserve, whereby there are a number of previous Swift Parrot records, it is considered likely that Swift Parrot will opportunistically utilise native vegetation within and adjacent to the areas proposed for TSF5 and TSF6 for foraging purposes.

However, given the apparent degraded condition of the majority of the study area and its close proximity to large areas of higher quality habitat (i.e. Mount Sugarloaf Nature Conservation Reserve) makes it unlikely that the study area provides critical or limiting habitat for the species.

In the context of the broader landscape which offers higher quality and key foraging habitat for Swift Parrot, the study area is only likely to be used opportunistically by the species en route to larger areas of suitable habitat. Furthermore, given the presence of intact areas of habitat surrounding the study area, vegetation connectivity surrounding the study area will be maintained, sustaining passage between key habitat areas. An assessment against the *EPBC Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* is included below (Table 9).

Based on the modified nature of the study area, landscape context and the proximity of previous records, any additional significant fauna species are considered unlikely to rely on habitat within the study area for foraging or breeding purposes due to the lack of suitable and/or important habitat features.

3.4.3 Ecological Communities

Nationally Significant

Four nationally listed ecological communities are predicted to occur within 10 kilometres of the study area (DAWE 2021):

- Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions;
- Grey Box *(Eucalyptus microcarpa)* Grassy Woodlands and Derived Native Grasslands of South-eastern Australia;
- Natural Grasslands of the Murray Valley Plains; and,
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

Buloke Woodlands of the Riverina and Murray -Darling Depression Bioregions

The Buloke Woodlands of the Riverina and Murray Darling Depression Bioregions' ecological community encompasses a number of closely-related woodland communities in which Buloke *Allocasuarina luehmannii* is usually a dominant or co-dominant tree (DSE 2011). The Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions occur substantially within the two named bioregions (Thackway and Cresswell 1995).

However, vegetation within the study area did not meet the condition thresholds that define any this ecological community due to the notable absence of Buloke.

Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia

The Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia occurs in two forms (DSEWPaC 2012):

- The most common form is as grassy woodland comprising a tree layer and an understorey that must have native grasses but with a varying proportion of shrubs and herbs.
- The derived native grassland form can occur in patches where the tree canopy and mid layer have been almost entirely removed but the native ground layer remains largely intact with high flora diversity.

Patches of Box Ironbark Forest within the study area were dominated by Grey Box, with a variable shrublayer which included such widespread species as wattles (Acacia species) and Cassinia species. In addition, the ground layer comprised a combination of grasses, namely Wallaby grasses and Spear grasses.

Condition thresholds that define the nationally significant ecological community Grey Box (*Eucalyptus microcarpa)* Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (GBGW community) are provided in Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia: A guide to the identification, assessment and management of a nationally threatened ecological community (DSEWPaC 2012). A summary of the main condition thresholds is provided below:

- Is the most common tree species Grey Box?
- Is the patch at least 0.5 hectares in size?
- Do non-grassy weeds make up more than 30% of the plant cover in the ground layer?
- Do trees cover at least 10% of the patch?
- Is the patch bigger than two hectares?
- Are there at least eight trees per hectare that either:
    - Contain hollows?; or,
    - Have a diameter > 60 cm at 1.3 metres above ground level?
- Is at least 10% of the plant cover in the ground layer made up of perennial native grass species?

Habitat Zone BIB5 **did meet** the condition thresholds for the ecological community. An assessment against the condition thresholds for the patch is given below:

Table 8. Assessment against condition thresholds for Grey Box Grassy Woodland (BIB5) (DSEWPaC 2012).

Condition Threshold	Assessment for BIB5
Is the most common tree species Grey Box?	Yes, the canopy is dominated by Grey Box.
Is the patch at least 0.5 hectares in size?	Yes, the patch is 5.100 hectares in size.
Do non-grassy weeds make up more than 30% of the plant cover in the ground layer?	No. **Note:** Lack of weed score (Appendix 1.2) is high (score of 13 out of 15).
Do trees cover at least 10% of the patch?	Yes. **Note:** Tree canopy score is high (4 out of 5), which means there is at least 50% tree canopy cover over the BIB5 patches.
Is the patch bigger than 2 hectares?	Yes, the patch is 5.100 hectares in size.
Are there at least eight trees per hectare that either: • Contain hollows?; or, • Have a diameter > 60 cm at 1.3 metres above ground level?	There are 27 large trees within 5.1 hectares of BIB5. These trees have a diameter at 1.3 metres above ground level (or diameter of breast height (DBH)) of at **least 70 cm** (Benchmark DBH of large trees). This means there are approximately 5 trees of a DBH of 70 cm *per hectare.* Additional trees of greater than 60 cm, but less than 70 cm DBH were observed within the study area. Although, these

	were not required to be recorded (under the Guidelines 2017) as they were not considered a large tree. However, at least eight trees per hectare are considered to have a diameter > 60 cm at 1.3 metres above ground level.
Is at least 10% of the plant cover in the ground layer made up of perennial native grass species?	Yes. Note: Weed cover in ground layer is negligible and at least 90% of life forms present within patch (based on lack of weeds and understorey scores in Appendix 1.2). As such, ground layer is predominantly weed free and at least 10% of the ground cover would be dominated by perennial native grass species.

Habitat Zones BIB1 to BIB4 and BIB6 did not meet the condition thresholds that define the Grey Box Grassy Woodland (GBGW) ecological community, due to one or a combination of the following:

- The patch was not at least 0.5 hectares in size; and/or,
- Low floristic diversity within the mid and ground layers.

The sizes of the patches are: BIB1 = 0.385 hectares, BIB2 = 0.800 hectares, BIB3 = 0.600 hectares, BIB4 = 1.948 hectares, BIB5 = 5.100 hectares and BIB6 = 6.041 hectares.

As such, Habitat Zone BIB1 does not qualify as GBGW because it is too small (less than 0.5 hectares in size).

Whilst the remaining Habitat Zones (BIB2 to BIB6) were of the correct size (at least 0.5 hectares in size), they did not qualify for as the nationally listed ecological community because the patches were degraded with too few native species or insufficient native species cover in the ground layer (DSEWPaC 2012).

Natural Grasslands of the Murray Valley Plains

The Natural Grasslands of the Murray Valley Plains ecological community is a type of natural temperate grassland that has semi-arid characteristics, due to the lower rainfall where it occurs. The structure is an open grassland to forbland in which trees and tall shrubs are sparse to absent. The vegetation is dominated by the ground layer with range of perennial grasses, forbs and small shrubs.

Areas of open grassland within the study area had a high cover (>90%) of exotic grass species, many of which were direct-seeded for use as pasture. Scattered native grasses were generally present in these areas, however they did not have the required 25% relative cover to be considered a patch. As such, vegetation within the study area did not meet the defining characteristics of the Natural Grasslands of the Murray Valley Plains ecological community the low diversity of native flora and high cover of exotic vegetation.

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

This ecological community is characterised by the presence of White Box, Yellow Box and/or Blakely's Red Gum and a generally grassy understorey. The trees may occur as pure stands, mixtures of the three species or in mixtures with other trees, including wattle species.

Given the absence of these key indicator tree species, vegetation within the study area did not meet the condition thresholds that define this nationally significant ecological community.

State Significant

Grey Box – Buloke Grassy Community

The Grey Box - Buloke Grassy Woodland Community is a mainly grassy woodland dominated by Grey Box over a lower stratum of Buloke. The ground layer is mainly native grasses and although a shrub layer is usually lacking, a scattering of wattles is present at some sites.

However, vegetation within the study area did not meet the condition thresholds that defines this ecological community due to the absence of Buloke in the shrublayer and the low diversity of native flora and high cover of exotic vegetation within the ground layer.

4 LEGISLATIVE AND POLICY IMPLICATIONS

4.1 *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)

The EPBC Act establishes a Commonwealth process for the assessment of proposed actions likely to have a significant impact on any matters of National Environment Significance (NES).

Table 9. Potential impacts to matters of National Environmental Significance (NES)

Matter of NES	Potential Impacts
World Heritage properties	The proposed action will not impact any properties listed for World Heritage.
National heritage places	The proposed action will not impact any places listed for national heritage.
Ramsar wetlands of international significance	Gunbower Forest and NSW Central Murray State Forests are located 50 to 100 kilometres upstream. Given the location of the proposed action it will not impact these Ramsar Wetlands of International Importance. Furthermore, management practices and construction techniques consistent with Construction Techniques for Sediment Pollution Control (EPA 1991) and Environmental Guidelines for Major Construction Sites (EPA 1996), will be implemented to prevent any impact to the ecological character of any nearby wetland.
Threatened species and ecological communities	No nationally significant flora or fauna were recorded during the site assessment. However, there is suitable foraging habitat within the study area for one nationally significant fauna species, the Swift Parrot. In addition, vegetation within the study area meets the condition thresholds that define the nationally significant Grey Box Grassy Woodland and Derived Native Grasslands of South Eastern Australia ecological community. A significant impact assessment for Swift Parrot and the ecological community are provided in Table 9 and 10 below.
Migratory and marine species	While a number of species may occasionally fly the study area, it would not be classed as an 'important habitat' as defined under the EPBC Act Policy Statement 1.1 Principal Significant Impact Guidelines (DoE 2013).
Commonwealth marine area	The proposed action will not impact any Commonwealth marine areas.
Nuclear actions (including uranium mining)	The proposed action is not a nuclear action.
Great Barrier Reef Marine Park	The proposed action will not impact the Great Barrier Reef Marine Park.
Water resources impacted by coal seam gas or mining development	The proposed action is a mining development but will not impact water resources.

4.1.1 Implications

There is suitable habitat within the study area for one fauna species (Swift Parrot) and one ecological community (Grey Box (*Eucalyptus microcarpa*) Grassy Woodland and Derived Native Grasslands of South-eastern Australia) listed under the EPBC Act.

Swift Parrot

Given the apparent degraded condition of the majority of the study area and its close proximity to large areas of higher quality habitat (i.e. Mount Sugarloaf Nature Conservation Reserve) makes it unlikely that the study area provides critical or limiting habitat for the species. In the context of the broader landscape which offers higher quality and key foraging habitat for Swift Parrot, the study area is only likely to be used opportunistically by the species en route to larger areas of suitable habitat. Furthermore, given the presence of intact areas of habitat surrounding the study area, vegetation connectivity surrounding the study area will be maintained, sustaining passage between key habitat areas. As such, it is considered unlikely that the proposed vegetation removal will have a significant impact on Swift Parrot (Table 9).

An assessment against the *EPBC Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* is included below (Table 10).

Table 10. Significant Impact Assessment for Swift Parrot

Significant Impact Criteria for Endangered or Critically Endangered Species (Swift Parrot)	
Significant Impact Criteria	**Comment**
1. Lead to a long-term decrease in the size of the population	There is a moderate likelihood that Swift Parrot utilises habitat within the study area, given two of its preferred winter-foraging tree species (Grey Box and Waxy Yellow-gum) are present. However, given the apparent degraded condition of the majority of the study area and its close proximity to large areas of higher quality habitat (i.e. Mount Sugarloaf Nature Conservation Reserve) makes it unlikely that the study area provides critical or limiting habitat for the species. Rather, they may use the study area opportunistically for foraging or fly over it on their way to the areas of higher quality habitat. As such, the removal of habitat within the study area is unlikely to lead to a long-term decrease in the size of the population.
2. Reduce the area of occupancy of the species	Swift Parrot has not been previously recorded within the study area. However, should Swift Parrot inhabit the study area, the proposed action will reduce the area of occupancy of the species for foraging as a result of the removal of all native vegetation within the study area.
3. Fragment an existing population into two or more populations	Given the presence of intact areas of habitat surrounding the study area, it is considered unlikely that the proposed action will fragment any potentially existing Swift Parrot population into two or more populations. Given the apparent degraded condition of the majority of the study area, its close proximity to large areas of higher quality habitat (i.e. Mount Sugarloaf Nature Conservation Reserve), and the occurrence of breeding habitat only within Tasmania, it is considered that the study area does not provide critical or limiting habitat for the species (i.e. used for breeding purposes). That is. given the species breeds in Tasmania, the removal of foraging habitat will not disrupt the breeding cycle of any population. As such the removal of native vegetation within the study area is considered unlikely to adversely impact habitat crucial to the survival of Swift Parrot.
4. Adversely affect habitat critical to the survival of the species	
5. Disrupt the breeding cycle of a population.	

Significant Impact Criteria for Endangered or Critically Endangered Species (Swift Parrot)	
6. Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	Native vegetation within the study area is in a degraded condition, characterised by low floristic diversity and a high ground cover of weeds. As such, the study area is not considered high quality habitat for the Swift Parrot. In addition, the study area is close proximity to large areas of higher quality habitat (i.e. Mount Sugarloaf Nature Conservation Reserve). Whilst the proposed action will likely modify, destroy, remove and decrease the availability of habitat for the Swift Parrot, given the above, it is considered unlikely that this will be to the point where the species is likely to decline.
7. Result in invasive species that are harmful to the species becoming established in the species' habitat	Fosterville Gold Mine Pty Ltd currently engage a licensed pest control company to undertake annual rabbit and fox baiting programs and as such, and it is understood that these programs will be maintained to control pest fauna within the study area. As such, the proposed action is considered unlikely to result in invasive species (i.e. foxes) becoming established within the study area. Furthermore, materials used in the construction of the tailings dams will be certified weed/disease free and so the proposed action is also unlikely to introduce a disease that is detrimental to Swift Parrot into the study area.
8. Introduce disease that may cause the species to decline.	
9. Interfere with the recovery of the species.	The proposed action not interfere with the long-term recovery of the species.

Grey Box (Eucalyptus microcarpa) Grassy Woodland and Derived Native Grassland of South-eastern Australia

Habitat zone BIB5 (5.1 hectares) within the study area meet the condition thresholds that define the *Grey Box (Eucalyptus microcarpa) Grassy Woodland and Derived Native Grasslands of South-eastern Australia* ecological community.

Given the construction of the proposed tailings dams will result in the removal of all native vegetation within the study area, the proposed action is considered to have a significant impact on the ecological community. As such, a referral to the Commonwealth Environment Minister is required.

An assessment against the *EPBC Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* is included below (Table 11).

Table 11. Significant Impact Assessment for the Grey Box (Eucalyptus microcarpa) Grassy Woodland and Derived Native Grassland of South-eastern Australia

Significant Impact Criteria for Critically Endangered and Endangered Ecological Communities (Grey Box Grassy Woodland and Derived Native Grassland of South-eastern Australia)	
Significant Impact Criteria	**Comment**
1. Reduce the extent of an ecological community	Given construction of the proposed tailings dams will result in the removal of all native vegetation within the study area, the proposed action will reduce the extent of the ecological community and result in fragmentation of the ecological community.
2. Fragment or increase fragmentation of an ecological community, for example, by clearing vegetation for roads or transmission lines	
3. Adversely affect habitat critical to the survival of the ecological community	The construction of the tailings dams will remove approximately 5.1 hectares of the ecological community.

Significant Impact Criteria for Critically Endangered and Endangered Ecological Communities (Grey Box Grassy Woodland and Derived Native Grassland of South-eastern Australia)	
4. Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns.	Furthermore, tailings stored in tailings dams can be a dangerous source of chemicals including heavy metals and sulphides, which have the potential to leak into groundwater and modifying the nutrients in top soil. In addition, the construction of the tailings dams within the landscape is likely to further alter the surface water draining patterns.
5. Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	All native vegetation within the study area is proposed to be moved, in particular the overstorey which is dominated by Grey Box trees. As such, the tailings dams' construction will cause a substantial change in the species composition of the ecological community through the removal of approximately 5.1 hectares of the community.
6. Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: • assisting invasive species, that are harmful to the listed ecological community, to become established, or • causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community	Fosterville Gold Mine Pty Ltd currently engage a licensed pest control company to undertake annual rabbit and fox baiting programs and as such, and it is understood that these programs will be maintained to control pest fauna within the study area. As such, the proposed action is considered unlikely to result in invasive species (i.e. foxes) becoming established within the study area. In addition, the tailings within the tailings dams are generally toxic, which, if not mitigated properly, has the potential to leach into the soil and affect nearby patches of the ecological community outside of the study area.
7. Interfere with the recovery of an ecological community	All native vegetation within the study area is proposed to be moved as part of the tailings dam construction. Once constructed, the dams will occupy the majority of the study area, thereby interfering with any potential recovery of the ecological community in this location.

4.2 *Flora and Fauna Guarantee Act 1988* (Victoria)

The FFG Act is the primary legislation dealing with biodiversity conservation and sustainable use of native flora and fauna in Victoria. Proponents are required to apply for an FFG Act Permit to 'take' threatened and/or protected flora species, listed vegetation communities and listed fish species in areas of public land (e.g. within road reserves, drainage lines and public reserves/parks). An FFG Act permit is generally not required for removal of species or communities on private land, or for the removal of habitat for a listed terrestrial fauna species.

4.2.1 *Implications*

There are confirmed records of flora species listed as threatened and/or protected under the FFG Act (Golden Wattle, Gold-dust Wattle and Drooping Cassinia). The majority of the study area is privately owned, and as such a permit under the FFG Act is not required for these areas.

It is understood that in 2019, Fosterville Gold Mine was in the process of applying to purchase the crown road reserve where areas denoted as BIB5 (Figure 2) occurred. As the land will likely be acquired before native vegetation removal commences, a permit under the FFG Act will not be required.

In addition, suitable habitat for the State Significant Chestnut-rumped Heathwren, Diamond Firetail, Hardhead, and White-throated Needletail is present within the study area and, as such, there is potential for these species to occur within the study area. However, an FFG Act permit is generally not required for removal of species or communities on private land, or for the removal of habitat for a listed terrestrial fauna species.

4.3 *Mineral Resources (Sustainable Development) Act 1990* (Victoria)

The removal of native vegetation for the Earth Resources Industry (ERI) is regulated through the Mining and Extractive Industry Work Approvals Process. A Memorandum of Understanding (MoU) between the former Department of Sustainability and Environment (DSE) and Department of Primary Industries (DPI) recognises that native vegetation should be offset in accordance with the relevant environmental policy. As such the requirements for removing native vegetation within the study area was assessed against Victoria's Guidelines for the removal, destruction or lopping of native vegetation (the Guidelines) (DELWP 2017).

4.3.1 *Implications*

The study area is within Location 2, with 34.027 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Detailed assessment pathway.

The offset requirement for native vegetation removal is 5.428 General Habitat Units and 85 Large Trees.

4.4 *Planning and Environment Act* 1987 (Victoria)

The clearing of native vegetation for mining and extractive industries is exempt from the requirement for a planning permit under the Planning and Environment Act 1987 subject to an assessment as part of the work plan approval process (Mineral Resources [Sustainable Development] Act 1990).

4.4.1 *Local Planning Scheme*

The study area is located within the City of Greater Bendigo and is zoned as Public Conservation and Resource Zone (PCRZ) (DELWP 2021e). There are no environmental overlays that apply to the study area.

4.5 *Catchment and Land Protection Act 1994* (Victoria)

There were no weeds listed as noxious under the CaLP Act recorded during the assessment. However, there is evidence that the study area is currently occupied by a pest fauna species listed under the CaLP Act (European Rabbit *Oryctolagus cuniculus*). Fosterville Gold Mine Pty Ltd currently engage a licensed pest control

company to undertake annual rabbit and fox baiting programs and as such, it is recommended that these programs are maintained to control pest fauna within the study area. Any listed noxious weeds that are identified in future should be appropriately controlled throughout the study area, as is currently employed through weed spraying across the site.

4.6 *Wildlife Act 1975* and Wildlife Regulations 2013 (Victoria)

The *Wildlife Act 1975* (and associated Wildlife Regulations 2013) is the primary legislation in Victoria providing for protection and management of wildlife. Authorisation for habitat removal may be obtained under the *Wildlife Act 1975* through a licence granted under the *Forests Act 1958*, or under any other Act such as the *Planning and Environment Act 1987*. Any persons engaged to remove, salvage, hold or relocate native fauna during construction must hold a current Management Authorisation under the *Wildlife Act 1975*, issued by DELWP.

5 MITIGATION MEASURES

5.1 Avoid and Minimise Statement

TSF5 and TSF6 have been designed based on information relating to tailings characteristics, available construction materials, site specific factors (such as topography, geology, hydrology and seismicity), as well as financial feasibility. The combination of the above factors has influenced both the location (siting) and design of the tailings dams.

Furthermore, the mine site is constrained for vacant land, except for areas supporting native vegetation. As such, it is not possible to avoid impacts to native vegetation.

However, the design of the tailings dam has been revised since its initial conception to reduce the impacts of the proposed development footprint on native vegetation. Specifically, impacts to biodiversity have been minimised by:

- Locating the tailings dams partially within areas containing existing or former mining activities (old heap leach pads, process water storage dams and topsoil piles);
- Confining the works as close as possible to the centre of the existing mining operation area, rather than creating a sprawl of works across the landscape; and,
- Locating the works as far as possible (a minimum set back of 50 metres) from Gunyah Creek, located to the west of the study area.

The works have also been strategically located to avoid a culturally significant scar tree located to the west of the study area.

Following these amendments to the design, it is considered that there are no feasible opportunities to further avoid or minimise impacts to native vegetation without undermining the key objectives of the proposal. However, best practice mitigation measures detailed in Section 5.2 will be implemented to assist with minimising impacts to biodiversity during the construction phase.

5.2 Best Practice Mitigation Measures

Recommended measures to mitigate impacts upon terrestrial and aquatic values present within the study area may include:

- Minimise impacts to native vegetation and habitats through construction and micro-siting techniques, including fencing retained areas of native vegetation. If indeed necessary, trees should be lopped or trimmed rather than removed. Similarly, soil disturbance and sedimentation within wetlands should be avoided or kept to a minimum, to avoid, or minimise impacts to fauna habitats;
- All contractors should be aware of ecologically sensitive areas to minimise the likelihood of inadvertent disturbance to areas marked for retention. Native vegetation (areas of sensitivity) should be included as a mapping overlay on any construction plans;

- Tree Protection Zones (TPZs) should be implemented to prevent indirect losses of native vegetation during construction activities (DSE 2011). A TPZ applies to a tree and is a specific area above and below the ground, with a radius 12 x the Diameter at Breast Height (DBH). At a minimum standard a TPZ should consider the following:
    - A TPZ of trees should be a radius no less than two metres or greater than 15 metres;
    - Construction, related activities and encroachment (i.e. earthworks such as trenching that disturb the root zone) should be excluded from the TPZ;
    - Where encroachment is 10% or more of the total area of the TPZ, the tree should be considered as lost and offset accordingly (unless an arboricultural report specifies otherwise);
    - Directional drilling may be used for works within the TPZ without being considered encroachment. The directional bore should be at least 600 millimetres deep;
    - The above guidelines may be varied if a qualified arborist confirms the works will not significantly damage the tree (including stags / dead trees). In this case the tree would be retained, and no offset would be required; and,
    - Where the minimum standard for a TPZ has not been met an offset may be required.
- Removal of any habitat trees or shrubs (particularly hollow-bearing trees or trees/shrubs with nests) should be undertaken between February and September to avoid the breeding season for most fauna species. If any habitat trees or shrubs are proposed to be removed, this should be undertaken under the supervision of an appropriately qualified zoologist to salvage and translocate any displaced fauna. A Fauna Management Plan may be required to guide the salvage and translocation process;
- Where possible, construction stockpiles, machinery, roads, and other infrastructure should be placed away from areas supporting native vegetation, Large Trees and/or wetlands;
- Ensure that best practice sedimentation and pollution control measures are undertaken at all times, in accordance with Environment Protection Authority guidelines (EPA 1991; EPA 1996; Victorian Stormwater Committee 1999) to prevent offsite impacts to waterways and wetlands; and,
- As indigenous flora provides valuable habitat for indigenous fauna, it is recommended that any landscape plantings that are undertaken as part of the proposed works are conducted using indigenous species sourced from a local provenance, rather than exotic deciduous trees and shrubs.

5.3 Victorian Offset Impacts and Strategy

According to DELWPs Native Vegetation Offset Register (DELWP 2021f), there are three offset sites within the North Central CMA or City of Greater Bendigo region that can be used to satisfy the General Habitat Unit and Large tree offset requirements.

An offset register search statement identifying the relevant offsite sites is provided in Appendix 4.

5.4 Commonwealth Offset Implications

As outlined in the Australian Government's EPBC Act Environmental Offsets Policy (DSEWPaC 2012b), a project should be designed to take into consideration the three-step approach, which is:

- Avoid environmental impacts;
- Minimise impacts;
- Where impacts cannot be avoided or minimised, compensate for the residual impacts using other mitigation measures such as offsets; and,
- Ongoing adaptive management:

The EPBC Act Environmental Offsets Policy (DSEWPaC 2012b) outlines a framework for the use of environmental offsets under the EPBC Act including when they can be required, how they are determined and the framework under which they operate. Clear guidelines on what constitutes a suitable offset are provided and should be considered as part of any proposed offset strategy. Suitable offsets must include the following:

1. It delivers an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed development.
2. It is built around direct offsets but may include compensatory measures.
3. It is in proportion to the level of statutory protection that applies to the protected manner.
4. It is of a size and scale proportionate to the residual impacts on the protected manner.
5. It is additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs.
6. It effectively accounts for and manages the risks of the offset not succeeding.
7. It is efficient, effective, timely, transparent, scientifically robust and reasonable.
8. It has transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.

It should be noted that the actual quantum of offsets generated by an action is highly dependent on the quality of habitats, the proposed management actions and the security mechanism proposed at both the impact site and the proposed offset site.

6 FURTHER REQUIREMENTS

Further requirements associated with development of the study area, as well as additional studies or reporting that may be required, are provided in Table 12.

Table 12. Further requirements associated with development of the study area.

Relevant Legislation	Implications	Further Action
Environment Protection and Biodiversity Conservation Act 1999	The EPBC Act establishes a Commonwealth process for the assessment of proposed actions likely to have a significant impact on any matters of National Environmental Significance (NES). There is suitable habitat within the study area for one fauna species (Swift Parrot) and one ecological community (Grey Box (Eucalyptus microcarpa) Grassy Woodland and Derived Native Grasslands of South-eastern Australia) listed under the EPBC Act. Given the apparent degraded condition of the majority of the study area and its close proximity to large areas of higher quality habitat (i.e. Mount Sugarloaf Nature Conservation Reserve) makes it unlikely that the study area provides critical or limiting habitat for the species. In the context of the broader landscape which offers higher quality and key foraging habitat for Swift Parrot, the study area is only likely to be used opportunistically by the species en route to larger areas of suitable habitat. Furthermore, given the presence of intact areas of habitat surrounding the study area, vegetation connectivity surrounding the study area will be maintained, sustaining passage between key habitat areas. As such, it is considered unlikely that the proposed vegetation removal will have a significant impact on Swift Parrot, and further surveys are not deemed necessary. Areas of BIB5 (5.1 hectares) within the study area meet the condition thresholds that define the Grey Box (Eucalyptus microcarpa) Grassy Woodland and Derived Native Grasslands of South-eastern Australia ecological community. Given the construction of the proposed tailings dams will result in the removal of all native vegetation within the study area, the proposed action is considered to have a significant impact on the ecological community. As such, a referral to the Commonwealth Environment Minister is required.	Prepare and submit a referral to the Commonwealth Environment Minister at DAWE.

Relevant Legislation	Implications	Further Action
Flora and Fauna Guarantee Act 1988	There are confirmed records of flora species listed as threatened and/or protected under the FFG Act (Golden Wattle, Gold-dust Wattle and Drooping Cassinia). The majority of the study area is privately owned, and as such a permit under the FFG Act is not required for these areas. It is understood that in 2019, Fosterville Gold Mine was in the process of applying to purchase the crown road reserve where areas denoted as BIB5 (Figure 2) occurred. As the land will likely be acquired before native vegetation removal commences, a permit under the FFG Act will not be required. In addition, suitable habitat for the State Significant Chestnut-rumped Heathwren, Diamond Firetail, Hardhead, and White-throated Needletail is present within the study area and, as such, there is potential for these species to occur within the study area. However, an FFG Act permit is generally not required for removal of species or communities on private land, or for the removal of habitat for a listed terrestrial fauna species.	Prepare and submit an FFG Act permit application to DELWP.
Mineral Resources (Sustainable Development) 1990	The removal of native vegetation for the Earth Resources Industry (ERI) is regulated through the Mining and Extractive Industry Work Approvals Process. The requirements for removing native vegetation within the study area was assessed against Victoria's Guidelines for the removal, destruction or lopping of native vegetation (the Guidelines) (DELWP 2017). The study area is within Location 2, with 34.027 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Detailed assessment pathway. The offset requirement for native vegetation removal is 5.428 General Habitat Units and 85 Large Trees.	Prepare and submit a Work Plan (approved by DELWP and DEDJTR) under the MRSD Act if necessary.
Planning and Environment Act 1987	The clearing of native vegetation for mining and extractive industries is exempt from the requirement for a planning permit under the Planning and Environment Act 1987 subject to an assessment as part of the work plan approval process (Mineral Resources [Sustainable Development] Act 1990).	No further action required (for native vegetation removal).
Catchment and Land Protection Act 1994	To meet requirements under the CaLP Act, listed pest animals should be appropriately controlled throughout the study area.	Listed pest animals are currently controlled by Fosterville Gold Mine Pty Ltd with annual rabbit and fox baiting programs.
Wildlife Act 1975	Any persons engaged to conduct salvage and translocation or general handling of terrestrial fauna species must hold a current Management Authorisation.	Ensure wildlife specialists hold a current Management Authorisation.

REFERENCES

ALA 2021. Atlas of Living Australia. URL: https://www.ala.org.au/. Atlas of Living Australia, Canberra, ACT.

Birdlife Australia 2021. Birdlife Australia. URL: https://birdlife.org.au/. Birdlife Australia, Carlton, Victoria.

DAWE 2021. Protected Matters Search Tool. [www Document] URL: http://www.environment.gov.au/epbc/pmst/index.html. Commonwealth Department of Agriculture, Water and the Environment, Canberra, ACT.

DELWP 2017. *Guidelines for the removal, destruction or lopping of native vegetation*. December 2017. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.

DELWP 2018. *Assessor's handbook: Applications to remove, destroy or lop native vegetation*. October 2018. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.

DELWP 2019a. *Flora and Fauna Guarantee Act 1988* Threatened List – November 2019 [www Document]. URL: https://www.environment.vic.gov.au/__data/assets/pdf_file/0024/115827/20191114-FFG-Threatened-List.pdf. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.

DELWP 2019b. *Flora and Fauna Guarantee Act 1988* Protected Flora List – November 2019 [www Document]. URL: https://www.environment.vic.gov.au/__data/assets/pdf_file/0011/50420/20191114-FFG-protected-flora-list.pdf. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.

DELWP 2019c. *Flora and Fauna Guarantee Act 1988* Threatened List – Characteristics of Threatened Communities [www Document]. URL: https://www.environment.vic.gov.au/__data/assets/pdf_file/0018/50418/04072019-Flora-and-Fauna-Guarantee-Characteristics-of-Threatened-Communities-3.pdf. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.

DELWP 2021a. NatureKit Map [www Document]. URL: https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.

DELWP 2021b. Native Vegetation Information Management Tool [www Document]. URL: https://nvim.delwp.vic.gov.au. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.

DELWP 2021c. Ecological Vegetation Class (EVC) Benchmarks for each Bioregion [www Document]. URL: https://www.environment.vic.gov.au/biodiversity/bioregions-and-evc-benchmarks. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.

DELWP 2021d. Victorian Biodiversity Atlas. Sourced from GIS layers: "VBA_FLORA25", "VBA_FLORA100", "VBA_FAUNA25", "VBA_FAUNA100". October 2020. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.

DELWP 2021e. VicPlan Map [www Document]. URL: https://mapshare.maps.vic.gov.au/vicplan/. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.

DELWP 2021f. Search for Native Vegetation Credit Register [www Document]. URL: https://nvcr.delwp.vic.gov.au/Home/Index. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.

DEPI 2014. *Advisory List of Rare or Threatened Plants in Victoria*. Victorian Department of Environment and Primary Industries, Melbourne, Victoria.

DEWHA 2009. Significant impact guidelines for the critically endangered spiny rice-flower (*Pimelea spinescens* subsp. *spinescens.* Nationally threatened species and ecological communities. EPBC Act policy statement 3.11.

DSE 2004a. *Vegetation quality assessment manual: Guidelines for applying the habitat hectares scoring method.* Version 1.3. Victorian Department of Sustainability and Environment, Melbourne Victoria.

DSE 2004b. Flora and Fauna Guarantee Act 1988 Action Statement No. 169. Victorian Department of Sustainability and Environment, Melbourne, Victoria.

DSE 2011a. National Recovery Plan for Buloke Woodlands of the Riverina and Murray Darling Depression Bioregions. Victorian Department of Sustainability and Environment, Melbourne, Victoria.

DSE 2011b. *Native Vegetation Technical information sheet: Defining an acceptable distance for tree retention during construction works*. Victorian Department of Sustainability and Environment, Melbourne, Victoria.

DSE 2013. *Advisory list of Threatened Vertebrate Fauna in Victoria – 2013*. Victorian Department of Sustainability and Environment, Melbourne, Victoria.

DSEWPaC 2012a. Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia. Department of Sustainability, Environment, Water, Population and Communities, Canberra.

DSEWPaC 2012b. *Environment Protection and Biodiversity Conservation Act 1999.* Environmental Offsets Policy. Department of Sustainability, Environment, Water, Population and Communities, Canberra. Commonwealth of Australia 2012.

Ecology and Heritage Partners 2017. Biodiversity Assessment – Proposed Tailings Dams TSF5 and TSF6 within Fosterville Goldmine.

Ecology and Heritage Partners 2019. Biodiversity Assessment – Proposed Tailings Dams TSF5 and TSF6 within Fosterville Goldmine.

EPA 1991. *Construction Techniques for Sediment Pollution Control*. Published document prepared by the Victorian Environment Protection Authority, Melbourne, Victoria.

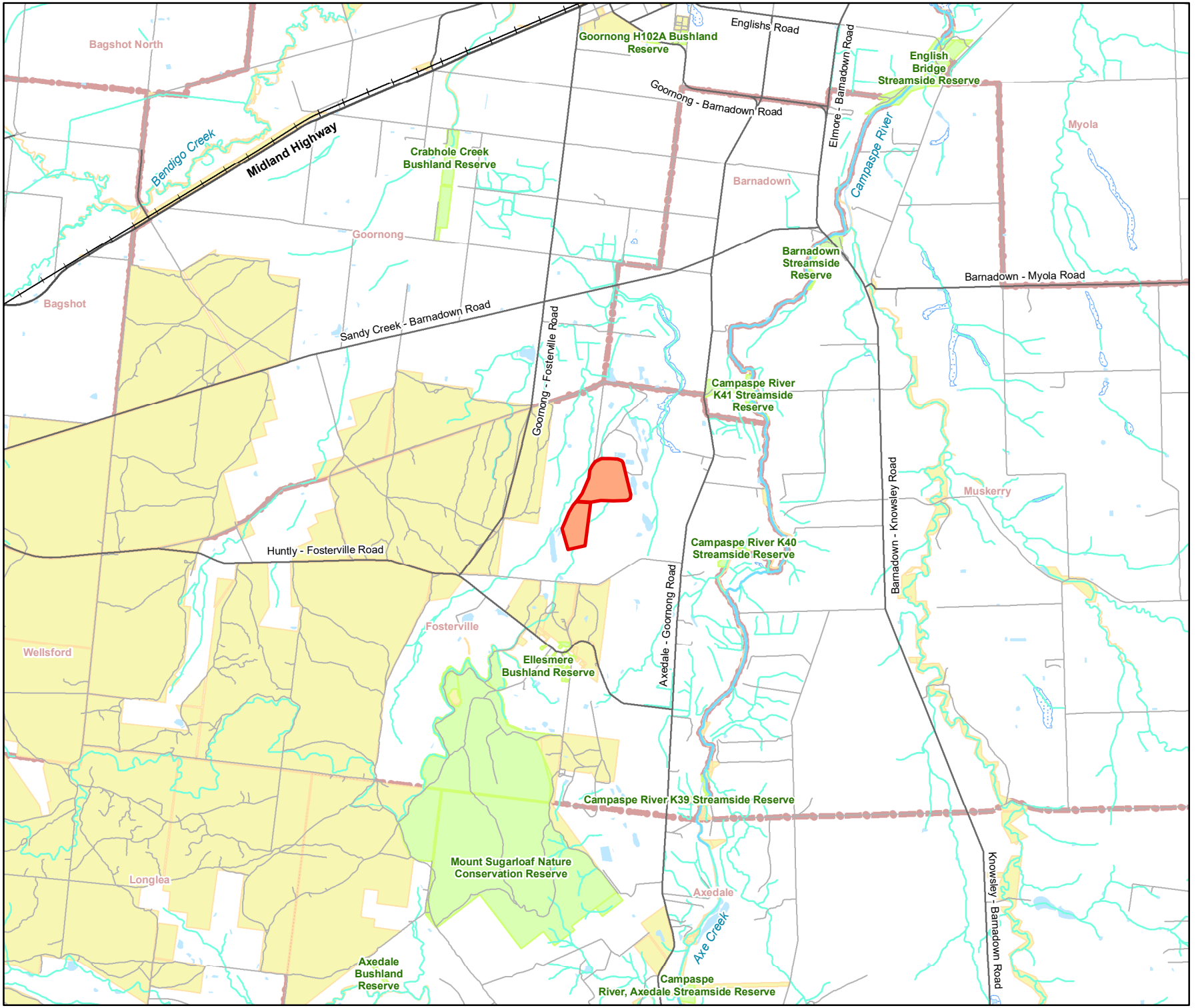
EPA 1996. *Environmental Guidelines for Major Construction Sites*. Published document prepared by the Victorian Environmental Protection Authority, Melbourne, Victoria.

Gullan, P. 2017. Illustrated Flora Information System of Victoria (IFISV). Viridans Pty Ltd, Victoria.

Thackway R. and Cresswell I.D. (Eds.) 1995. An interim biogeographic regionalisation for Australia: a framework for setting priorities in the national reserves system cooperative program. Australian Nature Conservation Agency, Canberra.

Victorian Urban Stormwater Committee 1999. *Urban Stormwater: Best Practice Environmental Management Guidelines*. CSIRO, Collingwood, Victoria.

FIGURES



Legend

- Study Area
- Railway
- Major Road
- Collector Road
- Minor Road
- Minor Watercourse
- Major Watercourse
- Permanent Waterbody
- Land Subject to Inundation
- Parks and Reserves
- Crown Land
- Localities

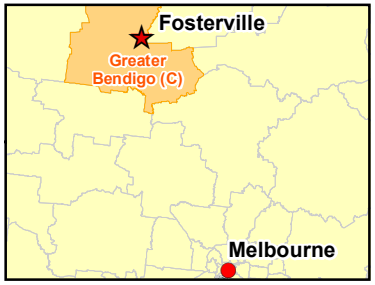


Figure 1

Location of the study area

Biodiversity Assessment for Fosterville Gold Mine, Fosterville

N

0 1,000 2,000

Metres

ecology & heritage partners

Figure 2
Ecological features
Biodiversity Assessment for Fosterville Gold Mine, Fosterville

Legend

- Study Area
- Current Wetlands
- Scattered Large Tree
- Scattered Small Tree
- Large Tree in patch
- Impacted tree - directly
- Impacted tree - indirectly
- Planted
- Regrowth

Ecological Vegetation Class

- Box-Ironbark Forest (EVC 61)
- Grey Box *(E. microcarpa)* Grassy Woodland
- Impacted vegetation

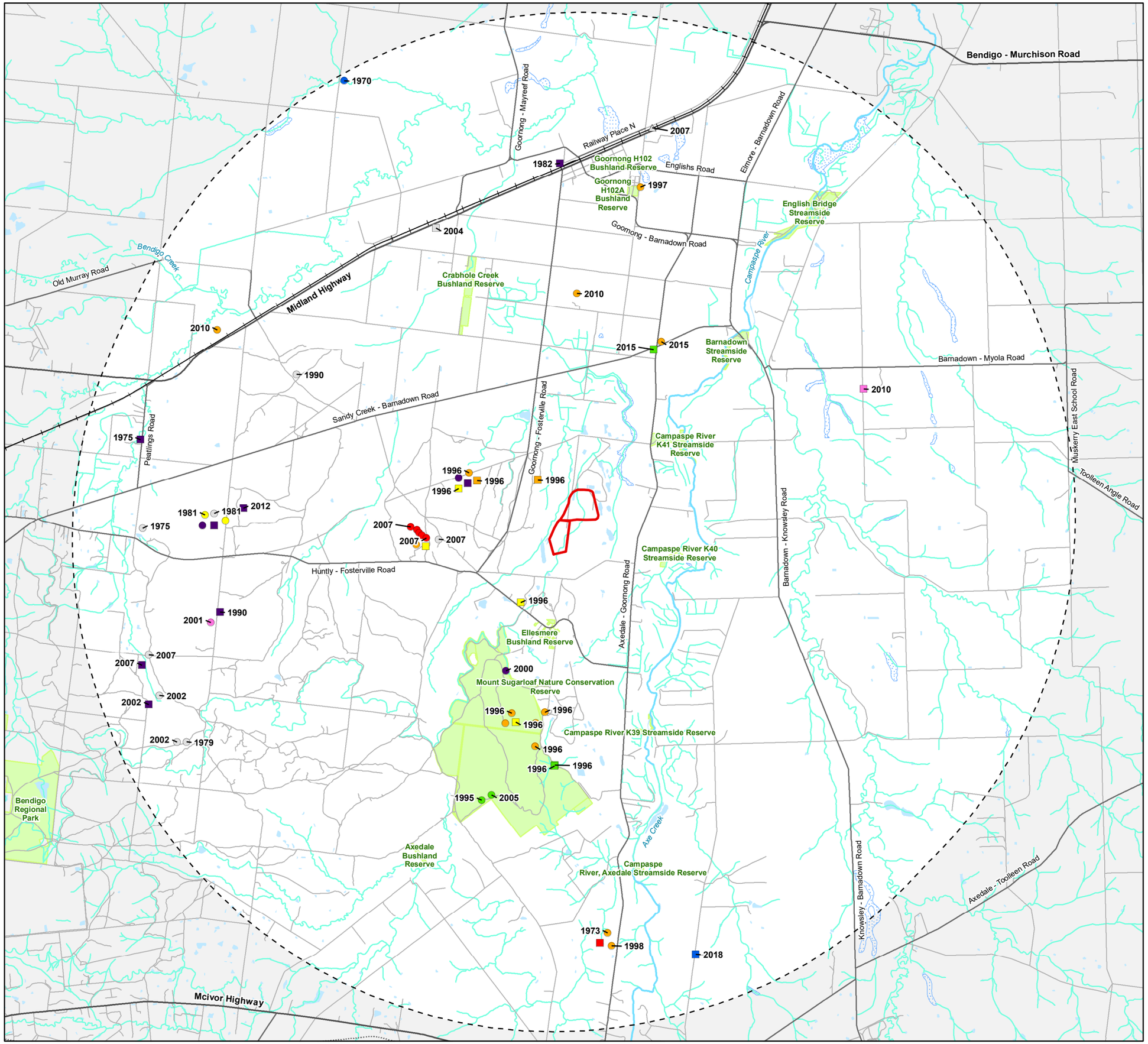
N

0 50 100
Metres

15293_Fig02_EcolFeat_P 13/07/2021 psorensen

ecology & heritage partners

Aerial source: Nearmap 2019



Legend

Study Area

Significant flora

- Ausfeld's Wattle
- Bent-leaf Wattle
- Buloke
- Cane Spear-grass
- Clover Glycine
- Crimson Sun-orchid
- Dainty Phebalium
- Dwarf Cassinia
- Late-flower Flax-lily
- Rosemary Grevillea
- Sand Rush
- Small-leaf Goodenia
- Southern Swainson-pea
- Spiny Rice-flower
- Waterbush
- Whirrakee Wattle
- Yellow-tongue Daisy

Figure 3

Previously documented significant flora within 10km of the study area

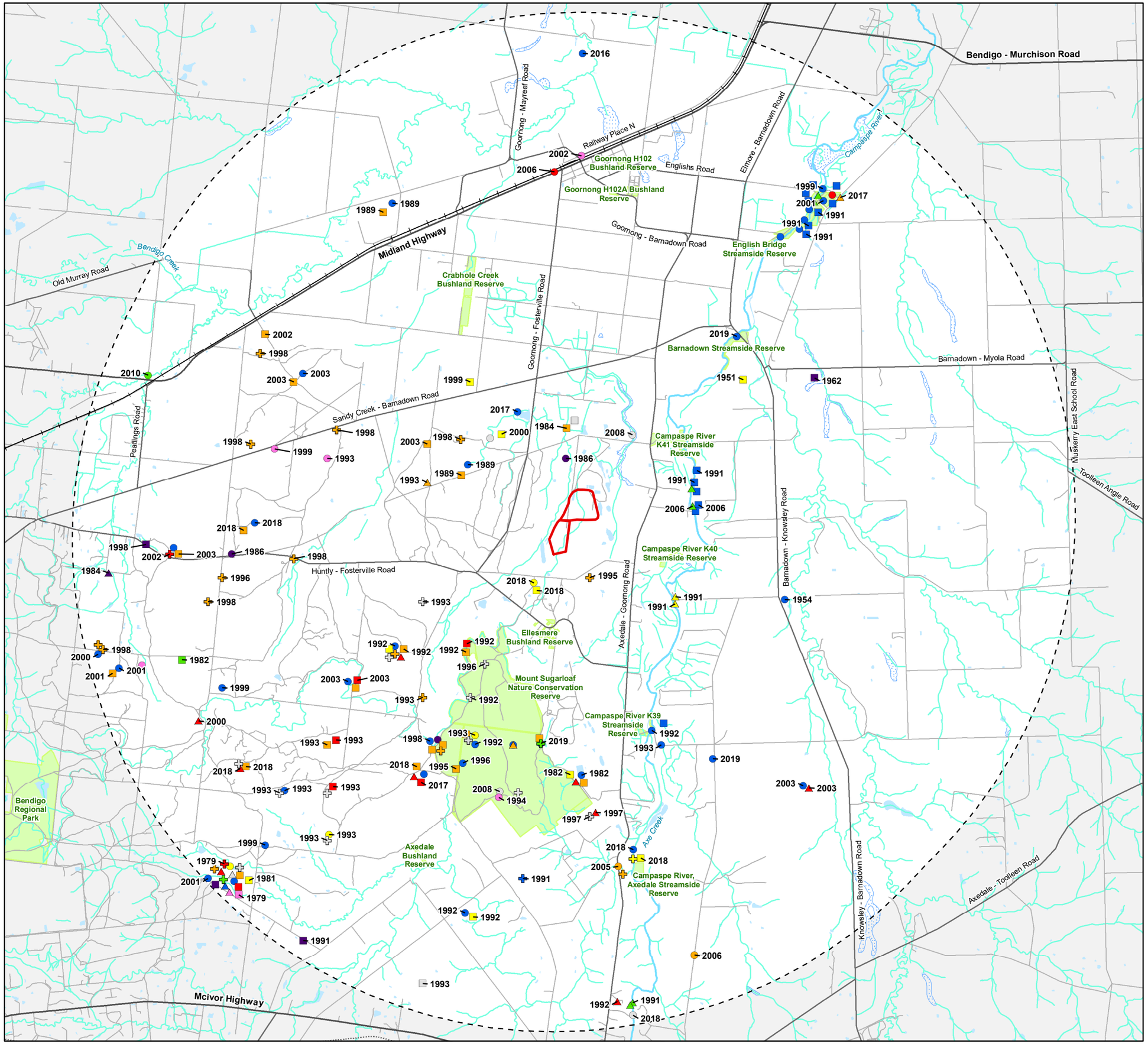
Biodiversity Assessment for Fosterville Gold Mine, Fosterville

N

0 2 4

Kilometres

ecology & heritage partners



Legend

Study Area

Significant fauna

- Azure Kingfisher
- Baillon's Crake
- Barking Owl
- Black-eared Cuckoo
- Brown Toadlet
- Brown Treecreeper
- Brush-tailed Phascogale
- Bullant
- Bush Stone-curlew
- Chestnut-rumped Heathwren
- Crested Bellbird
- Diamond Firetail
- Fat-tailed Dunnart
- Golden Perch
- Grey Falcon
- Grey-crowned Babbler
- Hardhead
- Hooded Robin
- Lace Monitor
- Macquarie Perch
- Murray Cod
- Pied Cormorant
- Purple-gaped Honeyeater
- Regent Honeyeater
- Speckled Warbler
- Spotted Quail-thrush
- Swift Parrot
- White-bellied Sea-Eagle
- White-throated Needletail
- Woodland Blind Snake

Figure 4

Previously documented significant fauna within 10km of the study area

Biodiversity Assessment for Fosterville Gold Mine, Fosterville

ecology & heritage partners

APPENDIX 1 FLORA

Appendix 1.1 Flora Results

Legend:

I Protected under the FFG Act (DELWP 2019b);

+ Planted indigenous species that also occur in native vegetation in the study area;

Table A1.1. Flora within the study area.

Scientific Name	Common Name	Notes
INDIGENOUS SPECIES		
Acacia pycnantha	Golden Wattle	**I**
Acacia acinacea sl.	Gold-dust Wattle	**I +**
Atriplex semibaccata	Berry Saltbush	-
Austrostipa scabra	Rough Spear Grass	-
Austrostipa spp.	Spear Grass	-
Cassinia arcuata	Drooping Cassinia	-
Einadia hastata	Saloop	-
Eucalyptus leucoxylon subsp. *pruinosa*	Waxy Yellow-gum	**+**
Eucalyptus melliodora	Yellow Box	**+**
Eucalyptus microcarpa	Grey Box	**+**
Juncus sp.	Rush	-
Oxalis perennans	Grassland Wood-sorrel	-
Rytidosperma racemosum var. *racemosum*	Slender Wallaby-grass	-
Rytidosperma spp.	Wallaby Grass	-
NON-INDIGENOUS OR INTRODUCED SPECIES		
Arctotheca calendula	Cape Weed	-
Bromus hordeaceus subsp. hordeaceus	Soft Brome	-
Ehrharta erecta var. *erecta*	Panic Veldt-grass	-
Hordeum leporinum	Barley-grass	-
Malva nicaeensis	Mallow of Nice	-
Phalaris aquatica	Toowoomba Canary-grass	-
Solanum nigrum s.l.	Black Nightshade	-

Appendix 1.2 Habitat Hectare Assessment

Table A1.2. Habitat Hectare Assessment Table.

Vegetation Zone		BIB1	BIB2	BIB3	BIB4	BIB5	BIB6
Bioregion		GF	GF	GF	GF	GF	GF
EVC		BIF	BIF	BIF	BIF	BIF	BIF
EVC Number		61	61	61	61	61	61
EVC Conservation Status		D	D	D	D	D	D
Patch Condition	Large Old Trees /10	3	0	0	0	6	4
	Canopy Cover /5	5	3	3	4	4	2
	Under storey /25	5	10	5	5	15	5
	Lack of Weeds /15	13	13	9	13	13	0
	Recruitment /10	5	5	5	0	5	0
	Organic Matter /5	4	4	3	4	4	2
	Logs /5	4	0	2	2	5	5
	Treeless EVC Multiplier	1.00	1.00	1.00	1.00	1.00	1.00
	Subtotal =	41.00	35.00	27.00	28.00	52.00	18.00
Landscape Value /25		8	8	8	8	8	8
Habitat Points /100		49	43	35	36	60	26
Habitat Score		0.49	0.43	0.35	0.36	0.60	0.26

Note: BIB = Box Ironbark Forest; D = Depleted; GF = Goldfields

Appendix 1.3 Scattered Trees and Large Trees in Patches

Table A1.3. Scattered Trees and Large Trees in Patches.

Tree #	Common Name	Species Name	DBH	Category	Comments	Status
1	Waxy Yellow-gum	*Eucalyptus leucoxylon* subsp. *pruinosa*	38	Small Tree	Patch	Retained
2	Waxy Yellow-gum	*Eucalyptus leucoxylon* subsp. *pruinosa*	87.5	Large Tree	Scattered	**Removed**
3	Waxy Yellow-gum	*Eucalyptus leucoxylon* subsp. *pruinosa*	23	Small Tree	Scattered	**Removed**
4	Dead	-	128	Large Tree	Scattered	**Removed**
5	Waxy Yellow-gum	*Eucalyptus leucoxylon* subsp. *pruinosa*	102	Large Tree	Scattered	**Removed**
6	Dead	-	81	Large Tree	Patch	**Removed**
7	Waxy Yellow-gum	*Eucalyptus leucoxylon* subsp. *pruinosa*	157	Large Tree	Patch	**Removed**
8	Grey-box	*Eucalyptus microcarpa*	54	Small Tree	Scattered	**Removed**
9	Dead	-	90.5	Large Tree	Scattered	Retained
10	Dead	-	84	Large Tree	Scattered	**Removed**
11	Dead	-	120	Large Tree	Scattered	**Removed**
12	Dead	-	113	Large Tree	Scattered	**Removed**
13	Dead	-	101	Large Tree	Scattered	**Removed**
14	Grey-box	*Eucalyptus microcarpa*	113	Large Tree	Patch	**Removed**
15	Dead	-	86	Large Tree	Patch	**Removed**
16	Dead	-	100	Large Tree	Patch	**Removed**
17	Grey-box	*Eucalyptus microcarpa*	86.5	Large Tree	Patch	**Removed**
18	Dead	-	85	Large Tree	Patch	**Removed**
19	Grey-box	*Eucalyptus microcarpa*	87	Large Tree	Patch	**Removed**

Tree #	Common Name	Species Name	DBH	Category	Comments	Status
20	Yellow-box	*Eucalyptus melliodora*	73	Large Tree	Patch	**Removed**
21	Grey-box	*Eucalyptus microcarpa*	111.5	Large Tree	Patch	**Removed**
22	Grey-box	*Eucalyptus microcarpa*	129	Large Tree	Patch	**Removed**
23	Dead	-	158	Large Tree	Scattered	**Removed**
24	Dead	-	108	Large Tree	Patch	**Removed**
25	Dead	-	133	Large Tree	Patch	Retained
26	Grey-box	*Eucalyptus microcarpa*	144	Large Tree	Patch	**Removed**
27	Dead	-	190	Large Tree	Scattered	**Removed**
28	Dead	-	159	Large Tree	Patch	**Removed**
29	Dead	-	87	Large Tree	Scattered	**Removed**
30	Grey-box	*Eucalyptus microcarpa*	131	Large Tree	Patch	**Removed**
31	Grey-box	*Eucalyptus microcarpa*	112	Large Tree	Patch	**Removed**
32	Grey-box	*Eucalyptus microcarpa*	101.5	Large Tree	Patch	**Removed**
33	Grey-box	*Eucalyptus microcarpa*	110	Large Tree	Scattered	**Removed**
34	Dead	-	88	Large Tree	Scattered	**Removed**
35	Grey-box	*Eucalyptus microcarpa*	97	Large Tree	Scattered	**Removed**
36	Grey-box	*Eucalyptus microcarpa*	125	Large Tree	Patch	**Removed**
37	Grey-box	*Eucalyptus microcarpa*	85	Large Tree	Patch	**Removed**
38	Grey-box	*Eucalyptus microcarpa*	92	Large Tree	Patch	**Removed**
39	Grey-box	*Eucalyptus microcarpa*	77.5	Large Tree	Patch	**Removed**
40	Grey-box	*Eucalyptus microcarpa*	87	Large Tree	Patch	**Removed**
41	Dead	-	98	Large Tree	Scattered	**Removed**

Tree #	Common Name	Species Name	DBH	Category	Comments	Status
42	Dead	-	94	Large Tree	Scattered	**Removed**
43	Grey-box	*Eucalyptus microcarpa*	104	Large Tree	Patch	**Removed**
44	Grey-box	*Eucalyptus microcarpa*	116	Large Tree	Scattered	**Removed**
45	Grey-box	*Eucalyptus microcarpa*	-	Large Tree	Patch	Retained
46	Grey-box	*Eucalyptus microcarpa*	140	Large Tree	Patch	**Removed**
47	Grey-box	*Eucalyptus microcarpa*	148	Large Tree	Patch	**Removed**
48	Grey-box	*Eucalyptus microcarpa*	95	Large Tree	Patch	**Removed**
49	Grey-box	*Eucalyptus microcarpa*	96	Large Tree	Patch	**Removed**
50	Grey-box	*Eucalyptus microcarpa*	146	Large Tree	Patch	**Removed**
51	Grey-box	*Eucalyptus microcarpa*	-	Large Tree	Patch	**Removed**
52	Yellow-box	*Eucalyptus melliodora*	81	Large Tree	Scattered	**Removed**
53	Grey-box	*Eucalyptus microcarpa*	181	Large Tree	Patch	**Removed**
54	Grey-box	*Eucalyptus microcarpa*	123	Large Tree	Patch	**Removed**
55	Grey-box	*Eucalyptus microcarpa*	151	Large Tree	Patch	**Removed**
56	Grey-box	*Eucalyptus microcarpa*	124	Large Tree	Patch	**Removed**
57	Grey-box	*Eucalyptus microcarpa*	104	Large Tree	Patch	**Removed**
58	Grey-box	*Eucalyptus microcarpa*	132	Large Tree	Patch	**Removed**
59	Grey-box	*Eucalyptus microcarpa*	103	Large Tree	Patch	**Removed**
60	Grey-box	*Eucalyptus microcarpa*	97	Large Tree	Patch	**Removed**
61	Grey-box	*Eucalyptus microcarpa*	102	Large Tree	Patch	**Removed**
62	Grey-box	*Eucalyptus microcarpa*	103	Large Tree	Patch	**Removed**
63	Grey-box	*Eucalyptus microcarpa*	113	Large Tree	Patch	**Removed**

Tree #	Common Name	Species Name	DBH	Category	Comments	Status
64	Grey-box	*Eucalyptus microcarpa*	151	Large Tree	Patch	**Removed**
65	Yellow-box	*Eucalyptus melliodora*	73	Large Tree	Patch	**Removed**
66	Grey-box	*Eucalyptus microcarpa*	123	Large Tree	Patch	**Removed**
67	Grey-box	*Eucalyptus microcarpa*	120	Large Tree	Patch	**Removed**
68	Grey-box	*Eucalyptus microcarpa*	98	Large Tree	Patch	**Removed**
69	Grey-box	*Eucalyptus microcarpa*	133	Large Tree	Patch	**Removed**
70	Grey-box	*Eucalyptus microcarpa*	135	Large Tree	Patch	**Removed**
71	Grey-box	*Eucalyptus microcarpa*	106	Large Tree	Patch	**Removed**
72	Dead	-	142	Large Tree	Patch	**Removed**
73	Grey-box	*Eucalyptus microcarpa*	102	Large Tree	Patch	**Removed**
74	Grey-box	*Eucalyptus microcarpa*	119	Large Tree	Patch	**Removed**
75	Grey-box	*Eucalyptus microcarpa*	123	Large Tree	Patch	**Removed**
76	-	-	40	Small Tree	Scattered	**Removed**
77	-	-	15	Small Tree	Scattered	**Removed**
80	-	-	80	Large Tree	Patch	**Removed**
81	-	-	70	Large Tree	Patch	Retained
82	-	-	30	Small Tree	Scattered	**Removed**
83	-	-	30	Small Tree	Scattered	**Removed**
84	-	-	30	Small Tree	Scattered	**Removed**
85	-	-	80	Large Tree	Patch	**Removed**
86	-	-	70	Large Tree	Patch	Retained
87	-	-	70	Large Tree	Patch	**Removed**

Tree #	Common Name	Species Name	DBH	Category	Comments	Status
88	-	-	76	Large Tree	Patch	**Removed**
89	-	-	80	Large Tree	Patch	**Removed**
90	-	-	75	Large Tree	Patch	**Removed**
91	-	-	75	Large Tree	Patch	**Removed**
92	-	-	75	Large Tree	Patch	**Removed**
93	-	-	100	Large Tree	Scattered	**Removed**
94	-	-	90	Large Tree	Patch	**Removed**
95	-	-	80	Large Tree	Scattered	**Removed**
96	-	-	90	Large Tree	Patch	**Removed**
97	-	-	90	Large Tree	Patch	**Removed**
98	-	-	90	Large Tree	Patch	**Removed**
99	-	-	110	Large Tree	Patch	**Removed**
100	-	-	40	Small Tree	Scattered	**Removed**
101	-	-	100	Large Tree	Patch	**Removed**
102	-	-	87	Large Tree	Patch	**Removed**

Appendix 1.4 Significant Flora Species

Significant flora within 10 kilometres of the study area is provided in the Table A1.4.3 at the end of this section, with Tables A1.4.1 and A1.4.2 below providing the background context for the values in Table 1.4.3.

Table A1.4.1 Conservation status of each species for each Act/policy. The values in this table correspond to Columns 5 to 7 in Table A1.4.3.

EPBC (*Environment Protection and Biodiversity Conservation Act 1999*):		FFG (*Flora and Fauna Guarantee Act 1988*):		DELWP (Advisory List of Rare or Threatened Plants in Victoria [DEPI 2014]):	
EX	Extinct	L	Listed as threatened	x	Presumed extinct in Victoria
CR	Critically endangered	N	Nominated for listing as threatened	e	Endangered in Victoria
EN	Endangered	D	Delisted as threatened	v	Vulnerable in Victoria
VU	Vulnerable	I	Rejected for listing as threatened; taxon invalid	r	Rare in Victoria
#	Listed on the Protected Matters Search Tool	X	Rejected for listing as threatened; taxon ineligible	k	Poorly known in Victoria

Table A1.4.2 Likelihood of occurrence rankings: Habitat characteristics assessment of significant flora species previously recorded within 10 kilometres of the study area, or that may potentially occur within the study area to determine their likelihood of occurrence. The values in this table correspond to Column 8 in Table A1.4.3.

1	Known Occurrence	• Recorded within the study area recently (i.e. within ten years).
2	High Likelihood	• Previous records of the species in the local vicinity; and/or, • The study area contains areas of high-quality habitat.
3	Moderate Likelihood	• Limited previous records of the species in the local vicinity; and/or • The study area contains some characteristics of the species' preferred habitat.
4	Low Likelihood	• Poor or limited habitat for the species, however other evidence (such as lack of records or environmental factors) indicates there is a very low likelihood of presence.
5	Unlikely	• No suitable habitat and/or outside the species range.

Table A1.4.3 Significant flora recorded within 10 kilometres of the study area.

Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	DEPI	Likely occurrence in study area
NATIONAL SIGNIFICANCE							
Amphibromus fluitans #	River Swamp Wallaby-grass	-	-	VU	-	-	5
Caladenia tensa #	Greencomb Spider-orchid	-	-	EN	-	v	5
Caladenia versicolor #	Candy Spider-orchid	-	-	VU	L	e	5
Dodonaea procumbens #	Trailing Hop-bush	-	-	VU	-	v	5
Glycine latrobeana	**Clover Glycine**	**2**	**2005**	**VU**	**L**	**v**	**4**
Lepidium monoplocoides #	Winged Peppercress	-	-	EN	L	e	5
Pimelea spinescens* subsp. *spinescens	**Spiny Rice-flower**	**2**	**2018**	**CR**	**L**	**e**	**4**
Senecio macrocarpus #	Large-headed Fireweed	-	-	VU	L	e	5
STATE SIGNIFICANCE							
Acacia ausfeldii	**Ausfeld's Wattle**	**9**	**2007**	**-**	**X**	**v**	**4**
Acacia williamsonii	Whirrakee Wattle	9	2012	-	X	r	5
Allocasuarina luehmannii	**Buloke**	**18**	**2015**	**-**	**L**	**e**	**4**
Brachyscome chrysoglossa	**Yellow-tongue Daisy**	**1**	**2007**	**-**	**L**	**v**	**4**
Diuris punctata	Purple Diuris	1	1983	-	L	v	5
Phebalium festivum	Dainty Phebalium	1	2001	-	L	v	5
Vittadinia spp.	New Holland Daisy	1	1983	-	L	-	5
REGIONAL SIGNIFICANCE							
Acacia flexifolia	**Bent-leaf Wattle**	**5**	**2007**	**-**	**-**	**r**	**4**

Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	DEPI	Likely occurrence in study area
Austrostipa breviglumis	**Cane Spear-grass**	**2**	**1981**	**-**	**-**	**r**	**4**
Cassinia diminuta	**Dwarf Cassinia**	**3**	**2000**	**-**	**-**	**r**	**4**
Dianella tarda	Late-flower Flax-lily	2	2004	-	-	v	5
Goodenia benthamiana	Small-leaf Goodenia	4	1996	-	-	r	5
Grevillea rosmarinifolia	Rosemary Grevillea	1	1998	-	-	P	5
Juncus psammophilus	**Sand Rush**	**2**	**1996**	**-**	**-**	**r**	**4**
Myoporum montanum	Waterbush	1	2010	-	-	r	5
Prasophyllum sp. aff. *validum* A	Woodland Leek-orchid	1	2009	-	-	e	5
Swainsona behriana	Southern Swainson-pea	5	2015	-	-	r	5

Data Sources: Victorian Biodiversity Atlas (DELWP 2020); Protected Matters Search Tool (DAWE 2021)

APPENDIX 2 FAUNA

Appendix 2.1 Significant Fauna Species

Significant fauna within 10 kilometres of the study area is provided in the Table A2.1.3 at the end of this section, with Tables A2.1.1 and A2.1.2 below providing the background context for the values in Table 2.1.3.

Table A2.1.1 Conservation status of each species for each Act/policy. The values in this table correspond to Columns 5 to 8 in Table A2.1.3.

EPBC (*Environment Protection and Biodiversity Conservation Act 1999*):	FFG (*Flora and Fauna Guarantee Act 1988*):
EX Extinct	L Listed as threatened
CR Critically endangered	N Nominated for listing as threatened
EN Endangered	D Delisted as threatened
VU Vulnerable	I Rejected for listing as threatened; taxon invalid or ineligible
CD Conservation dependent	
# Listed on the Protected Matters Search Tool	
DELWP (Advisory List of Threatened Vertebrate Fauna in Victoria [DSE 2013]; Advisory List of Threatened Invertebrate Fauna in Victoria [DSE 2009]):	NAP (National Action Plans for several Australian species [Cogger *et al.* 1993; Duncan *et al.* 1999; Garnet *et al.* 2011; Sands and New 2002; Tyler 1997: Woinarski *et al*. 2014)):
EX Extinct in Victoria	EX Extinct
RX Regionally extinct in Victoria	CR Critically endangered
EW Extinct in the wild in Victoria	EN Endangered
CR Critically endangered in Victoria	VU Vulnerable
EN Endangered in Victoria	NT Near threatened
VU Vulnerable in Victoria	CD Conservation dependent
NT Near threatened in Victoria	DD Data deficient (insufficient or poorly known)
DD Data deficient (insufficient or poorly known)	LC Least concern

Table A2.1.2 Likelihood of occurrence rankings: Habitat characteristics assessment of significant fauna species previously recorded within 10 kilometres of the study area, or that may potentially occur within the study area to determine their likelihood of occurrence. The values in this table correspond to Column 9 in Table A2.1.3.

1	High Likelihood	• Known resident in the study area based on site observations, database records, or expert advice; and/or, • Recent records (i.e. within five years) of the species in the local area (DELWP 2018); and/or, • The study area contains the species' preferred habitat.
2	Moderate Likelihood	• The species is likely to visit the study area regularly (i.e. at least seasonally); and/or, • Previous records of the species in the local area (DELWP 2018); and/or, • The study area contains some characteristics of the species' preferred habitat.
3	Low Likelihood	• The species is likely to visit the study area occasionally or opportunistically whilst en route to more suitable sites; and/or, • There are only limited or historical records of the species in the local area (i.e. more than 20 years old); and/or, • The study area contains few or no characteristics of the species' preferred habitat.
4	Unlikely	• No previous records of the species in the local area; and/or, • The species may fly over the study area when moving between areas of more suitable habitat; and/or, • Out of the species' range; and/or, • No suitable habitat present.

Table A2.1.3. Significant fauna within 10 kilometres of the study area.

Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	Likelihood
NATIONAL SIGNIFICANCE							
Australasian Bittern	*Botaurus poiciloptilus*	#	-	EN	L	EN	4
Australian Painted Snipe	*Rostratula australis*	#	-	VU	L	CR	4
Curlew Sandpiper	*Calidris ferruginea*	#	-	CR	-	EN	4
Eastern Curlew	*Numenius madagascariensis*	#	-	CR	-	VU	4
Flat-headed Galaxias	*Galaxias rostratus*	#	-	CR	-	VU	4
Golden Sun Moth	*Synemon plana*	#	-	CR	L	CR	4
Grey-headed Flying-fox	*Pteropus poliocephalus*	#	-	VU	L	VU	3
Growling Grass Frog	*Litoria raniformis*	#	-	VU	L	EN	4
Macquarie Perch	*Macquaria australasica*	1991	3	EN	L	EN	3
Malleefowl	*Leipoa ocellata*	#	-	VU	L	EN	4
Murray Cod	*Maccullochella peelii*	2012	11	VU	L	VU	3
Painted Honeyeater	*Grantiella picta*	#	-	VU	L	VU	4
Pink-tailed Worm-Lizard	*Aprasia parapulchella*	#	-	VU	L	EN	4
Plains-wanderer	*Pedionomus torquatus*	#	-	CR	L	CR	4
Regent Honeyeater	*Anthochaera phrygia*	1984	2	CR	L	CR	3
Striped Legless Lizard	*Delma impar*	#	-	VU	L	EN	4
Superb Parrot	*Polytelis swainsonii*	#	-	VU	L	EN	3
Swift Parrot	***Lathamus discolor***	**2005**	**20**	**CR**	**L**	**EN**	**2**
STATE SIGNIFICANCE							

Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	Likelihood
Australian Bustard	*Ardeotis australis*	1895	1	-	L	CR	4
Brown Toadlet	*Pseudophryne bibronii*	2010	1	-	L	EN	3
Brush-tailed Phascogale	*Phascogale tapoatafa*	2004	5	-	L	VU	3
Bullant	*Myrmecia sp. 17*	2003	3	-	L	VU	3
Bush Stone-curlew	*Burhinus grallarius*	1993	2	-	L	EN	3
Chestnut-rumped Heathwren	***Calamanthus pyrrhopygius***	**2017**	**6**	**-**	**L**	**VU**	**2**
Common Sandpiper	*Actitis hypoleucos*	#	-	-	-	VU	4
Diamond Firetail	***Stagonopleura guttata***	**2018**	**17**	**-**	**L**	**NT**	**2**
Grey Falcon	*Falco hypoleucos*	1979	2	-	L	EN	3
Hardhead	*Aythya australis*	1978	1	-	-	VU	4
Lace Goanna	*Varanus varius*	2017	3	-	-	EN	4
Purple-gaped Honeyeater	*Lichenostomus cratitius*	1971	1	-	-	VU	3
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	2018	2	-	L	VU	4
White-throated Needletail	***Hirundapus caudacutus***	**2017**	**5**	**-**	**-**	**VU**	**2**
REGIONAL SIGNIFICANCE							
Black-eared Cuckoo	***Chrysococcyx osculans***	**2018**	**6**	**-**	**-**	**NT**	**2**
Fat-tailed Dunnart	*Sminthopsis crassicaudata*	1982	1	-	-	NT	3
Golden Perch	*Macquaria ambigua*	2012	26	-	-	NT	3
Latham's Snipe	*Gallinago hardwickii*	#	-	-	-	NT	4
Pectoral Sandpiper	*Calidris melanotos*	#	-	-	-	NT	4
Pied Cormorant	*Phalacrocorax varius*	1978	1	-	-	NT	4

Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	Likelihood
Spotted Quail-thrush	*Cinclosoma punctatum*	2002	2	-	-	NT	3

APPENDIX 3 NATIVE VEGETATION REMOVAL (NVR) REPORT

Native vegetation removal report

This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*. The report **is not an assessment by DELWP** of the proposed native vegetation removal. Native vegetation information and offset requirements have been determined using spatial data provided by the applicant or their consultant.

Date of issue: **02/07/2021**
Time of issue: **2:28 pm**

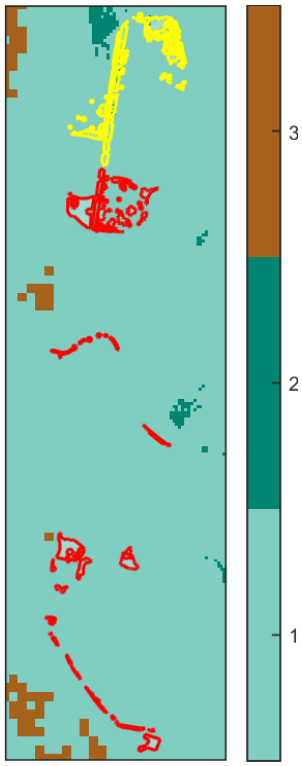
Report ID: EHP_2021_080

Project ID	EHP15293_Fosterville_VG94

Assessment pathway

Assessment pathway	**Detailed Assessment Pathway**
Extent including past and proposed	34.027 ha
Extent of past removal	20.254 ha
Extent of proposed removal	13.773 ha
No. Large trees proposed to be removed	85
Location category of proposed removal	Location 2 The native vegetation is in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map). Removal of less than 0.5 hectares of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species.

1. Location map



Offset requirements if a permit is granted

Any approval granted will include a condition to obtain an offset that meets the following requirements:

General offset amount[1]	5.428 general habitat units
Vicinity	North Central Catchment Management Authority (CMA) or Greater Bendigo City Council
Minimum strategic biodiversity value score[2]	0.272
Large trees	85 large trees

NB: values within tables in this document may not add to the totals shown above due to rounding

Appendix 1 includes information about the native vegetation to be removed

Appendix 2 includes information about the rare or threatened species mapped at the site.

Appendix 3 includes maps showing native vegetation to be removed and extracts of relevant species habitat importance maps

1 The general offset amount required is the sum of all general habitat units in Appendix 1.

2 Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required

Next steps

Any proposal to remove native vegetation must meet the application requirements of the Detailed Assessment Pathway and it will be assessed under the Detailed Assessment Pathway.

If you wish to remove the mapped native vegetation you are required to apply for a permit from your local council. Council will refer your application to DELWP for assessment, as required. **This report is not a referral assessment by DELWP.**

This *Native vegetation removal report* must be submitted with your application for a permit to remove, destroy or lop native vegetation.

Refer to the *Guidelines for the removal, destruction or lopping of native* vegetation (the Guidelines) for a full list of application requirements This report provides information that meets the following application requirements:

- The assessment pathway and reason for the assessment pathway
- A description of the native vegetation to be removed (partly met)
- Maps showing the native vegetation and property (partly met)
- Information about the impacts on rare or threatened species.
- The offset requirements determined in accordance with section 5 of the Guidelines that apply if approval is granted to remove native vegetation.

Additional application requirements must be met including:

- Topographical and land information
- Recent dated photographs
- Details of past native vegetation removal
- An avoid and minimise statement
- A copy of any Property Vegetation Plan that applies
- A defendable space statement as applicable
- A statement about the Native Vegetation Precinct Plan as applicable
- A site assessment report including a habitat hectare assessment of any patches of native vegetation and details of trees
- An offset statement that explains that an offset has been identified and how it will be secured.

Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

For more information contact the DELWP Customer Service Centre 136 186

www.delwp.vic.gov.au

Appendix 1: Description of native vegetation to be removed

The species-general offset test was applied to your proposal. This test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the species offset threshold. The threshold is set at 0.005 per cent of the mapped habitat value for a species. When the proportional impact is above the species offset threshold a species offset is required. This test is done for all species mapped at the site. Multiple species offsets will be required if the species offset threshold is exceeded for multiple species.

Where a zone requires species offset(s), the species habitat units for each species in that zone is calculated by the following equation in accordance with the Guidelines:

Species habitat units = extent x condition x species landscape factor x 2, where the species landscape factor = 0.5 + (habitat importance score/2)

The species offset amount(s) required is the sum of all species habitat units per zone

Where a zone does not require a species offset, the general habitat units in that zone is calculated by the following equation in accordance with the Guidelines:

General habitat units = extent x condition x general landscape factor x 1.5, where the general landscape factor = 0.5 + (strategic biodiversity value score/2)

The general offset amount required is the sum of all general habitat units per zone.

Native vegetation to be removed

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	**Type**	**BioEVC**	**BioEVC conservation status**	**Large tree(s)**	**Partial removal**	**Condition score**	**Polygon Extent**	**Extent without overlap**	**SBV score**	**HI score**	**Habitat units**	**Offset type**
68-E	Patch	gold0061	Depleted	2	no	0.490	0.384	0.384	0.350		0.191	General
69-D	Patch	gold0061	Depleted	0	no	0.430	0.796	0.796	0.387		0.356	General
70-B	Patch	gold0061	Depleted	0	no	0.350	0.341	0.341	0.376		0.123	General
71-C	Patch	gold0061	Depleted	1	no	0.360	0.202	0.202	0.370		0.075	General
72-F	Patch	gold0061	Depleted	2	no	0.600	0.406	0.406	0.540		0.281	General
73-A	Patch	gold0061	Depleted	0	no	0.260	0.111	0.111	0.145		0.025	General
74-A	Patch	gold0061	Depleted	1	no	0.260	0.117	0.117	0.130		0.026	General
75-A	Patch	gold0061	Depleted	1	no	0.260	0.210	0.210	0.135		0.047	General
76-A	Patch	gold0061	Depleted	11	no	0.260	1.894	1.894	0.147		0.424	General
77-A	Patch	gold0061	Depleted	3	no	0.260	0.827	0.827	0.404		0.226	General
78-A	Patch	gold0061	Depleted	19	no	0.260	1.824	1.824	0.441		0.512	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
79-A	Patch	vriv0061	Vulnerable	0	no	0.260	0.000	0.000	0.360		0.000	General
80-B	Patch	gold0061	Depleted	0	no	0.350	0.248	0.248	0.233		0.080	General
81-F	Patch	gold0061	Depleted	7	no	0.600	0.771	0.771	0.349		0.468	General
82-F	Patch	gold0061	Depleted	6	no	0.600	0.642	0.642	0.314		0.379	General
83-F	Patch	gold0061	Depleted	10	no	0.600	1.760	1.760	0.390		1.101	General
84-C	Patch	gold0061	Depleted	0	no	0.360	0.451	0.451	0.353		0.165	General
85-C	Patch	gold0061	Depleted	0	no	0.360	0.635	0.635	0.335		0.229	General
86-C	Patch	vriv0061	Vulnerable	0	no	0.360	0.085	0.085	0.408		0.033	General
87-F	Patch	vriv0061	Vulnerable	2	no	0.600	0.611	0.611	0.404		0.386	General
88-A	Patch	vriv0061	Vulnerable	2	no	0.260	0.199	0.199	0.360		0.053	General
89-T	Scattered Tree	gold0061	Depleted	1	no	0.200	0.070	0.070	0.390		0.015	General
90-T	Scattered Tree	gold0061	Depleted	1	no	0.200	0.070	0.065	0.354		0.013	General
91-T	Scattered Tree	gold0061	Depleted	1	no	0.200	0.070	0.070	0.390		0.015	General
92-T	Scattered Tree	vriv0061	Vulnerable	1	no	0.200	0.070	0.060	0.360		0.012	General
93-T	Scattered Tree	vriv0061	Vulnerable	1	no	0.200	0.070	0.062	0.360		0.013	General
94-T	Scattered Tree	vriv0061	Vulnerable	1	no	0.200	0.070	0.050	0.360		0.010	General
95-T	Scattered Tree	vriv0061	Vulnerable	1	no	0.200	0.070	0.068	0.360		0.014	General
96-T	Scattered Tree	gold0061	Depleted	1	no	0.200	0.070	0.058	0.490		0.013	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
97-T	Scattered Tree	gold0061	Depleted	1	no	0.200	0.070	0.024	0.391		0.005	General
98-T	Scattered Tree	gold0061	Depleted	1	no	0.200	0.070	0.052	0.120		0.009	General
99-T	Scattered Tree	gold0061	Depleted	1	no	0.200	0.070	0.023	0.489		0.005	General
100-T	Scattered Tree	gold0061	Depleted	1	no	0.200	0.070	0.058	0.490		0.013	General
101-T	Scattered Tree	gold0061	Depleted	1	no	0.200	0.070	0.059	0.360		0.012	General
102-T	Scattered Tree	gold0061	Depleted	1	no	0.200	0.070	0.068	0.290		0.013	General
103-T	Scattered Tree	gold0061	Depleted	1	no	0.200	0.070	0.019	0.150		0.003	General
104-T	Scattered Tree	gold0061	Depleted	1	no	0.200	0.070	0.070	0.130		0.012	General
105-T	Scattered Tree	gold0061	Depleted	1	no	0.200	0.070	0.070	0.100		0.012	General
106-T	Scattered Tree	gold0061	Depleted	1	no	0.200	0.070	0.056	0.360		0.012	General
107-T	Scattered Tree	gold0061	Depleted	0	no	0.200	0.031	0.031	0.390		0.007	General
108-T	Scattered Tree	gold0061	Depleted	0	no	0.200	0.031	0.031	0.350		0.006	General
109-T	Scattered Tree	gold0061	Depleted	0	no	0.200	0.031	0.023	0.120		0.004	General
110-T	Scattered Tree	gold0061	Depleted	0	no	0.200	0.031	0.031	0.409		0.007	General
111-T	Scattered Tree	gold0061	Depleted	0	no	0.200	0.031	0.031	0.400		0.007	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
112-T	Scattered Tree	gold0061	Depleted	0	no	0.200	0.031	0.022	0.130		0.004	General
113-T	Scattered Tree	gold0061	Depleted	0	no	0.200	0.031	0.022	0.130		0.004	General
114-T	Scattered Tree	gold0061	Depleted	0	no	0.200	0.031	0.031	0.130		0.005	General
115-T	Scattered Tree	gold0061	Depleted	0	no	0.200	0.031	0.031	0.310		0.006	General

Appendix 2: Information about impacts to rare or threatened species' habitats on site

This table lists all rare or threatened species' habitats mapped at the site.

Species common name	Species scientific name	Species number	Conservation status	Group	Habitat impacted	% habitat value affected
Dwarf Cassinia	*Cassinia diminuta*	507664	Rare	Dispersed	Habitat importance map	0.0033
Whirrakee Wattle	*Acacia williamsonii*	500103	Rare	Dispersed	Habitat importance map	0.0033
Jericho Wire-grass	*Aristida jerichoensis var. subspinulifera*	504631	Endangered	Dispersed	Habitat importance map	0.0032
Cottony Cassinia	*Cassinia ozothamnoides*	501560	Vulnerable	Dispersed	Habitat importance map	0.0025
Dainty Phebalium	*Phebalium festivum*	502487	Vulnerable	Dispersed	Habitat importance map	0.0022
Cane Spear-grass	*Austrostipa breviglumis*	503268	Rare	Dispersed	Habitat importance map	0.0021
Blue Burr-daisy	*Calotis cuneifolia*	500594	Rare	Dispersed	Habitat importance map	0.0021
Ausfeld's Wattle	*Acacia ausfeldii*	500013	Vulnerable	Dispersed	Habitat importance map	0.0020
Velvet Daisy-bush	*Olearia pannosa subsp. cardiophylla*	502317	Vulnerable	Dispersed	Habitat importance map	0.0019
Rising Star Guinea-flower	*Hibbertia humifusa subsp. humifusa*	505082	Rare	Dispersed	Habitat importance map	0.0019
Grey-crowned Babbler	*Pomatostomus temporalis temporalis*	10443	Endangered	Dispersed	Habitat importance map	0.0019
Sikh's Whiskers	*Pterostylis boormanii*	502787	Rare	Dispersed	Habitat importance map	0.0018
Woodland Leek-orchid	*Prasophyllum sp. aff. validum A*	505904	Endangered	Dispersed	Habitat importance map	0.0017
Goldfields Grevillea	*Grevillea dryophylla*	501533	Rare	Dispersed	Habitat importance map	0.0015
Bristly Greenhood	*Pterostylis setifera*	503935	Rare	Dispersed	Habitat importance map	0.0013
Arching Flax-lily	*Dianella sp. aff. longifolia (Benambra)*	505560	Vulnerable	Dispersed	Habitat importance map	0.0013
Erect Peppercress	*Lepidium pseudopapillosum*	501909	Endangered	Dispersed	Habitat importance map	0.0012
Southern Swainson-pea	*Swainsona behriana*	504944	Rare	Dispersed	Habitat importance map	0.0011

Late-flower Flax-lily	*Dianella tarda*	505085	Vulnerable	Dispersed	Habitat importance map	0.0010
Bush Stone-curlew	*Burhinus grallarius*	10174	Endangered	Dispersed	Habitat importance map	0.0010
Floodplain Fireweed	*Senecio campylocarpus*	507136	Rare	Dispersed	Habitat importance map	0.0010
Small-leaf Goodenia	*Goodenia benthamiana*	501493	Rare	Dispersed	Habitat importance map	0.0010
Slender Mint-bush	*Prostanthera saxicola var. bracteolata*	502750	Rare	Dispersed	Habitat importance map	0.0009
Emerald-lip Greenhood	*Pterostylis smaragdyna*	503915	Rare	Dispersed	Habitat importance map	0.0008
Blue Mallee	*Eucalyptus polybractea*	501311	Rare	Dispersed	Habitat importance map	0.0008
Bent-leaf Wattle	*Acacia flexifolia*	500035	Rare	Dispersed	Habitat importance map	0.0008
Brown Toadlet	*Pseudophryne bibronii*	13117	Endangered	Dispersed	Habitat importance map	0.0007
Inland Pomaderris	*Pomaderris paniculosa subsp. paniculosa*	503943	Vulnerable	Dispersed	Habitat importance map	0.0007
Barking Owl	*Ninox connivens connivens*	10246	Endangered	Dispersed	Habitat importance map	0.0006
Painted Honeyeater	*Grantiella picta*	10598	Vulnerable	Dispersed	Habitat importance map	0.0006
Slender Club-sedge	*Isolepis congrua*	501773	Vulnerable	Dispersed	Habitat importance map	0.0006
Waterbush	*Myoporum montanum*	502240	Rare	Dispersed	Habitat importance map	0.0006
Snowy Mint-bush	*Prostanthera nivea var. nivea*	502746	Rare	Dispersed	Habitat importance map	0.0006
Kamarooka Mallee	*Eucalyptus froggattii*	501279	Rare	Dispersed	Habitat importance map	0.0005
Western Golden-tip	*Goodia medicaginea*	501518	Rare	Dispersed	Habitat importance map	0.0005
Broom Bitter-pea	*Daviesia genistifolia s.s.*	503813	Rare	Dispersed	Habitat importance map	0.0004
Whipstick Westringia	*Westringia crassifolia*	503567	Endangered	Dispersed	Habitat importance map	0.0004
Half-bearded Spear-grass	*Austrostipa hemipogon*	503985	Rare	Dispersed	Habitat importance map	0.0004
Clover Glycine	*Glycine latrobeana*	501456	Vulnerable	Dispersed	Habitat importance map	0.0003
Buloke	*Allocasuarina luehmannii*	500678	Endangered	Dispersed	Habitat importance map	0.0003
Fuzzy New Holland Daisy	*Vittadinia cuneata var. morrisii*	505060	Rare	Dispersed	Habitat importance map	0.0003
Bearded Dragon	*Pogona barbata*	12177	Vulnerable	Dispersed	Habitat importance map	0.0003

Small Milkwort	*Comesperma polygaloides*	500798	Vulnerable	Dispersed	Habitat importance map	0.0002
Yellow-tongue Daisy	*Brachyscome chrysoglossa*	503654	Vulnerable	Dispersed	Habitat importance map	0.0002
Chestnut-rumped Heathwren	*Calamanthus pyrrhopygius*	10498	Vulnerable	Dispersed	Habitat importance map	0.0002
Lace Monitor	*Varanus varius*	12283	Endangered	Dispersed	Habitat importance map	0.0002
Hairy Tails	*Ptilotus erubescens*	502825	Vulnerable	Dispersed	Habitat importance map	0.0002
Square-tailed Kite	*Lophoictinia isura*	10230	Vulnerable	Dispersed	Habitat importance map	0.0002
Black Falcon	*Falco subniger*	10238	Vulnerable	Dispersed	Habitat importance map	0.0001
Growling Grass Frog	*Litoria raniformis*	13207	Endangered	Dispersed	Habitat importance map	0.0000

Habitat group

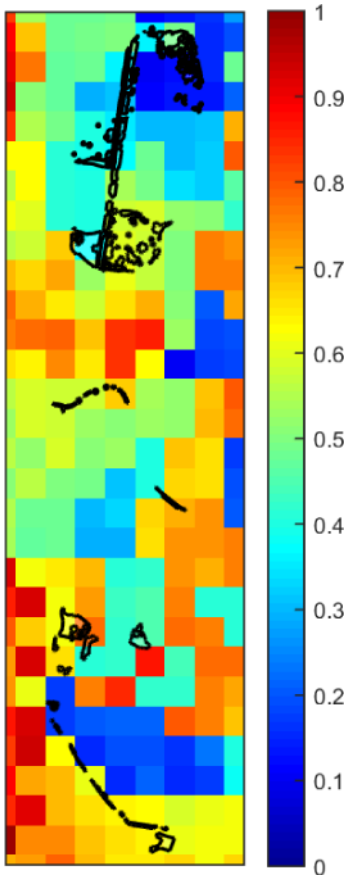
- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

Habitat impacted

- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance scores in dispersed species habitat maps and selected VBA records
- Selected VBA record is an area in Victoria that represents a large population, roosting or breeding site etc.

Appendix 3 – Images of mapped native vegetation

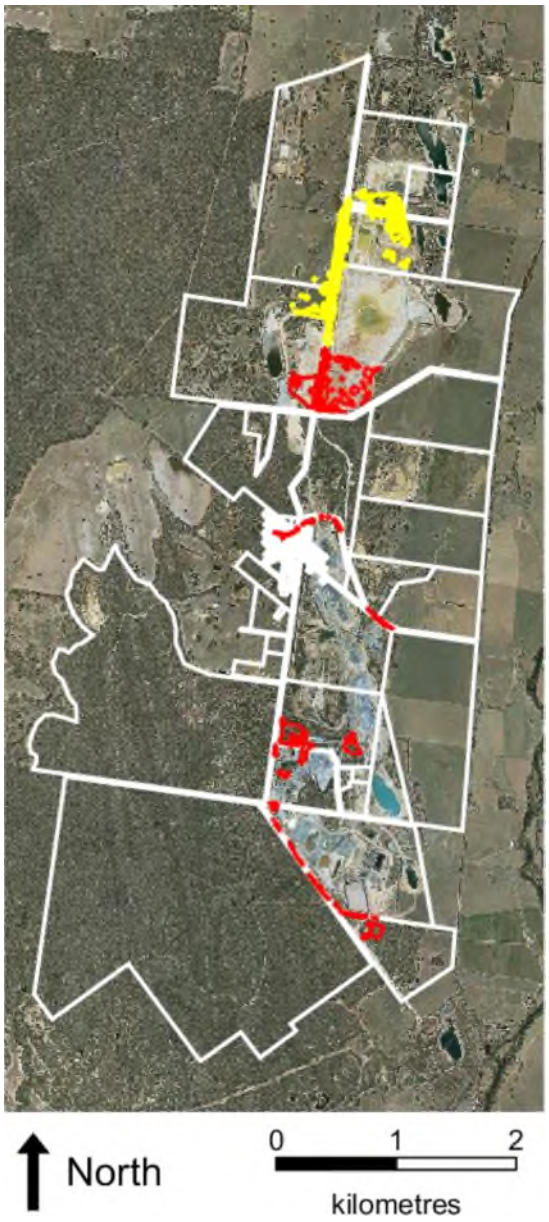
2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation

A

4. Map of the property in context



Yellow boundaries denote areas of proposed native vegetation removal.

Red boundaries denote areas of past removal.

APPENDIX 4 AVAILABLE NATIVE VEGETATION CREDITS

Report of available native vegetation credits

This report lists native vegetation credits available to purchase through the Native Vegetation Credit Register.

This report is **not evidence** that an offset has been secured. An offset is only secured when the units have been purchased and allocated to a permit or other approval and an allocated credit extract is provided by the Native Vegetation Credit Register.

Date and time: 02/07/2021 10:13 **Report ID: 9688**

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
5.428	0.272	85	CMA	North Central
			or LGA	Greater Bendigo City

Details of available native vegetation credits on 02 July 2021 10:13

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-3031	9.861	179	North Central	Pyrenees Shire	Yes	Yes	No	VegLink
BBA-3052_01	13.629	285	North Central	Northern Grampians Shire	Yes	Yes	No	VegLink
VC_CLO-2451_01	19.100	146	North Central	Greater Bendigo City	No	Yes	No	Contact NVOR

These sites meet your requirements using alternative arrangements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)

There are no sites listed in the Native Vegetation Credit Register that meet your offset requirements when applying the alternative arrangements as listed in section 11.2 of the Guidelines for the removal, destruction or lopping of native vegetation.

These potential sites are not yet available, land owners may finalise them once a buyer is confirmed.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)

There are no potential sites listed in the Native Vegetation Credit Register that meet your offset requirements.

LT - Large Trees *CMA - Catchment Management Authority* *LGA - Municipal District or Local Government Authority*

Next steps

If applying for approval to remove native vegetation
Attach this report to an application to remove native vegetation as evidence that your offset requirement is currently available.

If you have approval to remove native vegetation
Below are the contact details for all brokers. Contact the broker(s) listed for the credit site(s) that meet your offset requirements. These are shown in the above tables. If more than one broker or site is listed, you should get more than one quote before deciding which offset to secure.

Broker contact details

Broker Abbreviation	Broker Name	Phone	Email	Website
Abezco	Abzeco Pty. Ltd.	(03) 9431 5444	offsets@abzeco.com.au	www.abzeco.com.au
Baw Baw SC	Baw Baw Shire Council	(03) 5624 2411	bawbaw@bawbawshire.vic.gov.au	www.bawbawshire.vic.gov.au
Bio Offsets	Biodiversity Offsets Victoria	0452 161 013	info@offsetsvictoria.com.au	www.offsetsvictoria.com.au
Contact NVOR	Native Vegetation Offset Register	136 186	nativevegetation.offsetregister@delwp.vic.gov.au	www.environment.vic.gov.au/native-vegetation
Ecocentric	Ecocentric Environmental Consulting	0410 564 139	ecocentric@me.com	Not avaliable
Ethos	Ethos NRM Pty Ltd	(03) 5153 0037	offsets@ethosnrm.com.au	www.ethosnrm.com.au
Nillumbik SC	Nillumbik Shire Council	(03) 9433 3316	offsets@nillumbik.vic.gov.au	www.nillumbik.vic.gov.au
TFN	Trust for Nature	8631 5888	offsets@tfn.org.au	www.trustfornature.org.au
VegLink	Vegetation Link Pty Ltd	(03) 8578 4250 or 1300 834 546	offsets@vegetationlink.com.au	www.vegetationlink.com.au
Yarra Ranges SC	Yarra Ranges Shire Council	1300 368 333	biodiversityoffsets@yarraranges.vic.gov.au	www.yarraranges.vic.gov.au

For more information contact the DELWP Customer Service Centre 136 186 or the Native Vegetation Credit Register at nativevegetation.offsetregister@delwp.vic.gov.au

Australian Government

Department of Agriculture, Water and the Environment

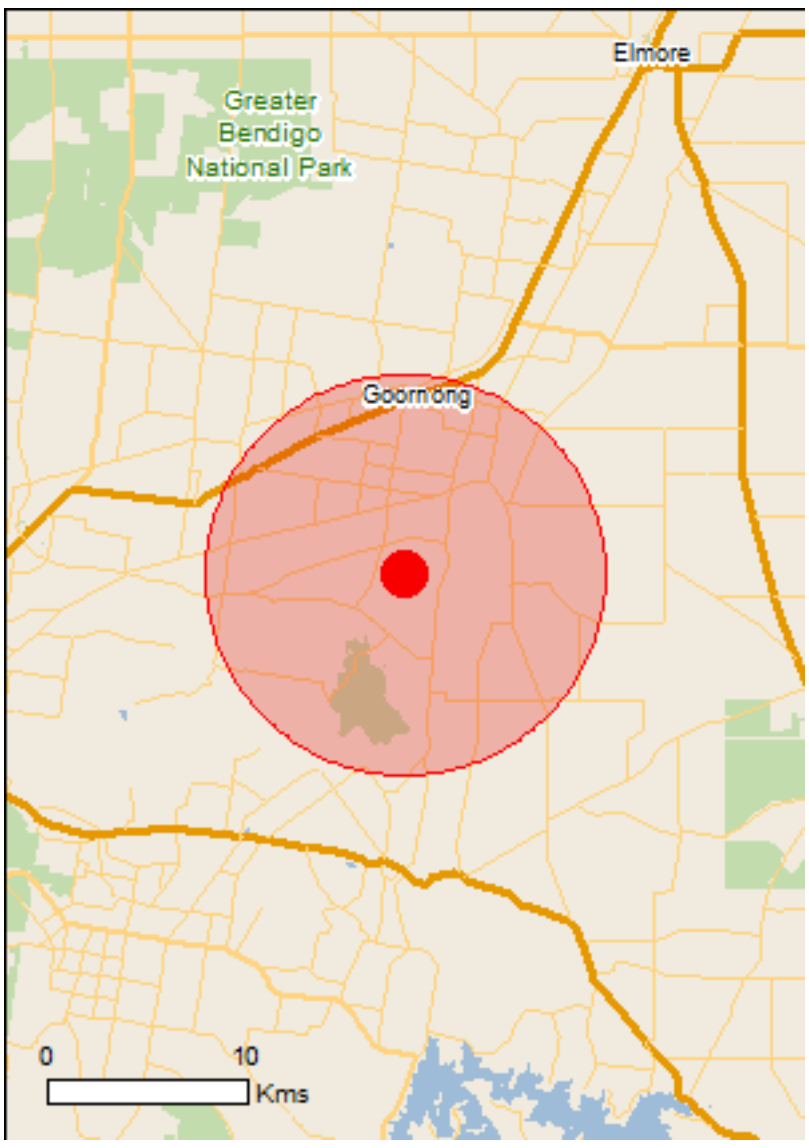
EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

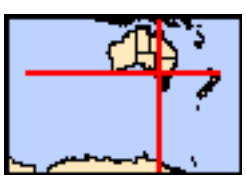
Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 02/07/21 11:45:00



Coordinates

Buffer: 10.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	6
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	29
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	17
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	13
Regional Forest Agreements:	None
Invasive Species:	36
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar) [Resource Information]

Name	Proximity
Banrock station wetland complex	400 - 500km upstream
Gunbower forest	50 - 100km upstream
Hattah-kulkyne lakes	200 - 300km upstream
Nsw central murray state forests	50 - 100km upstream
Riverland	400 - 500km upstream
The coorong, and lakes alexandrina and albert wetland	400 - 500km upstream

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	Community may occur within area
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area
Natural Grasslands of the Murray Valley Plains	Critically Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area

Name	Status	Type of Presence
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pedionomus torquatus		
Plains-wanderer [906]	Critically Endangered	Species or species habitat likely to occur within area
Polytelis swainsonii		
Superb Parrot [738]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
Galaxias rostratus		
Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat likely to occur within area
Maccullochella macquariensis		
Trout Cod [26171]	Endangered	Species or species habitat may occur within area
Maccullochella peelii		
Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area
Frogs		
Crinia sloanei		
Sloane's Froglet [59151]	Endangered	Species or species habitat may occur within area
Litoria raniformis		
Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat likely to occur within area
Insects		
Synemon plana		
Golden Sun Moth [25234]	Critically Endangered	Species or species habitat may occur within area
Mammals		
Pteropus poliocephalus		
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Plants		
Amphibromus fluitans		
River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat likely to occur within area
Caladenia tensa		
Greencomb Spider-orchid, Rigid Spider-orchid [24390]	Endangered	Species or species habitat may occur within area
Caladenia versicolor		
Candy Spider-orchid [24392]	Vulnerable	Species or species habitat may occur within area
Dodonaea procumbens		
Trailing Hop-bush [12149]	Vulnerable	Species or species habitat may occur within area
Glycine latrobeana		
Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat known to occur within area
Lepidium monoplocoides		
Winged Pepper-cress [9190]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
[Pimelea spinescens subsp. spinescens](#) Plains Rice-flower, Spiny Rice-flower, Prickly Pimelea [21980]	Critically Endangered	Species or species habitat known to occur within area
[Prasophyllum validum](#) Sturdy Leek-orchid, Mount Remarkable Leek-orchid [10268]	Vulnerable	Species or species habitat likely to occur within area
[Senecio macrocarpus](#) Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area
Reptiles		
[Aprasia parapulchella](#) Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat known to occur within area
[Delma impar](#) Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat likely to occur within area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat may occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within

Name	Threatened	Type of Presence
		area
Rostratula benghalensis (sensu lato)		
Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Axedale B.R.	VIC
Barnadown SS.R.	VIC
Campaspe River K39 SS.R.	VIC
Campaspe River K40 SS.R.	VIC
Campaspe River K41 SS.R.	VIC
Campaspe River, Axedale SS.R.	VIC
Crabhole Creek B.R.	VIC
Ellesmere B.R.	VIC
English Bridge SS.R.	VIC
Goornong H102 B.R.	VIC
Goornong H102A B.R.	VIC
Goornong H102B B.R.	VIC
Mount Sugarloaf N.C.R.	VIC

Invasive Species	[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis		
Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis		
Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos		
Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis		
European Goldfinch [403]		Species or species habitat likely to occur within area
Carduelis chloris		
European Greenfinch [404]		Species or species habitat likely to occur within area
Columba livia		
Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus		
House Sparrow [405]		Species or species

Name	Status	Type of Presence
		habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area

Name	Status	Type of Presence
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area
Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-36.68054 144.50221

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

Department of Agriculture Water and the Environment
GPO Box 858
Canberra City ACT 2601 Australia
+61 2 6274 1111