Proposed Subdivision:
240 Malcolm Street, Mansfield
Flora and fauna assessment

FINAL REPORT

Prepared for Alex Lyons and Mountain Planning

14 July 2025

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Biosis staff involved in this project were:

- Stuart Mendham
- Daeyoo Kang and Philip Gidley (mapping)
- Matt Looby and Georgina Zacks (quality assurance)

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Summary

Biosis Pty Ltd was commissioned by Mountain Planning in 2021, on behalf of the proponent Alex Lyons, to undertake a flora and fauna assessment of an area of land proposed for a rural living subdivision at 240 Malcolm Street, Mansfield (the study area). The study area is located approximately 1.9 kilometres west of the Mansfield CBD and approximately 56 kilometres south of the nearest major town of Benalla (Figure 1). The area encompasses approximately 38 hectares of freehold land which is owned by the proponent, Alex Lyons. The land is currently zoned Rural Living Zone (RLZ), and the study area is subject to a Development Plan Overlay (DPO). The northern boundary of the study area is Malcolm Street, the eastern and southern boundaries are freehold farming land, and several lifestyle properties bound the western side of the study area.

There is a nine lot low density rural living subdivision in the early stages of planning which is proposed for the study area. The area currently contains an existing farmhouse and shedding in the north-east part of the property, and introduced pasture throughout much of the remaining areas of the property. The study area is generally flat in the northern half, and a seasonally wet depression occurs just below the break of slope, approximately in the middle of the property. The southern half of the property is a moderate slope with a treeless crest in the far south-west, which contains some rock outcrops and two patches dominated by native grasses. Several patches of remnant woodland and 63 native scattered trees occur across the study area.

The majority of the 38 hectare study area has been highly modified due to past clearing and agricultural land use. The ground flora is dominated by non-native pasture grasses and grassy and herbaceous weed species. There are, however, a number of large scattered remnant trees throughout the site, but predominantly near the creek in the east, along the western boundary, and scattered throughout the sloping country in the southern half of the study area. A number of these trees have a variety of hollow sizes and therefore provide good habitat for hollow-dependant fauna species. The treed patch vegetation on site all consists of overstorey only, with an understorey dominated by pasture grasses and other non-native species. There are, however, two small patches of treeless derived native grasses in the south-west corner of the property, which are dominated by Dense Spear Grass *Austrostipa densiflora*, Wallaby *Grass Rytidosperma spp.* and Weeping Grass *Microlaena stipoides*, and scattered native grasses also occurred along parts of the rock outcrop on the ridgeline.

Ecological values

Key ecological values identified within the study area are as follows:

- Six patches (approximately 1 hectare total) of remnant Plains Grassy Woodland Ecological Vegetation Class (EVC) treed patch vegetation, dominated by River Red-gum *Eucalyptus camaldulensis*, and some with Yellow Box *E. melliodora* on the sloping country, with a non-native understorey.
- Approximately 0.4 hectares of Plains Grassy Woodland EVC patch vegetation on the western boundary, which contained a several large remnant River Red-gums, surrounded by younger planted and regenerating River Red-gums, with a non-native understorey.
- Two small patches (approximately 0.14 hectares) of Plains Grassy Woodland EVC (derived) grassland patch vegetation near the ridgeline in the far south-west, dominated by Weeping Grass, Spear Grass and Wallaby Grass.
- Plains Grassy Woodland is an endangered EVC in the Central Victorian Uplands Bioregion of Victoria. There is a considerable amount of eucalypt regeneration occurring around the drip lines of some of

the scattered trees in the study area, particularly the River Red-gums on the mid-slopes, as well as those in the wetter areas in the north.

- There are 63 large to very large scattered trees throughout the property, particularly along Owens Creek in the east, along the north-western boundary, and on the sloping country in the south. These trees are generally in good health and many provide hollows for fauna.
- An area of revegetation (0.2 hectares) along the northern part of Owens Creek on the eastern boundary, which contained a mixture of planted native trees and shrubs including River Red-gum, Manna Gum *Eucalyptus viminalis*, Blackwood *Acacia melanoxylon* and Lightwood *A. implexa*. The creek is providing nesting and foraging habitat for woodland birds, and habitat for Bare-nosed Wombat *Vombatus ursinus*.
- There are two rows of planted native eucalypts (predominantly Manna Gum) just outside the study area to the north, growing close to the fence along the boundary of Malcolm Street.
- A rocky outcrop on the exposed ridgeline in the far southern part of the study area, which contains no canopy but has some scattered native grasses throughout, particularly nearer the grassland patches in the far south-west. This may provide habitat for common reptiles as well as the threatened Striped Legless Lizard *Delma impar*, as well as foraging habitat for woodland birds and hunting opportunities for birds of prey.
- There are three farm dams in the study area. The two central dams are heavily impacted by livestock trampling and contain only limited habitat value. The dam in the north-west has some fringing non-native dominated vegetation and offers a little more habitat value for wetland birds and other fauna species, including potential foraging habitat for the threatened Eastern Great Egret *Ardea alba modesta*.
- There is a large seasonal wet area which runs between the farm dam just outside and west of the study area, through the centre of the study area and the central northern-most dam, and drains into Owens Creek in the east. This area is dominated by pasture and other non-native species, with some scattered *Juncus* spp. (Rushes). This area may provide intermittent foraging habitat for wetland birds, including the threatened Eastern Great Egret and other migratory wetland birds.
- Despite being mapped as potentially occurring in the area, the vegetation in the study area and adjoining areas do not qualify as the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* threatened ecological community, due to dominance of River Red-gum, non-native understorey and high levels of modification and fragmentation.
- The scattered trees and patch vegetation (treed and derived) in the study area contribute habitat for the *Flora and Fauna Guarantee Act 1988* (FFG Act) listed threatened *Victorian Temperate Woodland Bird Community*.
- There is potential habitat for Swift Parrot *Lathamus discolor*, Little Eagle *Hieraaetus morphnoides*, Barking Owl *Ninox connivens*, Diamond Firetail *Stagonopleura guttata*, Eastern Great Egret *Ardea alba modesta*, Grey-headed Flying-fox *Pteropus poliocephalus* and Striped Legless Lizard *Delma impar* (threatened species).
- The large trees in the study area contribute to connectivity between Owens Creek in the east, linking across the property into the surrounding vegetated properties in the west. The large to very large remnant native trees in the study area are typical of those found in Plains Grassy Woodland around Mansfield.

Government legislation and policy

An assessment of the project in relation to key biodiversity legislation and policy is provided and summarised below.

Legislation / policy	Relevant ecological feature on site	Permit / approval required	Notes
EPBC Act	Habitat for EPBC listed species Swift Parrot, Grey-headed Flying-fox and Striped Legless Lizard.	Due to the planned large lot size that allows for retention of habitat and the avoidance of native vegetation, a referral is not recommended based on current development design.	We understand the proposed low density development will be designed in a manner to avoid any direct impacts to native vegetation and significant habitat features on site. If the development design changes, particularly any removal of large trees or disturbance of the derived grassland and rocky areas in the south-west part of the site, then further consideration of EPBC Act implications will be required.
FFG Act	Habitat for four FFG listed woodland and wetland birds, and study area contributes to the FFG listed threatened Victorian Temperate Woodland Bird Community.	Protected flora permit not required as the proposed development is on private land.	Site is freehold land. The study area does contain threatened flora or fauna or important habitat. However, we understand the subdivision is low density and will be designed with no direct impacts to native vegetation or habitat as part of the development.
Planning & Environment Act	Applies to any native vegetation to be removed, destroyed or lopped.	Planning permit is required in Victoria to lop or remove native vegetation.	We understand no native vegetation is proposed for removal as part of the subdivision and lot size will be greater than 0.4 hectares with building envelopes placed to avoid direct impacts on patches (treed and derived grassland) and scattered trees. See recommendations.
CaLP Act	Two restricted noxious weeds and one declared pest animal occur on site.	Not applicable.	Comply with requirements to control/eradicate these pests and weeds.

Legislation / policy	Relevant ecological feature on site	Permit / approval required	Notes
Water Act	Applies to mapped waterways, such as Owens Creek, and the creek running west to east through the centre of the study area into Owens Creek.	Works on waterways permit may apply.	Any works, such as the proposed crossing of Owens Creek for the property access road in the centre of the study area, will need to consider a works on waterways permit.

Figure 2 of this report has been updated in July 2025 to include the current subdivision boundary layout in order to respond to draft permit conditions provided by Mansfield Shire Council, and to reflect current department names. Other aspects of the report (e.g. database searches) have not been updated.

Guidelines for the removal, destruction or lopping of native vegetation (the Guidelines)

Based on the preliminary nine lot subdivision design, we understand it is intended to avoid direct or indirect impacts on native vegetation. There are numerous scattered trees and several patches of vegetation on site (treed and derived grassland) as well as native vegetation just outside of the study area (of low to moderate quality) and this report provides constraint mapping to guide the final subdivision design. We also understand site design for the lot boundaries, future roads and associated infrastructure will consider retention of dams and all trees and patch vegetation. To ensure there are no direct or indirect impacts, we recommend that the final design should involve no works within proximity to Owens Creek, or within the Tree Protection Zones (TPZs) of scattered trees or within 15 metres of patch vegetation. If the subdivision design, placement of building envelopes and associated works can avoid direct removal of native vegetation and encroachment into TPZs, then Clause 52.17 of the Victoria Planning Provisions will not be triggered and a planning permit application for subdivision will not require assessment under the *Guidelines for the removal, destruction or lopping of native vegetation*.

Recommendations

The results of this assessment have been incorporated into the project's final design, by adding the flora and fauna (ecological features) mapping information into the subdivision planning maps and implementing development and construction controls to ensure the subdivision development and associated infrastructure does not impact on native vegetation in the study area or the adjoining mapped vegetation/habitats, Owens Creek, the three dams, the TPZs of scattered trees or the 15 metre patch protection zones around remnant native vegetation. Future farm style fencing may pass through some TPZs but these works are considered minimal and not likely to cause encroachment beyond 10 percent of any TPZ. Lot boundaries have been designed to be greater than 4 metres from any native vegetation to avoid consequential loss of vegetation through the fence line clearing exemption in Clause 52.17.

All areas of vegetation/habitat nominated in the overall design plan as 'retained' and the TPZ and 15 metre protection buffers of vegetation adjoining the project study area should to be treated as no-go zones and placement of building envelopes should avoid these areas. Adequate barriers, fencing and signage are encouraged in areas where works are in close proximity to these no-go zones, to ensure compliance with this recommendation.

All areas of vegetation/habitat nominated in the design plan as 'retained' are not to be encroached upon as future development progresses, unless appropriate assessments and approvals take place. Other recommendations to reduce the impact of the subdivision on the study area's current biodiversity values include the following:

- Avoid or minimise works near woodland areas during the Swift Parrot winter migration to mainland Australia (April – September).
- Micro-siting of all construction related access roads, stockpiles, vehicle parking and site compounds should occur and these structures should be located in areas that do not contain native vegetation or important fauna habitat.
- Clearly delineate the extent of the project's construction footprint and restrict all access to retained vegetation and fauna habitat through signage and/or secure high visibility temporary fencing.
- Use locally indigenous trees and shrubs in all revegetation and plantings if done as part of rehabilitation of works areas. Consider revegetating the southern part of Owens Creek for bank stability and biodiversity purposes.
- Implement strict weed and pathogen hygiene protocols during construction and operation, ensuring equipment arrives clean and weed/pathogen free.

These biodiversity and vegetation protection measures should be documented in a Construction Environmental Management Plan (or similar), which should also include other measures to reduce the possible impacts of site construction works, including erosion and sedimentation management, biosecurity considerations (pests and diseases), waste and pollution management, work site delineation, cultural heritage and contingency plans if natural (flora and fauna) or cultural heritage issues (i.e. unexpected finds) are encountered during the construction works.

1. Introduction

1.1 Project background

Biosis Pty Ltd was commissioned by Mountain Planning in 2021, on behalf of the proponent Alex Lyons, to undertake a flora and fauna assessment of a 38 hectare property located at 240 Malcolm Street, Mansfield (the study area). There is a nine lot residential rural living subdivision proposed for the study area, which currently contains an existing farmhouse and shedding in the north-eastern part of the property, and predominantly introduced pasture throughout the remaining areas of the property. The study area also includes three dams, a seasonal wet area, numerous large to very large scattered trees, a revegetated creek line and some treed and non-treed (grassland) Plains Grassy Woodland EVC patch vegetation.

Figure 2 of this report has been updated in July 2025 to include the current subdivision boundary layout in order to respond to draft permit conditions provided by Mansfield Shire Council, and to reflect current department names. Other aspects of the report (e.g. database searches) have not been updated.

1.2 Scope of assessment

The objectives of this investigation are to:

- Describe the vascular flora (ferns, conifers, flowering plants) and vertebrate fauna (mammals, birds, reptiles and frog) encountered on site.
- Map native vegetation and other habitat features.
- Review the implications of relevant biodiversity legislation and policy, including *Victoria's Guidelines for the removal, destruction or lopping of native vegetation* ('the Guidelines').
- Identify potential implications of the proposed development and provide recommendations to assist with development design.
- Recommend any further assessments of the site that may be required (such as a vegetation impact assessment or targeted searches for threatened species).

1.3 Location of the study area

The study area is located approximately 1.9 kilometres west of Mansfield's CBD and approximately 56 kilometres south of the nearest large town of Benalla (Figure 1). The study area encompasses approximately 38 hectares of freehold land which is owned by the proponent, Alex Lyons. The land is currently zoned Rural Living Zone (RLZ), and the surrounding land to the east includes Low Density Residential Zone (LDRZ) and General Residential Zone (GRZ1). The land is subject to a Development Plan Overlay (DPO). The northern boundary of the study area is Malcolm Street, the eastern and southern boundaries are freehold land currently used for farming, and the western boundary consists of several rural lifestyle properties.

The study area is within the:

- Central Victorian Uplands Bioregion
- Goulburn River Basin (Goulburn Broken catchment)
- Management area of the Goulburn Broken Catchment Management Authority (CMA)
- Shire of Mansfield (Mansfield Planning Scheme).

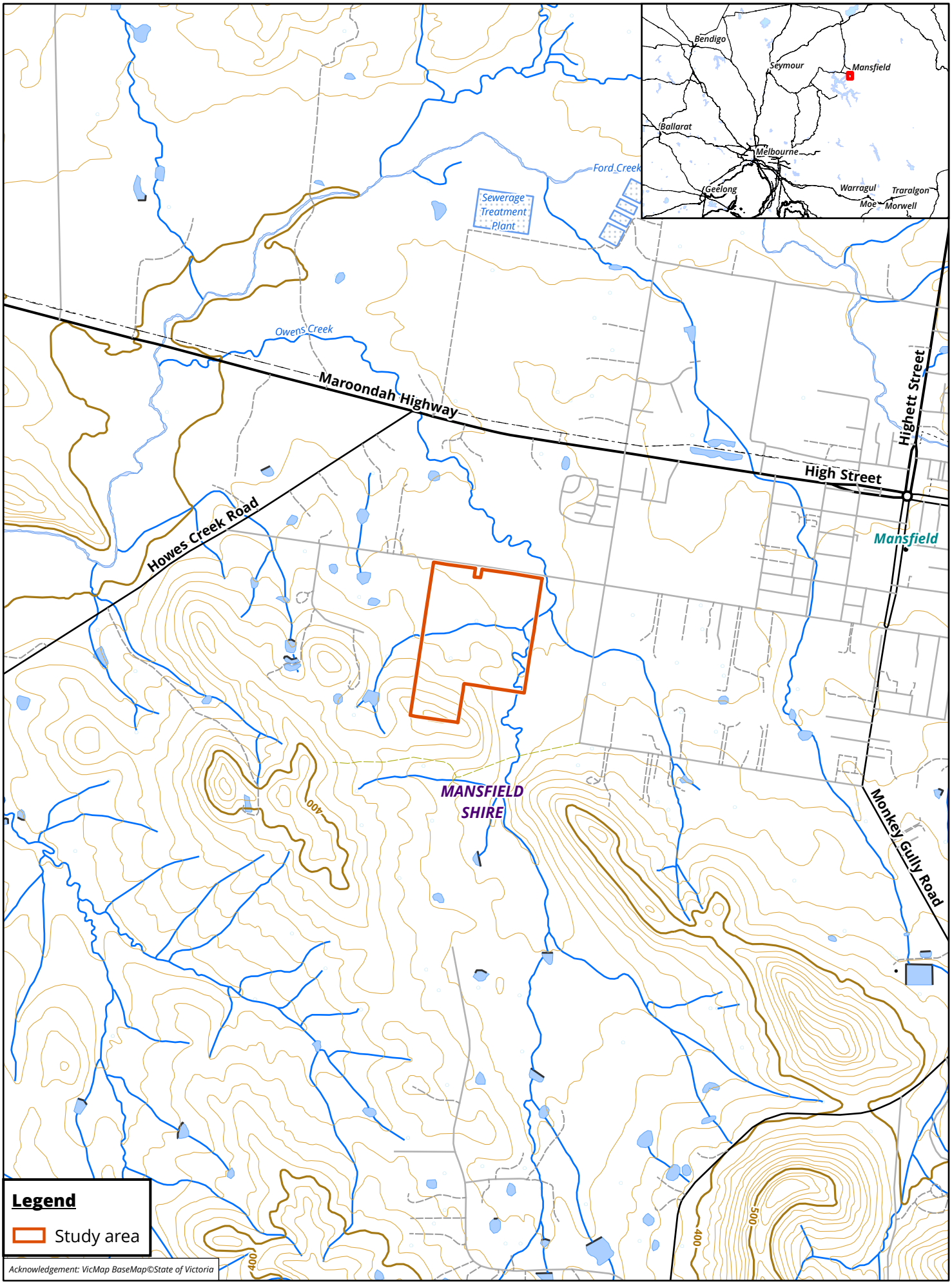

Figure 1 Location of the study area

biosis

Matter: 35835,
Date: 01 October 2021 ,
Prepared for: SM, Prepared by: DK, Last edited by: dkang
Layout: 35835_F1_Locality
Project: P:\35800s\35835\Mapping\35835_MansfieldSubdiv_FFA.aprx

0 250 500 750 1,000
Metres
Scale: 1:25,000 @ A4
Coordinate System GDA 1994 MGA Zone 55

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2. Methods

2.1 Database review

In order to provide a context for the study area, information about flora and fauna from within 5 kilometres of the study area (the 'local area') was obtained from relevant biodiversity databases, many of which are maintained by the Victorian Government's Department of Energy, Environment and Climate Action (DEECA) or the Australian Government's Department of Climate Change, Energy, the Environment and Water (DCCEEW). Records from the following databases were collated and reviewed:

- DEECA's Victorian Biodiversity Atlas (VBA), including the 'VBA_FLORA25, FLORA100 & FLORA Restricted' and 'VBA_FAUNA25, FAUNA100 & FAUNA Restricted' datasets.
- DCCEEW's Protected Matters Search Tool for matters protected by the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Other sources of biodiversity information were examined including:

- DEECA's NatureKit mapping tool
- DEECA's Habitat Importance maps
- DEECA's Native Vegetation Information Management (NVIM) system
- Planning Scheme overlays relevant to biodiversity based on http://planningschemes.dpcd.vic.gov.au.

2.2 Definitions of threatened species or communities

Threatened species or communities include those species or communities that are listed under the Commonwealth EPBC Act and/or Victoria's FFG Act. The conservation status of a species or ecological community is determined by its listing status under Commonwealth or State legislation / policy (Table 1).

Table 1 Conservation status of threatened species and ecological communities

Conservation status	
National	Listed as nationally critically endangered, endangered or vulnerable under the EPBC Act
State	Listed as extinct, extinct in the wild, critically endangered, endangered, vulnerable or conservation dependent in Victoria under the FFG Act

Lists of threatened species generated from the databases are provided in Appendix 1 (flora) and Appendix 2 (fauna) and the species have been assessed to determine their likelihood of occurrence in the study area, based on the process outlined below.

2.3 Determining likelihood of occurrence of listed threatened species

Likelihood of occurrence indicates the potential for a species or ecological community to occur regularly within the study area. It is based on expert opinion, information in relevant biodiversity databases and reports, and an assessment of the habitats on site. Likelihood of occurrence is ranked as negligible, low, medium, high or recorded. The rationale for the rank assigned is provided for each species in Appendix 1 (flora) and Appendix 2 (fauna). Those species for which there is little or no suitable habitat within the study area are assigned a likelihood of low or negligible and are not considered further.

Only those species listed under the EPBC Act or the FFG Act (hereafter referred to as 'threatened species') are assessed to determine their likelihood of occurrence. The habitat value for threatened species is calculated by the Habitat Importance Modelling produced by DEECA (DELWP 2017). Where threatened species are recorded in the study area this is noted in Appendix 1 (flora) and Appendix 2 (fauna).

Threatened species which have at least medium likelihood of occurrence are given further consideration in this report. The need for targeted survey for these species is also considered.

2.4 Site investigation

2.4.1 Flora assessment

The flora assessment was undertaken on 13 September 2021 by Consultant Botanist Stuart Mendham and a list of flora species was collected. This list will be submitted to DEECA for incorporation into the Victorian Biodiversity Atlas. Planted species have not been recorded unless they are naturalised.

Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs, and grasses' (Clause 73.01).

The Guidelines classify native vegetation into two categories (DELWP 2017):

- A **patch** of native vegetation (measured in hectares) is either:
  - An area of native vegetation, with or without trees, where at least 25 percent of the total perennial understorey cover is native plants.
  - An area with three or more native canopy trees where the drip line (i.e. the outermost boundary of a tree canopy) of each tree touches the drip line of at least one other tree, forming a continuous canopy.
  - Any mapped wetland included in the *Current wetlands map,* available in DEECA systems and tools.

Patch vegetation is classified into ecological vegetation classes (EVCs). An EVC contains one or more floristic (plant) communities, and represents a grouping of broadly similar environments. Definitions of EVCs and benchmarks (condition against which vegetation quality at the site can be compared) are determined by DEECA.

- A **scattered tree** is defined as a native canopy tree that does not form part of a patch of native vegetation.

A canopy tree is a mature tree that is greater than three metres in height and is normally found in the upper layer of a vegetation type. Ecological vegetation class descriptions provide a list of the typical canopy species. A scattered tree is defined as either small or large, and is determined using the large tree benchmark for the relevant EVC. The extent of a small scattered tree is the area of a circle with a 10 metre radius (i.e. 0.031 hectares), while the extent of a large scattered tree is a circle with a 15 metre radius (i.e. 0.070 hectares). A condition score is applied to each scattered tree based on information provided by DEECA's NVIM.

Due to the initial designs being completed in a way that avoids all native vegetation on site, a Vegetation Quality Assessment (VQA) was not undertaken for the patches of native vegetation identified in the study area as we understand these will not be impacted. If the designs change in a manner which impacts on any mapped patches or scattered trees, then an assessment will be required under the Guidelines.

Species nomenclature for flora follows the Victorian Biodiversity Atlas (VBA).

2.4.2 Fauna assessment

The study area was investigated on 13 September 2021 for general fauna survey to determine its values for fauna. A list of fauna species recorded is provided in Appendix 2 (fauna). Fauna values were determined primarily on the basis of the types and qualities of habitat(s) present. All species of fauna observed during the assessment were noted and active searching for fauna was undertaken. This included direct observation, searching under rocks and logs, examination of tracks and scats and identifying calls. Particular attention was given to searching for significant species and their habitats. Fauna species were recorded with a view to characterising the values of the study area and the investigation was not intended to provide a comprehensive survey of all fauna that has potential to utilise the study area over time.

2.4.3 Permits

Biosis undertakes flora and fauna assessments under the following permits and approvals:

- Permit to Take/Keep Protected Flora issued by DEECA under the *Flora and Fauna Guarantee Act 1988* (FFG Act) (Permit Number 10010120)

2.5 Qualifications

Ecological surveys provide a sampling of flora and fauna at a given time and season. There are a number of reasons why not all species will be detected at a site during survey, such as low abundance, patchy distribution, species dormancy, seasonal conditions, and migration and breeding behaviours. In many cases these factors do not present a significant limitation to assessing the overall biodiversity values of a site.

The current flora and fauna assessment was conducted in early spring, which is an optimal time for survey. The survey timing and effort was considered appropriate to characterise the biodiversity values of the study area and assess impacts likely to result from the proposed development.

2.6 Legislation and policy

The implications for the project were assessed in relation to key biodiversity legislation and policy including:

- Matters listed under the EPBC Act, associated policy statements, significant impacts guidelines, listing advice and key threatening processes
- Threatened taxa, communities and threatening processes listed under Section 10 of the FFG Act and associated action statements and listing advice
- Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017)
- *Planning and Environment Act 1987* – specifically Clauses 12.01-2, 52.17 and 66.02 and Overlays in the Mansfield Shire Planning Scheme
- Noxious weeds and pest animals lists under the *Catchment and Land Protection Act 1994* (CaLP Act)
- *Water Act 1989.*

2.7 Mapping

Peak Surveyors supplied the latest subdivision layout in June 2025 (J21186 - Proposed PoS V02 30June2025.pdf).

Mapping was conducted using hand-held GPS-enabled tablets and aerial photo interpretation. The accuracy of this mapping is therefore subject to the accuracy of the tablets (generally ± 5 metres) and dependent on the limitations of aerial photo rectification and registration.

Mapping has been produced using a Geographic Information System (GIS). Electronic GIS files which contain our flora and fauna spatial data are available to incorporate into design concept plans. However this mapping may not be sufficiently precise for detailed design purposes.

3. Results

The ecological features of the study area are described below and mapped in Figure 2.

Species recorded during the flora and fauna assessment are listed in Appendix 1 (flora) and Appendix 2 (fauna). Unless of particular note, these species are not discussed further.

Threatened species recorded or predicted to occur in the local area are also provided in those appendices, along with an assessment of the likelihood of the species occurring within the study area.

3.1 Vegetation and fauna habitat

The majority of the 38 hectare study area has been highly modified due to past clearing and agricultural land use. The ground flora is dominated by pasture grasses and grassy and herbaceous weed species which are common in the farming environment. There are, however, a number of large scattered trees throughout the site, but predominantly near the creek in the east, along the western boundary, and scattered throughout the sloping country in the southern half of the study area. A number of these trees are large to very large, and many provided a variety of hollow sizes and therefore good habitat for fauna species. There is also patch vegetation on site, along the western boundary and the more elevated parts of the study area, but all treed patches consisted of overstorey only, with an understorey dominated by pasture grasses and other non-native species. There are, however, two small patches of treeless derived native grasses (Plains Grassy Woodland EVC) in the south-west corner of the property, which were dominated by Dense Spear Grass, Wallaby Grass and Weeping Grass.

There are three dams and associated wet areas in the study area. The dams and wet areas are dominated by non-native species, with just a few scattered *Juncus* spp. (Rushes) scattered throughout. Due to the historical grazing of the property, the dams contain limited habitat for native species. There is a waterway, Owens Creek, which runs along the eastern edge of the property, and the northern part of this waterway has been revegetated with indigenous native species. There are also some invasive weeds still present in the creek line, include Weeping Willows *Salix babylonica* and *Prunus* spp. (Cherry Plum) species.

The study area is generally flat in the northern half, and a seasonally wet depression occurs just below the break of slope, approximately in the middle of the property and runs west to east, draining into Owens Creek on the eastern boundary. The southern half of the property is a moderate slope with a treeless crest in the far south which contains some rocky outcrops and some patches of native grasses in the far southwest corner, which are dominated by Weeping Grass, Dense Spear Grass and Wallaby Grasses.

The study area features are described further in Table 2 and are mapped in Figure 2. Representative photos of the study area are provided below Table 2 (Plates 1 to 22).

Table 2 Summary of vegetation and habitat types within the study area

Vegetation or habitat type	Description	Location	Significant values
Plains Grassy Woodland EVC 55 (Treed - remnant)	Dense canopy layer dominated by large River Red-gums and Yellow Box, with an understorey dominated by non-native pasture grasses such as Rye Grass *Lolium* spp. and Barley Grass *Hordeum* spp., with some grassy and herbaceous weeds species. Represented by Habitat Zones 1, 2, 4 and 7. See Plates 1 and 2 below Table 2).	In the north-western part of the study area along a drainage line, and in the southern more elevated parts of the study area.	Eucalypts in these areas offer possible foraging and nesting habitat for a range of more common woodland birds, raptors and owls, as well as potential habitat for threatened species such as Swift Parrot, Little Eagle, Barking Owl, Diamond Firetail and Grey-headed Flying-fox.
Plains Grassy Woodland EVC 55 (Treed – Planted and remnant)	Dense canopy layer dominated by medium sized River Red-gums which have been planted (in rows) around several large remnant River Red-gums, with an understorey dominated by non-native pasture grasses such as Rye Grass and Barley Grass, with some grassy and herbaceous weeds species. Represented by Habitat Zone 3. See Plates 3, 4 and 5.	Along the western boundary in the north-western part of the study area.	The medium sized planted eucalypts in this area offer possible foraging habitat for a range of woodland birds, such as those listed above. The several larger remnant eucalypts in this patch offer foraging and tree hollow nesting habitat for woodland birds and owls, as well as native arboreal mammal species.
Plains Grassy Woodland EVC 55 (Derived grassland)	Characterised by Dense Spear grasses, Wallaby Grass and Weeping Grass, with some rock outcrop throughout and scattered non-native grasses and herbs also in the ground layer. Trees and shrubs are absent. Represented by Habitat Zones 5 and 6. See Plates 6 and 7.	Limited to a small patch on the slope on western boundary and a larger patch on the crest of the hill and down into the south-western corner of the property.	The rocky outcrops may provide some areas of potential habitat for a range of more common reptiles, as well as potential habitat for the threatened Striped Legless Lizard. The scattered native grasses and pasture in this area may also offer foraging opportunities for seed-eating woodland birds and hunting opportunities larger birds and for birds of prey.
Scattered trees	63 scattered remnant trees occur throughout the study area and are dominated by River Red-gum and Yellow Box. Many of the larger trees contain hollows. See Plates 8 and 9.	Predominantly along the western boundary, the southern slopes and the south-eastern portion of the creek line in the east.	Eucalypts in the study area are generally large and healthy specimens which offer foraging, roosting and nesting habitat for a range of woodland birds, common possum species and microbats.

Vegetation or habitat type	Description	Location	Significant values
Revegetated creek line	This section of creek has been revegetation with a range of native trees and shrubs, including Manna Gum, River Red-gum, Blackwood and Lightwood. There are also woody weeds such as fruit trees and Weeping Willows throughout this section, and a ground layer dominated by non-native grasses and herbaceous weed species. See Plates 10 and 11.	The northern portion of Owens Creek in the far eastern part of the property.	This section of the creek line is diverse and offers good shelter, nesting and foraging habitat for a range of birds, reptiles, mammals and amphibian species.
Creek line with scattered trees	This section of creek has scattered large River Red-gums including live and dead specimens, with an understorey dominated by pasture species such as Rye Grass and Barley Grass, with some other grassy and herbaceous weeds species and scattered Weeping Willows. See Plate 12.	The southern portion of Owens Creek in the south-eastern part of the property.	The large eucalypts in this section of the creek offer good nesting habitat for a range of birds and microbat species. Bare-nose Wombats are also using this area for habitat.
Rocky outcrops	Natural rock outcrops occur along the highest point of the property, with two areas being dominated by native grasses in the far south-west, and the remaining outcrop area dominated by non-native pasture species and other weed species. See Plates 13.	Rock outcrops confined to the ridge running north-west to south-east through the far southern part of the property.	The rocks provide shelter and basking sites for common reptile species, and potential habitat for the threatened Striped Legless Lizard. Scattered native grasses throughout the rocky outcrop may also provide foraging opportunities for seed-eating woodland birds, and open hunting areas for larger birds and birds of prey.
Constructed dams	The dam in the north-west is degraded but contains some fringing aquatic vegetation, dominated by non-native species but currently provides habitat for wetland birds and amphibians. The two central dams are in a highly degraded state owing to the absence of vegetation, trampling by livestock and nitrification. Nonetheless, these two dams also provide some habitat for waterbirds and amphibian species. See Plates 14, 15 and 16.	One dam at the break of slope, one dam in the centre in the north of the property and one dam in the far north-west corner of the study area.	Dams on site are generally of low habitat value for significant fauna. All will be used occasionally by significant waterbirds but none offer important or limiting resources to any such species.

Vegetation or habitat type	Description	Location	Significant values
Seasonal wet area / drainage lines	Species as above, with only limited native wetland vegetation observed in the wettest areas, such as *Juncus* species. The main significant wet area is linking west to east through the middle of the property just below the break of slope, between the dam to the west of the property, through the central dam in the study area and draining into Owens Creek in the east. See Plates 15 and 16.	Above and below the site's three dams, and through the middle of the property.	These areas provide foraging habitat for wetland and woodland birds, and these areas also provide intermittent habitat for at least two common frog species. Works (proposed crossing for access road) in or near the mapped designated waterway running west to east through the study area, draining into Owens Creek in the east, will need to be considered via a works on waterways permit application.
Predominantly introduced vegetation	Open pasture dominated by Annual Rye-grass *Lolium rigidum*, Cocksfoot *Dactylis glomeratus*, Barley Grass *Hordeum* spp. and other annual pasture and various weed species. Native vegetation in these areas is limited and consists of some scattered native rushes and very few native grasses and herbs. See Plates 16 and 19.	Majority of the study area.	Provides foraging habitat for common woodland and wetland birds.
Landscaped and mown vegetation around existing house block	These areas support grasslands dominated by lawn species and other weedy grasses that are regularly mown, with an overstorey of predominantly exotic deciduous trees, with one large scattered River Red-gum in the south-eastern part of the house block. See Plates 17 and 18.	Around the existing house block in the north-eastern part of the study area.	These maintained areas have little value for any significant fauna species, but gardens may support a range of common native and introduced bird species, particularly when in flower. The lone scattered Eucalypt is providing nesting and breeding habitat for birds and common possum species, which were observed during the field assessment (deceased baby Common Brush-tailed Possum *Trichosurus vulpecula* located at base of tree).

Vegetation or habitat type	Description	Location	Significant values
Regenerating eucalypt species	Small saplings regenerating throughout the study area, particularly around River Red-gum trees on the flat and wetter parts. See Plates 21 and 22.	Scattered, some dense areas especially in the wetter areas around large River Red-gums.	Other than the revegetated creek these saplings provide the only understorey habitat throughout the site and should be avoided/protected.
Other man-made structures	Other man-made structures such as houses and shedding.	Scattered through northern parts of the study area.	These structures may provide some habitat features for terrestrial vertebrates including birds and microbats.
Rubbish and broken roof tiles in the creek line	Some old white good items and some large piles of bricks and broken tiles in the drainage line. See Plate 20.	In the tree-lined drainage line in the north-west section of the study area.	The white goods and other metallic rubbish items serve little value, however the piles of broken tiles and bricks currently provide basking habitat and shelter for common reptiles.

Plate 1 **Plains Grassy Woodland (treed) along the creek line in the west, looking south (photo taken 13 September 2021).**

Plate 2 **Plains Grassy Woodland (treed) on upper slope in south-east corner, looking north-west (photo taken 13 September 2021).**

Plate 3 **Plains Grassy Woodland (planted and several remnant), located on western boundary, photo taken looking south (photo taken 13 September 2021).**

Plate 4 **Plains Grassy Woodland (planted and some remnant) on western boundary, looking south down obvious planted rows (photo taken 13 September 2021).**

Plate 5 Large remnant River Red-gum in the planted patch on the western boundary, with significant hollows, looking south-west (photo taken 13 September 2021).

Plate 6 Small derived native grassland patch (derived EVC 55) mid slope near western boundary, looking uphill to the south-east (photo taken 13 September 2021).

Plate 7 **Large derived native grassland patch (derived EVC 55) on crest in far south-west corner, looking south-east (photo taken 13 September 2021).**

Plate 8 **Typical large scattered tree (Yellow Box) located in centre of property, looking south (photo taken 13 September 2021).**

Plate 9 **Typical large scattered trees (River Red-gums) at the break of slope mid property, looking southwest (photo taken 13 September 2021).**

Plate 10 **Revegetated creek line of Owens Creek, on the eastern boundary, looking approximately south-east (photo taken 13 September 2021).**

Plate 11 **Revegetated Owens Creek with Weeping Willows, looking approximately north (photo taken 13 September 2021).**

Plate 12 **Southern part of Owens Creek with scattered River Red-gums and Weeping Willows, looking south (photo taken 13 September 2021).**

Plate 13 Rocky outcrop on the ridge with scattered native grasses, and weeds/pasture species dominating, looking east (photo taken 13 September 2021).

Plate 14 The better quality of the three dams on the property, in the north-west corner, looking north-west with Malcolm Street in the background (photo taken 13 September 2021).

Plate 15 The central dam at the break of slope, which is typical of the two more grazing impacted dams on the property with limited habitat, looking north-west. The seasonal wet drainage line is visible behind the dam (photo taken 13 September 2021).

Plate 16 The third dam, located on flat country towards the northern part of the property, with typical pasture dominated species in foreground, and the seasonal wet area visible to the left and the right of the dam, looking north-west (photo taken 13 September 2021).

Plate 17 House block in north-east corner with introduced trees along driveway, looking approximately east (photo taken 13 September 2021).

Plate 18 Isolated large River Red-gum in the house block, providing habitat for mammals and birds, looking south-east (photo taken 13 September 2021).

Plate 19 Typical ground flora under remnant trees, dominated by pasture grasses and other exotic species, regenerating River Red-gums in the background, looking south (photo taken 13 September 2021).

Plate 20 Rubbish and broken tiles in the drainage line in the north-western part of the property, looking south-east (photo taken 13 September 2021).

Plate 21 More densely treed middle and upper slopes, with regenerating River Red-gums around a scattered tree in the foreground, looking south-east (photo taken 13 September 2021).

Plate 22 Regenerating River Red-gums at northern end of the drainage line patch, in the north-west part of the property, looking north-west (photo taken 13 September 2021).

3.2 Landscape context

The study area is flat to moderately sloping farmland located in a rural landscape just west of the Mansfield township and Mansfield golf course. The area is surrounded by Malcolm Street and farmland to the north, the eastern and southern boundaries are freehold land currently used for farming, and the western boundary consists of several lifestyle properties which have reasonable coverage of native vegetation. Habitat connectivity varies across the study area and in the general vicinity. There is some connectivity between the patches of vegetation on the hill and the vegetation along Owens creek to the east and south, and some connectivity between the patches on the western boundary with the remnant vegetation in the rural lifestyle properties to the west. At a landscape scale, physical habitat connectivity is generally poor to the east and south, poor to moderate in the north and moderate to the west and north-west of the study area.

The Mansfield area is well known for its large scattered River Red-gums and other Eucalypt species, especially on the plains country, and the study site is no exception. Despite the relatively poor physical habitat connectivity in the local landscape, the considerable number of large and significant habitat trees on site, many of which contain hollows, are an important contributor to the provision of fauna habitat in the broader landscape. There are no shrubs in the study area, aside from those planted along Owens Creek. There are relatively good amounts of regenerating eucalypts despite the site's clearing history and ongoing agricultural land use, particularly on the slopes and around the larger River Red-gums in the flatter wetter areas to the north-west. Efforts should be made to avoid and protect these regenerating trees as part of planning and fencing the subdivision boundaries.

3.3 Threatened species and ecological communities

Threatened species ecological communities recorded or predicted to occur within 5 kilometres of the study area or from the relevant catchment (aquatic species) are listed in Appendix 1 (flora) and Appendix 2 (fauna). An assessment of the likelihood of these species and communities occurring in the study area and an indication of where within the site (i.e. which habitats or features of relevance to the communities/species) is included. A summary of those communities and species recorded or with a medium or higher likelihood of occurring in the study area is provided in Table 3.

Table 3 Summary of EPBC and FFG Act listed species most likely to occur in the study area

Species name	Listing status	Area of value within the study area
Victorian Temperate Woodland Bird Community	FFG listed threatened community	The revegetated creek line of Owens Creek provides nesting and foraging habitat and the numerous hollow-bearing trees scattered throughout the study area and patch vegetation provide important nesting habitat for many woodland birds and arboreal mammals.
Swift Parrot ***Lathamus discolor***	Critically endangered under the EPBC Act and FFG Act	Recent records within 5 km of the study area and species is known to occupy nearby forest and woodland habitat. Some suitable foraging habitat in the study area, including the revegetated creek line of Owens Creek which provides foraging habitat and the numerous large Eucalypt trees scattered throughout the study area provide shelter and foraging habitat.

Species name	Listing status	Area of value within the study area
Grey-headed Flying-fox ***Pteropus poliocephalus***	Vulnerable under the EPBC Act and FFG Act	The revegetated creek line of Owens Creek and the numerous large eucalypt trees scattered throughout the study area provide shelter, foraging and potential roosting habitat.
Striped Legless Lizard ***Delma impar***	Vulnerable under the EPBC Act and endangered under the FFG Act	The rocky outcrop and native grasslands on the ridgeline and in the south-west corner of the study area may provide suitable habitat and basking areas for this species. This species has previously been recorded around Mansfield near Mount Battery on rocky slopes.
Barking Owl ***Ninox connivens***	Critically endangered under the FFG Act	May occasionally hunt prey in the agricultural area located within the study area, and the large eucalypt trees with hollows provide nesting habitat.
Eastern Great Egret ***Ardea alba modesta***	Vulnerable under the FFG Act	May occasionally forage in the three dams, the seasonally wet drainage area and broader pastured areas located within the study area.
Little Eagle ***Hieraaetus morphnoides***	Vulnerable under the FFG Act	May occasionally hunt prey in the agricultural area located within the study area, and the large eucalypt trees provide good nesting habitat.
Diamond Firetail ***Stagonopleura guttata***	Vulnerable under the FFG Act	The shrubs along the revegetated Owens Creek provide good foraging, shelter and nesting habitat, and the large scattered trees and patch vegetation provide opportunities for nesting near the nests of large birds of prey, which is a preference for this species for protection of their eggs from predation.

3.3.1 DEECA habitat importance modelling for threatened species

As there is no assessment being conducted under the Guidelines as part of this study and report, habitat importance modelling has not been considered at this stage of the project. The study area contains predominantly scattered native vegetation and some patch vegetation, and habitat features that would support threatened species are restricted to the large scattered trees and several patches on site.

3.3.2 Threatened ecological communities

EPBC Act listed communities

There is one EPBC Act listed threatened ecological community predicted to occur within the 5 kilometre project search area (Appendix 1), that being *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*. Remnant Blakely's Red-gum and White Box trees were not recorded within or adjoining the study area. There were Yellow Box trees scattered throughout the elevated areas, but River Red-gum is the dominant woodland tree species. The presence of Yellow Box trees as individual remnant specimens or in small and highly modified woodland patches was reviewed against the determination criteria published by OEH (2017). It has been determined that due to the dominance of River Red-gums, the lack of

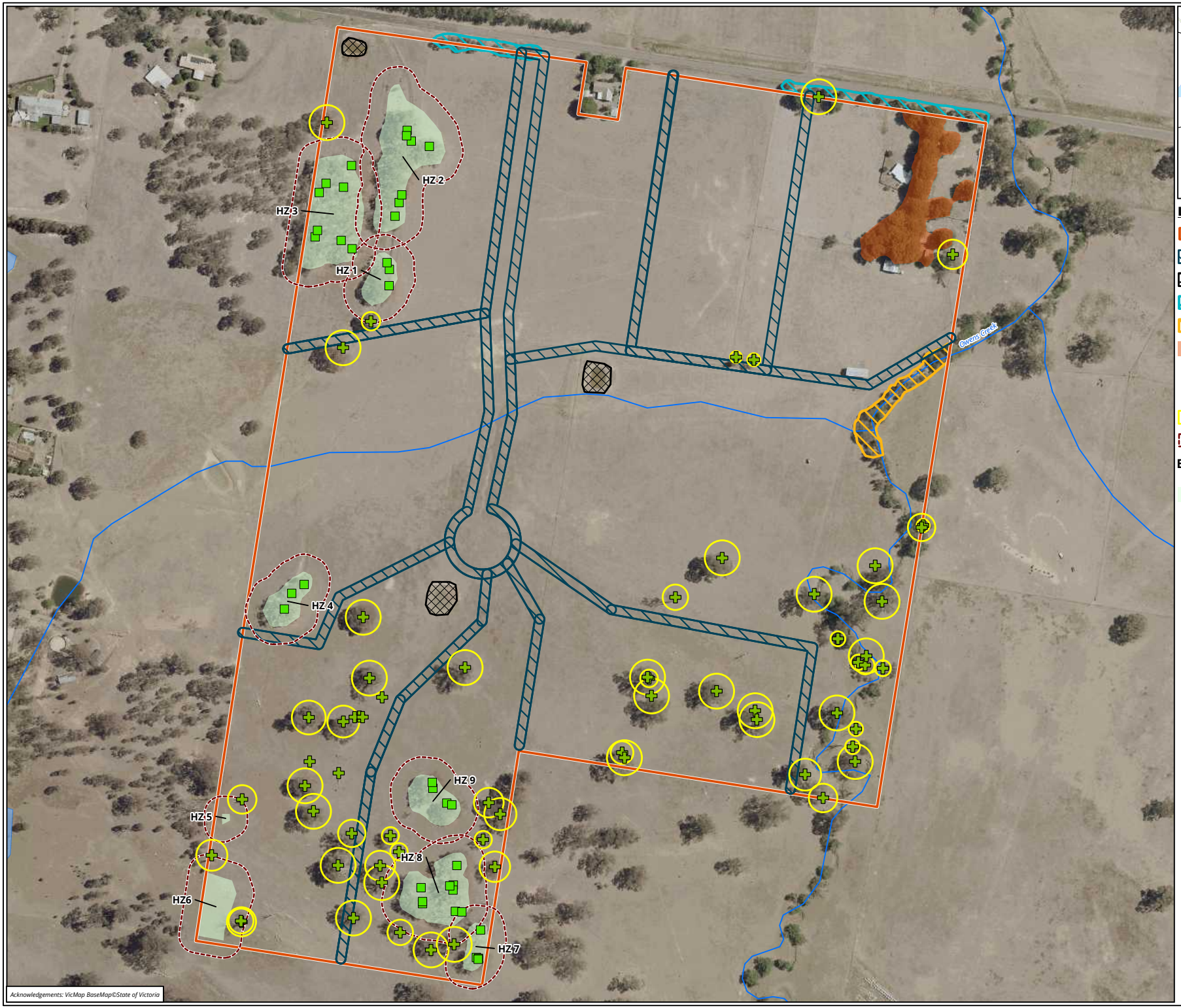
native understorey in the study area's woodland vegetation, and the high weed cover and lack of non-grass species diversity, that remnant trees and patches in the study area do not qualify as the EPBC Act listed community.

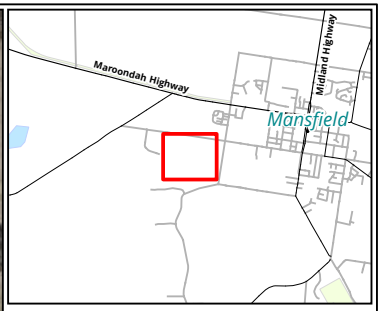
FFG Act listed communities

There is one FFG Act listed threatened ecological community that is predicted to occur within the project search area (Appendix 1), that being the *Victorian Temperate Woodland Bird Community*. A range of threatened woodland birds may reside, nest, shelter and forage in or move through the study area using the remnant and planted trees and those in the neighbouring landscape. The woodland bird species associated with this threatened community are therefore likely to occupy the study area either permanently or occasionally throughout the year. As such, the presence of the *Victorian Temperate Woodland Bird Community* in the broader area is likely, and the native vegetation in the study area qualifies as contributing to this community.

3.4 Further survey recommendations

We understand the subdivision design has factored in the location of trees and other native vegetation, and that no vegetation impacts are expected. If the design changes then a detailed assessment of ecological impacts to Striped Legless Lizard would be required and a native vegetation impact assessment would need to be undertaken.





Legend

- Study area
- Proposed design 4m buffer
- Dam
- Planted native vegetation
- Revegetated trees and shrubs
- Planted non-native vegetation
- Patch tree
- Scattered tree
- Tree Protection Zone (TPZ)
- Protection buffer (15 m)

Ecological Vegetation Class

- (CVU_0055) Plains Grassy Woodland

Figure 2 Ecological values and constraints

0 30 60 90 120 150

Metres

Scale: 1:3,000 @ A3

Coordinate System: GDA2020 MGA Zone 55

biosis APEM Group

N

Matter: 35835,
Date: 10 July 2025 ,
Prepared for: JLH Prepared by: PG, Last edited by: pgidley
Layout: 43051_F2_ValuesConstraints
Project: P:\43000s\43051\Mapping\
43051_FFA_Update_MalcolmStMansfield.aprx

4. Biodiversity legislation and government policy

This section provides an assessment of the project in relation to key biodiversity legislation and government policy. This section does not describe the legislation and policy in detail. Where available, links to further information are provided.

4.1 Commonwealth

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act applies to developments and associated activities that have the potential to significantly impact on Matters of National Environmental Significance (MNES) protected under the Act.

Link for further information including a guide to the referral process is available at: http://www.environment.gov.au/epbc/index.html.

MNES relevant to the project are summarised in Table 4. It includes an assessment against the EPBC Act policy statements published by the Australian Government which provide guidance on the practical application of EPBC Act.

Table 4 Assessment of project in relation to the EPBC Act

MNES	Project specifics	Assessment against significant impact guidelines
EPBC Act listed species	24 EPBC Act listed species have been recorded or are predicted to occur in the 5 km project search area. The likelihood of these species occurring in the study area is assessed in Appendix 1 (flora) and Appendix 2 (fauna).	Most of these species are not likely to occur or only occur on an irregular basis, and given the large lot size and efforts been made in the project planning stage to avoid any impacts to native vegetation, the development is unlikely to constitute a significant impact. If the development design changes, particularly any removal of large trees or disturbance of the derived grassland and rocky areas in the south-west part of the site, then further consideration of EPBC Act implications will be required.
EPBC Act listed ecological communities	One EPBC Act listed ecological community has been recorded or predicted to occur in the 5 km project search area.	Blakely's Red-gum and White Box trees were not recorded within or near the study area. There are Yellow Box trees scattered throughout the elevated areas, but River Red-gum is the dominant woodland tree species. It has been determined that due to the lack of understorey in the woodland vegetation, the high weed cover and lack of non-grass species diversity, that remnant trees and patches do not qualify as the EPBC Act listed community.

MNES	Project specifics	Assessment against significant impact guidelines
Migratory species	11 migratory species have been recorded or predicted to occur in the 5 km project search area (Appendix **2**).	While some of these species would be expected to use the study area on occasions, and some of them may do so regularly or may be resident, it does not provide high quality or important habitat for an ecologically significant proportion of any of these species. Impacts to migratory species' habitat in the study are minimal and does not constitute a significant impact.
Wetlands of international importance (Ramsar sites).	The study area is identified as being 150 kilometres south-east of the nearest Ramsar site, the Barmah State Forest.	The study area does not drain directly any Ramsar sites and the development is not likely to result in a significant impact.

On the basis of criteria outlined in the relevant *Significant Impact Guidelines* it is considered unlikely that a significant impact on a Matter of National Environmental Significance would result from the proposed development in the study area given the intended large lot size and design response to avoid native vegetation removal. Referral of the proposed action to the Australian Government Minister for the Environment to determine whether the action requires approval under the EPBC Act is therefore not considered necessary based on the current design. If the development design changes, particularly any removal of large trees or disturbance of the derived grassland and rocky areas in the south-west part of the site, then further consideration of EPBC Act implications will be required.

4.2 State

4.2.1 Flora and Fauna Guarantee Act 1988 (FFG Act)

The FFG Act is the key piece of Victorian legislation for the conservation of threatened species and communities and for the management of potentially threatening processes. Under the FFG Act a permit is required from DEECA to 'take' protected flora species. Permit exemptions under the FFG Act generally apply to the non-commercial removal of protected flora from private land, unless there is 'critical habitat' that has been declared on the land. Authorisation under the FFG Act is required to collect, kill, injure or disturb listed fish on private or public land.

Link for further information: https://www.environment.vic.gov.au/conserving-threatened-species/victorias-framework-for-conserving-threatened-species

The FFG Act defines public land as *Crown land or land owned by, or vested in, a public authority,* while private land is defined as *any land other than public land.* A public authority is defined in the FFG Act as a body established for a public purpose by or under any Act and includes:

- an Administrative Office
- a Government Department
- a municipal council
- a public entity
- a State-owned enterprise.

Native vegetation on site and the habitats present are contributing to the Victorian Temperate Woodland Bird FFG act listed threatened community, and although not identified on site during field surveys, the site may contain FFG Act listed threatened species (Appendix 2).

The study area is on private land, does not contain any declared 'critical habitat' for the purposes of the FFG Act and the flora species are not being taken for the purpose of commercial sale. A protected flora permit is therefore not required, however, the presence of rare or threatened flora and/or habitat for threatened fauna will be considered by the Responsible Authority in determining its response to an application for development approval.

4.2.2 Catchment and Land Protection Act 1994 (CaLP Act)

The CaLP Act identifies and classifies certain species as noxious weeds or pest animals, and provides a system of controls on noxious species.

Declared noxious weeds identified in the study area are listed in Appendix 1 and established pest animals are listed in Appendix 2.

The land owner must take all reasonable steps to eradicate regionally prohibited weeds, prevent the growth and spread of regionally controlled weeds, and prevent the spread of and as far as possible eradicate established pest animals. The State is responsible for eradicating State prohibited weeds from all land in Victoria. It is important that adequate consideration of biosecurity issues are considered during the development process, and that measures are put in place to minimise the introduction of pests and diseases to the site, or moving from the site, during construction stages of the project.

Link for further information: http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds.

4.2.3 Planning and Environment Act 1987 (incl. Planning Schemes)

The *Planning and Environment Act 1987* controls the planning and development of land in Victoria, and provides for the development of planning schemes for all municipalities.

The development does not seek to remove native vegetation therefore controls and permit requirements contained within the Mansfield Shire Planning Scheme in relation to native vegetation removal are not relevant to the proposal.

The study area is not covered by any overlays relevant to biodiversity under the Scheme.

Victoria's Guidelines for the removal, destruction or lopping of native vegetation

The Guidelines are incorporated into the Victoria Planning Provisions and all planning schemes in Victoria (DELWP 2017). The Guidelines replaced the previous incorporated document titled *Permitted clearing of native vegetation – Biodiversity assessment guidelines* (DEPI 2013) on 12 December 2017.

The purpose of the Guidelines is to guide how impacts to biodiversity should be considered when assessing a permit application to remove, destroy or lop native vegetation. The objective for the guidelines in Victoria is 'No net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation'.

Due to the subdivision being planned with minimal environmental impact in mind, and the development having neither direct nor indirect impacts on native vegetation, an assessment of the implications for the project under Clause 52.17 or the Guidelines is not required based on the current development design.

4.2.4 Water Act

The primary purpose of the *Water Act 1989* is to provide a framework for the allocation and management of surface water and groundwater throughout Victoria. It provides a principal mechanism for maintenance of ecosystem functions including those of aquatic ecosystems. Under By-Laws created by the relevant Authority under the Act, the authorities regulate the works within and in the vicinity of waterways. with a catchment area of 60ha or more.

The proposed development will involve construction activities that affect beds and banks of waterways, riparian vegetation or quality or quantity of water in a mapped designated waterway which flows into Owens Creek. Development within the study area will require a permit from Goulburn Broken Catchment Management Authority. Guidelines and application forms are available from CMAs online: https://www.gbcma.vic.gov.au/our-region/waterway-floodplain-management/floodplain-planning/works-on-waterways-permits.

5. Victoria's Guidelines for the removal, destruction or lopping of native vegetation

The Guidelines were introduced in December 2017. They set out and describe the application of Victoria's statewide policy in relation to assessing and compensating for the removal of native vegetation in order to achieve the objective of 'no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation'.

This objective is to be achieved through Victoria's planning system using an assessment approach that relies on strategic planning and the permit and offset system. The key policy for achieving no net loss to biodiversity is the three-step approach of avoid, minimise and offset:

- **Avoid** the removal, destruction or lopping of native vegetation to ensure that the important biodiversity values of native vegetation continue to be delivered into the future.
- **Minimise** impacts resulting from the removal of native vegetation that cannot be avoided.
- Provide an **offset** to compensate for the biodiversity impact resulting from the removal of native vegetation.

The steps that have been taken during the design of the development to ensure that impacts on biodiversity from the removal of native vegetation have been minimised include:

- Avoiding all areas of native vegetation by placing the lot boundaries through areas that do not contain native vegetation. Future farm style fencing may pass through some TPZs but these works are considered minimal and not likely to cause encroachment beyond 10 percent of any TPZ. Lot boundaries have been designed to be greater than 4 metres from any native vegetation to avoid consequential loss of vegetation through the fencing exemption in Clause 52.17.
- Subdivision is designed to ensure works and any temporary facilities in the study area do not impinge on the TPZs or the 15 metre protection buffers of any nearby patch vegetation.
- Locating any fill or material storage sites or compounds on existing disturbed land well away from native species, to minimise impacts to native vegetation.
- Designing the proposed site access road and property driveways in the most cleared and the poorest quality sections through the centre of the property, making sure to avoid scattered trees, patch vegetation and eucalypt regrowth.

Due to the avoidance measures being incorporated into the design and the placement of the proposed subdivision boundaries and associated ground works not having direct or indirect impacts on adjoining native vegetation, an assessment of the development under the Guidelines has not been undertaken as native vegetation removal is not anticipated.

5.1 Proposed removal of native vegetation

There are no direct or indirect native vegetation losses associated with this project based on the current development design.

5.2 Determining the assessment pathway

There are no direct or indirect native vegetation losses associated with this project based on the current development design.

5.3 Offset requirements

Not applicable.

5.4 Proposed offset strategy

Not applicable.

6. Key ecological values and recommendations

This section identifies the key ecological features of the study area, provides an outline of potential implications of the proposed development on those values and includes recommendations to assist Mountain Planning to finalise the design to minimise impacts on biodiversity values. The initial subdivision development plans have been designed in a way to ensure subdivision boundaries and future roads, access ways, temporary works and storage areas and permanent site infrastructure avoids all areas of native vegetation in the study area. This report provides further detail to refine the subdivision design to ensure this goal of impact avoidance is achieved.

The majority of the 38 hectare study area has been highly modified due to past clearing and agricultural land use. The ground flora is dominated by pasture grasses and grassy and herbaceous weed species which are common in the farming environment. There are, however, a number of large scattered trees throughout the site, but predominantly near the creek in the east, along the western boundary, and scattered throughout the sloping country in the southern half of the study area. A number of these trees were large to very large, and many provided a variety of hollow sizes and therefore good habitat for fauna species. There was also patch vegetation on site, along the western boundary and the more elevated parts of the study area, but all treed patches consisted of overstorey only, with an understorey dominated by pasture grasses and other non-native species. In addition to the treed patches, there were also two small patches of treeless derived native grasses in the south-west corner of the property, which were dominated by Dense Spear Grass, Wallaby Grass and Weeping Grass.

The initial subdivision design has been done in a way to ensure access roads and driveways are to be constructed in the cleared, flatter areas in the mid to northern part of the study area. These areas are dominated by non-native pasture species and herbaceous weed species, and contain minimal native vegetation (scattered rushes) and limited habitat for native fauna. The dams in the study area are highly degraded and contain little or no native vegetation. Despite the dams being degraded and containing limited habitat for native species, efforts have also been made to ensure the design avoids and retains these dams on site. There is a waterway, Owens Creek, which runs along the eastern edge of the property, the northern part of which has been revegetated with native species. There are also some invasive weeds still present in the creek line, including Weeping Willows and fruit tree species. Consideration should be given to removing the remaining Weeping Willows along Owens Creek, and revegetating the remaining southern part of Owens Creek with indigenous species for bank stabilisation and habitat purposes.

There is a proposed crossing of the mapped designated waterway that runs west to east through the middle of the study area and flows into Owens Creek. A works on waterways permit will need to be considered for works in this area. If subdivision plans are altered and works are proposed near Owens Creek, they will also have to be addressed by way of a works on waterways permit application through Goulburn Broken Catchment Management Authority.

The primary measure to reduce impacts to biodiversity values within the study area is to avoid and minimise removal of native vegetation and terrestrial and aquatic habitat. It is critical that this be considered during the final design phase of the project, when key decisions are made about the final location of building envelopes, fences, access roads, built infrastructure, site compounds, temporary material storage/stockpiles and services. The results of this assessment should therefore be incorporated into the final project design, by adding the flora and fauna (ecological features), TPZs, patch buffers and mapping information into the construction planning maps and ensuring this report's recommended measures are put in place to ensure all mapped vegetation/habitats are retained and protected from construction impacts.

The final design phase is also the time during which future requirements for infrastructure and services must be forecast and allowance made outside any nominated protected areas for all construction works, such as building envelopes, drainage and site services. All areas of vegetation/habitat nominated in the design plan as 'retained' are to be treated as no-go zones and are not to be encroached upon as development progresses. Any encroachment will need to be subject to further assessment and may potentially require vegetation offsets.

A summary of potential implications of development of the study area and recommendations to minimise impacts during the **final design phase** of the project is provided in Table 5.

Table 5 Summary of key ecological values, potential implications of developing the study area and recommendations to minimise ecological impacts during the design phase.

Ecological feature	Implications of development	Recommendations
Native vegetation	There are no direct or indirect impacts to native vegetation expected from the current development design. The subdivision permit application will not need to be assessed under the Guidelines.	No impacts from removal of native vegetation. In accordance with the Guidelines, the design of the subdivision boundaries and access roads has been done in a manner to avoid nearby scattered tree TPZs and 15 metre protection buffers of adjoining patch vegetation. Where boundaries come close to TPZs or protection buffers of retained vegetation, these areas should be fenced off, signed and treated as no-go zones.
Threatened species and ecological communities	Given the proposed large lot size, degraded condition of the ground layer in the study area, and the lack of impacts to native vegetation from consideration during the design phase, the development is deemed to pose a low risk of impact on threatened species and ecological communities (as identified in Table 3).	Avoid all impacts to adjoining scattered trees, remnant patches (trees and grassland areas) and their protection buffers. Where subdivision boundaries are close to TPZ and buffer areas, these areas should be fenced off, signed and treated as no-go zones.
Designated waterway flowing into Owens Creek	The current design proposed a crossing for property access, which crosses the designated waterway which runs west to east through the centre of the study area, and drains into Owens Creek.	Works within or in close proximity to this mapped designated waterway (or Owens Creek) will need to consider the impact of works on the waterway, and a works on waterways permit application will need to be submitted through the Goulburn Broken Catchment Management Authority.

Construction and post-construction management

There are not expected to be any significant construction works as part of the subdivision boundary fencing, however more significant works will be required for entrance roads, installation of electricity and other utility connections, site drainage works and building envelope preparation. Specific detail relating to preventing impacts to retained native vegetation and aquatic and terrestrial habitat within and adjoining the study area (i.e. including protecting native vegetation along the roadside of Malcolm Street and adjoining scattered trees and patch vegetation outside the study area) should be addressed in a project-specific Construction

Environmental Management Plan (or similar). This should include issues relating to contractors such as environmental inductions, installation of temporary fencing/signage, biosecurity measures, and drainage and sediment control, as well as natural and cultural heritage issues (including contingencies for detection of heritage items during construction).

References

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Appendices

Appendix 1 Flora

The following abbreviations and symbols are relevant to this Appendix:

Code	Meaning	Reference
National listings (EPBC Act)		
EX	Extinct	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
CR	Critically endangered	
EN	Endangered	
VU	Vulnerable	
PMST	Protected Matters Search Tool	
State listings (FFG Act)		
x	Extinct	Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act)
cr	Critically endangered	
e	Endangered	
v	Vulnerable	
t	Threatened	
Weed status (CaLP Act, DCCEEW Weeds of National Significance)		
SP	State prohibited species	Victorian *Catchment and Land Protection Act 1994* (CaLP Act)
RP	Regionally prohibited species	
RC	Regionally controlled species	
R	Restricted species	
WoNS	Weed of National Significance	Australian Weeds Strategy (DAWR 2017)
Other		
#	Native species outside its natural range	Victorian Biodiversity Atlas (VBA)

A1.1 Flora species recorded from the study area

Table A1.1 Flora species recorded from the study area

Status	Scientific Name	Common Name
Indigenous species		
	Acacia implexa	Lightwood
	Acacia melanoxylon	Blackwood
	Anthosachne scabra s.s.	Common Wheat-grass
	Austrostipa densiflora	Dense Spear-grass
	Austrostipa spp.	Spear Grass
	Crassula spp.	Crassula
	Cyperus eragrostis	Drain Flat-sedge
	Eucalyptus camaldulensis	River Red-gum
	Eucalyptus melliodora	Yellow Box
	Eucalyptus viminalis (planted)	Manna Gum
	Juncus spp.	Rush
	Microlaena stipoides var. *stipoides*	Weeping Grass
	Rytidosperma spp.	Wallaby Grass
Introduced species		
	Acetosella vulgaris	Sheep Sorrel
	Aira spp.	Hair Grass
	Arctotheca calendula	Cape Weed
	Avena spp.	Oat
	Bromus diandrus	Great Brome
	Bromus hordeaceus	Soft Brome
	Capsella bursa-pastoris	Shepherd's Purse
	Cerastium spp.	Mouse-ear Chickweed
R	*Cirsium vulgare*	Spear Thistle
	Cynodon dactylon var. *dactylon*	Couch
	Cynosurus echinatus	Rough Dog's-tail
	Dactylis glomerata	Cocksfoot
	Erodium moschatum	Musky Heron's-bill
	Galium aparine	Cleavers
	Holcus lanatus	Yorkshire Fog
	Hordeum spp.	Barley Grass
	Hypochaeris radicata	Flatweed
	Lolium perenne	Perennial Rye-grass
	Lolium rigidum	Wimmera Rye-grass
	Malva parviflora	Small-flower Mallow
	Oxalis purpurea	Large-flower Wood-sorrel
	Phalaris aquatica	Toowoomba Canary-grass
	Plantago lanceolata	Ribwort

Status	Scientific Name	Common Name
	Poa annua s.s.	Annual Meadow-grass
	Prunus spp.	Prunus
	Romulea rosea	Onion Grass
	Rumex conglomeratus	Clustered Dock
	Rumex crispus	Curled Dock
R	*Salix babylonica* s.s.	Weeping Willow
	Setaria spp.	Pigeon Grass
	Sonchus oleraceus	Sow Thistle
	Trifolium repens var. *repens*	White Clover
	Trifolium subterraneum	Subterranean Clover
	Urtica urens	Small Nettle
	Vulpia bromoides	Squirrel-tail Fescue

A1.2 Listed flora species

The following table includes threatened flora species that have potential to occur within the study area. The list of threatened species is sourced from the VBA and PMST (accessed on 3 September 2021). Where years are specified for the most recent database records, these refer to records from the VBA unless otherwise specified. Where no year is specified, the PMST has predicted that the species has potential to occur. A proportion of the flora habitat descriptions have been reproduced with permission from the Royal Botanic Gardens Victoria (RBGV 2020).

Table A1.2 Threatened flora species recorded or predicted to occur within 5 km of the study area

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely of occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
National significance								
Amphibromus fluitans	River Swamp Wallaby-grass	VU			PMST	Swampy areas, mainly along the Murray River between Wodonga and Echuca with scattered records from southern Victoria.	**Negligible**	No records. Wetland habitats in the study area are limited to one wet depression which is grazed and highly fragmented, and contain only the most grazing tolerant native vegetation.
Dianella amoena	Matted Flax-lily	EN	e		PMST	Lowland grassland and grassy woodland, on well-drained to seasonally waterlogged fertile sandy loam soils to heavy cracking clays.	**Negligible**	No records. The flat areas and wet depression are grazed and highly fragmented, and contain only the most grazing tolerant native vegetation.

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely of occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
Glycine latrobeana	Clover Glycine	VU	v		PMST	Grasslands and grassy woodlands, particularly those dominated by Kangaroo Grass *Themeda triandra.*	**Negligible**	No records. Kangaroo Grass was not recorded on site. The ground flora was highly disturbed across the site and no suitable habitat was present for this species.
Senecio macrocarpus	Large-headed Fireweed	VU	e		PMST	Grassland, shrubland and woodland habitats on heavy soils subject to waterlogging and/or drought conditions in summer.	**Low**	No records. The flat areas and wet depression are grazed and highly fragmented, and contain only the most grazing tolerant native vegetation.
Thesium australe	Austral Toad-flax	VU	v		PMST	Most commonly in damp grassland and woodland, including subalpine grassy heathlands.	**Low**	No records. The ground flora was highly disturbed across the site and dominated by non-native species. Highly unlikely that suitable habitat was present for this species.

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely of occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
State significance								
Amphibromus pithogastrus	Plump Swamp Wallaby-grass		e	2018		Seasonally damp depressions in grassland or grassy wetland.	**Negligible**	Wetland habitats in the study area are limited to three degraded dams and one seasonally wet area, all of which are grazed and highly fragmented, and contains only occasional Juncus, the most grazing tolerant of native vegetation.
Dianella longifolia var. *grandis*	Flax-lily		v	2011		The habitat requirements of this species are poorly known.	**Low**	The ground flora was highly disturbed across the site and dominated by non-native species. Highly unlikely that suitable habitat was present for this species.
Dianella tarda	Late-flower Flax-lily		v	2008		Heavy soils in grassy woodland environments dominated by River Red-gum *Eucalyptus camaldulensis* and Yellow Box *E. melliodora*.	**Low**	The flat areas and wet depression with heavy soils are grazed and highly fragmented, and contain only the most grazing tolerant native vegetation.

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely of occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
Geranium potentilloides var. *abditum*	Soft Crane's-bill		r	2018		In, or fringing, subalpine woodlands, often in areas with exposed rock.	**Low**	The ground flora was highly disturbed across the site and dominated by non-native species. Some small rocky outcrops, but given heavy grazing history, unlikely that suitable habitat was present for this species.
Podolepis hieracioides	Long Podolepis		r	1853		Confined to montane and subalpine areas in the east, in open forest, woodland or grassland.	**Negligible**	No recent records. Species preferred habitat is not present in the study area.

A1.3 Threated ecological communities

The following table includes the threatened ecological communities that have potential to occur within the project area. The list of threatened ecological communities has been compiled with reference to characteristics of FFG Act threatened communities (SAC 2013) and predictive output from the PMST (accessed on 3 September 2021).

Table A1.3 Threatened ecological communities predicted to occur within 5 km of the project area.

Community Name	Conservation status	Source	Description
National significance			
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	PMST	Remnant Blakely's Red-gum *Eucalyptus blakelyi* and White Box *E. albens* were not recorded within or adjoining the study area. There were Yellow Box trees scattered throughout the elevated areas, but River Red-gum *E. camaldulensis* is the dominant woodland tree species. The study area therefore does not meet the requirements to be considered part of this EPBC listed community.
State significance			
Victorian Temperate Woodland Bird Community	Threatened	NA	This FFG listed threatened community includes the woodland stands and scattered trees in the project area, as well as the revegetated creek line and the native grasslands on the ridgeline. Listed woodland birds within this community that have been recorded or may occur include the Swift Parrot, Little Eagle, Barking Owl and Diamond Firetail.

Appendix 2 Fauna

The following abbreviations and symbols are relevant to this Appendix:

Code	Meaning	Reference
National listings (EPBC Act)		
EX	Extinct	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
CR	Critically endangered	
EN	Endangered	
VU	Vulnerable	
NT	Near threatened	
CD	Conservation dependent	
PMST	Protected Matters Search Tool	
State listings (FFG Act)		
x	Extinct	Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act)
cr	Critically endangered	
e	Endangered	
v	Vulnerable	
t	Threatened	
Pest animal status (CaLP Act)		
PS	Declared pest animal	Victorian *Catchment and Land Protection Act 1994* (CaLP Act)
Other		
*****	Introduced species	Victorian Biodiversity Atlas (VBA)

A2.1 Fauna species recorded from the study area

Table A2.1 Vertebrate fauna recorded from the study area (present assessment)

Status	Scientific Name	Common Name
Indigenous species		
	Anas superciliosa	Pacific Black Duck
	Anthochaera carunculata	Red Wattlebird
	Cacatua galerita	Sulphur-crested Cockatoo
	Cacatua sanguinea	Little Corella
	Chenonetta jubata	Australian Wood Duck
	Coracina novaehollandiae	Black-faced Cuckoo-shrike
	Corvus coronoides	Australian Raven
	Crinia signifera	Common Froglet
	Egretta novaehollandiae	White-faced Heron
	Gymnorhina tibicen	Australian Magpie
	Hirundo neoxena	Welcome Swallow
	Limnodynastes dumerilii dumerilii	Pobblebonk Frog
	Pardalotus striatus	Striated Pardalote
	Platycercus elegans	Crimson Rosella
	Psephotus haematonotus	Red-rumped Parrot
	Rhipidura leucophrys	Willie Wagtail
	Strepera graculina	Pied Currawong
	Threskiornis spinicollis	Straw-necked Ibis
	Trichosurus vulpecula	Common Brush-tailed Possum
	Vombatus ursinus	Bare-nosed Wombat
Introduced species		
PS	*Oryctolagus cuniculus*	European Rabbit
	Passer domesticus	House Sparrow
	Turdus merula	Common Blackbird
PS	*Vulpes vulpes*	Red Fox

A2.2 Listed fauna species

The following table includes a list of threatened fauna species that have potential to occur within the study area. The list of threatened species is sourced from the VBA and PMST (accessed on 3 September 2021). Where years are specified for the most recent database records, these refer to records from the VBA unless otherwise specified. Where no year is specified, the PMST has predicted that the species has potential to occur.

Table A2.3 Threatened fauna species recorded or predicted to occur within 5 km of the study area

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
National significance								
Rostratula australis	Australian Painted-snipe	EN	cr		PMST	Shallows of well-vegetated freshwater wetlands.	**Negligible**	No records and no suitable habitat. Dams degraded and contain little to no vegetation. Small areas of highly fragmented wetland habitat occur nearby but are outside the study area.
Botaurus poiciloptilus	Australasian Bittern	EN	cr		PMST	Shallow freshwater and brackish wetlands with abundant emergent aquatic vegetation.	**Negligible**	No records and no suitable habitat. Small areas of highly fragmented wetland habitat occur nearby but are outside the study area.
Falco hypoleucos	Grey Falcon	VU	v		PMST	Lightly timbered plains and Acacia scrub.	**Low**	No records. Limited timbered and very little shrubby habitat available in the study area for this species.

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
Lathamus discolor	Swift Parrot	CR	cr	2006	PMST	A range of forests and woodlands, especially those supporting nectar-producing tree species. Also well-treed urban areas.	**Medium**	Recent records within 5 km of the study area. Known to occupy nearby forest and woodland habitat. Some suitable foraging habitat in the study area and may visit site on occasion.
Hirundapus caudacutus	White-throated Needletail	VU	v	1978	PMST	An almost exclusively aerial species within Australia, occurring over most types of habitat, particularly wooded areas.	**Low**	This chiefly aerial species may operate in the airspace above the study area but is unlikely to use terrestrial habitat within the study area.
Numenius madagascariensis	Eastern Curlew	CR	cr		PMST	Large intertidal sandflats, banks, mudflats, estuaries, inlets, sewage farms, saltworks, harbours, coastal lagoons and bays.	**Negligible**	No records of this species and no suitable habitat for this species within the study area.
Calidris ferruginea	Curlew Sandpiper	CR	cr		PMST	Large intertidal sandflats, banks, mudflats, estuaries, inlets, sewage farms, saltworks, harbours, coastal lagoons and bays.	**Negligible**	No records of this species and no suitable habitat for this species within the study area.
Grantiella picta	Painted Honeyeater	VU	v		PMST	Dry open woodlands and forests. Typically forages for fruit and nectar in mistletoes and in tree canopies.	**Low**	No records. Limited records further afield locally, with species tending to prefer higher quality Box-Ironbark and plains country to the north and northwest.

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
Anthochaera phrygia	Regent Honeyeater	CR	cr	1983	PMST	A range of dry woodlands and forests dominated by nectar-producing tree species.	**Low**	No recent records. Is known to occasionally frequent the area around Mansfield, however, is regionally exceedingly rare. Preferred habitat (Box-Ironbark woodland) for this species is not within the study area.
Potorous tridactylus trisulcatus	Long-nosed Potoroo	VU	v		PMST	Forest, heathy woodlands and heathlands.	**Low**	No records. Land use history and lack of suitable ground habitat means this species is unlikely to occur in the study area.
Dasyurus maculatus maculatus	Spot-tailed Quoll	EN	e	1986	PMST	Rainforest and wet and dry sclerophyll forests and woodlands.	**Low**	No recent records. This species has undergone considerable range contractions and within Victoria is generally restricted to the East Gippsland area. Land use history means this species is very unlikely to occur in the study area.
Petauroides volans	Southern Greater Glider	VU	v		PMST	Wet and damp sclerophyll forest with large hollow-bearing trees.	**Negligible**	No records near Mansfield. Tends to be restricted to ridgelines of well-connected forested areas in the highlands of Victoria.

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
Pseudomys fumeus	Smoky Mouse	EN	e		PMST	Coastal heath and heathy woodland, wet forest, sub-alpine heath and dry sclerophyll forest.	**Negligible**	No records. Tends to be restricted to well-connected forested areas in the highlands of Victoria.
Pteropus poliocephalus	Grey-headed Flying-fox	VU	v		PMST	Rainforest, wet and dry sclerophyll forest, woodland and urban areas.	**Medium**	Some suitable roosting and foraging habitat occurs in the study area.
Aprasia parapulchella	Pink-tailed Worm-Lizard	VU	e		PMST	Woodland and grassland with partially buried rocks.	**Low**	No records of this species and the potentially suitable rocky habitat for this species within the study area has been heavily impacted by clearing and grazing.
Delma impar	Striped Legless Lizard	VU	e	2014	PMST	Natural temperate grassland, grassy woodland and exotic grassland.	**Medium**	The rock outcrop and native grasslands in that vicinity may provide some suitable habitat and basking areas for this species. This species has been recorded previously in the Mansfield area.
Litoria spenceri	Spotted Tree Frog	EN	cr		PMST	Rocky areas along streams within forest and woodland.	**Negligible**	No records. No suitable habitat in the study area for this species.
Litoria raniformis	Growling Grass Frog	VU	v	1788	PMST	Still or slow-flowing waterbodies and surrounding terrestrial vegetation.	**Negligible**	No recent records. No suitable habitat in the study area for this species.

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
Galaxias rostratus	Flat-headed Galaxias	CR	v		PMST	Still or slow-moving waters of rivers, billabongs, lakes and swamps.	**Negligible**	No records. Creeks are highly degraded. No suitable habitat in the study area for this species.
Maccullochella macquariensis	Trout Cod	EN	e		PMST	Streams characterised by a high abundance of large woody debris.	**Negligible**	No records. Creeks are highly degraded. No suitable habitat in the study area for this species.
Maccullochella peelii	Murray Cod	VU	e		PMST	A diverse range of stream habitats in the Murray-Darling basin; principally the main channels of rivers and their major tributaries.	**Negligible**	No records. Creeks are highly degraded. No suitable habitat in the study area for this species.
Macquaria australasica	Macquarie Perch	EN	e	2006		Streams with clear water and deep, rocky holes with abundant cover.	**Negligible**	Creeks are highly degraded. No suitable habitat in the study area for this species.
Synemon plana	Golden Sun Moth	CR	v	1905	PMST	Natural temperate grassland, grassy woodland and pasture supporting spear grasses and wallaby grasses and exotic grassland dominated by Chilean needle grass.	**Low**	No recent records. Native grasses are very scattered and limited; only occurring in two small patches on the hill in the south-west. Limited suitable habitat in the study area for this species means low chance species occupies the study area.
State significance								
Burhinus grallarius	Bush Stone-curlew		cr	1924		Open woodland, treed farmland.	**Negligible**	No recent records and no suitable habitat remains in the study area due to past land use.

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
Ardea alba modesta	Eastern Great Egret		v	2019		Flooded crops, pasture, swamps, lagoons, saltmarsh, sewage ponds, estuaries, dams, roadside ditches. Breeds in trees standing in water.	**Medium**	Some suitable dams, creeks and seasonally wet habitat which may be used for foraging in the study area.
Spatula rhynchotis	Australasian Shoveler		v	2002		Prefers large, permanent lakes and swamps with deep water, stable conditions and abundant aquatic vegetation. Less commonly recorded in small or shallow waters, such as billabongs, sewage ponds, freshwater rivers and densely vegetated farm dams. Forages in open water but nests in densely vegetated freshwater wetlands, where fringing vegetation may be an important habitat feature.	**Low**	Records within 5 km of the study area but no deep, vegetated open water and therefore no suitable habitat for the species in the study area.

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
Aythya australis	Hardhead		v	2002		A mainly aquatic species preferring large, deep freshwater environments with abundant aquatic vegetation, including slow moving areas of rivers. Also occurs in brackish wetlands and may be found in deep dams and water storage ponds. Occasionally in estuarine and littoral habitats such as saltpans, coastal lagoons and sheltered inshore waters. Avoids main streams or rivers, except in calm reaches where aquatic flora is developed.	**Low**	Records within 5 km of the study area but no deep, vegetated open water and therefore no suitable habitat for the species in the study area. May be at best an infrequent visitor to the dams in the study area.
Hieraaetus morphnoides	Little Eagle		v	2004		Woodland and open areas. Rabbits are a key component of their diet. Nesting occurs in mature trees in open woodland or riparian vegetation.	**Medium**	Numerous records in the general area and the species is likely to frequent the study area on occasion searching for prey. May utilise large trees as nesting habitat in the study area.

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
Haliaeetus leucogaster	White-bellied Sea-Eagle		e	2002		Coastal areas such as beaches and estuaries, inland wetlands and major inland streams.	**Low**	Species is known to forage along major rivers and streams and may fly over the study area on occasion. Unlikely to be used for nesting habitat given the distance the study area is from Lake Eildon.
Ninox connivens	Barking Owl		cr	2017		Eucalypt forests and woodlands.	**Medium**	Numerous records in the general area and there is suitable habitat for the species in the study area.
Actitis hypoleucos	Common Sandpiper		v		PMST	Migrates to Australia from Eurasia in August where it inhabits a wide variety of coastal and inland wetlands with muddy margins before departing north in March.	**Low**	No records. This species is unlikely to forage in the seasonal wet area in the study area due to lack of habitat. At best would be a rare visitor to the dams in the study area.
Pomatostomus temporalis	Grey-crowned Babbler		v	1924		Open forests and woodlands.	**Low**	No recent records. There is some habitat in the study area which may be suitable foraging habitat for species, but given the rarity of this species, it is very unlikely to be using the study area.

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
Pyrrholaemus sagittatus	Speckled Warbler		e	2019		Eucalypt woodland with rocky gullies, ridges, tussock grasses and a sparse shrub understorey.	**Low**	Known from the local area but tends to inhabit higher quality bushland. Only limited suitable habitat for the species in the study area and at best may be an infrequent visitor.
Stagonopleura guttata	Diamond Firetail		v	2019		Open forests and woodlands with a grassy ground layer.	**Medium**	Occurs within woodlands around Mansfield and there is suitable nesting and foraging habitat for the species in the study area.
Phascogale tapoatafa	Brush-tailed Phascogale		v	1973		Drier sclerophyll forests and woodlands.	**Low**	No recent records. Very limited records around Mansfield. Only known from higher quality wooded areas some distance away from the study area.
Ornithorhynchus anatinus	Platypus		v	1966		A variety of freshwater waterbodies, particularly those with stable banks suitable for burrows, and shallow waters for foraging.	**Negligible**	No recent records. No suitable watercourses in the study area.

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
Pseudemoia pagenstecheri	Tussock Skink		e	2012		On the ground in a range of grasslands or sparse grassy woodlands from alps to coast.	**Low**	Grasslands are restricted to two small patches of moderate quality. This species is better known from grasslands in the highlands to the east and south. No suitable habitat in the study area.
Nannoperca australis (Murray-Darling lineage)	Southern Pygmy Perch (Murray-Darling lineage)		v	2006		Well-vegetated, slow-flowing or still waters including streams, lakes, billabongs and other types of wetlands. The species is found in populations upstream of the Avoca River, and recently been discovered in tributaries of the upper Lachlan and upper Murray River catchments.	**Negligible**	No records. Creeks are highly degraded. No suitable habitat in the study area for this species.
Acrodipsas brisbanensis	Large Ant Blue Butterfly		e	1993		Restricted to small, isolated remnants of open forest and woodland. The peaks of specific summits are important for 'hill-topping' during the main breeding season (Dec to Feb) when territories are established around the tops of trees.	**Low**	Very few records of this species and no recent records. The occasional presence on the ridge cannot be ruled out, but would only be an infrequent/rare visitor to the study area at best.

A2.3 Migratory species (EPBC Act listed)

Table A2.4 Migratory fauna species recorded or predicted to occur within 5 km of the study area

Scientific name	Common name	Most recent record
Migratory species		
Gallinago hardwickii	Latham's Snipe	2018
Hirundapus caudacutus	White-throated Needletail	1978
Apus pacificus	Fork-tailed Swift	PMST
Numenius madagascariensis	Eastern Curlew	PMST
Actitis hypoleucos	Common Sandpiper	PMST
Calidris ferruginea	Curlew Sandpiper	PMST
Calidris acuminata	Sharp-tailed Sandpiper	PMST
Calidris melanotos	Pectoral Sandpiper	PMST
Motacilla flava	Yellow Wagtail	PMST
Rhipidura rufifrons	Rufous Fantail	PMST
Myiagra cyanoleuca	Satin Flycatcher	PMST