

# **Review of Environmental Factors**

## **Proposed Gudja Gudja Mura Trail, Tumbarumba**

A report for Tredwell | January 2023

Report No. 22.REF-077



## Citation

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## Definitions & Acronyms used within this REF

BC Act	Biodiversity Conservation Act 2016
BOS	Biodiversity Offset Scheme
EEC	Endangered Ecological Community
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FM Act	NSW Fisheries Management Act 1994
ESD	Ecologically Sustainable Development
HBT	Hollow-bearing tree
LEP	Local Environmental Plan
LGA	Local Government Area
Likely	Taken to be a real chance or possibility
Locality	The area within a 5 km radius of the proposal
Local population (migratory or nomadic fauna)	The population comprises those individuals that are likely to occur in the study area from time to time.
Local population (resident fauna)	The population comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to use habitats in the study area.
Local population (threatened flora)	The population comprises those individuals occurring in the study area or the cluster of individuals that extend into habitat adjoining and contiguous with the study area that could reasonably be expected to be cross-pollinating with those in the study area.
Migratory species	A species specified in the schedules of the EPBC Act
NES	National Environmental Significance
NP	National Park
NP&W Act	NSW National Parks and Wildlife Act 1974
NPWS	National Parks and Wildlife Service
OEH	NSW Office of Environment & Heritage
PCT	Plant Community Type
PoM	Plan of Management
Proposal	The area to be directly affected by the proposal. That is, the footprint of the proposal.
REF	Review of Environmental Factors
Region	A biogeographical region that has been recognised and documented such as the Interim Biogeographical Regions of Australia (IBRA) (Thackway and Creswell, 1995). The study area is located within the South Eastern Highlands Bioregion.
SEPP	State Environmental Planning Policy
Subject site	The area to be directly affected by the proposal; that is, the footprint of the proposal.

Study area	The study area includes the subject site and any additional areas that are likely to be affected by the proposal, either directly or indirectly.
SVRC	Snowy Valleys Regional Council
Threatened biota	Those threatened species, endangered populations or endangered ecological communities considered known or likely to occur in the study area.
Threatened species	A species specified in the schedules of the BC Act, FM Act or the EPBC Act.



## Declaration

This Review of Environmental Factors provides a true and fair review of the proposed activity in relation to its potential effects on the environment. It addresses to the fullest extent possible, all of the factors listed in Clause 171 of the Environmental Planning and Assessment Regulation 2021.

Signed: 

Name: Steve Sass

Delegation: Director / Principal Ecologist, EnviroKey Pty. Ltd.

Date: 27 January 2023

I have examined this REF and the certification and accept the REF on behalf of Snowy Valleys Regional Council.

Signed .....

Name .....

Delegation .....

Date .....

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# 1 INTRODUCTION

EnviroKey were engaged by Tredwell Management Services (TMS) on behalf of Snowy Valleys Regional Council (SVRC) to undertake a Review of Environmental Factors (REF) to assess the environmental impacts associated with the proposed Gudja Gudja Mura Trail near Tumbarumba.

The proposal is for the construction and operation of an Aboriginal cultural heritage interpretative trail in a travelling stock reserve that would link the existing Tumbarumba to Rosewood Rail Trail to Murrays Crossing Road. An existing informal mountain bike trail already exists in this location. The general location for this proposal is shown in **Figure 1-1**.

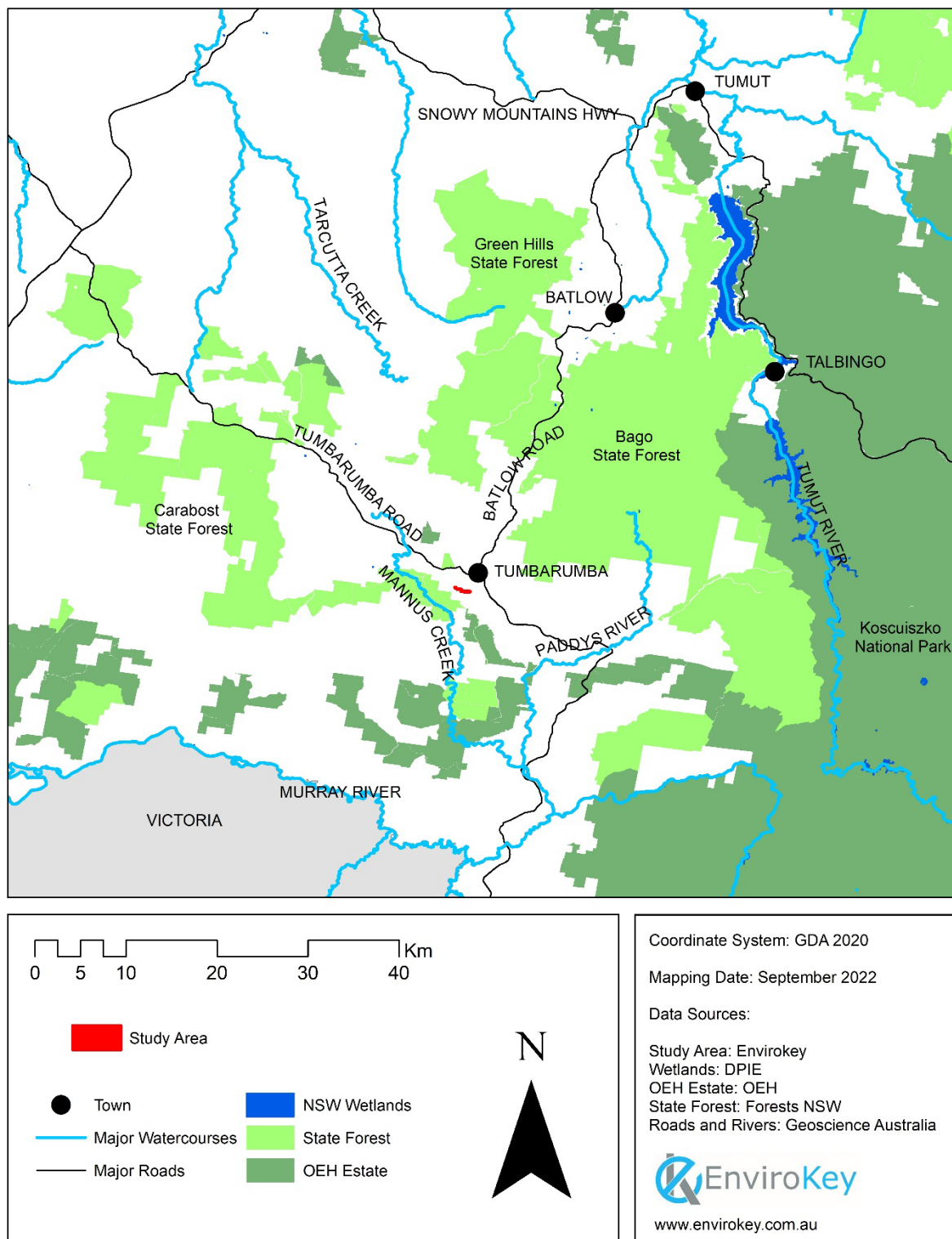
A draft Regional Tracks and Trails Masterplan for the Snowy Valleys LGA identifies the Gudja Gudja Mura Trail as an important addition to tourism in Tumbarumba, particularly as an “add-on” to the existing Tumbarumba to Rosewood Rail Trail.

Accordingly, this REF:

- Describes the existing environment;
- Identifies the environmental impacts associated with the proposed activity; and
- Recommends safeguards designed to mitigate potential impacts associated with the proposed activity.

This REF has been prepared in accordance with the requirements of Section 111 of the *Environmental Planning and Assessment Act 1979* and Section 171 of the *Environmental Planning and Assessment Regulation 2021* specifying a “duty to consider environmental impact”. This REF was prepared by suitably qualified personnel with full details of these provided (**Appendix 1**).





**Figure 1-1:** General location of the proposal

## 2 PROPOSED ACTIVITY

### 2.1 STUDY AREA

The study area applied to this REF is the existing road reserve. The Proposal is located within the South Eastern Highlands Bioregion (Thackway and Creswell, 1995, NPWS, 2003), Snowy Valleys local government area (LGA), Murray Local Land Service (LLS) region and the Bondo sub-region. The proposal is located within the Adrah Hills and Ranges landscape system (Mitchell, 2002).

### 2.2 THE PROPOSED ACTIVITY

The proposed work is as follows:

- Install adequate and suitable sediment control
- Earthworks for pathway
- Construct pathway
- Backfill and compact around pathway
- Re-establish all non-pathway areas

The proposal is identified in **Appendix 2** of this REF.

A draft Regional Tracks and Trails Masterplan for the Snowy Valleys LGA identifies the Gudja Gudja Mura Trail as an important addition to tourism in Tumbarumba, particularly as an “add-on” to the existing Tumbarumba to Rosewood Rail Trail.

### 2.3 ALTERNATIVES

#### 2.3.1 *Option 1: Do nothing*

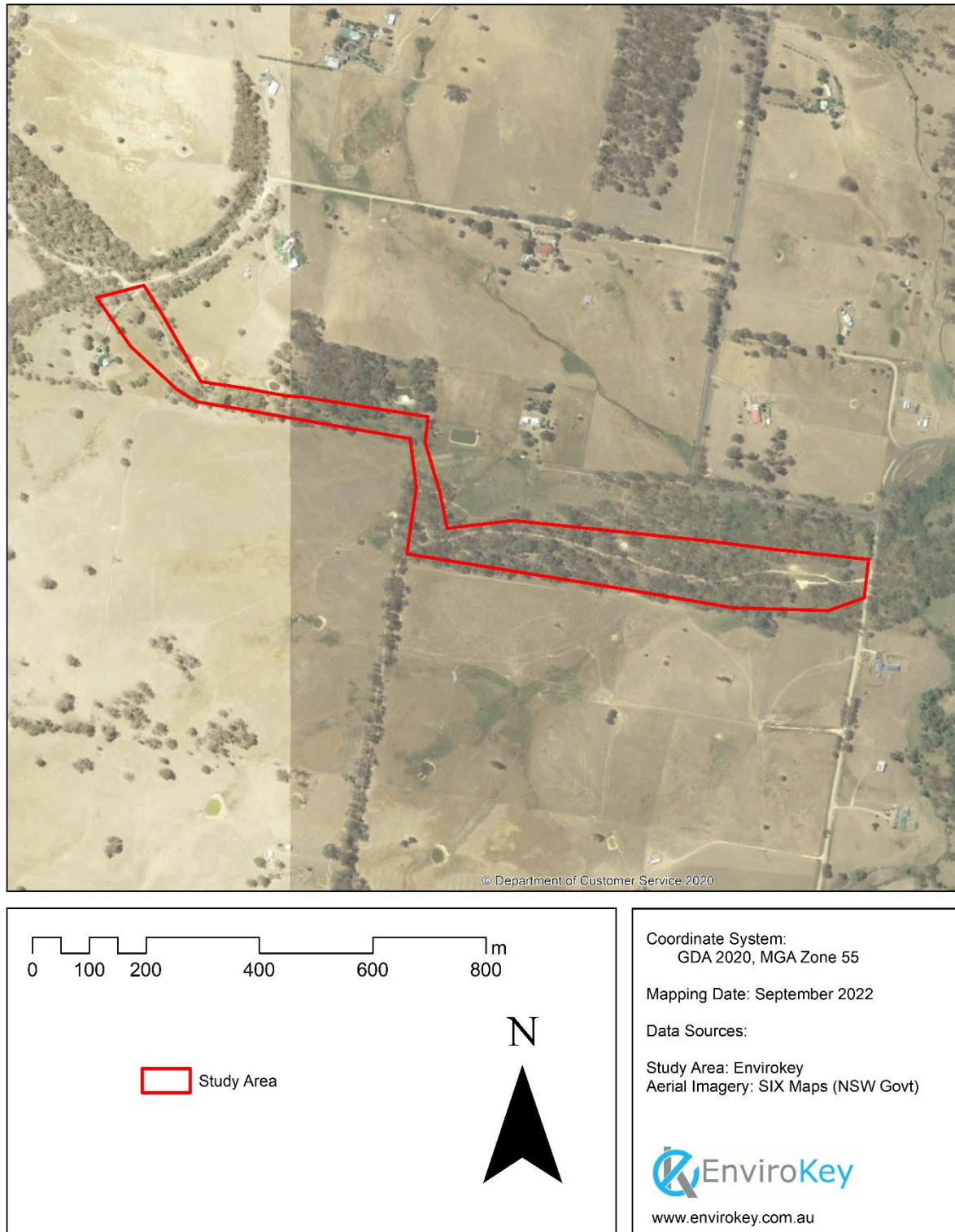
With consideration of the ‘do nothing’ approach, the objectives of the draft Snowy Valleys Regional Tracks and Trails Master Plan would not be met.

#### 2.3.2 *Option 2: Construct and operate the Gudja Gudja Mura Trail*

Option two is for the proposal as identified in **Appendix 2**. This option achieves the outcomes of the proposal while having minor environmental impact. The Gudja Gudja Mura Trail is a proposal aboriginal cultural heritage interpretative walk which would provide an immersive experience for users as well as have intended connection to country for local Aboriginal people. A draft Regional Tracks and Trails Masterplan for the Snowy Valleys LGA identifies the Gudja Gudja Mura Trail as an important addition to tourism in Tumbarumba, particularly as an “add-on” to the existing Tumbarumba to Rosewood Rail Trail.

**Given the benefits of Option 2, this is the preferred option for the proposal.**





**Figure 2-1:** Study area applied to this REF

### 3 LEGISLATIVE CONTEXT

This chapter provides information on Commonwealth, State and Local legislation that is relevant to the proposed activity.

#### 3.1 NSW ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) forms the legal and policy platform for development assessment and approval in NSW and aims to, inter alia, 'encourage the proper management, development and conservation of natural and artificial resources'.

The proposal will be determined by SVRC under Division 5.1 of the Act. The SVRC as the determining authority, must 'examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity' pursuant to Section 111 of the Act. Clause 171 of the *Environmental Planning & Assessment Regulation 2021* (EP&A Regulation) identifies matters that 'must be taken into account concerning the impact of an activity on the environment'.

Section 5A of the EP&A Act contains five factors to be considered by determining authorities when considering the significance of impacts on threatened biota associated with activities under Part 5 of the Act (the '5-part test'). Should the 5-part test determine that a '*significant effect*' on any threatened biota listed under the BC Act is likely, then the authority must prepare a Species Impact Statement. Species which occur or have the potential to occur in the study area have been considered in **Appendix 3**.

The EP&A Act provides the framework for environmental planning in NSW and includes provisions to ensure that proposals which have the potential to significantly affect the environment are subject to detailed assessment.

#### 3.2 NSW CROWN LAND MANAGEMENT ACT 2016

The study area is located within the Murrays Crossing Travelling Stock Reserve (TSR). Any proposed work must be authorised.

Part of the study area is known as the Murrays Crossing Reserve is managed by SVRC as the Crown Land Manager (Lot 7025 DP 96851, Lot 99 DP 755892, Lot 7014 DP 1028680). As the Crown land Manager under the Crown land Management Act, approvals and licenses would be granted by SVRC.

### 3.3 STATE ENVIRONMENTAL PLANNING POLICY (T&ISEPP) 2021

Part 2 of the T&ISEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. This is detailed below.

<b>Is consultation with Council required under clauses 13-15 of the infrastructure SEPP?</b>		
Are the works likely to have a substantial impact on the stormwater management services which are provided by council?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works likely to generate traffic to an extent that will strain the capacity of the existing road system in a local government area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will the works involve connection to a council owned sewerage system? If so, will this connection have a substantial impact on the capacity of the system?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will the works involve connection to a council owned water supply system? If so, will this require the use of a substantial volume of water?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a minor or inconsequential disruption to pedestrian or vehicular flow?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will the works involve more than a minor or inconsequential excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Is there a local heritage item (that is not also a state heritage item) or a heritage conservation area in the study area for the works? If yes, does a heritage assessment indicate that the potential impacts to the heritage significance of the item/area are more than minor or inconsequential?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works located on flood liable land? If so, will the works change flooding patterns to more than a minor extent?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

<b>Is consultation with Council required under clauses 16 of the T&amp;ISEPP?</b>		
Are the works adjacent to a national park, nature reserve or other area reserved under the <i>National Parks and Wildlife Act 1974</i> , or on land acquired under that Act?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works adjacent to an aquatic reserve or a marine park declared under the <i>Marine Estate Management Act 2014</i> ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Is the proposal in the Sydney Harbour Foreshore Area as defined by the <i>Sydney Harbour Foreshore Authority Act 1998</i> ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works for the purpose of residential development, an educational establishment, a health services facility, a correctional facility or group home in bush fire prone land?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Would the works increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map? (Note: the dark sky region is within 200 kilometres of the Siding Spring Observatory)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works on buffer land around the defence communications facility near Morundah? (Note: refer to Defence Communications Facility Buffer Map referred to in clause 5.15 of Lockhart LEP 2012, Narrandera LEP 2013, and Urana LEP 2011).	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works on land in a mine subsidence district within the meaning of the <i>Mine Subsidence Compensation Act 1961</i> ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

### 3.4 NSW WILDERNESS ACT 1987

The objectives of the NSW *Wilderness Act 1987* are:

- to provide for the permanent protection of wilderness areas;
- to provide for the proper management of wilderness areas; and
- to promote the education of the public in the appreciation, protection and management of wilderness.

The proposal is not located within an area listed under the NSW *Wilderness Act 1987*.



### 3.5 NSW BIODIVERSITY CONSERVATION ACT 2016

The *Biodiversity Conservation Act 2016* (BC Act) specifies that a Test of Significance (ToS) must be considered by decision-makers regarding the effect of a proposed development or activity on threatened species or ecological communities, or their habitats (OEH, 2018). These factors form part of the threatened species assessment process under the *Environmental Planning and Assessment Act 1979* (EP&A Act) and are collectively referred to as the ToS.

Determining authorities have a statutory obligation, under Division 5.1 of the EP&A Act, to consider whether a proposal is likely to significantly affect threatened species, populations or ecological communities, or their habitats by applying the ToS. This is done so within **Appendix 4**.

### 3.6 COMMONWEALTH ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) enables the Australian Government to join with the states and territories in providing a national scheme of environment and heritage protection and biodiversity conservation to ensure that actions likely to cause a 'significant impact' on matters of national environmental significance (NES) undergo an assessment and approval process. Under the Act, an action includes a project, undertaking, development, or activity.

Under the EPBC Act, actions that have, or are likely to have a significant impact on a matter of national environmental significance (NES) require approval from the Australian Government Minister for the Department of the Environment (DotE) (DoCCEE&W, 2022).

The nine matters of NES that are protected under the EPBC Act are:

- Listed threatened species and ecological communities
- Listed migratory species
- Wetlands of international importance
- Commonwealth marine environment
- World heritage properties
- National heritage places
- The Great Barrier Reef Marine Park
- Nuclear actions
- A water resource, in relation to coal seam gas development and large coal mining development.

The Significant Impact Guidelines for the EPBC Act (DoCCEE&W, 2022) set out criteria to assist in determining whether an action requires approval and in particular, whether a proposed action is likely to have a 'significant impact' on a matter of NES.

If a proposed action is likely to have a significant impact on a matter of NES, referral of the proposal to the Department of the Environment and Energy is required to confirm whether the Commonwealth considers the proposal a 'controlled action' and subsequently requiring Minister approval under the EPBC Act.

This REF provides an assessment to ascertain whether the proposal will require referral to the Commonwealth. This assessment is provided within **Appendix 5**.

### 3.7 NSW PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997 (POEO ACT)

The POEO Act provides an integrated system of licensing for polluting activities within the objective of protecting the environment. Section 148 of this Act requires notification of pollution incidents. Section 120 of this Act provides that it is an offence to pollute waters. Schedule 1 of the POEO Act describes activities for which an Environment Protection Licence is required.

SVRC must ensure that all stages of the proposal are managed to prevent pollution, including pollution of waters. Any contractor and SVRC workers are obliged to notify the relevant authorities (e.g. Environment Protection Authority (EPA)) when a 'pollution incident' occurs that causes or threatens 'material harm' to the environment.

The proposal does not conform with the definition of a scheduled activity under this Act, therefore an Environment Protection Licence would not be required.

### 3.8 NSW HERITAGE ACT 1977

The NSW *Heritage Act 1977* defines 'environmental heritage' and can include places, buildings, works, relics, moveable objects, and precincts. A property is a heritage item if it is:

- listed in the heritage schedule of the Tumbarumba Local Environmental Plan (LEP);
- listed on the State Heritage Register, a register of places and items of particular importance to the people of NSW; or
- listed in the National Heritage Database.

Heritage items are considered in this REF in Section 4.8.

### 3.9 STATE ENVIRONMENTAL PLANNING POLICY KOALA HABITAT PROTECTION 2021

State Environmental Planning Policy (SEPP) Koala Habitat Protection (2021) encourages the conservation and management of natural vegetation areas that provide habitat for Koalas, to ensure that permanent free-living populations would be maintained over their present range and reverse the current trend of koala population decline. Local councils cannot approve development in an area affected by the policy without consideration of the Approved Koala Management Plan for the land.

The proposal is within areas mapped as Koala Development Application Map and Site Investigation Area for Koala Plans of Management by the SEPP. However, given the nature of the proposal area and the minor impact to native and non-native vegetation, no consideration of the Koala SEPP is deemed necessary.

### 3.10 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

Ecologically sustainable development (ESD) involves the effective integration of social, economic, and environmental considerations in decision-making processes. In 1992, the Commonwealth and all state and territory governments endorsed the *National Strategy for Ecologically Sustainable Development*. In NSW, the concept has been incorporated in legislation such as the EP&A Act and Regulation. For the purposes of the EP&A Act and other NSW legislation, the Intergovernmental Agreement on the Environment (1992) and the *Protection of the Environment Administration Act* 1991 outline the following principles which can be used to achieve ESD.

1. The precautionary principle: that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions can be guided by:
  - (i) careful evaluation to avoid, wherever practicable, serious, or irreversible damage to the environment, and
  - (ii) an assessment of the risk-weighted consequences of various options.
2. Inter-generational equity: that the present generation should ensure that the health, diversity, and productivity of the environment are maintained or enhanced for the benefit of future generations.
3. Conservation of biological diversity and ecological integrity: that conservation of biological diversity and ecological integrity should be a fundamental consideration.

The aims, structure and content of this REF are guided by these principles. The precautionary principle has been adopted in the assessment of impact; all potential impacts have been considered and mitigated where a risk is present. Where uncertainty exists, measures have been suggested to address it.

## 4 ENVIRONMENTAL ASSESSMENT

### 4.1 BIODIVERSITY

#### 4.1.1 *Database searches*

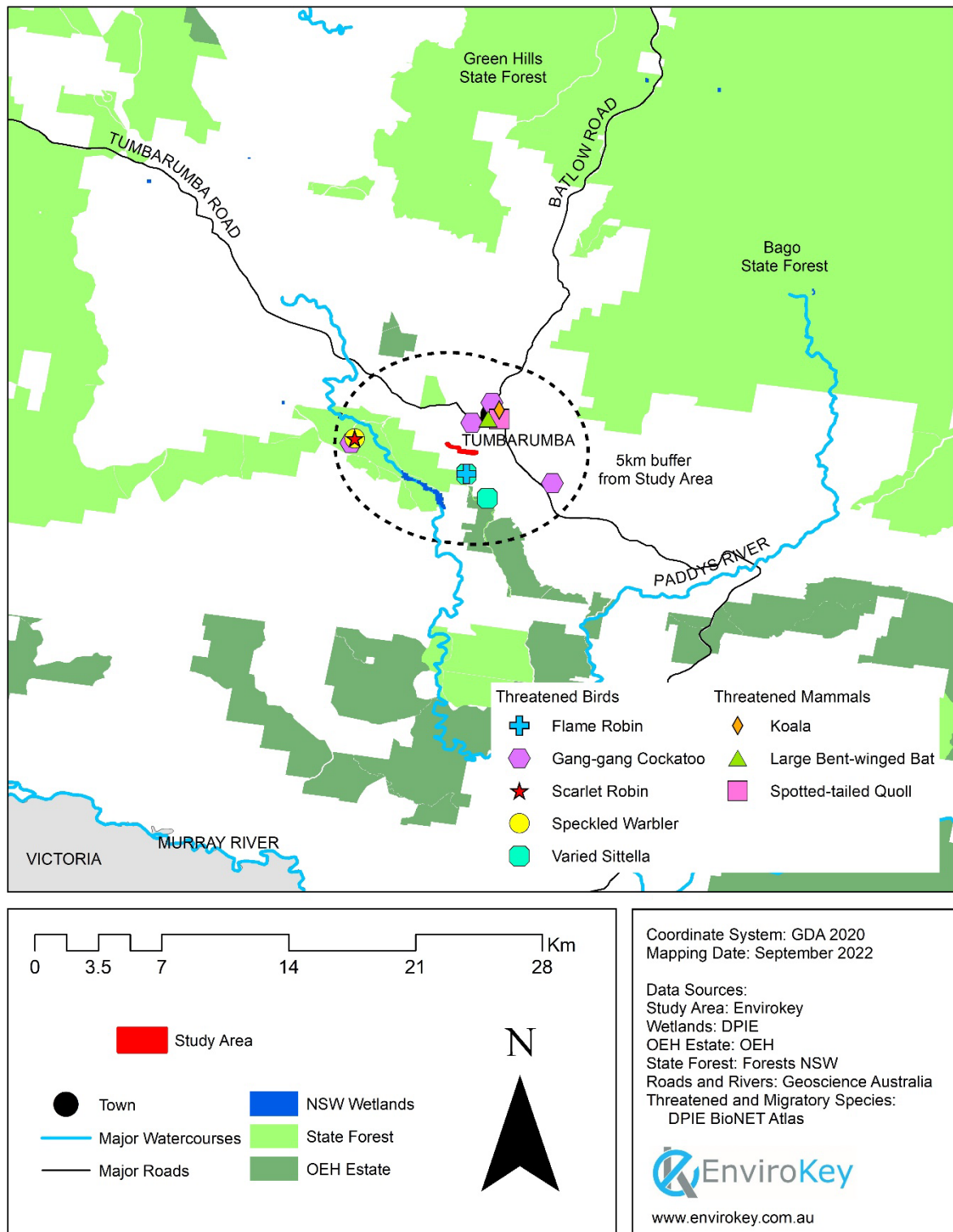
Background research was carried out to collect and review information on the presence or likelihood of occurrence of:

- Threatened terrestrial and aquatic species and their habitat
- Threatened ecological communities
- Important habitat for migratory species
- Areas of outstanding biodiversity value.

The following databases and information sources were reviewed:

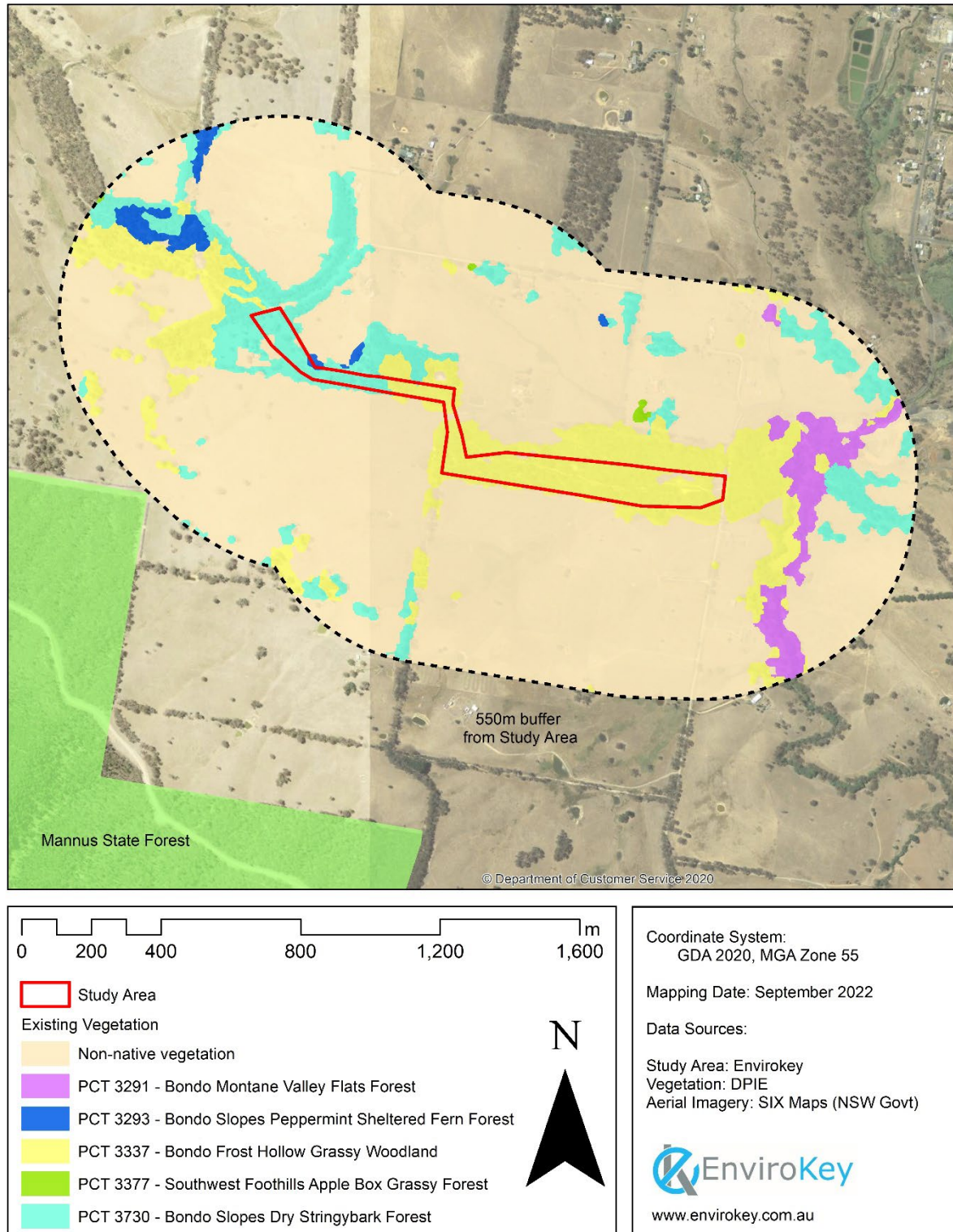
- BioNet - the website for the Atlas of NSW Wildlife and Threatened Biodiversity Data Collection (TBDC) – searched [September 2022]
- BioNet Vegetation Classification database – reviewed [September 2022]
- Department of Agriculture, Water, and the Environment (DAWE) Protected Matters Search Tool – searched [September 2022]
- NSW DPI Fisheries Spatial Data Portal
- NSW State Vegetation Type Map

These searches identified records of threatened and migratory species as well as the NSW State Vegetation Type (SVT) mapping. This data is provided in **Figure 4-1-2**.



**Figure 4-1:** Existing records of threatened species within the locality





**Figure 4-2:** Existing vegetation community mapping from the NSW State Vegetation Type map

### 4.1.2 Existing Environment

The existing environment is characterised by woodland and open forest. The native vegetation is consistent with two plant community types (PCT). These being PCT 3337 Bondo Frost Grassy Woodland and PCT 3730 Bondo Slopes Dry Stringybark Forest.

The vegetation in the study area is in moderate to good condition given the low diversity of weed species (**Appendix 10**). However, a patch and some smaller areas of Scotch Broom (*Cytisus scoparius*), a weed of National Significance and a Priority Weeds under the NSW Biosecurity Act 2015, was identified in the central portion of the study area. The study area also contains high numbers of hollow-bearing trees (HBT) (**Figure 4-5**). Our searches revealed at least 83 HBT (**Figure 4-5, Appendix 9**) confirming the potentially high value of this habitat for hollow-dependant fauna such as the NSW listed threatened species Squirrel Glider and nationally listed species Greater Glider, both known from the Tumbarumba area.

The flora and fauna species recorded are consistent with those expected in the landscape around Tumbarumba (**Appendix 10 and 11**).

#### Threatened and Migratory Fauna

Two threatened fauna species listed under the BC Act were recorded during the field survey. These being the Brown Treecreeper and Dusky Woodswallow. Both species were recorded in the woodland sections of the study area. A single Brown Treecreeper was noted by an alarm call, while a pair of Dusky Woodswallow were observed foraging in the lower western portion of the study area. Previously recorded sightings of threatened species indicate that some species frequent the areas adjacent to the proposal. **Appendix 3, 4 & 5** details threatened species and an analysis of their potential to be impacted by the proposal.

No EPBC Act listed biota were recorded during the field survey.

#### Threatened Flora Species

No flora species listed under the BC Act or the EPBC Act were found within the proposal footprint.

#### Threatened Ecological Communities

The PCT recorded within the study area are not consistent with any Threatened Ecological Community (TEC) as listed under the BC Act or the EPBC Act. This was also confirmed by a review of the NSW BioNET Vegetation Information System (DPIE/OEH, 2022).

#### Limitations

A common limitation of many biodiversity studies is the short period of time in which they are conducted or the season they are conducted in. When combined with a lack of seasonal sampling this can lead to either low detection rates or false absences being reported. This is also particularly relevant to highly mobile species that may not have been in the Subject Land



at the time of the survey. Given this, further analysis was conducted to evaluate which threatened and migratory biota were likely to occur within the vicinity of the proposed activity proposed activity based on the presence of habitat. This is detailed within **Appendix 3**.

**Table 4-4-1:** Examples of vegetation and habitat within the vicinity of the proposal.



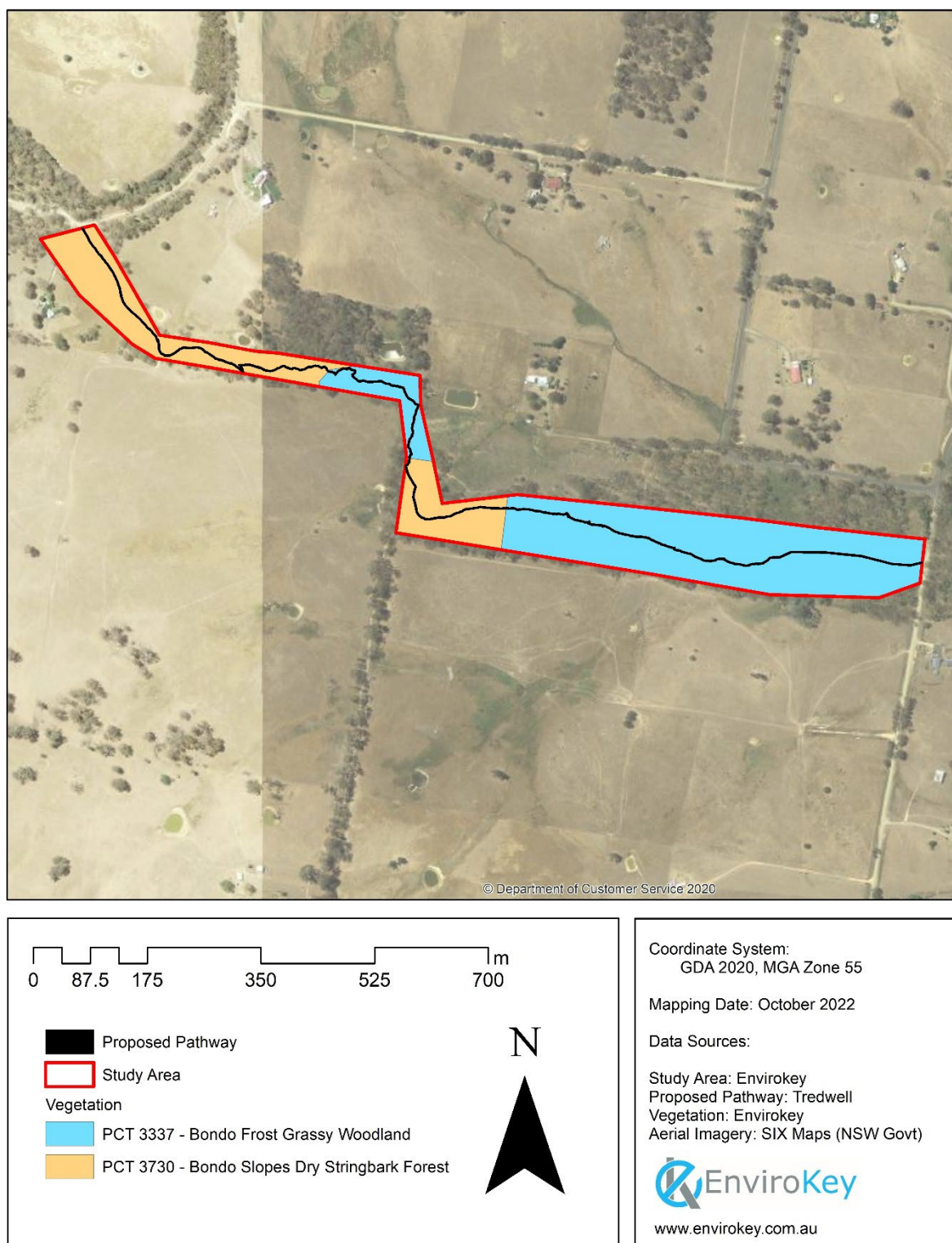
### 4.1.3 *Impact Assessment*

There are a number of known and potential impacts that could occur as a result of the proposal. These were identified by overlaying the GIS shapefile provided and adding a 1.5 metre buffer (resulting in a 3 metre wide clearing corridor). On this basis, the proposal would result in the potential removal of minor amounts of native vegetation (<0.6 hectare) and disturbance to hollow-bearing trees. Overall, the footprint of the proposal removes mostly ground and mid-storey vegetation.

Nonetheless, the proposed impact is minor in nature and the potential impacts to biodiversity are manageable with appropriate safeguards.

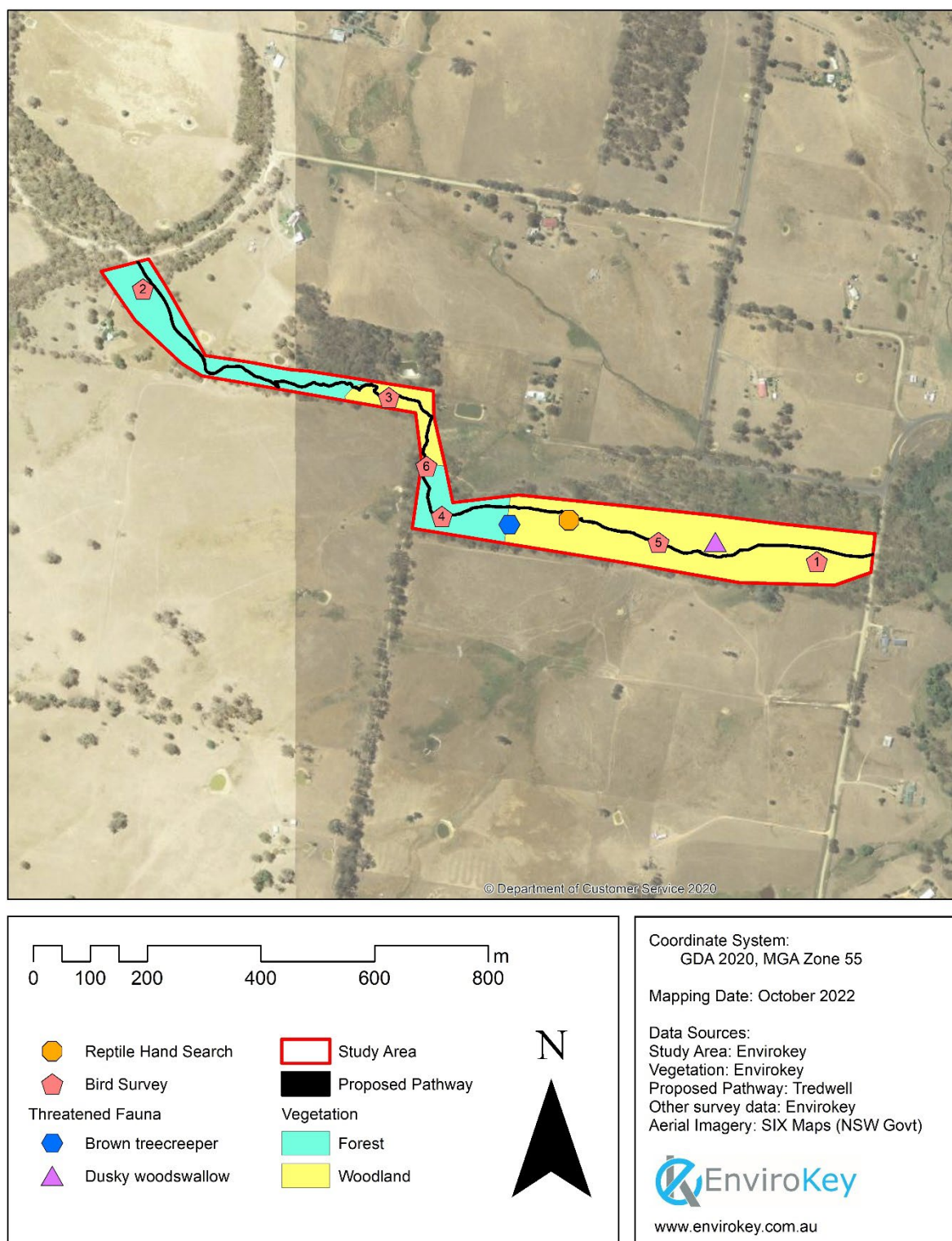
Significance Assessments completed in accordance with the BC Act and EPBC Act have determined that it is 'unlikely' that the proposed activity will have a significant effect on threatened species, populations, communities, and their habitats (**Appendix 4 & 5**).



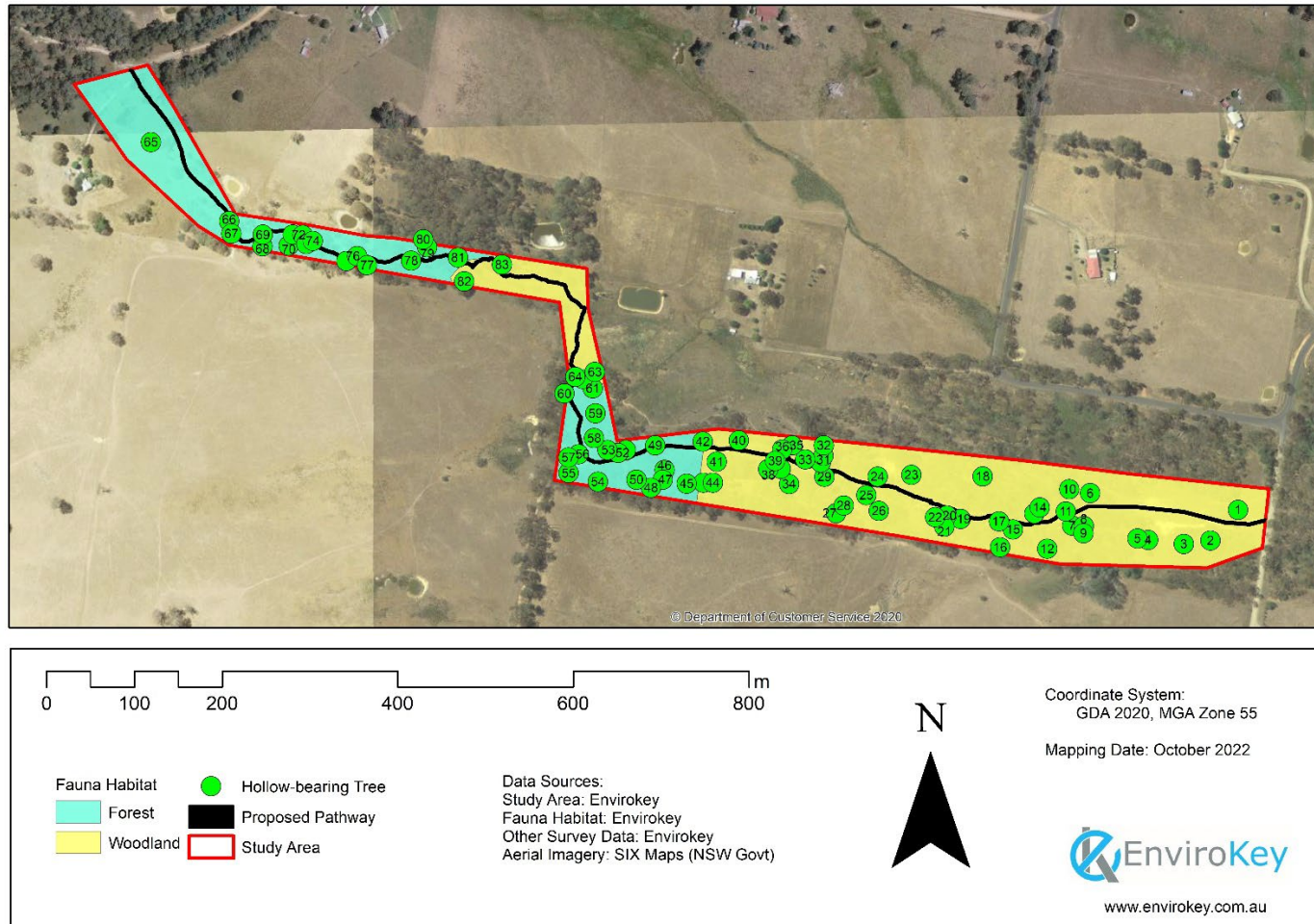


**Figure 4-3: Vegetation communities within the study area**





**Figure 4-4:** Field survey locations and threatened species recorded within the study area



**Figure 4-5:** Hollow-bearing tree locations within the study area

#### 4.1.4 Proposed Safeguards

EnviroKey recommend the following safeguards:

- Construction activities should not occur during intense rain events or in a predicted extended rain event.
- Erosion and sediment control plan should be established and maintained to avoid sediment runoff during any vegetation clearing and construction and should only be removed once the ground is stabilised.
- Erosion and sediment controls would be in position prior to the proposed activity commencing and left *insitu* for as long as necessary for the site to become stabilised. However, should these controls begin to deteriorate and lose functionality; they are to be replaced immediately.
- No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.
- Removal of any hollow-bearing trees should only be carried out under a hollow-bearing tree protocol. This protocol would also include direct supervision of a suitably qualified and experienced ecologist. The ecologist would collect, hold and relocate any microchiropteran bats, or arboreal mammals to adjoining habitat within the study area during the hollow-bearing tree removal process.
- No HBT can be removed between October to January inclusive to avoid the known breeding season of Gang-gang Cockatoo.
- There must be no release of dirty water into drainage lines and/or waterways.
- All fuels, chemicals and liquids are to be stored in an impervious bunded area or containers.
- An emergency spill kit must be kept on site at all times and maintained throughout the construction work. The spill kit must be appropriately sized for the volume of substances at the work site.

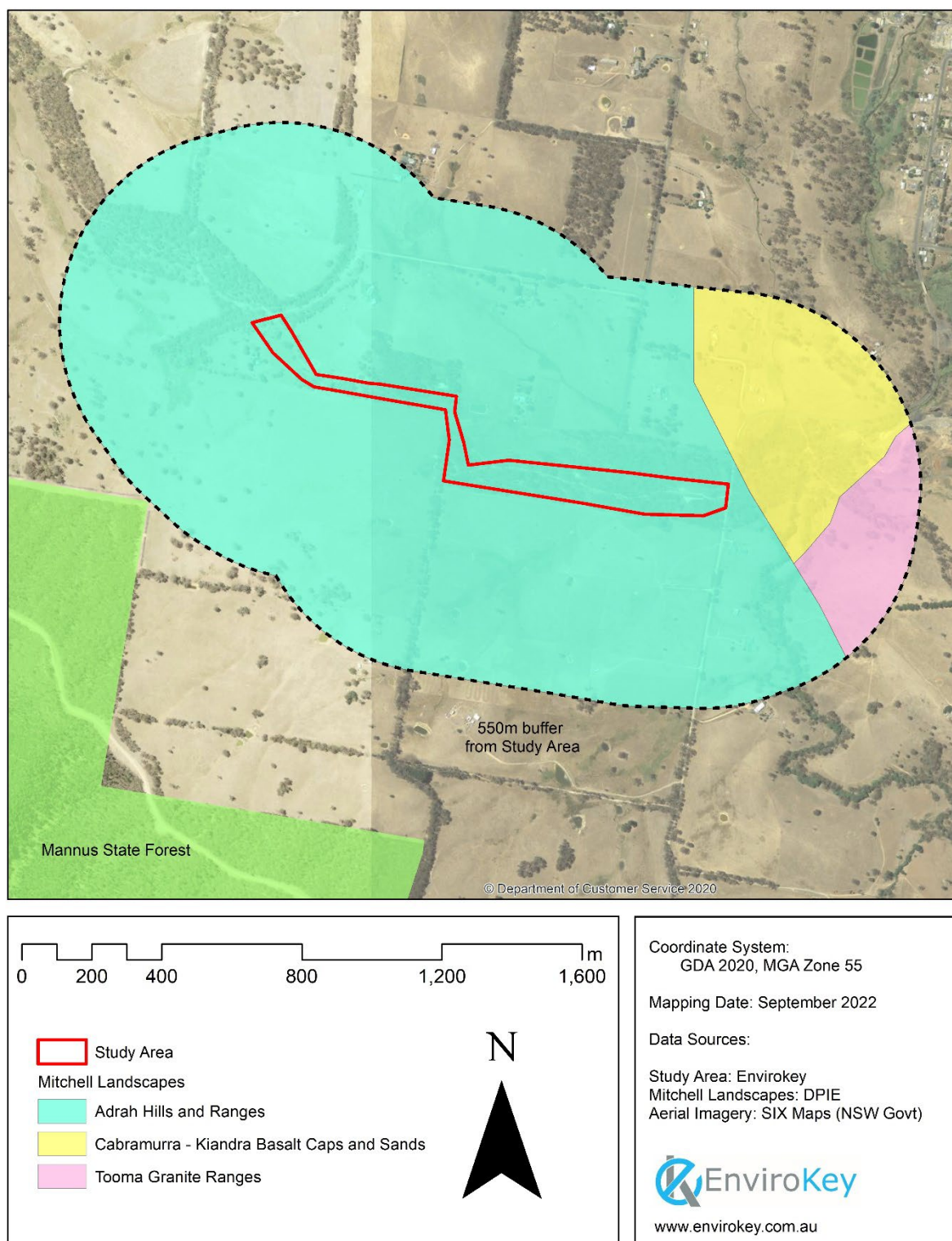
## 4.2 LANDFORM, SOILS, HYDROLOGY AND WATER QUALITY

### 4.2.1 Existing Environment

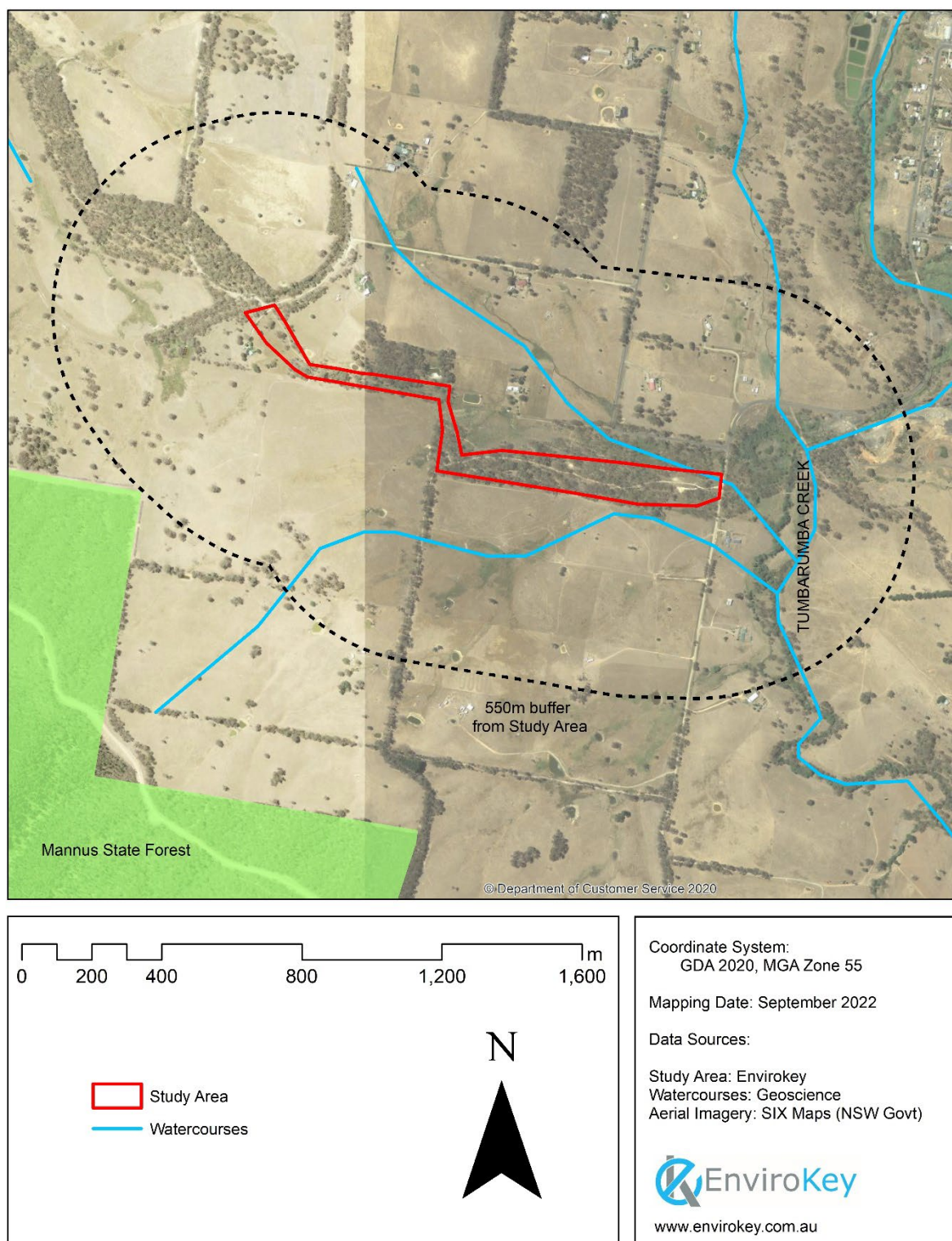
The proposal is located within the Adrah Hills and Ranges Mitchell Landscape (**Figure 4-6**). This landscape is characterised by rolling hills, low ranges and peaks on Ordovician geology with a general elevation of between 250-720 metres. Soils are thin red and brown textured soils merging to yellow harsh soils on valley floors.

No waterways traverse the proposal (**Figure 4-7**).





**Figure 4-6: Mitchell landscapes in the vicinity of the proposal**



**Figure 4-7: Waterways within the vicinity of the proposal**



The proposal is located on an Erosional Soil Landscape. This is defined as:

*'Soil landscapes that have been sculpted primarily by the erosive action of running water. Streams are well-defined and capable of transporting their sediment load. Soils are usually shallow (with occasional deep patches) and mode of origin is variable and complex. Soils may be either absent, derived from waterwashed parent materials or derived from in situ weathered bedrock. In many instances, subsoils have formed in situ while topsoils have formed from materials washed from further upslope. Erosional soil landscapes usually consist of steep to undulating hillslopes and may include tors, benches'*

There are no occurrences or likely occurrences of acid sulfate soils within proximity of the proposal as mapped on the Acid Sulfate Soil Risk Mapping.

#### 4.2.2 Impact Assessment

The proposal would result in minor earthworks, including the potential removal of less than 0.6 hectares of vegetation. During construction, disturbed areas could be subject to erosion resulting in deterioration of the existing environment and increased turbidity and a decrease in water quality entering local waterways.

The key factor influencing the extent of sediment runoff and stormwater pollution is likely to be weather events. The occurrence of a major storm event at a critical phase of the construction period could potentially result in higher levels of turbid run-off into the waterway.

#### 4.2.3 Proposed Safeguards

EnviroKey recommend the following safeguards:

- To manage erosion and sedimentation during construction, a sediment and erosion control plan shall be prepared. Erosion and sediment control practices should follow the recommendations and checklists outlined in:
  - *Managing Urban Stormwater: Soils and Construction Volume 1* (NSW, 2006)
  - *Managing Urban Stormwater: Soils and Construction – Installation of Services Vol 2A* (DECC, 2007)
- Rehabilitate exposed bare ground at the completion of the work.
- Erosion and sediment controls would be in position prior to proposed activity commencing and left *insitu* for as long as necessary for the site to become stabilised. However, should these controls begin to deteriorate and lose functionality; they are to be replaced immediately.
- No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.



## 4.3 NOISE AND VIBRATION

### 4.3.1 *Existing Environment*

While no recording or ongoing monitoring of acoustic qualities has been completed, the proposal area is located in setting expected to consist of minor levels of moderate background noise including livestock, people, machinery and vehicles.

A desktop review identifies a number of potentially sensitive receivers within the vicinity of the proposal (**Figure 4-8**). One of these is located within 100 metres of the proposal.

### 4.3.2 *Impact Assessment*

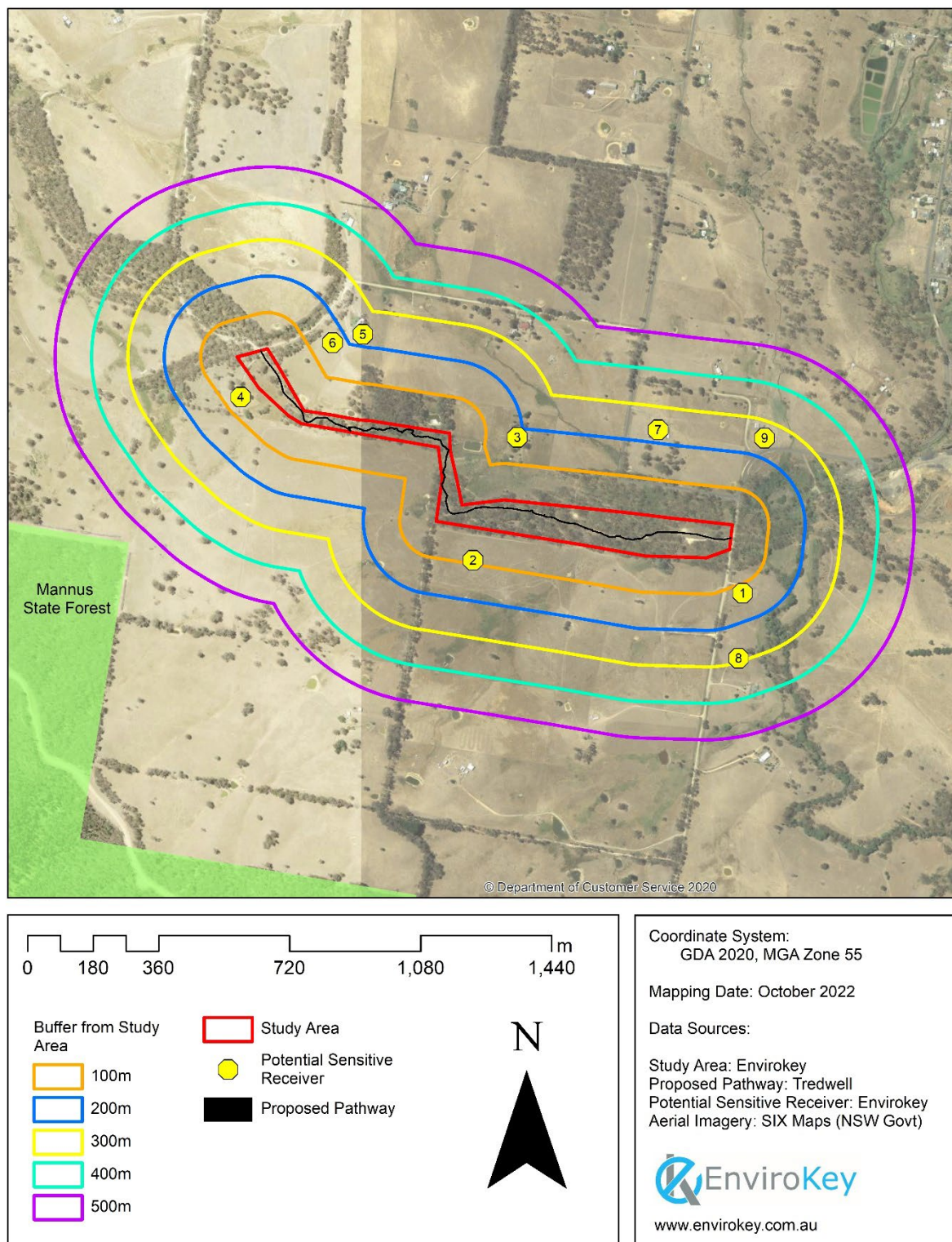
The proposal would result in noise and vibration from construction equipment such as machinery and vehicles. It is expected that noise and vibration would vary during the construction period. The proposed activity would not involve any blasting or drilling.

Upon completion, noise and vibration associated with construction activity would cease. During operation, and the distance of receivers away from the proposal, it is more than likely that potential impacts would be minor and inconsequential given the existing mountain bike riding track in the study area.

### 4.3.3 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- Construction activity would be restricted to the following standard working hours:
  - Monday-Friday: 7:00am to 6.00pm
  - Saturday: 8.00am to 1.00pm
  - Sunday and Public Holidays: no work
- Should the proposed work be outside of standard working hours, additional mitigations measures may be required.
- Completion of the proposed work in the minimum timeframe practicable.
- Noise output would be minimised through the use of modern equipment that is regularly maintained.
- Machinery engines would be switched off, minimising noise emissions, rather than being left idling for long period.



**Figure 4-8:** Potentially sensitive receivers adjacent to the study area

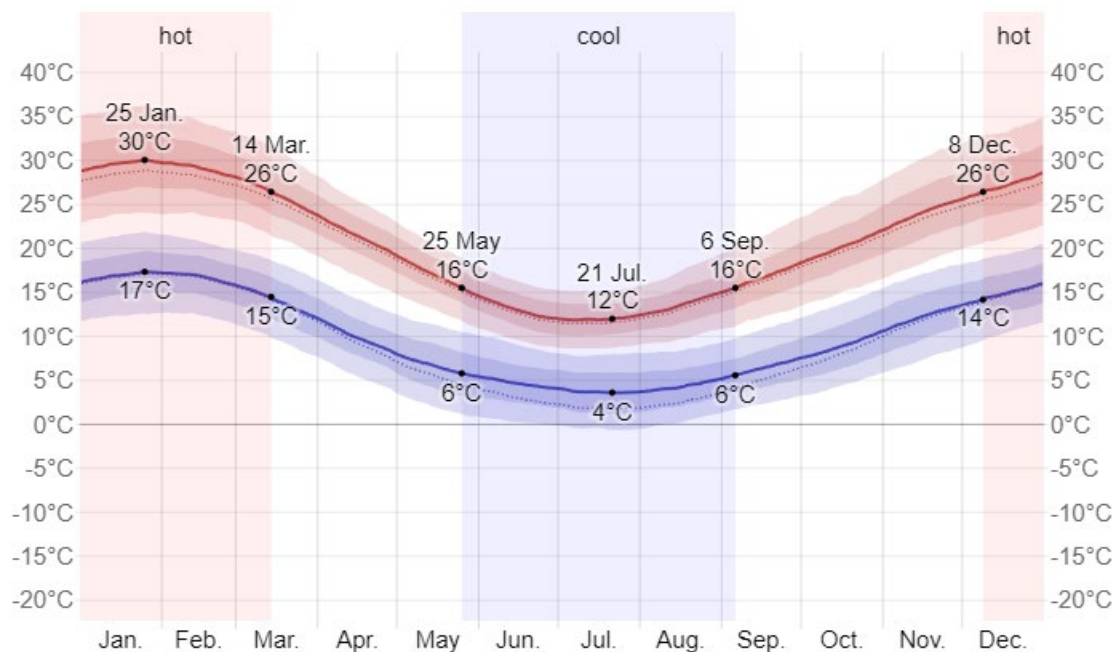
## 4.4 CLIMATE AND AIR QUALITY

### 4.4.1 Existing Environment

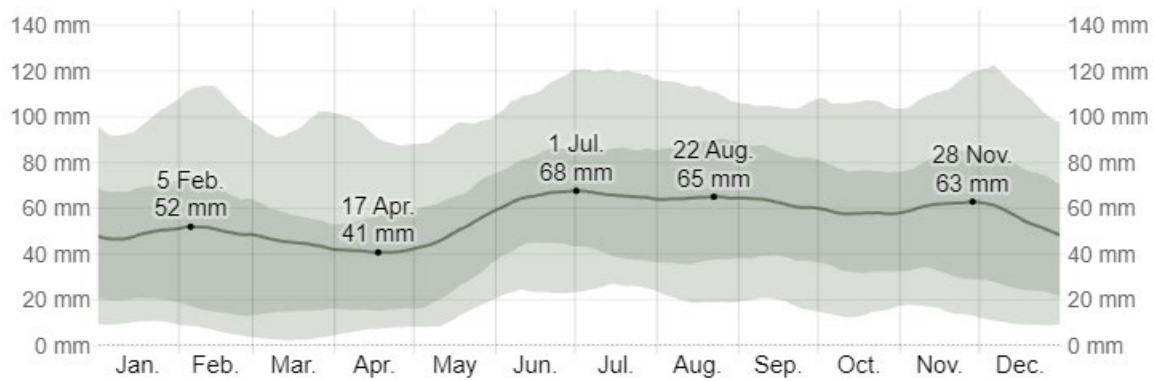
Climatic data was sourced from the closest official weather station located at Tumut. The hottest month of the year is January, with an average high of 30°C and a low of 17°C. The coldest month is July with an average low of 4°C and a high of 12°C (**Figure 4-9**). Rain falls throughout the year in Tumut. The month with the most rain is July, with an average rainfall of 66 millimetres while April has the least monthly rainfall with an average of 41 millimetres.

The most recent State of the Environment Report identified the Snowy Valleys LGA as having 'very good' air quality and that the contamination occurs mostly from motor vehicles and smoke from bush fires and hazard reduction activities.

Air quality in the study area is likely to be high considering its location away from primary sources of air containments such as heavy industry and major traffic areas.



**Figure 4-9:** Average Temperature data for the Tumut Weather Station (courtesy of WeatherSpark)



**Figure 4-10:** Average Rainfall data for the Tumut Weather Station (courtesy of WeatherSpark)

#### 4.4.2 Impact Assessment

##### Construction Impact

Local air quality has the potential to decrease slightly during the construction phase should the generation of dust and fine particulate matter during earthworks and when potential vegetation clearing occurs. Emissions would also be generated during the operation of equipment, such as excavators, heavy machinery, and motor vehicles. These negative impacts would be restricted to the construction period and are considered negligible given the location of the site in the local context.

##### Post Construction Impact

There is no post construction impact anticipated.

#### 4.4.3 Proposed Safeguards

EnviroKey recommends the following safeguards:

- Any stockpiles with the capacity to cause dust should be dampened or otherwise controlled to suppress dust.
- Trucks carrying loads of material such as soil, road base, gravel or spoil should be covered.
- All machinery should be periodically inspected and maintained to ensure minimum levels of emissions.
- Machinery engines should be switched off, rather than left idling for long periods.

## 4.5 VISUAL IMPACT

### 4.5.1 *Existing Environment*

The existing environment is dominated by forest and woodland within an agricultural setting.

### 4.5.2 *Impact Assessment*

Unmanaged, visual values may be comprised of damage to retained vegetation and the invasion of exotic flora, refuse from construction and hap-hazard storage of machinery. The main visual impacts that would occur as a result of the proposed work are:

- The potential removal of a relatively small area of vegetation (<0.6 hectares).
- The excavation/importation of soil/fill if required for the proposal. These impacts are considered temporary as all disturbed areas would be stabilized following the completion of construction.
- The influx of machinery. This impact is unavoidable and is only relevant during the construction period.

### 4.5.3 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- The proposed work area should be kept clean and orderly at all times, ensuring that no waste is left at the site following completion of the proposed work.
- Machinery and equipment storage should be conducted in a single location, where possible.
- Temporary sediment controls should be removed from the site once it is stabilised.

## 4.6 SOCIO-ECONOMIC IMPACT

### 4.6.1 *Existing Environment*

The study area comprises no driveways to homes, business, or road intersections that form an important part of the community.

### 4.6.2 *Impact Assessment*

It is anticipated that no road closures would be expected to facilitate the proposed work.

The proposed work may also have the potential to impact on the safety of the public that use the crown land and site workers. Construction sites are known to have an inherent risk to workers and the general public using areas within or adjacent to such sites. However, these impacts would be temporary; occurring only during the construction period and would be mitigated by appropriate safeguards.



### 4.6.3 Proposed Safeguards

EnviroKey recommend the following safeguards:

- Potential hazards should be minimised by ensuring that the proposed works are completed in accordance with relevant SVRC standards and WHS requirements.
- Dial Before You Dig **MUST** be consulted to ensure that the locations of all underground services are known **PRIOR** to excavation commencing. Appropriate actions must be formulated by the Project Manager and Site Supervisor to minimise the risk of these services becoming disrupted.
- Construction activity would avoid weekends and public holidays where possible.
- The proposed works would be completed in the minimum timeframe practical.

## 4.7 ABORIGINAL HERITAGE

### 4.7.1 Approach

To consider whether there are any Aboriginal heritage items within the vicinity of the proposed work, a search of the Aboriginal Heritage Information Management Systems (AHIMS) maintained by OEH was conducted (**Appendix 6**). An assessment with consideration of the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* was also conducted (section 4.7.2).

### 4.7.2 Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales

The purpose of the code of practice is to assist individuals and organisations (such as SVRC) to exercise due diligence when carrying out activities that may harm Aboriginal objects and to determine whether they should apply for consent in the form of an Aboriginal Heritage Impact Permit (AHIP) (DECCW, 2010). In the context of protecting Aboriginal cultural heritage, due diligence involves taking *reasonable and practical measures* to determine if an action will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm.

A search of the Aboriginal Heritage Information Management Systems (AHIMS) maintained by OEH found four Aboriginal objects within the vicinity of the proposal, suggesting a potentially highly significant landscape to Aboriginal people (**Appendix 6**).

The proposed work is not consistent with the low impact activities prescribed within the NPW Regulation in that it will be conducted on land that is previously disturbed by past activities or that the land has been the subject of human activity where disturbance remains *clear and observable*.

Based on this interpretation and application of the *Due Diligence* guidelines, the proposed works require consultation with the local Aboriginal community. Unless the consultation process indicates otherwise, an Aboriginal Cultural Heritage Assessment would be required.



It should also be noted that **any** decision about carry out further investigation through onsite survey of Aboriginal objects, consultation, an Aboriginal Cultural Heritage Assessment or applying for an AHIP using the information obtained through exercising *Due Diligence* is the responsibility of SVRC.

#### 4.7.3 *Proposed Safeguards*

With consideration of the document '*Due Diligence Code of Practice for the protection of Aboriginal Objects in New South Wales*' the following safeguards are proposed:

- The proposed works require consultation with the local Aboriginal community. Unless the consultation process indicates otherwise, an Aboriginal Cultural Heritage Assessment would be required.
- During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any Aboriginal objects.
- If human skeletal remains are found during the activity, work must stop immediately, secure the area to prevent unauthorised access and contact NSW Police and OEH.
- If potential material is identified, construction activities proximal to the potential material would cease and the NSW OEH will be contacted immediately to determine appropriate management. Notification procedures can be found at [www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm](http://www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm) The NPW Act requires that, if a person finds an Aboriginal object on land and the object is not already recorded on AHIMS, they are legally bound under s.89A of the NPW Act to notify NSW Heritage as soon as possible of the object's location. This requirement applies to all people and to all situations, including when you are following the Due Diligence Code.

## 4.8 HISTORIC HERITAGE

### 4.8.1 *Approach*

To consider whether there are any historic heritage items within the vicinity of the proposed activity, a search for items of Commonwealth, State and Local significance was completed. This involved a review of the Tumbarumba LEP and the ESpatial Planner through the DPE. In addition, searches for any items that were potential relics as defined by the NSW *Heritage Act 1977*, were also undertaken during the site analysis.

### 4.8.2 *Results*

There are no known local heritage items within the vicinity of the proposal and no items of potential relevance were identified during the site analysis.

The results of the database searches are provided within **Appendix 7**.

### 4.8.3 *Potential Impacts*

No heritage items were identified within the vicinity of the proposal; therefore, no potential impacts are anticipated as a result of the proposed work.

### 4.8.4 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any item that could be of historic heritage.
- If potential material is identified (other than that detailed within this REF), construction activities proximal to the potential material would cease and the NSW Heritage Office will be contacted immediately to determine appropriate management.

## 4.9 TRAFFIC MANAGEMENT

### 4.9.1 *Existing Environment*

The proposal area is located between two local roads, Camden Park Road and Murrays Crossing Road. Both roads are unsealed and carry local traffic only.

### 4.9.2 *Impact Assessment*

During the construction period, some minor disruptions may occur on Camden Park Road and Murrays Crossing Road to facilitate vehicle movements into the construction site.

Post construction, vehicle movements are not anticipated to increase significantly as mountain bike users already use this area.

### 4.9.3 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- A traffic management plan (to prepared by SVRC) would be implemented, which would include the use of signs, barriers, temporary speed zones and traffic control for the duration of the proposed works.
- The proposed works would be completed in accordance with WHS legislation.
- Construction would avoid weekends and public holidays where possible.
- The proposed works would be completed in the minimum timeframe practical.

## 4.10 WASTE MINIMISATION AND RESOURCE MANAGEMENT

### 4.10.1 *Impact Assessment*

The proposed activity is expected to result in the following waste, some of which would be able to be recycled or reused:

- Paper and office waste from project management activities.
- General construction waste such as concrete, steel and plastic.
- Waste from staff and construction personnel (food, packaging, portable toilets).
- Minor amounts of vegetation including weeds.

### 4.10.2 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- Waste stored on site would be held in appropriate skips or bundled into stockpiles and covered where appropriate. Transport of materials from the construction site to sites of reuse or disposal would be done using covered trucks.
- Dispose of material at an appropriate waste disposal/recycling facility where re-use or storage options are not available.
- Excess soil material exported from the site would be available for reuse or will be disposed of at an appropriate facility.
- In the event of any oil waste occurring on-site, this would be collected and transported to the nearest oil recycling facility.

## 4.11 CUMULATIVE IMPACT

### 4.11.1 *Negative Cumulative Impacts*

A number of actions as a result of the proposed works would have a minor negative cumulative impact. These include:

- Social impacts during the construction period based on minor traffic disruptions, dust, and noise.
- Biodiversity impacts resulting from aquatic habitat disturbance, soil disturbance and potential minor clearing of vegetation.
- Greenhouse gas emissions from the use of machinery, equipment, and vehicles during the construction period.
- The use of resources such as gravel, cement, tar-sealing, and fossil fuels.

Generally, negative cumulative impacts associated with the proposed activity would be confined to the construction period. Proposed safeguards provided within the REF confirm that risks from potential impacts are both low and able to be managed.

#### **4.11.2 Positive Cumulative Impacts**

Positive cumulative impacts as a result of the proposed works are expected to be:

- Improved visitor experiences in the region
- Improvements in safety to current crown land users
- Increased visitation and tourism stay nights for Tumbarumba when considered in combination with the existing Tumbarumba to Rosewood Rail Trail.

#### **4.11.3 Proposed Safeguards**

The proposed safeguards within previous sections of this REF address the cumulative impacts identified above. Given the positive cumulative impacts identified above, the proposed activity would result in a net environmental gain to the local area and to Council.

### **4.12 PRINCIPLES OF ECOLOGICALLY SUSTAINABLE DEVELOPMENT**

This section presents the principles of Ecologically Sustainable Development (ESD) in relation to the proposal.

#### **4.12.1 Precautionary Principle**

The ‘precautionary principle’ means that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

This REF has been prepared using the precautionary principle. That is, if threats are perceived as possibly leading to serious or irreversible environmental damage, then either the non-development of the proposal would occur, or that the proposed activity would need to be modified to ensure that such threats do not exist. This has been the approach in relation to proposed safeguards summarised in section 5 of this REF.

#### **4.12.2 Inter-generational Equity**

‘Inter-generational equity’ means that the present generation should ensure that the health, diversity, and productivity of the environment is maintained or enhanced for the benefit of future generations.

The proposed activity would not impact on natural or cultural features to a level that would compromise the health, diversity, or productivity of the environment to a level that would impact on future generations.

### **4.12.3     *Appropriate Valuation of Environmental Factors***

This principle requires that environmental assets should be appropriately valued. This REF has considered abiotic and biotic ecosystem factors together with social values in identifying potential impacts and providing a range of environmental safeguards to minimise the impacts of the proposed activity.

These factors ensure that the proposed activity is consistent with the principles of ESD.

## 5 SUMMARY OF ENVIRONMENTAL SAFEGUARDS

The potential impacts of the proposed activity identified within section 4 of this REF can be mitigated through appropriate safeguards to reduce these to acceptable levels. The safeguards provided throughout this REF are summarised within **Table 5-1**.

**Table 5-1:** Summary of Environmental Safeguards.

Environmental Component	Proposed Safeguards
Landforms, Soils, Hydrology and Water Quality	<ul style="list-style-type: none"> <li>To manage erosion and sedimentation during construction, a sediment and erosion control plan shall be prepared. Erosion and sediment control practices should follow the recommendations and checklists outlined in: <i>Managing Urban Stormwater: Soils and Construction Volume 1</i> (NSW, 2006) and <i>Managing Urban Stormwater: Soils and Construction – Installation of Services Vol 2A</i> (DECC, 2007).</li> <li>Rehabilitate exposed bare ground at the completion of the work.</li> <li>Erosion and sediment controls would be left <i>insitu</i> for as long as necessary for the site to become stabilised.</li> <li>No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.</li> </ul>
Biodiversity	<ul style="list-style-type: none"> <li>Construction activities should not occur during intense rain events or in a predicted extended rain event.</li> <li>Erosion and sediment control plan should be established and maintained to avoid sediment runoff during any vegetation clearing and construction and should only be removed once the ground is stabilised.</li> <li>Erosion and sediment controls would be in position prior to the proposed activity commencing and left <i>insitu</i> for as long as necessary for the site to become stabilised. However, should these controls begin to deteriorate and lose functionality; they are to be replaced immediately.</li> <li>No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.</li> <li>Removal of <u>any</u> hollow-bearing trees should only be carried out under a hollow-bearing tree protocol. This protocol would also include direct supervision of a suitably qualified and experienced ecologist. The ecologist would collect, hold and relocate any microchiropteran bats, or arboreal mammals to adjoining habitat within the study area during the hollow-bearing tree removal process</li> <li>No HBT can be removed between October to January inclusive to avoid the known breeding season of Gang-gang Cockatoo.</li> <li>There must be no release of dirty water into drainage lines and/or waterways.</li> <li>All fuels, chemicals and liquids are to be stored in an impervious bunded area or containers.</li> </ul>



Environmental Component	Proposed Safeguards
	<ul style="list-style-type: none"> <li>An emergency spill kit must be kept on site at all times and maintained throughout the construction work. The spill kit must be appropriately sized for the volume of substances at the work site.</li> </ul>
Noise and Vibration	<ul style="list-style-type: none"> <li>Construction activity would be restricted to the following standing working hours:               <ul style="list-style-type: none"> <li>Monday-Friday: 7:00am to 6.00pm</li> <li>Saturday: 8.00am to 1.00pm</li> <li>Sunday and Public Holidays: no work</li> </ul> </li> <li>Should work be proposed outside of standard working hours, additional mitigations measures would be required.</li> <li>Completion of the proposed activity in the minimum timeframe practicable.</li> <li>Noise output would be minimised through the use of modern equipment that is regularly maintained.</li> <li>Machinery engines would be switched off, minimising noise emissions, rather than being left idling for long period.</li> </ul>
Climate and Air Quality	<ul style="list-style-type: none"> <li>Any stockpiles with the capacity to cause dust should be dampened or otherwise controlled to suppress dust.</li> <li>Trucks carrying loads of material such as soil, road base, gravel or spoil should be covered.</li> <li>All machinery should be periodically inspected and maintained to ensure minimum levels of emissions.</li> <li>Machinery engines should be switched off, rather than left idling for long periods.</li> </ul>
Visual Impacts	<ul style="list-style-type: none"> <li>The proposed work area should be kept clean and orderly at all times, ensuring that no waste is left at the site following completion of the proposed work.</li> <li>Machinery and equipment storage should be conducted in a single location, where possible.</li> <li>Temporary erosion and sediment controls should be removed from the site once it is stabilised.</li> </ul>
Socio-Economic	<ul style="list-style-type: none"> <li>Potential hazards should be minimised by ensuring that the proposed works are completed in accordance with relevant SVRC standards and WHS requirements.</li> <li>Dial Before You Dig <u>MUST</u> be consulted to ensure that the locations of all underground services are known <u>PRIOR</u> to excavation commencing. Appropriate actions must be formulated by the Project Manager and Site Supervisor to minimise the risk of these services becoming disrupted.</li> <li>Construction activity would avoid weekends and public holidays where possible.</li> <li>The proposed works would be completed in the minimum timeframe practical.</li> </ul>
Aboriginal Heritage	<ul style="list-style-type: none"> <li>The proposed works require consultation with the local Aboriginal community. Unless the consultation process indicates otherwise, an Aboriginal Cultural Heritage Assessment would be required.</li> <li>During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any Aboriginal objects.</li> </ul>

Environmental Component	Proposed Safeguards
	<ul style="list-style-type: none"> <li>• If human skeletal remains are found during the activity, work must stop immediately, secure the area to prevent unauthorised access and contact NSW Police and NSW Heritage</li> <li>• If potential material is identified, construction activities proximal to the potential material would cease and the NSW Heritage Office will be contacted immediately to determine appropriate management. Notification procedures can be found at <a href="http://www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm">www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm</a> The NPW Act requires that, if a person finds an Aboriginal object on land and the object is not already recorded on AHIMS, they are legally bound under s.89A of the NPW Act to notify NSW Heritage Office as soon as possible of the object's location. This requirement applies to all people and to all situations, including when you are following the Due Diligence Code.</li> </ul>
Historic Heritage	<ul style="list-style-type: none"> <li>• During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any item that could be of historic heritage.</li> <li>• If potential material is identified (other than that detailed within this REF), construction activities proximal to the potential material would cease and the NSW Heritage Office will be contact immediately to determine appropriate management.</li> </ul>
Traffic Management	<ul style="list-style-type: none"> <li>• A traffic management plan (to prepared by SVRC) would be implemented, which would include the use of signs, barriers, temporary speed zones and traffic control for the duration of the proposed works.</li> <li>• The proposed works would be completed in accordance with WHS legislation.</li> <li>• Construction would avoid weekends and public holidays where possible.</li> <li>• The proposed works would be completed in the minimum timeframe practical.</li> </ul>
Waste Minimisation and Resource Management	<ul style="list-style-type: none"> <li>• Waste stored on site would be held in appropriate skips or bundled into stockpiles and covered where appropriate. Transport of materials from construction site to sites of reuse or disposal would be done using covered trucks.</li> <li>• Dispose of material at an appropriate waste disposal/recycling facility where re-use or storage options are not available.</li> <li>• Excess soil material exported from the site would be available for resale, reuse or will be disposed of at an appropriate facility.</li> <li>• In the event of any oil waste occurring on-site, this would be collected and transported to the nearest oil recycling facility.</li> </ul>
Cumulative Impacts	<p>The proposed safeguards within previous sections of this REF address the cumulative impacts identified. Given the positive cumulative impacts identified, the proposed activity would result in a net environmental gain to the local area and to Council.</p>

## 6 CLAUSE 171 CHECKLIST

A checklist of factors that should be considered in the assessment of impacts prior to its determination is included within Clause 171 of the *Environmental Planning and Assessment Regulation 2021*. This clause identifies seventeen issues that need to be addressed. The following text provides summary details of each of the issues, the majority of which have been addressed within the body of this document.

**a) any environmental impact on the community;**

There is the possibility of impacts associated with the construction period such as noise, traffic delays and dust. In the long-term, improvements to the Tumbarumba visitor experience and user safety on a formal pathway within the crown land, would provide for positive environmental impact.

**b) any transformation of a locality;**

While the proposed activity will impact visually during the construction process, overall, there would be no impact on the visual environment of the locality.

**c) any environmental impact on the ecosystem of the locality;**

No. While the proposal would involve the disturbance of a relatively minor amount of native vegetation, the potential impacts would not impact ecosystems at a locality scale.

**d) any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality;**

The proposed activity is unlikely to have a notable long-term impact on any aesthetic, recreational, scientific, or other environmental quality or value of the locality given its relatively minor impact.

**e) any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations;**

The proposal would not have any effect on any locality, place or building having aesthetic, anthropological, archaeological or any other significance or special value.

**f) any impact on the habitat of protected or endangered fauna (within the meaning of the National Parks and Wildlife Act 1974);**

A number of threatened biota including a threatened ecological community have been previously recorded in the locality. As such, an assessment of impacts was undertaken (**Appendix 4 & 5**). Risks to threatened biota are considered to be low if proposed safeguards are effectively implemented.

**g) any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air;**

The proposed activity is unlikely to endanger any species of animal, plant or any other form of life or offer any significant long-term disturbance locally, given the relatively minor nature of the proposal.

**h) any long-term effects on the environment;**

Negative long term effects on the environment would be unlikely if the proposed safeguards discussed in **section 5** are fully implemented.

**i) any degradation of the quality of the environment;**

No negative long-term environmental impacts are expected. Minor amounts of dust and noise pollution are expected during the construction phase and may have short-term impacts on the environment directly adjacent to the proposal.

**j) any risk to the safety of the environment;**

The proposed activity is unlikely to cause any risk to the environment given safeguards listed in **section 5** are followed.

**k) any reduction in the range of beneficial uses of the environment;**

The proposed activity would not result in a significant reduction in the range of beneficial uses of the environment in the locality, given the existing environment and the relatively minor nature of the activity proposed.

**l) any pollution of the environment;**

There is a risk that pollution of the local environment would occur as a result of contaminants, including silt and hydrocarbons entering the local environment during construction. The risk would be minimised as a result of the environmental safeguards described in **section 5**.

**m) any environmental problems associated with the disposal of waste;**

Disposal of waste would be managed during construction as outlined in section 4.10.

**n) any increased demands on resources (natural or otherwise) that are, or likely to become in short supply;**

This REF has identified that the proposed activity would not create a significant increase in the demands on resources that are likely to become in short supply in the near future.

**o) any cumulative environmental effect with other existing or likely future activities;**

Assessment of the cumulative environmental effects of the proposed activity identifies both negative and positive environmental impacts that would occur. Generally, negative environmental impacts are confined to the construction period, while improvements in road conditions, and improved safety are significant positive environmental impacts.

**p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions;**

There would be no impact to coastal processes or hazards.

**q) Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1**

The proposal is consistent the SVRC Regional Tracks and Trails Master Plan that is currently being prepared.

**r) Other relevant environmental factors**

In considering the potential impacts of this proposal all relevant environmental factors have been considered, refer to Chapter 4 of this REF.



## 7 CONCLUSION

This REF provides a true and fair review of the proposed activity in relation to its potential effects on the environment. It addresses to the fullest extent possible, all of the factors listed in Clause 171 of the Environmental Planning and Assessment Regulation 2021.

The potential impacts of the proposed Gudja Gudja Mura Trail identified within section 4 of this REF can be mitigated through appropriate safeguards to reduce these to acceptable levels. Accordingly, an Environmental Impact Statement (EIS) is not required.

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## 9 APPENDICES



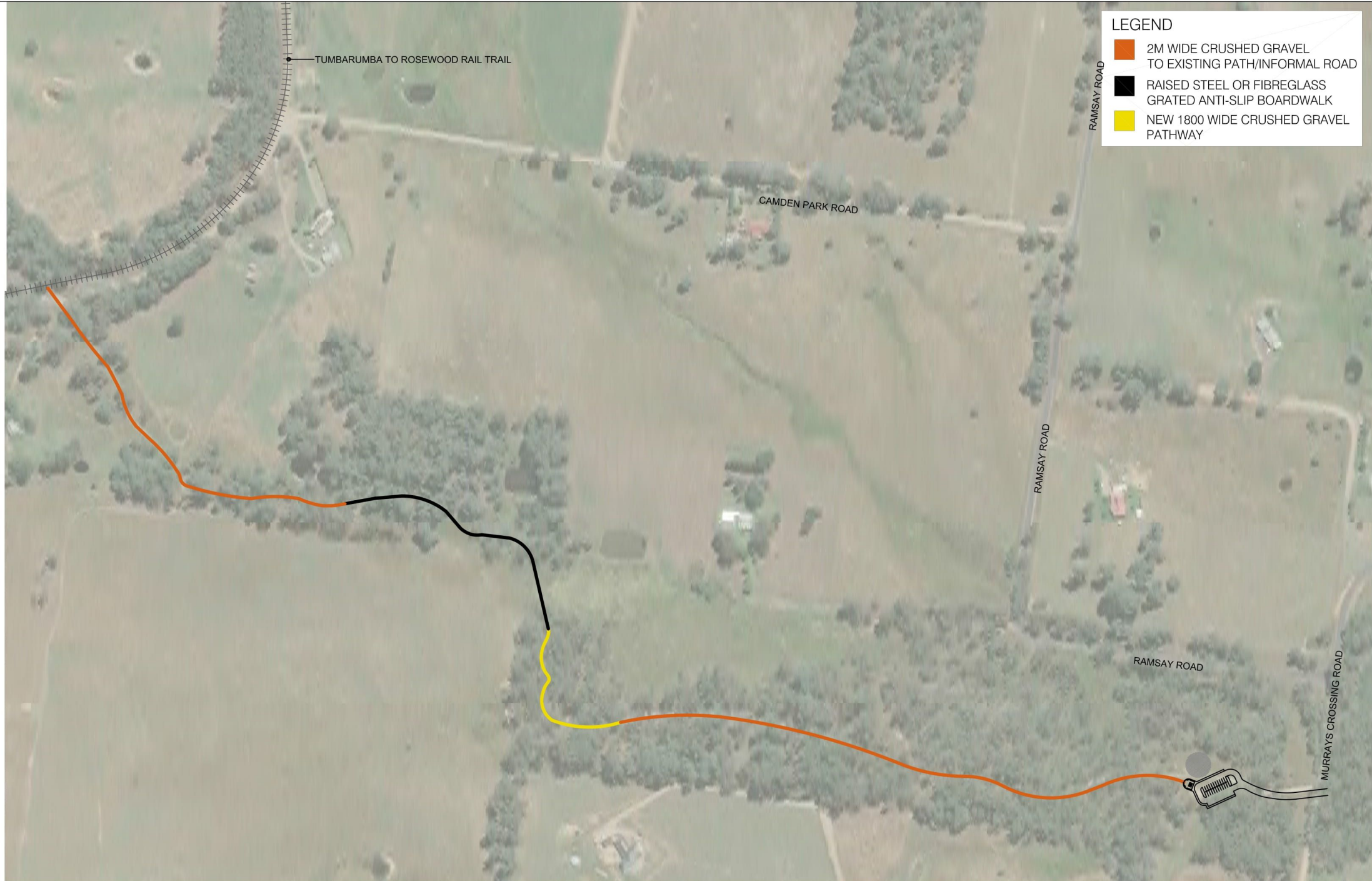
## **APPENDIX 1 – QUALIFICATIONS AND EXPERIENCE OF PERSONNEL**

Name and Qualifications	Experience
<p><b>Steve Sass</b> B.App.Sci (Env.Sci) (Hons), GradCert.CaptVert.Mngt (CSU) Director / Principal Ecologist / Project Manager</p> <p>Certified Environmental Practitioner, EIANZ Accredited Biodiversity Assessor Member, Ecological Consultants Association of NSW (ECA)</p>	<p>Steve is a highly experienced Consulting Ecologist having undertaken hundreds of terrestrial and aquatic ecological surveys and assessments across Australia since 1992. He has an in-depth working knowledge of environmental and biodiversity legislation across all states and territories which allows him to provide detailed and accurate assessments and formulate practical solutions to clients and specific projects on a case-by-case basis.</p> <p>Previous and current research holds Steve in high regard within both the scientific and ecological consultants' community. Steve was recently given 'Expert' status for a number of species listed under the NSW <i>Biodiversity Conservation Act 2016</i> and is currently working with OEH on the Saving our Species Program for a newly identified species of dragon lizard in western NSW (<i>Ctenophorus mirrityana</i>) which Steve collaborated with other scientists to formally describe.</p> <p>Steve has extensive experience in south-east NSW. Over the past ten years, he has completed or provided specialist biodiversity advice to more than 1000 environmental assessments for projects such as residential and industrial developments, highway upgrades and telecommunications, water, sewerage, energy, mining and electricity network infrastructure projects. Steve is highly conversant with the flora, vegetation communities, fauna and their habitats of the region. His expertise with regard to forest and wetland birds, reptiles, frogs and mammals is well known. For the REF Steve was the Project manager and prepared this report.</p>
<p><b>Linda Sass</b> Ass.Deg.Gn.St (Science), BA, DipEd (Sec) Member, Ecological Consultants Association of NSW (ECA)</p>	<p>Linda is an experienced ecologist having conducted flora and fauna surveys across western NSW for the past 12 years. Her recent projects in southern NSW include a Species Impact Statement for the Potato Point Fire Buffer Construction within Eurobodalla National Park and well as a number of highway upgrades near Moruya, Bodalla, Narooma, Ulladulla and Braidwood and she has conducted numerous frog surveys across the Bega Valley including Panboola Wetlands. For this project, Linda assisted with the field survey.</p>
<p><b>Zoe Sass</b> B.Sci (GIS), BA</p>	<p>Zoe has worked as an ecologist on a casual basis with <b>EnviroKey</b> over a number of years including during their university studies. She recently joined <b>EnviroKey</b> as a permanent member of the team as a Project Officer and</p>

Name and Qualifications	Experience
	<p>has prepared a number of REFs including the HW1 Mort Avenue Safety Improvement Work and HW1 Herganhens Lane Safety Improvement Work for Transport for NSW. Zoe has also been responsible for GIS mapping and statistical analysis for a number of environmental assessments including residential developments.</p> <p>For this project, Zoe carried out all GIS mapping, and spatial analysis, and assisted with the field survey.</p>

## APPENDIX 2 – THE PROPOSAL





LEGEND

2M WIDE CRUSHED GRAVEL  
TO EXISTING PATH/INFORMAL ROAD

RAISED STEEL OR FIBREGLASS  
GRATED ANTI-SLIP BOARDWALK

NEW 1800 WIDE CRUSHED GRAVEL  
PATHWAY

TREDWELL

Tredwell Management Services  
209b Henley Beach Road  
Torrensville, SA 5031  
Phone: 08 8234 6387

Client

Snowy Valleys Council  
24 Bridge Street,  
Tumbarumba NSW 2653, Australia

Project

SNOWY VALLEYS TRAIL CONCEPTS  
Snowy Valleys Council, NSW

Drawing Title

GUDJA GUDJA MURA TRAIL OVERVIEW

Drawn:  
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Rev.	Date	Description

DRAFT CONCEPT

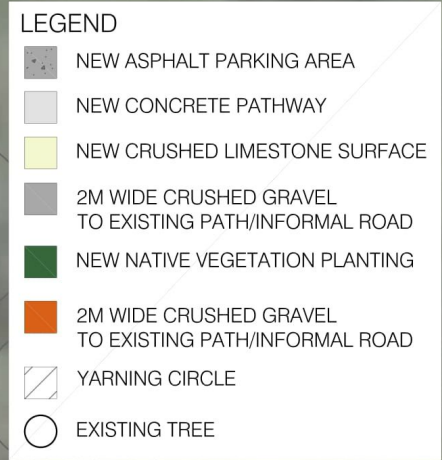
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GUDJA GUDJA MURA TRAIL

TOTAL PROJECT SURFACE AREAS AND SPECIFIED ITEM NUMBERS	
TOTAL DISTANCE	1.49 KM (ONE WAY)
2M WIDE CRUSHED GRAVEL TO EXISTING PATH/INFORMAL ROAD	1.03 KM
RAISED STEEL OR FIBREGLASS GRATED ANTI- SLIP BOARDWALK	290 M
NEW 1.8M WIDE CRUSHED GRAVEL PATHWAY	174 M
NEW ASPHALT PARKING AREA	1719 M2 (INCLUDING NEW ACCESS ROAD)
NEW CONCRETE PATHWAY	229 M2
NEW CRUSHED LIMESTONE SURFACE	90 M2
NEW NATIVE VEGETATION PLANTING	60 M2
NEW TRAILHEAD SIGN	2 NO.
NEW WAYMARKER	4 NO.
NEW INTERPRETIVE SIGN	3 NO.
NEW ON-PATH WARNING SIGN 'DRIVEWAY CROSSING AHEAD'	2 NO.
NEW WOODEN BENCH SEAT	4 NO.
NEW PICNIC AREA SHADE SHELTER (3M X 4M)	1 NO.
NEW PICNIC TABLE	1 NO.
NEW HOOP STYLE BIKE RACK	6 NO.
NEW CULVERT	1 NO.
NEW ART/SCULPTURE INSTALLATION	1 NO.









LEGEND

2M WIDE CRUSHED GRAVEL TO EXISTING PATH/INFORMAL ROAD

RAISED STEEL OR FIBREGLOSS GRATED ANTI-SLIP BOARDWALK

NEW 1800 WIDE CRUSHED GRAVEL PATHWAY

PROPOSED INFRASTRUCTURE

POINT OF INTEREST (POI)

PROPERTY BOUNDARY

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

YARNING CIRCLE

TREDWELL

Tredwell Management Services  
209b Henley Beach Road  
Torrensville, SA 5031  
Phone: 08 8234 6387

Client

Snowy Valleys Council  
24 Bridge Street,  
Tumbarumba NSW 2653, Australia

Project

SNOWY VALLEYS TRAIL CONCEPTS  
Snowy Valleys Council, NSW

Drawing Title

GUDJA GUDJA MURA TRAIL - SECTION 1

Drawn:  
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Rev.	Date	Description

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Revision  
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LEGEND

2M WIDE CRUSHED GRAVEL TO EXISTING PATH/INFORMAL ROAD

RAISED STEEL OR FIBREGLASS GRATED ANTI-SLIP BOARDWALK

NEW 1800 WIDE CRUSHED GRAVEL PATHWAY

PROPOSED INFRASTRUCTURE

POINT OF INTEREST (POI)

PROPERTY BOUNDARY

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

YARNING CIRCLE

TREDWELL

Tredwell Management Services  
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Phone: 08 8234 6387

Client

Snowy Valleys Council  
24 Bridge Street,  
Tumbarumba NSW 2653, Australia

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Project

SNOWY VALLEYS TRAIL CONCEPTS  
Snowy Valleys Council, NSW

Drawing Title

GUDJA GUDJA MURA TRAIL - SECTION 2

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Rev.	Date	Description

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Drawing No.

GGMT\_04

Revision

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## **APPENDIX 3 – THREATENED AND MIGRATORY BIOTA EVALUATION**

When evaluating which threatened and migratory biota are likely to occur within the study area, the following factors were taken into consideration:

- The presence of potential habitat
- Condition of and approximate extent of potential habitat
- Species occurrence within study area and wider locality

The potential for these biota to be impacted by the proposal was assessed based on the following criteria:

- No (no suitable habitat based on known habitat requirements within the study area; in the case of flora, site extensively searched during the appropriate time of year for detection and species not present).
- Unlikely (proposed works are unlikely to impact on the life-cycle of the species, the species is mobile and other habitat exists within the locality).
- Possible (proposed works could result in the removal of threatened flora or for fauna, impact on the life cycle of the species, disrupt normal ecological function, or entrap species within excavations).

Biota that are associated with littoral or marine habitats have been excluded from the analysis.

**Table 9-1:** Threatened and migratory biota evaluation.

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
<b>FROGS</b>					
Alpine Tree Frog <i>Litoria verreauxii alpina</i>	E	V	Found in a wide variety of habitats including woodland, heath, grassland and herb fields. Breed in natural and artificial wetlands including ponds, bogs, fens, streamside pools, stock dams and drainage channels that are still or slow flowing	0	No
Booroolong Frog <i>Litoria booroolongensis</i>	E	E	Lives in permanent streams with some fringing vegetation cover. Can be found sheltering under rocks or amongst vegetation near stream edge.	0	No
Northern Corroboree Frog <i>Pseudophryne pengilleyi</i>	CE	CE	Summer breeding habitat is pools and seepages in sphagnum bogs, wet heath, wet tussock grasslands and herbfields in low-lying depressions. Outside the	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			breeding season adults move away from the bogs into the surrounding heath, woodland and forest to overwinter under litter, logs and dense groundcover.		
Spotted Tree Frog <i>Litoria spenceri</i>	CE	CE	Occur among boulders or debris along naturally vegetated, rocky fast flowing upland streams and rivers. In winter animals are thought to hibernate in vegetation outside of the main stream environment	0	Unlikely
<b>BATS</b>					
Eastern False Pipistrelle <i>Falsistrellus tasmaniensis</i>	V		Roosts in eucalypts hollows as well as loose bark on trees or on buildings. Prefers moist habitats with trees taller than 20m.	0	Possible
Large Bent-winged Bat <i>Miniopterus orianae oceanensis</i>	V		Prefers caves but also uses derelict mines, storm water tunnels, buildings, and other built structures for roosting. They hunt in forested areas.	1	Unlikely
Southern Myotis <i>Myotis macropus</i>	V		Roost close to water in caves, mine shafts, hollow bearing trees, storm water channels, under bridges and in dense foliage. They forage over streams and pools.	0	No
<b>BIRDS</b>					
Barking Owl <i>Ninox connivens</i>	V		Inhabits woodland and open forest, including remnants and partly cleared farmland. It requires large permanent territories, about 2000 hectares in NSW habitats.	0	Unlikely
Black Falcon <i>Falco subniger</i>	V		The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions	0	Unlikely
Blue-billed Duck <i>Oxyura australis</i>	V		The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation.	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
Brown Treecreeper (eastern subspecies) <i>Climacteris picumnus victoriae</i>	V		Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species.	0	Possible
Diamond Firetail <i>Stagonopleura guttata</i>	V		Found in grassy woodlands including Box-Gum Woodlands and Snow Gum Woodland	0	Unlikely
Dusky Woodswallow <i>Artamus cyanopterus cyanopterus</i>	V		Found mostly in dry, open eucalypt forests and woodlands. Depending on location and climate, it can be migratory.	0	Possible
Flame Robin <i>Petroica phoenicea</i>	V		Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes.  Habitat often changes in winter to include drier more open habitat including dry forests, open woodlands, native grassland, pastures and occasionally in heathland or other shrubland.	1	Unlikely
Gang-gang Cockatoo <i>Callocephalon fimbriatum</i>	V	E	During spring and summer, found in tall mountain forests and woodlands usually heavily timbered and mature wet sclerophyll forests. In Autumn and winter, they generally move to drier more open forests and woodlands.	5	Possible
Glossy Black- Cockatoo <i>Calyptrorhynchus lathamii</i>	V	E	Inhabit open forests and woodlands. She-oak is an important food source and they feed almost exclusively on several species ( <i>Casurina</i> and <i>Allocasaurina</i> ).	0	Unlikely
Hooded Robin (south-eastern form)	V		Found in open eucalypt woodlands, acacia scrub and mallee, often in or near clearings or open areas.	0	Unlikely

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
<i>Melanodryas cucullata cucullata</i>			Requires diverse habitats with mature eucalypts, saplings, small shrubs and moderately tall native grasses.		
Little Eagle <i>Hieraaetus morphnoides</i>	V		Little Eagle is distributed across all of the Australian mainland except for densely vegetated areas, particularly on the Dividing Range escarpment. In NSW the Little Eagle is considered a single population. They inhabit open eucalypt woodland, woodland and open woodland, including She-oak, <i>Acacia</i> woodland and riparian woodland in arid and semi-arid regions.	0	Unlikely
Masked Owl <i>Tyto novaehollandiae</i>	V		Lives in dry eucalypt forests and woodlands from sea level to 1100m. Pairs have a home range of 500-1000 hectares and can often be seen hunting along edges of forests, including roadsides. Breeds in moist eucalypt forested gullies, using hollows or caves for nesting	0	Unlikely
Olive Whistler <i>Pachycephala olivacea</i>	V		Mostly inhabit wet forests above about 500m. During the winter months they may move to lower altitudes	0	Unlikely
Painted Honeyeater <i>Grantiella picta</i>	V	V	Inhabits Boree/Weeping Myall ( <i>Acacia pendula</i> ), Brigalow ( <i>A.harpophylla</i> ) and Box-Gum Woodlands and Box-Ironbark Forests. Feeds on mistletoes preferably the genus <i>Amyema</i>	0	Unlikely
Pilotbird <i>Pycnoptilus floccosus</i>	-	V	Occurs in wet temperate forests where undergrowth is dense.	0	Unlikely
Pink Robin <i>Petroica rodinogaster</i>	V		Inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies.	0	Unlikely
Powerful Owl <i>Ninox strenua</i>	V		inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. Size of territory varies depending on the quality and	0	Unlikely



Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			can range from 400 metres to 4000 hectares.		
Regent Honeyeater <i>Anthochaera phrygia</i>	CE	CE	Lives in dry open forest and woodland especially Box-Ironbark woodland, and riparian forests of River Sheoak. Woodlands they inhabit often support high abundance and species richness of bird species.	0	Unlikely
Scarlet Robin <i>Petroica boodang</i>	V		Lives in dry eucalypt forests and woodlands with open grassy understorey with scattered shrubs. Lives in both mature and regrowth vegetation and usually contains abundant logs and fallen timber	1	Unlikely
Sooty Owl <i>Tyto tenebricosa</i>	V		Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests.	0	Unlikely
Speckled Warbler <i>Chthonicola sagittata</i>	V		Lives in Eucalypts dominated communities that have a grassy understorey with sparse shrub layer. Large, relatively undisturbed habitats are needed for this species to remain in an area.	1	Unlikely
Spotted Harrier <i>Circus assimilis</i>	V		Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe.	0	Unlikely
Square-tailed Kite <i>Lophoictinia isura</i>	V		Found in timbered habitats including dry woodlands and open forests. Prefers timbered watercourses.	0	Unlikely
Superb Parrot <i>Polytelis swainsonii</i>	V	V	Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest.	0	Unlikely
Swift Parrot <i>Lathamus discolor</i>	E	CE M	Occurs in areas with flowering eucalypts or abundant lerp (from sap sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany <i>Eucalyptus robusta</i> , Spotted	0	Unlikely

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			Gum <i>Corymbia maculata</i> , Red Bloodwood <i>C. gummifera</i> , Forest Red Gum <i>E. tereticornis</i> , Mugga Ironbark <i>E. sideroxylon</i> , and White Box <i>E. albens</i> . Commonly used lerp infested trees include Inland Grey Box <i>E. microcarpa</i> , Grey Box <i>E. moluccana</i> , Blackbutt <i>E. pilularis</i> , and Yellow Box <i>E. melliodora</i>		
Turquoise Parrot <i>Neophema pulchella</i>	V		Habitats include edges of eucalypt woodland near clearings, timbered ridges and creeks in farmlands.	0	Unlikely
Varied Sittella <i>Daphoenositta chrysoptera</i>	V		This species is sedentary and known to inhabit most forest/woodland habitats.	2	Unlikely
White-bellied Sea-eagle <i>Haliaeetus leucogaster</i>	V	M	The species is normally seen perched high in a tree, or soaring over waterways and adjacent land, particularly along coastlines, lakes, and rivers.	0	Unlikely
White-fronted Chat <i>Epthianura albifrons</i>	V		Gregarious species, usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground.	0	Unlikely
<b>FISH</b>					
Flathead Galaxias <i>Galaxias rostratus</i>	E (FM Act)	CE	Known from the southern half of the Murry-Darling Basin. Inhabits a variety of habitats including rivers, lakes and swamps.	0	No
Macquarie Perch <i>Macquaria australasica</i>	E (FM Act)	E	Found in the upstream reaches of the Murray-Darling Basin. Found in rivers and lakes.	0	No
Murray Cod <i>Maccullochella peelii</i>		V	Prefers deep, slow flowing turbid water in rivers and streams with boulders or undercut banks.	0	No
Trout Cod	E (FM Act)	CE	Found in the southern Murray-Darling river system, this fish	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
<i>Maccullochella macquariensis</i>			inhabits fast flowing freshwater streams.		
Australian Grayling	E (FM Act)	E	The Australian Grayling is endemic to south-eastern Australia, including Victoria, Tasmania and New South Wales. Rare fish are likely in South Australia. It was once abundant throughout its range but has declined in many areas since European settlement and is now generally patchily distributed. In NSW its most northern limit is now the Clyde River.	0	No
<b>INVERTEBRATES</b>					
Murray Crayfish <i>Euastacus armatus</i>	V		The Murray Crayfish originally occurred in the Murrumbidgee River system in NSW and the ACT, and parts of the Murray river system in NSW, Victoria and South Australia. The species has also been recorded from the Lachlan and Macquarie catchments in NSW, although the origin of these populations is currently unknown, and may be translocated. Murray Crayfish have an upper altitudinal range of approximately 750 – 800 m ASL.	0	No
<b>MAMMALS</b>					
Broad-toothed Rat <i>Mastacomys fuscus</i>	V	V	Lives in a complex of runways through the dense vegetation of its wet grass, sedge or heath environment, and under the snow in winter. This relatively warm under-snow space enables it to be active throughout winter	0	No
Brush-tailed Phascogale <i>Phascogale tapoatafa</i>	V		Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest.	0	Unlikely
Eastern Pygmy-possum	V		Found in a broad range of habitats from rainforest through sclerophyll (including	0	Unlikely

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
<i>Cercartetus nanus</i>			Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred.		
Koala <i>Phascolarctos cinereus</i>	V	V	Inhabit eucalypt woodlands and forests. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size.	1	Unlikely
Smoky Mouse <i>Pseudomys fumeus</i>	CE	E	Appears to prefer heath habitat on ridge tops and slopes in sclerophyll forest, heathland and open-forest from the coast (in Victoria) to sub-alpine regions of up to 1800 metres, but sometimes occurs in ferny gullies	0	No
Spotted-tailed Quoll <i>Dasyurus maculatus</i>	V	E	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath, and inland riparian forest, from the sub-alpine zone to the coastline.	1	Unlikely
Squirrel Glider <i>Petaurus norfolcensis</i>	V		Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas	0	Possible
Greater Glider		E	Distribution levels are higher in regions of montane forest containing manna gum and mountain gum. Furthermore, the presence of Monkey Gum appears to improve the quality of habitat for the greater gliders in forests dominated by <i>E. obliqua</i> . Another factor determining population density is elevation. Optimal levels are 845 m above sea level. Within a forest of suitable habitat, they prefer overstorey basal areas in old-growth tree stands	1	Possible
Yellow-bellied Glider	V		Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
<i>Petaurus australis</i>			soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.		
<b>REPTILES</b>					
Little Whip Snake <i>Suta flagellum</i>	V		Occurs in Natural Temperate Grasslands and grassy woodlands, including those dominated by Snow Gum <i>Eucalyptus pauciflora</i> or Yellow Box <i>E. melliodora</i> . Also occurs in secondary grasslands derived from clearing of woodlands. Found on well drained hillsides, mostly associated with scattered loose rocks.	0	No
Rosenberg's Goanna <i>Varanus rosenbergi</i>	V		Found in heath, open forest and woodland. Associated with termites, the mounds of which this species nests in; termite mounds are a critical habitat component.	0	No
Striped Legless Lizard <i>Delma impar</i>	V	V	Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland.	0	No
<b>PLANTS</b>					
Alpine Greenhood <i>Pterostylis alpina</i>	V		Often found on sheltered southern slopes near streams in rich loam	0	No
Alpine Sun-orchid <i>Thelymitra alpicola</i>	V		Occurs in wet heaths, sphagnum bogs between 1000-1500 metres and swamps	0	No
Austral Toadflax <i>Thesium australe</i>	V	V	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast.	0	No



Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
Austral Pillwort <i>Pilularia novae-hollandiae</i>	E		grows in shallow swamps and waterways, often among grasses and sedges. It is most often recorded in drying mud as this is when it is most conspicuous	0	No
Cotoneaster Pomaderris <i>Pomaderris cotoneaster</i>	E	E	Has been recorded in a range of habitats in predominantly forested country. The habitats include forest with deep, friable soil, amongst rock beside a creek, on rocky forested slopes and in steep gullies between sandstone cliffs.	0	No
Crimson Spider Orchid <i>Caladenia concolor</i>	E	V	Habitat is regrowth woodland on granite ridge country that has retained a high diversity of plant species, including other orchids. Flowering does not take place every year for reasons that are not fully understood, though each plant probably lives for a considerable number of years	0	No
Dwarf Bush-pea <i>Pultenaea humilis</i>	V		<i>Pultenaea humilis</i> is found in isolated remnants of native woodland and forest communities that occur in extensively cleared agricultural landscapes.	0	No
East Lynne Midge Orchid <i>Genoplesium vernale</i>	V	V	Grows in dry sclerophyll woodland and forest extending from close to the coast to the adjoining coastal ranges. Confined to areas with well-drained shallow soils of low fertility, often occurring near the crests of ridges and on low rises where the ground cover is more open and sedge dominated rather than being shrubby.	0	No
Elusive Cress <i>Irenepharsus magicus</i>	E		Habitat preference for the species is unclear, although records have been found in recently logged Messmate Stringybark ( <i>Eucalyptus obliqua</i> ) forest, in rocky limestone areas, and 'growing on mineral soil of embankment'.	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
Leafy Anchor Plant <i>Discaria nitida</i>	V		Generally occurs on or close to stream banks and on rocky areas near small waterfalls. The species occurs in both woodland with heathy riparian vegetation and on treeless grassy sub-alpine plains	0	No
Rough Eyebright <i>Euphrasia scabra</i>	E		Occurs in or at the margins of swampy grassland or in sphagnum bogs, often in wet, peaty soil. Although parasitic, the species does not appear to be host-specific	0	No
Silky Swainson-pea	V		Found in Natural Temperate Grassland and Snow Gum <i>Eucalyptus pauciflora</i> Woodland on the Monaro.	0	No
Slender Greenhood <i>Pterostylis foliata</i>	V		Grows in eucalypt forest amongst an understorey of shrubs, ferns and grasses. It grows on loam or clay loam soils found on sheltered sloping to steep ground and populations may be found in localised open seepage areas.	0	No
Tumut Grevillea <i>Grevillea wilkinsonii</i>	CE	E	The Tumut Grevillea has a highly restricted distribution in the NSW South-west Slopes region. Its main occurrence is along a 6 km stretch of the Goobarragandra River approximately 20 km east of Tumut where about 1,000 plants are known. The other occurrence is a small population that straddles the boundary of two private properties at Gundagai where only eight mature plants survive.	0	No
Wee Jasper Grevillea <i>Grevillea iaspicula</i>	CE	E	Grows on rocky limestone outcrops and around sink holes and cave entrances. Vegetation is open woodland dominated by White Box ( <i>Eucalyptus albens</i> ) and Apple Box ( <i>E. bridgesiana</i> ) trees. Often occurs as a co-dominant species within the shrubby understorey of its open woodland habitat.	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
Woolly Ragwort <i>Senecio garlandii</i>	V		Occurs on sheltered slopes of rocky outcrops	0	No
Yass Daisy <i>Ammobium craspedioides</i>	V	V	Found in moist or dry forest communities, Box-Gum Woodland and secondary grassland derived from clearing of these communities. Apparently unaffected by light grazing, as populations persist in some grazed sites	0	No
<i>Caladenia montana</i>	V		Restricted to high montane areas 700–1000 m a.s.l. where it grows in well-drained loam on slopes and ridges of montane forest among an understorey of shrubs.	0	No
<i>Pimelea bracteata</i>	CE		In wet heath and along creek banks at higher altitudes in the Kiandra area	0	No
<b>ECOLOGICAL COMMUNITIES</b>					
Fuzzy Box Woodland on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	EEC		Tall woodland or open forest dominated by Fuzzy Box, <i>Eucalyptus conica</i> . Often occurs upstream from River Red Gum communities above frequently inundated areas of the floodplain. Also occurs on colluvium soils and lower slopes and valley flats	0	No
Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	EEC	E	The Montane Peatlands community is associated with accumulated peaty or organic-mineral sediments on poorly drained flats in the headwaters of streams. It occurs on undulating tablelands and plateaux, above 400-500 m elevation, generally in catchments with basic volcanic or fine-grained sedimentary substrates or, occasionally, granite.	0	No
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the	CEEC	CE	An open woodland community characterised by the presence or prior occurrence of White Box, Yellow Box and/or Blakely's Red Gum and a generally grassy understorey. Remnants generally occur on	Common in the Tumbarumba region	No

<b>Common Name (Scientific Name)</b>	<b>BC Act/ FM Act</b>	<b>EPBC Act</b>	<b>Habitat requirements</b>	<b>Number of records (source)</b>	<b>Potential to be impacted by the proposal</b>
NSW North Coast, New England, Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions			fertile lower parts of the landscape.		

## **APPENDIX 4 – TEST OF SIGNIFICANCE (BC AND FM ACT)**



Section 7.3 of the BC Act details five factors which are to be considered when determining if a proposed development or activity *'is likely to have a significant effect on the threatened species, ecological communities, or their habitats'*. These five factors must be taken into account by consent or determining authorities when considering a development proposal or development application. This enables a decision to be made as to whether there is likely to be a significant effect on the species.

**Appendix 3** found that six threatened biota were known to, or have the potential to be impacted by the proposal based on the evaluation completed. Given this, further assessment by application of the ToS is completed on the following biota:

- Eastern False Pipistrelle
- Brown Treecreeper
- Dusky Woodswallow
- Gang-gang Cockatoo
- Squirrel Glider
- Greater Glider

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**(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,**

Hollow-dependant fauna (Dusky Woodswallow, gliders, microbats, Gang-gang cockatoo, Brown Treecreeper)

Eastern False Pipistrelle are known to occur in hollow-bearing trees, or man-made structures including bridges (Churchill, 2008). While no evidence of occupation was identified during this study, the density of hollow-bearing trees (HBT) within the study area provides evidence that they could roost here from time to time.

The Brown Treecreeper occurs in sub-coastal environments and the slopes of the Great Dividing Range through central NSW (Wagga Wagga, Temora, Forbes, Dubbo, Inverell) (Morcombe, 2004). Whilst it has a large range the species has greatly reduced in density over most of that range (Reid, 1999). They are found in eucalypt woodlands dominated by stringybarks or other roughbark eucalypt, usually with an open grassy understory (including Box-gum Woodland) and dry open forest occurs in eucalypt forests and woodland of inland plains and slopes of the Great Dividing Range (DPIE/BCS, 2022). They can be territorial and rely on hollows for nesting (DPIE/BCS, 2022).

Dispersal of the Brown Treecreeper can occur with them unlikely to disperse if remnants are separated by more than 1.5km (Doerr et al., 2011). The Brown Treecreeper has also declined or disappeared from most remaining remnants that are smaller than 300 hectares, at least partly because females disperse from these areas or die preferentially and are not replaced

(Cooper et al., 2002, Cooper and Walters, 2002). Once lost from a remnant, recolonisation is unlikely without assistance. Brown Treecreeper was recorded during the field survey.

The Gang-gang Cockatoo is distributed from southern Victoria through south- and central-eastern New South Wales. In New South Wales, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. It occurs regularly in the Australian Capital Territory. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee. It favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 10 cm in diameter or larger and at least 9 m above the ground in eucalypts (Simson, 1924, NSWSC, 2008, Garnett and Baker, 2020).

The main factor for the EPBC Isiting is a result of the Black Summer Fires in 2019/2020. The population of Gang-gang Cockatoo has declined by approximately 69 percent in the last three generations (approximately 21 years) (Bird et al. 2020; Cameron et al. forthcoming). In addition to this continuous decline in population numbers, the species also suffered mortality and habitat loss during Black Summer Fires. Estimates of the distribution impacted by fire range from 28 to 36 percent (Legge et al. 2020; Ward et al. 2020; Legge et al. 2021). The 2019/2020 fires may have reduced the carrying capacity of 40 percent of occupied grid cells by half and resulted in a 10 percent reduction in the overall population size (Cameron et al. forthcoming). An analysis based on expert analysis estimated that three generations post-fire the population could still be 29 percent lower than the pre-fire population size (Legge et al. 2021). These predictions assume no further extreme drought or extensive fire events; however, such events are likely to reoccur over the assessment period, which would worsen the extent of population decline. Given this nomination, this BA will assume that Gang-gang Cockatoo is accepted for listing as Endangered under the EPBC Act and assess the potential impacts of the proposal on this species accordingly.

The Greater Glider is distributed along the east coast of mainland Australia, from central Queensland to central Victoria (Lunney, 1987, Kavanagh and Lambert, 1990, Pavey, 1992, Lindenmayer et al., 2002, Maloney, 2007). They are forest dependent and prefer older trees in moist forests. They use hollow-bearing trees for both shelter and nesting, with each family group using multiple den trees within its home range (Lindenmayer et al. 2004). Greater Glider density varies proportionally to the availability of hollow-bearing trees and do not persist in areas of forest where such trees are absent. There is an inverse relationship between the habitat patch size and extinction risk. McCarthy and Lindenmayer (1999) suggests populations inhabiting small patches of otherwise suitable habitat are subject to heightened risks of extinction due to the generally low densities and rates of population increase, and the potential impacts of events such as bushfire.

Squirrel Glider is known to occur in mature Box-Gum/Box Ironbark woodlands and River Red Gum forests west of the Great Dividing Range and in Blackbutt/Bloodwood forests with a heathy understory in coastal areas where they utilise hollow-bearing trees for denning purposes (Menkhorst and Collier, 1987, Menkhorst et al., 1988, Crane et al., 2017, Sharpe and Goldingay, 2017, Sharpe and Goldingay, 2019). Our field survey did not detect this

species, but this is likely an artefact of survey effort and methods, rather than non-presence as they are known from the Tumbarumba region.

Dusky Woodswallows are widespread in eastern, southern and south western Australia (Robinson, 1993, Rowley, 2000, Fulton, 2005, Kavanagh et al., 2007, Sims, 2007, Montague-Drake et al., 2009). The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range.

They occur mostly in dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. The species can also be found in farmland, usually at the edges of forest or woodland.

They are known to feed on invertebrates, mainly insects, which are captured whilst hovering or sallying above the canopy or over water. Also frequently hovers, sallies and pounces under the canopy, primarily over leaf litter and dead timber. Also occasionally take nectar, fruit and seed.

Depending on location and local climatic conditions (primarily temperature and rainfall), Dusky Woodswallow can be resident year round or migratory. In NSW, after breeding, birds migrate to the north of the state and to southeastern Queensland, while Tasmanian birds migrate to southeastern NSW after breeding. Migrants generally depart between March and May, heading south to breed again in spring. There is some evidence of site fidelity for breeding. Although dusky woodswallows generally breed as solitary pairs or occasionally in small flocks, large flocks may form around abundant food sources in winter. Large flocks may also form before migration, which is often undertaken with other species.

For all species, it is appropriate that if any HBT are to be removed, that appropriate safeguards are implemented. This REF includes the provision for a suitably qualified and experienced ecologist to be onsite during any HBT removal. These safeguards and recommendations detailed within section 5 provide a framework for minimising potential direct and indirect impacts to these species.

Based on general habitat removal, woodland and forest is relatively widespread within a 550 metre of the proposal (about 270 hectares), so the potential impact of this proposal of less than 0.6 hectares, is of little significance.

With consideration of these factors, it is *unlikely* that the proposal could have an adverse effect on the life cycle of the above species or their habitats such that a viable local population is likely to be placed at risk of extinction provided safeguards are fully implemented.

**(b) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:**

- (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**
- (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,**

These species are not listed as an endangered ecological community or critically endangered ecological community.

**(c) in relation to the habitat of a threatened species or ecological community:**

- (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and**
  - (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and**
  - (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,**
- i. The proposed activity would result in the removal of about 0.6 hectares of native vegetation.
  - ii. The proposed activity would not isolate or fragment other areas of habitats further than the impact that pre-exists and given the ability of these species to move over distance, the relatively minor nature of the proposed activity, and the extent and quality of forests in the wider locality.
  - iii. The potential habitat to be removed is of little importance to the long-term viability in the locality particularly with consideration of the remaining woodland and forest that occurs within the locality that would remain unaffected by the proposal.

**(d) whether the action proposed is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).**

No declared areas of outstanding biodiversity value are known within the Snowy Valley LGA under the BC Act.

**(e) whether the action proposed constitutes or is part of a key threatening process or is likely to increase the impact of, a key threatening process.**

The 'clearing of native vegetation' is recognised as a major factor contributing to the loss of biodiversity. Clearing of any area of native vegetation may impact biological diversity such as habitat fragmentation limiting gene flow between small isolated populations, which may result in a reduction in the potential for biodiversity to adapt to environmental change. The proposed activity would result in the removal of about 0.6 hectares. This relatively minor loss of vegetation is considered negligible in the context of the extent of vegetation remaining within

the locality and with consideration of the proposed development, does not constitute a key threatening process.

The 'Loss of Hollow-bearing Trees' is also a KTP to consider. While this REF does not recommend the removal of any HBT, it includes safeguards should this be considered necessary.

With consideration of these factors, the proposed activity is unlikely to result in the operation of or increase the impact of a key threatening process.

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### NSW Fisheries Management Act 1994

In the FM Act, there are seven factors which are to be considered when determining if a proposed development or activity '*is likely to have a significant effect on the threatened species, or ecological communities, or their habitats*'. These seven factors must be taken into account by consent or determining authorities when considering a development proposal or development application. This enables a decision to be made as to whether there is likely to be a significant effect on the species.

The habitat assessment table in **Appendix 3** found that no threatened biota listed under the FM Act have the potential to occur to be impacted by the proposal. Given this, no further assessment is conducted.

## **APPENDIX 5 – ASSESSMENT OF SIGNIFICANCE (EPBC ACT)**



## Migratory Species

Protected under several international agreements to which Australia is a signatory, Migratory species are considered Matters of National Environmental Significance under the EPBC Act.

Under the EPBC Act, an action is likely to have a significant impact on a migratory species if it substantially modifies, destroys or isolated an area of 'important habitat' for the species (DotE, 2013). The study area is not considered to comprise 'important habitat' as it does not contain:

- Habitat used by a migratory species occasionally or periodically within a region that supports an ecological significant proportion of the population of the species
- Habitat that is of critical importance to the species at particular life-cycle stages
- Habitat used by a migratory species that is at the limit of the species' range
- Habitat within an area where the species is declining.

Given this, the potential for the proposed activity to impact on EPBC Act listed migratory species is unlikely and not considered further.

## Threatened Species

The study area and immediate surrounds contains potential habitat for a number of biota listed as threatened under the EPBC Act; Gang-gang Cockatoo, Greater Glider. The following section provides significance assessment for these biota.

### Vulnerable Species (Greater Glider)

*Will the action lead to a long-term decrease in the size of an important population of a species?*

No. There is no evidence that an 'important population' as defined by the EPBC Act occurs within the study area. Nonetheless, the proposed action would result in the direct impact of both native vegetation and potentially hollow-bearing trees. However, extensive areas of native vegetation remain within both the road reserve, and within the wider locality which would remain unaffected confirming that extensive areas of potential and known habitat would remain. A series of site-specific safeguards to minimise potential impacts have been developed for biodiversity and would be implemented should the proposed action proceed. Additionally, HBT are widespread across the study area, with the majority of these located outside of the direct impact area.

Given this, it is unlikely that the proposed action would lead to a long-term decrease in an area of occupancy of an important population of this species.

*Will the action reduce the area of occupancy of an important population?*

No. While there is no evidence to suggest that an 'important' population even occurs within the study area, the proposed action would result in the direct impact native vegetation and HBT. There are large areas of existing native vegetation in the crown land in the wider locality which would remain unaffected by the proposal and would continue to provide habitat for this

species in the locality. Additionally, HBT are widespread across the study area, with the majority of these located outside of the direct impact area. Given this, it is unlikely that the proposed action would lead to a long-term decrease in an area of occupancy of an important population of this species (should one occur there).

*Will the action fragment an existing population into two or more populations?*

No population would be fragmented into two or more populations by the current design of the proposed action. No impacts are proposed to aquatic habitats.

*Will the action adversely affect habitat critical to the survival of a species?*

No. The habitat present is not considered critical for the survival of this species.

*Will the action disrupt the breeding cycle of an important population?*

No. The proposal has the potential to impact the breeding cycle of hollow-dependant fauna. This REF has identified site-specific safeguards to ensure that potential impacts to breeding cycles are minimised through the provision of a suitably qualified and experienced person to supervise any HBT removal through a site-specific plan.

*Will the action modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?*

No. The potential habitat proposed for removal would not result in this species being likely to decline.

*Will the action result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat?*

No. Mitigation measures within section 5 provide a framework to minimise the risk of weed species becoming established as a result of this proposal.

*Will the action introduce disease that may cause the species to decline?*

No. Recommendations within section 5 provide a framework for managing potential risks to biodiversity.

*Will the action interfere with the recovery of the species?*

No. Mitigation measures outlined within section 5 suggest that it is unlikely that the proposed action would have an impact on the recovery of this species given the relatively minor level of impact proposed and that a range of mitigation measures designed specifically to minimise potential impacts to threatened species would be implemented.

#### Endangered Species and Critically Endangered Species (Gang-gang Cockatoo)

*Will the action lead to a long-term decrease in the size of a population of a species?*

No. While Gang-gang Cockatoo could potentially forage and breed in the wider study area, extensive areas of habitat remain in the locality. Further, HBT are widespread throughout the study area and well clear of the proposed impact area.

Given this, it is unlikely that the proposed action would lead to a long-term decrease in the size of a population of either species (should they even occur there).

*Will the action reduce the area of occupancy of the species?*

No. There is no evidence to suggest that a population relies upon the resources of the study area in its entirety particularly given the highly mobile nature of Gang-gang Cockatoo. Given this, the action is unlikely to reduce any area of occupancy to the detriment of this species.

*Will the action fragment an existing population into two or more populations?*

No population would be fragmented into two or more populations given the context of the design of the proposal and the high mobility of the species. No impacts to aquatic habitat are proposed.

*Will the action adversely affect habitat critical to the survival of a species?*

No. The habitat is not considered critical to this species for its survival.

*Will the action disrupt the breeding cycle of a population?*

No. Measures implemented HBT removal would ensure that any breeding cycle is not disrupted.

*Will the action modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?*

No. The availability of habitat in the locality indicates that the proposal is unlikely to impact potential habitat to the extent this species is likely to decline.

*Will the action result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat?*

No. Mitigation measures within section 6 provide a framework to minimise the risk of weed species invading adjoining habitats.

*Will the action introduce disease that may cause the species to decline?*

No. Recommendations within section 6 provide a framework for managing potential risks to biodiversity.

*Will the action interfere with the recovery of the species?*

No. Given the relatively minor nature of the proposed action, the extent of similar or higher quality habitats in the locality, and the adoption of the mitigation measures outlined within

section 5, it is unlikely that the proposed action would have an impact on the recovery of this species.

## Conclusion

With consideration of the assessments completed within Annexure C, the proposal is '*unlikely*' to have a '*significant effect*' on threatened or migratory biota or endangered or critically endangered TEC as listed by the EPBC Act. Based on this, referral to the Commonwealth Minister is not warranted.

## **APPENDIX 6 – ABORIGINAL INFORMATION MANAGEMENT SYSTEM SEARCH RESULTS (AHIMS)**



EnviroKey Pty Ltd

PO Box 7231

TATHRA New South Wales 2550

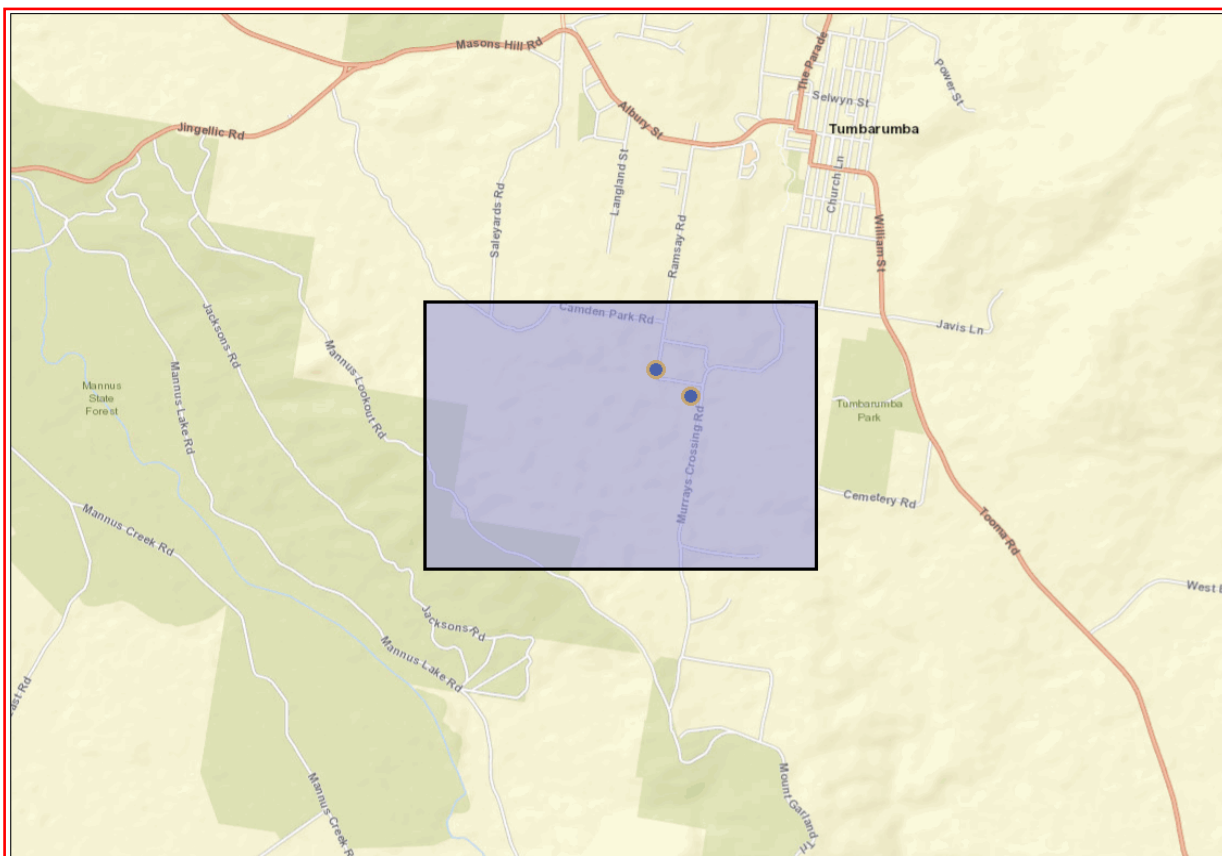
Attention: Steve Sass

Email: [steve@envirokey.com.au](mailto:steve@envirokey.com.au)

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lat, Long From : -35.8057, 147.9806 - Lat, Long To : -35.7883, 148.0115, conducted by Steve Sass on 26 October 2022.**

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

4	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

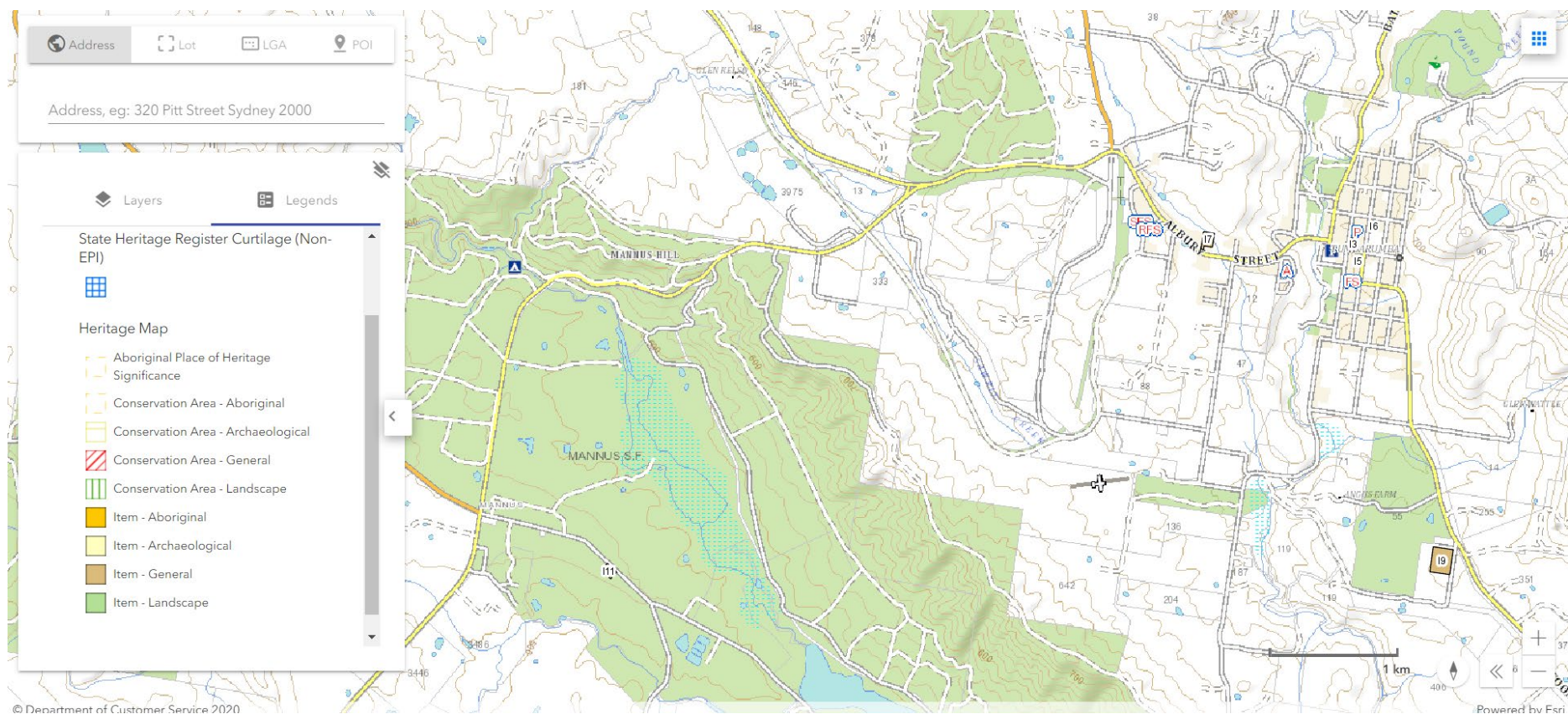
**If your search shows Aboriginal sites or places what should you do?**

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(https://www.legislation.nsw.gov.au/gazette\)](https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

**Important information about your AHIMS search**

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

## APPENDIX 7 – NON-ABORIGINAL HERITAGE SEARCHES



Tumbarumba	Tumbarumba Pioneer Cemetery	Cemetery Road	Lot 7033, DP 1001030	Local	19
Tumbarumba	Tumbarumba Court House	Bridge Street	Lot 7019, DP 1001035	Local	13
Tumbarumba	Tumbarumba Post Office	Murray Street	Lot 24, DP 1104086	Local	15
Tumbarumba	Wolters Cottage	80 Albury Street	Lots 778 and 779, DP 47976	Local	17
Tumbarumba	Tumbarumba Public School	Murray Street	Lot 3, Section 8, DP 759003	Local	16

## APPENDIX 8 – PROTECTED MATTERS SEARCH TOOL RESULTS





# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 18-Sep-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

# Summary

## Matters of National Environment Significance

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

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance (Ramsar)</a>	7
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Listed Threatened Ecological Communities:</a>	3
<a href="#">Listed Threatened Species:</a>	40
<a href="#">Listed Migratory Species:</a>	11

## Other Matters Protected by the EPBC Act

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

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

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

<a href="#">Commonwealth Lands:</a>	1
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	17
<a href="#">Whales and Other Cetaceans:</a>	None
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None
<a href="#">Habitat Critical to the Survival of Marine Turtles:</a>	None

## Extra Information

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

<a href="#">State and Territory Reserves:</a>	2
<a href="#">Regional Forest Agreements:</a>	1
<a href="#">Nationally Important Wetlands:</a>	None
<a href="#">EPBC Act Referrals:</a>	4
<a href="#">Key Ecological Features (Marine):</a>	None
<a href="#">Biologically Important Areas:</a>	None
<a href="#">Bioregional Assessments:</a>	None
<a href="#">Geological and Bioregional Assessments:</a>	None

# Details

## Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[ Resource Information ]
Ramsar Site Name	Proximity	Buffer Status
<u>Banrock station wetland complex</u>	700 - 800km upstream from Ramsar site	In feature area
<u>Barmah forest</u>	200 - 300km upstream from Ramsar site	In feature area
<u>Gunbower forest</u>	300 - 400km upstream from Ramsar site	In feature area
<u>Hattah-kulkyne lakes</u>	500 - 600km upstream from Ramsar site	In feature area
<u>Nsw central murray state forests</u>	200 - 300km upstream from Ramsar site	In feature area
<u>Riverland</u>	600 - 700km upstream from Ramsar site	In feature area
<u>The coorong, and lakes alexandrina and albert wetland</u>	700 - 800km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities	[ Resource Information ]
--	--------------------------

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

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
<u>Alpine Sphagnum Bogs and Associated Fens</u>	Endangered	Community likely to occur within area	In buffer area only
<u>Natural Temperate Grassland of the South Eastern Highlands</u>	Critically Endangered	Community likely to occur within area	In feature area
<u>White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland</u>	Critically Endangered	Community may occur within area	In feature area

Listed Threatened Species

[ Resource Information ]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.  
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
<u>Anthochaera phrygia</u> Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
<u>Calidris ferruginea</u> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
<u>Callocephalon fimbriatum</u> Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
<u>Falco hypoleucos</u> Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
<u>Grantiella picta</u> Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<u>Hirundapus caudacutus</u> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
<u>Lathamus discolor</u> Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area	In feature area
<u>Numenius madagascariensis</u> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<u>Polytelis swainsonii</u> Superb Parrot [738]	Vulnerable	Species or species habitat may occur within area	In feature area
<u>Pycnoptilus floccosus</u> Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Rostratula australis</u> Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
FISH			
<u>Galaxias rostratus</u> Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
<u>Maccullochella macquariensis</u> Trout Cod [26171]	Endangered	Species or species habitat may occur within area	In buffer area only
<u>Maccullochella peelii</u> Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<u>Macquaria australasica</u> Macquarie Perch [66632]	Endangered	Translocated population known to occur within area	In feature area
FROG			
<u>Crinia sloanei</u> Sloane's Froglet [59151]	Endangered	Species or species habitat may occur within area	In feature area
<u>Litoria booroolongensis</u> Booroolong Frog [1844]	Endangered	Species or species habitat likely to occur within area	In feature area
<u>Litoria raniformis</u> Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat may occur within area	In feature area
INSECT			
<u>Synemon plana</u> Golden Sun Moth [25234]	Vulnerable	Species or species habitat may occur within area	In buffer area only
MAMMAL			
<u>Dasyurus maculatus maculatus (SE mainland population)</u> Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area



Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Mastacomys fuscus mordicus</u> Broad-toothed Rat (mainland), Tooarrana [87617]	Vulnerable	Species or species habitat may occur within area	In feature area
<u>Nyctophilus corbeni</u> Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<u>Petauroides volans</u> Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In feature area
<u>Petaurus australis australis</u> Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<u>Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)</u> Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
<u>Pseudomys fumeus</u> Smoky Mouse, Konoom [88]	Endangered	Species or species habitat may occur within area	In buffer area only
<u>Pteropus poliocephalus</u> Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			
<u>Ammobium craspedioides</u> Yass Daisy [20758]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<u>Amphibromus fluitans</u> River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat may occur within area	In feature area
<u>Leucochrysum albicans subsp. tricolor</u> Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat may occur within area	In buffer area only
<u>Pimelea bracteata</u> [8125]	Critically Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Prasophyllum bagoense</u> Bago Leek-orchid [84276]	Critically Endangered	Species or species habitat may occur within area	In feature area
<u>Prasophyllum petilum</u> Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area	In feature area
<u>Pterostylis oreophila</u> Blue-tongued Orchid, Kiandra Greenhood [22903]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
<u>Senecio macrocarpus</u> Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In feature area
<u>Swainsona recta</u> Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area	In feature area
<u>Thesium australe</u> Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
<u>Aprasia parapulchella</u> Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area	In feature area
<u>Delma impar</u> Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area	In feature area
<u>Liopholis montana</u> Mountain Skink [87162]	Endangered	Species or species habitat may occur within area	In buffer area only
Listed Migratory Species			
		[ Resource Information ]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
<u>Apus pacificus</u> Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Hirundapus caudacutus</u> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
<u>Motacilla flava</u> Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
<u>Myiagra cyanoleuca</u> Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
<u>Rhipidura rufifrons</u> Rufous Fantail [592]		Species or species habitat likely to occur within area	In feature area
Migratory Wetlands Species			
<u>Actitis hypoleucos</u> Common Sandpiper [59309]	Critically Endangered	Species or species habitat may occur within area	In feature area
<u>Calidris acuminata</u> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
<u>Calidris ferruginea</u> Curlew Sandpiper [856]		Species or species habitat may occur within area	In feature area
<u>Calidris melanotos</u> Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
<u>Gallinago hardwickii</u> Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area	In feature area
<u>Numenius madagascariensis</u> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

## Other Matters Protected by the EPBC Act

### Commonwealth Lands [\[ Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [14992]	NSW	In buffer area only

### Listed Marine Species [\[ Resource Information \]](#)

Scientific Name	Threatened Category	Presence Text	Buffer Status
<b>Bird</b>			
<u><i>Actitis hypoleucos</i></u> Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
<u><i>Apus pacificus</i></u> Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
<u><i>Bubulcus ibis</i> as <i>Ardea ibis</i></u> Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
<u><i>Calidris acuminata</i></u> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
<u><i>Calidris ferruginea</i></u> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
<u><i>Calidris melanotos</i></u> Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
<u><i>Gallinago hardwickii</i></u> Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Haliaeetus leucogaster</u> White-bellied Sea-Eagle [943]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<u>Hirundapus caudacutus</u> White-throated Needletail [682]		Species or species habitat known to occur within area overfly marine area	In feature area
<u>Lathamus discolor</u> Swift Parrot [744]		Species or species habitat may occur within area overfly marine area	In feature area
<u>Merops ornatus</u> Rainbow Bee-eater [670]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
<u>Motacilla flava</u> Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
<u>Myiagra cyanoleuca</u> Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
<u>Neophema chrysostoma</u> Blue-winged Parrot [726]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
<u>Numenius madagascariensis</u> Eastern Curlew, Far Eastern Curlew [847]		Species or species habitat may occur within area	In feature area
<u>Rhipidura rufifrons</u> Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In feature area
<u>Rostratula australis</u> as <u>Rostratula benghalensis (sensu lato)</u> Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

## Extra Information

State and Territory Reserves			[ <a href="#">Resource Information</a> ]
Protected Area Name	Reserve Type	State	Buffer Status
Bogandyera	Nature Reserve	NSW	In buffer area only
Courabyra	Nature Reserve	NSW	In buffer area only

Regional Forest Agreements			[ <a href="#">Resource Information</a> ]
Note that all areas with completed RFAs have been included.			
RFA Name		State	Buffer Status
<a href="#">Southern RFA</a>		New South Wales	In feature area

EPBC Act Referrals					[ <a href="#">Resource Information</a> ]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status	
Not controlled action					
<a href="#">Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia</a>	2015/7522	Not Controlled Action	Completed		In feature area
<a href="#">INDIGO Central Submarine Telecommunications Cable</a>	2017/8127	Not Controlled Action	Completed		In feature area
Not controlled action (particular manner)					
<a href="#">Aerial baiting for wild dog control</a>	2006/2713	Not Controlled Action (Particular Manner)	Post-Approval		In buffer area only
<a href="#">INDIGO Marine Cable Route Survey (INDIGO)</a>	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval		In feature area



# Caveat

## 1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

## 2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

## 3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

## 4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

# Acknowledgements

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

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

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

Please feel free to provide feedback via the [Contact Us](#) page.

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## APPENDIX 9 – LOCATIONS OF HOLLOW-BEARING TREES

ID	Latitude	Longitude	Easting	Northing
1	-35.7946	148.002	590543.1	6038365
2	-35.795	148.0017	590511.6	6038330
3	-35.795	148.0013	590481.2	6038326
4	-35.795	148.0009	590440.7	6038331
5	-35.7949	148.0007	590428.6	6038332
6	-35.7945	148.0001	590374.6	6038384
7	-35.7948	147.9999	590354.1	6038347
8	-35.7948	148.0001	590367.4	6038347
9	-35.7949	148.0001	590367	6038339
10	-35.7944	147.9999	590350.7	6038389
11	-35.7947	147.9998	590346.9	6038363
12	-35.7951	147.9996	590325.6	6038321
13	-35.7947	147.9994	590311	6038361
14	-35.7946	147.9995	590317.1	6038368
15	-35.7949	147.9992	590286.6	6038343
16	-35.7951	147.999	590272	6038322
17	-35.7948	147.999	590270.6	6038352
18	-35.7943	147.9988	590252.1	6038403
19	-35.7948	147.9985	590226.9	6038355
20	-35.7947	147.9983	590211.3	6038359
21	-35.7948	147.9983	590208.6	6038346
22	-35.7948	147.9982	590198.1	6038357
23	-35.7943	147.9979	590170.9	6038405
24	-35.7943	147.9975	590132.5	6038403
25	-35.7945	147.9973	590119.7	6038382
26	-35.7947	147.9975	590133.8	6038364
27	-35.7947	147.9969	590085.1	6038361
28	-35.7946	147.997	590094	6038370
29	-35.7943	147.9968	590071.7	6038403
30	-35.7942	147.9967	590067.6	6038419
31	-35.7941	147.9968	590070.7	6038427
32	-35.794	147.9968	590071.2	6038439
33	-35.7942	147.9965	590049.9	6038423
34	-35.7944	147.9963	590031.8	6038394
35	-35.794	147.9964	590035	6038439
36	-35.7941	147.9962	590023.7	6038434
37	-35.7943	147.9962	590022	6038412
38	-35.7943	147.9961	590007.8	6038412
39	-35.7942	147.9962	590015.8	6038421

ID	Latitude	Longitude	Easting	Northing
40	-35.794	147.9957	589974.2	6038444
41	-35.7942	147.9954	589949.1	6038420
42	-35.794	147.9952	589933.2	6038443
43	-35.7944	147.9953	589933.8	6038396
44	-35.7944	147.9954	589944.8	6038396
45	-35.7944	147.995	589914.7	6038395
46	-35.7943	147.9948	589889.7	6038411
47	-35.7944	147.9947	589887.6	6038400
48	-35.7945	147.9946	589874.2	6038390
49	-35.794	147.9946	589879.1	6038439
50	-35.7944	147.9944	589857.6	6038400
51	-35.7941	147.9943	589845.7	6038433
52	-35.7941	147.9942	589836.8	6038430
53	-35.7941	147.994	589824.8	6038433
54	-35.7944	147.9939	589813.7	6038397
55	-35.7943	147.9936	589780.4	6038407
56	-35.7941	147.9937	589791.7	6038429
57	-35.7942	147.9936	589780.1	6038425
58	-35.794	147.9939	589809.3	6038447
59	-35.7937	147.9939	589811	6038475
60	-35.7935	147.9935	589775.5	6038498
61	-35.7935	147.9939	589807.9	6038504
62	-35.7934	147.9937	589796.5	6038514
63	-35.7933	147.9939	589810.2	6038522
64	-35.7933	147.9936	589787.9	6038517
65	-35.791	147.9883	589304.5	6038785
66	-35.7918	147.9892	589393.5	6038694
67	-35.7919	147.9893	589396.1	6038680
68	-35.792	147.9897	589431.6	6038666
69	-35.7919	147.9897	589431.8	6038679
70	-35.792	147.99	589461.5	6038667
71	-35.7919	147.99	589465.9	6038679
72	-35.7919	147.9902	589477.3	6038678
73	-35.792	147.9902	589481.5	6038668
74	-35.792	147.9903	589489.1	6038672
75	-35.7922	147.9907	589527.2	6038649
76	-35.7921	147.9909	589539.4	6038655
77	-35.7922	147.991	589550.8	6038644
78	-35.7922	147.9915	589601	6038649



ID	Latitude	Longitude		Easting	Northing
79	-35.792	147.9917		589619.3	6038665
80	-35.7919	147.9917		589614.7	6038674
81	-35.7921	147.9921		589654.3	6038653
82	-35.7924	147.9922		589661.4	6038626
83	-35.7922	147.9927		589704.3	6038645

## **APPENDIX 10 – FLORA SPECIES RECORDED DURING THE FIELD SURVEY**

Scientific Name	Common Name
<b>Exotic</b>	
<i>Centaurea erythraea</i>	Common Century
<i>Cirsium vulgare</i>	Spear Thistle
<i>Conyza albida</i>	Tall Fleabane
<i>Cytisus scoparius</i>	Scotch Broom
<i>Galium murale</i>	Small Goosegrass
<i>Hedera helix</i>	English Ivy
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Hypericum perforatum</i>	St Johns Wort
<i>Hypochaeris radicata</i>	Flatweed
<i>Lactuca serriola</i>	Prickly Lettuce
<i>Malus domestica</i>	Apple Tree
<i>Malus floribunda</i>	Crab Apple
<i>Narcissus ?pseudonarcissus</i>	Daffodil
<i>Onopordum acanthium</i>	Scotch Thistle
<i>Paspalum dilatatum</i>	Paspalum
<i>Phalaris aquatica</i>	Bulbous Canary-grass
<i>Phalaris paradoxa</i>	Awned Canary-grass
<i>Plantago lanceolata</i>	Plantain
<i>Prunus subhirtella</i>	Ornamental Cherry
<i>Ranunculus arvensis</i>	Field Buttercup
<i>Romulea rosea</i>	Onion Grass
<i>Rosa rubiginosa</i>	Sweet Briar Rose
<i>Rubus fruticosus</i>	Blackberry
<i>Rumex acetosella</i>	Sheep Sorrel
<i>Setaria pumila</i>	Pale Pigeon Grass
<i>Trifolium campestre</i>	Hop Clover
<i>Trifolium sp.</i>	Clover
<b>Native</b>	
<i>Acacia baileyana</i>	Cootamundra Wattle
<i>Acacia dealbata</i>	Silver Wattle

Scientific Name	Common Name
Acacia parvifolia	Coil-pod Wattle
Acaena novae-zelandiae	Bidgee Widgee
Acaena ovina	Australian Sheep's Burr
Bursaria spinosa	Sweet Bursaria
Carex appressa	Tall Sedge
Carex sp.	Sedge
Cassinia uncata	Sticky Cassinia
Cryptandra amara	Bitter Cyptandra
Cynodon dactylon	Couch Grass
Daviesia buxifolia	Box-leaf Bitter-pea
Daviesia latifolia	Hop bitter-pea
Elymus scaber	Common Wheat-grass
Eragrostis benthamii	Common Lovegrass
Eucalyptus bridgesiana	Apple Box
Eucalyptus dives	Broad-leaved Peppermint
Eucalyptus mannifera	Brittle Gum
Eucalyptus pauciflora	Snow Gum
Eucalyptus pauciflora	White Sallee
Eucalyptus stellulata	Black Sallee
Eucalyptus viminialis	Ribbon Gum
Euchiton sphaericus	Star Cudweed
Exocarpos cupressiformis	Native Cherry
Geranium solanderi	Australian Cranesbill
Juncus sp.	A Rush
Lachnagrostis filiformis	Common Blown Grass
Lomandra filiformis	Wattle Mat Rush
Lomandra longifolia	Spiny-head Mat-rush
Lomandra multiflora	Many-flowered Mat-rush
Oxylobium ?oxylobioides	Mountain Oxylobium
Poa labillardierei	Common Tussock-grass
Poa sieberiana	Grey Tussock-grass

Scientific Name	Common Name
Rumex brownii	Browne's dock
Themeda triandra	Kangaroo Grass

## **APPENDIX 11 – FAUNA SPECIES RECORDED DURING THE FIELD SURVEY**



Species Group	Common Name	Scientific Name
Amphibia	Beeping Froglet	<i>Crinia parinsignifera</i>
Amphibia	Spotted Marsh Frog	<i>Limnodynastes tasmaniensis</i>
Amphibia	Eastern Pobblebonk	<i>Limnodynastes dumerilii</i>
Amphibia	Clicking Froglet	<i>Crinia signifera</i>
Aves	Common Bronzewing	<i>Phaps chalcoptera</i>
Aves	Australian White Ibis	<i>Threskiornis molucca</i>
Aves	Noisy Friarbird	<i>Philemon corniculatus</i>
Aves	Magpie-lark	<i>Grallina cyanoleuca</i>
<b>Aves</b>	<b>Brown Treecreeper</b>	<b><i>Climacteris picumnus</i></b>
Aves	White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>
Aves	White-faced Heron	<i>Egretta novaehollandiae</i>
Aves	Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>
Aves	Satin Bowerbird	<i>Ptilonorhynchus violaceus</i>
Aves	Striated Pardalote	<i>Pardalotus striatus</i>
Aves	Red Wattlebird	<i>Anthochaera carunculata</i>
Aves	Sacred Kingfisher	<i>Todiramphus sanctus</i>
Aves	Red-browed Finch	<i>Neochmia temporalis</i>
Aves	Brown Thornbill	<i>Acanthiza pusilla</i>
Aves	Sulphur-crested Cockatoo	<i>Cacatua galerita</i>
Aves	Crimson Rosella	<i>Platycercus elegans</i>
<b>Aves</b>	<b>Dusky Woodswallow</b>	<b><i>Artamus cyanopterus</i></b>
Aves	Laughing Kookaburra	<i>Dacelo novaeguineae</i>
Aves	Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>
Aves	Grey Shrike-thrush	<i>Colluricincla harmonica</i>
Aves	Grey Fantail	<i>Rhipidura albiscapa</i>
Aves	Australian Magpie	<i>Cracticus tibicen</i>
Aves	White-throated Treecreeper	<i>Cormobates leucophaea</i>
Aves	Rufous Whistler	<i>Pachycephala rufiventris</i>
Aves	Superb Fairy-wren	<i>Malurus cyaneus</i>
Aves	Spotted Pardalote	<i>Pardalotus punctatus</i>
Aves	White-throated Gerygone	<i>Gerygone albogularis</i>

Species Group	Common Name	Scientific Name
Mammalia	Rabbit	<i>Oryctolagus cuniculus</i>
Mammalia	Swamp Wallaby	<i>Wallabia bicolor</i>
Reptilia	Inland Snake-eyed Skink	<i>Cryptoblepharus australis</i>

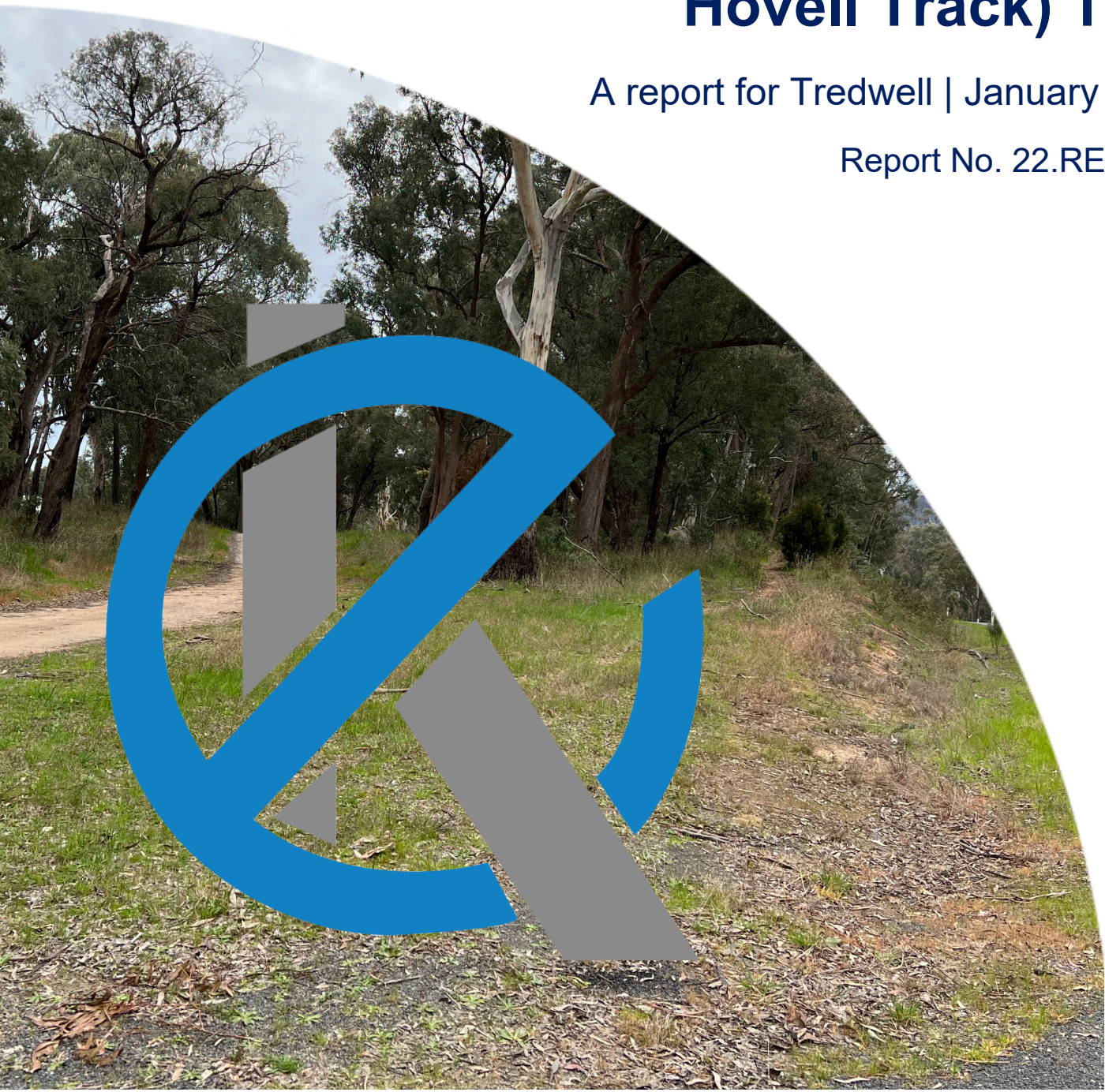
**Bold** denotes species listed under the BC Act or EPBC Act.

# **Review of Environmental Factors**

## **Proposed Tumbarumba to Henry Angel Trackhead (Hume and Hovell Track) Trail**

A report for Tredwell | January 2023

Report No. 22.REF-076



## Citation

EnviroKey (2023) Review of Environmental Factors: Proposed Tumbarumba to Henry Angel Trackhead (Hume and Hovell Track) Trail. A report prepared by S. Sass for Tredwell Management Services on behalf of Snowy Valley Regional Council. Report No. 22.REF-076. Final report. Version 1. 27/01/2023

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## Definitions & Acronyms used within this REF

BC Act	Biodiversity Conservation Act 2016
BOS	Biodiversity Offset Scheme
EEC	Endangered Ecological Community
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FM Act	NSW Fisheries Management Act 1994
ESD	Ecologically Sustainable Development
HBT	Hollow-bearing tree
LEP	Local Environmental Plan
LGA	Local Government Area
Likely	Taken to be a real chance or possibility
Locality	The area within a 5 km radius of the proposal
Local population (migratory or nomadic fauna)	The population comprises those individuals that are likely to occur in the study area from time to time.
Local population (resident fauna)	The population comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to use habitats in the study area.
Local population (threatened flora)	The population comprises those individuals occurring in the study area or the cluster of individuals that extend into habitat adjoining and contiguous with the study area that could reasonably be expected to be cross-pollinating with those in the study area.
Migratory species	A species specified in the schedules of the EPBC Act
NES	National Environmental Significance
NP	National Park
NP&W Act	NSW National Parks and Wildlife Act 1974
NPWS	National Parks and Wildlife Service
OEH	NSW Office of Environment & Heritage
PCT	Plant Community Type
PoM	Plan of Management
Proposal	The area to be directly affected by the proposal. That is, the footprint of the proposal.
REF	Review of Environmental Factors
Region	A biogeographical region that has been recognised and documented such as the Interim Biogeographical Regions of Australia (IBRA) (Thackway and Creswell, 1995). The study area is located within the South Eastern Highlands Bioregion.
SEPP	State Environmental Planning Policy
Subject site	The area to be directly affected by the proposal; that is, the footprint of the proposal.

Study area	The study area includes the subject site and any additional areas that are likely to be affected by the proposal, either directly or indirectly.
SVRC	Snowy Valleys Regional Council
Threatened biota	Those threatened species, endangered populations or endangered ecological communities considered known or likely to occur in the study area.
Threatened species	A species specified in the schedules of the BC Act, FM Act or the EPBC Act.

## Declaration

This Review of Environmental Factors provides a true and fair review of the proposed activity in relation to its potential effects on the environment. It addresses to the fullest extent possible, all of the factors listed in Clause 171 of the Environmental Planning and Assessment Regulation 2021.

Signed: 

Name: Steve Sass

Delegation: Director / Principal Ecologist, EnviroKey Pty. Ltd.

Date: 27 January 2023

I have examined this REF and the certification and accept the REF on behalf of Snowy Valleys Regional Council.

Signed .....

Name .....

Delegation .....

Date .....



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# 1 INTRODUCTION

EnviroKey were engaged by Tredwell Management Services (TMS) on behalf of Snowy Valleys Regional Council (SVRC) to undertake a Review of Environmental Factors (REF) to assess the environmental impacts associated with the proposed Tumbarumba to Henry Angel Trackhead (Hume & Hovell Track) Trail near Tumbarumba.

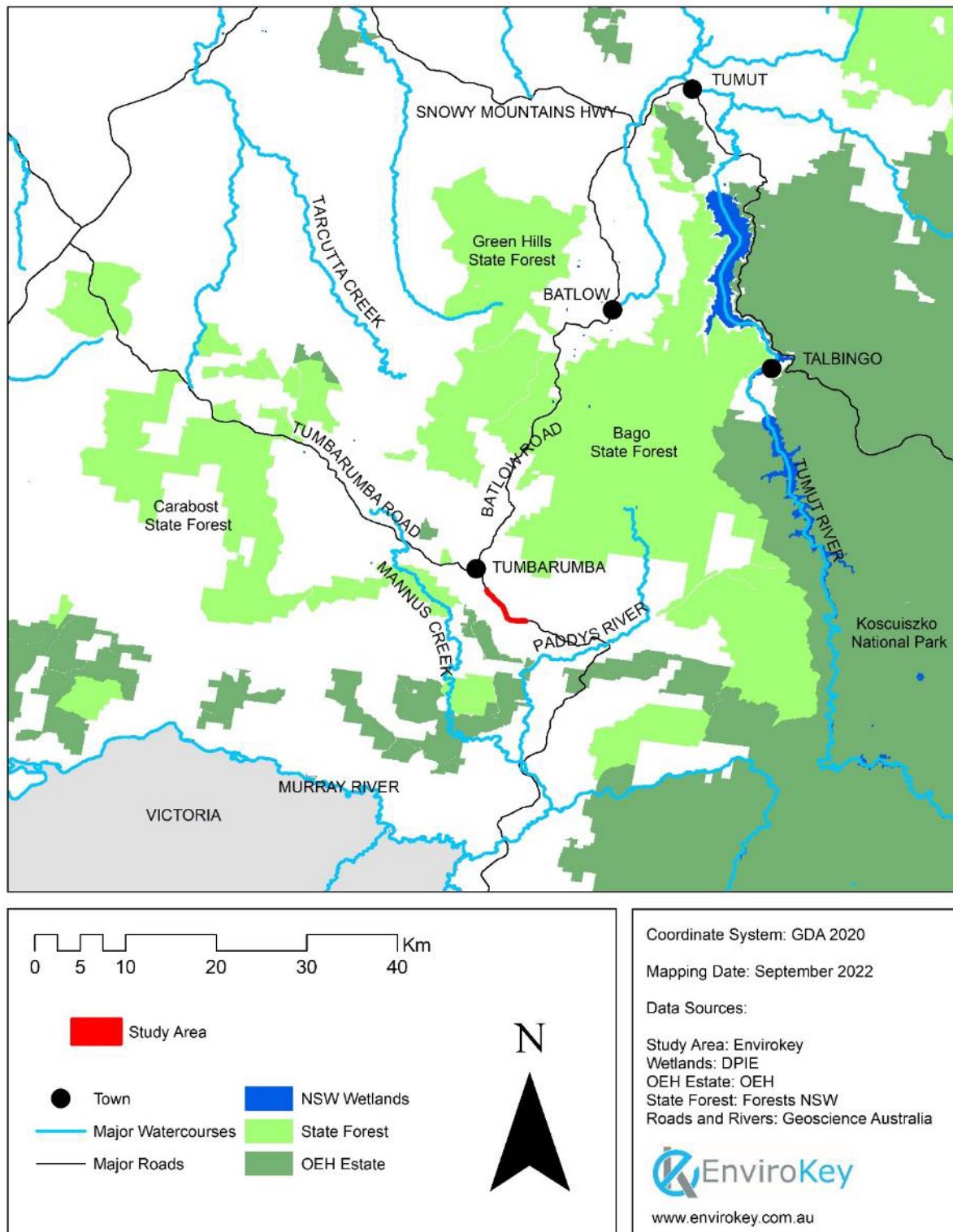
The proposal is for the construction and operation of shared trail within crown land and a road corridor that would link the existing Tumbarumba to Racecourse Trail to the Henry Angel Trackhead, south of Tumbarumba. The general location for this proposal is shown in **Figure 1-1**.

A draft Regional Tracks and Trails Masterplan for the Snowy Valleys LGA identifies the proposed Tumbarumba to Henry Angel Trackhead Trail as an important addition to tourism in the region, particularly as an “add-on” to the existing Tumbarumba to Rosewood Rail Trail.

Accordingly, this REF:

- Describes the existing environment;
- Identifies the environmental impacts associated with the proposed activity; and
- Recommends safeguards designed to mitigate potential impacts associated with the proposed activity.

This REF has been prepared in accordance with the requirements of Section 111 of the *Environmental Planning and Assessment Act 1979* and Section 171 of the *Environmental Planning and Assessment Regulation 2021* specifying a “duty to consider environmental impact”. This REF was prepared by suitably qualified personnel with full details of these provided (**Appendix 1**).



**Figure 1-1:** General location of the proposal

## 2 PROPOSED ACTIVITY

### 2.1 STUDY AREA

The study area applied to this REF is the existing road reserve and adjacent Travelling Stock Reserve. The Proposal is located within the South Eastern Highlands Bioregion (Thackway and Creswell, 1995, NPWS, 2003), Snowy Valleys local government area (LGA), Murray Local Land Service (LLS) region and the Bondo sub-region. The proposal is located within the Tooma Granite Ranges landscape system (Mitchell, 2002).

### 2.2 THE PROPOSED ACTIVITY

The proposed work is as follows:

- Install adequate and suitable sediment control
- Earthworks for pathway
- Construct pathway
- Backfill and compact around pathway
- Re-establish all non-pathway areas

The proposal is identified in **Appendix 2** of this REF.

A draft Regional Tracks and Trails Masterplan for the Snowy Valleys LGA identifies the proposed Tumbarumba to Hume & Hovell Trail as an important addition to tourism in the region, particularly as an “add-on” to the existing Tumbarumba to Rosewood Rail Trail.

### 2.3 ALTERNATIVES

#### 2.3.1 *Option 1: Do nothing*

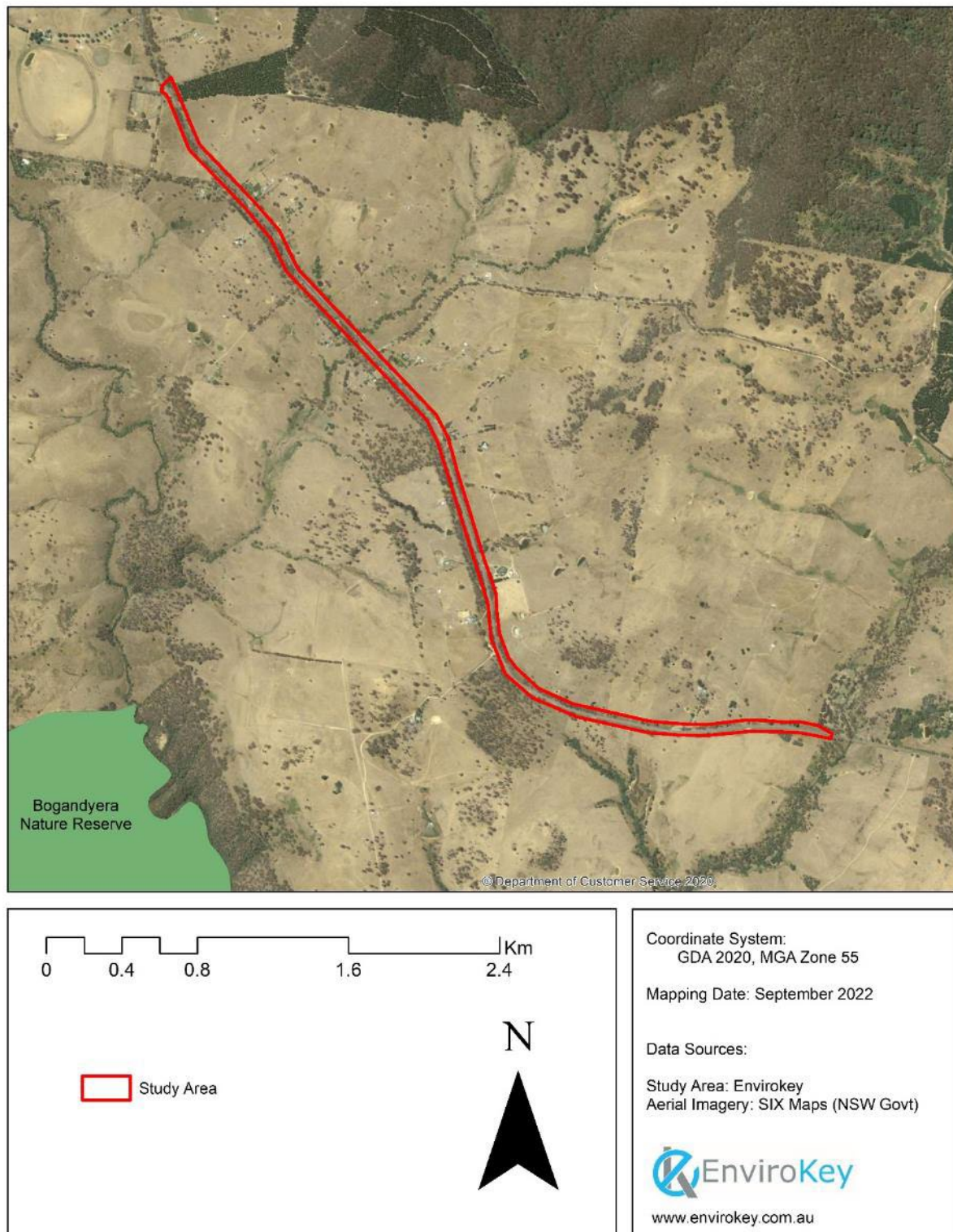
With consideration of the ‘do nothing’ approach, the objectives of the draft Snowy Valleys Regional Tracks and Trails Master Plan would not be met.

#### 2.3.2 *Option 2: Construct and operate the Tumbarumba to Hume & Hovell Trail*

Option two is for the proposal as identified in **Appendix 2**. This option achieves the outcomes of the proposal while having minor environmental impact. A draft Regional Tracks and Trails Masterplan for the Snowy Valleys LGA identifies the proposed Tumbarumba to Hume & Hovell Trail as an important addition to tourism in the region, particularly as an “add-on” to the existing Tumbarumba to Rosewood Rail Trail.

**Given the benefits of Option 2, this is the preferred option for the proposal.**





**Figure 2-1:** Study area applied to this REF



### 3 LEGISLATIVE CONTEXT

This chapter provides information on Commonwealth, State and Local legislation that is relevant to the proposed activity.

#### 3.1 NSW ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) forms the legal and policy platform for development assessment and approval in NSW and aims to, inter alia, 'encourage the proper management, development and conservation of natural and artificial resources'.

The proposal will be determined by SVRC under Division 5.1 of the Act. The SRVC as the determining authority, must 'examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity' pursuant to Section 111 of the Act. Clause 171 of the *Environmental Planning & Assessment Regulation 2021* (EP&A Regulation) identifies matters that 'must be taken into account concerning the impact of an activity on the environment'.

Section 5A of the EP&A Act contains five factors to be considered by determining authorities when considering the significance of impacts on threatened biota associated with activities under Part 5 of the Act (the '5-part test'). Should the 5-part test determine that a '*significant effect*' on any threatened biota listed under the BC Act is likely, then the authority must prepare a Species Impact Statement. Species which occur or have the potential to occur in the study area have been considered in in **Appendix 3**.

The EP&A Act provides the framework for environmental planning in NSW and includes provisions to ensure that proposals which have the potential to significantly affect the environment are subject to detailed assessment.

#### 3.2 NSW CROWN LAND MANAGEMENT ACT 2016

The study area is located within a Travelling Stock Reserve (TSR) and within an existing road corridor. Any proposed work must be authorised.

Part of the study area is known as the Burra TSR and is managed by SVRC as the Crown Land Manager (Lot 7029 DP 1027446). This TSR is known for its conservation value (Davidson et al., 2005). As the Crown land Manager under the Crown land Management Act, approvals and licenses would be granted by SVRC.

### 3.3 STATE ENVIRONMENTAL PLANNING POLICY (T&ISEPP) 2021

Part 2 of the T&ISEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. This is detailed below.

<b>Is consultation with Council required under clauses 13-15 of the infrastructure SEPP?</b>		
Are the works likely to have a substantial impact on the stormwater management services which are provided by council?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works likely to generate traffic to an extent that will strain the capacity of the existing road system in a local government area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will the works involve connection to a council owned sewerage system? If so, will this connection have a substantial impact on the capacity of the system?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will the works involve connection to a council owned water supply system? If so, will this require the use of a substantial volume of water?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a minor or inconsequential disruption to pedestrian or vehicular flow?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will the works involve more than a minor or inconsequential excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Is there a local heritage item (that is not also a state heritage item) or a heritage conservation area in the study area for the works? If yes, does a heritage assessment indicate that the potential impacts to the heritage significance of the item/area are more than minor or inconsequential?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works located on flood liable land? If so, will the works change flooding patterns to more than a minor extent?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

<b>Is consultation with Council required under clauses 16 of the T&amp;ISEPP?</b>		
Are the works adjacent to a national park, nature reserve or other area reserved under the <i>National Parks and Wildlife Act 1974</i> , or on land acquired under that Act?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works adjacent to an aquatic reserve or a marine park declared under the <i>Marine Estate Management Act 2014</i> ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Is the proposal in the Sydney Harbour Foreshore Area as defined by the <i>Sydney Harbour Foreshore Authority Act 1998</i> ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works for the purpose of residential development, an educational establishment, a health services facility, a correctional facility or group home in bush fire prone land?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Would the works increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map? (Note: the dark sky region is within 200 kilometres of the Siding Spring Observatory)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works on buffer land around the defence communications facility near Morundah? (Note: refer to Defence Communications Facility Buffer Map referred to in clause 5.15 of Lockhart LEP 2012, Narrandera LEP 2013, and Urana LEP 2011).	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works on land in a mine subsidence district within the meaning of the <i>Mine Subsidence Compensation Act 1961</i> ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

### 3.4 NSW WILDERNESS ACT 1987

The objectives of the NSW *Wilderness Act 1987* are:

- to provide for the permanent protection of wilderness areas;
- to provide for the proper management of wilderness areas; and
- to promote the education of the public in the appreciation, protection and management of wilderness.

The proposal is not located within an area listed under the NSW *Wilderness Act 1987*.

### 3.5 NSW BIODIVERSITY CONSERVATION ACT 2016

The *Biodiversity Conservation Act 2016* (BC Act) specifies that a Test of Significance (ToS) must be considered by decision-makers regarding the effect of a proposed development or activity on threatened species or ecological communities, or their habitats (OEH, 2018). These factors form part of the threatened species assessment process under the *Environmental Planning and Assessment Act 1979* (EP&A Act) and are collectively referred to as the ToS.

Determining authorities have a statutory obligation, under Division 5.1 of the EP&A Act, to consider whether a proposal is likely to significantly affect threatened species, populations or ecological communities, or their habitats by applying the ToS. This is done so within **Appendix 4**.

### 3.6 COMMONWEALTH ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) enables the Australian Government to join with the states and territories in providing a national scheme of environment and heritage protection and biodiversity conservation to ensure that actions likely to cause a 'significant impact' on matters of national environmental significance (NES) undergo an assessment and approval process. Under the Act, an action includes a project, undertaking, development, or activity.

Under the EPBC Act, actions that have, or are likely to have a significant impact on a matter of national environmental significance (NES) require approval from the Australian Government Minister for the Department of the Environment (DotE) (DoCCEE&W, 2022).

The nine matters of NES that are protected under the EPBC Act are:

- Listed threatened species and ecological communities
- Listed migratory species
- Wetlands of international importance
- Commonwealth marine environment
- World heritage properties
- National heritage places
- The Great Barrier Reef Marine Park
- Nuclear actions
- A water resource, in relation to coal seam gas development and large coal mining development.

The Significant Impact Guidelines for the EPBC Act (DoCCEE&W, 2022) set out criteria to assist in determining whether an action requires approval and in particular, whether a proposed action is likely to have a 'significant impact' on a matter of NES.

If a proposed action is likely to have a significant impact on a matter of NES, referral of the proposal to the Department of the Environment and Energy is required to confirm whether the Commonwealth considers the proposal a 'controlled action' and subsequently requiring Minister approval under the EPBC Act.

This REF provides an assessment to ascertain whether the proposal will require referral to the Commonwealth. This assessment is provided within **Appendix 5**.

### 3.7 NSW PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997 (POEO ACT)

The POEO Act provides an integrated system of licensing for polluting activities within the objective of protecting the environment. Section 148 of this Act requires notification of pollution incidents. Section 120 of this Act provides that it is an offence to pollute waters. Schedule 1 of the POEO Act describes activities for which an Environment Protection Licence is required.

SVRC must ensure that all stages of the proposal are managed to prevent pollution, including pollution of waters. Any contractor and SVRC workers are obliged to notify the relevant authorities (e.g. Environment Protection Authority (EPA)) when a 'pollution incident' occurs that causes or threatens 'material harm' to the environment.

The proposal does not conform with the definition of a scheduled activity under this Act, therefore an Environment Protection Licence would not be required.

### 3.8 NSW HERITAGE ACT 1977

The NSW *Heritage Act 1977* defines 'environmental heritage' and can include places, buildings, works, relics, moveable objects, and precincts. A property is a heritage item if it is:

- listed in the heritage schedule of the Tumbarumba Local Environmental Plan (LEP);
- listed on the State Heritage Register, a register of places and items of particular importance to the people of NSW; or
- listed in the National Heritage Database.

Heritage items are considered in this REF in Section 4.8.

### 3.9 STATE ENVIRONMENTAL PLANNING POLICY KOALA HABITAT PROTECTION 2021

State Environmental Planning Policy (SEPP) Koala Habitat Protection (2021) encourages the conservation and management of natural vegetation areas that provide habitat for Koalas, to ensure that permanent free-living populations would be maintained over their present range and reverse the current trend of koala population decline. Local councils cannot approve development in an area affected by the policy without consideration of the Approved Koala Management Plan for the land.

The proposal is within areas mapped as Koala Development Application Map and Site Investigation Area for Koala Plans of Management by the SEPP. However, given the nature of the proposal area and the minor impact to native and non-native vegetation, no consideration of the Koala SEPP is deemed necessary.

### 3.10 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

Ecologically sustainable development (ESD) involves the effective integration of social, economic, and environmental considerations in decision-making processes. In 1992, the Commonwealth and all state and territory governments endorsed the *National Strategy for Ecologically Sustainable Development*. In NSW, the concept has been incorporated in legislation such as the EP&A Act and Regulation. For the purposes of the EP&A Act and other NSW legislation, the Intergovernmental Agreement on the Environment (1992) and the *Protection of the Environment Administration Act* 1991 outline the following principles which can be used to achieve ESD.

1. The precautionary principle: that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions can be guided by:
  - (i) careful evaluation to avoid, wherever practicable, serious, or irreversible damage to the environment, and
  - (ii) an assessment of the risk-weighted consequences of various options.
2. Inter-generational equity: that the present generation should ensure that the health, diversity, and productivity of the environment are maintained or enhanced for the benefit of future generations.
3. Conservation of biological diversity and ecological integrity: that conservation of biological diversity and ecological integrity should be a fundamental consideration.

The aims, structure and content of this REF are guided by these principles. The precautionary principle has been adopted in the assessment of impact; all potential impacts have been considered and mitigated where a risk is present. Where uncertainty exists, measures have been suggested to address it.



## 4 ENVIRONMENTAL ASSESSMENT

### 4.1 BIODIVERSITY

#### 4.1.1 *Database searches*

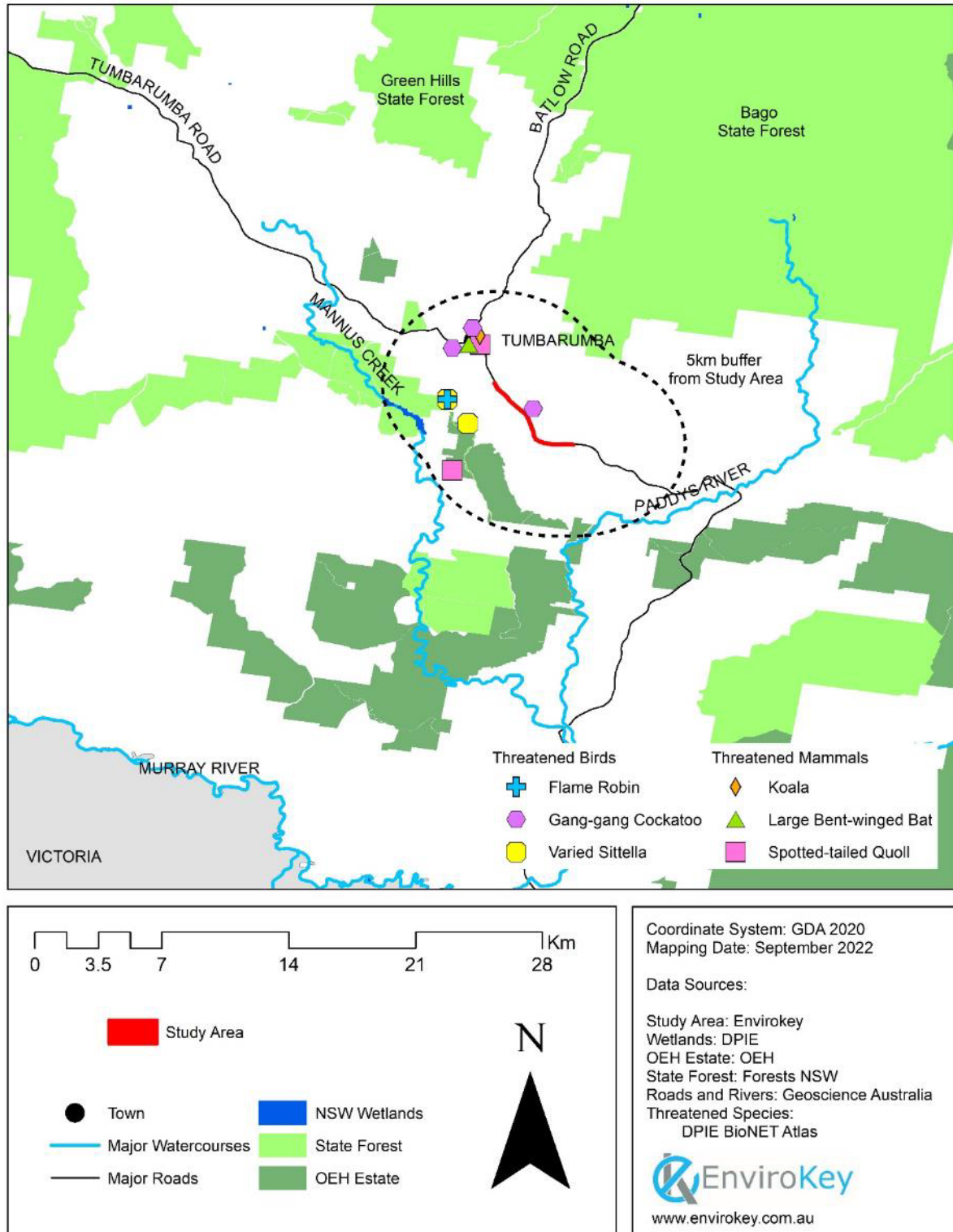
Background research was carried out to collect and review information on the presence or likelihood of occurrence of:

- Threatened terrestrial and aquatic species and their habitat
- Threatened ecological communities
- Important habitat for migratory species
- Areas of outstanding biodiversity value.

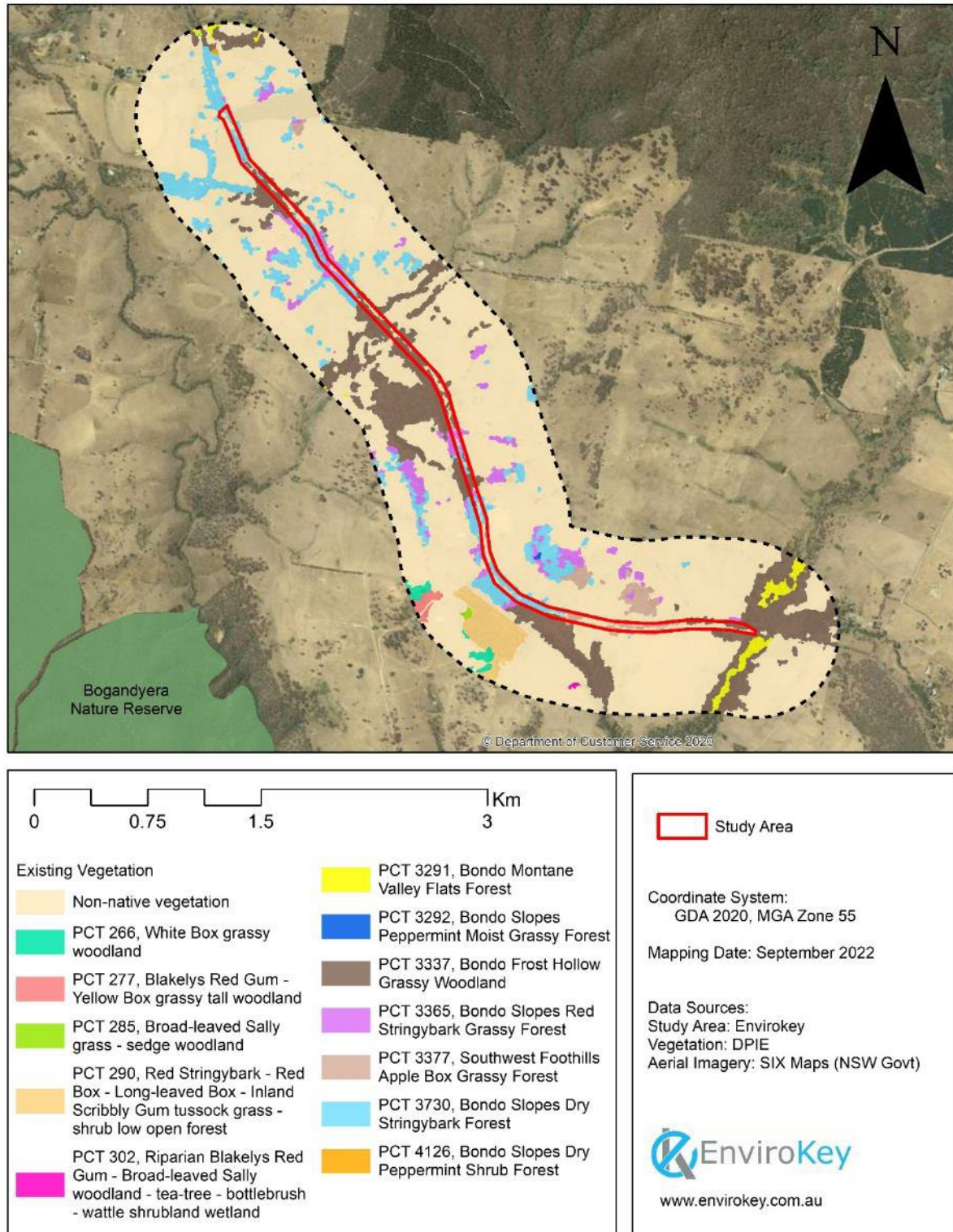
The following databases and information sources were reviewed:

- BioNet - the website for the Atlas of NSW Wildlife and Threatened Biodiversity Data Collection (TBDC) – searched [September 2022]
- BioNet Vegetation Classification database – reviewed [September 2022]
- Department of Agriculture, Water, and the Environment (DAWE) Protected Matters Search Tool – searched [September 2022]
- NSW DPI Fisheries Spatial Data Portal
- NSW State Vegetation Type Map

These searches identified records of threatened and migratory species as well as the NSW State Vegetation Type (SVT) mapping. This data is provided in **Figure 4-1-2**.



**Figure 4-1:** Existing records of threatened species within the locality



**Figure 4-2:** Existing vegetation community mapping from the NSW State Vegetation Type map

### 4.1.2 Existing Environment

The existing environment is characterised by woodland and open forest, as well as Cleared/highly disturbed land. The native vegetation within the study area is consistent with three plant community types (PCT). These being PCT 3337 Bondo Frost Grassy Woodland (14.66 hectares), PCT 3730 Bondo Slopes Dry Stringybark Forest (11.44 hectares) and PCT 3377 South West Foothills Apple Box Grassy Forest (2.53 hectares). The latter community fits the specific criteria for the threatened ecological community, Box-gum Woodland. Cleared/highly disturbed land is widespread within the study area (17.81 hectares).

The vegetation in the study area is in moderate to good condition given the relatively low diversity of weed species (**Appendix 10**). The study area also contains high numbers of hollow-bearing trees (HBT) (**Figure 4-5**). Our searches revealed at least 67 HBT (**Figure 4-5**, **Appendix 9**) confirming the potentially high value of this habitat for hollow-dependant fauna such as the NSW listed threatened species Squirrel Glider and nationally listed species Greater Glider, both known from the Tumberumba area.

The flora and fauna species recorded are consistent with those expected in the landscape around Tumberumba (**Appendix 10 and 11**).

#### Threatened and Migratory Fauna

One threatened fauna species listed under the BC Act were recorded during the field survey. This being the Brown Treecreeper. A single Brown Treecreeper was observed leaving a low sapling, and flying up to a tree hollow, presumably to a nest to feed a partner or chicks. Previously recorded sightings of threatened species indicate that some species frequent the areas adjacent to the proposal. **Appendix 3, 4 & 5** details threatened species and an analysis of their potential to be impacted by the proposal.

No EPBC Act listed biota were recorded during the field survey.

#### Threatened Flora Species

No flora species listed under the BC Act or the EPBC Act were found within the proposal footprint.

#### Threatened Ecological Communities

PCT 3377 South West Foothills Apple Box Grassy Forest is consistent with the threatened ecological community (TEC), Box-gum Woodland. This TEC is listed under the BC Act, and by specific criteria under the EPBC Act. The general dominance of exotic flora in the groundcover confirms that this vegetation does not meet the specific criteria for consideration under the EPBC Act.



## Limitations

A common limitation of many biodiversity studies is the short period of time in which they are conducted or the season they are conducted in. When combined with a lack of seasonal sampling this can lead to either low detection rates or false absences being reported. This is also particularly relevant to highly mobile species that may not have been in the study area at the time of the survey. Given this, further analysis was conducted to evaluate which threatened and migratory biota were likely to occur within the vicinity of the proposed activity proposed activity based on the presence of habitat. This is detailed within **Appendix 3**.

**Table 4-4-1:** Examples of vegetation and habitat within the vicinity of the proposal.







#### 4.1.3 *Impact Assessment*

There are a number of known and potential impacts that could occur as a result of the proposal. In the absence of a detailed design, we used a proposed pathway on the southern side of the road, through each vegetation community. A clearing width of 3 metres was used to estimate construction impacts and for the purpose of calculating impacts for this REF. On



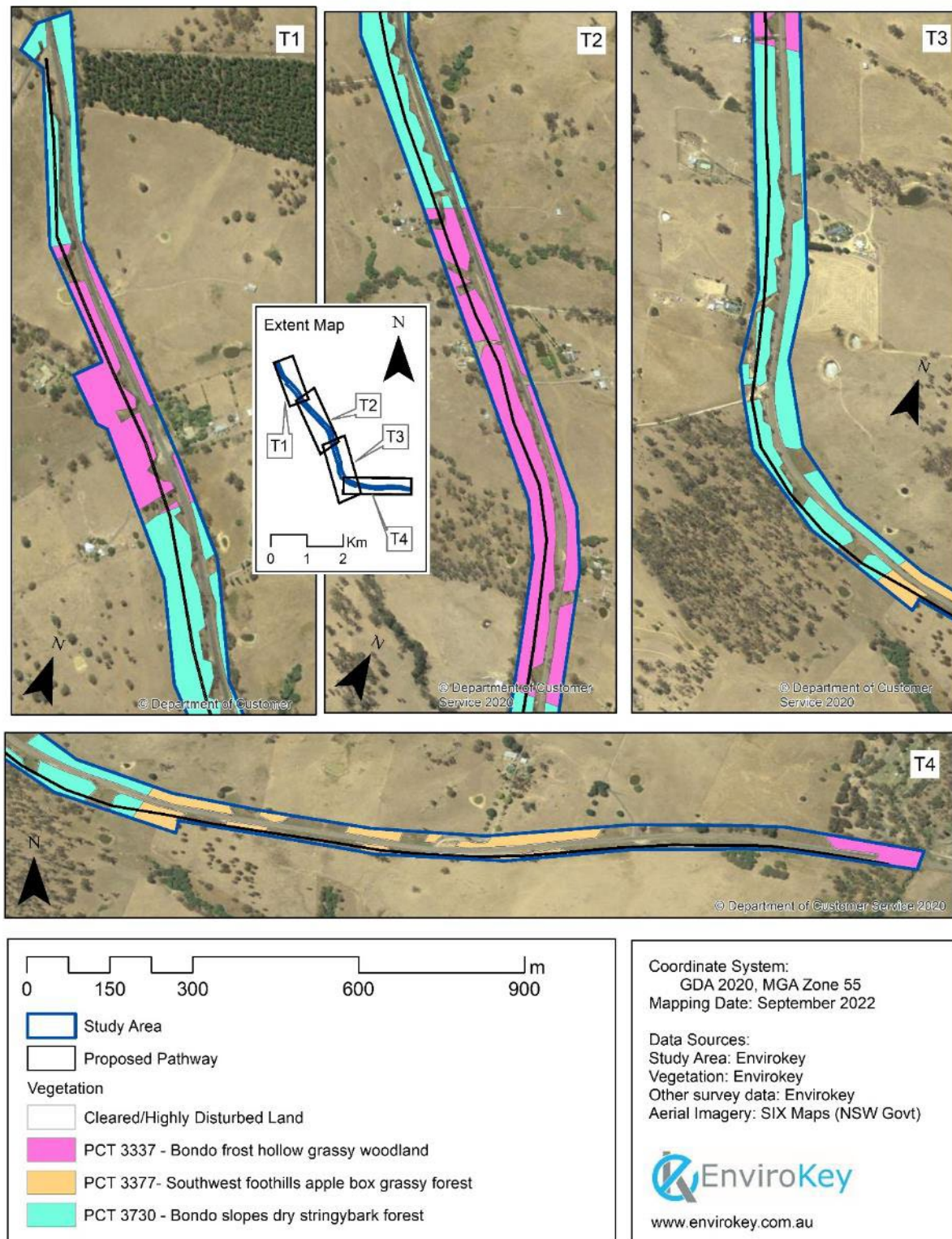
this basis, the proposal would result in the potential removal of 1.68 hectares of native and non-native vegetation as follows:

- PCT 3730 Bondo Slopes Dry Stringybark Forest: 0.65 hectares
- PCT 3377 Bondo Frost Grassy Woodland: 0.29 hectares
- PCT 3377 South West Foothills Apple Box Grassy Forest: 0.33 hectares
- Cleared/highly disturbed: 0.41 hectares

On this basis, impacts to native vegetation are limited to 1.27 hectares.

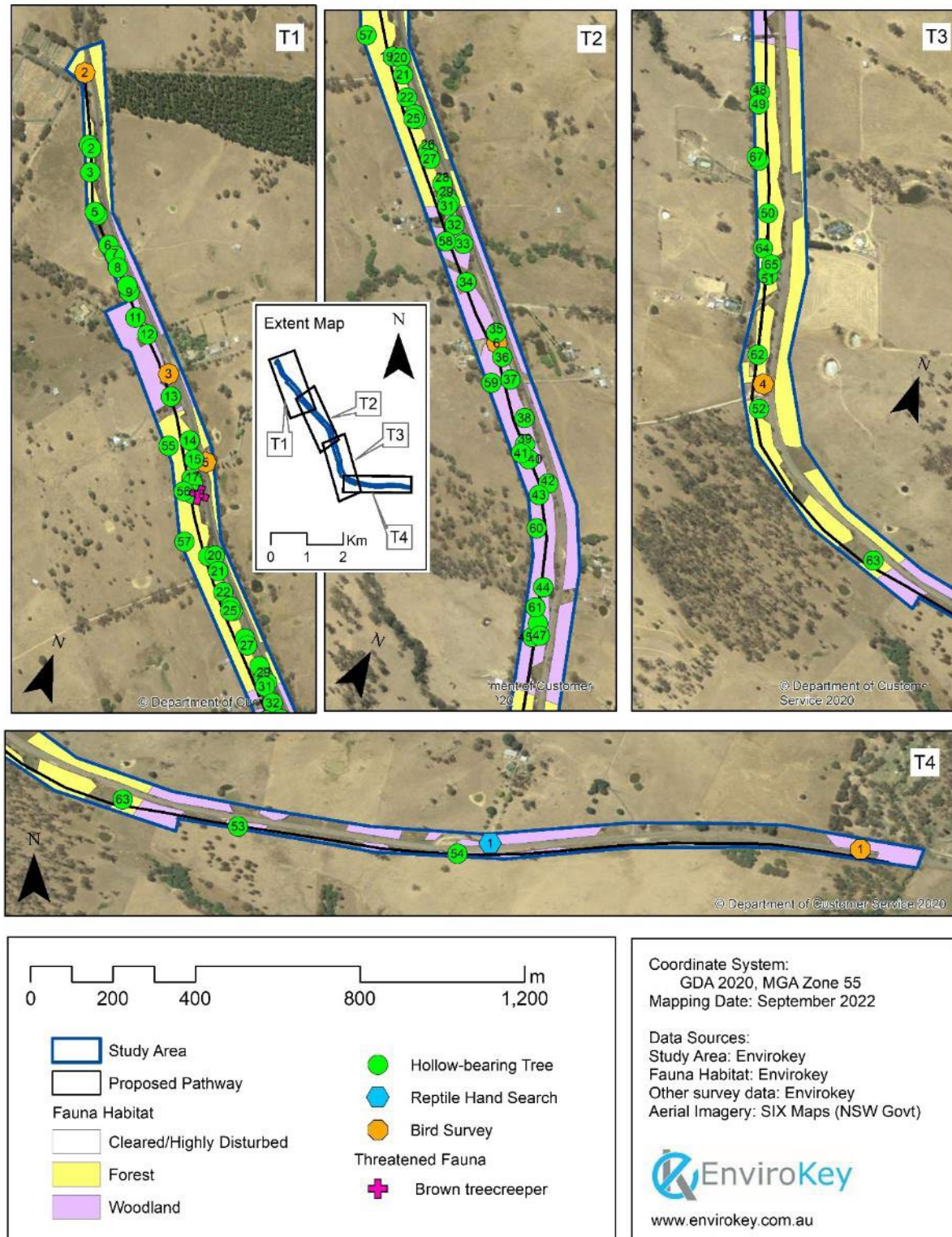
Overall, the footprint of the proposal removes mostly ground and mid-storey vegetation and all vegetation communities are extensive with the study area. However, five HBT may require removal, although it is anticipated that the final design will have some flexibility around these habitat features. Nonetheless, the proposed impact is minor in nature and the potential impacts to biodiversity are manageable with appropriate safeguards.

Significance Assessments completed in accordance with the BC Act and EPBC Act have determined that it is 'unlikely' that the proposed activity will have a significant effect on threatened species, populations, communities, and their habitats (**Appendix 4 & 5**).



**Figure 4-3:** Vegetation communities within the study area





**Figure 4-4:** Field survey locations and threatened species recorded within the study area

#### 4.1.4 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- Construction activities should not occur during intense rain events or in a predicted extended rain event.
- Erosion and sediment control plan should be established and maintained to avoid sediment runoff during any vegetation clearing and construction and should only be removed once the ground is stabilised.
- Erosion and sediment controls would be in position prior to the proposed activity commencing and left *insitu* for as long as necessary for the site to become stabilised. However, should these controls begin to deteriorate and lose functionality; they are to be replaced immediately.
- No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.
- Removal of any hollow-bearing trees should only be carried out under a hollow-bearing tree protocol. This protocol would also include direct supervision of a suitably qualified and experienced ecologist. The ecologist would collect, hold and relocate any microchiropteran bats, or arboreal mammals to adjoining habitat within the study area during the hollow-bearing tree removal process.
- No HBT can be removed between October to January inclusive to avoid the known breeding season of Gang-gang Cockatoo.
- There must be no release of dirty water into drainage lines and/or waterways.
- All fuels, chemicals and liquids are to be stored in an impervious bunded area or containers.
- An emergency spill kit must be kept on site at all times and maintained throughout the construction work. The spill kit must be appropriately sized for the volume of substances at the work site.

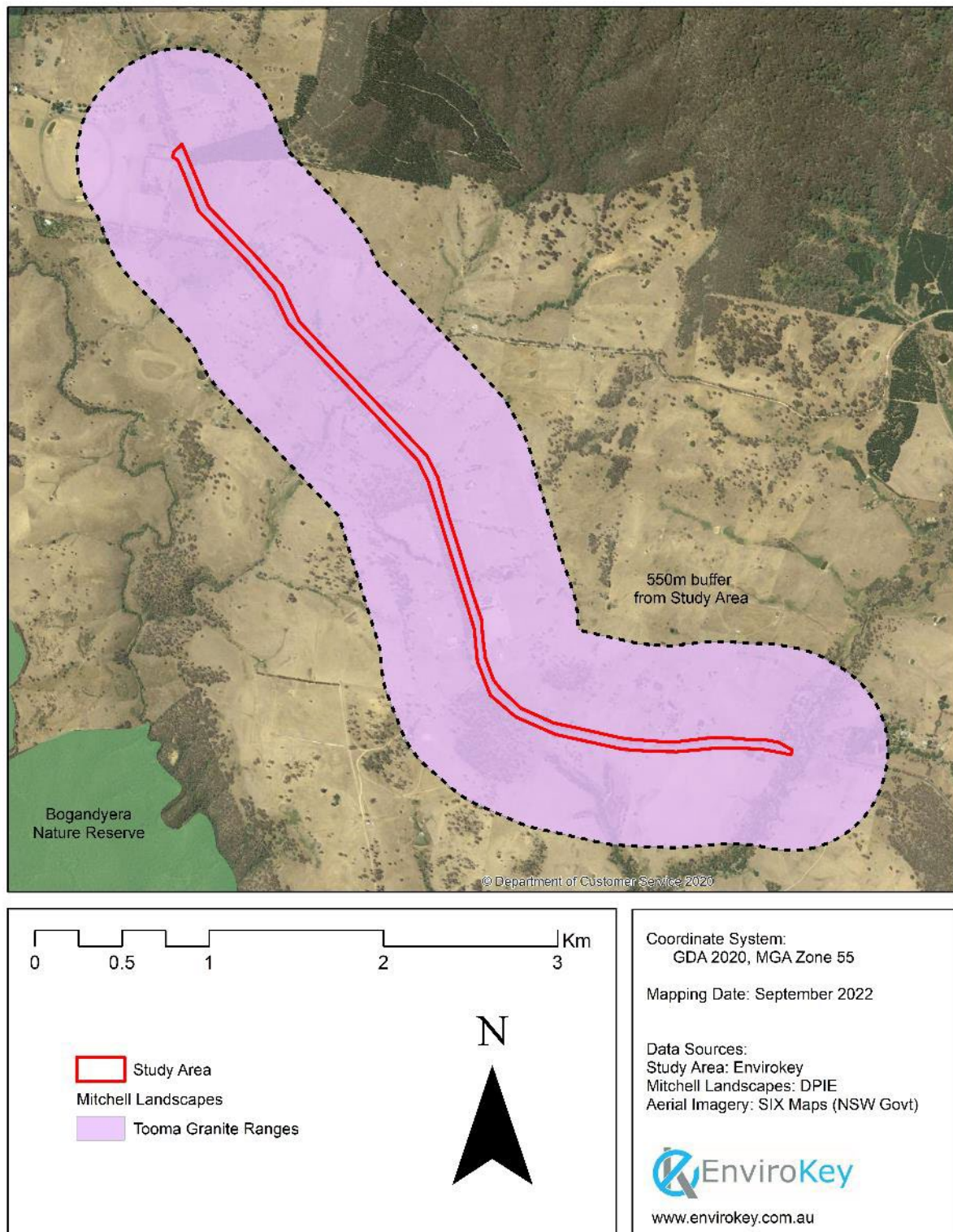
## 4.2 LANDFORM, SOILS, HYDROLOGY AND WATER QUALITY

### 4.2.1 *Existing Environment*

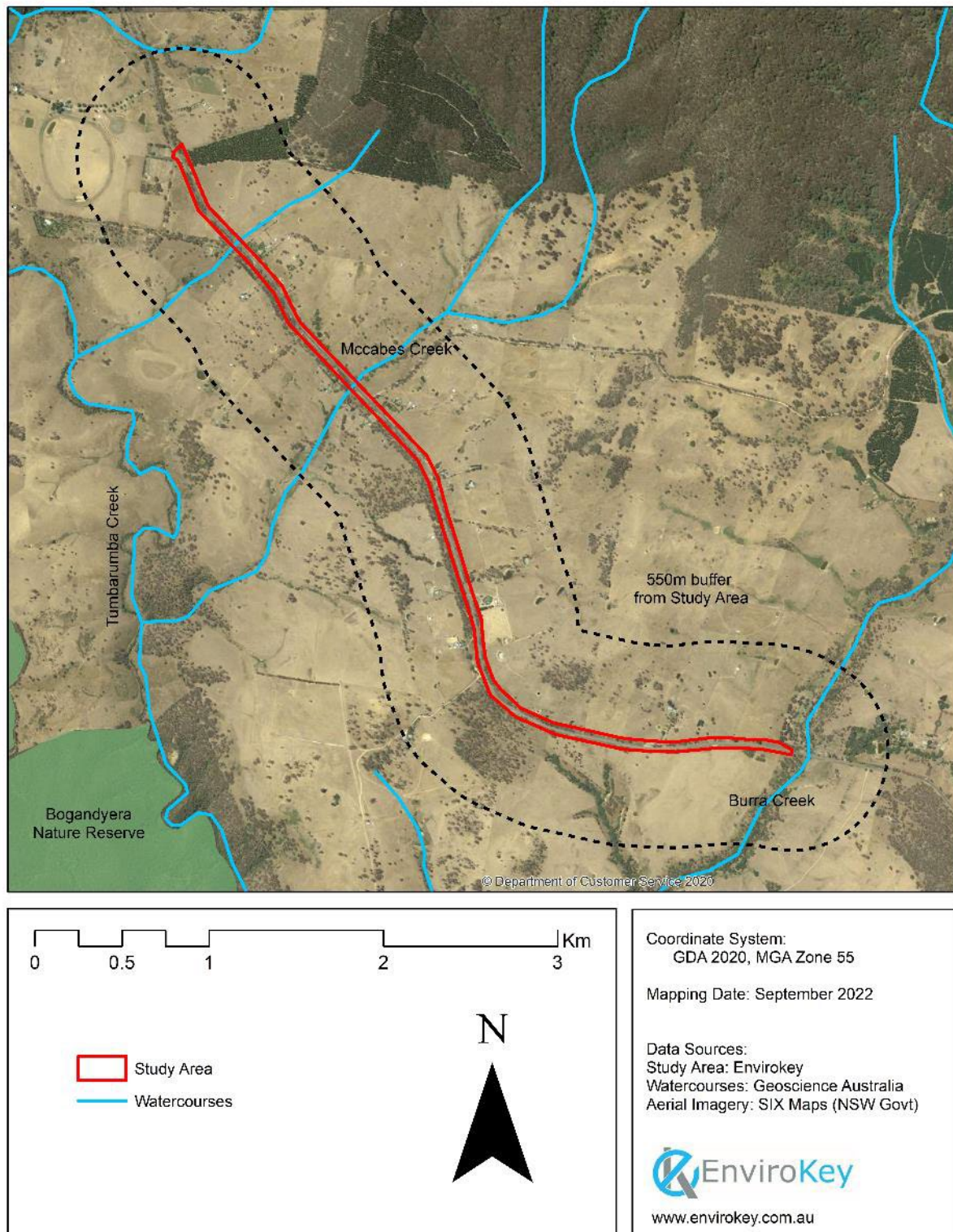
The proposal is located within the Tooma Granite Mitchell Landscape (**Figure 4-6**) (Mitchell, 2002). This landscape is characterised by rounded hills, ranges and plateau on Silurian gneissic granite. General elevation is between 700 and 1400 metres ASL. Soils are red and yellow gritty-texture contrast soils merging to gradational profiles at about 1000 metres.

Two minor waterways traverse the proposal; one of these a named waterway McCabes Creek (**Figure 4-7**). Burra Creek is at the southern end of the proposal, but outside of the study area.





**Figure 4-5:** Mitchell landscapes in the vicinity of the proposal



**Figure 4-6:** Waterways within the vicinity of the proposal



The proposal is located on an Erosional Soil Landscape. This is defined as:

*‘Soil landscapes that have been sculpted primarily by the erosive action of running water. Streams are well-defined and capable of transporting their sediment load. Soils are usually shallow (with occasional deep patches) and mode of origin is variable and complex. Soils may be either absent, derived from waterwashed parent materials or derived from in situ weathered bedrock. In many instances, subsoils have formed in situ while topsoils have formed from materials washed from further upslope. Erosional soil landscapes usually consist of steep to undulating hillslopes and may include tors, benches’*

There are no occurrences or likely occurrences of acid sulfate soils within proximity of the proposal as mapped on the Acid Sulfate Soil Risk Mapping.

#### 4.2.2 Impact Assessment

The proposal would result in minor earthworks, including the potential removal of up to 1.68 hectares of vegetation. During construction, disturbed areas could be subject to erosion resulting in deterioration of the existing environment and increased turbidity and a decrease in water quality entering local waterways.

The key factor influencing the extent of sediment runoff and stormwater pollution is likely to be weather events. The occurrence of a major storm event at a critical phase of the construction period could potentially result in higher levels of turbid run-off into the waterway.

#### 4.2.3 Proposed Safeguards

EnviroKey recommend the following safeguards:

- To manage erosion and sedimentation during construction, a sediment and erosion control plan shall be prepared. Erosion and sediment control practices should follow the recommendations and checklists outlined in:
  - *Managing Urban Stormwater: Soils and Construction Volume 1* (NSW, 2006)
  - *Managing Urban Stormwater: Soils and Construction – Installation of Services Vol 2A* (DECC, 2007)
- Rehabilitate exposed bare ground at the completion of the work.
- Erosion and sediment controls would be in position prior to proposed activity commencing and left *insitu* for as long as necessary for the site to become stabilised. However, should these controls begin to deteriorate and lose functionality; they are to be replaced immediately.
- No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.

## 4.3 NOISE AND VIBRATION

### 4.3.1 *Existing Environment*

While no recording or ongoing monitoring of acoustic qualities has been completed, the proposal area is located in setting expected to consist of minor levels of moderate background noise including livestock, people, machinery and vehicles.

A desktop review identifies a number of potentially sensitive receivers within the vicinity of the proposal (**Figure 4-8**). A total of 14 are located within 100 metres of the proposal including the Tumbarumba Cemetery.

### 4.3.2 *Impact Assessment*

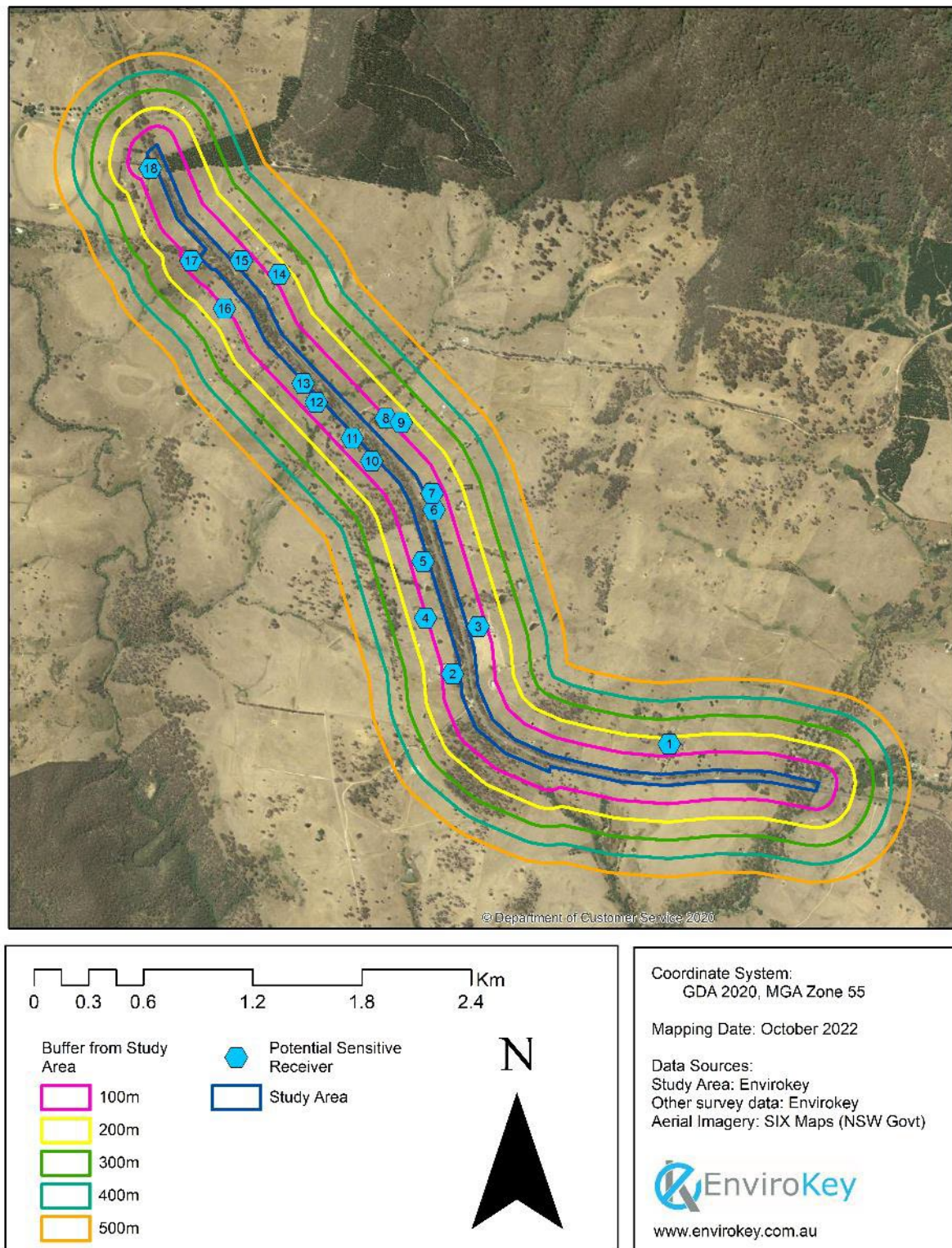
The proposal would result in noise and vibration from construction equipment such as machinery and vehicles. It is expected that noise and vibration would vary during the construction period. The proposed activity would not involve any blasting or drilling.

Upon completion, noise and vibration associated with construction activity would cease. During operation, and the distance of receivers away from the proposal, it is more than likely that potential impacts would be minor and inconsequential.

### 4.3.3 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- Construction activity would be restricted to the following standard working hours:
  - Monday-Friday: 7:00am to 6.00pm
  - Saturday: 8.00am to 1.00pm
  - Sunday and Public Holidays: no work
- Should the proposed work be outside of standard working hours, additional mitigations measures may be required.
- No work should occur within 200 metres of the Tumbarumba Cemetery when a service within 1 hour before, during, or within 1 hour after the completion of a service.
- Completion of the proposed work in the minimum timeframe practicable.
- Noise output would be minimised through the use of modern equipment that is regularly maintained.
- Machinery engines would be switched off, minimising noise emissions, rather than being left idling for long period.



**Figure 4-7:** Potentially sensitive receivers adjacent to the study area

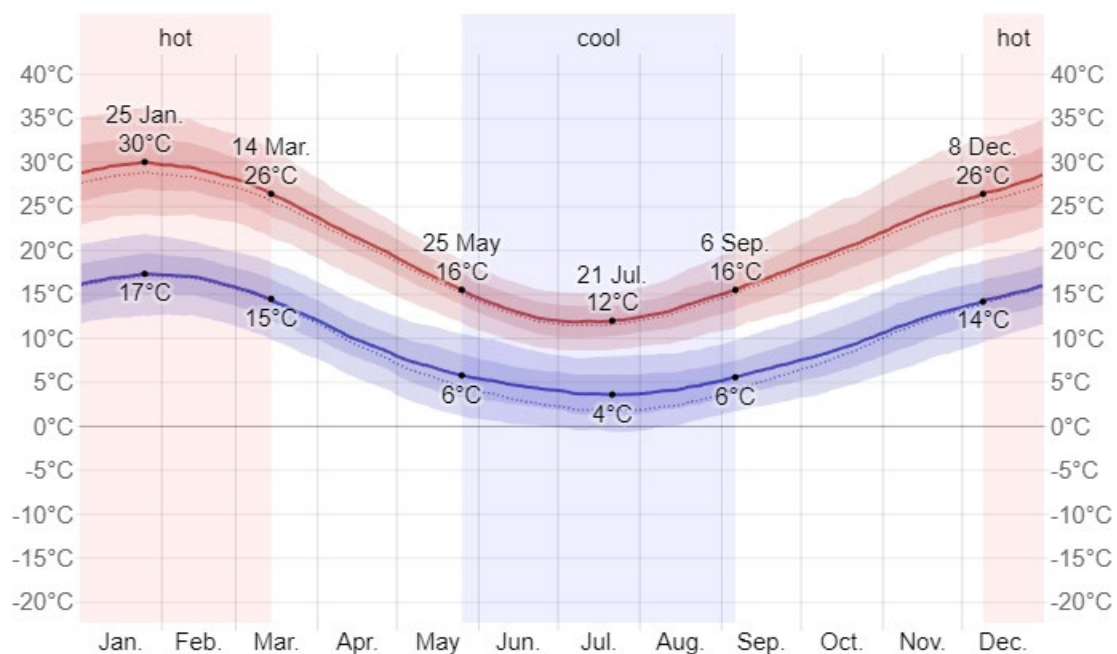
## 4.4 CLIMATE AND AIR QUALITY

### 4.4.1 Existing Environment

Climatic data was sourced from the closest official weather station located at Tumut. The hottest month of the year is January, with an average high of 30°C and a low of 17°C. The coldest month is July with an average low of 4°C and a high of 12°C (**Figure 4-9**). Rain falls throughout the year in Tumut. The month with the most rain is July, with an average rainfall of 66 millimetres while April has the least monthly rainfall with an average of 41 millimetres.

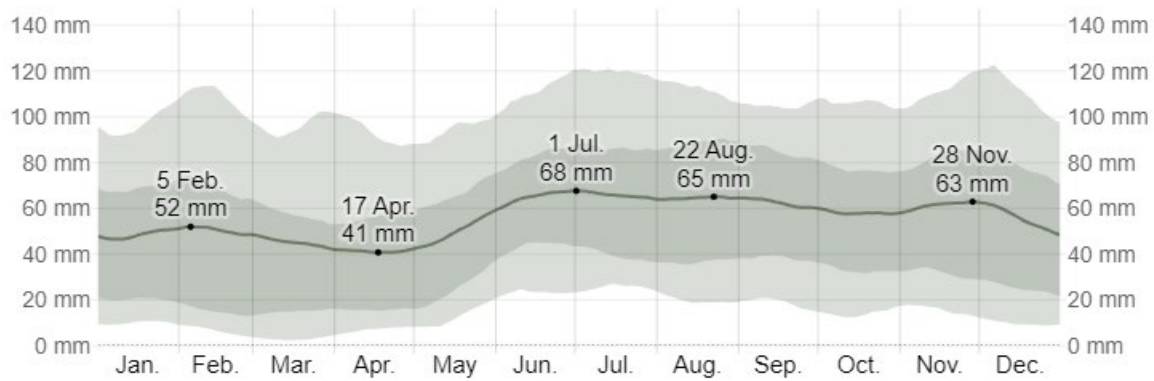
The most recent State of the Environmental Report identified the Snowy Valleys LGA as having 'very good' air quality and that the contamination occurs mostly from motor vehicles and smoke from bush fires and hazard reduction activities.

Air quality in the study area is likely to be high considering its location away from primary sources of air containments such as heavy industry and major traffic areas.



**Figure 4-8:** Average Temperature data for the Tumut Weather Station (courtesy of WeatherSpark)





**Figure 4-9:** Average Rainfall data for the Tumut Weather Station (courtesy of WeatherSpark)

#### 4.4.2 Impact Assessment

##### Construction Impact

Local air quality has the potential to decrease slightly during the construction phase should the generation of dust and fine particulate matter during earthworks and when potential vegetation clearing occurs. Emissions would also be generated during the operation of equipment, such as excavators, heavy machinery, and motor vehicles. These negative impacts would be restricted to the construction period and are considered negligible given the location of the site in the local context.

##### Post Construction Impact

There is no post construction impact anticipated.

#### 4.4.3 Proposed Safeguards

EnviroKey recommends the following safeguards:

- Any stockpiles with the capacity to cause dust should be dampened or otherwise controlled to suppress dust.
- Trucks carrying loads of material such as soil, road base, gravel or spoil should be covered.
- All machinery should be periodically inspected and maintained to ensure minimum levels of emissions.
- Machinery engines should be switched off, rather than left idling for long periods.

## 4.5 VISUAL IMPACT

### 4.5.1 *Existing Environment*

The existing environment is dominated by forest and woodland within an agricultural setting.

### 4.5.2 *Impact Assessment*

Unmanaged, visual values may be comprised of damage to retained vegetation and the invasion of exotic flora, refuse from construction and hap-hazard storage of machinery. The main visual impacts that would occur as a result of the proposed work are:

- The potential removal of a relatively small area of vegetation (about 1.68 hectares).
- The excavation/importation of soil/fill if required for the proposal. These impacts are considered temporary as all disturbed areas would be stabilized following the completion of construction.
- The influx of machinery. This impact is unavoidable and is only relevant during the construction period.

### 4.5.3 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- The proposed work area should be kept clean and orderly at all times, ensuring that no waste is left at the site following completion of the proposed work.
- Machinery and equipment storage should be conducted in a single location, where possible.
- Temporary sediment controls should be removed from the site once it is stabilised.

## 4.6 SOCIO-ECONOMIC IMPACT

### 4.6.1 *Existing Environment*

The study area runs parallel to the Tooma Road (MR 628), and comprises multiple driveways to homes, business, and the Tumbarumba Cemetery, that form an important part of the community.

### 4.6.2 *Impact Assessment*

It is anticipated that minor delays to Tooma Road users would be expected, in sections of work where one lane of the road may need to be closed, to facilitate the proposed work. These delays are unlikely to exceed five minutes and appropriate signage (to SVRC standards) would be installed during the construction period to inform road users of potential delays if this is likely.



The delays are unlikely to exceed 16 weeks in duration.

The proposed work may also have the potential to impact on the safety of the public and workers. Construction sites are known to have an inherent risk to workers and the general public using areas within or adjacent to such sites. However, these impacts would be temporary; occurring only during the construction period and would be mitigated by appropriate safeguards.

#### 4.6.3 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- Potential hazards should be minimised by ensuring that the proposed works are completed in accordance with relevant SVRC standards and WHS requirements.
- Dial Before You Dig MUST be consulted to ensure that the locations of all underground services are known PRIOR to excavation commencing. Appropriate actions must be formulated by the Project Manager and Site Supervisor to minimise the risk of these services becoming disrupted.
- Construction activity would avoid weekends and public holidays where possible.
- The proposed works would be completed in the minimum timeframe practical.

## 4.7 ABORIGINAL HERITAGE

### 4.7.1 *Approach*

To consider whether there are any Aboriginal heritage items within the vicinity of the proposed work, a search of the Aboriginal Heritage Information Management Systems (AHIMS) maintained by OEH was conducted (**Appendix 6**). An assessment with consideration of the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* was also conducted (section 4.7.2).

### 4.7.2 *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*

The purpose of the code of practice is to assist individuals and organisations (such as SVRC) to exercise due diligence when carrying out activities that may harm Aboriginal objects and to determine whether they should apply for consent in the form of an Aboriginal Heritage Impact Permit (AHIP) (DECCW, 2010). In the context of protecting Aboriginal cultural heritage, due diligence involves taking *reasonable and practical measures* to determine if an action will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm.

A search of the Aboriginal Heritage Information Management Systems (AHIMS) maintained by OEH found no Aboriginal objects within the vicinity of the proposal, potentially suggesting a landscape of lower significance to Aboriginal people (**Appendix 6**).

However, the proposed work is not consistent with the low impact activities prescribed within the NPW Regulation in that it will not be conducted on land that is previously disturbed by past activities or that the land has been the subject of human activity where disturbance remains *clear and observable*.

Based on this interpretation and application of the *Due Diligence* guidelines, the proposed works require consultation with the local Aboriginal community. Unless the consultation process indicates otherwise, an Aboriginal Cultural Heritage Assessment would be required.

It should also be noted that **any** decision about carry out further investigation through onsite survey of Aboriginal objects, consultation, an Aboriginal Cultural Heritage Assessment or applying for an AHIP using the information obtained through exercising *Due Diligence* is the responsibility of SVRC.

#### 4.7.3 *Proposed Safeguards*

With consideration of the document '*Due Diligence Code of Practice for the protection of Aboriginal Objects in New South Wales*' the following safeguards are proposed:

- The proposed works require consultation with the local Aboriginal community. Unless the consultation process indicates otherwise, an Aboriginal Cultural Heritage Assessment would be required.
- During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any Aboriginal objects.
- If human skeletal remains are found during the activity, work must stop immediately, secure the area to prevent unauthorised access and contact NSW Police and OEH.
- If potential material is identified, construction activities proximal to the potential material would cease and the NSW OEH will be contacted immediately to determine appropriate management. Notification procedures can be found at [www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm](http://www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm) The NPW Act requires that, if a person finds an Aboriginal object on land and the object is not already recorded on AHIMS, they are legally bound under s.89A of the NPW Act to notify NSW Heritage as soon as possible of the object's location. This requirement applies to all people and to all situations, including when you are following the Due Diligence Code.

## 4.8 HISTORIC HERITAGE

### 4.8.1 *Approach*

To consider whether there are any historic heritage items within the vicinity of the proposed activity, a search for items of Commonwealth, State and Local significance was completed. This involved a review of the Tumbarumba LEP and the ESpatial Planner through the DPE. In

addition, searches for any items that were potential relics as defined by the NSW *Heritage Act* 1977, were also undertaken during the site analysis.

#### 4.8.2 *Results*

There are no known local heritage items within the vicinity of the proposal and no items of potential relevance were identified during the site analysis.

The results of the database searches are provided within **Appendix 7**.

#### 4.8.3 *Potential Impacts*

No heritage items were identified within the vicinity of the proposal; therefore, no potential impacts are anticipated as a result of the proposed work.

#### 4.8.4 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any item that could be of historic heritage.
- If potential material is identified (other than that detailed within this REF), construction activities proximal to the potential material would cease and the NSW Heritage Office will be contacted immediately to determine appropriate management.

### 4.9 TRAFFIC MANAGEMENT

#### 4.9.1 *Existing Environment*

The proposal area is located on the southern/western side of the Tooma Road corridor and adjacent crown land. There are numerous access points to residences, farms and the entry road to the Tumbarumba Cemetery within the study area.

#### 4.9.2 *Impact Assessment*

During the construction period, some minor disruptions may occur on Tooma Road to facilitate vehicle movements into the construction site. It is possible that delays to road users and may be expected to facilitate vehicle and machinery movement. Delays would be considered short time (less than 5 minutes) and temporary in nature.

Post construction, appropriate signage and bollards would be required to ensure the safety of path users, road users and users to access driveways.

### 4.9.3 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- A traffic management plan (to prepared by SVRC) would be implemented, which would include the use of signs, barriers, temporary speed zones and traffic control for the duration of the proposed works.
- The proposed works would be completed in accordance with WHS legislation.
- Construction would avoid weekends and public holidays where possible.
- The proposed works would be completed in the minimum timeframe practical.
- Post construction, appropriate signage and bollards would be required to ensure the safety of path users, road users and users to access driveways.

## 4.10 WASTE MINIMISATION AND RESOURCE MANAGEMENT

### 4.10.1 *Impact Assessment*

The proposed activity is expected to result in the following waste, some of which would be able to be recycled or reused:

- Paper and office waste from project management activities.
- General construction waste such as concrete, steel and plastic.
- Waste from staff and construction personnel (food, packaging, portable toilets).
- Minor amounts of vegetation including weeds.

### 4.10.2 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- Waste stored on site would be held in appropriate skips or bundled into stockpiles and covered where appropriate. Transport of materials from the construction site to sites of reuse or disposal would be done using covered trucks..
- Dispose of material at an appropriate waste disposal/recycling facility where re-use or storage options are not available.
- Excess soil material exported from the site would be available for reuse or will be disposed of at an appropriate facility.
- In the event of any oil waste occurring on-site, this would be collected and transported to the nearest oil recycling facility.

## 4.11 CUMULATIVE IMPACT

### 4.11.1 *Negative Cumulative Impacts*

A number of actions as a result of the proposed works would have a minor negative cumulative impact. These include:

- Social impacts during the construction period based on minor traffic disruptions, dust, and noise.
- Biodiversity impacts resulting from aquatic habitat disturbance, soil disturbance and potential minor clearing of vegetation.
- Greenhouse gas emissions from the use of machinery, equipment, and vehicles during the construction period.
- The use of resources such as gravel, cement, tar-sealing, and fossil fuels.

Generally, negative cumulative impacts associated with the proposed activity would be confined to the construction period. Proposed safeguards provided within the REF confirm that risks from potential impacts are both low and able to be managed.

### 4.11.2 *Positive Cumulative Impacts*

Positive cumulative impacts as a result of the proposed works are expected to be:

- Improved visitor experiences in the region
- Improvements in safety to current crown land users
- Increased visitation and tourism stay nights for Tumbarumba when considered in combination with the existing Tumbarumba to Rosewood Rail Trail.

### 4.11.3 *Proposed Safeguards*

The proposed safeguards within previous sections of this REF address the cumulative impacts identified above. Given the positive cumulative impacts identified above, the proposed activity would result in a net environmental gain to the local area and to Council.

## 4.12 PRINCIPLES OF ECOLOGICALLY SUSTAINABLE DEVELOPMENT

This section presents the principles of Ecologically Sustainable Development (ESD) in relation to the proposal.

### 4.12.1 *Precautionary Principle*

The 'precautionary principle' means that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

This REF has been prepared using the precautionary principle. That is, if threats are perceived as possibly leading to serious or irreversible environmental damage, then either the non-development of the proposal would occur, or that the proposed activity would need to be modified to ensure that such threats do not exist. This has been the approach in relation to proposed safeguards summarised in section 5 of this REF.

#### **4.12.2     *Inter-generational Equity***

‘Inter-generational equity’ means that the present generation should ensure that the health, diversity, and productivity of the environment is maintained or enhanced for the benefit of future generations.

The proposed activity would not impact on natural or cultural features to a level that would compromise the health, diversity, or productivity of the environment to a level that would impact on future generations.

#### **4.12.3     *Appropriate Valuation of Environmental Factors***

This principle requires that environmental assets should be appropriately valued. This REF has considered abiotic and biotic ecosystem factors together with social values in identifying potential impacts and providing a range of environmental safeguards to minimise the impacts of the proposed activity.

These factors ensure that the proposed activity is consistent with the principles of ESD.



## 5 SUMMARY OF ENVIRONMENTAL SAFEGUARDS

The potential impacts of the proposed activity identified within section 4 of this REF can be mitigated through appropriate safeguards to reduce these to acceptable levels. The safeguards provided throughout this REF are summarised within **Table 5-1**

**Table 5-1:** Summary of Environmental Safeguards.

Environmental Component	Proposed Safeguards
Landforms, Soils, Hydrology and Water Quality	<ul style="list-style-type: none"> <li>To manage erosion and sedimentation during construction, a sediment and erosion control plan shall be prepared. Erosion and sediment control practices should follow the recommendations and checklists outlined in: <i>Managing Urban Stormwater: Soils and Construction Volume 1</i> (NSW, 2006) and <i>Managing Urban Stormwater: Soils and Construction – Installation of Services Vol 2A</i> (DECC, 2007).</li> <li>Rehabilitate exposed bare ground at the completion of the work.</li> <li>Erosion and sediment controls would be left insitu for as long as necessary for the site to become stabilised.</li> <li>No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.</li> </ul>
Biodiversity	<ul style="list-style-type: none"> <li>Construction activities should not occur during intense rain events or in a predicted extended rain event.</li> <li>Erosion and sediment control plan should be established and maintained to avoid sediment runoff during any vegetation clearing and construction and should only be removed once the ground is stabilised.</li> <li>Erosion and sediment controls would be in position prior to the proposed activity commencing and left <i>insitu</i> for as long as necessary for the site to become stabilised. However, should these controls begin to deteriorate and lose functionality; they are to be replaced immediately.</li> <li>No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.</li> <li>Removal of <u>any</u> hollow-bearing trees should only be carried out under a hollow-bearing tree protocol. This protocol would also include direct supervision by a suitably qualified and experienced ecologist. The ecologist would collect, hold and relocate any microchiropteran bats, or arboreal mammals to adjoining habitat within the study area during the hollow-bearing tree removal process.</li> <li>No HBT can be removed between October to January inclusive to avoid the known breeding season of Gang-gang Cockatoo.</li> <li>There must be no release of dirty water into drainage lines and/or waterways.</li> <li>All fuels, chemicals and liquids are to be stored in an impervious bunded area or containers.</li> </ul>

Environmental Component	Proposed Safeguards
	<ul style="list-style-type: none"> <li>An emergency spill kit must be kept on site at all times and maintained throughout the construction work. The spill kit must be appropriately sized for the volume of substances at the work site.</li> </ul>
Noise and Vibration	<ul style="list-style-type: none"> <li>Construction activity would be restricted to the following standing working hours:               <ul style="list-style-type: none"> <li>Monday-Friday: 7:00am to 6.00pm</li> <li>Saturday: 8.00am to 1.00pm</li> <li>Sunday and Public Holidays: no work</li> </ul> </li> <li>Should work be proposed outside of standard working hours, additional mitigations measures would be required.</li> <li>No work should occur within 200 metres of the Tumbarumba Cemetery within 1 hour before, during, or within 1 hour after the completion of a service.</li> <li>Completion of the proposed activity in the minimum timeframe practicable.</li> <li>Noise output would be minimised through the use of modern equipment that is regularly maintained.</li> <li>Machinery engines would be switched off, minimising noise emissions, rather than being left idling for long period.</li> </ul>
Climate and Air Quality	<ul style="list-style-type: none"> <li>Any stockpiles with the capacity to cause dust should be dampened or otherwise controlled to suppress dust.</li> <li>Trucks carrying loads of material such as soil, road base, gravel or spoil should be covered.</li> <li>All machinery should be periodically inspected and maintained to ensure minimum levels of emissions.</li> <li>Machinery engines should be switched off, rather than left idling for long periods.</li> </ul>
Visual Impacts	<ul style="list-style-type: none"> <li>The proposed work area should be kept clean and orderly at all times, ensuring that no waste is left at the site following completion of the proposed work.</li> <li>Machinery and equipment storage should be conducted in a single location, where possible.</li> <li>Temporary erosion and sediment controls should be removed from the site once it is stabilised.</li> </ul>
Socio-Economic	<ul style="list-style-type: none"> <li>Potential hazards should be minimised by ensuring that the proposed works are completed in accordance with relevant SVRC standards and WHS requirements.</li> <li>Dial Before You Dig <u>MUST</u> be consulted to ensure that the locations of all underground services are known <u>PRIOR</u> to excavation commencing. Appropriate actions must be formulated by the Project Manager and Site Supervisor to minimise the risk of these services becoming disrupted.</li> <li>Construction activity would avoid weekends and public holidays where possible.</li> <li>The proposed works would be completed in the minimum timeframe practical.</li> </ul>
Aboriginal Heritage	<ul style="list-style-type: none"> <li>The proposed works require consultation with the local Aboriginal community. Unless the consultation process indicates otherwise, an Aboriginal Cultural Heritage Assessment would be required.</li> <li>During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any Aboriginal objects.</li> </ul>

Environmental Component	Proposed Safeguards
	<ul style="list-style-type: none"> <li>• If human skeletal remains are found during the activity, work must stop immediately, secure the area to prevent unauthorised access and contact NSW Police and NSW Heritage</li> <li>• If potential material is identified, construction activities proximal to the potential material would cease and the NSW Heritage Office will be contacted immediately to determine appropriate management. Notification procedures can be found at <a href="http://www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm">www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm</a> The NPW Act requires that, if a person finds an Aboriginal object on land and the object is not already recorded on AHIMS, they are legally bound under s.89A of the NPW Act to notify NSW Heritage Office as soon as possible of the object's location. This requirement applies to all people and to all situations, including when you are following the Due Diligence Code.</li> </ul>
Historic Heritage	<ul style="list-style-type: none"> <li>• During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any item that could be of historic heritage.</li> <li>• If potential material is identified (other than that detailed within this REF), construction activities proximal to the potential material would cease and the NSW Heritage Office will be contact immediately to determine appropriate management.</li> </ul>
Traffic Management	<ul style="list-style-type: none"> <li>• A traffic management plan (to prepared by SVRC) would be implemented, which would include the use of signs, barriers, temporary speed zones and traffic control for the duration of the proposed works.</li> <li>• The proposed works would be completed in accordance with WHS legislation.</li> <li>• Construction would avoid weekends and public holidays where possible.</li> <li>• The proposed works would be completed in the minimum timeframe practical.</li> <li>• Post construction, appropriate signage and bollards would be required to ensure the safety of path users, road users and users to access driveways.</li> </ul>
Waste Minimisation and Resource Management	<ul style="list-style-type: none"> <li>• Waste stored on site would be held in appropriate skips or bundled into stockpiles and covered where appropriate. Transport of materials from construction site to sites of reuse or disposal would be done using covered trucks.</li> <li>• Dispose of material at an appropriate waste disposal/recycling facility where re-use or storage options are not available.</li> <li>• Excess soil material exported from the site would be available for resale, reuse or will be disposed of at an appropriate facility.</li> <li>• In the event of any oil waste occurring on-site, this would be collected and transported to the nearest oil recycling facility.</li> </ul>
Cumulative Impacts	<p>The proposed safeguards within previous sections of this REF address the cumulative impacts identified. Given the positive cumulative impacts identified, the proposed activity would result in a net environmental gain to the local area and to Council.</p>

## 6 CLAUSE 171 CHECKLIST

A checklist of factors that should be considered in the assessment of impacts prior to its determination is included within Clause 171 of the *Environmental Planning and Assessment Regulation 2021*. This clause identifies seventeen issues that need to be addressed. The following text provides summary details of each of the issues, the majority of which have been addressed within the body of this document.

**a) any environmental impact on the community;**

There is the possibility of impacts associated with the construction period such as noise, traffic delays and dust. In the long-term, improvements to the Tumbarumba visitor experience and user safety on a formal pathway within the crown land, would provide for positive environmental impact.

**b) any transformation of a locality;**

While the proposed activity will impact visually during the construction process, overall, there would be no impact on the visual environment of the locality.

**c) any environmental impact on the ecosystem of the locality;**

No. While the proposal would involve the disturbance of a relatively minor amount of native vegetation, the potential impacts would not impact ecosystems at a locality scale.

**d) any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality;**

The proposed activity is unlikely to have a notable long-term impact on any aesthetic, recreational, scientific, or other environmental quality or value of the locality given its relatively minor impact.

**e) any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations;**

The proposal would not have any effect on any locality, place or building having aesthetic, anthropological, archaeological or any other significance or special value.

**f) any impact on the habitat of protected or endangered fauna (within the meaning of the National Parks and Wildlife Act 1974);**

A number of threatened biota including a threatened ecological community have been previously recorded in the locality. As such, an assessment of impacts was undertaken (**Appendix 4 & 5**). Risks to threatened biota are considered to be low if proposed safeguards are effectively implemented.

**g) any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air;**

The proposed activity is unlikely to endanger any species of animal, plant or any other form of life or offer any significant long-term disturbance locally, given the relatively minor nature of the proposal.

**h) any long-term effects on the environment;**

Negative long term effects on the environment would be unlikely if the proposed safeguards discussed in **section 5** are fully implemented.

**i) any degradation of the quality of the environment;**

No negative long-term environmental impacts are expected. Minor amounts of dust and noise pollution are expected during the construction phase and may have short-term impacts on the environment directly adjacent to the proposal.

**j) any risk to the safety of the environment;**

The proposed activity is unlikely to cause any risk to the environment given safeguards listed in **section 5** are followed.

**k) any reduction in the range of beneficial uses of the environment;**

The proposed activity would not result in a significant reduction in the range of beneficial uses of the environment in the locality, given the existing environment and the relatively minor nature of the activity proposed.

**l) any pollution of the environment;**

There is a risk that pollution of the local environment would occur as a result of contaminants, including silt and hydrocarbons entering the local environment during construction. The risk would be minimised as a result of the environmental safeguards described in **section 5**.

**m) any environmental problems associated with the disposal of waste;**

Disposal of waste would be managed during construction as outlined in section 4.10.

**n) any increased demands on resources (natural or otherwise) that are, or likely to become in short supply;**

This REF has identified that the proposed activity would not create a significant increase in the demands on resources that are likely to become in short supply in the near future.

**o) any cumulative environmental effect with other existing or likely future activities;**

Assessment of the cumulative environmental effects of the proposed activity identifies both negative and positive environmental impacts that would occur. Generally, negative environmental impacts are confined to the construction period, while improvements in road conditions, and improved safety are significant positive environmental impacts.

**p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions;**

There would be no impact to coastal processes or hazards.

**q) Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1**

The proposal is consistent the SVRC Regional Tracks and Trails Master Plan that is currently being prepared.

**r) Other relevant environmental factors**

In considering the potential impacts of this proposal all relevant environmental factors have been considered, refer to Chapter 4 of this REF.



## 7 CONCLUSION

This REF provides a true and fair review of the proposed activity in relation to its potential effects on the environment. It addresses to the fullest extent possible, all of the factors listed in Clause 171 of the Environmental Planning and Assessment Regulation 2021.

The potential impacts of the proposed Tumbarumba to Hume and Hovell Trail identified within section 4 of this REF can be mitigated through appropriate safeguards to reduce these to acceptable levels. Accordingly, an Environmental Impact Statement (EIS) is not required.

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## 9 APPENDICES

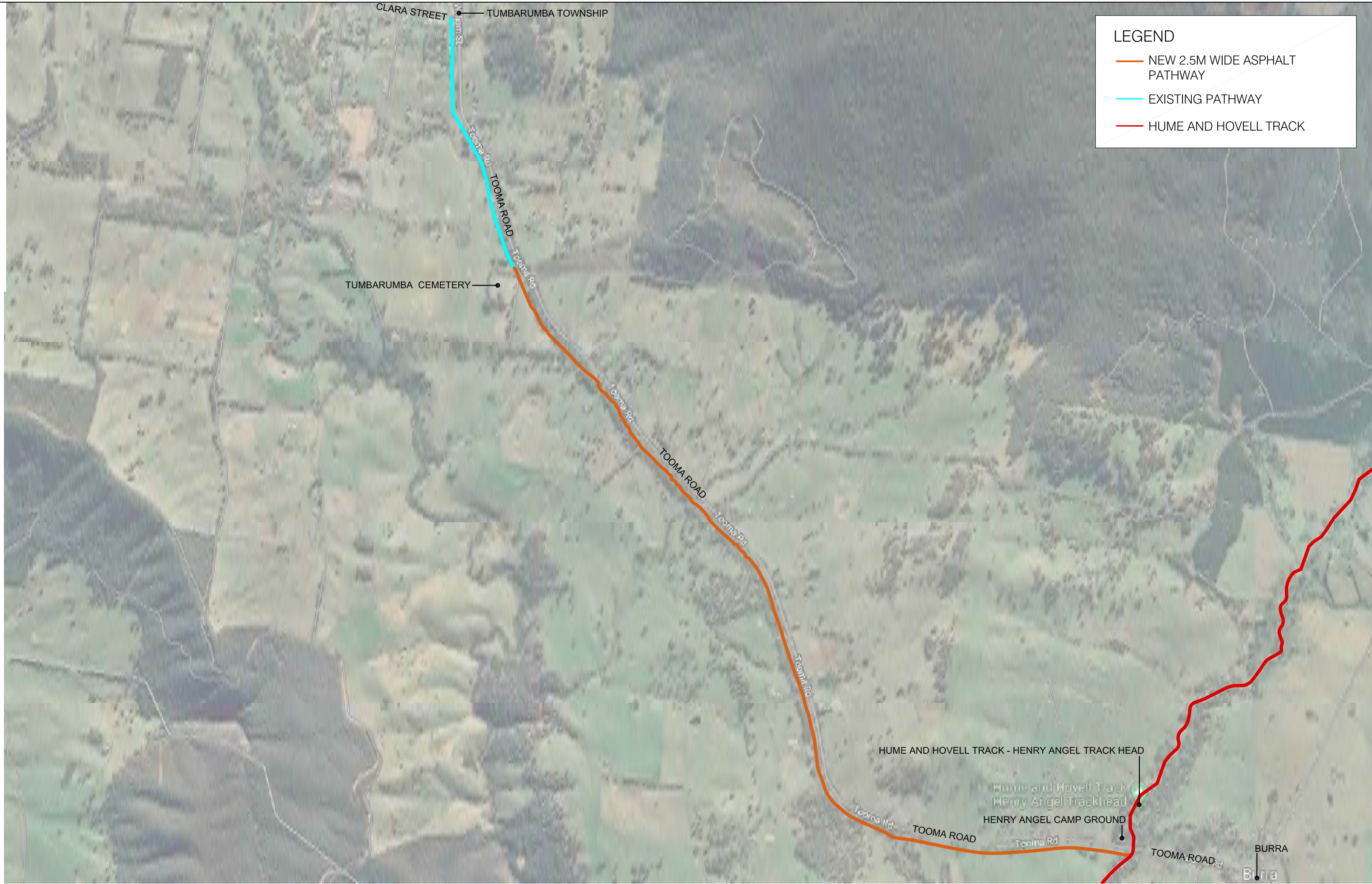
## **APPENDIX 1 – QUALIFICATIONS AND EXPERIENCE OF PERSONNEL**



Name and Qualifications	Experience
<p><b>Steve Sass</b> B.App.Sci (Env.Sci) (Hons), GradCert.CaptVert.Mngt (CSU) Director / Principal Ecologist / Project Manager</p> <p>Certified Environmental Practitioner, EIANZ Accredited Biodiversity Assessor Member, Ecological Consultants Association of NSW (ECA)</p>	<p>Steve is a highly experienced Consulting Ecologist having undertaken hundreds of terrestrial and aquatic ecological surveys and assessments across Australia since 1992. He has an in-depth working knowledge of environmental and biodiversity legislation across all states and territories which allows him to provide detailed and accurate assessments and formulate practical solutions to clients and specific projects on a case-by-case basis.</p> <p>Previous and current research holds Steve in high regard within both the scientific and ecological consultants' community. Steve was recently given 'Expert' status for a number of species listed under the NSW <i>Biodiversity Conservation Act 2016</i> and is currently working with OEH on the Saving our Species Program for a newly identified species of dragon lizard in western NSW (<i>Ctenophorus mirrityana</i>) which Steve collaborated with other scientists to formally describe.</p> <p>Steve has extensive experience in south-east NSW. Over the past ten years, he has completed or provided specialist biodiversity advice to more than 1000 environmental assessments for projects such as residential and industrial developments, highway upgrades and telecommunications, water, sewerage, energy, mining and electricity network infrastructure projects including the REF for the Tumbarumba to Rosewood Rail Trail. Steve is highly conversant with the flora, vegetation communities, fauna and their habitats of the region. His expertise with regard to forest and wetland birds, reptiles, frogs and mammals is well known.</p> <p>For the REF Steve was the Project manager and prepared this report.</p>
<p><b>Linda Sass</b> Ass.Deg.Gn.St (Science), BA, DipEd (Sec) Member, Ecological Consultants Association of NSW (ECA)</p>	<p>Linda is an experienced ecologist having conducted flora and fauna surveys across western NSW for the past 12 years. Her recent projects in southern NSW include a Species Impact Statement for the Potato Point Fire Buffer Construction within Eurobodalla National Park and well as a number of road upgrades and safety improvement projects. In recent times in the local area, these have included the MR85 Gilmore to Jingellic Road safety improvement project, MR284 Wagga Road drainage improvements, and MR287 Alpine Way Slope Stabilisation project.</p> <p>For this project, Linda assisted with the field survey.</p>
<p><b>Zoe Sass</b></p>	<p>Zoe has worked as an ecologist on a casual basis with <b>EnviroKey</b> over a number of years including during their</p>

Name and Qualifications	Experience
B.Sci (GIS), BA	<p>university studies. She recently joined <b>EnviroKey</b> as a permanent member of the team as a Project Officer and has prepared a number of REFs including the HW1 Mort Avenue Safety Improvement Work and HW1 Herganhens Lane Safety Improvement Work for Transport for NSW. Zoe has also been responsible for GIS mapping and statistical analysis for a number of environmental assessments including residential developments.</p> <p>For this project, Zoe carried out all GIS mapping, and spatial analysis.</p>

## APPENDIX 2 – THE PROPOSAL



LEGEND

NEW 2.5M WIDE ASPHALT PATHWAY

EXISTING PATHWAY

HUME AND HOVELL TRACK

TREDWELL

Tredwell Management Services  
209b Henley Beach Road  
Torrensville, SA 5031  
Phone: 08 8234 6387

Client

Snowy Valleys Council  
24 Bridge Street,  
Tumberumba NSW 2653, Australia

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Project

SNOWY VALLEYS TRAIL CONCEPTS  
Snowy Valleys Council, NSW

Drawing Title

TUMBARUMBA TO HUME & HOVELL - OVERVIEW

Drawn:  
AP  
Checked:  
NT

N

Scale 1:20,000 @ A3

0 200 400m

Rev.	Date	Description

DRAFT CONCEPT

Drawing No.

THH\_01

Revision

-



TUMBARUMBA TO HUME AND HOVELL PATHWAY

TOTAL PROJECT SURFACE AREAS AND SPECIFIED ITEM NUMBERS	
TOTAL DISTANCE	7.29 KM (ONE WAY)
EXISTING 2.5M WIDE ASPHALT PATHWAY	1.56 KM
NEW 2.5M WIDE ASPHALT PATHWAY	5.73 KM
NEW TRAILHEAD SIGN	1 NO.
NEW WAYMARKER	9 NO.
NEW INTERPRETIVE SIGN	1 NO.
NEW ON-PATH SIGNAGE 'ROAD CROSSING AHEAD'	6 NO.
ON-ROAD SIGNAGE 'SLOW - CROSSING AHEAD'	6 NO.
NEW BENCH SEAT	1 NO.
MAJOR VEGETATION CLEARING - 1.7KM @ 3M WIDE	5235 M2



Tredwell Management Services  
209b Henley Beach Road  
Torrensville, SA 5031  
Phone: 08 8234 6387

Client

Snowy Valleys Council

24 Bridge Street,  
Tumbarumba NSW 2653, Australia

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Project

SNOWY VALLEYS TRAIL CONCEPTS

Snowy Valleys Council, NSW

Drawing Title

TUMBARUMBA TO HUME & HOVELL - TOTALS

Drawn:  
AP  
Checked:  
NT

  
Scale N/A

Rev.	Date	Description

DRAFT CONCEPT

Drawing No.

THH\_02

Revision

-





LEGEND

EXISTING PATHWAY

NEW 2.5M WIDE ASPHALT PATHWAY

TREDWELL

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209b Henley Beach Road  
Torrensville, SA 5031  
Phone: 08 8234 6387

Client

Snowy Valleys Council  
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Project

SNOWY VALLEYS TRAIL CONCEPTS  
Snowy Valleys Council, NSW

Drawing Title

TUMBARUMBA TO HUME & HOVELL - SECTION 1

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Rev.	Date	Description

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Drawing No.	Revision
THH_03	-





LEGEND

EXISTING PATHWAY

NEW 2.5M WIDE ASPHALT PATHWAY

PROPOSED INFRASTRUCTURE

POINT OF INTEREST (POI)

PROPERTY BOUNDARY

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

MAJOR VEGETATION CLEARING  
NOTE: MINOR VEGETATION CLEARING AND SITE PREPARATION TO ENTIRE TRAIL LENGTH

HUME AND HOVELL TRACK



Tredwell Management Services  
209b Henley Beach Road  
Torrensville, SA 5031  
Phone: 08 8234 6387

Client

Snowy Valleys Council  
24 Bridge Street,  
Tumbarumba NSW 2653, Australia

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Project

SNOWY VALLEYS TRAIL CONCEPTS  
Snowy Valleys Council, NSW

Drawing Title

TUMBARUMBA TO HUME & HOVELL - SECTION 2

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Checked:  
NT

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Rev.	Date	Description

DRAFT CONCEPT

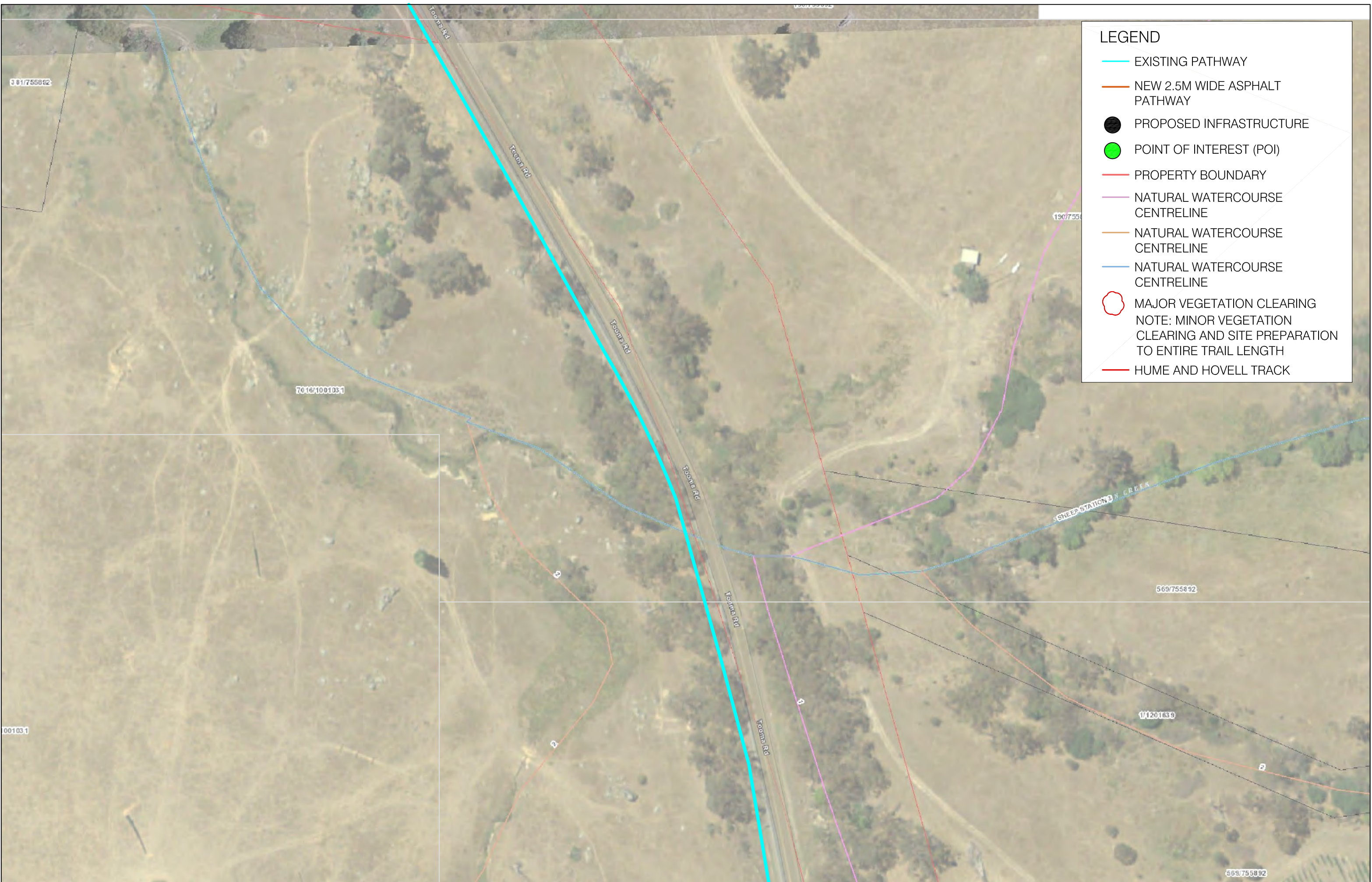
Drawing No.

THH\_04

Revision

-





- LEGEND
- EXISTING PATHWAY
- NEW 2.5M WIDE ASPHALT PATHWAY
- PROPOSED INFRASTRUCTURE
- POINT OF INTEREST (POI)
- PROPERTY BOUNDARY
- NATURAL WATERCOURSE CENTRELINE
- NATURAL WATERCOURSE CENTRELINE
- NATURAL WATERCOURSE CENTRELINE
- MAJOR VEGETATION CLEARING  
NOTE: MINOR VEGETATION CLEARING AND SITE PREPARATION TO ENTIRE TRAIL LENGTH
- HUME AND HOVELL TRACK



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Project

SNOWY VALLEYS TRAIL CONCEPTS  
Snowy Valleys Council, NSW

Drawing Title

TUMBARUMBA TO HUME & HOVELL - SECTION 3

Drawn:  
AP  
Checked:  
NT

N

Scale 1:1500 @ A3  
0 10 20m

Rev.	Date	Description

DRAFT CONCEPT

Drawing No.

THH\_05

Revision

-





LEGEND

- EXISTING PATHWAY
- NEW 2.5M WIDE ASPHALT PATHWAY
- PROPOSED INFRASTRUCTURE
- POINT OF INTEREST (POI)
- PROPERTY BOUNDARY
- NATURAL WATERCOURSE CENTRELINE
- NATURAL WATERCOURSE CENTRELINE
- NATURAL WATERCOURSE CENTRELINE
- MAJOR VEGETATION CLEARING  
NOTE: MINOR VEGETATION CLEARING AND SITE PREPARATION TO ENTIRE TRAIL LENGTH
- HUME AND HOVELL TRACK



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Snowy Valleys Council, NSW

Drawing Title  
TUMBARUMBA TO HUME & HOVELL - SECTION 4

Drawn:  
AP  
Checked:  
NT



Scale 1:1500 @ A3  
0 10 20m

Rev.	Date	Description

DRAFT CONCEPT

Drawing No.	Revision
THH_06	-



LEGEND

EXISTING PATHWAY

NEW 2.5M WIDE ASPHALT PATHWAY

PROPOSED INFRASTRUCTURE

POINT OF INTEREST (POI)

PROPERTY BOUNDARY

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

MAJOR VEGETATION CLEARING  
NOTE: MINOR VEGETATION CLEARING AND SITE PREPARATION TO ENTIRE TRAIL LENGTH

HUME AND HOVELL TRACK

NEW CEMETERY ROAD CROSSING POINT  
X2 ON-PATH SIGNAGE - 'ROAD CROSSING AHEAD'  
X2 ON-ROAD SIGNAGE - 'SLOW - CROSSING AHEAD' SIGN

NEW WAYMARKER SIGN

NEW BENCH SEAT

NEW INTERPRETIVE SIGN

TUMBARUMBA CEMETERY

0 10 20m

TREDWELL

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Snowy Valleys Council, NSW

Drawing Title

TUMBARUMBA TO HUME & HOVELL - SECTION 5

Drawn:  
AP  
Checked:  
NT

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Scale 1:1500 @ A3  
0 10 20m

Rev.	Date	Description

DRAFT CONCEPT

Drawing No.

THH\_07

Revision

-



LEGEND

EXISTING PATHWAY

NEW 2.5M WIDE ASPHALT PATHWAY

PROPOSED INFRASTRUCTURE

POINT OF INTEREST (POI)

PROPERTY BOUNDARY

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

MAJOR VEGETATION CLEARING  
NOTE: MINOR VEGETATION CLEARING AND SITE PREPARATION TO ENTIRE TRAIL LENGTH

HUME AND HOVELL TRACK



NEW WAYMARKER SIGN



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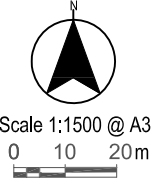
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Drawing Title  
TUMBARUMBA TO HUME & HOVELL - SECTION 6

Drawn:  
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Checked:  
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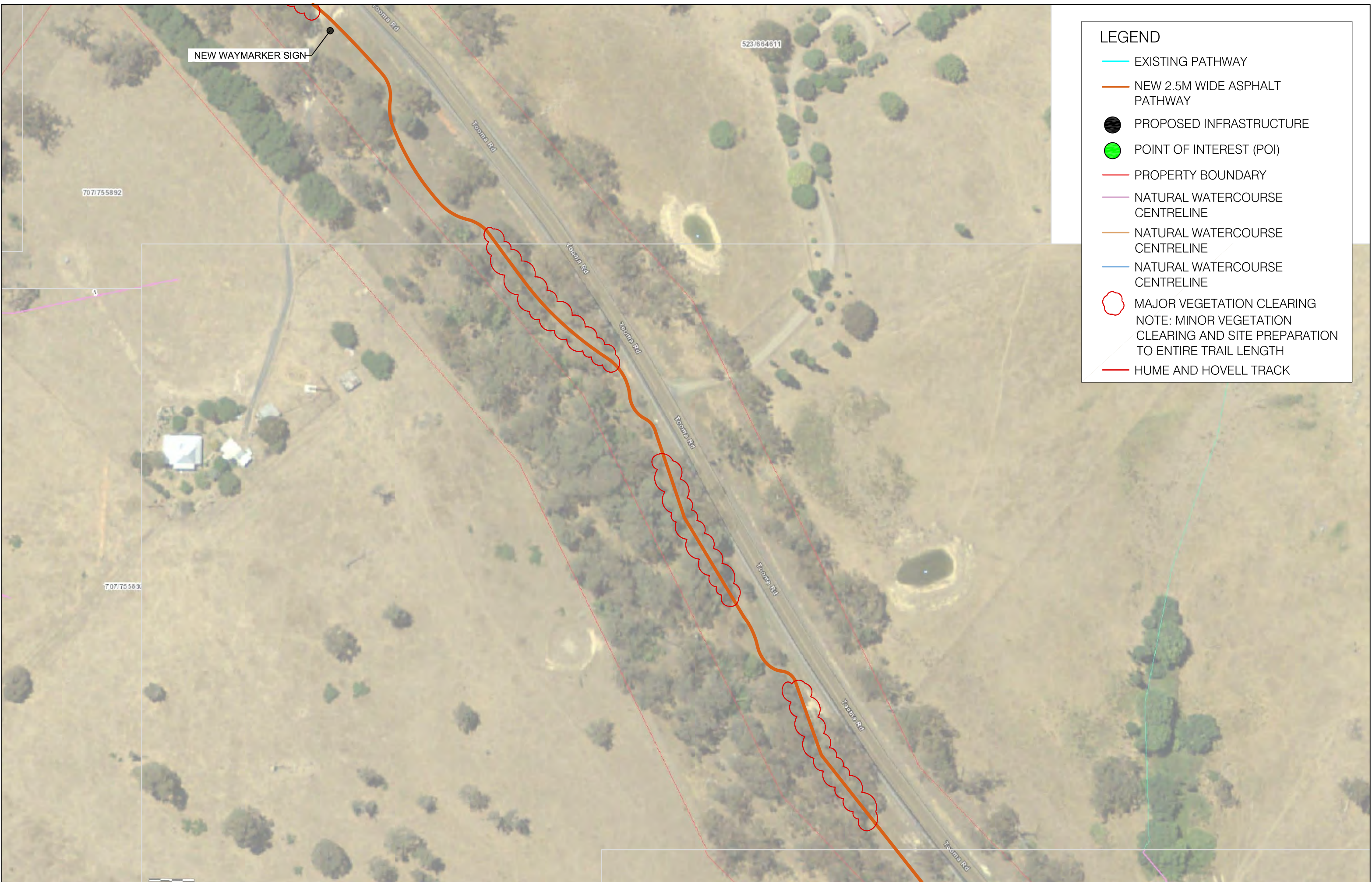


Rev.	Date	Description

DRAFT CONCEPT

Drawing No.	Revision
THH_08	-





- LEGEND
- EXISTING PATHWAY

NEW 2.5M WIDE ASPHALT PATHWAY

PROPOSED INFRASTRUCTURE

POINT OF INTEREST (POI)

PROPERTY BOUNDARY

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

MAJOR VEGETATION CLEARING  
NOTE: MINOR VEGETATION CLEARING AND SITE PREPARATION TO ENTIRE TRAIL LENGTH

HUME AND HOVELL TRACK


TREDWELL

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Drawing Title	TUMBARUMBA TO HUME & HOVELL - SECTION 7

Drawn:  
AP  
Checked:  
NT

  
Scale 1:1500 @ A3  
0 10 20m

Rev.	Date	Description

DRAFT CONCEPT

Drawing No.	Revision
THH_09	-



LEGEND

- EXISTING PATHWAY
- NEW 2.5M WIDE ASPHALT PATHWAY
- PROPOSED INFRASTRUCTURE
- POINT OF INTEREST (POI)
- PROPERTY BOUNDARY
- NATURAL WATERCOURSE CENTRELINE
- NATURAL WATERCOURSE CENTRELINE
- NATURAL WATERCOURSE CENTRELINE
- MAJOR VEGETATION CLEARING  
NOTE: MINOR VEGETATION CLEARING AND SITE PREPARATION TO ENTIRE TRAIL LENGTH
- HUME AND HOVELL TRACK



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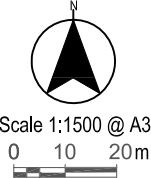
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Snowy Valleys Council, NSW

Drawing Title  
TUMBARUMBA TO HUME & HOVELL - SECTION 8

Drawn:  
AP  
Checked:  
NT



Rev.	Date	Description

DRAFT CONCEPT

Drawing No.	Revision
THH_10	-





LEGEND

EXISTING PATHWAY

NEW 2.5M WIDE ASPHALT PATHWAY

PROPOSED INFRASTRUCTURE

POINT OF INTEREST (POI)

PROPERTY BOUNDARY

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

MAJOR VEGETATION CLEARING  
NOTE: MINOR VEGETATION CLEARING AND SITE PREPARATION TO ENTIRE TRAIL LENGTH

HUME AND HOVELL TRACK



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Snowy Valleys Council, NSW

Drawing Title

TUMBARUMBA TO HUME & HOVELL - SECTION 9

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Checked:  
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Scale 1:1500 @ A3  
0 10 20m

Rev.	Date	Description

DRAFT CONCEPT

Drawing No.

THH\_11

Revision

-





LEGEND

- EXISTING PATHWAY
- NEW 2.5M WIDE ASPHALT PATHWAY
- PROPOSED INFRASTRUCTURE
- POINT OF INTEREST (POI)
- PROPERTY BOUNDARY
- NATURAL WATERCOURSE CENTRELINE
- NATURAL WATERCOURSE CENTRELINE
- NATURAL WATERCOURSE CENTRELINE
- MAJOR VEGETATION CLEARING  
NOTE: MINOR VEGETATION CLEARING AND SITE PREPARATION TO ENTIRE TRAIL LENGTH
- HUME AND HOVELL TRACK



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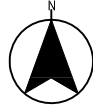
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Snowy Valleys Council, NSW

Drawing Title  
TUMBARUMBA TO HUME & HOVELL - SECTION 10

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AP  
Checked:  
NT



Scale 1:1500 @ A3  
0 10 20m

Rev.	Date	Description

**DRAFT CONCEPT**

Drawing No.	Revision
THH_12	-





LEGEND

EXISTING PATHWAY

NEW 2.5M WIDE ASPHALT PATHWAY

PROPOSED INFRASTRUCTURE

POINT OF INTEREST (POI)

PROPERTY BOUNDARY

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

MAJOR VEGETATION CLEARING  
NOTE: MINOR VEGETATION CLEARING AND SITE PREPARATION TO ENTIRE TRAIL LENGTH

HUME AND HOVELL TRACK



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Snowy Valleys Council, NSW

Drawing Title

TUMBARUMBA TO HUME & HOVELL - SECTION 11

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AP  
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NT

N

Scale 1:1500 @ A3  
0 10 20m

Rev.	Date	Description

DRAFT CONCEPT

Drawing No.	Revision
THH_13	-





LEGEND

EXISTING PATHWAY

NEW 2.5M WIDE ASPHALT PATHWAY

PROPOSED INFRASTRUCTURE

POINT OF INTEREST (POI)

PROPERTY BOUNDARY

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

MAJOR VEGETATION CLEARING  
NOTE: MINOR VEGETATION CLEARING AND SITE PREPARATION TO ENTIRE TRAIL LENGTH

HUME AND HOVELL TRACK



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Snowy Valleys Council, NSW

Drawing Title

TUMBARUMBA TO HUME & HOVELL - SECTION 12

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AP  
Checked:  
NT

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Scale 1:1500 @ A3  
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Rev.	Date	Description

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Drawing No.

THH\_14

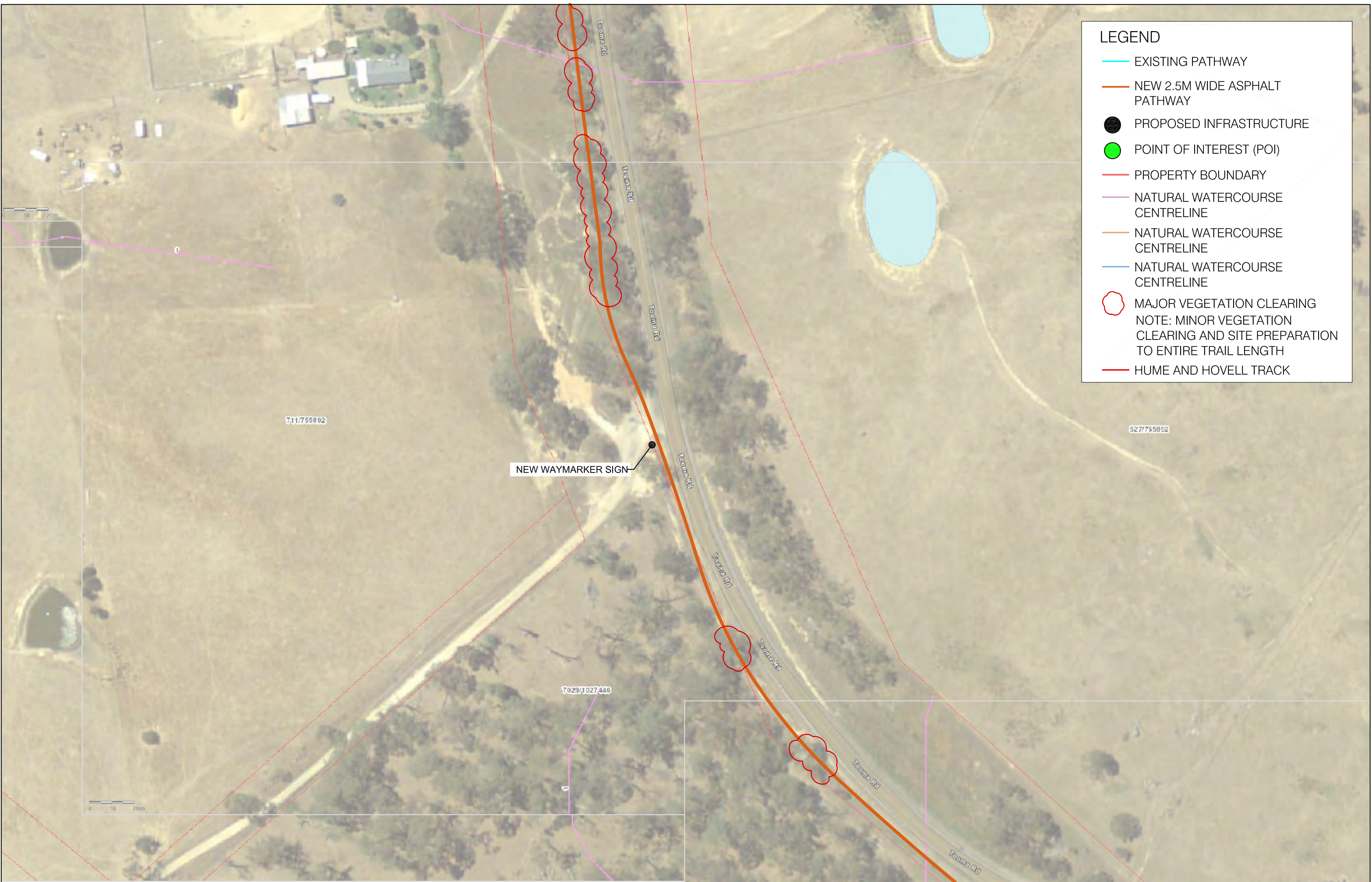
Revision

-



LEGEND

- EXISTING PATHWAY
- NEW 2.5M WIDE ASPHALT PATHWAY
- PROPOSED INFRASTRUCTURE
- POINT OF INTEREST (POI)
- PROPERTY BOUNDARY
- NATURAL WATERCOURSE CENTRELINE
- NATURAL WATERCOURSE CENTRELINE
- NATURAL WATERCOURSE CENTRELINE
- MAJOR VEGETATION CLEARING  
NOTE: MINOR VEGETATION CLEARING AND SITE PREPARATION TO ENTIRE TRAIL LENGTH
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TUMBARUMBA TO HUME & HOVELL - SECTION 13

Drawn:  
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NT



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Rev.	Date	Description

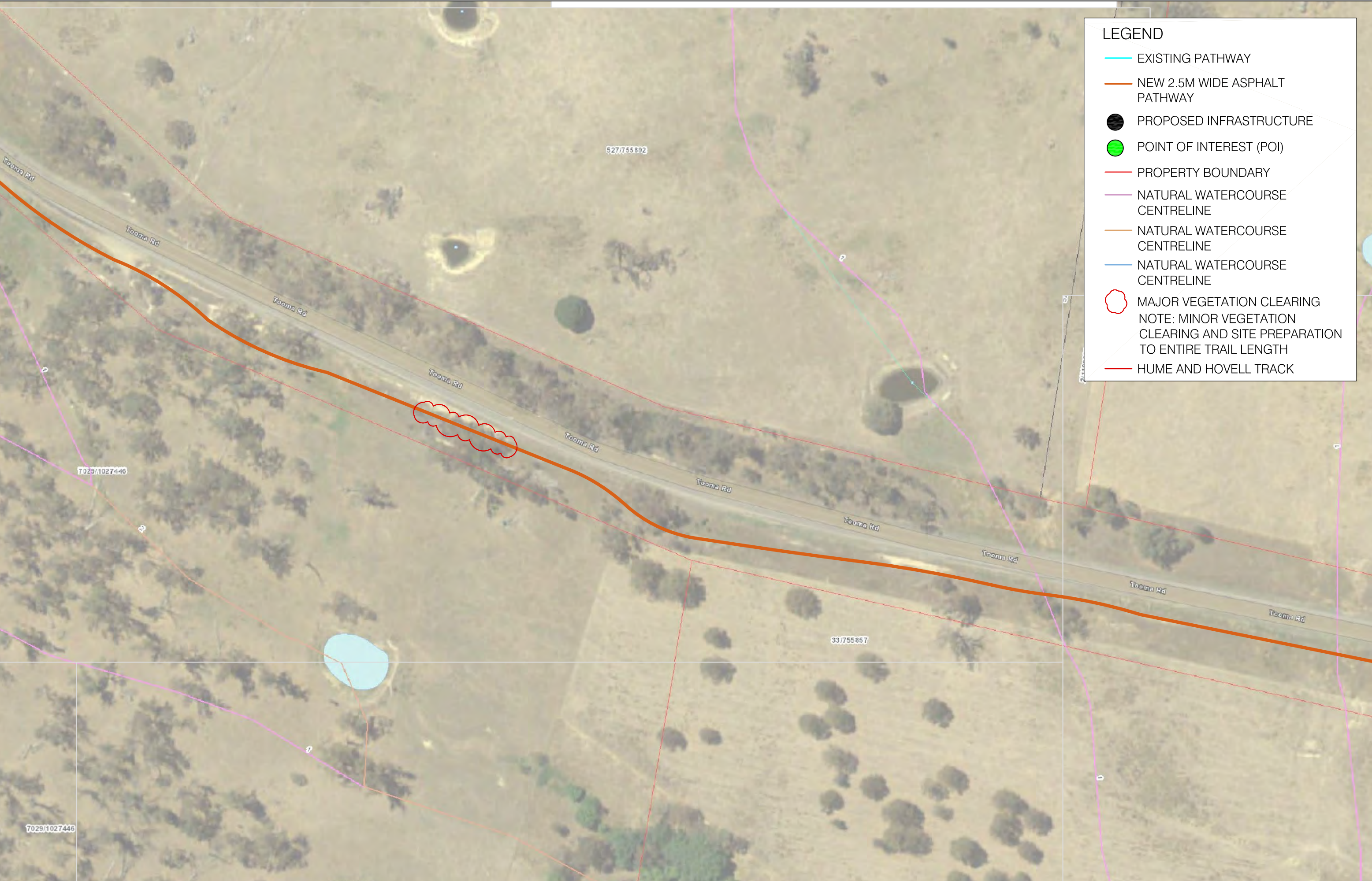
**DRAFT CONCEPT**

Drawing No.	Revision
THH_15	-



LEGEND

- EXISTING PATHWAY
- NEW 2.5M WIDE ASPHALT PATHWAY
- PROPOSED INFRASTRUCTURE
- POINT OF INTEREST (POI)
- PROPERTY BOUNDARY
- NATURAL WATERCOURSE CENTRELINE
- NATURAL WATERCOURSE CENTRELINE
- NATURAL WATERCOURSE CENTRELINE
- MAJOR VEGETATION CLEARING  
NOTE: MINOR VEGETATION CLEARING AND SITE PREPARATION TO ENTIRE TRAIL LENGTH
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Drawing Title  
TUMBARUMBA TO HUME & HOVELL - SECTION 14

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Checked: NT

Scale 1:1500 @ A3  
0 10 20m

Rev.	Date	Description

**DRAFT CONCEPT**

Drawing No.  
**THH\_16**

Revision  
**-**



LEGEND

EXISTING PATHWAY

NEW 2.5M WIDE ASPHALT PATHWAY

PROPOSED INFRASTRUCTURE

POINT OF INTEREST (POI)

PROPERTY BOUNDARY

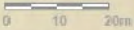
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NATURAL WATERCOURSE CENTRELINE

NATURAL WATERCOURSE CENTRELINE

MAJOR VEGETATION CLEARING  
NOTE: MINOR VEGETATION CLEARING AND SITE PREPARATION TO ENTIRE TRAIL LENGTH

HUME AND HOVELL TRACK



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Snowy Valleys Council, NSW

Drawing Title

TUMBARUMBA TO HUME & HOVELL - SECTION 15

Drawn:  
AP  
Checked:  
NT

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Scale 1:1500 @ A3  
0 10 20m

Rev.	Date	Description

DRAFT CONCEPT

Drawing No.

THH\_17

Revision

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LEGEND

EXISTING PATHWAY

NEW 2.5M WIDE ASPHALT PATHWAY

PROPOSED INFRASTRUCTURE

POINT OF INTEREST (POI)

PROPERTY BOUNDARY

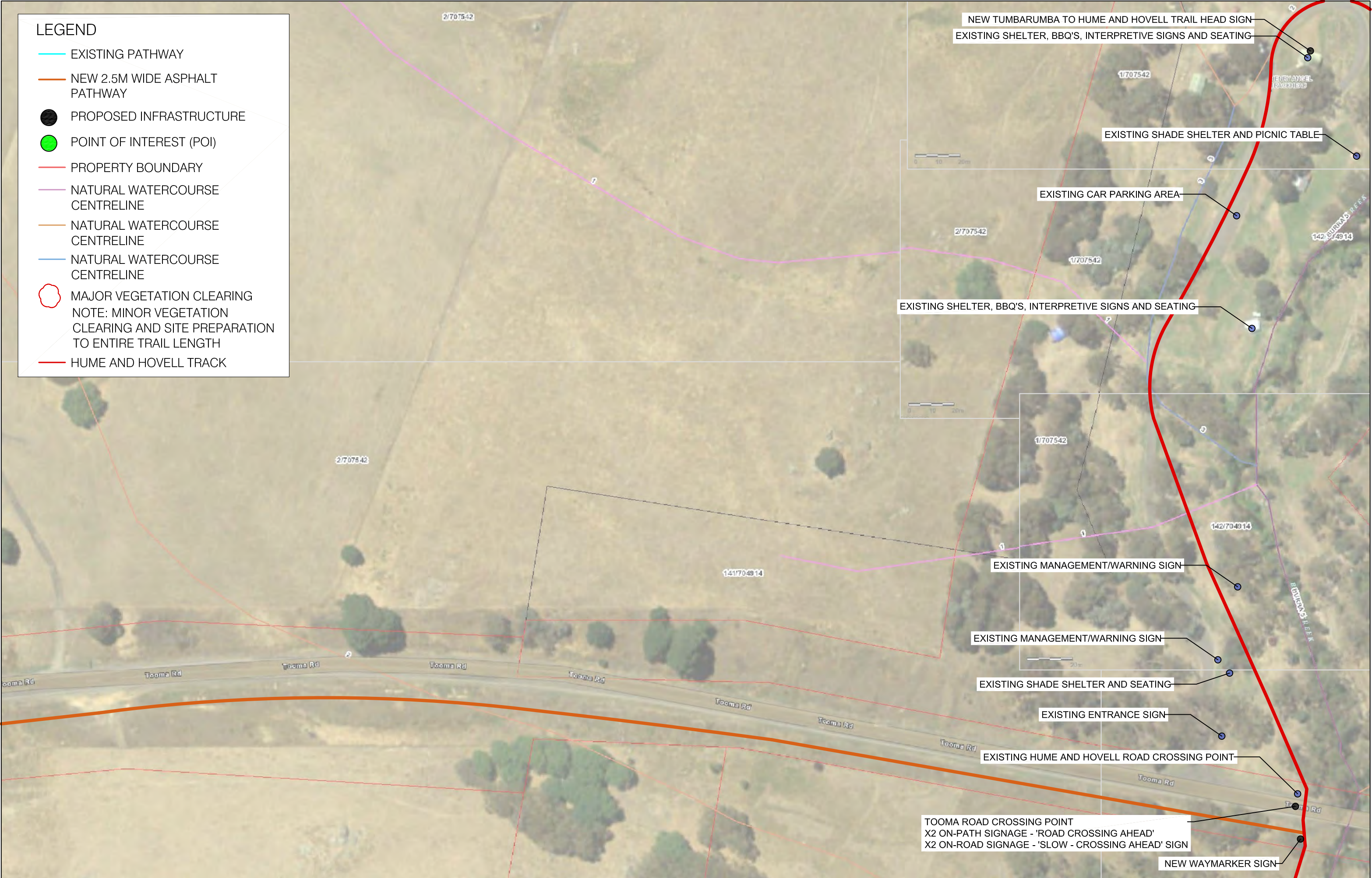
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NATURAL WATERCOURSE CENTRELINE

MAJOR VEGETATION CLEARING  
NOTE: MINOR VEGETATION CLEARING AND SITE PREPARATION TO ENTIRE TRAIL LENGTH

HUME AND HOVELL TRACK



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Project

SNOWY VALLEYS TRAIL CONCEPTS  
Snowy Valleys Council, NSW

Drawing Title

TUMBARUMBA TO HUME & HOVELL - SECTION 16

Drawn:  
AP  
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Scale 1:1500 @ A3  
0 10 20m

Rev.	Date	Description

DRAFT CONCEPT

Drawing No.	Revision
THH_18	-



## **APPENDIX 3 – THREATENED AND MIGRATORY BIOTA EVALUATION**

When evaluating which threatened and migratory biota are likely to occur within the study area, the following factors were taken into consideration:

- The presence of potential habitat
- Condition of and approximate extent of potential habitat
- Species occurrence within study area and wider locality

The potential for these biota to be impacted by the proposal was assessed based on the following criteria:

- No (no suitable habitat based on known habitat requirements within the study area; in the case of flora, site extensively searched during the appropriate time of year for detection and species not present).
- Unlikely (proposed works are unlikely to impact on the life-cycle of the species, the species is mobile and other habitat exists within the locality).
- Possible (proposed works could result in the removal of threatened flora or for fauna, impact on the life cycle of the species, disrupt normal ecological function, or entrap species within excavations).

Biota that are associated with littoral or marine habitats have been excluded from the analysis.

**Table 9-1:** Threatened and migratory biota evaluation.

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
<b>FROGS</b>					
Alpine Tree Frog <i>Litoria verreauxii alpina</i>	E	V	Found in a wide variety of habitats including woodland, heath, grassland and herb fields. Breed in natural and artificial wetlands including ponds, bogs, fens, streamside pools, stock dams and drainage channels that are still or slow flowing	0	No
Booroolong Frog <i>Litoria booroolongensis</i>	E	E	Lives in permanent streams with some fringing vegetation cover. Can be found sheltering under rocks or amongst vegetation near stream edge.	0	No
Northern Corroboree Frog <i>Pseudophryne pengilleyi</i>	CE	CE	Summer breeding habitat is pools and seepages in sphagnum bogs, wet heath, wet tussock grasslands and herbfields in low-lying depressions. Outside the	0	No



Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			breeding season adults move away from the bogs into the surrounding heath, woodland and forest to overwinter under litter, logs and dense groundcover.		
Spotted Tree Frog <i>Litoria spenceri</i>	CE	CE	Occur among boulders or debris along naturally vegetated, rocky fast flowing upland streams and rivers. In winter animals are thought to hibernate in vegetation outside of the main stream environment	0	Unlikely
<b>BATS</b>					
Eastern False Pipistrelle <i>Falsistrellus tasmaniensis</i>	V		Roosts in eucalypts hollows as well as loose bark on trees or on buildings. Prefers moist habitats with trees taller than 20m.	0	Possible
Large Bent-winged Bat <i>Miniopterus orianae oceanensis</i>	V		Prefers caves but also uses derelict mines, storm water tunnels, buildings, and other built structures for roosting. They hunt in forested areas.	2	Unlikely
Southern Myotis <i>Myotis macropus</i>	V		Roost close to water in caves, mine shafts, hollow bearing trees, storm water channels, under bridges and in dense foliage. They forage over streams and pools.	0	No
<b>BIRDS</b>					
Barking Owl <i>Ninox connivens</i>	V		Inhabits woodland and open forest, including remnants and partly cleared farmland. It requires large permanent territories, about 2000 hectares in NSW habitats.	0	Unlikely
Black Falcon <i>Falco subniger</i>	V		The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions	0	Unlikely
Blue-billed Duck <i>Oxyura australis</i>	V		The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation.	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
Brown Treecreeper (eastern subspecies) <i>Climacteris picumnus victoriae</i>	V		Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species.	0	Possible
Diamond Firetail <i>Stagonopleura guttata</i>	V		Found in grassy woodlands including Box-Gum Woodlands and Snow Gum Woodland	0	Unlikely
Dusky Woodswallow <i>Artamus cyanopterus cyanopterus</i>	V		Found mostly in dry, open eucalypt forests and woodlands. Depending on location and climate, it can be migratory.	0	Possible
Flame Robin <i>Petroica phoenicea</i>	V		Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes.  Habitat often changes in winter to include drier more open habitat including dry forests, open woodlands, native grassland, pastures and occasionally in heathland or other shrubland.	1	Unlikely
Gang-gang Cockatoo <i>Callocephalon fimbriatum</i>	V	E	During spring and summer, found in tall mountain forests and woodlands usually heavily timbered and mature wet sclerophyll forests. In Autumn and winter, they generally move to drier more open forests and woodlands.	4	Possible
Glossy Black- Cockatoo <i>Calyptrorhynchus lathamii</i>	V	E	Inhabit open forests and woodlands. She-oak is an important food source and they feed almost exclusively on several species ( <i>Casurina</i> and <i>Allocasaurina</i> ).	0	Unlikely
Hooded Robin (south-eastern form)	V		Found in open eucalypt woodlands, acacia scrub and mallee, often in or near clearings or open areas.	0	Unlikely

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
<i>Melanodryas cucullata cucullata</i>			Requires diverse habitats with mature eucalypts, saplings, small shrubs and moderately tall native grasses.		
Little Eagle <i>Hieraaetus morphnoides</i>	V		Little Eagle is distributed across all of the Australian mainland except for densely vegetated areas, particularly on the Dividing Range escarpment. In NSW the Little Eagle is considered a single population. They inhabit open eucalypt woodland, woodland and open woodland, including She-oak, <i>Acacia</i> woodland and riparian woodland in arid and semi-arid regions.	0	Unlikely
Masked Owl <i>Tyto novaehollandiae</i>	V		Lives in dry eucalypt forests and woodlands from sea level to 1100m. Pairs have a home range of 500-1000 hectares and can often be seen hunting along edges of forests, including roadsides. Breeds in moist eucalypt forested gullies, using hollows or caves for nesting	0	Unlikely
Olive Whistler <i>Pachycephala olivacea</i>	V		Mostly inhabit wet forests above about 500m. During the winter months they may move to lower altitudes	0	Unlikely
Painted Honeyeater <i>Grantiella picta</i>	V	V	Inhabits Boree/Weeping Myall ( <i>Acacia pendula</i> ), Brigalow ( <i>A.harpophylla</i> ) and Box-Gum Woodlands and Box-Ironbark Forests. Feeds on mistletoes preferably the genus <i>Amyema</i>	0	Unlikely
Pilotbird <i>Pycnoptilus floccosus</i>	-	V	Occurs in wet temperate forests where undergrowth is dense.	0	Unlikely
Pink Robin <i>Petroica rodinogaster</i>	V		Inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies.	0	Unlikely
Powerful Owl <i>Ninox strenua</i>	V		inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. Size of territory varies depending on the quality and	0	Unlikely

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			can range from 400 metres to 4000 hectares.		
Regent Honeyeater <i>Anthochaera phrygia</i>	CE	CE	Lives in dry open forest and woodland especially Box-Ironbark woodland, and riparian forests of River Sheoak. Woodlands they inhabit often support high abundance and species richness of bird species.	0	Unlikely
Scarlet Robin <i>Petroica boodang</i>	V		Lives in dry eucalypt forests and woodlands with open grassy understorey with scattered shrubs. Lives in both mature and regrowth vegetation and usually contains abundant logs and fallen timber	0	Unlikely
Sooty Owl <i>Tyto tenebricosa</i>	V		Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests.	0	Unlikely
Speckled Warbler <i>Chthonicola sagittata</i>	V		Lives in Eucalypts dominated communities that have a grassy understorey with sparse shrub layer. Large, relatively undisturbed habitats are needed for this species to remain in an area.	0	Unlikely
Spotted Harrier <i>Circus assimilis</i>	V		Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe.	0	Unlikely
Square-tailed Kite <i>Lophoictinia isura</i>	V		Found in timbered habitats including dry woodlands and open forests. Prefers timbered watercourses.	0	Unlikely
Superb Parrot <i>Polytelis swainsonii</i>	V	V	Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest.	0	Unlikely
Swift Parrot <i>Lathamus discolor</i>	E	CE M	Occurs in areas with flowering eucalypts or abundant lerp (from sap sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany <i>Eucalyptus robusta</i> , Spotted	0	Unlikely



Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			Gum <i>Corymbia maculata</i> , Red Bloodwood <i>C. gummifera</i> , Forest Red Gum <i>E. tereticornis</i> , Mugga Ironbark <i>E. sideroxylon</i> , and White Box <i>E. albens</i> . Commonly used lerp infested trees include Inland Grey Box <i>E. microcarpa</i> , Grey Box <i>E. moluccana</i> , Blackbutt <i>E. pilularis</i> , and Yellow Box <i>E. melliodora</i>		
Turquoise Parrot <i>Neophema pulchella</i>	V		Habitats include edges of eucalypt woodland near clearings, timbered ridges and creeks in farmlands.	0	Unlikely
Varied Sittella <i>Daphoenositta chrysoptera</i>	V		This species is sedentary and known to inhabit most forest/woodland habitats.	2	Unlikely
White-bellied Sea-eagle <i>Haliaeetus leucogaster</i>	V	M	The species is normally seen perched high in a tree, or soaring over waterways and adjacent land, particularly along coastlines, lakes, and rivers.	0	Unlikely
White-fronted Chat <i>Epthianura albifrons</i>	V		Gregarious species, usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground.	0	Unlikely
<b>FISH</b>					
Flathead Galaxias <i>Galaxias rostratus</i>	E (FM Act)	CE	Known from the southern half of the Murry-Darling Basin. Inhabits a variety of habitats including rivers, lakes and swamps.	0	No
Macquarie Perch <i>Macquaria australasica</i>	E (FM Act)	E	Found in the upstream reaches of the Murray-Darling Basin. Found in rivers and lakes.	0	No
Murray Cod <i>Maccullochella peelii</i>		V	Prefers deep, slow flowing turbid water in rivers and streams with boulders or undercut banks.	0	No
Trout Cod	E (FM Act)	CE	Found in the southern Murray-Darling river system, this fish	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
<i>Maccullochella macquariensis</i>			inhabits fast flowing freshwater streams.		
Australian Grayling	E (FM Act)	E	The Australian Grayling is endemic to south-eastern Australia, including Victoria, Tasmania and New South Wales. Rare fish are likely in South Australia. It was once abundant throughout its range but has declined in many areas since European settlement and is now generally patchily distributed. In NSW its most northern limit is now the Clyde River.	0	No
<b>INVERTEBRATES</b>					
Murray Crayfish <i>Euastacus armatus</i>	V		The Murray Crayfish originally occurred in the Murrumbidgee River system in NSW and the ACT, and parts of the Murray river system in NSW, Victoria and South Australia. The species has also been recorded from the Lachlan and Macquarie catchments in NSW, although the origin of these populations is currently unknown, and may be translocated. Murray Crayfish have an upper altitudinal range of approximately 750 – 800 m ASL.	0	No
<b>MAMMALS</b>					
Broad-toothed Rat <i>Mastacomys fuscus</i>	V	V	Lives in a complex of runways through the dense vegetation of its wet grass, sedge or heath environment, and under the snow in winter. This relatively warm under-snow space enables it to be active throughout winter	0	No
Brush-tailed Phascogale <i>Phascogale tapoatafa</i>	V		Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest.	0	Unlikely
Eastern Pygmy-possum	V		Found in a broad range of habitats from rainforest through sclerophyll (including	0	Unlikely

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
<i>Cercartetus nanus</i>			Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred.		
Koala <i>Phascolarctos cinereus</i>	V	V	Inhabit eucalypt woodlands and forests. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size.	1	Unlikely
Smoky Mouse <i>Pseudomys fumeus</i>	CE	E	Appears to prefer heath habitat on ridge tops and slopes in sclerophyll forest, heathland and open-forest from the coast (in Victoria) to sub-alpine regions of up to 1800 metres, but sometimes occurs in ferny gullies	0	No
Spotted-tailed Quoll <i>Dasyurus maculatus</i>	V	E	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath, and inland riparian forest, from the sub-alpine zone to the coastline.	2	Unlikely
Squirrel Glider <i>Petaurus norfolcensis</i>	V		Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas	0	Possible
Greater Glider		E	Distribution levels are higher in regions of montane forest containing manna gum and mountain gum. Furthermore, the presence of Monkey Gum appears to improve the quality of habitat for the greater gliders in forests dominated by <i>E. obliqua</i> . Another factor determining population density is elevation. Optimal levels are 845 m above sea level. Within a forest of suitable habitat, they prefer overstorey basal areas in old-growth tree stands	1	Possible
Yellow-bellied Glider	V		Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
<i>Petaurus australis</i>			soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.		
<b>REPTILES</b>					
Little Whip Snake <i>Suta flagellum</i>	V		Occurs in Natural Temperate Grasslands and grassy woodlands, including those dominated by Snow Gum <i>Eucalyptus pauciflora</i> or Yellow Box <i>E. melliodora</i> . Also occurs in secondary grasslands derived from clearing of woodlands. Found on well drained hillsides, mostly associated with scattered loose rocks.	0	Unlikely
Rosenberg's Goanna <i>Varanus rosenbergi</i>	V		Found in heath, open forest and woodland. Associated with termites, the mounds of which this species nests in; termite mounds are a critical habitat component.	0	No
Striped Legless Lizard <i>Delma impar</i>	V	V	Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland.	0	No
<b>PLANTS</b>					
Alpine Greenhood <i>Pterostylis alpina</i>	V		Often found on sheltered southern slopes near streams in rich loam	0	No
Alpine Sun-orchid <i>Thelymitra alpicola</i>	V		Occurs in wet heaths, sphagnum bogs between 1000-1500 metres and swamps	0	No
Austral Toadflax <i>Thesium australe</i>	V	V	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast.	0	No



Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
Austral Pillwort <i>Pilularia novae-hollandiae</i>	E		grows in shallow swamps and waterways, often among grasses and sedges. It is most often recorded in drying mud as this is when it is most conspicuous	0	No
Cotoneaster Pomaderris <i>Pomaderris cotoneaster</i>	E	E	Has been recorded in a range of habitats in predominantly forested country. The habitats include forest with deep, friable soil, amongst rock beside a creek, on rocky forested slopes and in steep gullies between sandstone cliffs.	0	No
Crimson Spider Orchid <i>Caladenia concolor</i>	E	V	Habitat is regrowth woodland on granite ridge country that has retained a high diversity of plant species, including other orchids. Flowering does not take place every year for reasons that are not fully understood, though each plant probably lives for a considerable number of years	0	No
Dwarf Bush-pea <i>Pultenaea humilis</i>	V		<i>Pultenaea humilis</i> is found in isolated remnants of native woodland and forest communities that occur in extensively cleared agricultural landscapes.	0	No
East Lynne Midge Orchid <i>Genoplesium vernale</i>	V	V	Grows in dry sclerophyll woodland and forest extending from close to the coast to the adjoining coastal ranges. Confined to areas with well-drained shallow soils of low fertility, often occurring near the crests of ridges and on low rises where the ground cover is more open and sedge dominated rather than being shrubby.	0	No
Elusive Cress <i>Irenepharsus magicus</i>	E		Habitat preference for the species is unclear, although records have been found in recently logged Messmate Stringybark ( <i>Eucalyptus obliqua</i> ) forest, in rocky limestone areas, and 'growing on mineral soil of embankment'.	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
Leafy Anchor Plant <i>Discaria nitida</i>	V		Generally occurs on or close to stream banks and on rocky areas near small waterfalls. The species occurs in both woodland with heathy riparian vegetation and on treeless grassy sub-alpine plains	0	No
Rough Eyebright <i>Euphrasia scabra</i>	E		Occurs in or at the margins of swampy grassland or in sphagnum bogs, often in wet, peaty soil. Although parasitic, the species does not appear to be host-specific	0	No
Silky Swainson-pea	V		Found in Natural Temperate Grassland and Snow Gum <i>Eucalyptus pauciflora</i> Woodland on the Monaro.	0	No
Slender Greenhood <i>Pterostylis foliata</i>	V		Grows in eucalypt forest amongst an understorey of shrubs, ferns and grasses. It grows on loam or clay loam soils found on sheltered sloping to steep ground and populations may be found in localised open seepage areas.	0	No
Tumut Grevillea <i>Grevillea wilkinsonii</i>	CE	E	The Tumut Grevillea has a highly restricted distribution in the NSW South-west Slopes region. Its main occurrence is along a 6 km stretch of the Goobarragandra River approximately 20 km east of Tumut where about 1,000 plants are known. The other occurrence is a small population that straddles the boundary of two private properties at Gundagai where only eight mature plants survive.	0	No
Wee Jasper Grevillea <i>Grevillea iaspicula</i>	CE	E	Grows on rocky limestone outcrops and around sink holes and cave entrances. Vegetation is open woodland dominated by White Box ( <i>Eucalyptus albens</i> ) and Apple Box ( <i>E. bridgesiana</i> ) trees. Often occurs as a co-dominant species within the shrubby understorey of its open woodland habitat.	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
Woolly Ragwort <i>Senecio garlandii</i>	V		Occurs on sheltered slopes of rocky outcrops	0	No
Yass Daisy <i>Ammobium craspedioides</i>	V	V	Found in moist or dry forest communities, Box-Gum Woodland and secondary grassland derived from clearing of these communities. Apparently unaffected by light grazing, as populations persist in some grazed sites	0	No
<i>Caladenia montana</i>	V		Restricted to high montane areas 700–1000 m a.s.l. where it grows in well-drained loam on slopes and ridges of montane forest among an understorey of shrubs.	0	No
<i>Pimelea bracteata</i>	CE		In wet heath and along creek banks at higher altitudes in the Kiandra area	0	No
<b>ECOLOGICAL COMMUNITIES</b>					
Fuzzy Box Woodland on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	EEC		Tall woodland or open forest dominated by Fuzzy Box, <i>Eucalyptus conica</i> . Often occurs upstream from River Red Gum communities above frequently inundated areas of the floodplain. Also occurs on colluvium soils and lower slopes and valley flats	0	No
Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	EEC	E	The Montane Peatlands community is associated with accumulated peaty or organic-mineral sediments on poorly drained flats in the headwaters of streams. It occurs on undulating tablelands and plateaux, above 400-500 m elevation, generally in catchments with basic volcanic or fine-grained sedimentary substrates or, occasionally, granite.	0	No
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the	CEEC	CE	An open woodland community characterised by the presence or prior occurrence of White Box, Yellow Box and/or Blakely's Red Gum and a generally grassy understorey. Remnants generally occur on	Common in the Tumbarumba region	Possible

<b>Common Name (Scientific Name)</b>	<b>BC Act/ FM Act</b>	<b>EPBC Act</b>	<b>Habitat requirements</b>	<b>Number of records (source)</b>	<b>Potential to be impacted by the proposal</b>
NSW North Coast, New England, Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions			fertile lower parts of the landscape.		



## **APPENDIX 4 – TEST OF SIGNIFICANCE (BC AND FM ACT)**

Section 7.3 of the BC Act details five factors which are to be considered when determining if a proposed development or activity *'is likely to have a significant effect on the threatened species, ecological communities, or their habitats'*. These five factors must be taken into account by consent or determining authorities when considering a development proposal or development application. This enables a decision to be made as to whether there is likely to be a significant effect on the species.

**Appendix 3** found that six threatened biota were known to, or have the potential to be impacted by the proposal based on the evaluation completed. Given this, further assessment by application of the ToS is completed on the following biota:

- Eastern False Pipistrelle
- Brown Treecreeper
- Dusky Woodswallow
- Gang-gang Cockatoo
- Squirrel Glider
- Greater Glider
- Box Gum Woodland

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**(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,**

Hollow-dependant fauna (Dusky Woodswallow, gliders, microbats, Gang-gang cockatoo, Brown Treecreeper)

Eastern False Pipistrelle are known to occur in hollow-bearing trees, or man-made structures including bridges (Churchill, 2008). While no evidence of occupation was identified during this study, the density of hollow-bearing trees (HBT) within the study area provides evidence that they could roost here from time to time.

The Brown Treecreeper occurs in sub-coastal environments and the slopes of the Great Dividing Range through central NSW (Wagga Wagga, Temora, Forbes, Dubbo, Inverell) (Morcombe, 2004). Whilst it has a large range the species has greatly reduced in density over most of that range (Reid, 1999). They are found in eucalypt woodlands dominated by stringybarks or other roughbark eucalypt, usually with an open grassy understory (including Box-gum Woodland) and dry open forest occurs in eucalypt forests and woodland of inland plains and slopes of the Great Dividing Range (DPIE/BCS, 2022). They can be territorial and rely on hollows for nesting (DPIE/BCS, 2022).

Dispersal of the Brown Treecreeper can occur with them unlikely to disperse if remnants are separated by more than 1.5km (Doerr et al., 2011). The Brown Treecreeper has also declined or disappeared from most remaining remnants that are smaller than 300 hectares, at least partly because females disperse from these areas or die preferentially and are not replaced

(Cooper et al., 2002, Cooper and Walters, 2002). Once lost from a remnant, recolonisation is unlikely without assistance. Brown Treecreeper was recorded during the field survey and evidence of breeding in the study area was observed.

The Gang-gang Cockatoo is distributed from southern Victoria through south- and central-eastern New South Wales. In New South Wales, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. It occurs regularly in the Australian Capital Territory. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee. It favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 10 cm in diameter or larger and at least 9 m above the ground in eucalypts (Simson, 1924, NSWSC, 2008, Garnett and Baker, 2020).

The main factor for the EPBC listing is a result of the Black Summer Fires in 2019/2020. The population of Gang-gang Cockatoo has declined by approximately 69 percent in the last three generations (approximately 21 years) (Bird et al. 2020; Cameron et al. forthcoming). In addition to this continuous decline in population numbers, the species also suffered mortality and habitat loss during Black Summer Fires. Estimates of the distribution impacted by fire range from 28 to 36 percent (Legge et al. 2020; Ward et al. 2020; Legge et al. 2021). The 2019/2020 fires may have reduced the carrying capacity of 40 percent of occupied grid cells by half and resulted in a 10 percent reduction in the overall population size (Cameron et al. forthcoming). An analysis based on expert analysis estimated that three generations post-fire the population could still be 29 percent lower than the pre-fire population size (Legge et al. 2021). These predictions assume no further extreme drought or extensive fire events; however, such events are likely to reoccur over the assessment period, which would worsen the extent of population decline. Given this nomination, this BA will assume that Gang-gang Cockatoo is accepted for listing as Endangered under the EPBC Act and assess the potential impacts of the proposal on this species accordingly.

The Greater Glider is distributed along the east coast of mainland Australia, from central Queensland to central Victoria (Lunney, 1987, Kavanagh and Lambert, 1990, Pavey, 1992, Lindenmayer et al., 2002, Maloney, 2007). They are forest dependent and prefer older trees in moist forests. They use hollow-bearing trees for both shelter and nesting, with each family group using multiple den trees within its home range (Lindenmayer et al. 2004). Greater Glider density varies proportionally to the availability of hollow-bearing trees and do not persist in areas of forest where such trees are absent. There is an inverse relationship between the habitat patch size and extinction risk. McCarthy and Lindenmayer (1999) suggest populations inhabiting small patches of otherwise suitable habitat are subject to heightened risks of extinction due to the generally low densities and rates of population increase, and the potential impacts of events such as bushfire.

Squirrel Glider is known to occur in mature Box-Gum/Box Ironbark woodlands and River Red Gum forests west of the Great Dividing Range and in Blackbutt/Bloodwood forests with a heathy understory in coastal areas where they utilise hollow-bearing trees for denning purposes (Menkhorst and Collier, 1987, Menkhorst et al., 1988, Crane et al., 2017, Sharpe and Goldingay, 2017, Sharpe and Goldingay, 2019). Our field survey did not detect this

species, but this is likely an artefact of survey effort and methods, rather than non-presence as they are known from the Tumbarumba region.

Dusky Woodswallow are widespread in eastern, southern and south western Australia (Robinson, 1993, Rowley, 2000, Fulton, 2005, Kavanagh et al., 2007, Sims, 2007, Montague-Drake et al., 2009). The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range.

They occur mostly in dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. The species can also be found in farmland, usually at the edges of forest or woodland.

They are known to feed on invertebrates, mainly insects, which are captured whilst hovering or sallying above the canopy or over water. Also frequently hovers, sallies and pounces under the canopy, primarily over leaf litter and dead timber. Also occasionally take nectar, fruit and seed.

Depending on location and local climatic conditions (primarily temperature and rainfall), Dusky Woodswallow can be resident year round or migratory. In NSW, after breeding, birds migrate to the north of the state and to southeastern Queensland, while Tasmanian birds migrate to southeastern NSW after breeding. Migrants generally depart between March and May, heading south to breed again in spring. There is some evidence of site fidelity for breeding. Although Dusky woodswallows generally breed as solitary pairs or occasionally in small flocks, large flocks may form around abundant food sources in winter. Large flocks may also form before migration, which is often undertaken with other species.

For all species, it is appropriate that if any HBT are to be removed (the design used for this REF identifies up to 5 require removal), that suitable safeguards are implemented. This REF includes the requirement for a suitably qualified and experienced ecologist to be onsite during any HBT removal. All safeguards and recommendations detailed within section 5 provide a framework for minimising potential direct and indirect impacts to these species and must be implemented to minimise the risks associated with HBT removal.

Based on general habitat removal, woodland and forest is relatively widespread within the study area (about 27 hectares) and within a 550 metre of the proposal (about 700 hectares), so the potential impact of this proposal of about 1.28 hectares (or 4.75% and 0.18% respectively), is of little significance.

With consideration of these factors, it is *unlikely* that the proposal could have an adverse effect on the life cycle of the above species or their habitats such that a viable local population is likely to be placed at risk of extinction provided safeguards are fully implemented.



**(b) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:**

- (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**
- (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,**

These species are not listed as an endangered ecological community or critically endangered ecological community.

**(c) in relation to the habitat of a threatened species or ecological community:**

- (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and**
  - (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and**
  - (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,**
- i. The proposed activity would result in the removal of about 0.6 hectares of native vegetation.
  - ii. The proposed activity would not isolate or fragment other areas of habitats further than the impact that pre-exists and given the ability of these species to move over distance, the relatively minor nature of the proposed activity, and the extent and quality of forests in the wider locality.
  - iii. The potential habitat to be removed is of little importance to the long-term viability in the locality particularly with consideration of the remaining woodland and forest that occurs within the locality that would remain unaffected by the proposal.

**(d) whether the action proposed is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).**

No declared areas of outstanding biodiversity value are known within the Snowy Valley LGA under the BC Act.

**(e) whether the action proposed constitutes or is part of a key threatening process or is likely to increase the impact of, a key threatening process.**

The 'clearing of native vegetation' is recognised as a major factor contributing to the loss of biodiversity. Clearing of any area of native vegetation may impact biological diversity such as habitat fragmentation limiting gene flow between small isolated populations, which may result

in a reduction in the potential for biodiversity to adapt to environmental change. The proposed activity would result in the removal of about 0.6 hectares. This relatively minor loss of vegetation is considered negligible in the context of the extent of vegetation remaining within the locality and with consideration of the proposed development, does not constitute a key threatening process.

The 'Loss of Hollow-bearing Trees' is also a KTP to consider. While this REF does not recommend the removal of any HBT, it includes safeguards should this be considered necessary.

With consideration of these factors, the proposed activity is unlikely to result in the operation of or increase the impact of a key threatening process.

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**(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,**

**Box-gum Woodland**

Box-gum Woodland is not listed as a threatened species.

**(b) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:**

- (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**
- (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,**

About 0.29 hectares of this TEC would be removed (none of which meets the EPBC Act listing criteria). This TEC is somewhat limited in the road reserve (2.53 hectares) but based on the NSW State Vegetation Type Map, the TEC also occurs within a 550-metre buffer of the road reserve (about 11.8 hectares). On that basis, the proposal would result in the removal of about 11.46% of the Box-gum Woodland in the road reserve. It would also equate to a loss of about 2.46% of the total extent of Box-gum Woodland within a 550-metre buffer.

On this basis, the proposal is unlikely to have an adverse effect on the extent, or substantially and adversely modification the composition of Box-gum Woodland, such that its local occurrence is likely to be placed at risk of extinction.

**(c) in relation to the habitat of a threatened species or ecological community:**

- (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and**
  - (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and**
  - (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,**
- i. The proposed activity would result in the removal of about 0.29 hectares of this TEC.
  - ii. The proposed activity would not isolate or fragment other areas of habitats further than the impact that pre-exists and the relatively minor nature of the proposed activity, and the extent and quality of this TEC in the wider locality.
  - iii. The potential habitat to be removed is of little importance to the long-term viability in the locality particularly with consideration of the remaining Box-gum Woodland that occurs within the study area and locality that would remain unaffected by the proposal.
- (d) whether the action proposed is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).**
- No declared areas of outstanding biodiversity value are known within the Snowy Valley LGA under the BC Act.
- (e) whether the action proposed constitutes or is part of a key threatening process or is likely to increase the impact of, a key threatening process.**

The 'clearing of native vegetation' is recognised as a major factor contributing to the loss of biodiversity. Clearing of any area of native vegetation may impact biological diversity such as habitat fragmentation limiting gene flow between small isolated populations, which may result in a reduction in the potential for biodiversity to adapt to environmental change. The proposed activity would result in the removal of about 0.29 hectares of Box-gum Woodland. This relatively minor loss of vegetation is considered negligible in the context of the extent of vegetation remaining within the locality and with consideration of the proposal, does not constitute a key threatening process.

The 'Loss of Hollow-bearing Trees' is also a KTP to consider. While this REF does not recommend the removal of any HBT, it includes safeguards should this be considered necessary.

With consideration of these factors, the proposed activity is unlikely to result in the operation of or increase the impact of a key threatening process.

## NSW Fisheries Management Act 1994

In the FM Act, there are seven factors which are to be considered when determining if a proposed development or activity '*is likely to have a significant effect on the threatened species, or ecological communities, or their habitats*'. These seven factors must be taken into account by consent or determining authorities when considering a development proposal or development application. This enables a decision to be made as to whether there is likely to be a significant effect on the species.

The habitat assessment table in **Appendix 3** found that no threatened biota listed under the FM Act have the potential to occur to be impacted by the proposal. Given this, no further assessment is conducted.



## **APPENDIX 5 – ASSESSMENT OF SIGNIFICANCE (EPBC ACT)**

## Migratory Species

Protected under several international agreements to which Australia is a signatory, Migratory species are considered Matters of National Environmental Significance under the EPBC Act.

Under the EPBC Act, an action is likely to have a significant impact on a migratory species if it substantially modifies, destroys or isolated an area of 'important habitat' for the species (DotE, 2013). The study area is not considered to comprise 'important habitat' as it does not contain:

- Habitat used by a migratory species occasionally or periodically within a region that supports an ecological significant proportion of the population of the species
- Habitat that is of critical importance to the species at particular life-cycle stages
- Habitat used by a migratory species that is at the limit of the species' range
- Habitat within an area where the species is declining.

Given this, the potential for the proposed activity to impact on EPBC Act listed migratory species is unlikely and not considered further.

## Threatened Species

The study area and immediate surrounds contains potential habitat for a number of biota listed as threatened under the EPBC Act; Gang-gang Cockatoo, Greater Glider. The following section provides significance assessment for these biota.

### Vulnerable Species (Greater Glider)

*Will the action lead to a long-term decrease in the size of an important population of a species?*

No. There is no evidence that an 'important population' as defined by the EPBC Act occurs within the study area. Nonetheless, the proposed action would result in the direct impact of both native vegetation and potentially hollow-bearing trees. However, extensive areas of native vegetation remain within both the road reserve, and within the wider locality which would remain unaffected confirming that extensive areas of potential and known habitat would remain. A series of site-specific safeguards to minimise potential impacts have been developed for biodiversity and would be implemented should the proposed action proceed. Additionally, HBT are widespread across the study area, with the majority of these located outside of the direct impact area.

Given this, it is unlikely that the proposed action would lead to a long-term decrease in an area of occupancy of an important population of this species.

*Will the action reduce the area of occupancy of an important population?*

No. While there is no evidence to suggest that an 'important' population even occurs within the study area, the proposed action would result in the direct impact native vegetation and HBT. There are large areas of existing native vegetation in the crown land in the wider locality which would remain unaffected by the proposal and would continue to provide habitat for this

species in the locality. Additionally, HBT are widespread across the study area, with the majority of these located outside of the direct impact area. Given this, it is unlikely that the proposed action would lead to a long-term decrease in an area of occupancy of an important population of this species (should one occur there).

*Will the action fragment an existing population into two or more populations?*

No population would be fragmented into two or more populations by the current design of the proposed action. No impacts are proposed to aquatic habitats.

*Will the action adversely affect habitat critical to the survival of a species?*

No. The habitat present is not considered critical for the survival of this species.

*Will the action disrupt the breeding cycle of an important population?*

No. The proposal has the potential to impact the breeding cycle of hollow-dependant fauna. This REF has identified site-specific safeguards to ensure that potential impacts to breeding cycles are minimised through the provision of a suitably qualified and experienced person to supervise any HBT removal through a site-specific plan.

*Will the action modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?*

No. The potential habitat proposed for removal would not result in this species being likely to decline.

*Will the action result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat?*

No. Mitigation measures within section 5 provide a framework to minimise the risk of weed species becoming established as a result of this proposal.

*Will the action introduce disease that may cause the species to decline?*

No. Recommendations within section 5 provide a framework for managing potential risks to biodiversity.

*Will the action interfere with the recovery of the species?*

No. Mitigation measures outlined within section 5 suggest that it is unlikely that the proposed action would have an impact on the recovery of this species given the relatively minor level of impact proposed and that a range of mitigation measures designed specifically to minimise potential impacts to threatened species would be implemented.

#### Endangered Species and Critically Endangered Species (Gang-gang Cockatoo)

*Will the action lead to a long-term decrease in the size of a population of a species?*

No. While Gang-gang Cockatoo could potentially forage and breed in the wider study area, extensive areas of habitat remain in the locality. Further, HBT are widespread throughout the study area and well clear of the proposed impact area.

Given this, it is unlikely that the proposed action would lead to a long-term decrease in the size of a population of either species (should they even occur there).

*Will the action reduce the area of occupancy of the species?*

No. There is no evidence to suggest that a population relies upon the resources of the study area in its entirety particularly given the highly mobile nature of Gang-gang Cockatoo. Given this, the action is unlikely to reduce any area of occupancy to the detriment of this species.

*Will the action fragment an existing population into two or more populations?*

No population would be fragmented into two or more populations given the context of the design of the proposal and the high mobility of the species. No impacts to aquatic habitat are proposed.

*Will the action adversely affect habitat critical to the survival of a species?*

No. The habitat is not considered critical to this species for its survival.

*Will the action disrupt the breeding cycle of a population?*

No. Measures implemented HBT removal would ensure that any breeding cycle is not disrupted.

*Will the action modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?*

No. The availability of habitat in the locality indicates that the proposal is unlikely to impact potential habitat to the extent this species is likely to decline.

*Will the action result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat?*

No. Mitigation measures within section 6 provide a framework to minimise the risk of weed species invading adjoining habitats.

*Will the action introduce disease that may cause the species to decline?*

No. Recommendations within section 6 provide a framework for managing potential risks to biodiversity.

*Will the action interfere with the recovery of the species?*

No. Given the relatively minor nature of the proposed action, the extent of similar or higher quality habitats in the locality, and the adoption of the mitigation measures outlined within



section 5, it is unlikely that the proposed action would have an impact on the recovery of this species.

## Conclusion

With consideration of the assessments completed within Annexure C, the proposal is '*unlikely*' to have a '*significant effect*' on threatened or migratory biota as listed by the EPBC Act. Based on this, referral to the Commonwealth Minister is not warranted.

## **APPENDIX 6 – ABORIGINAL INFORMATION MANAGEMENT SYSTEM SEARCH RESULTS (AHIMS)**

EnviroKey Pty Ltd

PO Box 7231

TATHRA New South Wales 2550

Attention: Steve Sass

Email: [steve@envirokey.com.au](mailto:steve@envirokey.com.au)

Date: 26 October 2022

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lot : 7029, DP:DP1027446, Section : - with a Buffer of 200 meters, conducted by Steve Sass on 26 October 2022.**

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

**If your search shows Aboriginal sites or places what should you do?**

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(https://www.legislation.nsw.gov.au/gazette\)](https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

**Important information about your AHIMS search**

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.



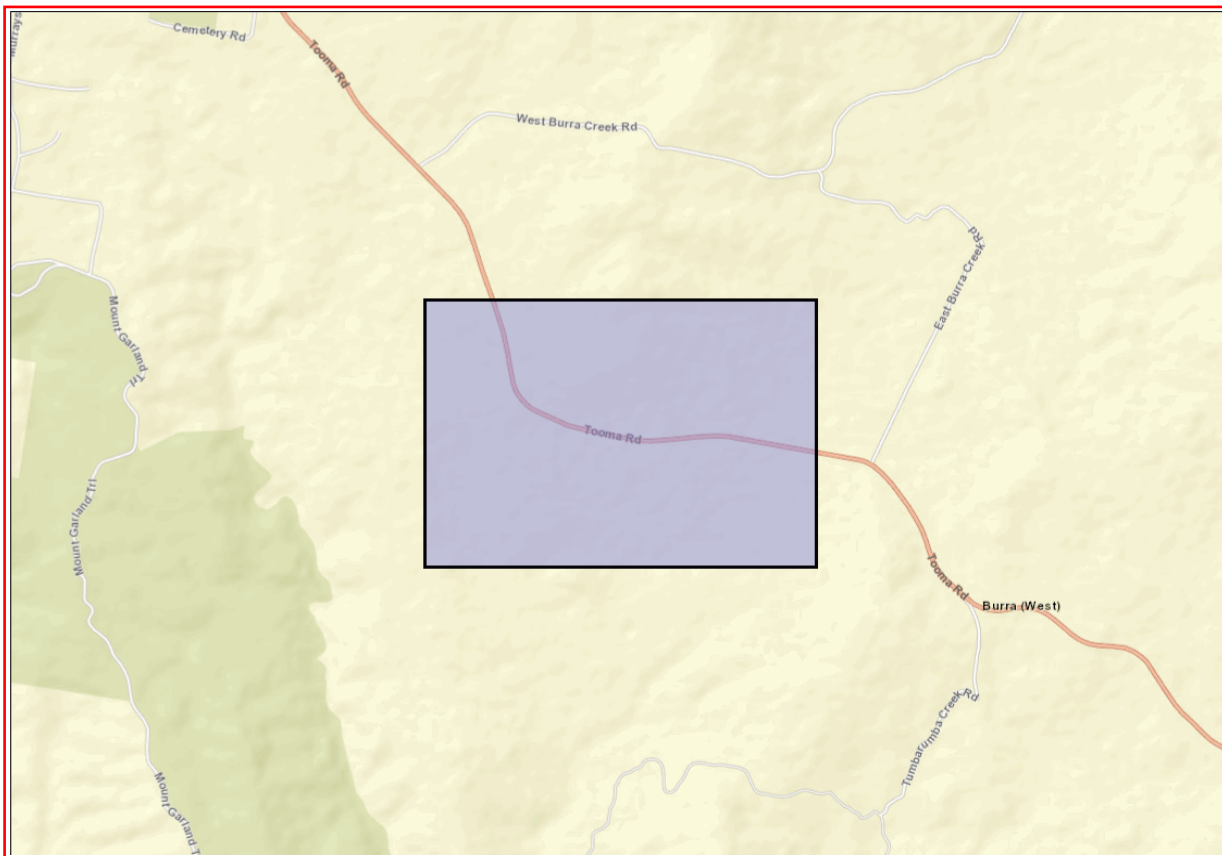
EnviroKey Pty Ltd  
PO Box 7231  
TATHRA New South Wales 2550  
Attention: Steve Sass  
Email: [steve@envirokey.com.au](mailto:steve@envirokey.com.au)

Date: 26 October 2022

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lat, Long From : -35.8361, 148.0335 - Lat, Long To : -35.8187, 148.0644, conducted by Steve Sass on 26 October 2022.**

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

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- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
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- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

EnviroKey Pty Ltd

Date: 26 October 2022

PO Box 7231

TATHRA New South Wales 2550

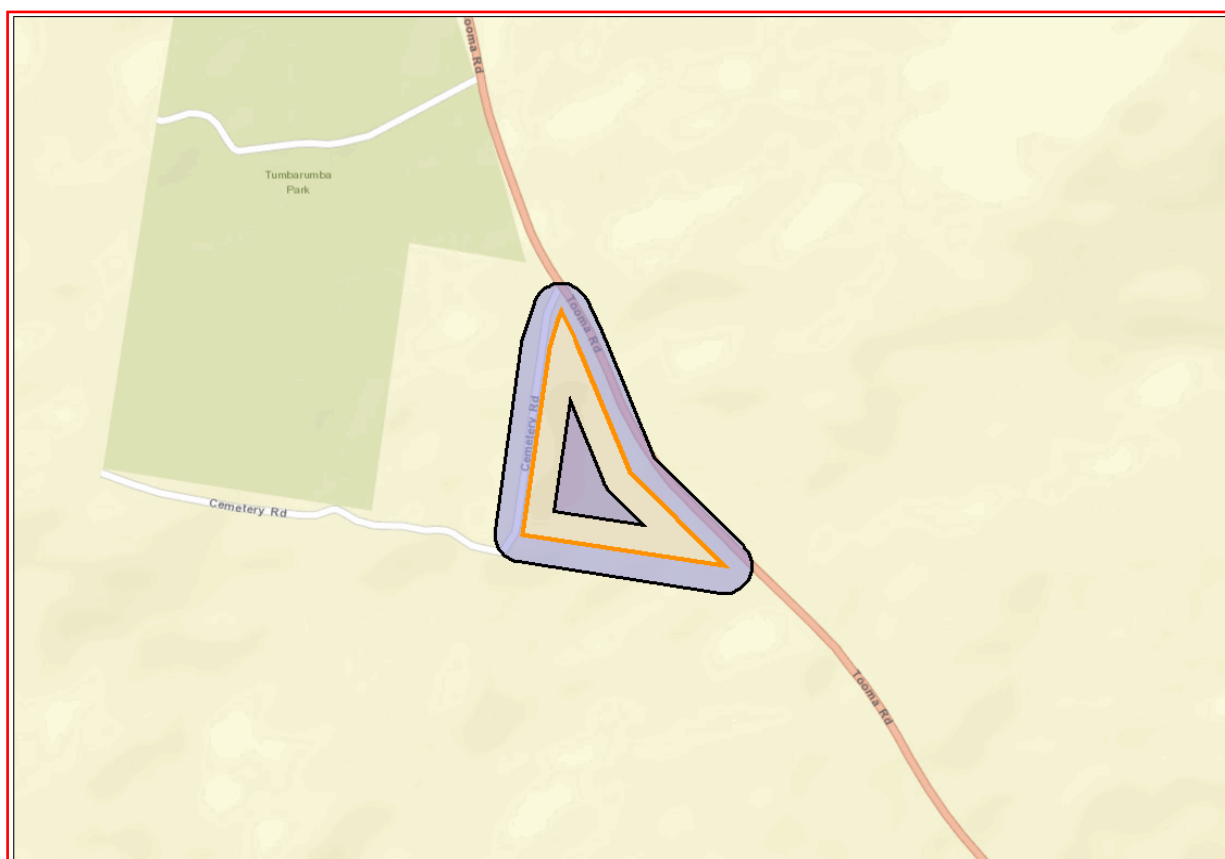
Attention: Steve Sass

Email: [steve@envirokey.com.au](mailto:steve@envirokey.com.au)

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lot : 658, DP:DP755892, Section : - with a Buffer of 50 meters, conducted by Steve Sass on 26 October 2022.**

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

**If your search shows Aboriginal sites or places what should you do?**

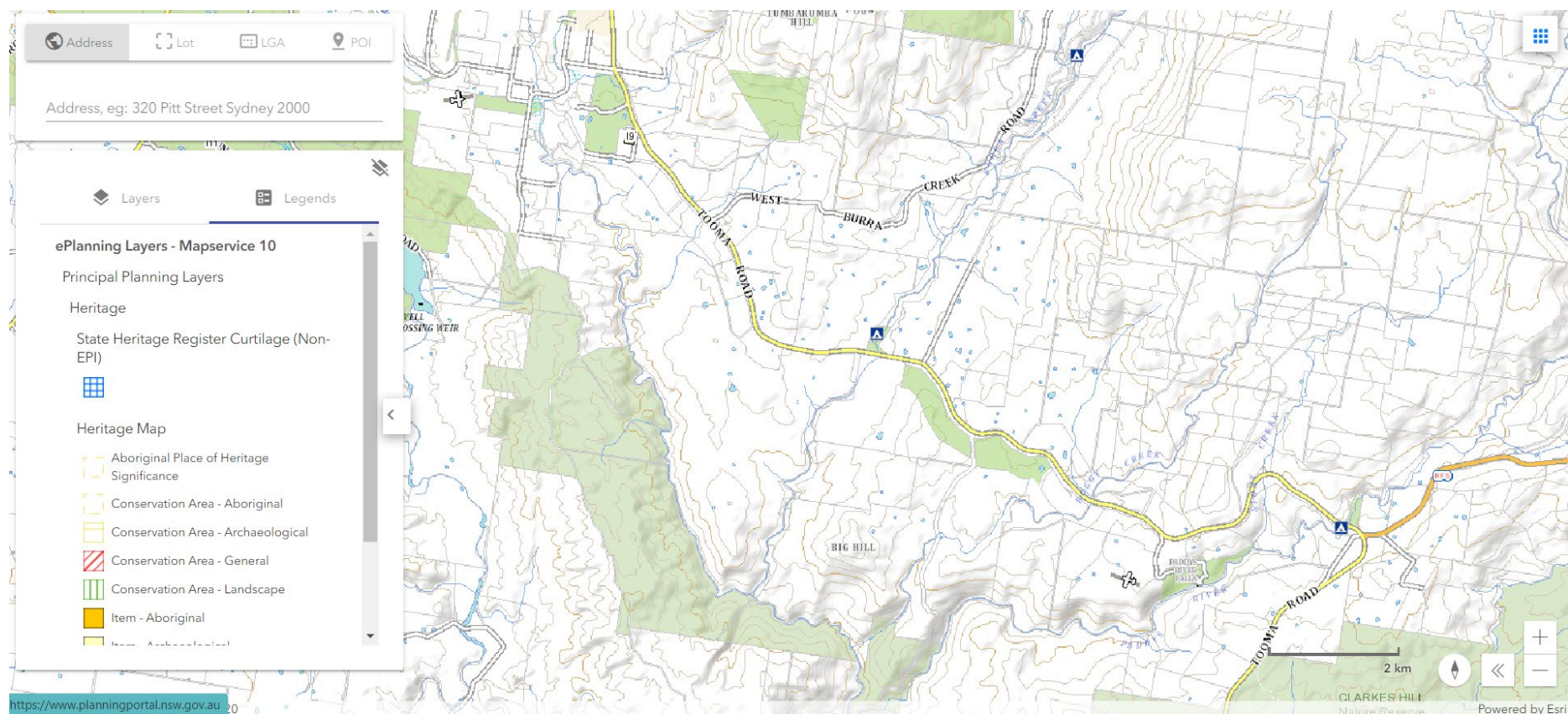
- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(https://www.legislation.nsw.gov.au/gazette\)](https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

**Important information about your AHIMS search**

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.



## APPENDIX 7 – NON-ABORIGINAL HERITAGE SEARCHES



Tumbarumba

Tumbarumba Pioneer Cemetery Cemetery Road

Lot 7033, DP 1001030

Local

19

## APPENDIX 8 – PROTECTED MATTERS SEARCH TOOL RESULTS



# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 18-Sep-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



# Summary

## Matters of National Environment Significance

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

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance (Ramsar</a>	7
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Listed Threatened Ecological Communities:</a>	3
<a href="#">Listed Threatened Species:</a>	45
<a href="#">Listed Migratory Species:</a>	11

## Other Matters Protected by the EPBC Act

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

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

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

<a href="#">Commonwealth Lands:</a>	1
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	17
<a href="#">Whales and Other Cetaceans:</a>	None
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None
<a href="#">Habitat Critical to the Survival of Marine Turtles:</a>	None

## Extra Information

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

<a href="#">State and Territory Reserves:</a>	1
<a href="#">Regional Forest Agreements:</a>	1
<a href="#">Nationally Important Wetlands:</a>	None
<a href="#">EPBC Act Referrals:</a>	4
<a href="#">Key Ecological Features (Marine):</a>	None
<a href="#">Biologically Important Areas:</a>	None
<a href="#">Bioregional Assessments:</a>	None
<a href="#">Geological and Bioregional Assessments:</a>	None

# Details

## Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[ Resource Information ]
Ramsar Site Name	Proximity	Buffer Status
<a href="#">Banrock station wetland complex</a>	700 - 800km upstream from Ramsar site	In feature area
<a href="#">Barmah forest</a>	200 - 300km upstream from Ramsar site	In feature area
<a href="#">Gunbower forest</a>	300 - 400km upstream from Ramsar site	In feature area
<a href="#">Hattah-kulkyne lakes</a>	500 - 600km upstream from Ramsar site	In feature area
<a href="#">Nsw central murray state forests</a>	200 - 300km upstream from Ramsar site	In feature area
<a href="#">Riverland</a>	600 - 700km upstream from Ramsar site	In feature area
<a href="#">The coorong, and lakes alexandrina and albert wetland</a>	700 - 800km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities

[ Resource Information ]

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

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Alpine Sphagnum Bogs and Associated Fens</a>	Endangered	Community likely to occur within area	In feature area
<a href="#">Natural Temperate Grassland of the South Eastern Highlands</a>	Critically Endangered	Community likely to occur within area	In feature area
<a href="#">White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland</a>	Critically Endangered	Community may occur within area	In feature area

Listed Threatened Species

[ Resource Information ]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.  
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
<a href="#">Anthochaera phrygia</a> Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Callocephalon fimbriatum</a> Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Falco hypoleucos</a> Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Grantiella picta</a> Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Lathamus discolor</a> Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Polytelis swainsonii</a> Superb Parrot [738]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Pycnoptilus floccosus</a> Pilotbird [525]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Rostratula australis</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
FISH			
<a href="#">Galaxias rostratus</a> Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Maccullochella macquariensis</a> Trout Cod [26171]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Maccullochella peelii</a> Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Macquaria australasica</a> Macquarie Perch [66632]	Endangered	Translocated population known to occur within area	In feature area
FROG			
<a href="#">Crinia sloanei</a> Sloane's Froglet [59151]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Litoria booroolongensis</a> Booroolong Frog [1844]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Litoria raniformis</a> Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Litoria spenceri</a> Spotted Tree Frog [25959]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
INSECT			
<a href="#">Synemon plana</a> Golden Sun Moth [25234]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Dasyurus maculatus maculatus (SE mainland population)</a> Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Mastacomys fuscus mordicus</a> Broad-toothed Rat (mainland), Tooarrana [87617]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Nyctophilus corbeni</a> Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Petauroides volans</a> Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Petaurus australis australis</a> Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)</a> Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Pseudomys fumeus</a> Smoky Mouse, Konoom [88]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Pteropus poliocephalus</a> Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			
<a href="#">Ammobium craspedioides</a> Yass Daisy [20758]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Amphibromus fluitans</a> River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Calotis glandulosa</a> Mauve Burr-daisy [7842]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Lepidium aschersonii</a> Spiny Pepper-cress [10976]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Leucochrysum albicans subsp. tricolor</a> Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Pimelea bracteata</a> [8125]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Prasophyllum bagoense</a> Bago Leek-orchid [84276]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Prasophyllum innubum</a> Brandy Marys Leek-orchid [83603]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Prasophyllum keltonii</a> Kelton's Leek-orchid [83604]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Prasophyllum petilum</a> Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Pterostylis oreophila</a> Blue-tongued Orchid, Kiandra Greenhood [22903]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Senecio macrocarpus</a> Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Swainsona recta</a> Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Thesium australe</a> Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area

REPTILE

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Aprasia parapulchella</a> Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Delma impar</a> Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Liopholis montana</a> Mountain Skink [87162]	Endangered	Species or species habitat may occur within area	In buffer area only

Listed Migratory Species

[ Resource Information ]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area

Migratory Terrestrial Species

<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
<a href="#">Myiagra cyanoleuca</a> Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
<a href="#">Rhipidura rufifrons</a> Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area

Migratory Wetlands Species

<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area	In feature area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

### Other Matters Protected by the EPBC Act

Commonwealth Lands		[ <a href="#">Resource Information</a> ]
The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.		
Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [14992]	NSW	In buffer area only

Listed Marine Species	<a href="#">[ Resource Information ]</a>		
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
<a href="#">Bubulcus ibis as Ardea ibis</a> Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Lathamus discolor</a> Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Myiagra cyanoleuca</a> Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Neophema chrysostoma</a> Blue-winged Parrot [726]		Species or species habitat likely to occur within area overfly marine area	In feature area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Rhipidura rufifrons</a> Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Rostratula australis as Rostratula benghalensis (sensu lato)</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

### Extra Information

State and Territory Reserves			[ <a href="#">Resource Information</a> ]
Protected Area Name	Reserve Type	State	Buffer Status
Bogandyera	Nature Reserve	NSW	In buffer area only

Regional Forest Agreements			[ <a href="#">Resource Information</a> ]
Note that all areas with completed RFAs have been included.			
RFA Name		State	Buffer Status
<a href="#">Southern RFA</a>		New South Wales	In feature area

EPBC Act Referrals			[ <a href="#">Resource Information</a> ]	
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
<a href="#">Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia</a>	2015/7522	Not Controlled Action	Completed	In feature area
<a href="#">INDIGO Central Submarine Telecommunications Cable</a>	2017/8127	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
<a href="#">Aerial baiting for wild dog control</a>	2006/2713	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
<a href="#">INDIGO Marine Cable Route Survey (INDIGO)</a>	2017/7996	Not Controlled Action	Post-Approval	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)		(Particular Manner)		

# Caveat

## 1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

## 2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

## 3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

## 4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.



# Acknowledgements

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

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

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

Please feel free to provide feedback via the [Contact Us](#) page.

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## APPENDIX 9 – LOCATIONS OF HOLLOW-BEARING TREES

ID	Within Proposed Path	Latitude	Longitude	Easting	Northing
1	NO	-35.799	148.0215	592296.9	6037869
2	NO	-35.799	148.0216	592305.8	6037863
3	NO	-35.7995	148.0218	592322.6	6037808
4	NO	-35.8003	148.0223	592375.2	6037717
5	NO	-35.8003	148.0222	592366.1	6037721
6	NO	-35.8009	148.0229	592425.3	6037657
7	NO	-35.801	148.0232	592448.8	6037638
8	NO	-35.8012	148.0234	592464.9	6037613
9	NO	-35.8017	148.0239	592511.7	6037567
10	NO	-35.8015	148.0238	592501.5	6037580
11	NO	-35.8021	148.0243	592546.9	6037514
12	NO	-35.8024	148.0247	592587.8	6037485
13	NO	-35.8035	148.0259	592693.4	6037363
14	NO	-35.8042	148.0268	592772.9	6037278
15	NO	-35.8046	148.0271	592798.7	6037239
16	NO	-35.805	148.0272	592808.3	6037192
17	NO	-35.8051	148.0273	592815.1	6037183
18	NO	-35.8053	148.0274	592824.5	6037158
19	NO	-35.8065	148.0284	592911.3	6037030
20	NO	-35.8064	148.0285	592925.5	6037037
21	NO	-35.8067	148.0288	592946.1	6037004
22	NO	-35.8071	148.0291	592975	6036960
23	NO	-35.8074	148.0295	593012.8	6036925
24	NO	-35.8073	148.0294	593004.3	6036934
25	NO	-35.8074	148.0294	593006.6	6036923
26	NO	-35.8079	148.0301	593063.4	6036872
27	NO	-35.808	148.0302	593074.2	6036858
28	NO	-35.8083	148.0307	593119.4	6036821
29	NO	-35.8085	148.0309	593139.1	6036798
30	NO	-35.8086	148.031	593150.4	6036790
31	NO	-35.8087	148.031	593149.5	6036780



ID	Within Proposed Path	Latitude	Longitude	Easting	Northing
32	NO	-35.809	148.0314	593180.1	6036748
33	NO	-35.8092	148.0317	593212.9	6036719
34	NO	-35.8099	148.0322	593255.6	6036642
35	NO	-35.8106	148.0333	593355.8	6036571
36	NO	-35.8109	148.0337	593389.6	6036527
37	NO	-35.8113	148.0341	593425.6	6036489
38	NO	-35.8119	148.0348	593486.9	6036425
39	NO	-35.8124	148.0351	593513	6036370
40	YES	-35.8126	148.0353	593534	6036343
41	NO	-35.8126	148.0351	593515	6036347
42	NO	-35.8128	148.036	593590.8	6036315
43	NO	-35.8132	148.0359	593585.9	6036280
44	NO	-35.8149	148.037	593682.5	6036090
45	NO	-35.8159	148.0373	593711.2	6035972
46	NO	-35.8156	148.0373	593708	6036008
47	NO	-35.8158	148.0375	593723.2	6035984
48	NO	-35.8181	148.0381	593775.2	6035731
49	NO	-35.8183	148.0381	593781.1	6035703
50	YES	-35.8205	148.0391	593868.9	6035462
51	NO	-35.8218	148.0396	593909.4	6035321
52	NO	-35.8246	148.0404	593979.3	6035007
53	YES	-35.8274	148.0464	594518.4	6034686
54	YES	-35.828	148.0512	594951	6034615
55	NO	-35.8045	148.0263	592728.9	6037249
56	NO	-35.8053	148.0271	592801.5	6037158
57	NO	-35.8063	148.0276	592845	6037043
58	NO	-35.8094	148.0314	593180.8	6036703
59	NO	-35.8116	148.0338	593395.6	6036460
60	NO	-35.8138	148.0362	593613.6	6036207
61	NO	-35.8153	148.0371	593688.2	6036039
62	YES	-35.8235	148.04	593941.9	6035130
63	NO	-35.8268	148.0439	594291.2	6034753
64	NO	-35.8213	148.0393	593882.3	6035377

<b>ID</b>	<b>Within Proposed Path</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Easting</b>	<b>Northing</b>
65	NO	-35.8215	148.0396	593908.9	6035347
66	NO	-35.8195	148.0386	593818.2	6035575
67	NO	-35.8194	148.0385	593811.3	6035581

## **APPENDIX 10 – FLORA SPECIES RECORDED DURING THE FIELD SURVEY**

Common Name	Scientific Name
Cootamundra Wattle	<i>Acacia baileyana</i>
Silver Wattle	<i>Acacia dealbata</i>
Ploughshare Wattle	<i>Acacia gunnii</i>
Narrow-leaved Wattle	<i>Acacia linearifolia</i>
Blackwood	<i>Acacia melanoxylon</i>
Mountain Hickory	<i>Acacia obliquinervia</i>
Ovens Wattle	<i>Acacia pravissima</i>
Bidgee-widgee	<i>Acaena novae-zelandiae</i>
Australian Sheep's Burr	<i>Acaena ovina</i>
*Sorrel	<i>Acetosella vulgaris</i>
*Tansyleaf Milfoil	<i>Achillea distans</i>
Powell's Amaranth	<i>Amaranthus powellii</i>
Box Mistletoe	<i>Amyema miquelii</i>
*Capeweed	<i>Arctotheca calendula</i>
A Starhair	<i>Astrotricha ledifolia</i>
Rough Spear-grass	<i>Austrostipa scabra subsp. falcata</i>
*Wild Oats	<i>Avena fatua</i>
Red-leg Grass	<i>Bothriochloa macra</i>
*Shivery Grass	<i>Briza minor</i>
Sweet Bursaria	<i>Bursaria spinosa</i>
*Common Bittercress	<i>Cardamine hirsuta</i>
Tall Sedge	<i>Carex appressa</i>
Sedge	<i>Carex sp.</i>
*Saffron Thistle	<i>Carthamus lanatus</i>
Sticky Cassinia	<i>Cassinia uncata</i>
Dodder	<i>Cassytha pubescens</i>
*Common Centaury	<i>Centaurium erythraea</i>
Mulga fern	<i>Cheilanthes sieberi</i>
Windmill Grass	<i>Chloris truncata</i>
Common Everlasting	<i>Chrysocephalum apiculatum</i>



Common Name	Scientific Name
Spear Thistle	<i>Cirsium vulgare</i>
Tall Fleabane	<i>Conyza albida</i>
*Cotoneaster	<i>Cotoneaster sp.</i>
Common Billy Buttons	<i>Craspedia variabilis</i>
Bitter Cryptandra	<i>Cryptandra amara</i>
Austral Bear's Ear	<i>Cymbonotus preissianus</i>
Couch Grass	<i>Cynodon dactylon</i>
*Scotch Broom	<i>Cytisus scoparius</i>
Box-leaf Bitter-pea	<i>Daviesia buxifolia</i>
Hop Bitter-pea	<i>Daviesia latifolia</i>
A Dianella	<i>Dianella sp.</i>
*Pattersons Curse	<i>Echium plantagineum</i>
*Common Couch	<i>Elymus repens</i>
Common Wheat-grass	<i>Elymus scaber</i>
Musk Monkey-flower	<i>Erythranthe moschata</i>
Blue Gum	<i>Eucalyptus bicostata</i>
Mountain Gum	<i>Eucalyptus cypellocarpa</i>
Apple Box	<i>Eucalyptus bridgesiana</i>
Broad-leaved Peppermint	<i>Eucalyptus dives</i>
Red Stringybark	<i>Eucalyptus macrorhyncha</i>
Brittle Gum	<i>Eucalyptus mannifera</i>
Bundy	<i>Eucalyptus nortonii</i>
White Sallee	<i>Eucalyptus pauciflora</i>
Black Sallee	<i>Eucalyptus stellulata</i>
Ribbon Gum	<i>Eucalyptus viminalis</i>
Star Cudweed	<i>Euchiton sphaericus</i>
Native Cherry	<i>Exocarpos cupressiformis</i>
*Small goosegrass	<i>Galium murale</i>
*Geranium	<i>Geranium antrorsum</i>
Australian Cranesbill	<i>Geranium solanderi</i>

Common Name	Scientific Name
*Yorkshire Fog	<i>Holcus lanatus</i>
*Barley grass	<i>Hordeum leporinum</i>
Common Hovea	<i>Hovea linearis</i>
*St Johns Wort	<i>Hypericum perforatum</i>
*Flatweed	<i>Hypochaeris radicata</i>
A Rush	<i>Juncus sp.</i>
Tick Bush	<i>Kunzea ambigua</i>
Common Blown Grass	<i>Lachnagrostis filiformis</i>
*Prickly Lettuce	<i>Lactuca serriola</i>
Prickly Tea-tree	<i>Leptospermum continentale</i>
*Small-leaved Privet	<i>Ligustrum sinense</i>
*Perennial Ryegrass	<i>Lolium perenne</i>
Wattle Mat Rush	<i>Lomandra filiformis</i>
Spiny-head Mat-rush	<i>Lomandra longifolia</i>
Many-flowered Mat-rush	<i>Lomandra multiflora</i>
*Apple Tree	<i>Malus domestica</i>
*Crab Apple	<i>Malus floribunda</i>
*Black Medic	<i>Medicago lupulina</i>
Urn Heath	<i>Melichrus urneolatus</i>
Weeping Grass	<i>Microlaena stipoides var. stipoides</i>
*Daffodil	<i>Narcissus ?pseudonarcissus</i>
*Jonquil	<i>Narcissus sp.</i>
*Oleander	<i>Nerium oleander</i>
*Scotch thistle	<i>Onopordum acanthium</i>
Rice Flower	<i>Ozothamnus diosmifolius</i>
*Paspalum	<i>Paspalum dilatatum</i>
*Phalaris	<i>Phalaris aquatica</i>
*Paradoxa Grass	<i>Phalaris paradoxis</i>
*Radiata Pine	<i>Pinus radiata</i>
*A Pine tree	<i>Pinus sp.</i>

Common Name	Scientific Name
*Plantain	<i>Plantago lanceolata</i>
*Winter Grass	<i>Poa annua</i>
Common Tussock-grass	<i>Poa labillardierei</i>
Grey Tussock-grass	<i>Poa sieberiana</i>
*A Poplar	<i>Poplar sp.</i>
*Ornamental Cherry	<i>Prunus sp.</i>
Bracken Fern	<i>Pteridium esculentum</i>
Field Buttercup	<i>Ranunculus arvensis</i>
*Onion Grass	<i>Romulea rosea</i>
*Sweet Briar Rose	<i>Rosa rubiginosa</i>
*Blackberry	<i>Rubus sp.</i>
Sheep Sorrel	<i>Rumex acetosella</i>
Browne's Dock	<i>Rumex brownii</i>
*Broad-leaved Dock	<i>Rumex obtusifolia</i>
Wallaby Grass	<i>Rytidosperma bipartitum</i>
Long Plume Grass	<i>Rytidosperma nivicola</i>
*Sheep's Burnet	<i>Sanguisorba minor subsp. muricata</i>
Pale Pigeon Grass	<i>Setaria pumila</i>
*Variegated Thistle	<i>Silybum marianum</i>
*Buffalo Grass	<i>Stenotaphrum secundatum</i>
Kangaroo grass	<i>Themeda triandra</i>
*Hop Clover	<i>Trifolium campestre</i>
*White Clover	<i>Trifolium repens</i>
*Clover	<i>Trifolium sp.</i>
Typha	<i>Typha orientalis</i>
*Elm	<i>Ulmus sp.</i>
*Twiggy Mullein	<i>Verbascum virgatum</i>

## **APPENDIX 11 – FAUNA SPECIES RECORDED DURING THE FIELD SURVEY**



Taxa	Common Name	Scientific Name
Amphibia	Beeping Froglet	<i>Crinia parinsignifera</i>
Amphibia	Eastern Froglet	<i>Crinia signifera</i>
Amphibia	Eastern Pobblebonk	<i>Limnodynastes dumerilii</i>
Amphibia	Striped Marsh Frog	<i>Limnodynastes peronii</i>
Amphibia	Spotted Marsh Frog	<i>Limnodynastes tasmaniensis</i>
Amphibia	Eastern Gungan	<i>Uperoleia laevigata</i>
Aves	Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>
Aves	Striated Thornbill	<i>Acanthiza lineata</i>
Aves	Brown Thornbill	<i>Acanthiza pusilla</i>
Aves	Australian King-Parrot	<i>Alisterus scapularis</i>
Aves	Pacific Black Duck	<i>Anas superciliosa</i>
Aves	Red Wattlebird	<i>Anthochaera carunculata</i>
Aves	White-necked Heron	<i>Ardea pacifica</i>
Aves	Sulphur-crested Cockatoo	<i>Cacatua galerita</i>
Aves	Little Corella	<i>Cacatua sanguinea</i>
Aves	Australian Wood Duck	<i>Chenonetta jubata</i>
Aves	Rufous Songlark	<i>Cincloramphus mathewsi</i>
<b>Aves</b>	<b>Brown Treecreeper</b>	<b><i>Climacteris picumnus</i></b>
Aves	Grey Shrike-thrush	<i>Colluricincla harmonica</i>
Aves	Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>
Aves	White-winged Chough	<i>Corcorax melanorhamphos</i>
Aves	White-throated Treecreeper	<i>Cormobates leucophaea</i>
Aves	Australian Raven	<i>Corvus coronoides</i>
Aves	Little Raven	<i>Corvus mellori</i>
Aves	Australian Magpie	<i>Cracticus tibicen</i>
Aves	Grey Butcherbird	<i>Cracticus torquatus</i>
Aves	Laughing Kookaburra	<i>Dacelo novaeguineae</i>
Aves	White-faced Heron	<i>Egretta novaehollandiae</i>
Aves	Galah	<i>Eolophus roseicapillus</i>
Aves	Nankeen Kestrel	<i>Falco cenchroides</i>
Aves	White-throated Gerygone	<i>Gerygone albogularis</i>

Taxa	Common Name	Scientific Name
Aves	Magpie-lark	<i>Grallina cyanoleuca</i>
Aves	Welcome Swallow	<i>Hirundo neoxena</i>
Aves	Yellow-faced Honeyeater	<i>Lichenostomus chrysops</i>
Aves	White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>
Aves	Superb Fairy-wren	<i>Malurus cyaneus</i>
Aves	Brown-headed Honeyeater	<i>Melithreptus brevirostris</i>
Aves	Red-browed Finch	<i>Neochmia temporalis</i>
Aves	Crested Pigeon	<i>Ocyphaps lophotes</i>
Aves	Rufous Whistler	<i>Pachycephala rufiventris</i>
Aves	Spotted Pardalote	<i>Pardalotus punctatus</i>
Aves	Striated Pardalote	<i>Pardalotus striatus</i>
Aves	Fairy Martin	<i>Petrochelidon ariel</i>
Aves	Common Bronzewing	<i>Phaps chalcoptera</i>
Aves	Noisy Friarbird	<i>Philemon corniculatus</i>
Aves	Crimson Rosella	<i>Platycercus elegans</i>
Aves	Eastern Rosella	<i>Platycercus eximius</i>
Aves	Satin Bowerbird	<i>Ptilonorhynchus violaceus</i>
Aves	Grey Fantail	<i>Rhipidura albiscapa</i>
Aves	Willie Wagtail	<i>Rhipidura leucophrys</i>
Aves	White-browed Scrubwren	<i>Sericornis frontalis</i>
Aves	Weebill	<i>Smicromis brevirostris</i>
Aves	Pied Currawong	<i>Strepera graculina</i>
Aves	Common Starling	<i>Sturnus vulgaris</i>
Aves	Australian White Ibis	<i>Threskiornis molucca</i>
Aves	Straw-necked Ibis	<i>Threskiornis spinicollis</i>
Aves	Sacred Kingfisher	<i>Todiramphus sanctus</i>
Aves	Masked Lapwing	<i>Vanellus miles</i>
Mammalia	Cat	<i>Felis catus</i>
Mammalia	Rabbit	<i>Oryctolagus cuniculus</i>
Mammalia	Short-beaked Echidna	<i>Tachyglossus aculeatus</i>
Mammalia	Common Wombat	<i>Vombatus ursinus</i>

Taxa	Common Name	Scientific Name
Mammalia	Fox	<i>Vulpes vulpes</i>
Mammalia	Swamp Wallaby	<i>Wallabia bicolor</i>
Mammalia	Eastern Grey Kangaroo	<i>Macropus giganteus</i>
Reptilia	Eastern Long-necked Turtle	<i>Chelodina longicollis</i>
Reptilia	Inland Snake-eyed Skink	<i>Cryptoblepharus australis</i>
Reptilia	Red-bellied Black Snake	<i>Pseudechis porphyriacus</i>

# **Review of Environmental Factors**

## **Proposed extension of Tumut River and Wetlands Walk**

A report for Tredwell | January 2023

Report No. 22.REF-074





## Citation

EnviroKey (2023) Review of Environmental Factors: Proposed Tumut River and Wetland Walk. A report prepared by S. Sass for Tredwell Management Services on behalf of Snowy Valley Regional Council. Report No. 22.REF-074 Final report. Version 1. 27/01/2023

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## Definitions & Acronyms used within this REF

BC Act	Biodiversity Conservation Act 2016
BOS	Biodiversity Offset Scheme
DPE	Department of Planning & Environment
EEC	Endangered Ecological Community
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FM Act	NSW Fisheries Management Act 1994
ESD	Ecologically Sustainable Development
HBT	Hollow-bearing tree
LEP	Local Environmental Plan
LGA	Local Government Area
Likely	Taken to be a real chance or possibility
Locality	The area within a 5 km radius of the proposal
Local population (migratory or nomadic fauna)	The population comprises those individuals that are likely to occur in the study area from time to time.
Local population (resident fauna)	The population comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to use habitats in the study area.
Local population (threatened flora)	The population comprises those individuals occurring in the study area or the cluster of individuals that extend into habitat adjoining and contiguous with the study area that could reasonably be expected to be cross-pollinating with those in the study area.
Migratory species	A species specified in the schedules of the EPBC Act
NES	National Environmental Significance
NP	National Park
NP&W Act	NSW National Parks and Wildlife Act 1974
NPWS	National Parks and Wildlife Service
PCT	Plant Community Type
Proposal	The area to be directly affected by the proposal. That is, the footprint of the proposal.
REF	Review of Environmental Factors
Region	A biogeographical region that has been recognised and documented such as the Interim Biogeographical Regions of Australia (IBRA) (Thackway and Creswell, 1995). The study area is located within the NSW South Western Slopes Bioregion.
SEPP	State Environmental Planning Policy
Subject site	The area to be directly affected by the proposal; that is, the footprint of the proposal.
SVRC	Snowy Valleys Regional Council

TEC	Threatened ecological community (includes those communities listed as vulnerable, endangered, or critically endangered).
Threatened biota	Those threatened species or endangered ecological communities considered known or likely to occur in the study area.
Threatened species	A species specified in the schedules of the BC Act, FM Act or the EPBC Act.

## Declaration

This Review of Environmental Factors provides a true and fair review of the proposed activity in relation to its potential effects on the environment. It addresses to the fullest extent possible, all of the factors listed in Clause 171 of the Environmental Planning and Assessment Regulation 2021.

Signed: 

Name: Steve Sass

Delegation: Director / Principal Ecologist, EnviroKey Pty. Ltd.

Date: 27 January 2023

I have examined this REF and the certification and accept the REF on behalf of Snowy Valleys Regional Council

Signed .....

Name .....

Delegation .....

Date .....



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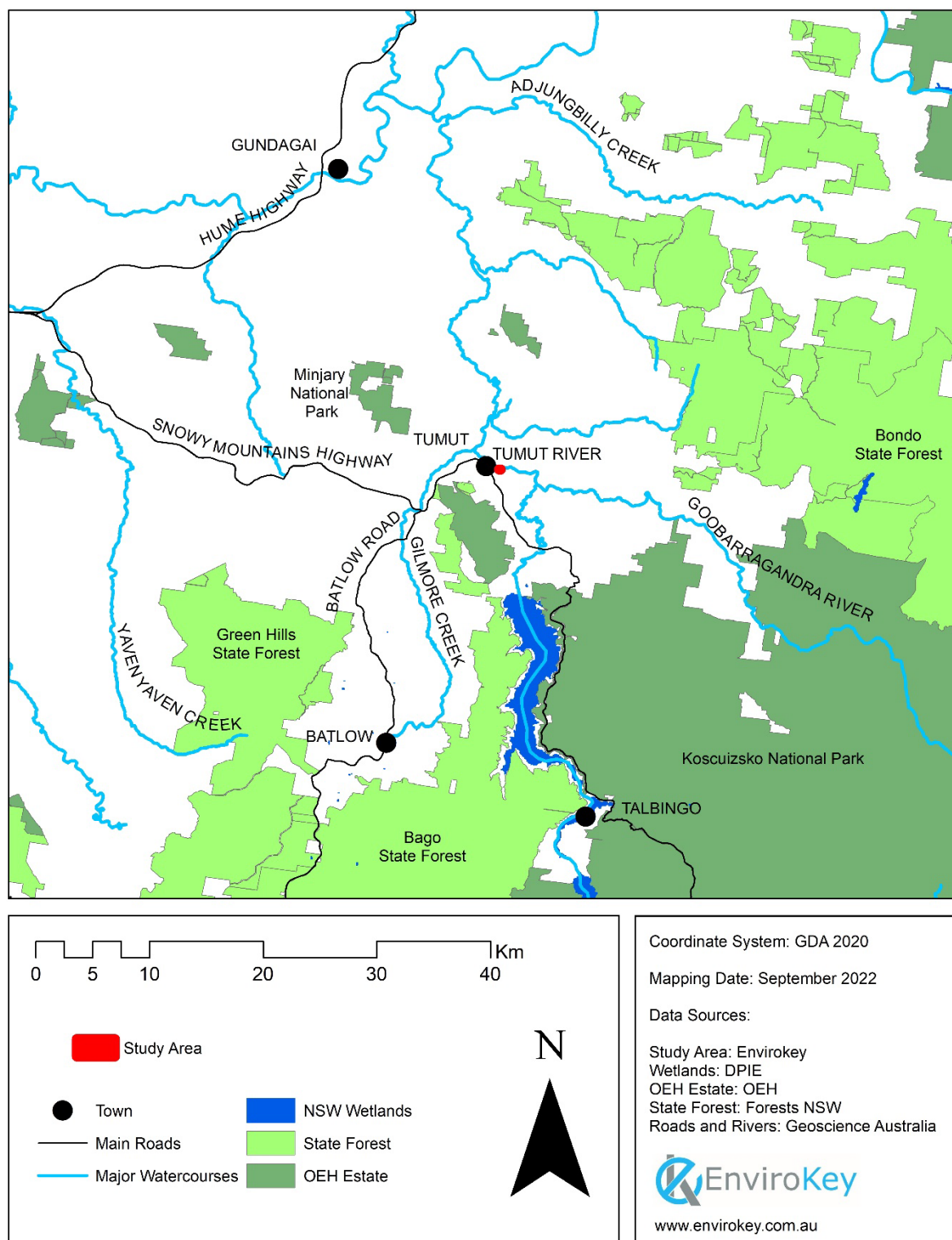
# 1 INTRODUCTION

EnviroKey were engaged by Tredwell Management Services (TMS) on behalf of Snowy Valley Regional Council (SVRC) to undertake a Review of Environmental Factors (REF) to assess the environmental impacts associated with the proposed extension of the Tumut River and Wetlands Walk. The proposal involves connecting two existing pathways together, adjacent to the Tumut River. The general location for this proposal is shown in **Figure 1-1**.

Accordingly, this REF:

- Describes the existing environment;
- Identifies the environmental impacts associated with the proposed activity; and
- Recommends safeguards designed to mitigate potential impacts associated with the proposed activity.

This REF has been prepared in accordance with the requirements of Section 111 of the *Environmental Planning and Assessment Act 1979* and Section 171 of the *Environmental Planning and Assessment Regulation 2021* specifying a “duty to consider environmental impact”. This REF was prepared by suitably qualified personnel with full details of these provided (**Appendix 1**).



**Figure 1-1:** General location of the proposal



## 2 PROPOSED ACTIVITY

### 2.1 STUDY AREA

The study area applied to this REF is identified within **Figure 2-1**. The Proposal is located within the NSW South Western Slopes Bioregion (Thackway and Creswell, 1995, NPWS, 2003), Snowy Valleys local government area (LGA), and the Upper Slopes sub-region. The proposal is located within the Tumut Channels and floodplain landscape system (Mitchell, 2002).

### 2.2 THE PROPOSED ACTIVITY

The proposed work is as follows:

- Install adequate and suitable sediment control
- Earthworks for pathway
- Construct pathway
- Installation of dense graded base road base and culvert subbase
- Installation of cast in situ base slab
- Installation of cast in situ wing walls
- Backfill and compact around pathway
- Re-establish all non-pathway areas

An existing cleared area would be used as a stockpile site.

The proposal is identified in **Appendix 2** of this REF.

### 2.3 ALTERNATIVES

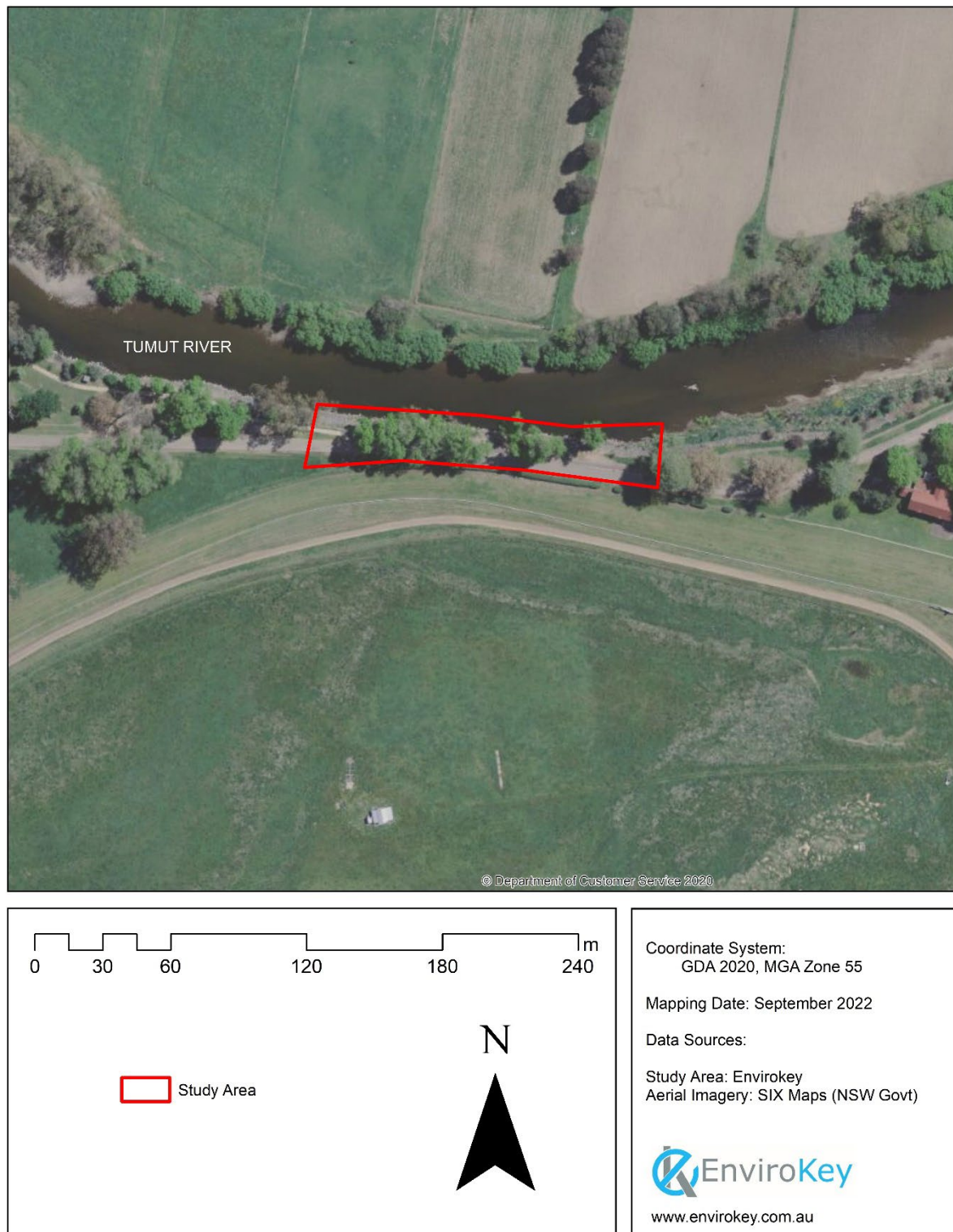
#### 2.3.1 *Option 1: Do nothing*

With consideration of the 'do nothing' approach, improvements to pedestrian safety would not be met. Path users would continue to walk onto the adjacent roadway and continue to be hazards to road users.

#### 2.3.2 *Option 2: Construct and operate formal pathway*

Option two is for the proposal as identified in **Appendix 2**. This option achieves the outcomes of the proposal while having minor environmental impact. Option two will also improve safety for the Tumut River and Wetlands Walk.

**Given the benefits of Option 2, this is the preferred option for the proposal.**



**Figure 2-1:** Study area applied to this REF

### 3 LEGISLATIVE CONTEXT

This chapter provides information on Commonwealth, State and Local legislation that is relevant to the proposed activity.

#### 3.1 NSW ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) forms the legal and policy platform for development assessment and approval in NSW and aims to, inter alia, 'encourage the proper management, development and conservation of natural and artificial resources'.

The proposal will be determined by SVRC under Division 5.1 of the Act. The SVRC, as the determining authority, must 'examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity' pursuant to Section 111 of the Act. Clause 171 of the *Environmental Planning & Assessment Regulation 2021* (EP&A Regulation) identifies matters that 'must be taken into account concerning the impact of an activity on the environment'.

Section 5A of the EP&A Act contains five factors to be considered by determining authorities when considering the significance of impacts on threatened biota associated with activities under Part 5 of the Act (the '5-part test'). Should the 5-part test determine that a '*significant effect*' on any threatened biota listed under the BC Act is likely, then the authority must prepare a Species Impact Statement. Species which occur or have the potential to occur in the study area have been considered in the Biodiversity Assessment included in **Appendix 3**.

The EP&A Act provides the framework for environmental planning in NSW and includes provisions to ensure that proposals which have the potential to significantly affect the environment are subject to detailed assessment.

#### 3.2 STATE ENVIRONMENTAL PLANNING POLICY (T&ISEPP) 2021

Part 2 of the T&ISEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. This is detailed below.

<b>Is consultation with Council required under clauses 13-15 of the infrastructure SEPP?</b>		
Are the works likely to have a substantial impact on the stormwater management services which are provided by council?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

<b>Is consultation with Council required under clauses 13-15 of the infrastructure SEPP?</b>		
Are the works likely to generate traffic to an extent that will strain the capacity of the existing road system in a local government area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will the works involve connection to a council owned sewerage system? If so, will this connection have a substantial impact on the capacity of the system?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will the works involve connection to a council owned water supply system? If so, will this require the use of a substantial volume of water?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a minor or inconsequential disruption to pedestrian or vehicular flow?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p>Will the works involve more than a minor or inconsequential excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?</p> <p>The proposal would involve some excavation however this considered to be relatively minor and not "more than a minor or inconsequential" excavation.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Is there a local heritage item (that is not also a state heritage item) or a heritage conservation area in the study area for the works? If yes, does a heritage assessment indicate that the potential impacts to the heritage significance of the item/area are more than minor or inconsequential?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p>Are the works located on flood liable land? If so, will the works change flooding patterns to more than a minor extent?</p> <p>Tumut River has the potential to flood. However, the minor nature of the proposal would not change any existing flooding patterns.</p>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No



<b>Is consultation with Council required under clauses 16 of the T&amp;ISEPP?</b>		
Are the works adjacent to a national park, nature reserve or other area reserved under the <i>National Parks and Wildlife Act 1974</i> , or on land acquired under that Act?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works adjacent to an aquatic reserve or a marine park declared under the <i>Marine Estate Management Act 2014</i> ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Is the proposal in the Sydney Harbour Foreshore Area as defined by the <i>Sydney Harbour Foreshore Authority Act 1998</i> ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works for the purpose of residential development, an educational establishment, a health services facility, a correctional facility or group home in bush fire prone land?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Would the works increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map? (Note: the dark sky region is within 200 kilometres of the Siding Spring Observatory)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works on buffer land around the defence communications facility near Morundah? (Note: refer to Defence Communications Facility Buffer Map referred to in clause 5.15 of Lockhart LEP 2012, Narrandera LEP 2013, and Urana LEP 2011).	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works on land in a mine subsidence district within the meaning of the <i>Mine Subsidence Compensation Act 1961</i> ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

### 3.3 NSW WILDERNESS ACT 1987

The objectives of the NSW *Wilderness Act 1987* are:

- to provide for the permanent protection of wilderness areas;
- to provide for the proper management of wilderness areas; and
- to promote the education of the public in the appreciation, protection and management of wilderness.

The proposal is not located within an area listed under the NSW *Wilderness Act 1987*.

### 3.4 NSW BIODIVERSITY CONSERVATION ACT 2016

The *Biodiversity Conservation Act 2016* (BC Act) specifies that a Test of Significance (ToS) must be considered by decision-makers regarding the effect of a proposed development or activity on threatened species or ecological communities, or their habitats (OEH, 2018). These factors form part of the threatened species assessment process under the *Environmental Planning and Assessment Act 1979* (EP&A Act) and are collectively referred to as the ToS.

Determining authorities have a statutory obligation, under Division 5.1 of the EP&A Act, to consider whether a proposal is likely to significantly affect threatened species, populations or ecological communities, or their habitats by applying the ToS. This is done so within **Appendix 4**.

### 3.5 COMMONWEALTH ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) enables the Australian Government to join with the states and territories in providing a national scheme of environment and heritage protection and biodiversity conservation to ensure that actions likely to cause a 'significant impact' on matters of national environmental significance (NES) undergo an assessment and approval process. Under the Act, an action includes a project, undertaking, development, or activity.

Under the EPBC Act, actions that have, or are likely to have a significant impact on a matter of national environmental significance (NES) require approval from the Australian Government Minister for the Department of the Environment (DotE) (DoCCEE&W, 2022).

The nine matters of NES that are protected under the EPBC Act are:

- Listed threatened species and ecological communities
- Listed migratory species
- Wetlands of international importance
- Commonwealth marine environment
- World heritage properties
- National heritage places
- The Great Barrier Reef Marine Park
- Nuclear actions
- A water resource, in relation to coal seam gas development and large coal mining development.

The Significant Impact Guidelines for the EPBC Act (DoCCEE&W, 2022) set out criteria to assist in determining whether an action requires approval and in particular, whether a proposed action is likely to have a 'significant impact' on a matter of NES.

If a proposed action is likely to have a significant impact on a matter of NES, referral of the proposal to the Department of the Environment and Energy is required to confirm whether the Commonwealth considers the proposal a 'controlled action' and subsequently requiring Minister approval under the EPBC Act.

This REF provides an assessment to ascertain whether the proposal will require referral to the Commonwealth. This assessment is provided within **Appendix 5**.

### 3.6 NSW FISHERIES MANAGEMENT ACT 1994

The NSW *Fisheries Management Act 1994* (FM Act) aims to conserve fish stocks, key habitats, threatened species, populations and ecological communities of fish and marine vegetation. It also aims to promote viable commercial fishing, aquaculture industries and recreational fishing.

The FM Act applies to all waters within the limits of the State, except where Commonwealth legislation applies. Part 7A Division 4 of the FM Act prohibits, without a licence, activities that damage habitats or harm threatened species, populations, or ecological communities. The proposal is located on a 'Key Fish Habitat' as defined by DPI.

Clause 219 of the FM Act makes it an offence to obstruct fish passage without a permit issued under CI 200 of the ACT. In-stream structures may obstruct fish passage. Consultation is required with DPI (Fisheries) on the permit requirements if the proposed pathway or viewing area would enter the Tumut River.

As a public authority, the SVRC does require a permit for dredging and reclamation works within 'water land' under Clause 199 (1) of the FM Act. Under this act, 'water land' means land submerged by water, whether permanently or intermittently or whether forming an artificial or natural body of water. While adjacent to the Tumut River, this portion of land is unlikely to be under water given the highly regulated nature of the waterway and could not be considered 'water land'.

### 3.7 NSW PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997 (POEO ACT)

The POEO Act provides an integrated system of licensing for polluting activities within the objective of protecting the environment. Section 148 of this Act requires notification of pollution incidents. Section 120 of this Act provides that it is an offence to pollute waters. Schedule 1 of the POEO Act describes activities for which an Environment Protection Licence is required.

SVRC must ensure that all stages of the proposal are managed to prevent pollution, including pollution of waters. Any contractor and SVRC workers are obliged to notify the relevant authorities (e.g. Environment Protection Authority (EPA)) when a 'pollution incident' occurs that causes or threatens 'material harm' to the environment.

The proposal does not conform with the definition of a scheduled activity under this Act, therefore an Environment Protection Licence would not be required.

### 3.8 NSW HERITAGE ACT 1977

The NSW *Heritage Act 1977* defines 'environmental heritage' and can include places, buildings, works, relics, moveable objects, and precincts. A property is a heritage item if it is:

- listed in the heritage schedule of the Tumut Local Environmental Plan (LEP);
- listed on the State Heritage Register, a register of places and items of particular importance to the people of NSW; or
- listed in the National Heritage Database.

Heritage items are considered in this REF in Section 4.8.

### 3.9 STATE ENVIRONMENTAL PLANNING POLICY KOALA HABITAT PROTECTION 2021

State Environmental Planning Policy (SEPP) Koala Habitat Protection (2021) encourages the conservation and management of natural vegetation areas that provide habitat for Koalas, to ensure that permanent free-living populations would be maintained over their present range and reverse the current trend of koala population decline. Local councils cannot approve development in an area affected by the policy without consideration of the Approved Koala Management Plan for the land.

Given the modified nature of the proposal area and the minor impact to mostly non-native vegetation, no consideration of the Koala SEPP is deemed necessary.

### 3.10 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

Ecologically sustainable development (ESD) involves the effective integration of social, economic, and environmental considerations in decision-making processes. In 1992, the Commonwealth and all state and territory governments endorsed the *National Strategy for Ecologically Sustainable Development*. In NSW, the concept has been incorporated in legislation such as the EP&A Act and Regulation. For the purposes of the EP&A Act and other NSW legislation, the Intergovernmental Agreement on the Environment (1992) and the *Protection of the Environment Administration Act 1991* outline the following principles which can be used to achieve ESD:

1. The precautionary principle: that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions can be guided by:
  - (i) careful evaluation to avoid, wherever practicable, serious, or irreversible damage to the environment, and



- (ii) an assessment of the risk-weighted consequences of various options.
- 2. Inter-generational equity: that the present generation should ensure that the health, diversity, and productivity of the environment are maintained or enhanced for the benefit of future generations.
- 3. Conservation of biological diversity and ecological integrity: that conservation of biological diversity and ecological integrity should be a fundamental consideration.

The aims, structure and content of this REF are guided by these principles. The precautionary principle has been adopted in the assessment of impact; all potential impacts have been considered and mitigated where a risk is present. Where uncertainty exists, measures have been suggested to address it.

## 4 ENVIRONMENTAL ASSESSMENT

### 4.1 BIODIVERSITY

#### 4.1.1 *Database searches*

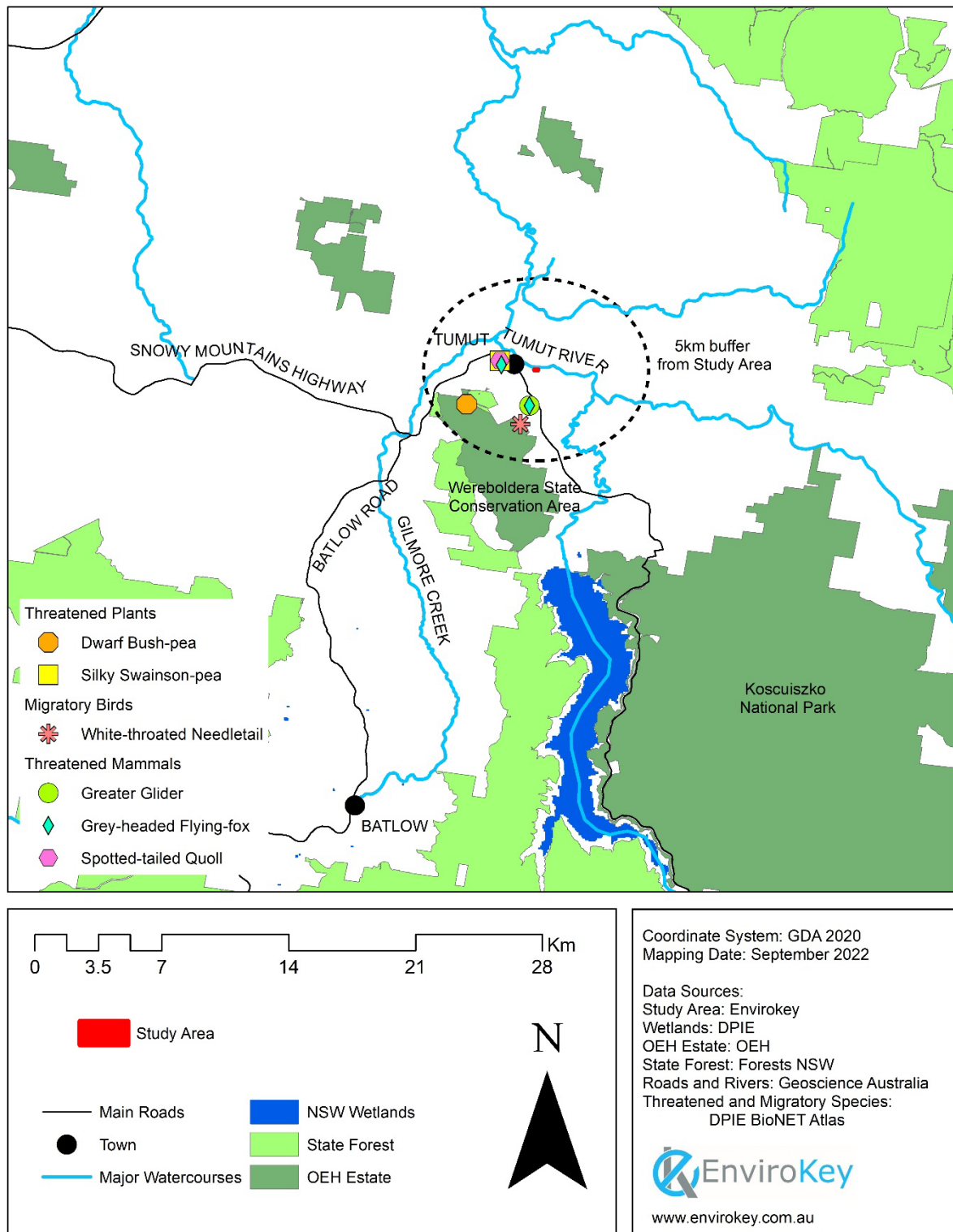
Background research was carried out to collect and review information on the presence or likelihood of occurrence of:

- Threatened terrestrial and aquatic species and their habitat
- Threatened ecological communities
- Important habitat for migratory species
- Areas of outstanding biodiversity value.

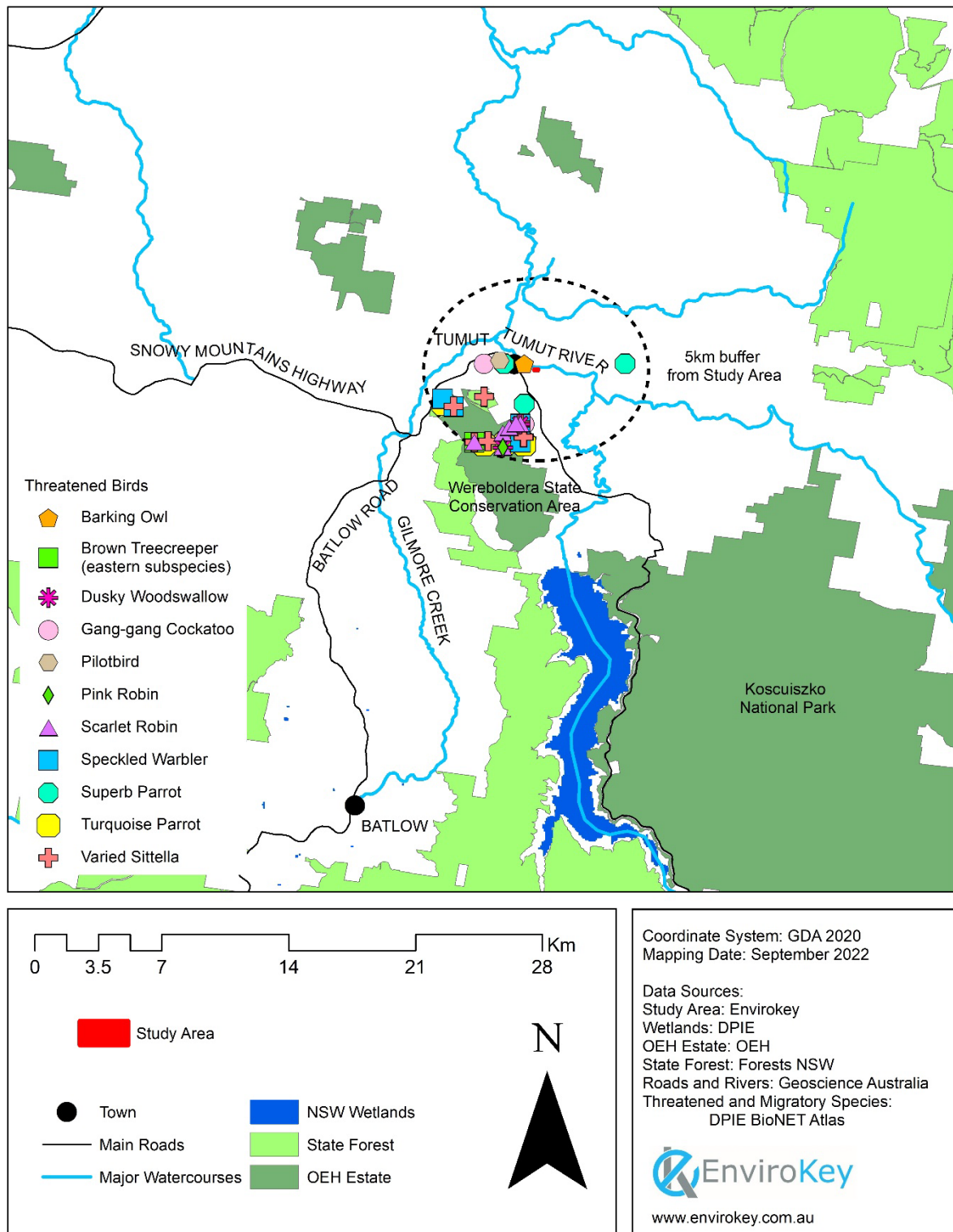
The following databases and information sources were reviewed:

- BioNet - the website for the Atlas of NSW Wildlife and Threatened Biodiversity Data Collection (TBDC) – searched [September 2022]
- BioNet Vegetation Classification database – reviewed [September 2022]
- Department of Agriculture, Water, and the Environment (DAWE) Protected Matters Search Tool – searched [September 2022]
- NSW DPI Fisheries Spatial Data Portal
- NSW State Vegetation Type Map

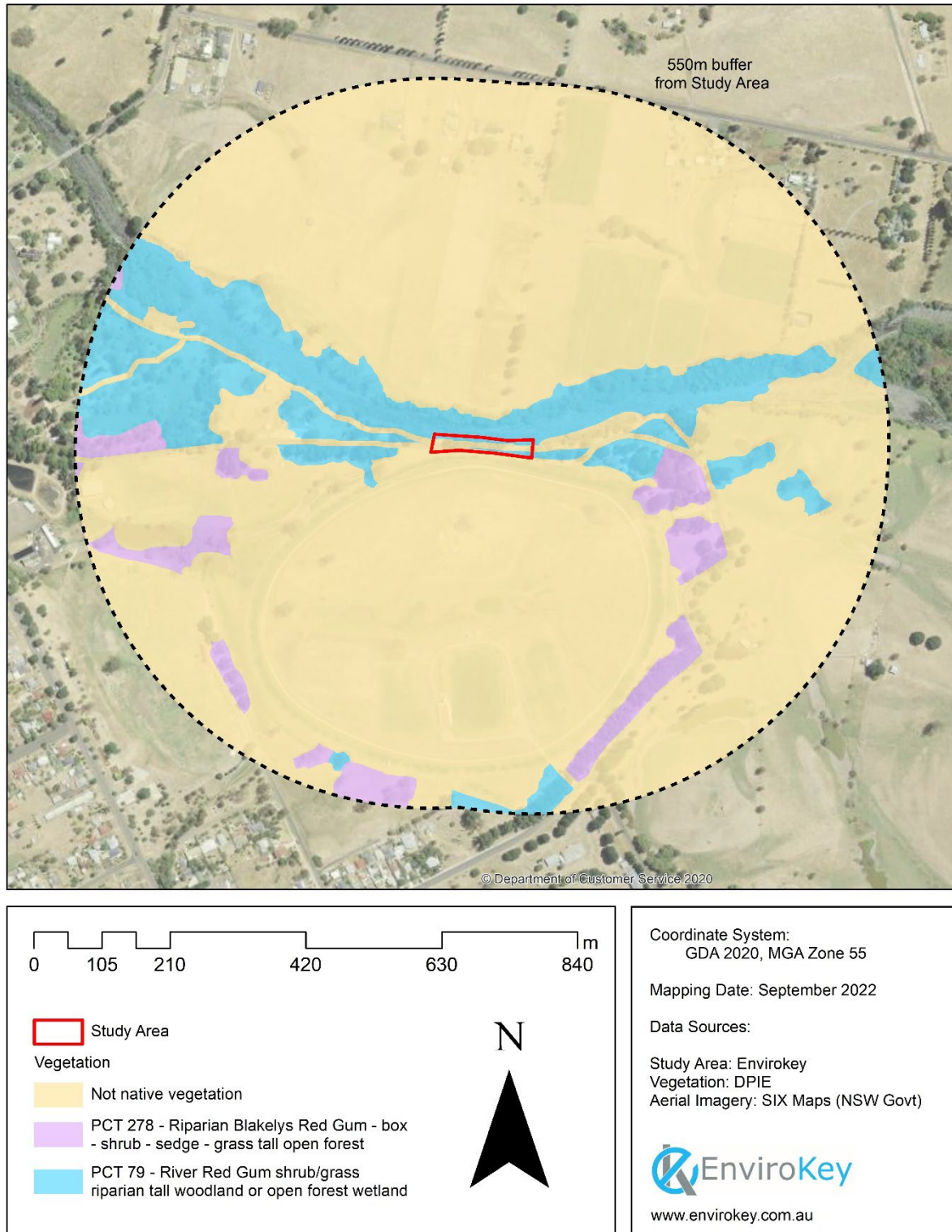
These searches identified records of threatened and migratory species as well as the NSW State Vegetation Type (SVT) mapping. This data is provided in **Figure 4-1-3**.



**Figure 4-1:** Existing records of threatened mammals and flora and migratory birds within the locality



**Figure 4-2:** Existing records of threatened birds within the locality



**Figure 4-3:** Existing vegetation community mapping from the NSW State Vegetation Type map



### 4.1.2 Existing Environment

The existing environment is characterised by a highly modified landscape, dominated by mature English Elm (*Ulmus procera*) and a ground cover dominated by non-native flora species. Both upstream and downstream, native vegetation occurs and this is most consistent with PCT 79 River Red Gum shrub-grass riparian tall woodland.

Ground covers are regularly mowed as part of routine maintenance by SVRC and the proximity to Elm Drive and the Tumut Racecourse, confirms the high level of disturbance at this location.

The Tumut River is the dominant biodiversity feature within the study area. This river system is highly modified by an altered unnatural flow regime as a result of the Snowy Mountains Scheme and the demands of downstream irrigation. Rock facing is on the river bank as an attempt to control erosion from the high irrigation flows. Despite the presence of an aquatic environment, non-native flora also dominated including Black Willow (*Salix nigra*) in some portions of the study area. Despite this, the Tumut River is considered Key Fish Habitat in the Murray Darling Basin South region.

**Table 4-4-1:** Examples of vegetation and aquatic habitat within the vicinity of the proposal.







### Threatened and Migratory Fauna

No fauna listed under the BC Act, FM Act or EPBC Act were recorded during the field survey. However previously recorded sightings of threatened species indicate that some species frequent the areas adjacent to the proposal. **Appendix 3, 4 & 5** details threatened species and an analysis of their potential to be impacted by the proposal.

### Threatened Flora Species

No flora species listed under the BC Act or the EPBC Act were found within the proposal footprint, nor are any expected to occur there given the highly disturbed nature of the study area.

## Threatened Ecological Communities

No Threatened Ecological Communities (TEC) as listed under the BC Act or the EPBC Act were recorded within the study area. However, the Tumut River is part of the Lower Murray River endangered ecological community listed under the FM Act. The listing includes all native fish and aquatic invertebrates within the river.

## Limitations

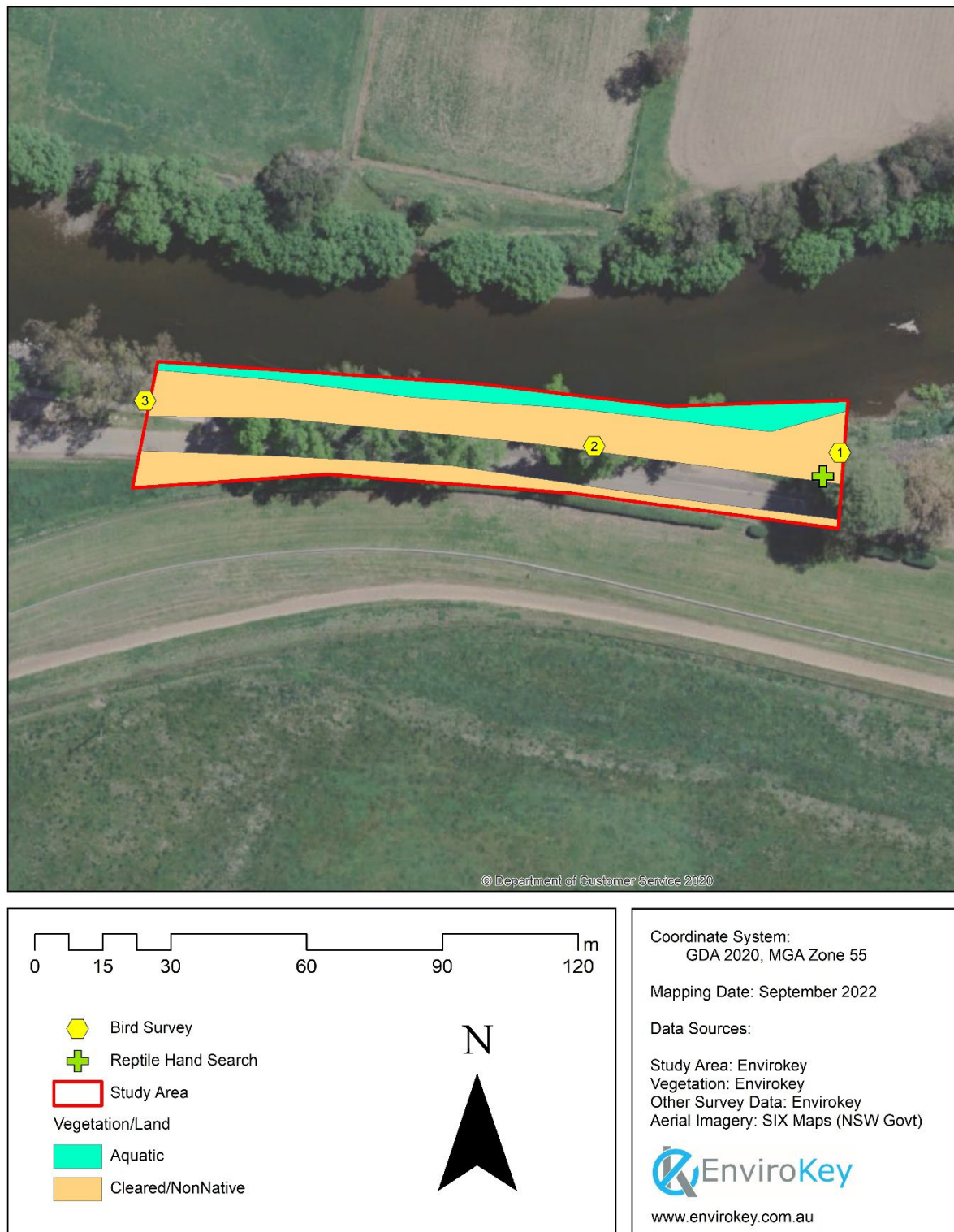
A common limitation of many biodiversity studies is the short period of time in which they are conducted or the season they are conducted in. When combined with a lack of seasonal sampling this can lead to either low detection rates or false absences being reported. This is also particularly relevant to highly mobile species that may not have been in the Subject Land at the time of the survey. Given this, further analysis was conducted to evaluate which threatened and migratory biota were likely to occur within the vicinity of the proposed activity based on the presence of habitat. This is detailed within **Appendix 3**.

### 4.1.3 *Impact Assessment*

There are a number of known and potential impacts that could occur as a result of the proposal. These are the potential removal of non-native vegetation (<0.05 hectare) and disturbance to aquatic habitat. Overall, the footprint of the proposal occurs within an area that has been previously heavily disturbed by road construction and historical clearing. Nonetheless, the proposed impact is minor in nature and the potential impacts to biodiversity are both negligible and manageable with appropriate safeguards.

Significance Assessments completed in accordance with the BC Act, FM Act and EPBC Act have determined that it is 'unlikely' that the proposed activity will have a significant effect on threatened species, populations, communities, and their habitats (**Appendix 4 & 5**).





**Figure 4-4:** Vegetation community within the study area

#### 4.1.4 Proposed Safeguards

EnviroKey recommend the following safeguards:

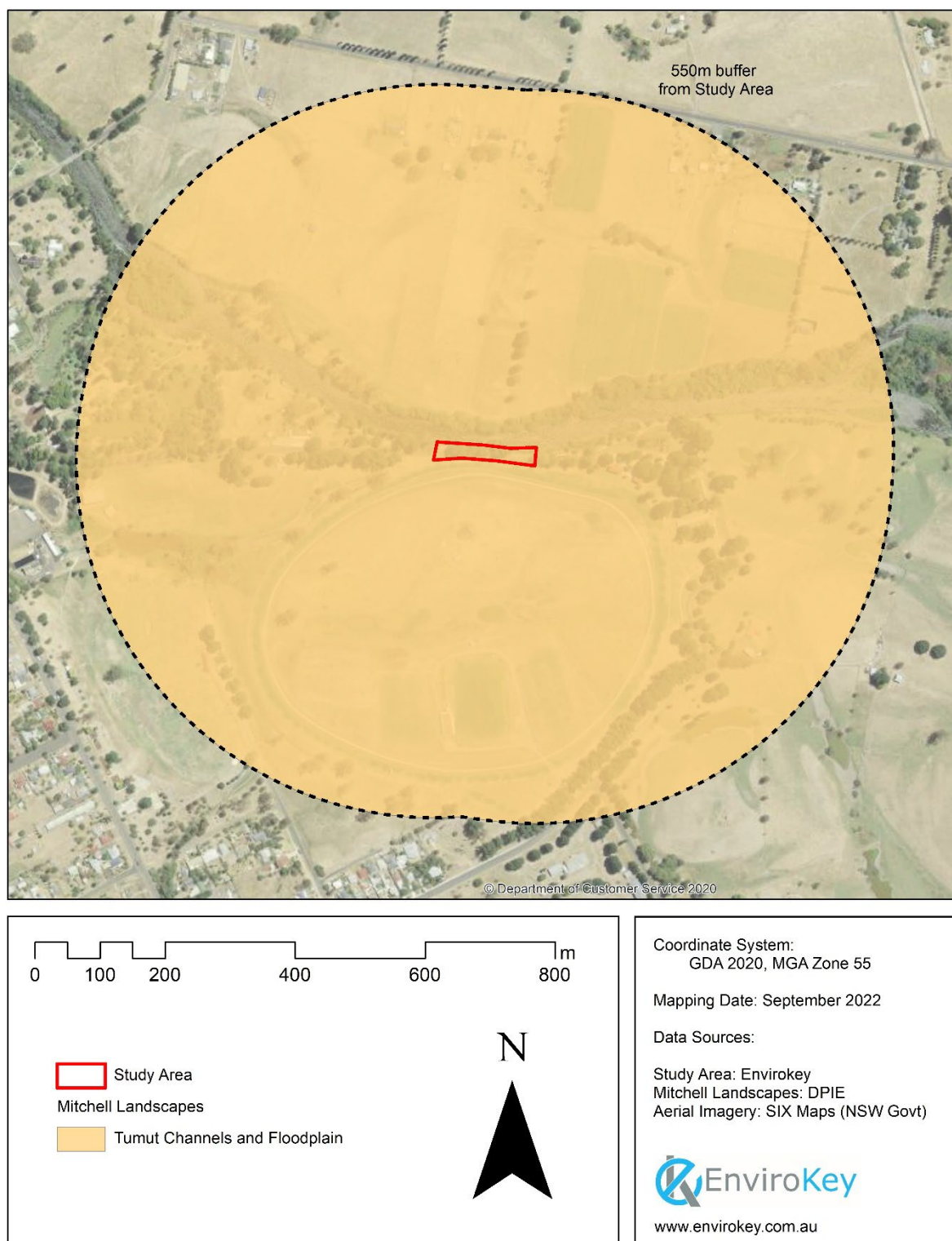
- Construction activities should not occur during intense rain events or in a predicted extended rain event.
- Erosion and sediment control plan should be established and maintained to avoid sediment runoff into Tumut River during any vegetation clearing and construction and should only be removed once the ground is stabilised.
- Erosion and sediment controls would be in position prior to the proposed activity commencing and left *insitu* for as long as necessary for the site to become stabilised. However, should these controls begin to deteriorate and lose functionality; they are to be replaced immediately.
- No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.
- There must be no release of dirty water into the Tumut River.
- Should any fish kills be observed during the work, DPI Fisheries must be notified immediately for urgent action.
- Visual monitoring of local water quality (i.e., turbidity, hydrocarbon spills/slicks) must be carried out on a regular basis to identify any potential spills or deficient sediment controls.
- Water quality control measures must be used to prevent any materials (e.g., concrete, grout, sediment etc.) entering waterways.
- All fuels, chemicals and liquids are to be stored in an impervious bunded area or containers.
- An emergency spill kit must be kept on site at all times and maintained throughout the construction work. The spill kit must be appropriately sized for the volume of substances at the work site.

## 4.2 LANDFORM, SOILS, HYDROLOGY AND WATER QUALITY

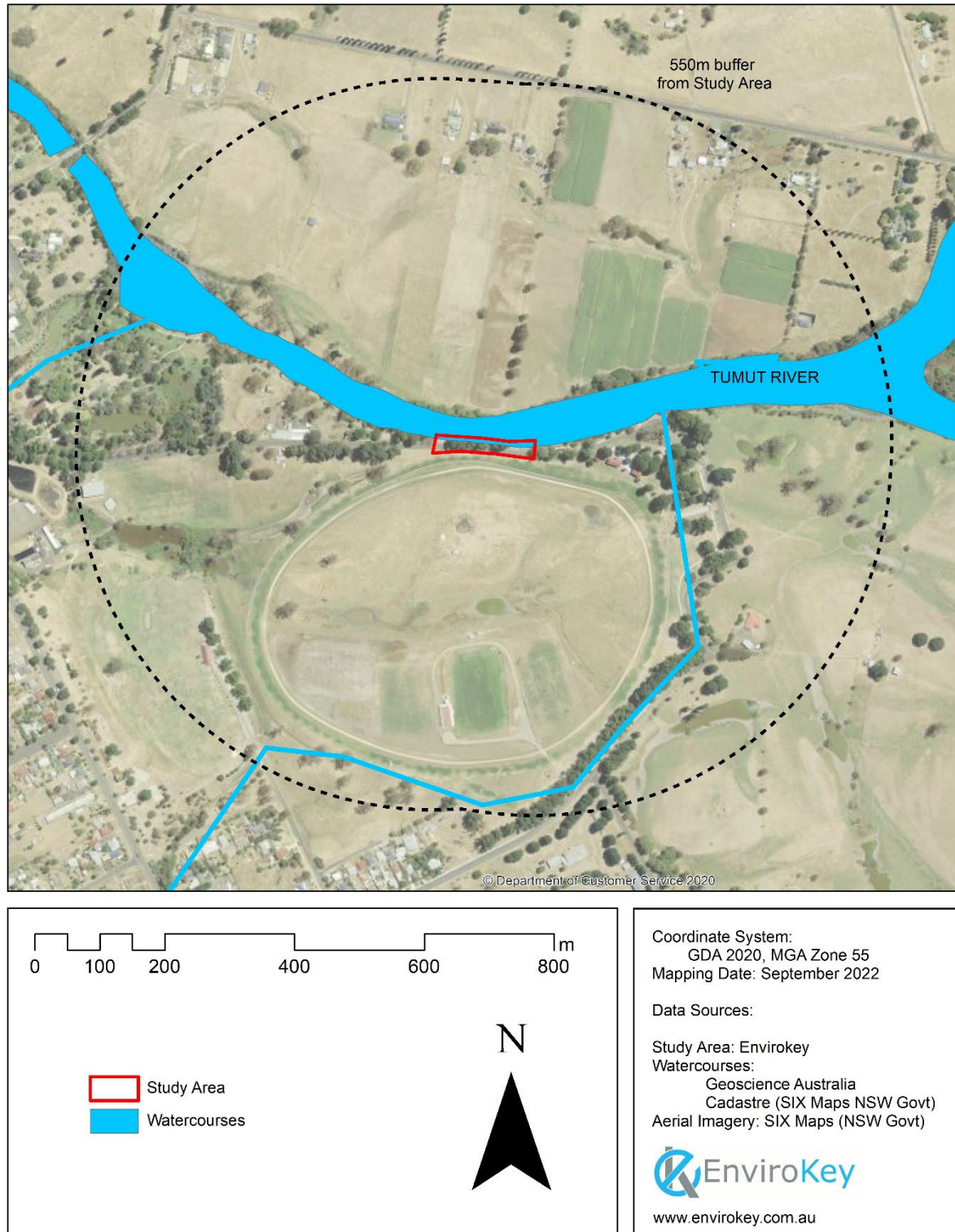
### 4.2.1 Existing Environment

The proposal is located within the Tumut Channels and Floodplain Mitchell Landscape (**Figure 4-5**). This landscape is characterised by channels, floodplains and remnant terraces of Quaternary alluvium, general elevation between 300 to 350m. They usually have gravel streambeds, with uniform dark brown loam on the floodplains, yellow texture-contrast soils and rubbly loams on terraces and valley margins.





**Figure 4-5: Mitchell landscapes in the vicinity of the proposal**



**Figure 4-6:** Waterways within the vicinity of the proposal



The proposal is located on an Erosional Soil Landscape. This is defined as:

*'Soil landscapes that have been sculpted primarily by the erosive action of running water. Streams are well-defined and capable of transporting their sediment load. Soils are usually shallow (with occasional deep patches) and mode of origin is variable and complex. Soils may be either absent, derived from waterwashed parent materials or derived from in situ weathered bedrock. In many instances, subsoils have formed in situ while topsoils have formed from materials washed from further upslope. Erosional soil landscapes usually consist of steep to undulating hillslopes and may include tors, benches'*

There are no occurrences or likely occurrences of acid sulfate soils within the locality.

The Tumut River is the main waterway to feature in the landscape (**Figure 4-6**). The river rises on the northern face of Mt Jagaungal within the NSW Snowy Mountains at around 1,430 metres above sea level and flows generally north-west for about 182 kilometres before it reaches the Murrumbidgee river near Gundagai. Within the study area, and in the general locality, the river is missing a large proportion of native riparian vegetation and is dominated by willows, privets, maples, elms, oaks, poplars, ash and other non-native species (**Figure 4-7**).



**Figure 4-7:** The Tumut River is located directly adjacent to the proposal.

### 4.2.2 Impact Assessment

The proposal would result in minor earthworks, including the potential removal of less than 0.05 hectare of non-native vegetation.

During construction, disturbed areas and stockpiles could be subject to erosion, resulting in deterioration of the existing environment and increased turbidity and a decrease in water quality entering the Tumut River.

The key factor influencing the extent of sediment runoff and stormwater pollution is likely to be weather events. The occurrence of a major storm event at a critical phase of the construction period could potentially result in higher levels of turbid run-off into the waterway.

### 4.2.3 Proposed Safeguards

EnviroKey recommend the following safeguards:

- To manage erosion and sedimentation during construction, a sediment and erosion control plan shall be prepared. Erosion and sediment control practices should follow the recommendations and checklists outlined in:
  - *Managing Urban Stormwater: Soils and Construction Volume 1* (NSW, 2006)
  - *Managing Urban Stormwater: Soils and Construction – Installation of Services Vol 2A* (DECC, 2007)
- Rehabilitate exposed bare ground at the completion of the work.
- Erosion and sediment controls would be in position prior to proposed activity commencing and left *insitu* for as long as necessary for the site to become stabilised. However, should these controls begin to deteriorate and lose functionality; they are to be replaced immediately.
- No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.

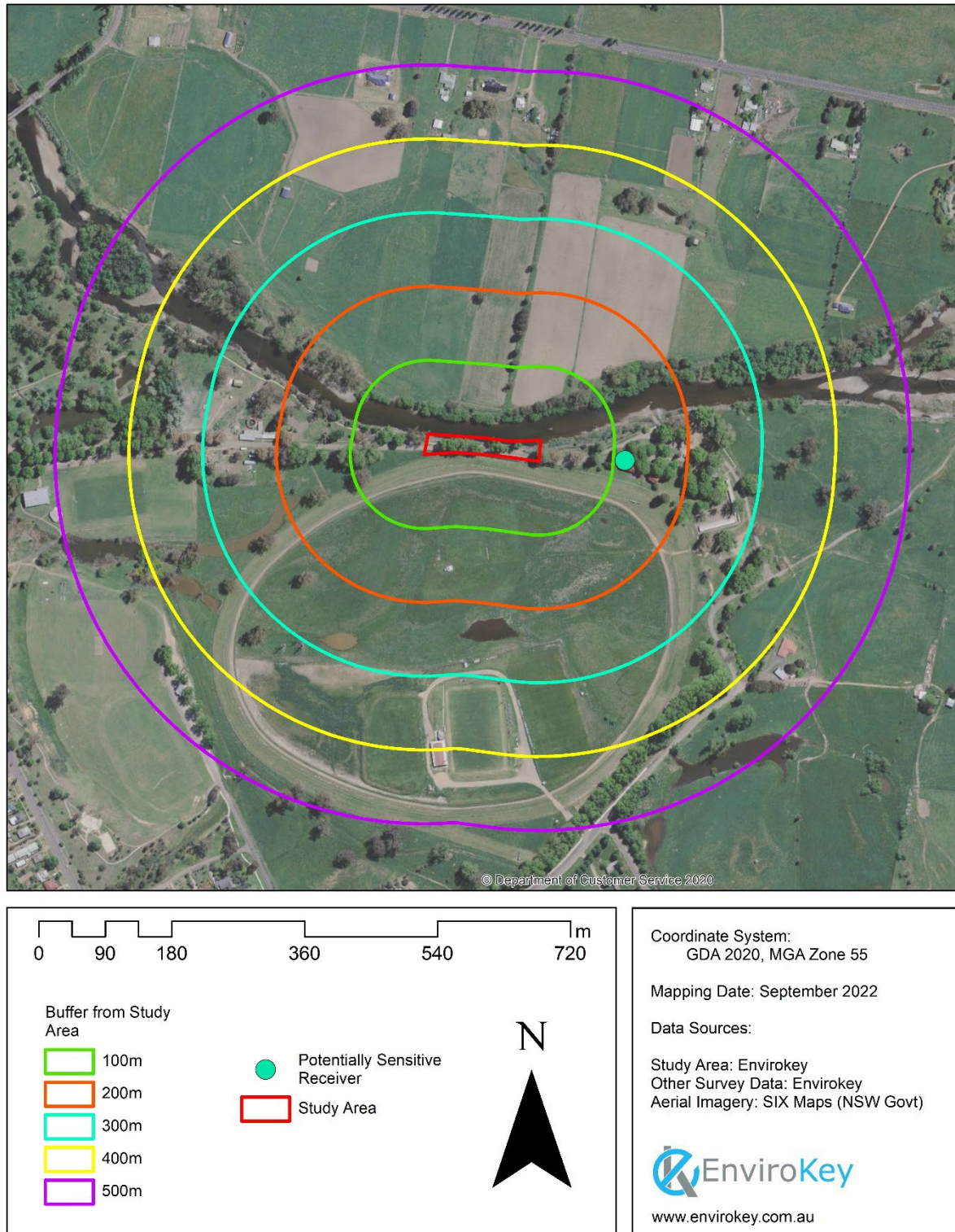
## 4.3 NOISE AND VIBRATION

### 4.3.1 Existing Environment

While no recording or ongoing monitoring of acoustic qualities has been completed, the proposal area is located in a setting expected to consist of minor levels of moderate background noise from vehicular traffic from the adjacent Tumut Racecourse, Elm Drive and other recreational activity in the locality.

The Riverside Café is likely the only sensitive receiver to be potentially affected by the proposal. It is located over 100 metres to the east of the proposal (**Figure 4-8**).





**Figure 4-8:** Potentially sensitive receivers adjacent to the study area



### 4.3.2 *Impact Assessment*

The proposal would result in noise and vibration from construction equipment such as machinery and vehicles. It is expected that noise and vibration would vary during the construction period. The proposed activity would not involve any blasting or drilling.

Upon completion, noise and vibration associated with construction activity would cease.

The Riverside Café is located just over 100 metres from the proposal. Given the relatively minor nature of the proposed work and the type of construction involved, it is more than likely that potential impacts would be minor and inconsequential.

### 4.3.3 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- Construction activity would be restricted to the following standard working hours:
  - Monday-Friday: 7:00am to 6.00pm
  - Saturday: 8.00am to 1.00pm
  - Sunday and Public Holidays: no work
- Should the proposed work be outside of standard working hours, additional mitigations measures may be required.
- Completion of the proposed work in the minimum timeframe practicable.
- Noise output would be minimised through the use of modern equipment that is regularly maintained.
- Machinery engines would be switched off, minimising noise emissions, rather than being left idling for long periods.

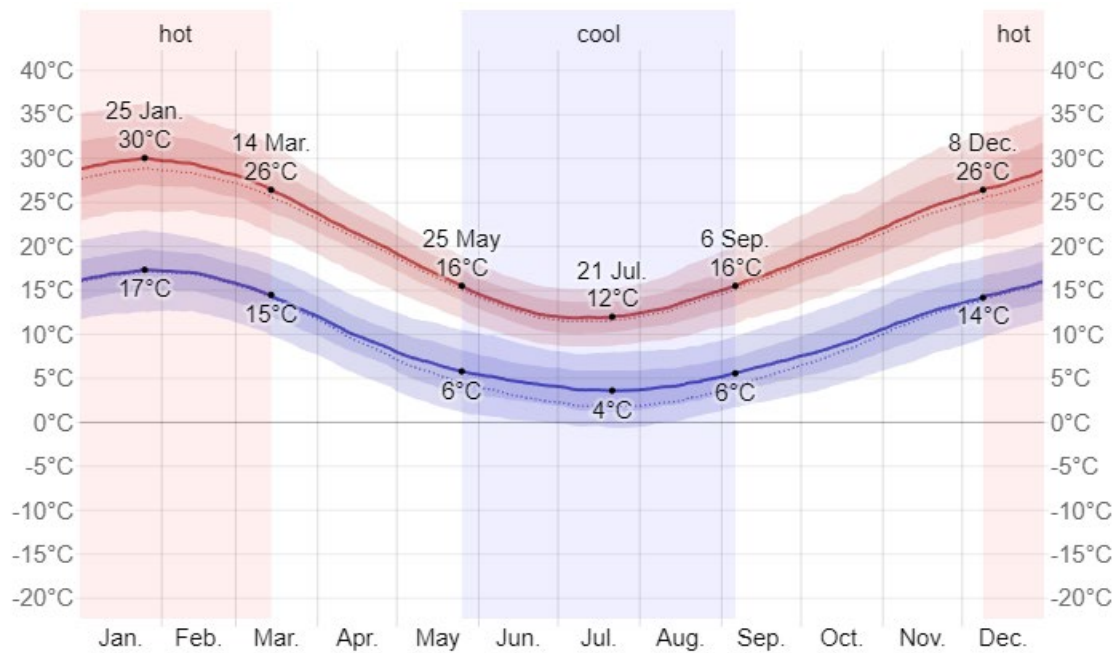
## 4.4 CLIMATE AND AIR QUALITY

### 4.4.1 *Existing Environment*

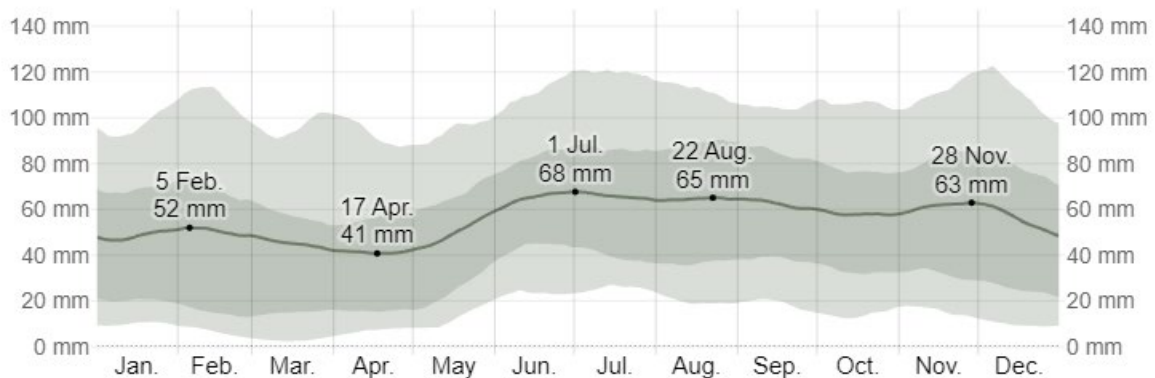
Climatic data was sourced from the closest official weather station located at Tumut. The hottest month of the year is January, with an average high of 30°C and a low of 17°C. The coldest month is July with an average low of 4°C and a high of 12°C (**Figure 4-9**). Rain falls throughout the year in Tumut. The month with the most rain is July, with an average rainfall of 66 millimetres while April has the least monthly rainfall with an average of 41 millimetres.

The most recent State of the Environment Report identified the Snowy Valleys LGA as having 'very good' air quality and that the contamination occurs mostly from motor vehicles and smoke from bush fires and hazard reduction activities.

Air quality in the study area is likely to be high considering its location away from primary sources of air containments such as heavy industry and major traffic areas.



**Figure 4-9:** Average Temperature data for the Tumut Weather Station (courtesy of WeatherSpark)



**Figure 4-10:** Average Rainfall data for the Tumut Weather Station (courtesy of WeatherSpark)

#### 4.4.2 Impact Assessment

##### Construction Impact

Local air quality has the potential to decrease slightly during the construction phase should the generation of dust and fine particulate matter during earthworks and when potential

vegetation clearing occurs. Emissions would also be generated during the operation of equipment, such as excavators, heavy machinery, and motor vehicles. These negative impacts would be restricted to the construction period and are considered negligible given the location of the site in the local context.

### **Post Construction Impact**

There is no post construction impact anticipated.

#### **4.4.3 Proposed Safeguards**

**EnviroKey** recommends the following safeguards:

- Any stockpiles with the capacity to cause dust should be dampened or otherwise controlled to suppress dust.
- Trucks carrying loads of material such as soil, road base, gravel or spoil should be covered.
- All machinery should be periodically inspected and maintained to ensure minimum levels of emissions.
- Machinery engines should be switched off, rather than left idling for long periods.

## **4.5 VISUAL IMPACT**

### **4.5.1 Existing Environment**

The existing environment comprises the Tumut River, Elm Drive, Tumut Racecourse and a variety of mowed lawns and a dominance of non-native vegetation.

### **4.5.2 Impact Assessment**

There is uncertainty if any of the mature English Elm would require removal as a result of the proposal.

Unmanaged, visual values may be comprised by damage to retained vegetation and the invasion of exotic flora, refuse from construction and hap-hazard storage of machinery. The main visual impacts that would occur as a result of the proposed work are:

- The potential removal of a small area of ground vegetation (<0.05 hectares of non-native vegetation).
- The excavation/importation of soil/fill if required for the proposal. These impacts are considered temporary as all disturbed areas would be stabilized following the completion of construction.
- The influx of machinery. This impact is unavoidable and is only relevant during the construction period.

### 4.5.3 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- The proposed work area should be kept clean and orderly at all times, ensuring that no waste is left at the site following completion of the proposed work.
- Machinery and equipment storage should be conducted in a single location, where possible.
- Temporary sediment controls should be removed from the site once it is stabilised.

## 4.6 SOCIO-ECONOMIC IMPACT

### 4.6.1 *Existing Environment*

The proposal is directly adjacent to Elm Drive. This road provides vehicle access to Riverside Café and the Tumut Racecourse.

### 4.6.2 *Impact Assessment*

It is anticipated that Elm Drive would remain open during the proposed work. However, the road would require traffic control and this would result in delays to road users during the construction period. The delays are unlikely to exceed 8 weeks and appropriate signage (to SVRC standards) would be installed during the construction period to inform road users of the closure and delays if this is likely.

The proposed work may also have the potential to impact on the safety of the public and workers. Construction sites are known to have an inherent risk to workers and the general public using areas within or adjacent to such sites. However, these impacts would be temporary; occurring only during the construction period and would be mitigated by appropriate safeguards.

### 4.6.3 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- Potential hazards should be minimised by ensuring that the proposed works are completed in accordance with relevant SVRC standards and WHS requirements.
- Dial Before You Dig MUST be consulted to ensure that the locations of all underground services are known PRIOR to excavation commencing. Appropriate actions must be formulated by the Project Manager and Site Supervisor to minimise the risk of these services becoming disrupted.
- Construction activity would avoid weekends and public holidays where possible.
- The proposed works would be completed in the minimum timeframe practical.



## 4.7 ABORIGINAL HERITAGE

### 4.7.1 Approach

To consider whether there are any Aboriginal heritage items within the vicinity of the proposed work, a search of the Aboriginal Heritage Information Management Systems (AHIMS) maintained by the NSW Government was conducted (**Appendix 6**). An assessment with consideration of the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* was also conducted (section 4.7.2).

### 4.7.2 *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*

The purpose of the code of practice is to assist individuals and organisations (such as SVRC) to exercise due diligence when carrying out activities that may harm Aboriginal objects and to determine whether they should apply for consent in the form of an Aboriginal Heritage Impact Permit (AHIP) (DECCW, 2010). In the context of protecting Aboriginal cultural heritage, due diligence involves taking *reasonable and practical measures* to determine if an action will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm.

A search of the AHIMS found no Aboriginal objects within the vicinity of the proposal (**Appendix 6**).

The proposed work is consistent with the low impact activities prescribed within the NPW Regulation in that it will be conducted on land that is previously disturbed by past activities (previous road construction, previous footpath construction, and rock facing of river banks) and that the land has been the subject of human activity where disturbance remains *clear and observable*.

Based on this interpretation and application of the *Due Diligence* guidelines, the proposed works can proceed with caution without applying for an AHIP.

It should also be noted that **any** decision about carry out further investigation through onsite survey of Aboriginal objects or applying for an AHIP using the information obtained through exercising *Due Diligence* is the responsibility of SVRC.

### 4.7.3 Proposed Safeguards

With consideration of the document '*Due Diligence Code of Practice for the protection of Aboriginal Objects in New South Wales*' the following safeguards are proposed:

- During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any Aboriginal objects.
- If human skeletal remains are found during the activity, work must stop immediately, secure the area to prevent unauthorised access and contact NSW Police and OEH.

- If potential material is identified, construction activities proximal to the potential material would cease and the NSW OEH will be contacted immediately to determine appropriate management. Notification procedures can be found at [www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm](http://www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm). The NPW Act requires that, if a person finds an Aboriginal object on land and the object is not already recorded on AHIMS, they are legally bound under s.89A of the NPW Act to notify OEH as soon as possible of the object's location. This requirement applies to all people and to all situations, including when you are following the Due Diligence Code.

## 4.8 HISTORIC HERITAGE

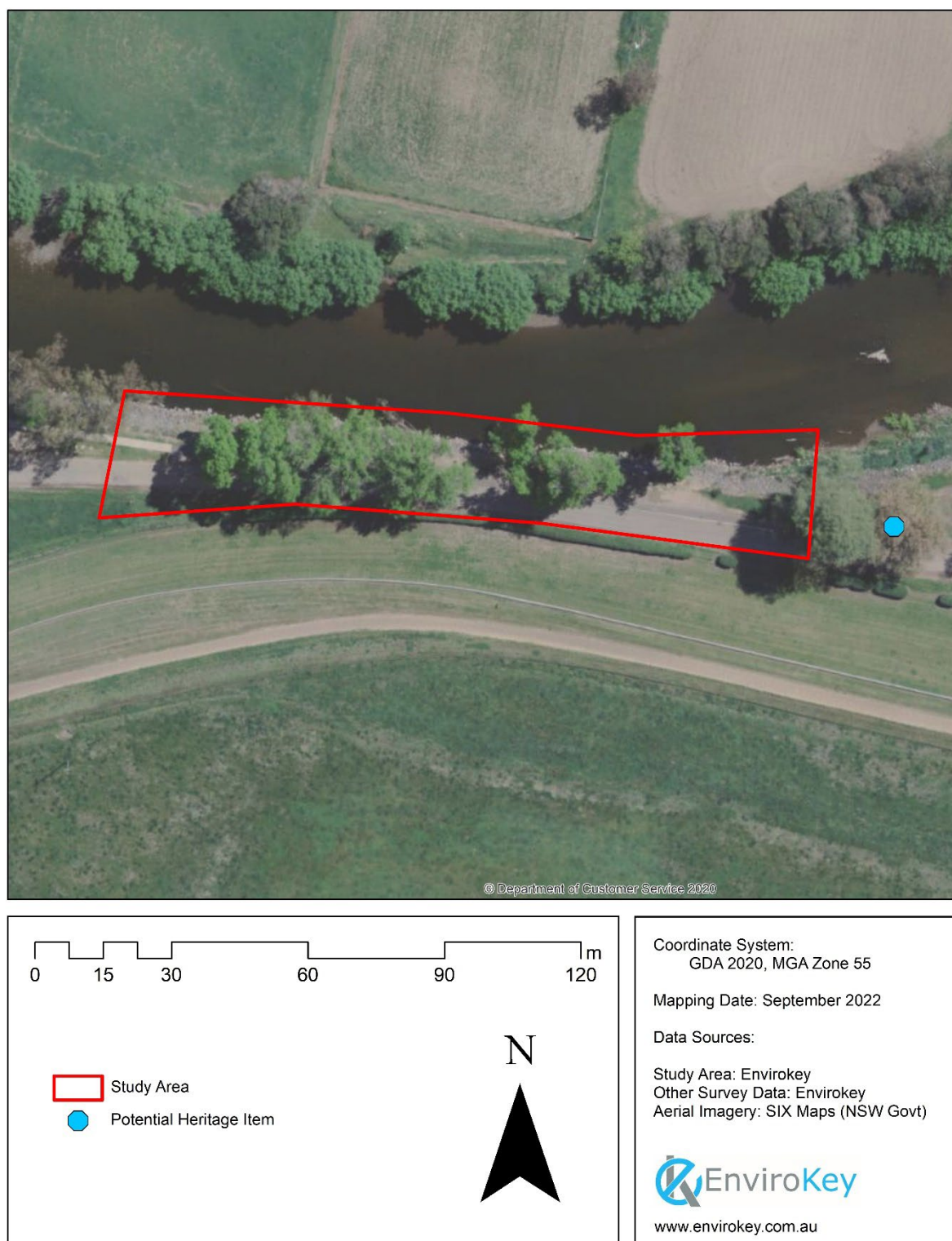
### 4.8.1 Approach

To consider whether there are any historic heritage items within the vicinity of the proposed activity, a search for items of Commonwealth, State and Local significance was completed. This involved a review of the Tumut LEP and the ESpatial Planner through the DPE. In addition, searches for any items that were potential relics as defined by the NSW *Heritage Act* 1977, were also undertaken during the site analysis.

### 4.8.2 Results

There was one known local heritage item within the vicinity of the proposal revealed from the database searches. This being the Racecourse Grandstand and Committee Stand and no items of potential relevance were identified during the site analysis.

A large Elm tree was found to contain several items and a plaque titled "Gnome Holiday Resort" (**Figure 4-11-12**). While this item does not appear to be listed on any local, state or commonwealth heritage register, it is likely to have some local historical relevance given that there are anecdotal reports of it being in existence for several decades.



**Figure 4-11:** Potential heritage items near the proposal.





**Figure 4-12:** Gnome Holiday Resort located at the eastern end of the proposal.

The results of the database searches are provided within **Appendix 7**.

#### **4.8.3**      *Potential Impacts*

No listed heritage items were identified within the vicinity of the proposal; therefore, no potential impacts are anticipated as a result of the proposed work. Additionally, the “Gnome Holiday Resort” is located well east of the proposed work. Given this, it would also not be impacted by the proposal.

#### **4.8.4**      *Proposed Safeguards*

**EnviroKey** recommend the following safeguards:

- During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any item that could be of historic heritage.
- No impacts should occur to the “Gnome Holiday Resort” or the large tree it is contained within.
- If potential material is identified (other than that detailed within this REF), construction activities proximal to the potential material would cease and the NSW Heritage Office will be contacted immediately to determine appropriate management.



## 4.9 TRAFFIC MANAGEMENT

### 4.9.1 *Existing Environment*

The proposal area is located on directly adjacent Elm Drive, Tumut. Currently, pedestrians and users of the Tumut River and Wetlands Walk are forced onto the roadside shoulder, and in close proximity to traffic. Elms Drive is a local road, with relatively low levels of traffic, which increase with events at the racecourse, and with visitors to the Riverside Café.

### 4.9.2 *Impact Assessment*

During the construction period, Elm Drive would require traffic management. It is likely that the lane closest to the proposed work, would be closed, and traffic would require site-specific management. Road users would be encouraged to seek alternate routes.

Post construction, vehicle movements would return to normal levels and are not anticipated to increase due to the installation of the culverts. Improvements to the overall safety of path users is considered a positive impact.

### 4.9.3 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- A traffic management plan (to be prepared by SVRC) would be implemented, which would include the use of signs, barriers, temporary speed zones and traffic control for the duration of the proposed works.
- The proposed works would be completed in accordance with WHS legislation.
- Construction would avoid weekends and public holidays where possible.
- The proposed works would be completed in the minimum timeframe practical.

## 4.10 WASTE MINIMISATION AND RESOURCE MANAGEMENT

### 4.10.1 *Impact Assessment*

The proposed activity is expected to result in the following waste, some of which would be able to be recycled or reused:

- Paper and office waste from project management activities.
- General construction waste such as concrete, steel and plastic.
- Waste from staff and construction personnel (food, packaging, portable toilets).
- Minor amounts of vegetation including weeds.

### 4.10.2 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- Waste stored on site would be held in appropriate skips or bundled into stockpiles and covered where appropriate. Transport of materials from the construction site to sites of reuse or disposal would be done using covered trucks.
- Dispose of material at an appropriate waste disposal/recycling facility where re-use or storage options are not available.
- Excess soil material exported from the site would be available for reuse or will be disposed of at an appropriate facility.
- In the event of any oil waste occurring on-site, this would be collected and transported to the nearest oil recycling facility.

## 4.11 CUMULATIVE IMPACT

### 4.11.1 *Negative Cumulative Impacts*

A number of actions as a result of the proposed works would have a minor negative cumulative impact. These include:

- Social impacts during the construction period based on minor traffic disruptions, dust, and noise.
- Biodiversity impacts resulting from riparian habitat disturbance, soil disturbance and potential minor clearing of vegetation.
- Greenhouse gas emissions from the use of machinery, equipment, and vehicles during the construction period.
- The use of resources such as gravel, cement, tar-sealing, and fossil fuels.

Generally, negative cumulative impacts associated with the proposed activity would be confined to the construction period. Proposed safeguards provided within the REF confirm that risks from potential impacts are both low and able to be managed.

### 4.11.2 *Positive Cumulative Impacts*

Positive cumulative impacts as a result of the proposed works are expected to be:

- Improved shared path user safety
- Improvements to road user safety.

### 4.11.3 *Proposed Safeguards*

The proposed safeguards within previous sections of this REF address the cumulative impacts identified above. Given the positive cumulative impacts identified above, the proposed activity would result in a net environmental gain to the local area and to Council.

## 4.12 PRINCIPLES OF ECOLOGICALLY SUSTAINABLE DEVELOPMENT

This section presents the principles of Ecologically Sustainable Development (ESD) in relation to the proposal.

### 4.12.1 *Precautionary Principle*

The 'precautionary principle' means that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

This REF has been prepared using the precautionary principle. That is, if threats are perceived as possibly leading to serious or irreversible environmental damage, then either the non-development of the proposal would occur, or that the proposed activity would need to be modified to ensure that such threats do not exist. This has been the approach in relation to proposed safeguards summarised in section 5 of this REF.

### 4.12.2 *Inter-generational Equity*

'Inter-generational equity' means that the present generation should ensure that the health, diversity, and productivity of the environment is maintained or enhanced for the benefit of future generations.

The proposed activity would not impact on natural or cultural features to a level that would compromise the health, diversity, or productivity of the environment to a level that would impact on future generations.

### 4.12.3 *Appropriate Valuation of Environmental Factors*

This principle requires that environmental assets should be appropriately valued. This REF has considered abiotic and biotic ecosystem factors together with social values in identifying potential impacts and providing a range of environmental safeguards to minimise the impacts of the proposed activity.

These factors ensure that the proposed activity is consistent with the principles of ESD.

## 5 SUMMARY OF ENVIRONMENTAL SAFEGUARDS

The potential impacts of the proposed activity identified within section 4 of this REF can be mitigated through appropriate safeguards to reduce these to acceptable levels. The safeguards provided throughout this REF are summarised within **Table 2**.

**Table 5-1:** Summary of Environmental Safeguards.

Environmental Component	Proposed Safeguards
Landforms, Soils, Hydrology and Water Quality	<ul style="list-style-type: none"> <li>To manage erosion and sedimentation during construction, a sediment and erosion control plan shall be prepared. Erosion and sediment control practices should follow the recommendations and checklists outlined in: <i>Managing Urban Stormwater: Soils and Construction Volume 1</i> (NSW, 2006) and <i>Managing Urban Stormwater: Soils and Construction – Installation of Services Vol 2A</i> (DECC, 2007).</li> <li>Rehabilitate exposed bare ground at the completion of the work.</li> <li>Erosion and sediment controls would be left insitu for as long as necessary for the site to become stabilised.</li> <li>No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.</li> </ul>



Environmental Component	Proposed Safeguards
Biodiversity	<ul style="list-style-type: none"> <li>• Construction activities should not occur during intense rain events or in a predicted extended rain event.</li> <li>• Erosion and sediment control plan should be established and maintained to avoid sediment runoff into Tumut River during any vegetation clearing and construction and should only be removed once the ground is stabilised.</li> <li>• Erosion and sediment controls would be in position prior to the proposed activity commencing and left <i>insitu</i> for as long as necessary for the site to become stabilised. However, should these controls begin to deteriorate and lose functionality; they are to be replaced immediately.</li> <li>• No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.</li> <li>• There must be no release of dirty water into the Tumut River.</li> <li>• Should any fish kills be observed during the work, DPI Fisheries must be notified immediately for urgent action.</li> <li>• Visual monitoring of local water quality (i.e., turbidity, hydrocarbon spills/slicks) must be carried out on a regular basis to identify any potential spills or deficient sediment controls.</li> <li>• Water quality control measures must be used to prevent any materials (e.g., concrete, grout, sediment etc.) entering waterways</li> <li>• All fuels, chemicals and liquids are to be stored in an impervious bunded area or containers.</li> <li>• An emergency spill kit must be kept on site at all times and maintained throughout the construction work. The spill kit must be appropriately sized for the volume of substances at the work site.</li> </ul>
Noise and Vibration	<ul style="list-style-type: none"> <li>• Construction activity would be restricted to the following standing working hours: <ul style="list-style-type: none"> <li>• Monday-Friday: 7:00am to 6:00pm</li> <li>• Saturday: 8:00am to 1:00pm</li> <li>• Sunday and Public Holidays: no work</li> </ul> </li> <li>• Should work be proposed outside of standard working hours, additional mitigation measures would be required.</li> <li>• Completion of the proposed activity in the minimum timeframe practicable.</li> <li>• Noise output would be minimised through the use of modern equipment that is regularly maintained.</li> <li>• Machinery engines would be switched off, minimising noise emissions, rather than being left idling for long period.</li> </ul>
Climate and Air Quality	<ul style="list-style-type: none"> <li>• Any stockpiles with the capacity to cause dust should be dampened or otherwise controlled to suppress dust.</li> <li>• Trucks carrying loads of material such as soil, road base, gravel or spoil should be covered.</li> </ul>

Environmental Component	Proposed Safeguards
	<ul style="list-style-type: none"> <li>• All machinery should be periodically inspected and maintained to ensure minimum levels of emissions.</li> <li>• Machinery engines should be switched off, rather than left idling for long periods.</li> </ul>
Visual Impacts	<ul style="list-style-type: none"> <li>• The proposed work area should be kept clean and orderly at all times, ensuring that no waste is left at the site following completion of the proposed work.</li> <li>• Machinery and equipment storage should be conducted in a single location, where possible.</li> <li>• Temporary erosion and sediment controls should be removed from the site once it is stabilised.</li> </ul>
Socio-Economic	<ul style="list-style-type: none"> <li>• Potential hazards should be minimised by ensuring that the proposed works are completed in accordance with relevant SVRC standards and WHS requirements.</li> <li>• Dial Before You Dig <u>MUST</u> be consulted to ensure that the locations of all underground services are known <u>PRIOR</u> to excavating commencing. Appropriate actions must be formulated by the Project Manager and Site Supervisor to minimise the risk that these services become disrupted.</li> <li>• Construction activity would avoid weekends and public holidays where possible.</li> <li>• The proposed works would be completed in the minimum timeframe practical.</li> </ul>
Indigenous Heritage	<ul style="list-style-type: none"> <li>• During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any Aboriginal objects.</li> <li>• If human skeletal remains are found during the activity, work must stop immediately, secure the area to prevent unauthorised access and contact NSW Police and OEH.</li> <li>• If potential material is identified, construction activities proximal to the potential material would cease and the NSW OEH will be contacted immediately to determine appropriate management. Notification procedures can be found at <a href="http://www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm">www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm</a> The NPW Act requires that, if a person finds an Aboriginal object on land and the object is not already recorded on AHIMS, they are legally bound under s.89A of the NPW Act to notify OEH as soon as possible of the object's location. This requirement applies to all people and to all situations, including when you are following the Due Diligence Code.</li> </ul>
Historic Heritage	<ul style="list-style-type: none"> <li>• During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any item that could be of historic heritage.</li> <li>• No impacts should occur to the "Gnome Holiday Resort" or the large tree it is contained within.</li> <li>• If potential material is identified (other than that detailed within this REF), construction activities proximal to the potential material would cease and the NSW Heritage Office will be contact immediately to determine appropriate management.</li> </ul>
Traffic Management	<ul style="list-style-type: none"> <li>• A traffic management plan (to prepared by SVRC) would be implemented, which would include the use of signs, barriers, temporary speed zones and traffic control for the duration of the proposed work.</li> <li>• The proposed works would be completed in accordance with WHS legislation.</li> <li>• Construction would avoid weekends and public holidays where possible.</li> </ul>

Environmental Component	Proposed Safeguards
Waste Minimisation and Resource Management	<ul style="list-style-type: none"> <li>• The proposed works would be completed in the minimum timeframe practical.</li> <li>• Waste stored on site would be held in appropriate skips or bundled into stockpiles and covered where appropriate. Transport of materials from construction site to sites of reuse or disposal would be done using covered trucks where possible.</li> <li>• Dispose of material at an appropriate waste disposal/recycling facility where re-use or storage options are not available.</li> <li>• Excess soil material exported from the site would be available for resale, reuse or will be disposed of at an appropriate facility.</li> <li>• In the event of any oil waste occurring on-site, this would be collected and transported to the nearest oil recycling facility.</li> </ul>
Cumulative Impacts	The proposed safeguards within previous sections of this REF address the cumulative impacts identified. Given the positive cumulative impacts identified, the proposed activity would result in a net environmental gain to the local area and to Council.

## 6 CLAUSE 171 CHECKLIST

A checklist of factors that should be considered in the assessment of impacts prior to its determination is included within Clause 171 of the *Environmental Planning and Assessment Regulation 2021*. This clause identifies seventeen issues that need to be addressed. The following text provides summary details of each of the issues, the majority of which have been addressed within the body of this document.

**a) any environmental impact on the community;**

There is the possibility of impacts associated with the construction period such as noise, traffic delays and dust. In the long-term, improvements to visitor experience and path user safety, would provide for positive environmental impact.

**b) any transformation of a locality;**

While the proposed activity will impact visually during the construction process, overall, there would be no impact on the visual environment of the locality.

**c) any environmental impact on the ecosystem of the locality;**

No. While the proposal would involve the disturbance of a relatively small area of non-native vegetation and potential minor impacts to the aquatic environment, they would be of little significance in context to the aquatic and terrestrial habitat in the locality.

**d) any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality;**

The infrastructure itself is not utilised for scientific or recreational purposes (e.g., research) nor does it have any aesthetic value. Overall, the proposed activity is unlikely to have a notable long-term impact on any aesthetic, recreational, scientific, or other environmental quality or value of the locality.

**e) any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations;**

The proposal would not have any effect on any locality, place or building having aesthetic, anthropological, archaeological or any other significance or special value.

**f) any impact on the habitat of protected or endangered fauna (within the meaning of the National Parks and Wildlife Act 1974);**

A number of threatened biota including a threatened ecological community have been previously recorded in the locality and adjacent to the proposal. As such, an assessment of



impacts was undertaken (**Appendix 4 & 5**). Risks to threatened biota are considered to be low if proposed safeguards are effectively implemented.

**g) any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air;**

The proposed activity is unlikely to endanger any species of animal, plant or any other form of life or offer any significant long-term disturbance locally, given the relatively minor nature of the proposal.

**h) any long-term effects on the environment;**

Negative long term effects on the environment would be unlikely if the proposed safeguards discussed in **section 5** are fully implemented.

**i) any degradation of the quality of the environment;**

No negative long-term environmental impacts are expected. Minor amounts of dust and noise pollution are expected during the construction phase and may have short-term impacts on the environment directly adjacent to the proposal.

**j) any risk to the safety of the environment;**

The proposed activity is unlikely to cause any risk to the environment given safeguards listed in **section 5** are followed.

**k) any reduction in the range of beneficial uses of the environment;**

The proposed activity would not result in a significant reduction in the range of beneficial uses of the environment in the locality, given the existing environment and the relatively minor nature of the activity proposed.

**l) any pollution of the environment;**

There is a risk that pollution of the local environment would occur as a result of contaminants, including silt and hydrocarbons entering the local environment during construction. The risk would be minimised as a result of the environmental safeguards described in **section 5**.

**m) any environmental problems associated with the disposal of waste;**

Disposal of waste would be managed during construction as outlined in section 4.10.

**n) any increased demands on resources (natural or otherwise) that are, or likely to become in short supply;**

This REF has identified that the proposed activity would not create a significant increase in the demands on resources that are likely to become in short supply in the near future.

**o) any cumulative environmental effect with other existing or likely future activities;**

Assessment of the cumulative environmental effects of the proposed activity identifies both negative and positive environmental impacts that would occur. Generally, negative environmental impacts are confined to the construction period, while improvements in road conditions, and improved safety are significant positive environmental impacts.

**p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions;**

There would be no impact to coastal processes or hazards.

**q) Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1**

The proposal is consistent the SVRC Regional Tracks and Trails Master Plan that is currently being prepared.

**r) Other relevant environmental factors**

In considering the potential impacts of this proposal all relevant environmental factors have been considered, refer to Chapter 4 of this REF.

## 7 CONCLUSION

This REF provides a true and fair review of the proposed activity in relation to its potential effects on the environment. It addresses to the fullest extent possible, all of the factors listed in Clause 171 of the Environmental Planning and Assessment Regulation 2021.

The potential impacts of the proposed extension to the Tumut River and Wetlands Walk identified within section 4 of this REF can be mitigated through appropriate safeguards to reduce these to acceptable levels. Accordingly, an Environmental Impact Statement (EIS) is not required.

## 8 REFERENCES



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## 9 APPENDICES

## **APPENDIX 1 – QUALIFICATIONS AND EXPERIENCE OF PERSONNEL**

Name and Qualifications	Experience
<p><b>Steve Sass</b> B.App.Sci (Env.Sci) (Hons), GradCert.CaptVert.Mngt (CSU) Director / Principal Ecologist / Project Manager</p> <p>Certified Environmental Practitioner, EIANZ Accredited Biodiversity Assessor Member, Ecological Consultants Association of NSW (ECA)</p>	<p>Steve is a highly experienced Consulting Ecologist having undertaken hundreds of terrestrial and aquatic ecological surveys and assessments across Australia since 1992. He has an in-depth working knowledge of environmental and biodiversity legislation across all states and territories which allows him to provide detailed and accurate assessments and formulate practical solutions to clients and specific projects on a case-by-case basis.</p> <p>Previous and current research holds Steve in high regard within both the scientific and ecological consultants' community. Steve was recently given 'Expert' status for a number of species listed under the NSW <i>Biodiversity Conservation Act 2016</i> and is currently working with OEH on the Saving our Species Program for a newly identified species of dragon lizard in western NSW (<i>Ctenophorus mirrityana</i>) which Steve collaborated with other scientists to formally describe.</p> <p>Steve has extensive experience in south-east NSW. Over the past ten years, he has completed or provided specialist biodiversity advice to more than 1000 environmental assessments for projects such as residential and industrial developments, highway upgrades and telecommunications, water, sewerage, energy, mining and electricity network infrastructure projects. Steve is highly conversant with the flora, vegetation communities, fauna and their habitats of the region. His expertise with regard to forest and wetland birds, reptiles, frogs and mammals is well known.</p> <p>For the REF Steve was the Project manager and assisted in preparing this report.</p>
<p><b>Linda Sass</b> Ass.Deg.Gn.St (Science), BA, DipEd (Sec) Member, Ecological Consultants Association of NSW (ECA)</p>	<p>Linda is an experienced ecologist having conducted flora and fauna surveys across western NSW for the past 12 years. Her recent projects in southern NSW include a Species Impact Statement for the Potato Point Fire Buffer Construction within Eurobodalla National Park and well as a number of highway upgrades near Moruya, Bodalla, Narooma, Ulladulla and Braidwood and she has conducted numerous frog surveys across the Bega Valley including Panboola Wetlands.</p> <p>For this project, Linda assisted with the field survey and carried out an internal review.</p>
<p><b>Zoe Sass</b> B.Sci (GIS), BA</p>	<p>Zoe has worked as an ecologist on a casual basis with <b>EnviroKey</b> over a number of years including during their university studies. She recently joined <b>EnviroKey</b> as a permanent member of the team as a Project Officer and has prepared a number of REFs including the HW1 Mort</p>



Name and Qualifications	Experience
	<p>Avenue Safety Improvement Work and HW1 Herganhens Lane Safety Improvement Work for Transport for NSW. Zoe has also been responsible for GIS mapping and statistical analysis for a number of environmental assessments including residential developments.</p> <p>For this project, Zoe carried out all GIS mapping, and spatial analysis.</p>

## APPENDIX 2 – THE PROPOSAL

## **APPENDIX 3 – THREATENED AND MIGRATORY BIOTA EVALUATION**

When evaluating which threatened and migratory biota are likely to occur within the study area, the following factors were taken into consideration:

- The presence of potential habitat
- Condition of and approximate extent of potential habitat
- Species occurrence within study area and wider locality

The potential for these biota to be impacted by the proposal was assessed based on the following criteria:

- No (no suitable habitat based on known habitat requirements within the study area; in the case of flora, site extensively searched during the appropriate time of year for detection and species not present).
- Unlikely (proposed works are unlikely to impact on the life-cycle of the species, the species is mobile and other habitat exists within the locality).
- Possible (proposed works could result in the removal of threatened flora or for fauna, impact on the life cycle of the species, disrupt normal ecological function, or entrap species within excavations).

Biota that are associated with littoral or marine habitats have been excluded from the analysis.

**Table 9-1:** Threatened and migratory biota evaluation.

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
<b>FROGS</b>					
Alpine Tree Frog <i>Litoria verreauxii alpina</i>	E	V	Found in a wide variety of habitats including woodland, heath, grassland and herb fields. Breed in natural and artificial wetlands including ponds, bogs, fens, streamside pools, stock dams and drainage channels that are still or slow flowing	0	No
Booroolong Frog <i>Litoria booroolongensis</i>	E	E	Lives in permanent streams with some fringing vegetation cover. Can be found sheltering under rocks or amongst vegetation near stream edge.	0	No
Northern Corroboree Frog <i>Pseudophryne pengilleyi</i>	CE	CE	Summer breeding habitat is pools and seepages in sphagnum bogs, wet heath, wet tussock grasslands and	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			herbfields in low-lying depressions. Outside the breeding season adults move away from the bogs into the surrounding heath, woodland and forest to overwinter under litter, logs and dense groundcover.		
Spotted Tree Frog <i>Litoria spenceri</i>	CE	CE	Occur among boulders or debris along naturally vegetated, rocky fast flowing upland streams and rivers. In winter animals are thought to hibernate in vegetation outside of the main stream environment	0	Unlikely
<b>BATS</b>					
Eastern False Pipistrelle <i>Falsistrellus tasmaniensis</i>	V		Roosts in eucalypts hollows as well as loose bark on trees or on buildings. Prefers moist habitats with trees taller than 20m.	0	No
Large Bent-winged Bat <i>Miniopterus orianae oceanensis</i>	V		Prefers caves but also uses derelict mines, storm water tunnels, buildings, and other built structures for roosting. They hunt in forested areas.	0	No
Southern Myotis <i>Myotis macropus</i>	V		Roost close to water in caves, mine shafts, hollow bearing trees, storm water channels, under bridges and in dense foliage. They forage over streams and pools.	0	No
<b>BIRDS</b>					
Barking Owl <i>Ninox connivens</i>	V		Inhabits woodland and open forest, including remnants and partly cleared farmland. It requires large permanent territories, about 2000 hectares in NSW habitats.	1	Unlikely
Black Falcon <i>Falco subniger</i>	V		The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions	0	Unlikely
Blue-billed Duck <i>Oxyura australis</i>	V		The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation.	0	No



Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
Brown Treecreeper (eastern subspecies) <i>Climacteris picumnus victoriae</i>	V		Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species.	6	Unlikely
Diamond Firetail <i>Stagonopleura guttata</i>	V		Found in grassy woodlands including Box-Gum Woodlands and Snow Gum Woodland	0	Unlikely
Dusky Woodswallow <i>Artamus cyanopterus cyanopterus</i>	V		Found mostly in dry, open eucalypt forests and woodlands. Depending on location and climate, it can be migratory.	3	Unlikely
Flame Robin <i>Petroica phoenicea</i>	V		Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes.  Habitat often changes in winter to include drier more open habitat including dry forests, open woodlands, native grassland, pastures and occasionally in heathland or other shrubland.	0	Unlikely
Gang-gang Cockatoo <i>Callocephalon fimbriatum</i>	V	E	During spring and summer, found in tall mountain forests and woodlands usually heavily timbered and mature wet sclerophyll forests. In Autumn and winter, they generally move to drier more open forests and woodlands.	7	Unlikely
Glossy Black-Cockatoo <i>Calyptrorhynchus lathamii</i>	V	E	Inhabit open forests and woodlands. She-oak is an important food source and they feed almost exclusively on several species ( <i>Casurina</i> and <i>Allocasaurina</i> ).	0	Unlikely
Hooded Robin (south-eastern form) <i>Melanodryas</i>	V		Found in open eucalypt woodlands, acacia scrub and mallee, often in or near clearings or open areas.	0	Unlikely

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
<i>cucullata cucullata</i>			Requires diverse habitats with mature eucalypts, saplings, small shrubs and moderately tall native grasses.		
Little Eagle <i>Hieraaetus morphnoides</i>	V		Little Eagle is distributed across all of the Australian mainland except for densely vegetated areas, particularly on the Dividing Range escarpment. In NSW the Little Eagle is considered a single population. They inhabit open eucalypt woodland, woodland and open woodland, including She-oak, <i>Acacia</i> woodland and riparian woodland in arid and semi-arid regions.	0	Unlikely
Masked Owl <i>Tyto novaehollandiae</i>	V		Lives in dry eucalypt forests and woodlands from sea level to 1100m. Pairs have a home range of 500-1000 hectares and can often be seen hunting along edges of forests, including roadsides. Breeds in moist eucalypt forested gullies, using hollows or caves for nesting	0	Unlikely
Olive Whistler <i>Pachycephala olivacea</i>	V		Mostly inhabit wet forests above about 500m. During the winter months they may move to lower altitudes	0	Unlikely
Painted Honeyeater <i>Grantiella picta</i>	V	V	Inhabits Boree/Weeping Myall ( <i>Acacia pendula</i> ), Brigalow ( <i>A.harpophylla</i> ) and Box-Gum Woodlands and Box-Ironbark Forests. Feeds on mistletoes preferably the genus <i>Amyema</i>	0	Unlikely
Pilotbird <i>Pycnoptilus floccosus</i>	-	V	Occurs in wet temperate forests where undergrowth is dense.	1	Unlikely
Pink Robin <i>Petroica rodinogaster</i>	V		Inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies.	0	Unlikely
Powerful Owl <i>Ninox strenua</i>	V		inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. Size of territory varies depending on	0	Unlikely

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			the quality and can range from 400 metres to 4000 hectares.		
Regent Honeyeater <i>Anthochaera phrygia</i>	CE	CE	Lives in dry open forest and woodland especially Box-Ironbark woodland, and riparian forests of River Sheoak. Woodlands they inhabit often support high abundance and species richness of bird species.	0	Unlikely
Scarlet Robin <i>Petroica boodang</i>	V		Lives in dry eucalypt forests and woodlands with open grassy understorey with scattered shrubs. Lives in both mature and regrowth vegetation and usually contains abundant logs and fallen timber	7	Unlikely
Sooty Owl <i>Tyto tenebricosa</i>	V		Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests.	0	Unlikely
Speckled Warbler <i>Chthonicola sagittata</i>	V		Lives in Eucalypts dominated communities that have a grassy understorey with sparse shrub layer. Large, relatively undisturbed habitats are needed for this species to remain in an area.	5	Unlikely
Spotted Harrier <i>Circus assimilis</i>	V		Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe.	0	Unlikely
Square-tailed Kite <i>Lophoictinia isura</i>	V		Found in timbered habitats including dry woodlands and open forests. Prefers timbered watercourses.	0	Unlikely
Superb Parrot <i>Polytelis swainsonii</i>	V	V	Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest.	3	Unlikely
Swift Parrot <i>Lathamus discolor</i>	E	CE M	Occurs in areas with flowering eucalypts or abundant lerp (from sap sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany <i>Eucalyptus robusta</i> ,	0	Unlikely

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			Spotted Gum <i>Corymbia maculata</i> , Red Bloodwood <i>C. gummifera</i> , Forest Red Gum <i>E. tereticornis</i> , Mugga Ironbark <i>E. sideroxylon</i> , and White Box <i>E. albens</i> . Commonly used lerp infested trees include Inland Grey Box <i>E. microcarpa</i> , Grey Box <i>E. moluccana</i> , Blackbutt <i>E. pilularis</i> , and Yellow Box <i>E. melliodora</i>		
Turquoise Parrot <i>Neophema pulchella</i>	V		Habitats include edges of eucalypt woodland near clearings, timbered ridges and creeks in farmlands.	4	Unlikely
Varied Sittella <i>Daphoenositta chrysoptera</i>	V		This species is sedentary and known to inhabit most forest/woodland habitats.	6	Unlikely
White-bellied Sea-eagle <i>Haliaeetus leucogaster</i>	V	M	The species is normally seen perched high in a tree, or soaring over waterways and adjacent land, particularly along coastlines, lakes, and rivers.	0	Unlikely
White-fronted Chat <i>Epthianura albifrons</i>	V		Gregarious species, usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground.	0	Unlikely
<b>FISH</b>					
Flathead Galaxias <i>Galaxias rostratus</i>	E (FM Act)	CE	Known from the southern half of the Murry-Darling Basin. Inhabits a variety of habitats including rivers, lakes and swamps.	0	No
Macquarie Perch <i>Macquaria australasica</i>	E (FM Act)	E	Found in the upstream reaches of the Murray-Darling Basin. Found in rivers and lakes.	0	No
Murray Cod <i>Maccullochella peelii</i>		V	Prefers deep, slow flowing turbid water in rivers and streams with boulders or undercut banks.	0	No
Trout Cod <i>Maccullochella</i>	E (FM Act)	CE	Found in the southern Murray-Darling river system, this fish inhabits fast flowing freshwater	Tumut River is known habitat	Unlikely

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
<i>macquariensis</i>			streams.		
Australian Grayling	E (FM Act)	E	The Australian Grayling is endemic to south-eastern Australia, including Victoria, Tasmania and New South Wales. Rare fish are likely in South Australia. It was once abundant throughout its range but has declined in many areas since European settlement and is now generally patchily distributed. In NSW its most northern limit is now the Clyde River.	0	No
<b>INVERTEBRATES</b>					
Murray Crayfish <i>Euastacus armatus</i>	V		The Murray Crayfish originally occurred in the Murrumbidgee River system in NSW and the ACT, and parts of the Murray river system in NSW, Victoria and South Australia. The species has also been recorded from the Lachlan and Macquarie catchments in NSW, although the origin of these populations is currently unknown, and may be translocated. Murray Crayfish have an upper altitudinal range of approximately 750 – 800 m ASL.	Known locally from recreational fishers	Possible
<b>MAMMALS</b>					
Broad-toothed Rat <i>Mastacomys fuscus</i>	V	V	Lives in a complex of runways through the dense vegetation of its wet grass, sedge or heath environment, and under the snow in winter. This relatively warm under-snow space enables it to be active throughout winter	0	No
Brush-tailed Phascogale <i>Phascogale tapoatafa</i>	V		Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest.	0	No
Eastern Pygmy-possum <i>Cercartetus nanus</i>	V		Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland	2	No



Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			to heath, but in most areas woodlands and heath appear to be preferred.		
Koala <i>Phascolarctos cinereus</i>	V	V	Inhabit eucalypt woodlands and forests. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size.	0	No
Smoky Mouse <i>Pseudomys fumeus</i>	CE	E	Appears to prefer heath habitat on ridge tops and slopes in sclerophyll forest, heathland and open-forest from the coast (in Victoria) to sub-alpine regions of up to 1800 metres, but sometimes occurs in ferny gullies	0	No
Spotted-tailed Quoll <i>Dasyurus maculatus</i>	V	E	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath, and inland riparian forest, from the sub-alpine zone to the coastline.	1	Unlikely
Squirrel Glider <i>Petaurus norfolcensis</i>	V		Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas	0	No
Greater Glider		E	Distribution levels are higher in regions of montane forest containing manna gum and mountain gum. Furthermore, the presence of Monkey Gum appears to improve the quality of habitat for the greater gliders in forests dominated by <i>E. obliqua</i> . Another factor determining population density is elevation. Optimal levels are 845 m above sea level. Within a forest of suitable habitat, they prefer overstorey basal areas in old-growth tree stands	1	No
Yellow-bellied Glider <i>Petaurus australis</i>	V		Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation;	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.		
<b>REPTILES</b>					
Little Whip Snake <i>Suta flagellum</i>	V		Occurs in Natural Temperate Grasslands and grassy woodlands, including those dominated by Snow Gum <i>Eucalyptus pauciflora</i> or Yellow Box <i>E. melliodora</i> . Also occurs in secondary grasslands derived from clearing of woodlands. Found on well drained hillsides, mostly associated with scattered loose rocks.	0	No
Rosenberg's Goanna <i>Varanus rosenbergi</i>	V		Found in heath, open forest and woodland. Associated with termites, the mounds of which this species nests in; termite mounds are a critical habitat component.	0	No
Striped Legless Lizard <i>Delma impar</i>	V	V	Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland.	0	No
<b>PLANTS</b>					
Alpine Greenhood <i>Pterostylis alpina</i>	V		Often found on sheltered southern slopes near streams in rich loam	0	No
Alpine Sun-orchid <i>Thelymitra alpicola</i>	V		Occurs in wet heaths, sphagnum bogs between 1000-1500 metres and swamps	0	No
Austral Toadflax <i>Thesium australe</i>	V	V	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast.	0	No
Austral Pillwort <i>Pilularia novae-hollandiae</i>	E		grows in shallow swamps and waterways, often among grasses and sedges. It is most	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			often recorded in drying mud as this is when it is most conspicuous		
Cotoneaster Pomaderris <i>Pomaderris cotoneaster</i>	E	E	Has been recorded in a range of habitats in predominantly forested country. The habitats include forest with deep, friable soil, amongst rock beside a creek, on rocky forested slopes and in steep gullies between sandstone cliffs.	0	No
Crimson Spider Orchid <i>Caladenia concolor</i>	E	V	Habitat is regrowth woodland on granite ridge country that has retained a high diversity of plant species, including other orchids. Flowering does not take place every year for reasons that are not fully understood, though each plant probably lives for a considerable number of years	0	No
Dwarf Bush-pea <i>Pultenaea humilis</i>	V		<i>Pultenaea humilis</i> is found in isolated remnants of native woodland and forest communities that occur in extensively cleared agricultural landscapes.	1	No
East Lynne Midge Orchid <i>Genoplesium vernale</i>	V	V	Grows in dry sclerophyll woodland and forest extending from close to the coast to the adjoining coastal ranges. Confined to areas with well-drained shallow soils of low fertility, often occurring near the crests of ridges and on low rises where the ground cover is more open and sedge dominated rather than being shrubby.	0	No
Elusive Cress <i>Irenepharsus magicus</i>	E		Habitat preference for the species is unclear, although records have been found in recently logged Messmate Stringybark ( <i>Eucalyptus obliqua</i> ) forest, in rocky limestone areas, and 'growing on mineral soil of embankment'.	0	No
Leafy Anchor Plant <i>Discaria nitida</i>	V		Generally occurs on or close to stream banks and on rocky areas near small waterfalls.	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			The species occurs in both woodland with heathy riparian vegetation and on treeless grassy sub-alpine plains		
Rough Eyebright <i>Euphrasia scabra</i>	E		Occurs in or at the margins of swampy grassland or in sphagnum bogs, often in wet, peaty soil. Although parasitic, the species does not appear to be host-specific	0	No
Silky Swainson-pea	V		Found in Natural Temperate Grassland and Snow Gum <i>Eucalyptus pauciflora</i> Woodland on the Monaro.	1	No
Slender Greenhood <i>Pterostylis foliata</i>	V		Grows in eucalypt forest amongst an understorey of shrubs, ferns and grasses. It grows on loam or clay loam soils found on sheltered sloping to steep ground and populations may be found in localised open seepage areas.	0	No
Tumut Grevillea <i>Grevillea wilkinsonii</i>	CE	E	The Tumut Grevillea has a highly restricted distribution in the NSW South-west Slopes region. Its main occurrence is along a 6 km stretch of the Goobarragandra River approximately 20 km east of Tumut where about 1,000 plants are known. The other occurrence is a small population that straddles the boundary of two private properties at Gundagai where only eight mature plants survive.	0	No
Wee Jasper Grevillea <i>Grevillea iaspicula</i>	CE	E	Grows on rocky limestone outcrops and around sink holes and cave entrances. Vegetation is open woodland dominated by White Box ( <i>Eucalyptus albens</i> ) and Apple Box ( <i>E. bridgesiana</i> ) trees. Often occurs as a co-dominant species within the shrubby understorey of its open woodland habitat.	0	No
Wooly Ragwort <i>Senecio garlandii</i>	V		Occurs on sheltered slopes of rocky outcrops	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
Yass Daisy <i>Ammobium craspedioides</i>	V	V	Found in moist or dry forest communities, Box-Gum Woodland and secondary grassland derived from clearing of these communities. Apparently unaffected by light grazing, as populations persist in some grazed sites	0	No
<i>Caladenia montana</i>	V		Restricted to high montane areas 700–1000 m a.s.l. where it grows in well-drained loam on slopes and ridges of montane forest among an understorey of shrubs.	0	No
<i>Pimelea bracteata</i>	CE		In wet heath and along creek banks at higher altitudes in the Kiandra area	0	No
<b>ECOLOGICAL COMMUNITIES</b>					
Fuzzy Box Woodland on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	EEC		Tall woodland or open forest dominated by Fuzzy Box, <i>Eucalyptus conica</i> . Often occurs upstream from River Red Gum communities above frequently inundated areas of the floodplain. Also occurs on colluvium soils and lower slopes and valley flats	0	No
Lower Murray Aquatic Ecological Community	EC		This community includes all native fish and aquatic invertebrates within all natural rivers, creeks and association lagoons, billabongs and lakes of the regulated portions of the Murray, Murrumbidgee and Tumut Rivers.	Yes	Possible
Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	EEC	E	The Montane Peatlands community is associated with accumulated peaty or organic-mineral sediments on poorly drained flats in the headwaters of streams. It occurs on undulating tablelands and plateaux, above 400-500 m elevation, generally in catchments with basic volcanic or fine-grained sedimentary substrates or, occasionally, granite.	0	No
White Box – Yellow	CEEC	CE	An open woodland community	Common in	No



Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England, Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions			characterised by the presence or prior occurrence of White Box, Yellow Box and/or Blakely's Red Gum and a generally grassy understorey. Remnants generally occur on fertile lower parts of the landscape.	the Tumut region	

## **APPENDIX 4 – TEST OF SIGNIFICANCE (BC AND FM ACT)**

## NSW Biodiversity Conservation Act 2016

Section 7.3 of the BC Act details five factors which are to be considered when determining if a proposed development or activity *'is likely to have a significant effect on the threatened species, ecological communities, or their habitats'*. These five factors must be taken into account by consent or determining authorities when considering a development proposal or development application. This enables a decision to be made as to whether there is likely to be a significant effect on the species.

**Appendix 3** found no threatened biota as listed by the BC Act had the potential to be impacted by the proposal. As such, no Tests of Significance are provided for any BC Act listed biota.

## NSW Fisheries Management Act 1994

In the FM Act, there are seven factors which are to be considered when determining if a proposed development or activity *'is likely to have a significant effect on the threatened species, or ecological communities, or their habitats'*. These seven factors must be taken into account by consent or determining authorities when considering a development proposal or development application. This enables a decision to be made as to whether there is likely to be a significant effect on the species.

The habitat assessment table in Appendix 3 found that two threatened biota listed under the FM Act that has the potential to occur within the study area based on the evaluation completed. Given this, further assessment by application of the 7-part test is completed on the following biota:

- Murray Crayfish
- Lower Murray aquatic ecological community

### Murray Crayfish & Lower Murray aquatic ecological community

**(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,**

Murray Crayfish are well known from the Tumut River. Habitat for the species occurs in flowing riverine reaches but do not occur in weir pool sites. However, local flow velocity variation forms preferred habitat for Murray Crayfish with the highest population density occurring on outside bends where flow velocity was at its highest in a portion of the Murray River (Gilligan et al., 2007). On this basis, it can be assumed that while all of the Tumut River within the locality provides suitable habitat, around half of this length may form preferred habitat.

DPI identifies the following as key threats to Murray Crayfish (Zukowski et al., 2011, DPI, 2014)

- Habitat modification from the construction of weirs

- Sedimentation covering rocky habitat
- River regulation
- Overfishing
- Loss of riparian vegetation, sedimentation, and general declines in aquatic ecosystem health.

Indirect impacts could occur during construction from erosion and sediment entering the water way, and further degradation of the riparian zone. Increases in sedimentation may impact aquatic habitats in a number of ways including blocking light, smothering aquatic habitat and resulting in the loss of macroinvertebrate communities.

Generally, working within or in close proximity to a water way can lead to an increased risk of sedimentation impacts. More specifically, the removal of the ground cover vegetation could result in sediment within the water column. Sedimentation and bank erosion can negatively affect fish, frogs, turtles and macroinvertebrates and may also block fish passage causing impacts during times of migration. More extreme impacts from sedimentation and increases in turbidity could lead to aquatic fauna asphyxiation, impacts to light penetration into the water column (which may affect predator/prey interactions), ingestion of large amounts of sediment potentially leading to illness and impacts on habitat diversity in the immediate area and downstream by smothering and filling of spaces occupied by aquatic fauna.

Overall, any risk to the aquatic environment is minimal and can be managed through appropriate safeguards.

With consideration of these factors, it is *unlikely* that the proposed activity could have an adverse effect on the life cycle of Murray Crayfish, or their habitats, such that a viable local population is likely to be placed at risk of extinction.

**(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,**

Murray Crayfish and the Lower Murray River aquatic ecological community are not an endangered population.

**(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:**

- (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**
- (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,**

Murray Crayfish are not an endangered ecological community.

The lower Murray aquatic ecological community includes all native fish and aquatic invertebrates within all natural creeks, rivers and associated lagoons, billabongs and lakes of the regulated portions of the Murray, Murrumbidgee and Tumut rivers, as well as all their

tributaries and branches (DPI, 2007). In their natural state, these lowland rivers experienced extremely variable water flows, ranging from floods to droughts. Variability in environmental conditions has led to adaptations in the native aquatic flora and fauna; for example, many species rely on floods to trigger spawning and create suitable breeding habitats. Lowland rivers provide a wide range of habitats for fish and invertebrates, including pools, runs or riffles, backwaters and billabongs, large woody habitats and aquatic plants. Floodplains also provide a mosaic of habitat types, including permanent and temporary wetlands, as well as terrestrial habitats.

DPI (2007) identify the following threats to this community:

- Modification of natural flows
- Spawning failures and habitat loss from cold water releases
- Degradation of riparian habitat
- Predation and competition from introduced fish
- Removal of in-stream large woody debris
- Agricultural practices including fertilizer use, grazing, pesticides
- Over-fishing

As the proposal does not include the removal of any native riparian vegetation, indirect impacts are most relevant to these biota.

Indirect impacts could occur during construction from erosion and sediment entering the water way, and further degradation of the riparian zone. Increases in sedimentation may impact aquatic habitats in a number of ways including blocking light, smothering aquatic habitat and resulting in the loss of macroinvertebrate communities.

Generally, working within or in close proximity to a water way can lead to an increased risk of sedimentation impacts. More specifically, the removal of the ground cover vegetation could result in sediment within the water column. Sedimentation and bank erosion can negatively affect fish, frogs, turtles and macroinvertebrates and may also block fish passage causing impacts during times of migration. More extreme impacts from sedimentation and increases in turbidity could lead to aquatic fauna asphyxiation, impacts to light penetration into the water column (which may affect predator/prey interactions), ingestion of large amounts of sediment potentially leading to illness and impacts on habitat diversity in the immediate area and downstream by smothering and filling of spaces occupied by aquatic fauna.

Overall, any risk to the aquatic environment is minimal and can be managed through appropriate safeguards and

With consideration of these factors, it is *unlikely* that the proposed activity could have an adverse effect on the extent of, or substantially and adversely modify the Lower Murray River aquatic ecological community, or their habitats, such that its local occurrence is likely to be placed at risk of extinction.

**(d) in relation to the habitat of a threatened species, population or ecological community:**



- (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and
- (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and
- (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

The proposal would result in the minor loss of riparian vegetation, dominated by non-native vegetation. No work would be carried out within the waterway. Tumut River is likely to be of high significance to Murray Crayfish in the locality, however, it is known confined to the study area.

- (e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat has been declared for this species under the FM Act.

- (f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The proposed action is being carried out adjacent to a waterway that has already suffered significant degradation over decades with the loss of native riparian vegetation, altered flow regime, and rock walling. The proposed work would be considered consistent with the recovery plan in that it would be carried out in a manner that does not impact this species or Lower Murray River aquatic ecological community.

- (g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

While the proposal – new pathway – are not recognised as a key threatening process (KTP) under the FM Act, the *Degradation of native riparian vegetation along NSW watercourses, and increased sedimentation and erosion during construction* is of relevance. Mitigation measures provided in this REF provide a framework to minimise the potential impacts of these KTP during construction and operation.

Given this, the proposal is ‘*unlikely*’ to result in the operation of, or increase the impact of, a key threatening process.

## Conclusion

This Assessment of Significance has determined that the proposed activity is ‘*unlikely*’ to have a ‘*significant effect*’ on Murray Crayfish, or the Lower Murray River aquatic ecological community or their habitat. Therefore, the proposed activity will not require a Species Impact Statement.

## APPENDIX 5 – ASSESSMENT OF SIGNIFICANCE (EPBC ACT)

## Migratory Species

Protected under several international agreements to which Australia is a signatory, Migratory species are considered Matters of National Environmental Significance under the EPBC Act.

Under the EPBC Act, an action is likely to have a significant impact on a migratory species if it substantially modifies, destroys or isolated an area of 'important habitat' for the species (DotE, 2013). The study area is not considered to comprise 'important habitat' as it does not contain:

- Habitat used by a migratory species occasionally or periodically within a region that supports an ecological significant proportion of the population of the species
- Habitat that is of critical importance to the species at particular life-cycle stages
- Habitat used by a migratory species that is at the limit of the species' range
- Habitat within an area where the species is declining.

Given this, the potential for the proposed activity to impact on EPBC Act listed migratory species is unlikely and not considered further.

## Threatened Species

The evaluation table within **Appendix 3** identified that no EPBC Act listed biota would be potentially impacted by the proposal. Given this, no significance assessments under the EPBC Act are provided. Based on this, referral to the Commonwealth Minister is not warranted.

## **APPENDIX 6 – ABORIGINAL INFORMATION MANAGEMENT SYSTEM SEARCH RESULTS (AHIMS)**

EnviroKey Pty Ltd

PO Box 7231

TATHRA New South Wales 2550

Attention: Steve Sass

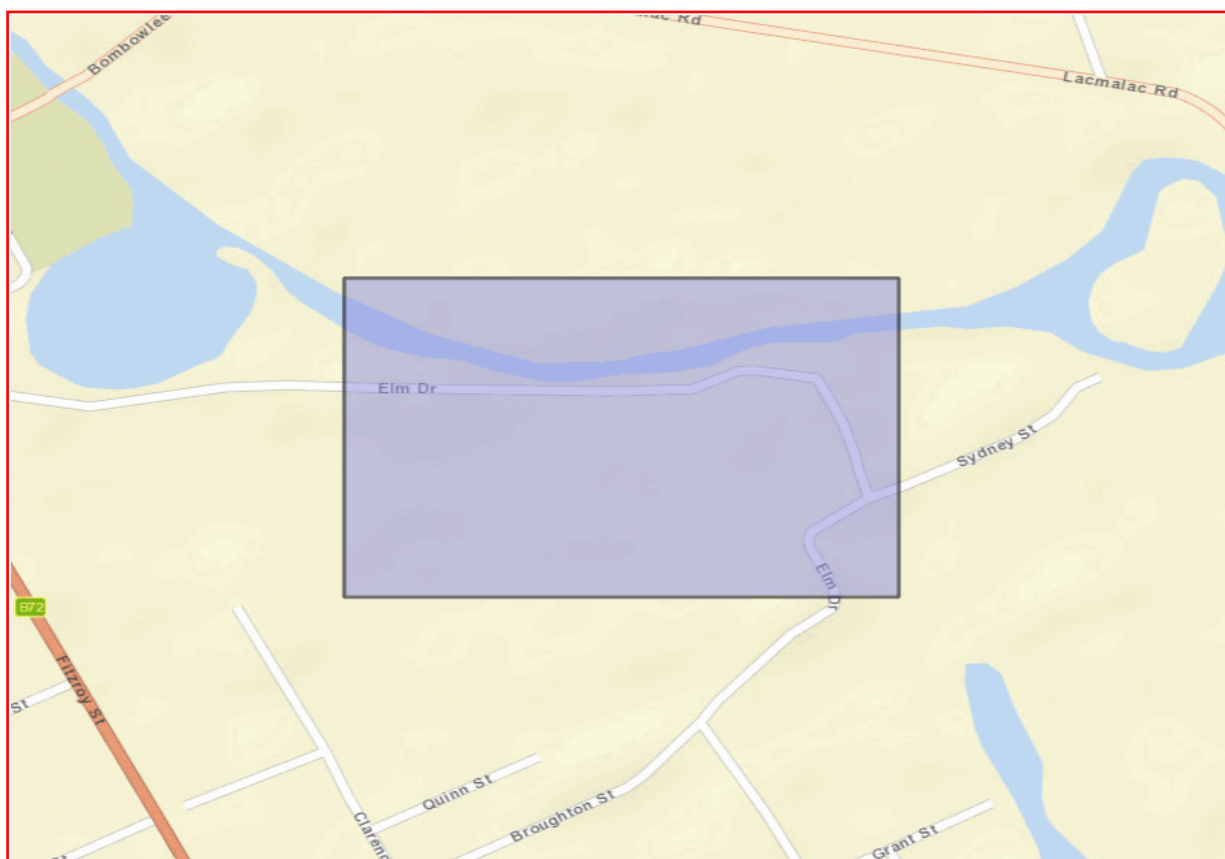
Email: [steve@envirokey.com.au](mailto:steve@envirokey.com.au)

Date: 15 September 2022

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lat, Long From : -35.3058, 148.2327 - Lat, Long To : -35.3015, 148.2405, conducted by Steve Sass on 15 September 2022.**

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *



**If your search shows Aboriginal sites or places what should you do?**

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(https://www.legislation.nsw.gov.au/gazette\)](https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

**Important information about your AHIMS search**

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

## APPENDIX 7 – NON-ABORIGINAL HERITAGE SEARCHES

Address Lot LGA POI

Address, eg: 320 Pitt Street Sydney 2000

Layers

Legends

Filter layers

Land Zoning Map

☐ Additional Controls

☐ Land Zoning Map

Lot Size Map

☐ Land Application Map

☐ Land

CRICKETNETS

ELM DRIVE

ELM DRIVE

TUMUT RACECOURSE

40 m



## APPENDIX 8 – PROTECTED MATTERS SEARCH TOOL RESULTS



# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 18-Sep-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



# Summary

## Matters of National Environment Significance

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

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance (Ramsar)</a>	4
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Listed Threatened Ecological Communities:</a>	4
<a href="#">Listed Threatened Species:</a>	33
<a href="#">Listed Migratory Species:</a>	11

## Other Matters Protected by the EPBC Act

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

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

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

<a href="#">Commonwealth Lands:</a>	3
<a href="#">Commonwealth Heritage Places:</a>	1
<a href="#">Listed Marine Species:</a>	18
<a href="#">Whales and Other Cetaceans:</a>	None
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None
<a href="#">Habitat Critical to the Survival of Marine Turtles:</a>	None

## Extra Information

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

<a href="#">State and Territory Reserves:</a>	1
<a href="#">Regional Forest Agreements:</a>	1
<a href="#">Nationally Important Wetlands:</a>	None
<a href="#">EPBC Act Referrals:</a>	5
<a href="#">Key Ecological Features (Marine):</a>	None
<a href="#">Biologically Important Areas:</a>	None
<a href="#">Bioregional Assessments:</a>	None
<a href="#">Geological and Bioregional Assessments:</a>	None

# Details

## Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[ Resource Information ]
Ramsar Site Name	Proximity	Buffer Status
<a href="#">Banrock station wetland complex</a>	700 - 800km upstream from Ramsar site	In feature area
<a href="#">Hattah-kulkyne lakes</a>	500 - 600km upstream from Ramsar site	In feature area
<a href="#">Riverland</a>	600 - 700km upstream from Ramsar site	In feature area
<a href="#">The coorong, and lakes alexandrina and albert wetland</a>	700 - 800km upstream from Ramsar site	In feature area

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

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Alpine Sphagnum Bogs and Associated Fens</a>	Endangered	Community may occur within area	In buffer area only
<a href="#">Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia</a>	Endangered	Community may occur within area	In feature area
<a href="#">Natural Temperate Grassland of the South Eastern Highlands</a>	Critically Endangered	Community likely to occur within area	In feature area
<a href="#">White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland</a>	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species	[ Resource Information ]
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Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Anthochaera phrygia</u> Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
<u>Botaurus poiciloptilus</u> Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
<u>Calidris ferruginea</u> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
<u>Callocephalon fimbriatum</u> Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
<u>Falco hypoleucos</u> Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<u>Grantiella picta</u> Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<u>Hirundapus caudacutus</u> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
<u>Lathamus discolor</u> Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
<u>Numenius madagascariensis</u> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<u>Polytelis swainsonii</u> Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area	In feature area
<u>Pycnoptilus floccosus</u> Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Rostratula australis</u> Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
FISH			
<u>Maccullochella macquariensis</u> Trout Cod [26171]	Endangered	Species or species habitat may occur within area	In feature area
<u>Maccullochella peelii</u> Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area	In feature area
<u>Macquaria australasica</u> Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
FROG			
<u>Crinia sloanei</u> Sloane's Froglet [59151]	Endangered	Species or species habitat may occur within area	In buffer area only
<u>Litoria booroolongensis</u> Booroolong Frog [1844]	Endangered	Species or species habitat likely to occur within area	In feature area
<u>Litoria raniformis</u> Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat may occur within area	In feature area
INSECT			
<u>Synemon plana</u> Golden Sun Moth [25234]	Vulnerable	Species or species habitat known to occur within area	In feature area
MAMMAL			
<u>Dasyurus maculatus maculatus (SE mainland population)</u> Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
<u>Nyctophilus corbeni</u> Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Petauroides volans</u>			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In buffer area only
<u>Phascolarctos cinereus</u> (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
<u>Pteropus poliocephalus</u>			
Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
PLANT			
<u>Ammobium craspedioides</u>			
Yass Daisy [20758]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<u>Amphibromus fluitans</u>			
River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat may occur within area	In feature area
<u>Caladenia arenaria</u>			
Sand-hill Spider-orchid [9275]	Endangered	Species or species habitat may occur within area	In buffer area only
<u>Pimelea bracteata</u>			
[8125]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
<u>Pomaderris cotoneaster</u>			
Cotoneaster Pomaderris [2043]	Endangered	Species or species habitat may occur within area	In buffer area only
<u>Prasophyllum petilum</u>			
Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area	In feature area
<u>Swainsona recta</u>			
Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area	In feature area
REPTILE			
<u>Aprasia parapulchella</u>			
Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area	In feature area



Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Delma impar</u> Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area	In feature area

Listed Migratory Species		[ <a href="#">Resource Information</a> ]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
<u>Apus pacificus</u> Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area

Migratory Terrestrial Species			
<u>Hirundapus caudacutus</u> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
<u>Motacilla flava</u> Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
<u>Myiagra cyanoleuca</u> Satin Flycatcher [612]		Species or species habitat likely to occur within area	In feature area
<u>Rhipidura rufifrons</u> Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area

Migratory Wetlands Species			
<u>Actitis hypoleucos</u> Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
<u>Calidris acuminata</u> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
<u>Calidris ferruginea</u> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
<u>Calidris melanotos</u> Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Gallinago hardwickii</u> Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area	In feature area
<u>Numenius madagascariensis</u> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

## Other Matters Protected by the EPBC Act

### Commonwealth Lands [\[ Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Commonwealth Trading Bank of Australia		
Commonwealth Land - Commonwealth Trading Bank of Australia [14988]	NSW	In buffer area only

Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [14986]	NSW	In buffer area only

Commonwealth Land - Australian Telecommunications Commission [14987]	NSW	In buffer area only
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### Commonwealth Heritage Places [\[ Resource Information \]](#)

Name	State	Status	Buffer Status
Historic			
<u>Tumut Post Office</u>	NSW	Listed place	In buffer area only

### Listed Marine Species [\[ Resource Information \]](#)

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
<u>Actitis hypoleucos</u> Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
<u>Apus pacificus</u> Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Bubulcus ibis as Ardea ibis</u> Cattle Egret [66521]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
<u>Calidris acuminata</u> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
<u>Calidris ferruginea</u> Curlew Sandpiper [856]		Species or species habitat may occur within area overfly marine area	In feature area
<u>Calidris melanotos</u> Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
<u>Chalcites osculans as Chrysococcyx osculans</u> Black-eared Cuckoo [83425]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In buffer area only
<u>Gallinago hardwickii</u> Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area overfly marine area	In feature area
<u>Haliaeetus leucogaster</u> White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
<u>Hirundapus caudacutus</u> White-throated Needletail [682]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
<u>Lathamus discolor</u> Swift Parrot [744]		Species or species habitat likely to occur within area overfly marine area	In feature area
<u>Merops ornatus</u> Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Motacilla flava</u> Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
<u>Myiagra cyanoleuca</u> Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area	In feature area
<u>Neophema chrysostoma</u> Blue-winged Parrot [726]		Species or species habitat likely to occur within area overfly marine area	In feature area
<u>Numenius madagascariensis</u> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<u>Rhipidura rufifrons</u> Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
<u>Rostratula australis as Rostratula benghalensis (sensu lato)</u> Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

## Extra Information

State and Territory Reserves			[ <a href="#">Resource Information</a> ]
Protected Area Name	Reserve Type	State	Buffer Status
Wereboldera	State Conservation Area	NSW	In buffer area only

Regional Forest Agreements			[ <a href="#">Resource Information</a> ]
Note that all areas with completed RFAs have been included.			
RFA Name	State		Buffer Status
<u>Southern RFA</u>	New South Wales		In feature area

EPBC Act Referrals					[ <a href="#">Resource Information</a> ]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status	
Not controlled action					
<u>Improving rabbit biocontrol: releasing another strain of RHDV.</u>	2015/7522	Not Controlled Action	Completed	In feature area	

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
<a href="#">sthrrn two thirds of Australia</a>				
<a href="#">INDIGO Central Submarine Telecommunications Cable</a>	2017/8127	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
<a href="#">1080 Surface baiting research proposal</a>	2008/3983	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
<a href="#">INDIGO Marine Cable Route Survey (INDIGO)</a>	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Referral decision				
<a href="#">New transmission infrastructure, HumeLink</a>	2021/9121	Referral Decision	Referral Publication	In buffer area only



# Caveat

## 1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

## 2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

## 3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

## 4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

# Acknowledgements

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

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

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

Please feel free to provide feedback via the [Contact Us](#) page.

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## **APPENDIX 9 – FLORA SPECIES RECORDED DURING THE FIELD SURVEY**

Common Name	Scientific Name
Silver Wattle	<i>Acacia dealbata</i>
Cape Weed	* <i>Arctotheca calendula</i>
Fleabane	* <i>Erigeron bonariensis</i>
River Red Gum	<i>Eucalyptus camaldulensis</i>
Goosegrass	* <i>Galium aparine</i>
English Ivy	* <i>Hedera helix</i>
Yorkshire Fog	* <i>Holcus lanatus</i>
Barley Grass	* <i>Hordeum glaucum</i>
Flatweed	* <i>Hypochaeris radicata</i>
Common Rush	<i>Juncus sp.</i>
Prickly Lettuce	* <i>Lactuca serriola</i>
Broad-leaf Privet	* <i>Ligustrum lucidum</i>
Rye Grass	* <i>Lolium perenne</i>
Sour Sob	* <i>Oxalis pes-caprae</i>
Couch Grass	<i>Paspalum dilatatum</i>
Kikuyu Grass	* <i>Pennisetum clandestinum</i>
Canary Island Palm	* <i>Phoenix canariensis</i>
Plantain	* <i>Plantago lanceolata</i>
Wintergrass	* <i>Poa annua</i>
Onion Grass	* <i>Romulea rosea</i>
Black Willow	* <i>Salix nigra</i>
Milk Thistle	* <i>Sonchus oleraceus</i>
Chickweed	* <i>Stellaria media</i>
Dandelion	* <i>Taraxacum officinale</i>
Hop Clover	* <i>Trifolium campestre</i>
White Clover	* <i>Trifolium repens</i>
English Elm	* <i>Ulmus procera</i>
Purple Top Vervain	* <i>Verbena bonariensis</i>

\*denotes non-native species



## **APPENDIX 10 – FAUNA SPECIES RECORDED DURING THE FIELD SURVEY**

Species Group	Scientific Name	Common Name
Amphibia	<i>Crinia signifera</i>	Clicking Froglet
Amphibia	<i>Limnodynastes tasmaniensis</i>	Spotted Marsh Frog
Amphibia	<i>Limnodynastes tasmaniensis</i>	Spotted Marsh Frog
Aves	<i>Acanthiza nana</i>	Yellow Thornbill
Aves	<i>Acanthorhynchus tenuirostris</i>	Eastern Spinebill
Aves	<i>Alisterus scapularis</i>	Australian King-Parrot
Aves	<i>Cacatua sanguinea</i>	Little Corella
Aves	<i>Chenonetta jubata</i>	Australian Wood Duck
Aves	<i>Corcorax melanorhamphos</i>	White-winged Chough
Aves	<i>Corvus coronoides</i>	Australian Raven
Aves	<i>Cracticus tibicen</i>	Australian Magpie
Aves	<i>Dacelo novaeguineae</i>	Laughing Kookaburra
Aves	<i>Grallina cyanoleuca</i>	Magpie-lark
Aves	<i>Hirundo neoxena</i>	Welcome Swallow
Aves	<i>Malurus cyaneus</i>	Superb Fairy-wren
Aves	<i>Neochmia temporalis</i>	Red-browed Finch
Aves	<i>Passer domesticus</i>	House Sparrow
Aves	<i>Phylidonyris novaehollandiae</i>	New Holland Honeyeater
Aves	<i>Platycercus elegans</i>	Crimson Rosella
Aves	<i>Sericornis frontalis</i>	White-browed Scrubwren
Aves	<i>Strepera graculina</i>	Pied Currawong
Aves	<i>Sturnus vulgaris</i>	Common Starling
Aves	<i>Turdus merula</i>	Common Blackbird
Aves	<i>Vanellus miles</i>	Masked Lapwing
Aves	<i>Zosterops lateralis</i>	Silvereye
Mammalia	<i>Oryctolagus cuniculus</i>	Rabbit

# Review of Environmental Factors

## Proposed Batlow to Wybalena Rail Trail,

A report for Tredwell | January 2023

Report No. 22.REF-075



## Citation

EnviroKey (2023) Review of Environmental Factors: Proposed Batlow to Wybalena Rail Trail. A report prepared by S. Sass for Tredwell Management Services on behalf of Snowy Valley Regional Council. Report No. 22.REF-075. Final report. Version 1. 27/01/2023

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## Disclaimer

The scope of work for this report was defined by time and budgetary constraints and the availability of other reports and data.

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## Definitions & Acronyms used within this REF

BC Act	Biodiversity Conservation Act 2016
BOS	Biodiversity Offset Scheme
EEC	Endangered Ecological Community
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FM Act	NSW Fisheries Management Act 1994
ESD	Ecologically Sustainable Development
HBT	Hollow-bearing tree
LEP	Local Environmental Plan
LGA	Local Government Area
Likely	Taken to be a real chance or possibility
Locality	The area within a 5 km radius of the proposal
Local population (migratory or nomadic fauna)	The population comprises those individuals that are likely to occur in the study area from time to time.
Local population (resident fauna)	The population comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to use habitats in the study area.
Local population (threatened flora)	The population comprises those individuals occurring in the study area or the cluster of individuals that extend into habitat adjoining and contiguous with the study area that could reasonably be expected to be cross-pollinating with those in the study area.
Migratory species	A species specified in the schedules of the EPBC Act
NES	National Environmental Significance
NP	National Park
NP&W Act	NSW National Parks and Wildlife Act 1974
NPWS	National Parks and Wildlife Service
OEH	NSW Office of Environment & Heritage
PCT	Plant Community Type
PoM	Plan of Management
Proposal	The area to be directly affected by the proposal. That is, the footprint of the proposal.
REF	Review of Environmental Factors
Region	A biogeographical region that has been recognised and documented such as the Interim Biogeographical Regions of Australia (IBRA) (Thackway and Creswell, 1995). The study area is located within the South Eastern Highlands Bioregion.
SEPP	State Environmental Planning Policy
RTF	NSW Rail Trails Framework



Subject site	The area to be directly affected by the proposal; that is, the footprint of the proposal.
Study area	The study area includes the subject site and any additional areas that are likely to be affected by the proposal, either directly or indirectly.
SVRC	Snowy Valleys Regional Council
Threatened biota	Those threatened species, endangered populations or endangered ecological communities considered known or likely to occur in the study area.
Threatened species	A species specified in the schedules of the BC Act, FM Act or the EPBC Act.

## Declaration

This Review of Environmental Factors provides a true and fair review of the proposed activity in relation to its potential effects on the environment. It addresses to the fullest extent possible, all of the factors listed in Clause 171 of the Environmental Planning and Assessment Regulation 2021.

Signed: 

Name: Steve Sass

Delegation: Director / Principal Ecologist, EnviroKey Pty. Ltd.

Date: 27 January 2023

I have examined this REF and the certification and accept the REF on behalf of Snowy Valleys Regional Council.

Signed .....

Name .....

Delegation .....

Date .....

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# 1 INTRODUCTION

EnviroKey were engaged by Tredwell Management Services (TMS) on behalf of Snowy Valleys Regional Council (SVRC) to undertake a Review of Environmental Factors (REF) to assess the environmental impacts associated with the proposed Batlow to Wybalena Rail Trail.

The proposal is for the construction and operation of a rail trail within a disused rail corridor commencing with a proposed rail trail head south of the original Batlow Railway Station and following the disused rail line north until it reaches Herrings Road, a distance of about 5.6 kilometres (**Appendix 2**). An on-road pathway along Herrings Road to the Batlow-Gilmore Road would also form part of the proposal (1.3 kilometres). The general location for this proposal is shown in **Figure 1-1**.

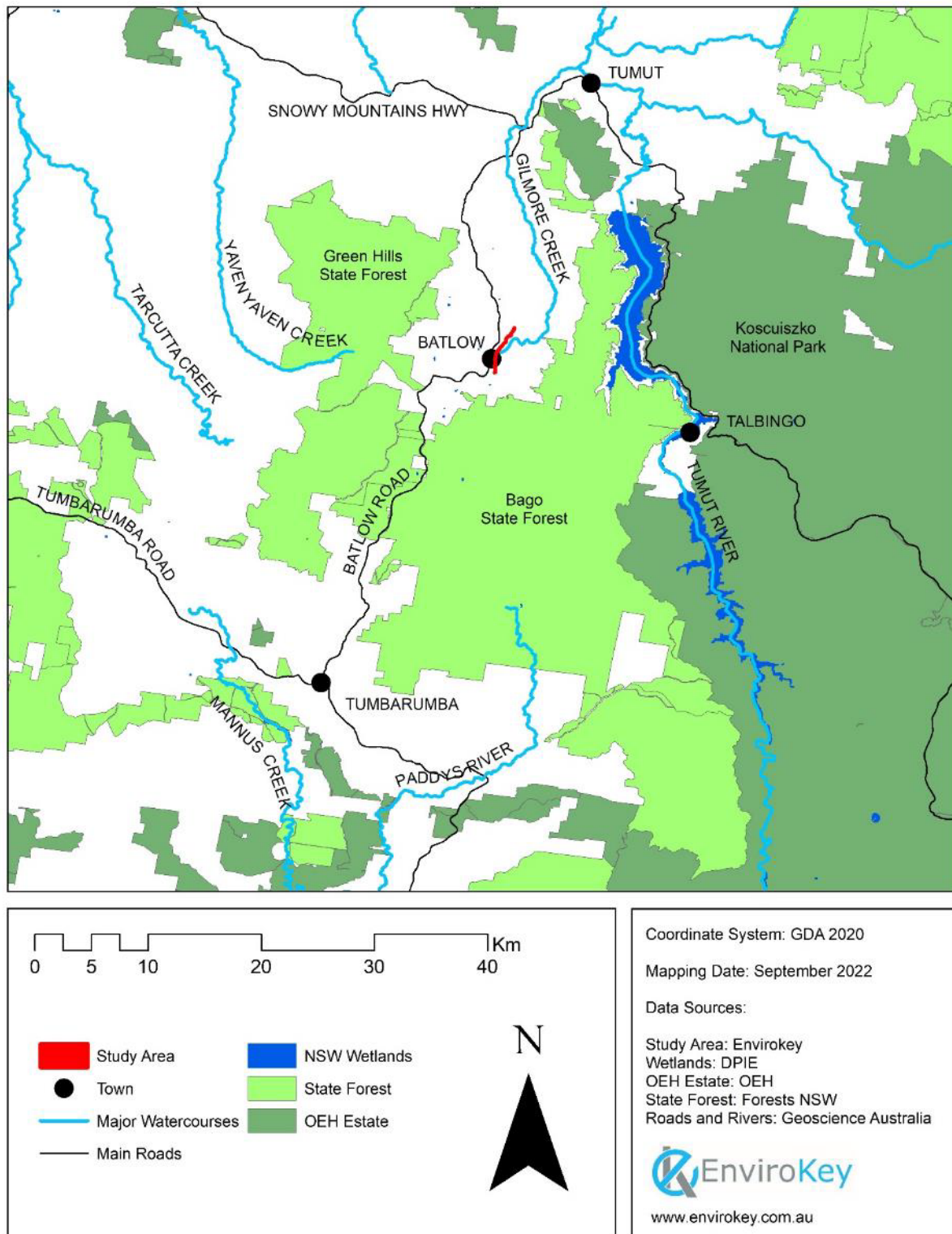
A draft Regional Tracks and Trails Masterplan for the Snowy Valleys LGA identifies the proposed Batlow to Tumut Rail Trail as an important addition to tourism in the region, particularly as an “add-on” to the existing Tumbarumba to Rosewood Rail Trail.

Accordingly, this REF:

- Describes the existing environment;
- Identifies the environmental impacts associated with the proposed activity; and
- Recommends safeguards designed to mitigate potential impacts associated with the proposed activity.

This REF has been prepared in accordance with the requirements of Section 111 of the *Environmental Planning and Assessment Act 1979* and Section 171 of the *Environmental Planning and Assessment Regulation 2021* specifying a “duty to consider environmental impact”. This REF was prepared by suitably qualified personnel with full details of these provided (**Appendix 1**).





**Figure 1-1:** General location of the proposal

## 2 PROPOSED ACTIVITY

### 2.1 STUDY AREA

The study area applied to this REF is the existing rail corridor and existing road reserve on Herrings Road. The Proposal is located within the South Eastern Highlands Bioregion (Thackway and Creswell, 1995, NPWS, 2003), Snowy Valleys local government area (LGA), Riverina Local Land Service (LLS) region and the Bondo sub-region. The proposal is located within the Adelong Granite Ranges and Carabost Hills and Ranges landscape systems (Mitchell, 2002).

### 2.2 THE PROPOSED ACTIVITY

The proposed work is as follows:

- Install adequate and suitable sediment control
- Remove railway line and sleepers
- Prepare ground including replacement of culverts where determined by an Engineer
- Construct 2.5 metre crushed gravel pathway
- Fence rail corridor where it passes through private property
- Install informative and interpretative signage
- Install trail furniture
- Construct new rail head next to Banskia Ave
- On-road pathway along Herrings Road to the Batlow-Gilmore Road
- Re-establish all non-pathway areas

The proposal is identified in **Appendix 2** of this REF.

A draft Regional Tracks and Trails Masterplan for the Snowy Valleys LGA identifies the proposed Batlow to Tumut Rail Trail as an important addition to tourism in the region, particularly as an “add-on” to the existing Tumbarumba to Rosewood Rail Trail. However, this REF and the proposal itself, considers only the 5.6 kilometre section between Batlow and Wybalena and associated infrastructure.

### 2.3 ALTERNATIVES

#### 2.3.1 *Option 1: Do nothing*

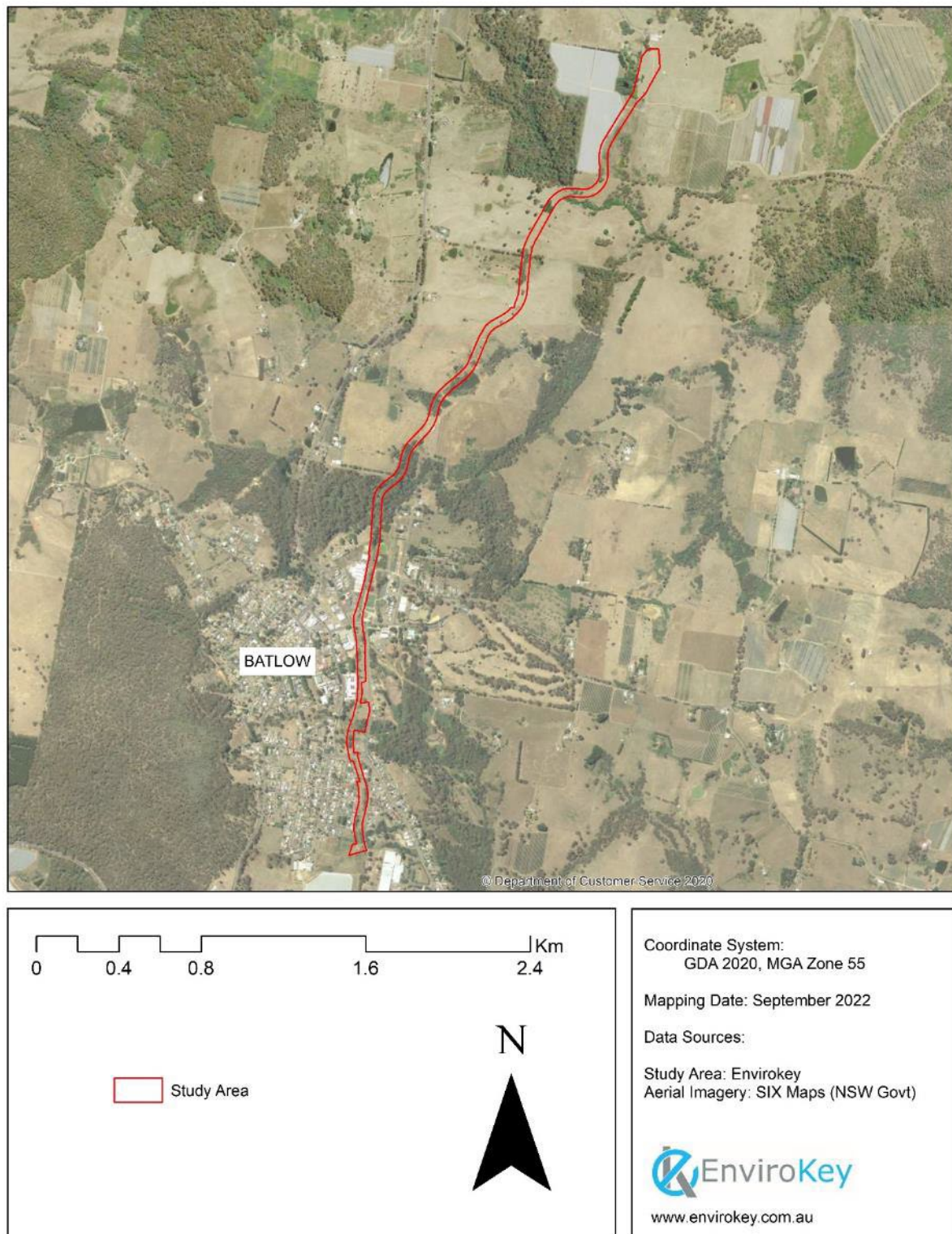
With consideration of the ‘do nothing’ approach, the objectives of the draft Snowy Valleys Regional Tracks and Trails Master Plan would not be met.

#### 2.3.2 *Option 2: Construct and operate the Batlow to Wybalena Rail Trail*

Option two is for the proposal as identified in **Appendix 2**. This option achieves the outcomes of the proposal while having minor environmental impact. A draft Regional Tracks and Trails

Masterplan for the Snowy Valleys LGA identifies the proposed Batlow to Wybalena Rail Trail as an important addition to tourism in the region, particularly as an “add-on” to the existing Tumbarumba to Rosewood Rail Trail.

**Given the benefits of Option 2, this is the preferred option for the proposal.**



**Figure 2-1: Study area applied to this REF**



### 3 LEGISLATIVE CONTEXT

This chapter provides information on Commonwealth, State and Local legislation that is relevant to the proposed activity.

#### 3.1 NSW ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) forms the legal and policy platform for development assessment and approval in NSW and aims to, inter alia, 'encourage the proper management, development and conservation of natural and artificial resources'.

The proposal will be determined by SVRC under Division 5.1 of the Act. The SRVC as the determining authority, must 'examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity' pursuant to Section 111 of the Act. Clause 171 of the *Environmental Planning & Assessment Regulation 2021* (EP&A Regulation) identifies matters that 'must be taken into account concerning the impact of an activity on the environment'.

Section 5A of the EP&A Act contains five factors to be considered by determining authorities when considering the significance of impacts on threatened biota associated with activities under Part 5 of the Act (the '5-part test'). Should the 5-part test determine that a '*significant effect*' on any threatened biota listed under the BC Act is likely, then the authority must prepare a Species Impact Statement. Species which occur or have the potential to occur in the study area have been considered in in **Appendix 3**.

The EP&A Act provides the framework for environmental planning in NSW and includes provisions to ensure that proposals which have the potential to significantly affect the environment are subject to detailed assessment.

#### 3.2 NSW RAIL TRAILS FRAMEWORK

The NSW Government recognises multiple benefits to rail trails for the community of NSW, particularly in response to the highly successful Tumbarumba to Rosewood Rail Trail, a pilot project as the first rail trail in NSW. These benefits include:

- Promoting community resilience and social connection
- Supporting economic development and tourism
- Protecting environmental, cultural and heritage assets
- Improving health through active transport

The NSW Rail Trails Framework will expedite the development of rail trails across NSW by providing proponents such as SVRC with clarity around the NSW Government's expectations



in the establishing new rail trails. The Framework has been developed by the NSW Government and the community of NSW in their interest with developing other rail trails across the state.

A REF is recognised as the suitable environmental assessment for a rail trail in Figure 1 in the Framework which identifies the planning pathway for rail trails in NSW. This REF fulfils those requirements.

### 3.3 STATE ENVIRONMENTAL PLANNING POLICY (T&ISEPP) 2021

Part 2 of the T&ISEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. This is detailed below.

<b>Is consultation with Council required under clauses 13-15 of the infrastructure SEPP?</b>		
Are the works likely to have a substantial impact on the stormwater management services which are provided by council?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works likely to generate traffic to an extent that will strain the capacity of the existing road system in a local government area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will the works involve connection to a council owned sewerage system? If so, will this connection have a substantial impact on the capacity of the system?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will the works involve connection to a council owned water supply system? If so, will this require the use of a substantial volume of water?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a minor or inconsequential disruption to pedestrian or vehicular flow?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will the works involve more than a minor or inconsequential excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

<b>Is consultation with Council required under clauses 13-15 of the infrastructure SEPP?</b>		
Is there a local heritage item (that is not also a state heritage item) or a heritage conservation area in the study area for the works? If yes, does a heritage assessment indicate that the potential impacts to the heritage significance of the item/area are more than minor or inconsequential?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works located on flood liable land? If so, will the works change flooding patterns to more than a minor extent?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

<b>Is consultation with Council required under clauses 16 of the T&amp;ISEPP?</b>		
Are the works adjacent to a national park, nature reserve or other area reserved under the <i>National Parks and Wildlife Act 1974</i> , or on land acquired under that Act?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works adjacent to an aquatic reserve or a marine park declared under the <i>Marine Estate Management Act 2014</i> ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Is the proposal in the Sydney Harbour Foreshore Area as defined by the <i>Sydney Harbour Foreshore Authority Act 1998</i> ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works for the purpose of residential development, an educational establishment, a health services facility, a correctional facility or group home in bush fire prone land?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Would the works increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map? (Note: the dark sky region is within 200 kilometres of the Siding Spring Observatory)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the works on buffer land around the defence communications facility near Morundah? (Note: refer to Defence Communications Facility Buffer Map referred to in clause 5.15 of Lockhart LEP 2012, Narrandera LEP 2013, and Urana LEP 2011).	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Is consultation with Council required under clauses 16 of the T&ISEPP?		
Are the works on land in a mine subsidence district within the meaning of the <i>Mine Subsidence Compensation Act 1961</i> ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

### 3.4 NSW WILDERNESS ACT 1987

The objectives of the NSW *Wilderness Act 1987* are:

- to provide for the permanent protection of wilderness areas;
- to provide for the proper management of wilderness areas; and
- to promote the education of the public in the appreciation, protection and management of wilderness.

The proposal is not located within an area listed under the NSW *Wilderness Act 1987*.

### 3.5 NSW BIODIVERSITY CONSERVATION ACT 2016

The *Biodiversity Conservation Act 2016* (BC Act) specifies that a Test of Significance (ToS) must be considered by decision-makers regarding the effect of a proposed development or activity on threatened species or ecological communities, or their habitats (OEH, 2018). These factors form part of the threatened species assessment process under the *Environmental Planning and Assessment Act 1979* (EP&A Act) and are collectively referred to as the ToS.

Determining authorities have a statutory obligation, under Division 5.1 of the *EP&A Act*, to consider whether a proposal is likely to significantly affect threatened species, populations or ecological communities, or their habitats by applying the ToS. This is done so within **Appendix 4**.

### 3.6 COMMONWEALTH ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) enables the Australian Government to join with the states and territories in providing a national scheme of environment and heritage protection and biodiversity conservation to ensure that actions likely to cause a '*significant impact*' on matters of national environmental significance (NES) undergo an assessment and approval process. Under the Act, an action includes a project, undertaking, development, or activity.

Under the EPBC Act, actions that have, or are likely to have a significant impact on a matter of national environmental significance (NES) require approval from the Australian Government Minister for the Department of the Environment (DotE) (DoCCEE&W, 2022).

The nine matters of NES that are protected under the EPBC Act are:

- Listed threatened species and ecological communities
- Listed migratory species
- Wetlands of international importance
- Commonwealth marine environment
- World heritage properties
- National heritage places
- The Great Barrier Reef Marine Park
- Nuclear actions
- A water resource, in relation to coal seam gas development and large coal mining development.

The Significant Impact Guidelines for the EPBC Act (DoCCEE&W, 2022) set out criteria to assist in determining whether an action requires approval and in particular, whether a proposed action is likely to have a 'significant impact' on a matter of NES.

If a proposed action is likely to have a significant impact on a matter of NES, referral of the proposal to the Department of the Environment and Energy is required to confirm whether the Commonwealth considers the proposal a 'controlled action' and subsequently requiring Minister approval under the EPBC Act.

This REF provides an assessment to ascertain whether the proposal will require referral to the Commonwealth. This assessment is provided within **Appendix 5**.

### 3.7 NSW PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997 (POEO ACT)

The POEO Act provides an integrated system of licensing for polluting activities within the objective of protecting the environment. Section 148 of this Act requires notification of pollution incidents. Section 120 of this Act provides that it is an offence to pollute waters. Schedule 1 of the POEO Act describes activities for which an Environment Protection Licence is required.

SVRC must ensure that all stages of the proposal are managed to prevent pollution, including pollution of waters. Any contractor and SVRC workers are obliged to notify the relevant authorities (e.g. Environment Protection Authority (EPA)) when a 'pollution incident' occurs that causes or threatens 'material harm' to the environment.

The proposal does not conform with the definition of a scheduled activity under this Act, therefore an Environment Protection Licence would not be required.

### 3.8 NSW HERITAGE ACT 1977

The NSW *Heritage Act 1977* defines 'environmental heritage' and can include places, buildings, works, relics, moveable objects, and precincts. A property is a heritage item if it is:

- listed in the heritage schedule of the Tumut Local Environmental Plan (LEP);
- listed on the State Heritage Register, a register of places and items of particular importance to the people of NSW; or
- listed in the National Heritage Database.

Heritage items are considered in this REF in Section 4.8.

### 3.9 STATE ENVIRONMENTAL PLANNING POLICY KOALA HABITAT PROTECTION 2021

State Environmental Planning Policy (SEPP) Koala Habitat Protection (2021) encourages the conservation and management of natural vegetation areas that provide habitat for Koalas, to ensure that permanent free-living populations would be maintained over their present range and reverse the current trend of koala population decline. Local councils cannot approve development in an area affected by the policy without consideration of the Approved Koala Management Plan for the land.

The proposal is within areas mapped as Koala Development Application Map and Site Investigation Area for Koala Plans of Management by the SEPP. However, given the nature of the proposal area and the minor impact to native and non-native vegetation, no consideration of the Koala SEPP is deemed necessary.

### 3.10 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

Ecologically sustainable development (ESD) involves the effective integration of social, economic, and environmental considerations in decision-making processes. In 1992, the Commonwealth and all state and territory governments endorsed the *National Strategy for Ecologically Sustainable Development*. In NSW, the concept has been incorporated in legislation such as the EP&A Act and Regulation. For the purposes of the EP&A Act and other NSW legislation, the Intergovernmental Agreement on the Environment (1992) and the *Protection of the Environment Administration Act 1991* outline the following principles which can be used to achieve ESD.

1. The precautionary principle: that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions can be guided by:
  - (i) careful evaluation to avoid, wherever practicable, serious, or irreversible damage to the environment, and



- (ii) an assessment of the risk-weighted consequences of various options.
- 2. Inter-generational equity: that the present generation should ensure that the health, diversity, and productivity of the environment are maintained or enhanced for the benefit of future generations.
- 3. Conservation of biological diversity and ecological integrity: that conservation of biological diversity and ecological integrity should be a fundamental consideration.

The aims, structure and content of this REF are guided by these principles. The precautionary principle has been adopted in the assessment of impact; all potential impacts have been considered and mitigated where a risk is present. Where uncertainty exists, measures have been suggested to address it.

## 4 ENVIRONMENTAL ASSESSMENT

### 4.1 BIODIVERSITY

#### 4.1.1 *Database searches*

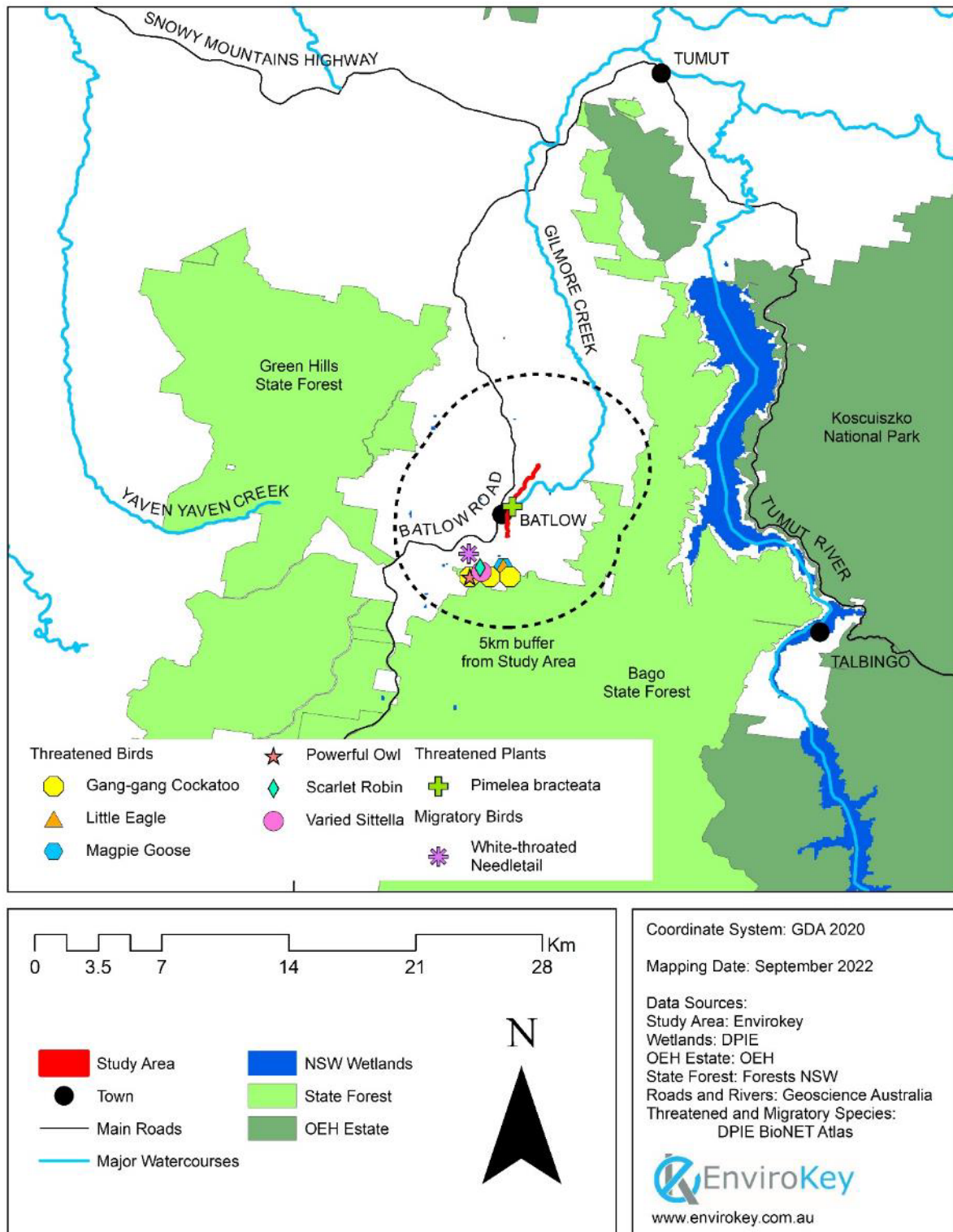
Background research was carried out to collect and review information on the presence or likelihood of occurrence of:

- Threatened terrestrial and aquatic species and their habitat
- Threatened ecological communities
- Important habitat for migratory species
- Areas of outstanding biodiversity value.

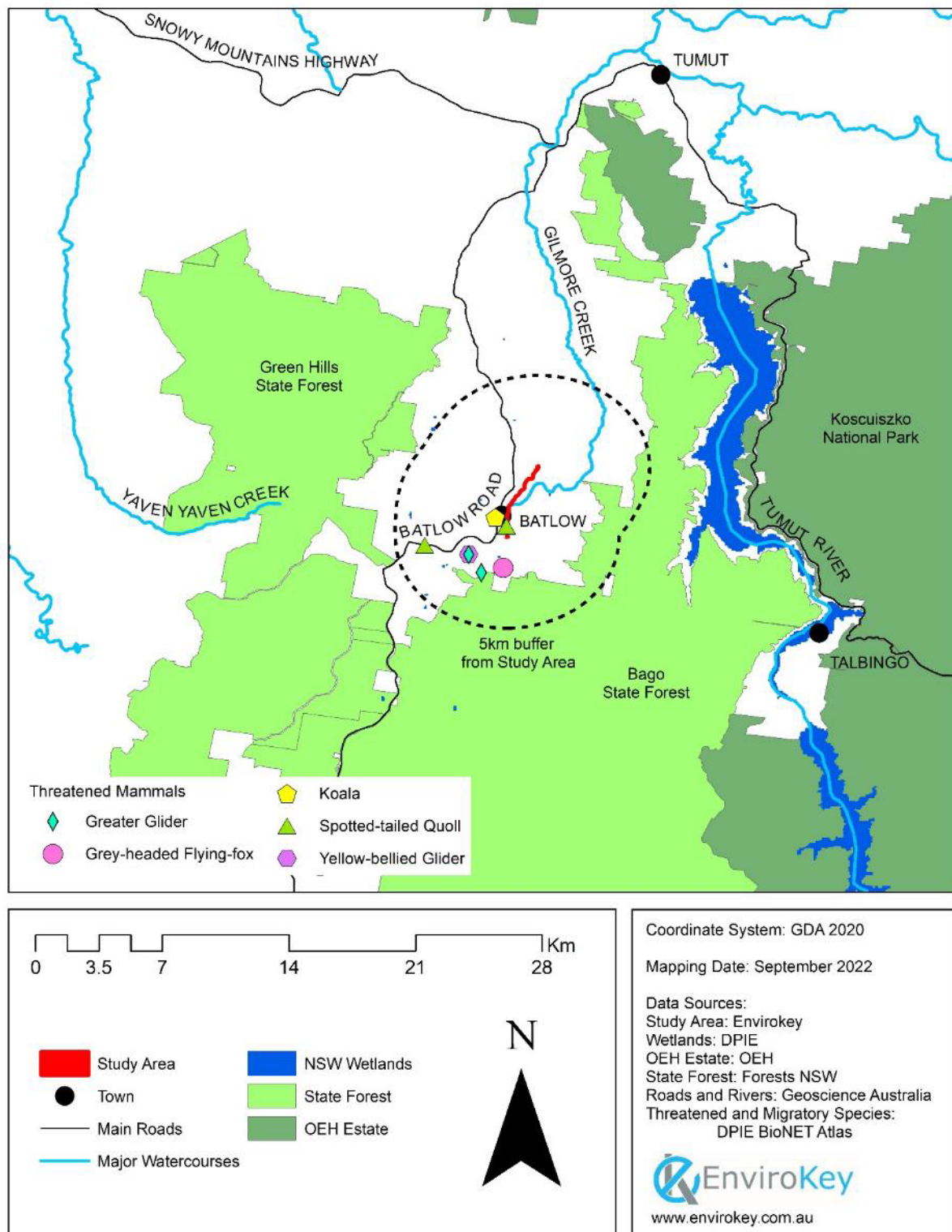
The following databases and information sources were reviewed:

- BioNet - the website for the Atlas of NSW Wildlife and Threatened Biodiversity Data Collection (TBDC) – searched [September 2022]
- BioNet Vegetation Classification database – reviewed [September 2022]
- Department of Agriculture, Water, and the Environment (DAWE) Protected Matters Search Tool – searched [September 2022]
- NSW DPI Fisheries Spatial Data Portal
- NSW State Vegetation Type Map

These searches identified records of threatened and migratory species as well as the NSW State Vegetation Type (SVT) mapping. This data is provided in **Figure 4-1-3**.

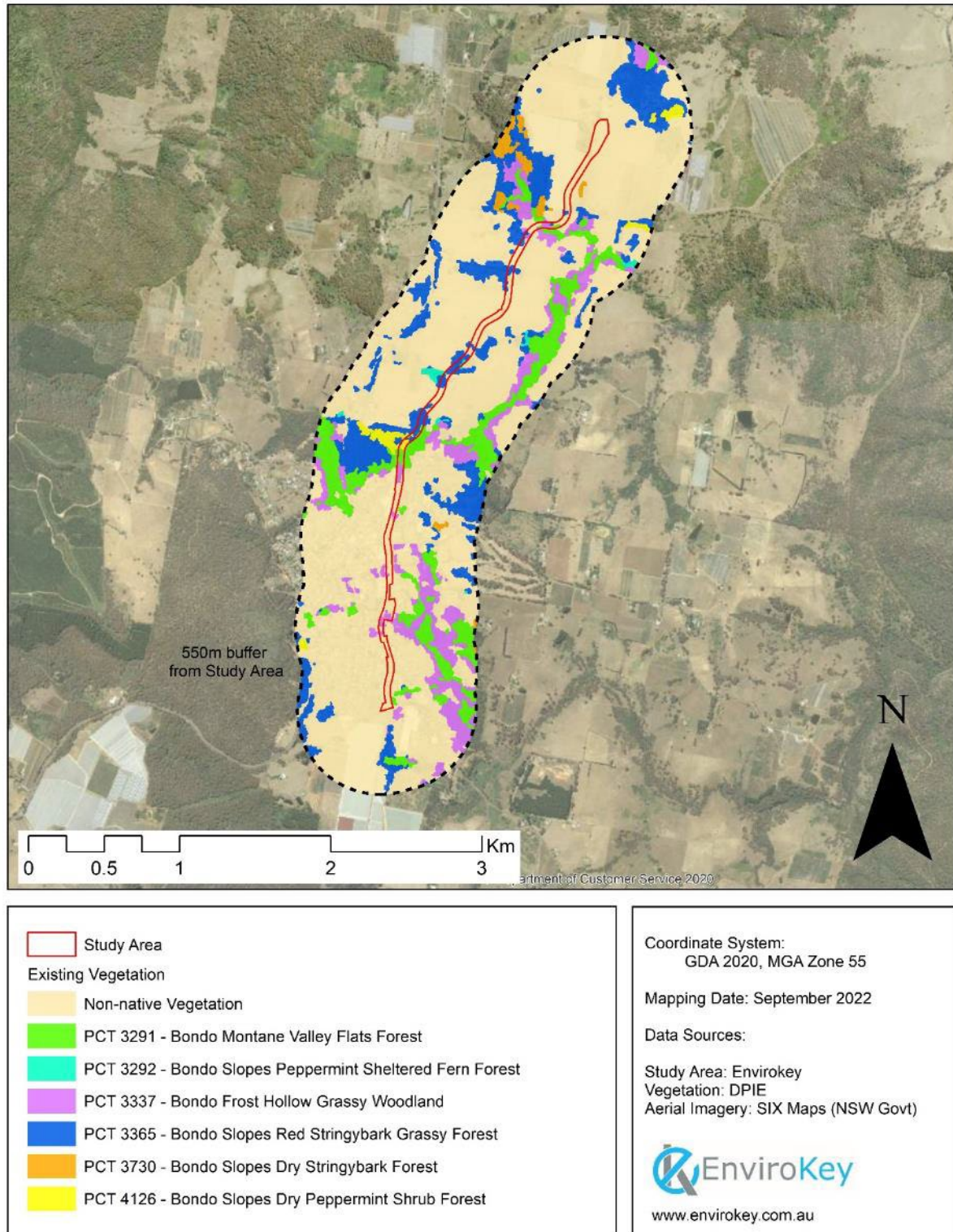


**Figure 4-1:** Existing records of threatened species within the locality



**Figure 4-2:** Existing records of threatened species within the locality





**Figure 4-3:** Existing vegetation community mapping from the NSW State Vegetation Type map



#### 4.1.2 Existing Environment

The existing environment is characterised by woodland and open forest, as well as Cleared/highly disturbed land and native tree plantings. The native vegetation within the study area is consistent with two plant community types (PCT) and a third being an ecotonal occurrence (that is showing characteristic species of more than a single community). These being:

- PCT 3291 Bondo Montane Valley Flats Forest
- PCT 3291 ecotonal with PCT 4130 / Bondo Montane Valley Flats Forest ecotonal with Dry Peppermint Shrub Forest
- PCT 3337 Bondo Frost Grassy Woodland

Cleared/highly disturbed land is widespread within the study area. Native tree plantings were also present.

Given that the rail corridor has been disused for many decades, the vegetation in many places has regenerated and is growing within the tracks. However, overall, the vegetation in the study area is in moderate to good condition with the exception of the areas of PCT 3337 near the Batlow Railway Station which was heavily weed infested. There was a complete paucity of hollow-bearing trees noted, but as the rail corridor north of the Reedy Flat Creek could not be surveyed in detail, it is uncertain if any HBT are present in those portions. However, since the 2019/2020 Black Summer Fires, any HBT that remains in the landscape is considered to be potentially high value of this habitat for hollow-dependant fauna such as the nationally listed Greater Glider, a species that is known from the Batlow area post-fire.

The flora and fauna species recorded are consistent with those expected in the landscape around Batlow (**Appendix 10 and 11**).

#### Threatened and Migratory Fauna

One threatened fauna species listed under the BC Act and EPBC Act was recorded during the field survey. This being the Gang-gang Cockatoo. A pair was observed flying across the study area and this is not surprising given their known presence in the Batlow region. Previously recorded sightings of threatened species indicate that some species frequent the areas adjacent to the proposal. **Appendix 3, 4 & 5** details threatened species and an analysis of their potential to be impacted by the proposal.

#### Threatened Flora Species

No flora species listed under the BC Act or the EPBC Act were found within the proposal footprint. However, a previous record for *Pimelea bracteata* occurs near Reedy Flat Creek, adjacent to Wakehurst Ave (DPIE/BCS, 2022a). However, a search in this general vicinity could not locate this species. It should be noted that there a number of dwellings in this area and therefore private property which could not be accessed. No individuals of this plant were recorded in the rail corridor around the Reedy Flat Creek crossing.

## Threatened Ecological Communities

PCT 3291 and the ecotonal occurrence of PCT 3219 are both consistent with the threatened ecological community (TEC), Tablelands Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregion (DPIE/OEH, 2022). Tableland Basalt Forest is dominated by an open eucalypt canopy of variable composition. *Eucalyptus viminalis*, *E. radiata*, *E. dalrympleana* subsp. *dalrympleana* and *E. pauciflora* may occur in the community in pure stands or in varying combinations. The TEC typically occurs on loam or clay soils associated with basalt or, less commonly, alluvium, fine-grained sedimentary rocks, granites and similar substrates that produce relatively fertile soils.

## Limitations

A common limitation of many studies is the short period of time in which they are conducted or the season they are conducted in. When combined with a lack of seasonal sampling this can lead to either low detection rates or false absences being reported. This is also particularly relevant to highly mobile species that may not have been in the study area at the time of the survey. Given this, further analysis was conducted to evaluate which threatened and migratory biota were likely to occur within the vicinity of the proposed activity proposed activity based on the presence of habitat. This is detailed within **Appendix 3**.

Access to the rail corridor north of Reedy Flat Creek was limited. Permission from landholders had not been received by the time of the field survey. However, Councillor Sam Hughes made arrangements for our field staff to have a guided visit to the property north of Reedy Flat Creek. While this visit was beneficial, no actual field surveys could be conducted due to the limited time granted by the landowner. For all land north of Reedy Flat Creek, this REF relies on a combination of air photo interpretation, photos from Councillor Sam Hughes from a previous site visit and limited inspections as described above. Additionally, some areas within the town limits were behind locked gates and unable to be inspected (see **Table 4-1** for example).

**Table 4-1:** Examples of vegetation and habitat within the vicinity of the proposal.















#### 4.1.3 *Impact Assessment*

There are a number of known and potential impacts that could occur as a result of the proposal. A clearing width of 3 metres along the rail corridor was used to estimate construction impact and for the purpose of calculating impacts for this REF. On this basis, the proposal would result in the potential removal of 1.33 hectares of native and non-native vegetation as follows:

- PCT 3291 Bondo Montane Valley Flats Forest (0.1 hectares)
- PCT 3291 ecotonal with PCT 4130 / Bondo Montane Valley Flats Forest ecotonal with Dry Peppermint Shrub Forest (0.3 hectares)
- Cleared/highly disturbed land (0.93 hectares)

On this basis, impacts to native vegetation are limited to 0.4 hectares.

The proposed impact is minor in nature and the potential impacts to biodiversity are manageable with appropriate safeguards.

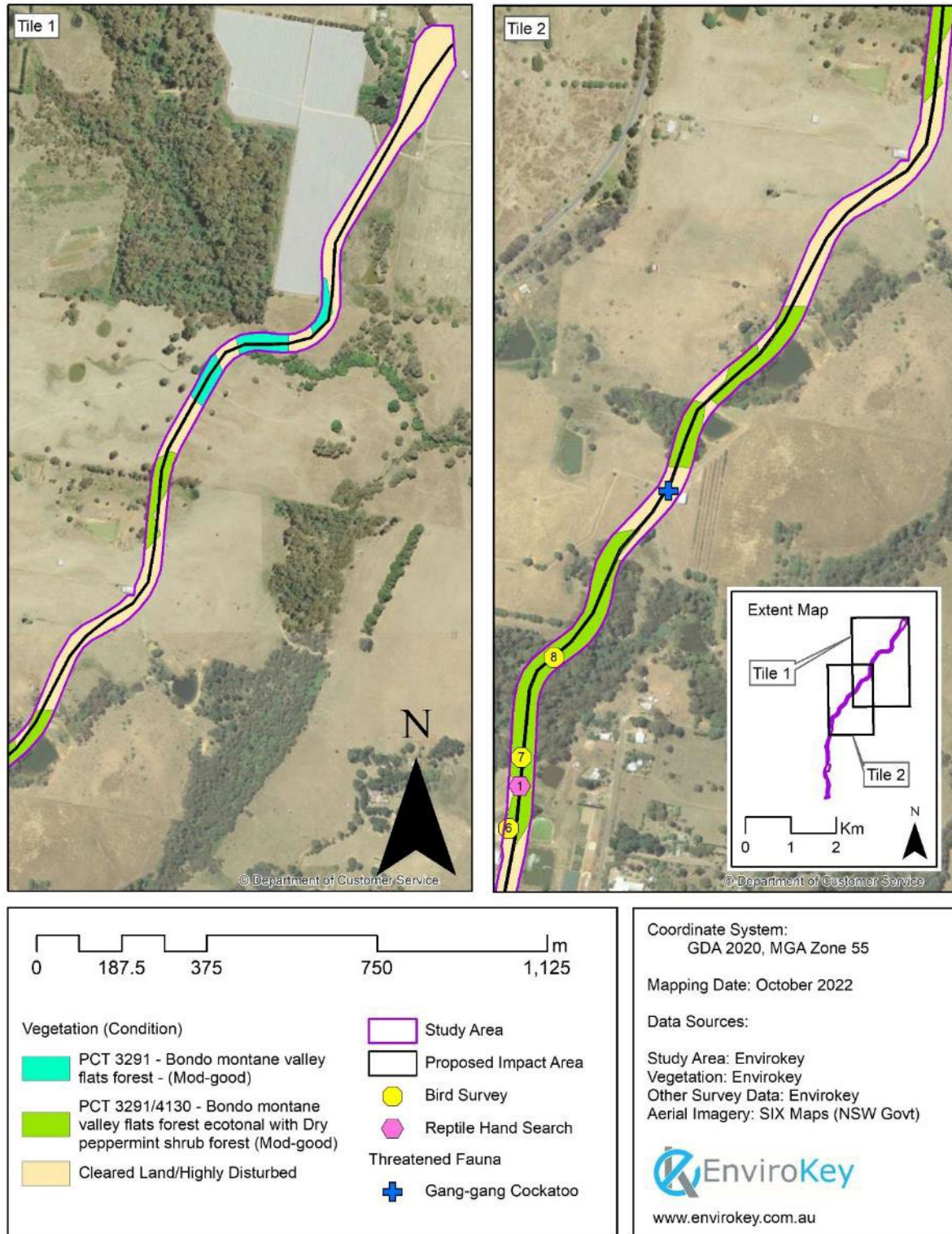


Significance Assessments completed in accordance with the BC Act and EPBC Act have determined that it is 'unlikely' that the proposed activity will have a significant effect on threatened species, populations, communities, and their habitats (**Appendix 4 & 5**).

#### 4.1.4 Proposed Safeguards

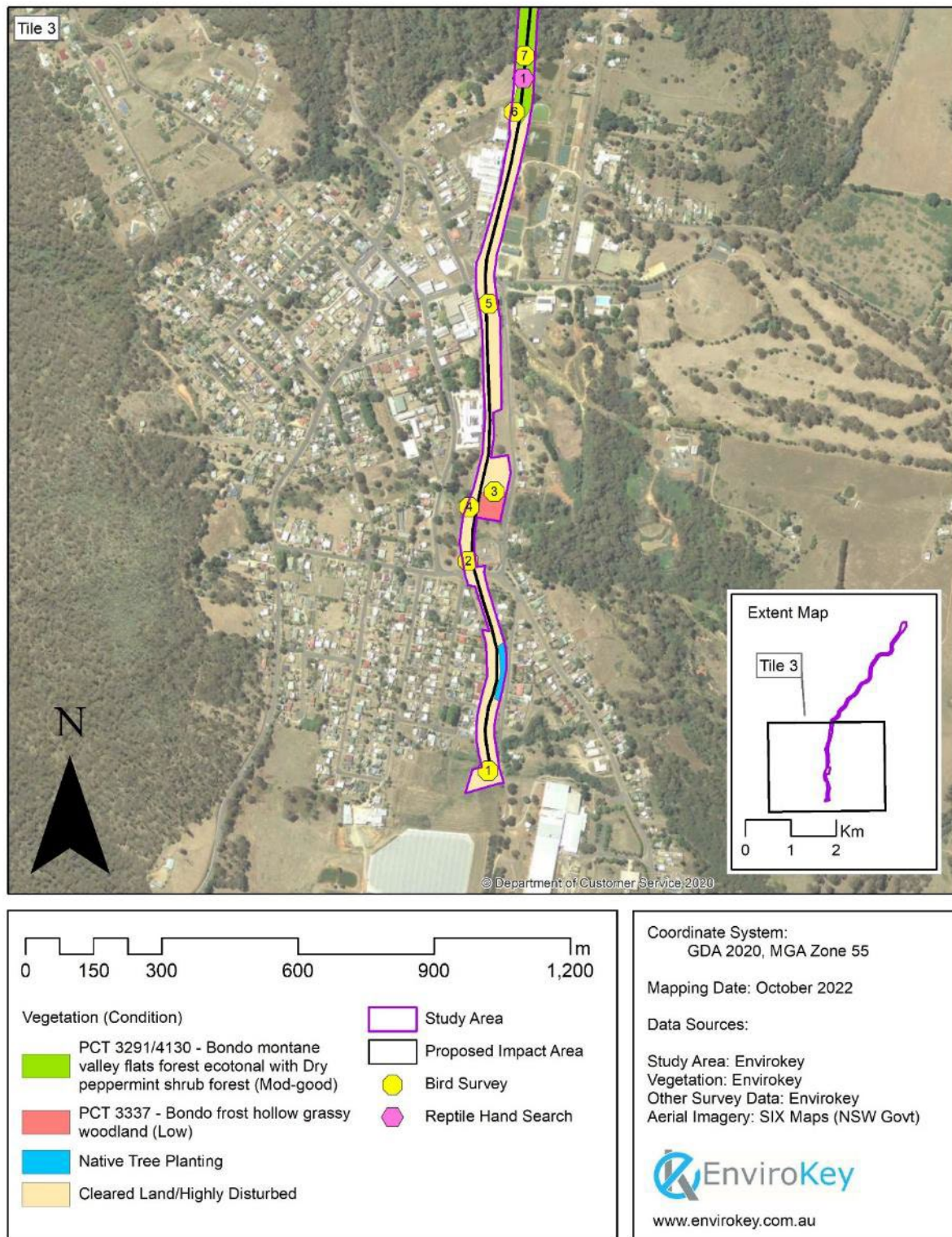
EnviroKey recommend the following safeguards:

- Additional flora assessment of the northern section of the rail corridor is required to ensure no threatened flora are present within the corridor. From the point north of Lot 67, DP 1178759 to the end of the proposal would be required. This target survey would focus on the presence/absence of the threatened plant *Pimelea bracteata*. The REF would be updated at the conclusion of that survey once access can be arranged by SVRC.
- Construction activities should not occur during intense rain events or in a predicted extended rain event.
- Erosion and sediment control plan should be established and maintained to avoid sediment runoff during any vegetation clearing and construction and should only be removed once the ground is stabilised.
- Erosion and sediment controls would be in position prior to the proposed activity commencing and left *insitu* for as long as necessary for the site to become stabilised. However, should these controls begin to deteriorate and lose functionality; they are to be replaced immediately.
- No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.
- There must be no release of dirty water into drainage lines and/or waterways.
- All fuels, chemicals and liquids are to be stored in an impervious bunded area or containers.
- An emergency spill kit must be kept on site at all times and maintained throughout the construction work. The spill kit must be appropriately sized for the volume of substances at the work site.



**Figure 4-4:** Vegetation communities, survey locations and threatened species within the study area (northern end)





**Figure 4-5:** Vegetation communities and survey locations within the study area (southern end)

## 4.2 LANDFORM, SOILS, HYDROLOGY AND WATER QUALITY

### 4.2.1 Existing Environment

The proposal is located within the Adelong Granite Ranges and Carabost Hills and Ranges Mitchell Landscapes (**Figure 4-6**) (Mitchell, 2002).

The Adelong Granite Ranges Mitchell Landscape is characterised by steep hills and peaks on Silurian gneissic granite and Devonian massive granite. General elevation is between 500 to 760 metres ASL. Soils are coarse loamy sand between rock outcrops, then gritty profiles developing to yellow harsh textured soils on lower slopes.

The Carabost Hills and Ranges Mitchell Landscape is a steep dipping Lower Ordovician chert, slate, lithic sandstone, shale, schist and basic volcanic rock geology between 250 and 720 metres ASL. Soils are thin red brown and red-yellow texture soils.

Several minor waterways traverse the proposal; one of these is a named waterway Reedy Flat Creek (**Figure 4-7**).

The proposal is located on an Erosional Soil Landscape. This is defined as:

*‘Soil landscapes that have been sculpted primarily by the erosive action of running water. Streams are well-defined and capable of transporting their sediment load. Soils are usually shallow (with occasional deep patches) and mode of origin is variable and complex. Soils may be either absent, derived from waterwashed parent materials or derived from in situ weathered bedrock. In many instances, subsoils have formed in situ while topsoils have formed from materials washed from further upslope. Erosional soil landscapes usually consist of steep to undulating hillslopes and may include tors, benches’*

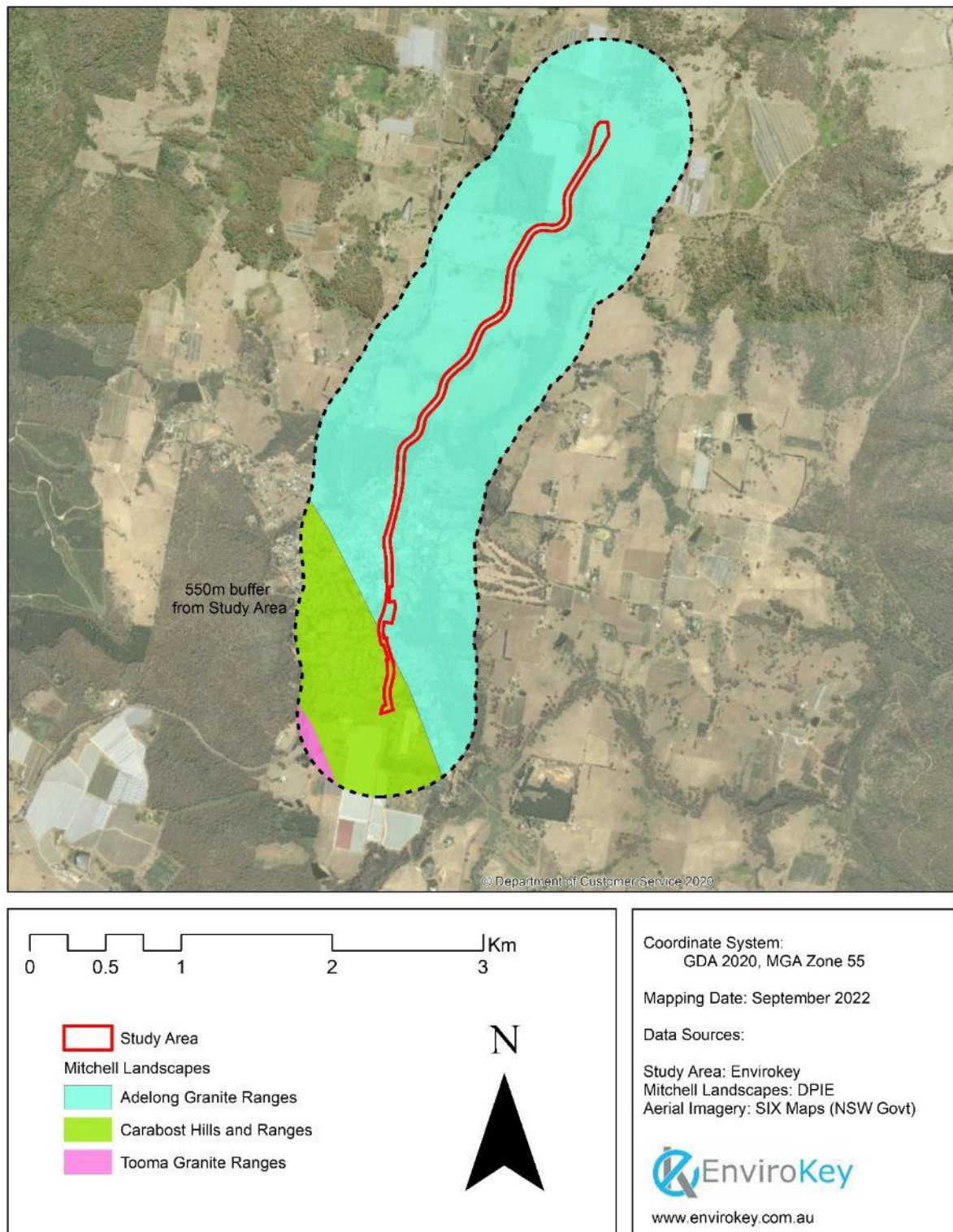
There are no occurrences or likely occurrences of acid sulfate soils within proximity of the proposal as mapped on the Acid Sulfate Soil Risk Mapping.

### 4.2.2 Impact Assessment

The proposal would result in minor earthworks, including the potential removal of up to 1.33 hectares of vegetation. During construction, disturbed areas could be subject to erosion resulting in deterioration of the existing environment and increased turbidity and a decrease in water quality entering local waterways.

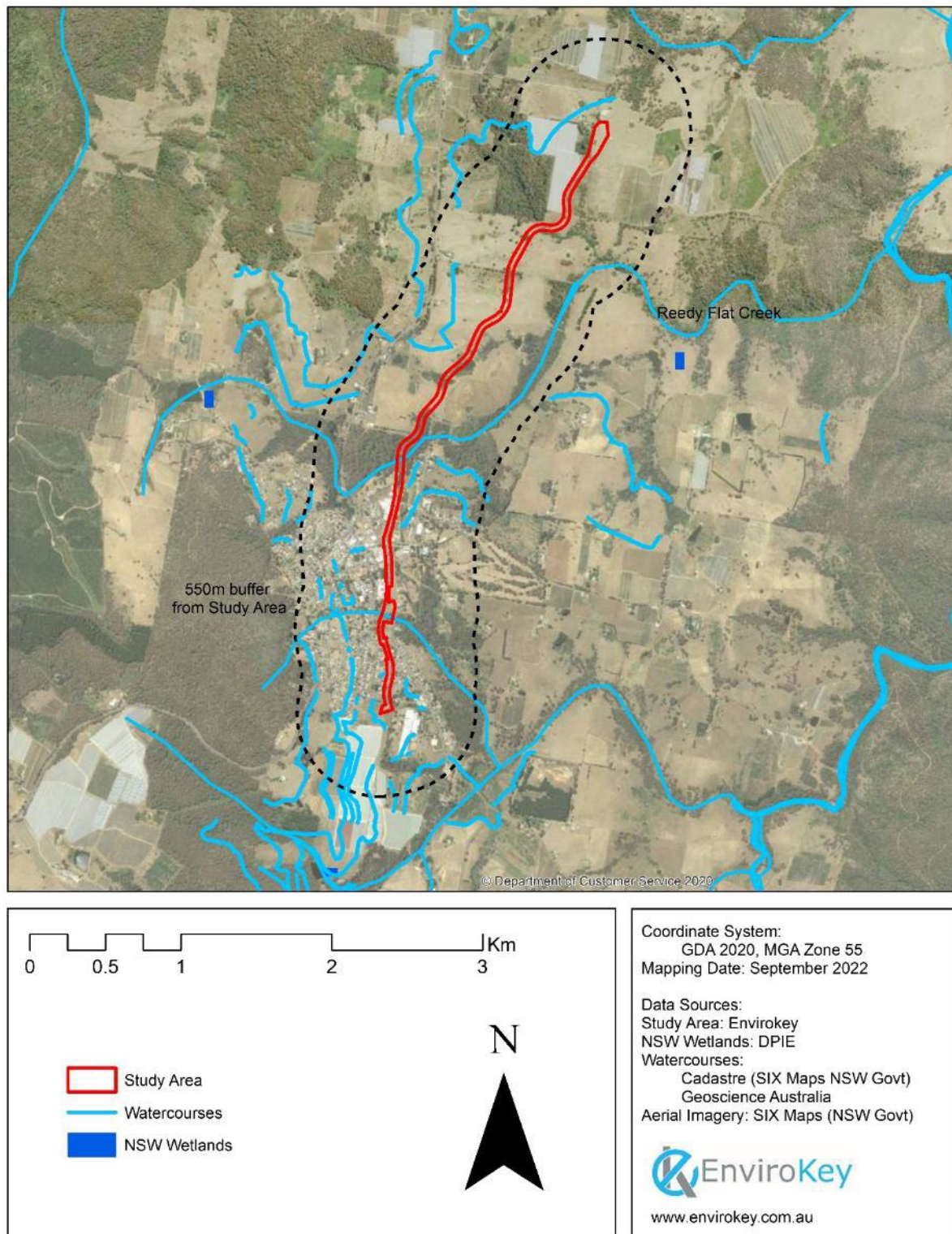
The key factor influencing the extent of sediment runoff and stormwater pollution is likely to be weather events. The occurrence of a major storm event at a critical phase of the construction period could potentially result in higher levels of turbid run-off into the waterway.





**Figure 4-6:** Mitchell landscapes in the vicinity of the proposal





**Figure 4-7: Waterways within the vicinity of the proposal**

### 4.2.3 Proposed Safeguards

EnviroKey recommend the following safeguards:

- To manage erosion and sedimentation during construction, a sediment and erosion control plan shall be prepared. Erosion and sediment control practices should follow the recommendations and checklists outlined in:
  - *Managing Urban Stormwater: Soils and Construction Volume 1* (NSW, 2006)
  - *Managing Urban Stormwater: Soils and Construction – Installation of Services Vol 2A* (DECC, 2007)
- Rehabilitate exposed bare ground at the completion of the work.
- Erosion and sediment controls would be in position prior to proposed activity commencing and left *insitu* for as long as necessary for the site to become stabilised. However, should these controls begin to deteriorate and lose functionality; they are to be replaced immediately.
- No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.

## 4.3 NOISE AND VIBRATION

### 4.3.1 Existing Environment

While no recording or ongoing monitoring of acoustic qualities has been completed, the proposal area is located in a setting expected to consist of minor levels of moderate background noise including livestock, people, machinery and vehicles. This would vary in the context of residential and commercial buildings and activities within Batlow town limits but would still be considered moderate.

### 4.3.2 Impact Assessment

The proposal would result in noise and vibration from construction equipment such as machinery and vehicles. It is expected that noise and vibration would vary during the construction period. The proposed activity would not involve any blasting or drilling.

Upon completion, noise and vibration associated with construction activity would cease. During operation, and the distance of receivers away from the proposal, it is more than likely that potential impacts would be minor and inconsequential.

### 4.3.3 Proposed Safeguards

EnviroKey recommend the following safeguards:

- Construction activity would be restricted to the following standard working hours:
  - Monday-Friday: 7:00am to 6.00pm

- Saturday: 8.00am to 1.00pm
  - Sunday and Public Holidays: no work
- Should the proposed work be outside of standard working hours, additional mitigations measures may be required.
- Completion of the proposed work in the minimum timeframe practicable.
- Noise output would be minimised through the use of modern equipment that is regularly maintained.
- Machinery engines would be switched off, minimising noise emissions, rather than being left idling for long period.

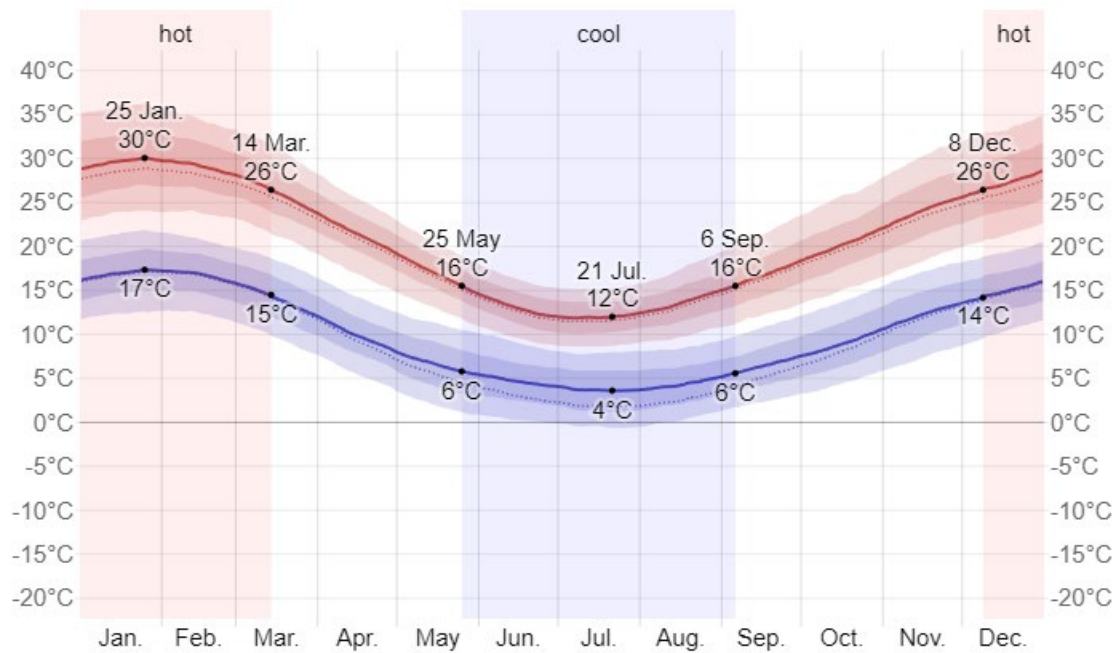
## 4.4 CLIMATE AND AIR QUALITY

### 4.4.1 *Existing Environment*

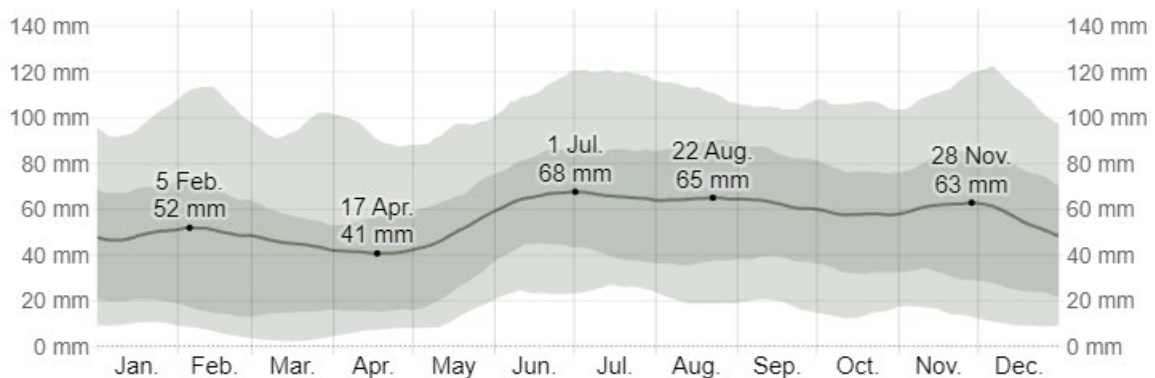
Climatic data was sourced from the closest official weather station located at Tumut. The hottest month of the year is January, with an average high of 30°C and a low of 17°C. The coldest month is July with an average low of 4°C and a high of 12°C (**Figure 4-8**). Rain falls throughout the year in Tumut. The month with the most rain is July, with an average rainfall of 66 millimetres while April has the least monthly rainfall with an average of 41 millimetres.

The most recent State of the Environment Report identified the Snowy Valleys LGA as having 'very good' air quality and that the contamination occurs mostly from motor vehicles and smoke from bush fires and hazard reduction activities.

Air quality in the study area is likely to be high considering its location away from primary sources of air containments such as heavy industry and major traffic areas.



**Figure 4-8:** Average Temperature data for the Tumut Weather Station (courtesy of WeatherSpark)



**Figure 4-9:** Average Rainfall data for the Tumut Weather Station (courtesy of WeatherSpark)

#### 4.4.2 Impact Assessment

##### Construction Impact

Local air quality has the potential to decrease slightly during the construction phase should the generation of dust and fine particulate matter during earthworks and when potential

vegetation clearing occurs. Emissions would also be generated during the operation of equipment, such as excavators, heavy machinery, and motor vehicles. These negative impacts would be restricted to the construction period and are considered negligible given the location of the site in the local context.

### Post Construction Impact

There is no post construction impact anticipated.

#### 4.4.3 *Proposed Safeguards*

EnviroKey recommends the following safeguards:

- Any stockpiles with the capacity to cause dust should be dampened or otherwise controlled to suppress dust.
- Trucks carrying loads of material such as soil, road base, gravel or spoil should be covered.
- All machinery should be periodically inspected and maintained to ensure minimum levels of emissions.
- Machinery engines should be switched off, rather than left idling for long periods.

## 4.5 VISUAL IMPACT

### 4.5.1 *Existing Environment*

The existing environment comprises residential and commercial areas, forested areas, and open farmland. Examples of the general setting are provided in **Table 4-1**.

### 4.5.2 *Impact Assessment*

Unmanaged, visual values may be comprised of damage to retained vegetation and the invasion of exotic flora, refuse from construction and hap-hazard storage of machinery. The main visual impacts that would occur as a result of the proposed work are:

- The potential removal of a relatively small area of native and non-native vegetation (about 1.33 hectares).
- The excavation/importation of soil/fill if required for the proposal. These impacts are considered temporary as all disturbed areas would be stabilized following the completion of construction.
- The influx of machinery. This impact is unavoidable and is only relevant during the construction period.



### 4.5.3 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- The proposed work area should be kept clean and orderly at all times, ensuring that no waste is left at the site following completion of the proposed work.
- Machinery and equipment storage should be conducted in a single location, where possible.
- Temporary sediment controls should be removed from the site once it is stabilised.

## 4.6 SOCIO-ECONOMIC IMPACT

### 4.6.1 *Existing Environment*

The proposal is located within the Batlow township and surrounding agricultural areas. Agricultural holdings comprises of livestock and horticultural production and these industries are important contributors to the Batlow community. It is possible that the proposal passes through some properties with biosecurity certification and management practices.

### 4.6.2 *Impact Assessment*

It is anticipated that there would potentially be minor delays to road users in the vicinity of the proposal during the construction period. However, these would be short in duration and related mainly to times when access for large machinery or trucks is required into the proposal works area. These delays are unlikely to exceed five minutes and appropriate signage (to SVRC standards) would be installed during the construction period to inform road users of potential traffic delays. Further, no disruption to property access would occur during the construction period.

The proposal may also have the potential to impact on the safety of the public and workers. Construction sites are known to have an inherent risk to workers and the general public using areas within or adjacent to such sites. However, these impacts would be temporary, occurring only during the construction period and would be mitigated by appropriate safeguards.

There is potential for the proposal to present a biosecurity risk, particular for those landholders that are already biosecurity certified. In these instances, safeguards to reduce the risk of rail trail users entering neighbouring properties is appropriate. This is also likely to be a risk during the construction period with machinery, vehicles and persons regularly entering and existing the rail corridor. Chytrid fungus grids should be incorporated into the rail trail design, as used in national parks to protect endangered frogs from a waterborne fungus (often moved around in mud and dirt). These should be installed at the entrances to any land that the proposal traverses that is already biosecurity certified (see **Figure 4-10**).

Once completed, the proposea is expected to be of positive benefit by increasing visitation to the region, along with improved health benefits within the community.



**Figure 4-10:** Chytrid grid to help walkers and riders remove mud and dirt from them before entering tracks (this one is located on the Lower Thredbo Valley Track in Kosciuszko National Park).

#### 4.6.3 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- Potential hazards should be minimised by ensuring that the proposed works are completed in accordance with relevant SVRC standards and WHS requirements.
- Dial Before You Dig MUST be consulted to ensure that the locations of all underground services are known PRIOR to excavation commencing. Appropriate actions must be

formulated by the Project Manager and Site Supervisor to minimise the risk of these services becoming disrupted.

- Construction activity would avoid weekends and public holidays where possible.
- The proposed works would be completed in the minimum timeframe practical.
- For operation of the proposal, chytrid grids should be installed at the trackheads, as well as the external boundaries of biosecurity certified properties, to minimise the risk of biosecurity impacts.

## 4.7 ABORIGINAL HERITAGE

### 4.7.1 Approach

To consider whether there are any Aboriginal heritage items within the vicinity of the proposed work, a search of the Aboriginal Heritage Information Management Systems (AHIMS) maintained by OEH was conducted (**Appendix 6**). An assessment with consideration of the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* was also conducted (section 4.7.2).

### 4.7.2 *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*

The purpose of the code of practice is to assist individuals and organisations (such as SVRC) to exercise due diligence when carrying out activities that may harm Aboriginal objects and to determine whether they should apply for consent in the form of an Aboriginal Heritage Impact Permit (AHIP) (DECCW, 2010). In the context of protecting Aboriginal cultural heritage, due diligence involves taking *reasonable and practical measures* to determine if an action will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm.

A search of the Aboriginal Heritage Information Management Systems (AHIMS) maintained by OEH found no Aboriginal objects within the vicinity of the proposal, potentially suggesting a landscape of lower significance to Aboriginal people (**Appendix 6**).

The NPW regulation removes the need to follow the due diligence process if you are carrying out a specifically defined low impact activity. Clause 80B (4) identifies exemptions based on carry out an activity on land that is disturbed, in that human activity has changed the lands surface, with changes that remain clear and observable. The entire rail corridor has had significant alterations to the natural land surface, particularly during construction of the cuttings and embankments. Clause 4 (c) acknowledges that the previous construction of trails and tracks may have disturbed the land. The Batlow to Tumut railway construction resulted in significant alteration to the surface of the land.

On that basis, a due diligence assessment is not required. SVRC can proceed with caution, and if Aboriginal objects are later found during construction, all work must stop, and OEH notified.

#### 4.7.3 *Proposed Safeguards*

With consideration of the document '*Due Diligence Code of Practice for the protection of Aboriginal Objects in New South Wales*' the following safeguards are proposed:

- During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any Aboriginal objects.
- If human skeletal remains are found during the activity, work must stop immediately, secure the area to prevent unauthorised access and contact NSW Police and OEH.
- If potential material is identified, construction activities proximal to the potential material would cease and the NSW OEH will be contacted immediately to determine appropriate management. Notification procedures can be found at [www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm](http://www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm) The NPW Act requires that, if a person finds an Aboriginal object on land and the object is not already recorded on AHIMS, they are legally bound under s.89A of the NPW Act to notify NSW Heritage as soon as possible of the object's location. This requirement applies to all people and to all situations, including when you are following the Due Diligence Code.

### 4.8 HISTORIC HERITAGE

#### 4.8.1 *Approach*

To consider whether there are any historic heritage items within the vicinity of the proposed activity, a search for items of Commonwealth, State and Local significance was completed. This involved a review of the Tumut LEP and the ESpatial Planner through the DPE. In addition, searches for any items that were potential relics as defined by the NSW *Heritage Act* 1977, were also undertaken during the site analysis.

#### 4.8.2 *Results*

The desktop analysis identified numerous heritage items in the Batlow township. However, none are located within or directly adjacent to the existing rail corridor. No items of potential heritage significance were identified during the site analysis.

The results of the database searches are provided within **Appendix 7**.

#### 4.8.3 *Potential Impacts*

No heritage items were identified within the vicinity of the proposal; therefore, no potential impacts are anticipated as a result of the proposed work.

#### 4.8.4 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any item that could be of historic heritage.
- If potential material is identified (other than that detailed within this REF), construction activities proximal to the potential material would cease and the NSW Heritage Office will be contacted immediately to determine appropriate management.

### 4.9 TRAFFIC MANAGEMENT

#### 4.9.1 *Existing Environment*

The MR85 Tumut Road from Batlow is a major transport route in the district. Numerous local roads traverse the rail corridor, or run parallel to it within Batlow township. Although there are currently no road usage figures for these roads, visual observations during the field survey suggest that increased vehicular movements occur during morning and afternoon periods.

The proposed on-road path on Herrings Road is a minor local road, with occasional agricultural traffic and local traffic from residences on Herring Road and Stewarts Road.

#### 4.9.2 *Impact Assessment*

During the construction period, it is anticipated that potential delays to road users would be expected as one lane of the road would need to be closed to allow for machinery access to the site in some instances. These delays would be temporary and in most cases would not exceed five minutes. The road would then be fully open to local traffic again. There is the potential for vehicle collisions with machinery and other traffic during construction period however this possibility would be considered very low. There is unlikely to be any impacts to MR85.

Post construction, appropriate signage and bollards would be required to ensure the safety of path users, road users and users to farm driveways.

#### 4.9.3 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- A traffic management plan (to prepared by SVRC) would be implemented, which would include the use of signs, barriers, temporary speed zones and traffic control for the duration of the proposed works.



- Access to all properties and residences would be maintained. Where this is not possible, SVRC would liaise directly with affected residences and business to develop an appropriate strategy.
- The proposed works would be completed in accordance with WHS legislation.
- Construction would avoid weekends and public holidays where possible.
- The proposed works would be completed in the minimum timeframe practical.
- Post construction, appropriate signage and bollards would be required to ensure the safety of path users, road users and users to access driveways.

## 4.10 WASTE MINIMISATION AND RESOURCE MANAGEMENT

### 4.10.1 *Impact Assessment*

The proposed activity is expected to result in the following waste, some of which would be able to be recycled or reused:

- Old railway lines and railway sleepers
- Mulched vegetation
- Priority weed waste
- Paper and office waste from project management activities.
- General construction waste such as concrete, steel and plastic.
- Waste from staff and construction personnel (food, packaging, portable toilets).
- Minor amounts of vegetation including weeds.

The proposal would result in the use of a number of resources, including;

- Any materials to construct the rail trail
- Sediment fencing
- Water
- Resources associated with the operation of construction machinery and motor vehicles

The majority of resources to be used for the proposal are non-renewable and have the potential to affect climate and air quality. Air quality are addressed in Section 4.4 and safeguards to minimise these impacts are proposed.

There are likely to be minor amounts of rubbish to be generated by rail trail users.

### 4.10.2 *Proposed Safeguards*

EnviroKey recommend the following safeguards:

- The provision of appropriate garbage and recycling receivers during construction and operation.

- Waste stored on site would be held in appropriate skips or bundled into stockpiles and covered where appropriate. Transport of materials from the construction site to sites of reuse or disposal would be done using covered trucks.
- Dispose of material at an appropriate waste disposal/recycling facility where re-use or storage options are not available.
- Excess soil material exported from the site would be available for reuse or will be disposed of at an appropriate facility.
- In the event of any oil waste occurring on-site, this would be collected and transported to the nearest oil recycling facility.

## 4.11 CUMULATIVE IMPACT

### 4.11.1 *Negative Cumulative Impacts*

A number of actions as a result of the proposed works would have a minor negative cumulative impact. These include:

- Social impacts during the construction period based on minor traffic disruptions, dust, and noise.
- Biodiversity impacts resulting from aquatic habitat disturbance, soil disturbance and potential minor clearing of vegetation.
- Greenhouse gas emissions from the use of machinery, equipment, and vehicles during the construction period.
- The use of resources such as gravel, cement, tar-sealing, and fossil fuels.

Generally, negative cumulative impacts associated with the proposed activity would be confined to the construction period. Proposed safeguards provided within the REF confirm that risks from potential impacts are both low and able to be managed.

### 4.11.2 *Positive Cumulative Impacts*

Positive cumulative impacts as a result of the proposed works are expected to be:

- Improved visitor experiences in the region
- Increased health benefits to any users of the rail trail
- Increased visitation and tourism stay nights for Batlow when considered in combination with the existing Tumbarumba to Rosewood Rail Trail.

### 4.11.3 *Proposed Safeguards*

The proposed safeguards within previous sections of this REF address the cumulative impacts identified above. Given the positive cumulative impacts identified above, the proposed activity would result in a net environmental gain to the local area and to Council.

## 4.12 PRINCIPLES OF ECOLOGICALLY SUSTAINABLE DEVELOPMENT

This section presents the principles of Ecologically Sustainable Development (ESD) in relation to the proposal.

### 4.12.1 *Precautionary Principle*

The 'precautionary principle' means that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

This REF has been prepared using the precautionary principle. That is, if threats are perceived as possibly leading to serious or irreversible environmental damage, then either the non-development of the proposal would occur, or that the proposed activity would need to be modified to ensure that such threats do not exist. This has been the approach in relation to proposed safeguards summarised in section 5 of this REF.

### 4.12.2 *Inter-generational Equity*

'Inter-generational equity' means that the present generation should ensure that the health, diversity, and productivity of the environment is maintained or enhanced for the benefit of future generations.

The proposed activity would not impact on natural or cultural features to a level that would compromise the health, diversity, or productivity of the environment to a level that would impact on future generations.

### 4.12.3 *Appropriate Valuation of Environmental Factors*

This principle requires that environmental assets should be appropriately valued. This REF has considered abiotic and biotic ecosystem factors together with social values in identifying potential impacts and providing a range of environmental safeguards to minimise the impacts of the proposed activity.

These factors ensure that the proposed activity is consistent with the principles of ESD.

## 5 SUMMARY OF ENVIRONMENTAL SAFEGUARDS

The potential impacts of the proposed activity identified within section 4 of this REF can be mitigated through appropriate safeguards to reduce these to acceptable levels. The safeguards provided throughout this REF are summarised within **Table 5-1**.

**Table 5-1:** Summary of Environmental Safeguards.

Environmental Component	Proposed Safeguards
Landforms, Soils, Hydrology and Water Quality	<ul style="list-style-type: none"> <li>To manage erosion and sedimentation during construction, a sediment and erosion control plan shall be prepared. Erosion and sediment control practices should follow the recommendations and checklists outlined in: <i>Managing Urban Stormwater: Soils and Construction Volume 1</i> (NSW, 2006) and <i>Managing Urban Stormwater: Soils and Construction – Installation of Services Vol 2A</i> (DECC, 2007).</li> <li>Rehabilitate exposed bare ground at the completion of the work.</li> <li>Erosion and sediment controls would be left <i>in situ</i> for as long as necessary for the site to become stabilised.</li> <li>No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.</li> </ul>
Biodiversity	<ul style="list-style-type: none"> <li>Additional flora assessment of the northern section of the rail corridor is required to ensure no threatened flora are present within the corridor. From the point north of Lot 67, DP 1178759 to the end of the proposal would be required. This target survey would focus on the presence/absence of the threatened plant <i>Pimelea bracteata</i>. The REF would be updated at the conclusion of that survey once access can be arranged by SVRC.</li> <li>Construction activities should not occur during intense rain events or in a predicted extended rain event.</li> <li>Erosion and sediment control plan should be established and maintained to avoid sediment runoff during any vegetation clearing and construction and should only be removed once the ground is stabilised.</li> <li>Erosion and sediment controls would be in position prior to the proposed activity commencing and left <i>in situ</i> for as long as necessary for the site to become stabilised. However, should these controls begin to deteriorate and lose functionality; they are to be replaced immediately.</li> <li>No hay bales should be used for the purpose of erosion and sediment control unless they can be certified weed-free.</li> <li>There must be no release of dirty water into drainage lines and/or waterways.</li> <li>All fuels, chemicals and liquids are to be stored in an impervious bunded area or containers.</li> <li>An emergency spill kit must be kept on site at all times and maintained throughout the construction work. The spill kit must be appropriately sized for the volume of substances at the work site.</li> </ul>
Noise and Vibration	<ul style="list-style-type: none"> <li>Construction activity would be restricted to the following standing working hours: <ul style="list-style-type: none"> <li>Monday-Friday: 7:00am to 6:00pm</li> <li>Saturday: 8:00am to 1:00pm</li> </ul> </li> </ul>

Environmental Component	Proposed Safeguards
	<ul style="list-style-type: none"> <li>• Sunday and Public Holidays: no work</li> <li>• Should work be proposed outside of standard working hours, additional mitigations measures would be required.</li> <li>• Completion of the proposed activity in the minimum timeframe practicable.</li> <li>• Noise output would be minimised through the use of modern equipment that is regularly maintained.</li> <li>• Machinery engines would be switched off, minimising noise emissions, rather than being left idling for long period.</li> </ul>
Climate and Air Quality	<ul style="list-style-type: none"> <li>• Any stockpiles with the capacity to cause dust should be dampened or otherwise controlled to suppress dust.</li> <li>• Trucks carrying loads of material such as soil, road base, gravel or spoil should be covered.</li> <li>• All machinery should be periodically inspected and maintained to ensure minimum levels of emissions.</li> <li>• Machinery engines should be switched off, rather than left idling for long periods.</li> </ul>
Visual Impacts	<ul style="list-style-type: none"> <li>• The proposed work area should be kept clean and orderly at all times, ensuring that no waste is left at the site following completion of the proposed work.</li> <li>• Machinery and equipment storage should be conducted in a single location, where possible.</li> <li>• Temporary sediment controls should be removed from the site once it is stabilised.</li> </ul>
Socio-Economic	<ul style="list-style-type: none"> <li>• Potential hazards should be minimised by ensuring that the proposed works are completed in accordance with relevant SVRC standards and WHS requirements.</li> <li>• Dial Before You Dig <u>MUST</u> be consulted to ensure that the locations of all underground services are known <u>PRIOR</u> to excavation commencing. Appropriate actions must be formulated by the Project Manager and Site Supervisor to minimise the risk of these services becoming disrupted.</li> <li>• Construction activity would avoid weekends and public holidays where possible.</li> <li>• The proposed works would be completed in the minimum timeframe practical.</li> <li>• For operation of the proposal, chytid grids should be installed at the trackheads, as well as the external boundaries of biosecurity certified properties, to minimise the risk of biosecurity impacts.</li> </ul>
Aboriginal Heritage	<ul style="list-style-type: none"> <li>• During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any Aboriginal objects.</li> <li>• If human skeletal remains are found during the activity, work must stop immediately, secure the area to prevent unauthorised access and contact NSW Police and NSW Heritage</li> <li>• If potential material is identified, construction activities proximal to the potential material would cease and the NSW Heritage Office will be contacted immediately to determine appropriate management. Notification procedures can be found at <a href="http://www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm">www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm</a> The NPW Act requires that, if a person finds an Aboriginal object on land and the object is not already recorded on AHIMS, they are legally bound under s.89A of the NPW Act to notify NSW Heritage Office as soon as possible of the object's location. This requirement applies to all people and to all situations, including when you are following the Due Diligence Code.</li> </ul>



Environmental Component	Proposed Safeguards
Historic Heritage	<ul style="list-style-type: none"> <li>During induction training, all employees and contractors will be advised of their responsibility to advise management if they uncover any item that could be of historic heritage.</li> <li>If potential material is identified (other than that detailed within this REF), construction activities proximal to the potential material would cease and the NSW Heritage Office will be contact immediately to determine appropriate management.</li> </ul>
Traffic Management	<ul style="list-style-type: none"> <li>A traffic management plan (to prepared by SVRC) would be implemented, which would include the use of signs, barriers, temporary speed zones and traffic control for the duration of the proposed works.</li> <li>Access to all properties and residences would be maintained. Where this is not possible, SVRC would liaise directly with affected residences and business to develop an appropriate strategy.</li> <li>The proposed works would be completed in accordance with WHS legislation.</li> <li>Construction would avoid weekends and public holidays where possible.</li> <li>The proposed works would be completed in the minimum timeframe practical.</li> <li>Post construction, appropriate signage and bollards would be required to ensure the safety of path users, road users and users to access driveways.</li> </ul>
Waste Minimisation and Resource Management	<ul style="list-style-type: none"> <li>The provision of appropriate garbage and recycling receivers during construction and operation.</li> <li>Waste stored on site would be held in appropriate skips or bundled into stockpiles and covered where appropriate. Transport of materials from construction site to sites of reuse or disposal would be done using covered trucks where possible.</li> <li>Dispose of material at an appropriate waste disposal/recycling facility where re-use or storage options are not available.</li> <li>Excess soil material exported from the site would be available for resale, reuse or will be disposed of at an appropriate facility.</li> <li>In the event of any oil waste occurring on-site, this would be collected and transported to the nearest oil recycling facility.</li> </ul>
Cumulative Impacts	<p>The proposed safeguards within previous sections of this REF address the cumulative impacts identified. Given the positive cumulative impacts identified, the proposed activity would result in a net environmental gain to the local area and to Council.</p>

## 6 CLAUSE 171 CHECKLIST

A checklist of factors that should be considered in the assessment of impacts prior to its determination is included within Clause 171 of the *Environmental Planning and Assessment Regulation 2021*. This clause identifies seventeen issues that need to be addressed. The following text provides summary details of each of the issues, the majority of which have been addressed within the body of this document.

**a) any environmental impact on the community;**

There is the possibility of impacts associated with the construction period such as noise, traffic delays and dust. In the long-term, likely increased in visitation by tourists to Batlow would provide for positive environmental impact.

**b) any transformation of a locality;**

While the proposed activity will impact visually during the construction process, overall, there would be no impact on the visual environment of the locality.

**c) any environmental impact on the ecosystem of the locality;**

No. While the proposal would involve the disturbance of a relatively minor amount of native and non-native vegetation, the potential impacts would not impact ecosystems at a locality scale.

**d) any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality;**

The proposed activity is unlikely to have a notable long-term impact on any aesthetic, scientific, or other environmental quality or value of the locality given its relatively minor impact. However, a positive recreational asset would be created should the proposal proceed.

**e) any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations;**

The proposal would not have any negative effect on any locality, place or building having aesthetic, anthropological, archaeological or any other significance or special value.

**f) any impact on the habitat of protected or endangered fauna (within the meaning of the National Parks and Wildlife Act 1974);**

A number of threatened biota including a threatened ecological community have been previously recorded in the locality. As such, an assessment of impacts was undertaken (**Appendix 4 & 5**). Risks to threatened biota are considered to be low if proposed safeguards are effectively implemented.

**g) any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air;**

The proposed activity is unlikely to endanger any species of animal, plant or any other form of life or offer any significant long-term disturbance locally, given the relatively minor nature of the proposal.

**h) any long-term effects on the environment;**

Negative long term effects on the environment would be unlikely if the proposed safeguards discussed in **section 5** are fully implemented.

**i) any degradation of the quality of the environment;**

No negative long-term environmental impacts are expected. Minor amounts of dust and noise pollution are expected during the construction phase and may have short-term impacts on the environment directly adjacent to the proposal.

**j) any risk to the safety of the environment;**

The proposed activity is unlikely to cause any risk to the environment given safeguards listed in **section 5** are followed.

**k) any reduction in the range of beneficial uses of the environment;**

The proposed activity would increase the beneficial uses of the now disused Batlow to Tumut rail corridor.

**l) any pollution of the environment;**

There is a risk that pollution of the local environment would occur as a result of contaminants, including silt and hydrocarbons entering the local environment during construction. The risk would be minimised as a result of the environmental safeguards described in **section 5**.

**m) any environmental problems associated with the disposal of waste;**

Disposal of waste would be managed during construction and operation as outlined in section 4.10.

**n) any increased demands on resources (natural or otherwise) that are, or likely to become in short supply;**

This REF has identified that the proposed activity would not create a significant increase in the demands on resources that are likely to become in short supply in the near future.

**o) any cumulative environmental effect with other existing or likely future activities;**

Assessment of the cumulative environmental effects of the proposed activity identifies both negative and positive environmental impacts that would occur. Generally, negative environmental impacts are confined to the construction period, while improvements in community health and Batlow tourism experiences would be a significant positive environmental impacts.

**p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions;**

There would be no impact to coastal processes or hazards.

**q) Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1**

The proposal is consistent the SVRC Regional Tracks and Trails Master Plan that is currently being prepared.

**r) Other relevant environmental factors**

In considering the potential impacts of this proposal all relevant environmental factors have been considered, refer to Chapter 4 of this REF.

## 7 CONCLUSION

This REF provides a true and fair review of the proposed activity in relation to its potential effects on the environment. It addresses to the fullest extent possible, all of the factors listed in Clause 171 of the Environmental Planning and Assessment Regulation 2021.

The potential impacts of the proposed Batlow to Wybalena Rail Trail identified within section 4 of this REF can be mitigated through appropriate safeguards to reduce these to acceptable levels. Accordingly, an Environmental Impact Statement (EIS) is not required.



## 8 REFERENCES

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## 9 APPENDICES



## **APPENDIX 1 – QUALIFICATIONS AND EXPERIENCE OF PERSONNEL**

Name and Qualifications	Experience
<p><b>Steve Sass</b> B.App.Sci (Env.Sci) (Hons), GradCert.CaptVert.Mngt (CSU) Director / Principal Ecologist / Project Manager</p> <p>Certified Environmental Practitioner, EIANZ Accredited Biodiversity Assessor Member, Ecological Consultants Association of NSW (ECA)</p>	<p>Steve is a highly experienced Consulting Ecologist having undertaken hundreds of terrestrial and aquatic ecological surveys and assessments across Australia since 1992. He has an in-depth working knowledge of environmental and biodiversity legislation across all states and territories which allows him to provide detailed and accurate assessments and formulate practical solutions to clients and specific projects on a case-by-case basis.</p> <p>Previous and current research holds Steve in high regard within both the scientific and ecological consultants' community. Steve was recently given 'Expert' status for a number of species listed under the NSW <i>Biodiversity Conservation Act 2016</i> and is currently working with OEH on the Saving our Species Program for a newly identified species of dragon lizard in western NSW (<i>Ctenophorus mirrityana</i>) which Steve collaborated with other scientists to formally describe.</p> <p>Steve has extensive experience in south-east NSW. Over the past ten years, he has completed or provided specialist biodiversity advice to more than 1000 environmental assessments for projects such as residential and industrial developments, highway upgrades and telecommunications, water, sewerage, energy, mining and electricity network infrastructure projects including the REF for the Tumbarumba to Rosewood Rail Trail. Steve is highly conversant with the flora, vegetation communities, fauna and their habitats of the region. His expertise with regard to forest and wetland birds, reptiles, frogs and mammals is well known.</p> <p>For the REF Steve was the Project manager and prepared this report.</p>
<p><b>Linda Sass</b> Ass.Deg.Gn.St (Science), BA, DipEd (Sec) Member, Ecological Consultants Association of NSW (ECA)</p>	<p>Linda is an experienced ecologist having conducted flora and fauna surveys across western NSW for the past 12 years. Her recent projects in southern NSW include a Species Impact Statement for the Potato Point Fire Buffer Construction within Eurobodalla National Park and well as a number of road upgrades and safety improvement projects. In recent times in the local area, these have included the MR85 Gilmore to Jingellic Road safety improvement project, MR284 Wagga Road drainage improvements, and MR287 Alpine Way Slope Stabilisation project.</p> <p>For this project, Linda assisted with the field survey.</p>
<p><b>Zoe Sass</b></p>	<p>Zoe has worked as an ecologist on a casual basis with <b>EnviroKey</b> over a number of years including during their</p>

Name and Qualifications	Experience
B.Sci (GIS), BA	<p>university studies. She recently joined <b>EnviroKey</b> as a permanent member of the team as a Project Officer and has prepared a number of REFs including the HW1 Mort Avenue Safety Improvement Work and HW1 Herganhens Lane Safety Improvement Work for Transport for NSW. Zoe has also been responsible for GIS mapping and statistical analysis for a number of environmental assessments including residential developments.</p> <p>For this project, Zoe carried out all GIS mapping, and spatial analysis.</p>

## APPENDIX 2 – THE PROPOSAL

## **APPENDIX 3 – THREATENED AND MIGRATORY BIOTA EVALUATION**



When evaluating which threatened and migratory biota are likely to occur within the study area, the following factors were taken into consideration:

- The presence of potential habitat
- Condition of and approximate extent of potential habitat
- Species occurrence within study area and wider locality

The potential for these biota to be impacted by the proposal was assessed based on the following criteria:

- No (no suitable habitat based on known habitat requirements within the study area; in the case of flora, site extensively searched during the appropriate time of year for detection and species not present).
- Unlikely (proposed works are unlikely to impact on the life-cycle of the species, the species is mobile and other habitat exists within the locality).
- Possible (proposed works could result in the removal of threatened flora or for fauna, impact on the life cycle of the species, disrupt normal ecological function, or entrap species within excavations).

Biota that are associated with littoral or marine habitats have been excluded from the analysis.

**Table 9-1:** Threatened and migratory biota evaluation.

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
<b>FROGS</b>					
Alpine Tree Frog <i>Litoria verreauxii alpina</i>	E	V	Found in a wide variety of habitats including woodland, heath, grassland and herb fields. Breed in natural and artificial wetlands including ponds, bogs, fens, streamside pools, stock dams and drainage channels that are still or slow flowing	0	No
Booroolong Frog <i>Litoria booroolongensis</i>	E	E	Lives in permanent streams with some fringing vegetation cover. Can be found sheltering under rocks or amongst vegetation near stream edge.	0	No
Northern Corroboree Frog <i>Pseudophryne pengilleyi</i>	CE	CE	Summer breeding habitat is pools and seepages in sphagnum bogs, wet heath, wet tussock grasslands and herbfields in low-lying depressions. Outside the breeding season adults move away from the bogs into the surrounding heath, woodland and forest to overwinter under litter, logs and dense groundcover.	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
Spotted Tree Frog <i>Litoria spenceri</i>	CE	CE	Occur among boulders or debris along naturally vegetated, rocky fast flowing upland streams and rivers. In winter animals are thought to hibernate in vegetation outside of the main stream environment	0	Unlikely
<b>BATS</b>					
Eastern False Pipistrelle <i>Falsistrellus tasmaniensis</i>	V		Roosts in eucalypts hollows as well as loose bark on trees or on buildings. Prefers moist habitats with trees taller than 20m.	0	Unlikely
Large Bent-winged Bat <i>Miniopterus orianae oceanensis</i>	V		Prefers caves but also uses derelict mines, storm water tunnels, buildings, and other built structures for roosting. They hunt in forested areas.	2	Unlikely
Southern Myotis <i>Myotis macropus</i>	V		Roost close to water in caves, mine shafts, hollow bearing trees, storm water channels, under bridges and in dense foliage. They forage over streams and pools.	0	No
Grey-headed Flying-fox	V	V	Large megabat that roosts in riparian areas and rainforests, forages in wet sclerophyll forests, woodlands and riparian forests	1	Unlikely
<b>BIRDS</b>					
Barking Owl <i>Ninox connivens</i>	V		Inhabits woodland and open forest, including remnants and partly cleared farmland. It requires large permanent territories, about 2000 hectares in NSW habitats.	0	Unlikely
Black Falcon <i>Falco subniger</i>	V		The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions	0	Unlikely
Blue-billed Duck <i>Oxyura australis</i>	V		The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation.	0	No
Brown Treecreeper (eastern subspecies) <i>Climacteris picumnus victoriae</i>	V		Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species.	0	Possible

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
Diamond Firetail <i>Stagonopleura guttata</i>	V		Found in grassy woodlands including Box-Gum Woodlands and Snow Gum Woodland	0	Unlikely
Dusky Woodswallow <i>Artamus cyanopterus cyanopterus</i>	V		Found mostly in dry, open eucalypt forests and woodlands. Depending on location and climate, it can be migratory.	0	Possible
Flame Robin <i>Petroica phoenicea</i>	V		Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes.  Habitat often changes in winter to include drier more open habitat including dry forests, open woodlands, native grassland, pastures and occasionally in heathland or other shrubland.	0	Unlikely
Gang-gang Cockatoo <i>Callocephalon fimbriatum</i>	V	E	During spring and summer, found in tall mountain forests and woodlands usually heavily timbered and mature wet sclerophyll forests. In Autumn and winter, they generally move to drier more open forests and woodlands.	3	Possible
Glossy Black-Cockatoo <i>Calyptrorhynchus lathami</i>	V	E	Inhabit open forests and woodlands. She-oak is an important food source and they feed almost exclusively on several species ( <i>Casurina</i> and <i>Allocasaurina</i> ).	0	Unlikely
Hooded Robin (south-eastern form) <i>Melanodryas cucullata cucullata</i>	V		Found in open eucalypt woodlands, acacia scrub and mallee, often in or near clearings or open areas. Requires diverse habitats with mature eucalypts, saplings, small shrubs and moderately tall native grasses.	0	Unlikely
Little Eagle <i>Hieraaetus morphnoides</i>	V		Little Eagle is distributed across all of the Australian mainland except for densely vegetated areas, particularly on the Dividing Range escarpment. In NSW the Little Eagle is considered a single population. They inhabit open eucalypt woodland, woodland and open woodland, including She-oak, <i>Acacia</i> woodland and riparian woodland in arid and semi-arid regions.	1	Unlikely
Masked Owl <i>Tyto novaehollandiae</i>	V		Lives in dry eucalypt forests and woodlands from sea level to 1100m. Pairs have a home range of 500-1000 hectares and can often be seen hunting along edges of forests, including roadsides.	0	Unlikely

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			Breeds in moist eucalypt forested gullies, using hollows or caves for nesting		
Olive Whistler <i>Pachycephala olivacea</i>	V		Mostly inhabit wet forests above about 500m. During the winter months they may move to lower altitudes	0	Unlikely
Painted Honeyeater <i>Grantiella picta</i>	V	V	Inhabits Boree/Weeping Myall ( <i>Acacia pendula</i> ), Brigalow ( <i>A. harpophylla</i> ) and Box-Gum Woodlands and Box-Ironbark Forests. Feeds on mistletoes preferably the genus <i>Amyema</i>	0	Unlikely
Pilotbird <i>Pycnoptilus floccosus</i>	-	V	Occurs in wet temperate forests where undergrowth is dense.	0	Unlikely
Pink Robin <i>Petroica rodinogaster</i>	V		Inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies.	0	Unlikely
Powerful Owl <i>Ninox strenua</i>	V		inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. Size of territory varies depending on the quality and can range from 400 metres to 4000 hectares.	1	Unlikely
Regent Honeyeater <i>Anthochaera phrygia</i>	CE	CE	Lives in dry open forest and woodland especially Box-Ironbark woodland, and riparian forests of River Sheoak. Woodlands they inhabit often support high abundance and species richness of bird species.	0	Unlikely
Scarlet Robin <i>Petroica boodang</i>	V		Lives in dry eucalypt forests and woodlands with open grassy understorey with scattered shrubs. Lives in both mature and regrowth vegetation and usually contains abundant logs and fallen timber	1	Unlikely
Sooty Owl <i>Tyto tenebricosa</i>	V		Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests.	0	Unlikely
Speckled Warbler <i>Chthonicola sagittata</i>	V		Lives in Eucalypts dominated communities that have a grassy understorey with sparse shrub layer. Large, relatively undisturbed habitats are needed for this species to remain in an area.	0	Unlikely
Spotted Harrier <i>Circus assimilis</i>	V		Occurs in grassy open woodland including Acacia and mallee remnants,	0	Unlikely

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			inland riparian woodland, grassland and shrub steppe.		
Square-tailed Kite <i>Lophoictinia isura</i>	V		Found in timbered habitats including dry woodlands and open forests. Prefers timbered watercourses.	0	Unlikely
Superb Parrot <i>Polytelis swainsonii</i>	V	V	Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest.	0	Unlikely
Swift Parrot <i>Lathamus discolor</i>	E	CE M	Occurs in areas with flowering eucalypts or abundant lerp (from sap sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany <i>Eucalyptus robusta</i> , Spotted Gum <i>Corymbia maculata</i> , Red Bloodwood <i>C. gummifera</i> , Forest Red Gum <i>E. tereticornis</i> , Mugga Ironbark <i>E. sideroxylon</i> , and White Box <i>E. albens</i> . Commonly used lerp infested trees include Inland Grey Box <i>E. microcarpa</i> , Grey Box <i>E. moluccana</i> , Blackbutt <i>E. pilularis</i> , and Yellow Box <i>E. melliodora</i>	0	Unlikely
Turquoise Parrot <i>Neophema pulchella</i>	V		Habitats include edges of eucalypt woodland near clearings, timbered ridges and creeks in farmlands.	0	Unlikely
Varied Sittella <i>Daphoenositta chrysoptera</i>	V		This species is sedentary and known to inhabit most forest/woodland habitats.	1	Unlikely
White-bellied Sea-eagle <i>Haliaeetus leucogaster</i>	V	M	The species is normally seen perched high in a tree, or soaring over waterways and adjacent land, particularly along coastlines, lakes, and rivers.	0	Unlikely
White-fronted Chat <i>Epthianura albifrons</i>	V		Gregarious species, usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground.	0	Unlikely
White-throated Needletail		V, M	Rarely landing in Australia, this migratory species is a master of the sky	1	Unlikely
<b>FISH</b>					
Flathead Galaxias <i>Galaxias rostratus</i>	E (FM Act)	CE	Known from the southern half of the Murry-Darling Basin. Inhabits a variety of habitats including rivers, lakes and swamps.	0	No



Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
Macquarie Perch <i>Macquaria australasica</i>	E (FM Act)	E	Found in the upstream reaches of the Murray-Darling Basin. Found in rivers and lakes.	0	No
Murray Cod <i>Maccullochella peelii</i>		V	Prefers deep, slow flowing turbid water in rivers and streams with boulders or undercut banks.	0	No
Trout Cod <i>Maccullochella macquariensis</i>	E (FM Act)	CE	Found in the southern Murray-Darling river system, this fish inhabits fast flowing freshwater streams.	0	No
Australian Grayling	E (FM Act)	E	The Australian Grayling is endemic to south-eastern Australia, including Victoria, Tasmania and New South Wales. Rare fish are likely in South Australia. It was once abundant throughout its range but has declined in many areas since European settlement and is now generally patchily distributed. In NSW its most northern limit is now the Clyde River.	0	No
<b>INVERTEBRATES</b>					
Murray Crayfish <i>Euastacus armatus</i>	V		The Murray Crayfish originally occurred in the Murrumbidgee River system in NSW and the ACT, and parts of the Murray river system in NSW, Victoria and South Australia. The species has also been recorded from the Lachlan and Macquarie catchments in NSW, although the origin of these populations is currently unknown, and may be translocated. Murray Crayfish have an upper altitudinal range of approximately 750 – 800 m ASL.	0	No
<b>MAMMALS</b>					
Broad-toothed Rat <i>Mastacomys fuscus</i>	V	V	Lives in a complex of runways through the dense vegetation of its wet grass, sedge or heath environment, and under the snow in winter. This relatively warm under-snow space enables it to be active throughout winter	0	No
Brush-tailed Phascogale <i>Phascogale tapoatafa</i>	V		Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest.	0	Unlikely
Eastern Pygmy-possum	V		Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to	0	Unlikely

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
<i>Cercartetus nanus</i>			heath, but in most areas woodlands and heath appear to be preferred.		
Koala <i>Phascolarctos cinereus</i>	V	V	Inhabit eucalypt woodlands and forests. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size.	1	Unlikely
Smoky Mouse <i>Pseudomys fumeus</i>	CE	E	Appears to prefer heath habitat on ridge tops and slopes in sclerophyll forest, heathland and open-forest from the coast (in Victoria) to sub-alpine regions of up to 1800 metres, but sometimes occurs in ferny gullies	0	No
Spotted-tailed Quoll <i>Dasyurus maculatus</i>	V	E	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath, and inland riparian forest, from the sub-alpine zone to the coastline.	5	Unlikely
Squirrel Glider <i>Petaurus norfolcensis</i>	V		Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas	0	Unlikely
Greater Glider		E	Distribution levels are higher in regions of montane forest containing manna gum and mountain gum. Furthermore, the presence of Monkey Gum appears to improve the quality of habitat for the greater gliders in forests dominated by <i>E. obliqua</i> . Another factor determining population density is elevation. Optimal levels are 845 m above sea level. Within a forest of suitable habitat, they prefer overstorey basal areas in old-growth tree stands	2	Possible
Yellow-bellied Glider <i>Petaurus australis</i>	V		Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.	1	Possible
<b>REPTILES</b>					
Little Whip Snake <i>Suta flagellum</i>	V		Occurs in Natural Temperate Grasslands and grassy woodlands, including those dominated by Snow Gum Eucalyptus pauciflora or Yellow Box E. melliodora. Also occurs in secondary grasslands derived from clearing of woodlands.	0	Unlikely

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			Found on well drained hillsides, mostly associated with scattered loose rocks.		
Rosenberg's Goanna <i>Varanus rosenbergi</i>	V		Found in heath, open forest and woodland. Associated with termites, the mounds of which this species nests in; termite mounds are a critical habitat component.	0	No
Striped Legless Lizard <i>Delma impar</i>	V	V	Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland.	0	No
<b>PLANTS</b>					
Alpine Greenhood <i>Pterostylis alpina</i>	V		Often found on sheltered southern slopes near streams in rich loam	0	No
Alpine Sun-orchid <i>Thelymitra alpicola</i>	V		Occurs in wet heaths, sphagnum bogs between 1000-1500 metres and swamps	0	No
Austral Toadflax <i>Thesium australe</i>	V	V	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast.	0	No
Austral Pillwort <i>Pilularia novae-hollandiae</i>	E		grows in shallow swamps and waterways, often among grasses and sedges. It is most often recorded in drying mud as this is when it is most conspicuous	0	No
Cotoneaster Pomaderris <i>Pomaderris cotoneaster</i>	E	E	Has been recorded in a range of habitats in predominantly forested country. The habitats include forest with deep, friable soil, amongst rock beside a creek, on rocky forested slopes and in steep gullies between sandstone cliffs.	0	No
Crimson Spider Orchid <i>Caladenia concolor</i>	E	V	Habitat is regrowth woodland on granite ridge country that has retained a high diversity of plant species, including other orchids. Flowering does not take place every year for reasons that are not fully understood, though each plant probably lives for a considerable number of years	0	No
Dwarf Bush-pea <i>Pultenaea humilis</i>	V		<i>Pultenaea humilis</i> is found in isolated remnants of native woodland and forest communities that occur in extensively cleared agricultural landscapes.	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
East Lynne Midge Orchid <i>Genoplesium vernale</i>	V	V	Grows in dry sclerophyll woodland and forest extending from close to the coast to the adjoining coastal ranges. Confined to areas with well-drained shallow soils of low fertility, often occurring near the crests of ridges and on low rises where the ground cover is more open and sedge dominated rather than being shrubby.	0	No
Elusive Cress <i>Irenepharsus magicus</i>	E		Habitat preference for the species is unclear, although records have been found in recently logged Messmate Stringybark ( <i>Eucalyptus obliqua</i> ) forest, in rocky limestone areas, and 'growing on mineral soil of embankment'.	0	No
Leafy Anchor Plant <i>Discaria nitida</i>	V		Generally occurs on or close to stream banks and on rocky areas near small waterfalls. The species occurs in both woodland with heathy riparian vegetation and on treeless grassy sub-alpine plains	0	No
Rough Eyebright <i>Euphrasia scabra</i>	E		Occurs in or at the margins of swampy grassland or in sphagnum bogs, often in wet, peaty soil. Although parasitic, the species does not appear to be host-specific	0	No
Silky Swainson-pea	V		Found in Natural Temperate Grassland and Snow Gum <i>Eucalyptus pauciflora</i> Woodland on the Monaro.	0	No
Slender Greenhood <i>Pterostylis foliata</i>	V		Grows in eucalypt forest amongst an understorey of shrubs, ferns and grasses. It grows on loam or clay loam soils found on sheltered sloping to steep ground and populations may be found in localised open seepage areas.	0	No
Tumut Grevillea <i>Grevillea wilkinsonii</i>	CE	E	The Tumut Grevillea has a highly restricted distribution in the NSW South-west Slopes region. Its main occurrence is along a 6 km stretch of the Goobarragandra River approximately 20 km east of Tumut where about 1,000 plants are known. The other occurrence is a small population that straddles the boundary of two private properties at Gundagai where only eight mature plants survive.	0	No
Wee Jasper Grevillea <i>Grevillea iaspicula</i>	CE	E	Grows on rocky limestone outcrops and around sink holes and cave entrances. Vegetation is open woodland dominated by White Box ( <i>Eucalyptus albens</i> ) and Apple Box ( <i>E. bridgesiana</i> ) trees. Often occurs as a co-dominant species within	0	No

Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
			the shrubby understorey of its open woodland habitat.		
Wooly Ragwort <i>Senecio garlandii</i>	V		Occurs on sheltered slopes of rocky outcrops	0	No
Yass Daisy <i>Ammobium craspedioides</i>	V	V	Found in moist or dry forest communities, Box-Gum Woodland and secondary grassland derived from clearing of these communities. Apparently unaffected by light grazing, as populations persist in some grazed sites	0	No
<i>Caladenia montana</i>	V		Restricted to high montane areas 700–1000 m a.s.l. where it grows in well-drained loam on slopes and ridges of montane forest among an understorey of shrubs.	0	No
<i>Pimelea bracteata</i>	CE		In wet heath and along creek banks at higher altitudes in the Kiandra area	2	Possible, target survey required north as outlined in this REF.
<b>ECOLOGICAL COMMUNITIES</b>					
Fuzzy Box Woodland on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	EEC		Tall woodland or open forest dominated by Fuzzy Box, <i>Eucalyptus conica</i> . Often occurs upstream from River Red Gum communities above frequently inundated areas of the floodplain. Also occurs on colluvium soils and lower slopes and valley flats	0	No
Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	EEC	E	The Montane Peatlands community is associated with accumulated peaty or organic-mineral sediments on poorly drained flats in the headwaters of streams. It occurs on undulating tablelands and plateaux, above 400-500 m elevation, generally in catchments with basic volcanic or fine-grained sedimentary substrates or, occasionally, granite.	0	No



Common Name (Scientific Name)	BC Act/ FM Act	EPBC Act	Habitat requirements	Number of records (source)	Potential to be impacted by the proposal
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England, Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	CEEC	CE	An open woodland community characterised by the presence or prior occurrence of White Box, Yellow Box and/or Blakely's Red Gum and a generally grassy understorey. Remnants generally occur on fertile lower parts of the landscape.	Found in the Batlow area	No
Tablelands Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregion	EEC	-	Tableland Basalt Forest is dominated by an open eucalypt canopy of variable composition. <i>Eucalyptus viminalis</i> , <i>E. radiata</i> , <i>E. dalrympleana</i> subsp. <i>dalrympleana</i> and <i>E. pauciflora</i> may occur in the community in pure stands or in varying combinations.	Widespread in the Batlow area	Possible

## APPENDIX 4 – TEST OF SIGNIFICANCE (BC AND FM ACT)

Section 7.3 of the BC Act details five factors which are to be considered when determining if a proposed development or activity *'is likely to have a significant effect on the threatened species, ecological communities, or their habitats'*. These five factors must be taken into account by consent or determining authorities when considering a development proposal or development application. This enables a decision to be made as to whether there is likely to be a significant effect on the species.

**Appendix 3** found that six threatened biota were known to, or have the potential to be impacted by the proposal based on the evaluation completed. Given this, further assessment by application of the ToS is completed on the following biota:

- Brown Treecreeper
- Dusky Woodswallow
- Gang-gang Cockatoo
- Yellow-bellied Glider
- Greater Glider
- Tablelands Basalt Forest TEC

**(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,**

Hollow-dependant fauna (Dusky Woodswallow, gliders, Gang-gang cockatoo, Brown Treecreeper)

The Brown Treecreeper occurs in sub-coastal environments and the slopes of the Great Dividing Range through central NSW (Wagga Wagga, Temora, Forbes, Dubbo, Inverell) (Morcombe, 2004). Whilst it has a large range the species has greatly reduced in density over most of that range (Reid, 1999). They are found in eucalypt woodlands dominated by stringybarks or other roughbark eucalypt, usually with an open grassy understory (including Box-gum Woodland) and dry open forest occurs in eucalypt forests and woodland of inland plains and slopes of the Great Dividing Range (DPIE/BCS, 2022b). They can be territorial and rely on hollows for nesting (DPIE/BCS, 2022b).

Dispersal of the Brown Treecreeper can occur with them unlikely to disperse if remnants are separated by more than 1.5km (Doerr et al., 2011). The Brown Treecreeper has also declined or disappeared from most remaining remnants that are smaller than 300 hectares, at least partly because females disperse from these areas or die preferentially and are not replaced (Cooper et al., 2002, Cooper and Walters, 2002). Once lost from a remnant, recolonisation is unlikely without assistance. Brown Treecreeper was recorded during the field survey and evidence of breeding in the study area was observed.

The Gang-gang Cockatoo is distributed from southern Victoria through south- and central-eastern New South Wales. In New South Wales, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-

west slopes. It occurs regularly in the Australian Capital Territory. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee. It favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 10 cm in diameter or larger and at least 9 m above the ground in eucalypts (Simson, 1924, NSWSC, 2008, Garnett and Baker, 2020).

The main factor for the EPBC listing is a result of the Black Summer Fires in 2019/2020. The population of Gang-gang Cockatoo has declined by approximately 69 percent in the last three generations (approximately 21 years) (Bird et al. 2020; Cameron et al. forthcoming). In addition to this continuous decline in population numbers, the species also suffered mortality and habitat loss during Black Summer Fires. Estimates of the distribution impacted by fire range from 28 to 36 percent (Legge et al. 2020; Ward et al. 2020; Legge et al. 2021). The 2019/2020 fires may have reduced the carrying capacity of 40 percent of occupied grid cells by half and resulted in a 10 percent reduction in the overall population size (Cameron et al. forthcoming). An analysis based on expert analysis estimated that three generations post-fire the population could still be 29 percent lower than the pre-fire population size (Legge et al. 2021). These predictions assume no further extreme drought or extensive fire events; however, such events are likely to reoccur over the assessment period, which would worsen the extent of population decline. Given this nomination, this BA will assume that Gang-gang Cockatoo is accepted for listing as Endangered under the EPBC Act and assess the potential impacts of the proposal on this species accordingly.

The Greater Glider is distributed along the east coast of mainland Australia, from central Queensland to central Victoria (Lunney, 1987, Kavanagh and Lambert, 1990, Pavey, 1992, Lindenmayer et al., 2002, Maloney, 2007). They are forest dependent and prefer older trees in moist forests. They use hollow-bearing trees for both shelter and nesting, with each family group using multiple den trees within its home range (Lindenmayer et al. 2004). Greater Glider density varies proportionally to the availability of hollow-bearing trees and do not persist in areas of forest where such trees are absent. There is an inverse relationship between the habitat patch size and extinction risk. McCarthy and Lindenmayer (1999) suggest populations inhabiting small patches of otherwise suitable habitat are subject to heightened risks of extinction due to the generally low densities and rates of population increase, and the potential impacts of events such as bushfire. Greater Glider are known from the Batlow district, with animals recently recorded near White Gate.

The Yellow-bellied Glider has a wide distribution along the east coast and adjacent ranges from north Queensland to western Victoria (Menkhorst and Knight, 2010). Its occurrence within its range is patchy however, and population density generally very low. Several studies on this species are reported in Goldingay and Kavanagh (1991) and other studies of their feeding behaviour and habitat requirements (Rees et al., 2007, Goldingay and Possingham, 1995, Eyre and Goldingay, 2005, Kavanagh, 2004, Craig, 1985, Goldingay, 1992, NPWS, 1999, Goldingay, 1989, Goldingay, 2000, Goldingay and Kavanagh, 1991). The important factor is that they exploit a range of plant exudates including sap, manna (a substance formed by exudation of sap at the site of insect damage on branchlets and foliage of eucalypts and angophoras) and nectar of eucalypt flowers, honeydew (excretions of certain sap-sucking

insects) and obtain protein by foraging for insects and other invertebrates mostly under the peeling bark of smooth-barked eucalypts, and by consuming pollen when it is available in eucalypt blossom.

Because Yellow-bellied Gliders exploit food resources which are largely ephemeral in nature they require large home ranges compared with similar sized animals which feed on foliage. Goldingay (1989) found that they spend all night out of their dens, and in this time they spend 90% of the time foraging (Goldingay, 1989). Because of the ephemeral and widely distributed nature of their food resources they need to be very mobile animals, and they are known to be capable of glides of more than 100 metres length, and to cover large distances between den sites and feeding areas (Goldingay and Possingham, 1995, Jackson, 1999). However, at times when other food resources are limited they can be heavily dependent on eucalypt sap, which is licked from incisions which they chew in the bark of selected trees (Eyre and Goldingay, 2005, Goldingay, 2000).

Kavanagh (1987) found that gliders selectively foraged in larger trees of more than 80 cm diameter. Only when foraging for insects under bark did they utilise smaller (<40 cm diameter) trees; for all other food resources they preferred large trees (Kavanagh, 1987). They also require large trees to provide the hollows in which they shelter during the day. There are two main habitat requirements for this species, large old trees containing hollows to provide den sites, and a sufficient diversity of eucalypt species to provide them with the range of food resources they require throughout the year.

Impacts of developments on the gliders at any site may come about by removal of individual trees which contain their dens or which are favoured sap feeding trees, and the potential to disrupt movement corridors through the removal of vegetation. These factors would constitute a serious threat to the persistence of a group of gliders that could use a site. Removal of other large trees which are favoured for feeding but are not either den or sap feed trees may also be deleterious, given the species preference for feeding in larger trees. Kavanagh (1987) found however, that logging did not affect a population of gliders he was studying, because neither their den nor sap feed trees were removed and the logged area constituted only one third of their home range. Because scattered trees were left in the logged area they continued to be able to move from tree to tree through it to forage further a field.

Dusky Woodswallow are widespread in eastern, southern and south western Australia (Robinson, 1993, Rowley, 2000, Fulton, 2005, Kavanagh et al., 2007, Sims, 2007, Montague-Drake et al., 2009). The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range.

They occur mostly in dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. The species can also be found in farmland, usually at the edges of forest or woodland.



They are known to feed on invertebrates, mainly insects, which are captured whilst hovering or sallying above the canopy or over water. Also frequently hovers, sallies and pounces under the canopy, primarily over leaf litter and dead timber. Also occasionally take nectar, fruit and seed.

Depending on location and local climatic conditions (primarily temperature and rainfall), Dusky Woodswallow can be resident year round or migratory. In NSW, after breeding, birds migrate to the north of the state and to southeastern Queensland, while Tasmanian birds migrate to southeastern NSW after breeding. Migrants generally depart between March and May, heading south to breed again in spring. There is some evidence of site fidelity for breeding. Although Dusky woodswallows generally breed as solitary pairs or occasionally in small flocks, large flocks may form around abundant food sources in winter. Large flocks may also form before migration, which is often undertaken with other species.

For all species, it is appropriate that if any HBT are to be removed (unlikely on the existing rail line), that suitable safeguards are implemented. This REF includes the requirement for a suitably qualified and experienced ecologist to be onsite during any HBT removal. All safeguards and recommendations detailed within section 5 provide a framework for minimising potential direct and indirect impacts to these species and must be implemented to minimise the risks associated with HBT removal.

Based on general habitat removal, woodland and forest is relatively widespread within the study area (about 5.5 hectares) and within a 550 metre of the proposal (about 160 hectares), so the potential impact of this proposal of about 0.4 hectares of regrowth native vegetation (or 7.27% and 0.25% respectively), is of little significance.

With consideration of these factors, it is *unlikely* that the proposal could have an adverse effect on the life cycle of the above species or their habitats such that a viable local population is likely to be placed at risk of extinction provided safeguards are fully implemented.

**(b) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:**

- (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**
- (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,**

These species are not listed as an endangered ecological community or critically endangered ecological community.

**(c) in relation to the habitat of a threatened species or ecological community:**

- (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and**
- (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and**
- (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,**
  - i. The proposed activity would result in the removal of about 0.4 hectares of native vegetation.
  - ii. The proposed activity would not isolate or fragment other areas of habitats further than the impact that pre-exists and given the ability of these species to move over distance, the relatively minor nature of the proposed activity, and the extent and quality of forests in the wider locality.
  - iii. The potential habitat to be removed is of little importance to the long-term viability in the locality particularly with consideration of the remaining woodland and forest that occurs within the locality that would remain unaffected by the proposal.
- (d) whether the action proposed is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).**

No declared areas of outstanding biodiversity value are known within the Snowy Valley LGA under the BC Act.

- (e) whether the action proposed constitutes or is part of a key threatening process or is likely to increase the impact of, a key threatening process.**

The 'clearing of native vegetation' is recognised as a major factor contributing to the loss of biodiversity. Clearing of any area of native vegetation may impact biological diversity such as habitat fragmentation limiting gene flow between small isolated populations, which may result in a reduction in the potential for biodiversity to adapt to environmental change. The proposed activity would result in the removal of about 0.6 hectares. This relatively minor loss of vegetation is considered negligible in the context of the extent of vegetation remaining within the locality and with consideration of the proposed development, does not constitute a key threatening process.

The 'Loss of Hollow-bearing Trees' is also a KTP to consider. While this REF does not recommend the removal of any HBT, it includes safeguards should this be considered necessary.

With consideration of these factors, the proposed activity is unlikely to result in the operation of or increase the impact of a key threatening process.

- (a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,**

#### Tablelands Basalt Forest

Tablelands Basalt Forest is not listed as a threatened species.

- (b) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:**

- (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**
- (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,**

About 0.4 hectares of this TEC would be removed. This TEC is somewhat limited in the rail corridor (5.2 hectares) but based on the NSW State Vegetation Type Map, the TEC also occurs within a 550-metre buffer of the road reserve (about 50.06 hectares). On that basis, the proposal would result in the removal of about 7.69% of the Tablelands Basalt Forest in the study area. It would also equate to a loss of about 0.80% of the total extent of Tablelands Basalt Forest within a 550-metre buffer of the proposal.

On this basis, the proposal is unlikely to have an adverse effect on the extent, or substantially and adversely modification the composition of Tablelands Basalt Forest, such that its local occurrence is likely to be placed at risk of extinction.

- (c) in relation to the habitat of a threatened species or ecological community:**

- (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and**
- (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and**
- (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,**
  - i. The proposed activity would result in the removal of about 0.4 hectares of this TEC, as regrowth vegetation.
  - ii. The proposed activity would not isolate or fragment other areas of habitats further than the impact that pre-exists and the relatively minor nature of the proposed activity, and the extent and quality of this TEC in the wider locality.

- iii. The potential habitat to be removed is of little importance to the long-term viability in the locality particularly with consideration of the remaining Tablelands Basalt Forest that occurs within the study area and locality that would remain unaffected by the proposal.

**(d) whether the action proposed is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).**

No declared areas of outstanding biodiversity value are known within the Snowy Valley LGA under the BC Act.

**(e) whether the action proposed constitutes or is part of a key threatening process or is likely to increase the impact of, a key threatening process.**

The 'clearing of native vegetation' is recognised as a major factor contributing to the loss of biodiversity. Clearing of any area of native vegetation may impact biological diversity such as habitat fragmentation limiting gene flow between small isolated populations, which may result in a reduction in the potential for biodiversity to adapt to environmental change. The proposed activity would result in the removal of about 0.4 hectares of regrowth Tablelands Basalt Forest. This relatively minor loss of vegetation is considered negligible in the context of the extent of vegetation remaining within the locality and with consideration of the proposal, does not constitute a key threatening process.

The 'Loss of Hollow-bearing Trees' is also a KTP to consider. While this REF does not recommend the removal of any HBT, it includes safeguards should this be considered necessary.

With consideration of these factors, the proposed activity is unlikely to result in the operation of or increase the impact of a key threatening process.

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#### NSW Fisheries Management Act 1994

In the FM Act, there are seven factors which are to be considered when determining if a proposed development or activity '*is likely to have a significant effect on the threatened species, or ecological communities, or their habitats*'. These seven factors must be taken into account by consent or determining authorities when considering a development proposal or development application. This enables a decision to be made as to whether there is likely to be a significant effect on the species.

The habitat assessment table in **Appendix 3** found that no threatened biota listed under the FM Act have the potential to occur to be impacted by the proposal. Given this, no further assessment is conducted.

## **APPENDIX 5 – ASSESSMENT OF SIGNIFICANCE (EPBC ACT)**



## Migratory Species

Protected under several international agreements to which Australia is a signatory, Migratory species are considered Matters of National Environmental Significance under the EPBC Act.

Under the EPBC Act, an action is likely to have a significant impact on a migratory species if it substantially modifies, destroys or isolated an area of 'important habitat' for the species (DotE, 2013). The study area is not considered to comprise 'important habitat' as it does not contain:

- Habitat used by a migratory species occasionally or periodically within a region that supports an ecological significant proportion of the population of the species
- Habitat that is of critical importance to the species at particular life-cycle stages
- Habitat used by a migratory species that is at the limit of the species' range
- Habitat within an area where the species is declining.

Given this, the potential for the proposed activity to impact on EPBC Act listed migratory species is unlikely and not considered further.

## Threatened Species

The study area and immediate surrounds contains potential habitat for a number of biota listed as threatened under the EPBC Act; Yellow-bellied Glider, Gang-gang Cockatoo, Greater Glider. The following section provides significance assessment for these biota.

### Vulnerable Species (Yellow-bellied Glider, Greater Glider)

*Will the action lead to a long-term decrease in the size of an important population of a species?*

No. There is no evidence that an 'important population' as defined by the EPBC Act occurs within the study area. Nonetheless, the proposed action would result in the direct impact of both native vegetation and potentially hollow-bearing trees. However, extensive areas of native vegetation remain within both the rail corridor, and within the wider locality which would remain unaffected confirming that extensive areas of potential and known habitat would remain. A series of site-specific safeguards to minimise potential impacts have been developed for biodiversity and would be implemented should the proposed action proceed. Additionally, HBT are widespread across the study area, with the majority of these located outside of the direct impact area.

Given this, it is unlikely that the proposed action would lead to a long-term decrease in an area of occupancy of an important population of this species.

*Will the action reduce the area of occupancy of an important population?*

No. While there is no evidence to suggest that an 'important' population even occurs within the study area, the proposed action would result in the direct impact native vegetation and HBT. There are large areas of existing native vegetation in the rail corridor and in the wider locality which would remain unaffected by the proposal and would continue to provide habitat

for these species in the locality. Given this, it is unlikely that the proposed action would lead to a long-term decrease in an area of occupancy of an important population of this species (should one occur there).

*Will the action fragment an existing population into two or more populations?*

No population would be fragmented into two or more populations by the current design of the proposed action. No impacts are proposed to aquatic habitats.

*Will the action adversely affect habitat critical to the survival of a species?*

No. The habitat present is not considered critical for the survival of this species.

*Will the action disrupt the breeding cycle of an important population?*

No. The proposal has the potential to impact the breeding cycle of hollow-dependant fauna. This REF has identified site-specific safeguards to ensure that potential impacts to breeding cycles are minimised through the provision of a suitably qualified and experienced person to supervise any HBT removal through a site-specific plan.

*Will the action modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?*

No. The potential habitat proposed for removal would not result in these species being likely to decline.

*Will the action result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat?*

No. Mitigation measures within section 5 provide a framework to minimise the risk of weed species becoming established as a result of this proposal.

*Will the action introduce disease that may cause the species to decline?*

No. Recommendations within section 5 provide a framework for managing potential risks to biodiversity.

*Will the action interfere with the recovery of the species?*

No. Mitigation measures outlined within section 5 suggest that it is unlikely that the proposed action would have an impact on the recovery of this species given the relatively minor level of impact proposed and that a range of mitigation measures designed specifically to minimise potential impacts to threatened species would be implemented.

#### Endangered Species and Critically Endangered Species (Gang-gang Cockatoo)

*Will the action lead to a long-term decrease in the size of a population of a species?*

No. While Gang-gang Cockatoo could potentially forage and breed in the wider study area, extensive areas of habitat remain in the locality.

Given this, it is unlikely that the proposed action would lead to a long-term decrease in the size of a population of this species.

*Will the action reduce the area of occupancy of the species?*

No. There is no evidence to suggest that a population relies upon the resources of the study area in its entirety particularly given the highly mobile nature of Gang-gang Cockatoo. Given this, the action is unlikely to reduce any area of occupancy to the detriment of this species.

*Will the action fragment an existing population into two or more populations?*

No population would be fragmented into two or more populations given the context of the design of the proposal and the high mobility of the species. No impacts to aquatic habitat are proposed.

*Will the action adversely affect habitat critical to the survival of a species?*

No. The habitat is not considered critical to this species for its survival.

*Will the action disrupt the breeding cycle of a population?*

No. Measures implemented HBT removal would ensure that any breeding cycle is not disrupted.

*Will the action modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?*

No. The availability of habitat in the locality indicates that the proposal is unlikely to impact potential habitat to the extent this species is likely to decline.

*Will the action result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat?*

No. Mitigation measures within section 6 provide a framework to minimise the risk of weed species invading adjoining habitats.

*Will the action introduce disease that may cause the species to decline?*

No. Recommendations within section 6 provide a framework for managing potential risks to biodiversity.

*Will the action interfere with the recovery of the species?*

No. Given the relatively minor nature of the proposed action, the extent of similar or higher quality habitats in the locality, and the adoption of the mitigation measures outlined within

section 5, it is unlikely that the proposed action would have an impact on the recovery of this species.

## Conclusion

With consideration of the assessments completed within Annexure C, the proposal is '*unlikely*' to have a '*significant effect*' on threatened or migratory biota as listed by the EPBC Act. Based on this, referral to the Commonwealth Minister is not warranted.

## **APPENDIX 6 – ABORIGINAL INFORMATION MANAGEMENT SYSTEM SEARCH RESULTS (AHIMS)**



EnviroKey Pty Ltd

PO Box 7231

TATHRA New South Wales 2550

Attention: Steve Sass

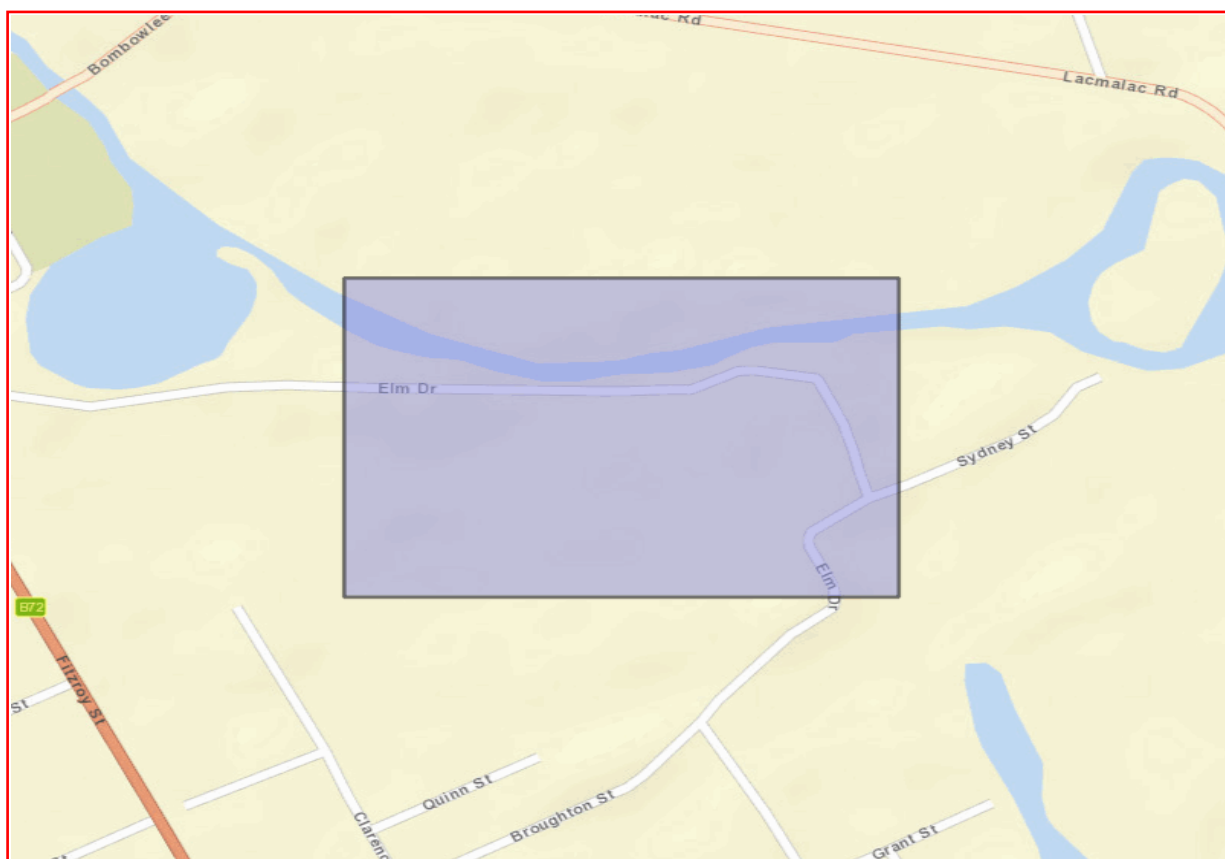
Email: [steve@envirokey.com.au](mailto:steve@envirokey.com.au)

Date: 15 September 2022

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lat, Long From : -35.3058, 148.2327 - Lat, Long To : -35.3015, 148.2405, conducted by Steve Sass on 15 September 2022.**

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

**If your search shows Aboriginal sites or places what should you do?**

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(https://www.legislation.nsw.gov.au/gazette\)](https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

**Important information about your AHIMS search**

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

## APPENDIX 7 – NON-ABORIGINAL HERITAGE SEARCHES

Address Lot LGA POI

Address, eg: 320 Pitt Street Sydney 2000

Layers

Legends

Filter layers

Land Zoning Map

☐ Additional Controls

☐ Land Zoning Map

Lot Size Map

☐ Land Application Map

☐ Land

CRICKETNETS

ELM DRIVE

ELM DRIVE

TUMUT RACECOURSE

40 m



## APPENDIX 8 – PROTECTED MATTERS SEARCH TOOL RESULTS





# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 18-Sep-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

# Summary

## Matters of National Environment Significance

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

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance (Ramsar)</a>	4
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Listed Threatened Ecological Communities:</a>	4
<a href="#">Listed Threatened Species:</a>	33
<a href="#">Listed Migratory Species:</a>	11

## Other Matters Protected by the EPBC Act

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

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

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

<a href="#">Commonwealth Lands:</a>	3
<a href="#">Commonwealth Heritage Places:</a>	1
<a href="#">Listed Marine Species:</a>	18
<a href="#">Whales and Other Cetaceans:</a>	None
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None
<a href="#">Habitat Critical to the Survival of Marine Turtles:</a>	None

## Extra Information

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

<a href="#">State and Territory Reserves:</a>	1
<a href="#">Regional Forest Agreements:</a>	1
<a href="#">Nationally Important Wetlands:</a>	None
<a href="#">EPBC Act Referrals:</a>	5
<a href="#">Key Ecological Features (Marine):</a>	None
<a href="#">Biologically Important Areas:</a>	None
<a href="#">Bioregional Assessments:</a>	None
<a href="#">Geological and Bioregional Assessments:</a>	None

# Details

## Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[ Resource Information ]
Ramsar Site Name	Proximity	Buffer Status
<a href="#">Banrock station wetland complex</a>	700 - 800km upstream from Ramsar site	In feature area
<a href="#">Hattah-kulkyne lakes</a>	500 - 600km upstream from Ramsar site	In feature area
<a href="#">Riverland</a>	600 - 700km upstream from Ramsar site	In feature area
<a href="#">The coorong, and lakes alexandrina and albert wetland</a>	700 - 800km upstream from Ramsar site	In feature area

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

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Alpine Sphagnum Bogs and Associated Fens</a>	Endangered	Community may occur within area	In buffer area only
<a href="#">Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia</a>	Endangered	Community may occur within area	In feature area
<a href="#">Natural Temperate Grassland of the South Eastern Highlands</a>	Critically Endangered	Community likely to occur within area	In feature area
<a href="#">White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland</a>	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species	[ Resource Information ]
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Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Anthochaera phrygia</u> Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
<u>Botaurus poiciloptilus</u> Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
<u>Calidris ferruginea</u> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
<u>Callocephalon fimbriatum</u> Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
<u>Falco hypoleucos</u> Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<u>Grantiella picta</u> Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<u>Hirundapus caudacutus</u> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
<u>Lathamus discolor</u> Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
<u>Numenius madagascariensis</u> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<u>Polytelis swainsonii</u> Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area	In feature area
<u>Pycnoptilus floccosus</u> Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Rostratula australis</u> Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
FISH			
<u>Maccullochella macquariensis</u> Trout Cod [26171]	Endangered	Species or species habitat may occur within area	In feature area
<u>Maccullochella peelii</u> Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area	In feature area
<u>Macquaria australasica</u> Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
FROG			
<u>Crinia sloanei</u> Sloane's Froglet [59151]	Endangered	Species or species habitat may occur within area	In buffer area only
<u>Litoria booroolongensis</u> Booroolong Frog [1844]	Endangered	Species or species habitat likely to occur within area	In feature area
<u>Litoria raniformis</u> Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat may occur within area	In feature area
INSECT			
<u>Synemon plana</u> Golden Sun Moth [25234]	Vulnerable	Species or species habitat known to occur within area	In feature area
MAMMAL			
<u>Dasyurus maculatus maculatus (SE mainland population)</u> Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
<u>Nyctophilus corbeni</u> Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area	In feature area



Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Petauroides volans</u> Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In buffer area only
<u>Phascolarctos cinereus</u> (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
<u>Pteropus poliocephalus</u> Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
PLANT			
<u>Ammobium craspedioides</u> Yass Daisy [20758]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<u>Amphibromus fluitans</u> River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat may occur within area	In feature area
<u>Caladenia arenaria</u> Sand-hill Spider-orchid [9275]	Endangered	Species or species habitat may occur within area	In buffer area only
<u>Pimelea bracteata</u> [8125]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
<u>Pomaderris cotoneaster</u> Cotoneaster Pomaderris [2043]	Endangered	Species or species habitat may occur within area	In buffer area only
<u>Prasophyllum petilum</u> Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area	In feature area
<u>Swainsona recta</u> Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area	In feature area
REPTILE			
<u>Aprasia parapulchella</u> Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Delma impar</u> Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area	In feature area

Listed Migratory Species		[ <a href="#">Resource Information</a> ]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
<u>Apus pacificus</u> Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area

Migratory Terrestrial Species			
<u>Hirundapus caudacutus</u> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
<u>Motacilla flava</u> Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
<u>Myiagra cyanoleuca</u> Satin Flycatcher [612]		Species or species habitat likely to occur within area	In feature area
<u>Rhipidura rufifrons</u> Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area

Migratory Wetlands Species			
<u>Actitis hypoleucos</u> Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
<u>Calidris acuminata</u> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
<u>Calidris ferruginea</u> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
<u>Calidris melanotos</u> Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Gallinago hardwickii</u> Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area	In feature area
<u>Numenius madagascariensis</u> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

## Other Matters Protected by the EPBC Act

### Commonwealth Lands [\[ Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Commonwealth Trading Bank of Australia		
Commonwealth Land - Commonwealth Trading Bank of Australia [14988]	NSW	In buffer area only

Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [14986]	NSW	In buffer area only

Commonwealth Land - Australian Telecommunications Commission [14987]	NSW	In buffer area only
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### Commonwealth Heritage Places [\[ Resource Information \]](#)

Name	State	Status	Buffer Status
Historic			
<u>Tumut Post Office</u>	NSW	Listed place	In buffer area only

### Listed Marine Species [\[ Resource Information \]](#)

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
<u>Actitis hypoleucos</u> Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
<u>Apus pacificus</u> Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Bubulcus ibis as Ardea ibis</u> Cattle Egret [66521]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
<u>Calidris acuminata</u> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
<u>Calidris ferruginea</u> Curlew Sandpiper [856]		Species or species habitat may occur within area overfly marine area	In feature area
<u>Calidris melanotos</u> Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
<u>Chalcites osculans as Chrysococcyx osculans</u> Black-eared Cuckoo [83425]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In buffer area only
<u>Gallinago hardwickii</u> Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area overfly marine area	In feature area
<u>Haliaeetus leucogaster</u> White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
<u>Hirundapus caudacutus</u> White-throated Needletail [682]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
<u>Lathamus discolor</u> Swift Parrot [744]		Species or species habitat likely to occur within area overfly marine area	In feature area
<u>Merops ornatus</u> Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<u>Motacilla flava</u> Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
<u>Myiagra cyanoleuca</u> Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area	In feature area
<u>Neophema chrysostoma</u> Blue-winged Parrot [726]		Species or species habitat likely to occur within area overfly marine area	In feature area
<u>Numenius madagascariensis</u> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<u>Rhipidura rufifrons</u> Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
<u>Rostratula australis as Rostratula benghalensis (sensu lato)</u> Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

## Extra Information

State and Territory Reserves			[ <a href="#">Resource Information</a> ]
Protected Area Name	Reserve Type	State	Buffer Status
Wereboldera	State Conservation Area	NSW	In buffer area only

Regional Forest Agreements			[ <a href="#">Resource Information</a> ]
Note that all areas with completed RFAs have been included.			
RFA Name	State		Buffer Status
<u>Southern RFA</u>	New South Wales		In feature area

EPBC Act Referrals					[ <a href="#">Resource Information</a> ]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status	
Not controlled action					
<u>Improving rabbit biocontrol: releasing another strain of RHDV.</u>	2015/7522	Not Controlled Action	Completed	In feature area	



Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
<a href="#"><u>sthrrn two thirds of Australia</u></a>				
<a href="#"><u>INDIGO Central Submarine Telecommunications Cable</u></a>	2017/8127	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
<a href="#"><u>1080 Surface baiting research proposal</u></a>	2008/3983	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
<a href="#"><u>INDIGO Marine Cable Route Survey (INDIGO)</u></a>	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Referral decision				
<a href="#"><u>New transmission infrastructure, HumeLink</u></a>	2021/9121	Referral Decision	Referral Publication	In buffer area only

# Caveat

## 1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

## 2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

## 3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

## 4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

# Acknowledgements

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

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

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

Please feel free to provide feedback via the [Contact Us](#) page.

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## **APPENDIX 9 – FLORA SPECIES RECORDED DURING THE FIELD SURVEY**



Scientific Name	Common Name
EXOTICS	
* <i>Acer negundo</i>	Box-elder Maple
* <i>Amaranthus sp.</i>	Pigweed
* <i>Arctotheca calendula</i>	Capeweed
* <i>Asphodelus fistulosus</i>	Onion Weed
* <i>Avena barbata</i>	Bearded Oats
* <i>Avena fatua</i>	Wild Oats
* <i>Betula pendula</i>	Silver Birch
* <i>Bouteloua dactyloides</i>	Buffalo Grass
* <i>Brassica napus</i>	Rapeseed
* <i>Brassica rapa</i>	Wild Turnip
* <i>Briza minor</i>	Shivery Grass
* <i>Briza maxima</i>	Blow fly Grass
* <i>Bromus diandrus</i>	Great Brome
* <i>Capsella bursa-pastoris</i>	Shepherd's Purse
* <i>Carthamus lanatus</i>	Saffron Thistle
* <i>Centaureum erythraea</i>	Common Centaury
* <i>Conyza bonariensis</i>	Flaxleaf Fleabane
* <i>Cytisus scoparius</i>	Scotch Broom
* <i>Datura innoxia</i>	Downy Thornapple
* <i>Echium plantagineum</i>	Patterson's Curse
* <i>Foeniculum vulgare</i>	Fennel
* <i>Fumaria officinalis</i>	Common Fumitory
* <i>Fraxinus sp.</i>	Claret Ash
* <i>Galium aprine</i>	Goosegrass
* <i>Gazannia sp.</i>	Gazannia
* <i>Gibasis pellucida</i>	Tahitian Bridal Veil
* <i>Heliotropium europaeum</i>	Potato Weed
* <i>Heliotropium supinum</i>	Prostrate Heliotrope

Scientific Name	Common Name
* <i>Hordeum leporinum</i>	Barley Grass
* <i>Hypericum perforatum</i>	St. Johns Wort
* <i>hypochaeris radicata</i>	Flatweed
* <i>Lactuca serriola</i>	Prickly Lettuce
* <i>Lepidium africanum</i>	Common Peppergrass
* <i>Lepidium draba</i>	Hoary Cress
* <i>Malva parviflora</i>	Small-flowered mallow
* <i>Narcissus tazetta</i>	Jonquil
* <i>Oenothera biennis</i>	Evening Primrose
* <i>Oxalis pes-caprae</i>	African Wood-sorrel
* <i>Paspalum dilatatum</i>	Paspalum
* <i>Phalaris aquatica</i>	Phalaris
* <i>Phalaris paradoxa</i>	Paradoxa Grass
* <i>Photinia serratifolia</i>	Chinese Photinia
* <i>Phytolacca octandra</i>	Ink Weed
* <i>Pinus radiata</i>	Radiata Pine
* <i>Plantago lanceolata</i>	Ribwort
* <i>Poa annua</i>	Winter Grass
* <i>Prunus serrulate</i>	Oriental Cherry
* <i>Quercus ?palustris</i>	Pin Oak
* <i>Quercus ?robur</i>	English Oak
* <i>Romulea rosea</i>	Onion Grass
* <i>Rosa rubiginosa</i>	Rose Briar
* <i>Rubus fruticosus</i>	Blackberry
* <i>Rumex acetosella</i>	Sheep's Sorrel
* <i>Rosa rubiginosa</i>	Rose Briar
* <i>Rumex crispus</i>	Curled Dock
* <i>Salvia verbenaca</i>	Wild Sage
* <i>Silybum marianum</i>	Variegated Thistle

Scientific Name	Common Name
* <i>Sisymbrium erysimoides</i>	Smooth Mustard
* <i>Solanum nigrum</i>	Black-berry Nightshade
* <i>Sonchus oleraceus</i>	Common Sowthistle
* <i>Trifolium angustifolium</i>	Narrow-leaved Clover
* <i>Trifolium repens</i>	White Clover
* <i>Verbena bonariensis</i>	Purple Top
* <i>Yucca sp.</i>	Yucca
* <i>Ulmus parviflora</i>	Chinese Elm
<b>NATIVES</b>	
<i>Acacia baileyana</i>	Cootamundra Wattle
<i>Acacia melanoxylon</i>	Blackwood
<i>Acacia dealbata</i>	Silver Wattle
<i>Acaena novae-zelandiae</i>	Bidgee-Widgee
<i>Acaena ovina</i>	Sheep's Burr
<i>Alternanthera nana</i>	Hairy Joyweed
<i>Asperula conferta</i>	Common Woodruff
<i>Bothriochloa macra</i>	Red-leg Grass
<i>Bursaria spinosa</i>	Sweet Busaria
<i>Carex appressa</i>	Tall Sedge
<i>Carex inversa</i>	Knob Sedge
<i>Cassinia aculeata</i>	Dolly Bush
<i>Cassinia sifton</i>	Sifton Bush
<i>Crassula sieberiana</i>	Australian Stonecrop
<i>Cynodon dactylon</i>	Couch
<i>Cyperus eragrostis</i>	Tall Flatsedge
<i>Dianella revoluta</i>	Blue Flax-lily
<i>Dichelachne crinita</i>	Plume Grass
<i>Eucalyptus radiata</i>	Narrow-leaved Peppermint
<i>Eucalyptus bicostata</i>	Blue Gum

Scientific Name	Common Name
<i>Eucalyptus bridgesiana</i>	Apple Box
<i>Eucalyptus darlympleana</i>	Mountain Gum
<i>Eucalyptus dives</i>	Broad-leaved Peppermint
<i>Eucalyptus macrorhyncha</i>	Red Stringybark
<i>Eucalyptus pauciflora</i>	White Sallee
<i>Eucalyptus viminalis</i>	Ribbon Gum
<i>Exocarpos cupressiformis</i>	Native Cherry
<i>Glycine clandestina</i>	Twining Glycine
<i>Goodenia ovata</i>	Hop Goodenia
<i>Juncus sp.</i>	A Juncus
<i>Kennedia prostrata</i>	Running Postman
<i>Lomandra filiformis subsp. filiformis</i>	Wattle Mat-rush
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Lomandra multiflora</i>	Many-flowered Mat-rush
<i>Microlaena stipoides</i>	Weeping grass
<i>Poa sieberiana</i>	Blue Tussock Grass
<i>Poa labillardieri</i>	Common Tussock Grass
<i>Rumex brownii</i>	Swamp Dock
<i>Themeda australis</i>	Kangaroo Grass

## **APPENDIX 10 – FAUNA SPECIES RECORDED DURING THE FIELD SURVEY**



Species Group	Scientific Name	Common Name
Amphibia	<i>Crinia signifera</i>	Clicking Froglet
Amphibia	<i>Limnodynastes tasmaniensis</i>	Spotted Marsh Frog
Aves	<i>Alisterus scapularis</i>	Australian King-Parrot
Aves	<i>Cracticus tibicen</i>	Australian Magpie
Aves	<i>Corvus coronoides</i>	Australian Raven
Aves	<i>Chenonetta jubata</i>	Australian Wood Duck
Aves	<i>Turdus merula</i>	Common Blackbird
Aves	<i>Sturnus vulgaris</i>	Common Starling
Aves	<i>Platycercus elegans</i>	Crimson Rosella
Aves	<i>Acanthorhynchus tenuirostris</i>	Eastern Spinebill
Aves	<i>Passer domesticus</i>	House Sparrow
Aves	<i>Dacelo novaeguineae</i>	Laughing Kookaburra
Aves	<i>Cacatua sanguinea</i>	Little Corella
Aves	<i>Grallina cyanoleuca</i>	Magpie-lark
Aves	<i>Vanellus miles</i>	Masked Lapwing
Aves	<i>Phylidonyris novaehollandiae</i>	New Holland Honeyeater
Aves	<i>Strepera graculina</i>	Pied Currawong
Aves	<i>Neochmia temporalis</i>	Red-browed Finch
Aves	<i>Zosterops lateralis</i>	Silvereye
Aves	<i>Malurus cyaneus</i>	Superb Fairy-wren
Aves	<i>Hirundo neoxena</i>	Welcome Swallow
Aves	<i>Sericornis frontalis</i>	White-browed Scrubwren
Aves	<i>Corcorax melanorhamphos</i>	White-winged Chough
Aves	<i>Acanthiza nana</i>	Yellow Thornbill
Mammalia	<i>Oryctolagus cuniculus</i>	Rabbit