Transport
for NSW

HW19 Monaro Highway, Northbound Overtaking Lane, 2km north of Bredbo

Minor works review of environmental factors

February 2023

transport.nsw.gov.au

NSW GOVERNMENT

Acknowledgement of Country

Transport for NSW acknowledges, the traditional custodians of the land on which the northbound overtaking lane on the Monaro Highway north of Bredbo is proposed.

We pay our respects to their Elders past and present and celebrate the diversity of Aboriginal people and their ongoing cultures and connections to the lands and waters of NSW.

Many of the transport routes we use today – from rail lines, to roads, to water crossings – follow the traditional Songlines, trade routes and ceremonial paths in Country that our nation's First Peoples followed for tens of thousands of years.

Transport for NSW is committed to honouring Aboriginal peoples' cultural and spiritual connections to the land, waters and seas and their rich contribution to society.

MW REF approval and authorisation

Approved by	Ian Nerrie, Project/Contract Manager
Signed	
Date	3/04/2023

Table of contents

Figures

Tables

1. Introduction

The purpose of the Minor Works review of environmental factors (REF) is to describe the proposal, to document the likely impacts of the proposal on the environment, to detail mitigation measures to be implemented and to determine whether or not the proposal can proceed. For the purposes of this work Transport for NSW (Transport) is the proponent and determining authority under Division 5.1 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

The description of the proposed works and assessment of associated environmental impacts has been undertaken in the context of section 171 of the Environmental Planning and Assessment Regulation 2021, Guidelines for Division 5.1 Assessments (DPE, 2022), the Biodiversity Conservation Act 2016 (BC Act), the Fisheries Management Act 1994 (FM Act) and the Commonwealth Government's Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

In doing so the REF helps to fulfil the requirements of section 5.5 of the EP&A Act including that Transport examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the activity.

The findings of the REF would be considered when assessing:

- Whether the proposal is likely to have a significant impact on the environment and therefore the necessity for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning and Public Spaces under Division 5.2 of the EP&A Act
- The significance of any impact on threatened species as defined by the BC Act and/or FM Act, in section 1.7 of the EP&A Act and therefore the requirement for a Species Impact Statement or a Biodiversity Development Assessment Report
- The potential for the proposal to significantly impact a matter of national environmental significance, including nationally listed threatened biodiversity matters, or the environment of Commonwealth land. Where a significant impact is considered likely on nationally listed biodiversity matters, either the proposal must be reconsidered or a Project REF must be prepared.

2. The proposal

2.1 Description

2.1.1 Proposal location details

Table 2-1: Proposal location details

Location details	
Title	HW19 Monaro Highway, Northbound Overtaking Lane, 2km north of Bredbo
File number	P.0072480
Road name and number	HW19 Monaro Highway
Closest crossroad(s)	North St
Chainage of works	36075 to 37800
Local government area	Snowy Monaro Regional Council
Transport for NSW region	South

2.1.2 Proposal location description

Transport for NSW (Transport) proposes to construct a northbound overtaking lane on the Monaro Highway (HW19) about 2 kilometres north of Bredbo. The proposal is within the Snowy Monaro Regional Council LGA. The proposed length of the proposed overtaking lane is 900m and is shown in Appendix A.

Key features of the proposal include:

- Widening of the northbound lane by 6.0 metres from existing edge of seal to allow for construction of an overtaking lane and new road shoulder
- Proposed length of overtaking lane is 900 metres excluding merge / diverge tapers
- Pipe culvert extension at five locations including two 450mm culvert extensions to the west of the road and three twin cell (1x 450mm, 1x 1500mm, 1x 900mm) culvert extensions to the west of the road
- One new single cell 400mm culvert
- 300 metres of type SO concrete gutter
- Shoulder sealing of adjacent property access on the western side of the road
- Installation of 852m of new safety barrier
- Installation of new line marking and and signage.

The proposal is anticipated to involve the following work methodology:

- Install temporary traffic control signs
- Establish temporary site compounds, stockpile sites, laydown areas and exclusion zone fencing
- Install boundary fencing
- Install environmental controls including erosion and sediment controls, and no go zones
- Install new pipe culvert extensions at five locations
- Excavate unsuitable material and reuse by widening the road embankments
- Utilise fill sites are available for the reuse of surplus material. These fill sites have a safety improvement benefit by providing a widened runoff area

- Import new pavement materials for construction of the road pavement and shoulders required for 6.0m wide formation widening
- Topsoil and revegetation batter works
- Bitumen sealing of shoulders followed by line marking
- Install steel W beam guardrail and end terminal, guideposts and other delineation
- Site clean-up, stabilisation and rehabilitation of disturbed areas
- Remove traffic controls.

Equipment and machinery to be used for the proposal includes:

- Grader
- Water Tankers
- Padfoot rollers
- Steel drum roller
- 25 tonne excavator
- Loader / backhoe
- Bobcat with broom
- Truck 9 tonne
- Truck 12 tonne tippers and 12 tonne trailers
- Concrete trucks
- Concrete pump truck
- Spray sealing truck and bitumen tankers
- Guardrail installation post rammer

Construction would primarily occur during the following standard work times:

- 7am to 6pm Monday to Friday
- 8 am to 1 pm Saturday
- No work Sundays or public holidays

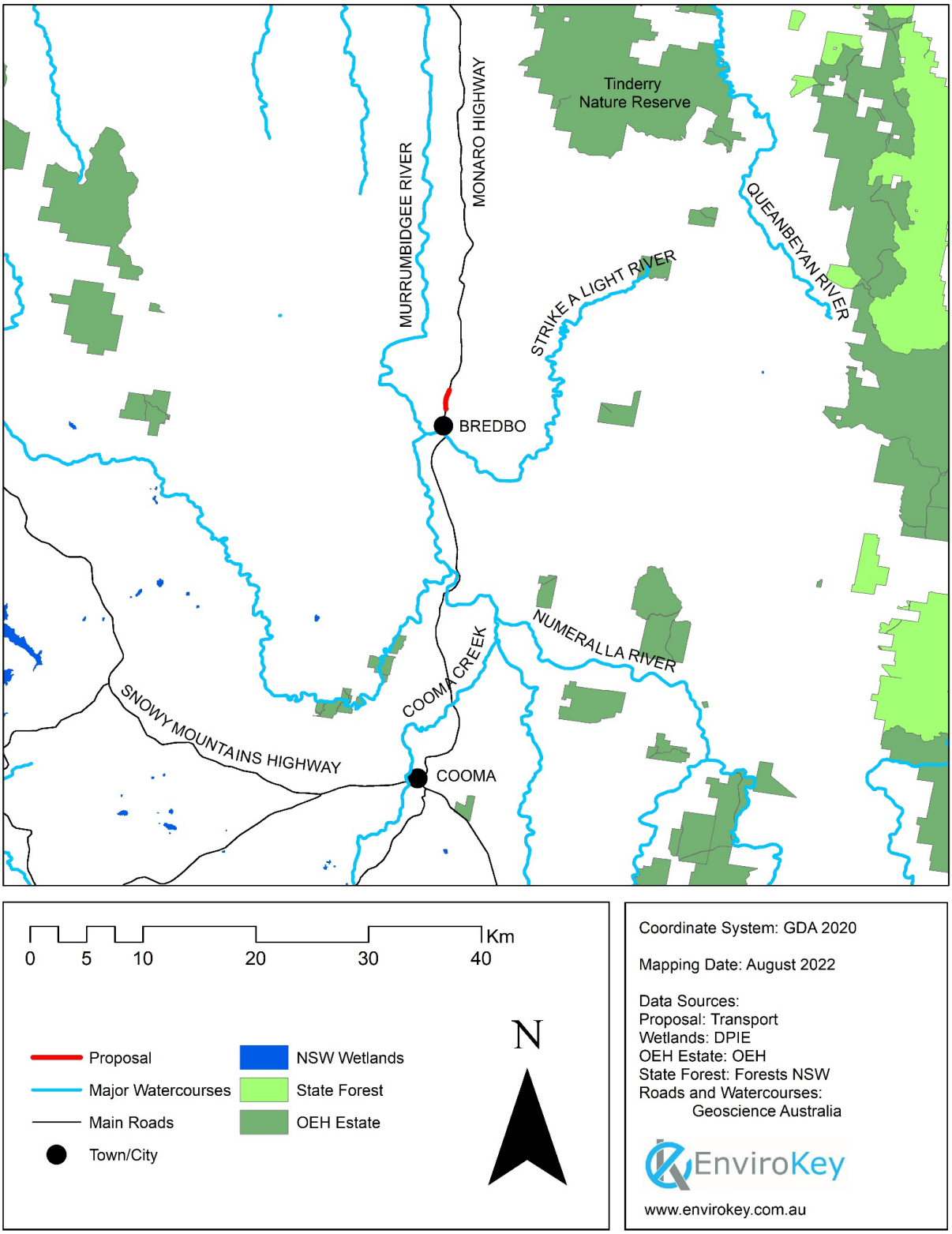


Figure 2-1: Location of the proposal

Figure 2-2: The proposal footprint

2.1.3 Proposal objectives

The proposal is part of a broader strategy to improve safety and efficiency along the Monaro highway to accommodate increased seasonal traffic during snow season.

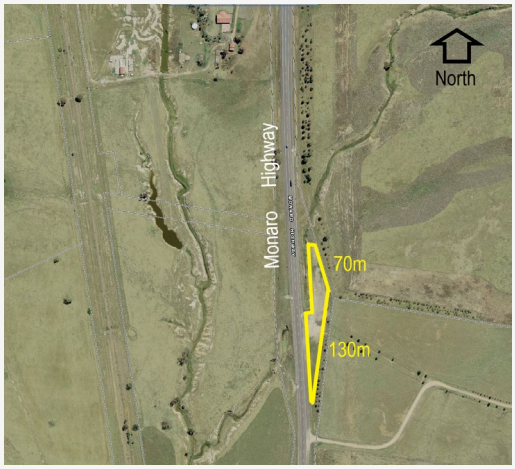
In 2016, preliminary investigations were undertaken for opportunities for northbound overtaking lanes as part of an investigation into opportunities for safety and efficiency upgrades on the Monaro Highway (HW19) and Kosciusko Road (MR286). In the five-year period from 1 January 2013 to 31 December 2017 there have been 24 crashes reported northbound on this section of the Monaro Highway. In addition to the five year crash analysis period, in 2018 there were four fatal crashes reported on the full length of the Monaro Highway between Cooma and the ACT border.

The proposal aims to:

- Develop an overtaking lane to enhance safety to road users by improving travel time, level of service, reducing driver frustration and unsafe behaviour
- Reduce risk of overtaking related crashes including head on crashes
- Continue safety improvements as part of an ongoing work on Monaro Highway (HW19)

2.1.4 Ancillary facilities

Table 2-2: Ancillary facilities

Ancillary facilities		
Will the proposal require the use or installation of a compound site? An existing stockpile site, about 1km north of Bredbo will be used as a compound site.  Figure 2-3: Location of proposed compound and stockpile sites  Figure 2-4: Location of proposed stockpile site (previously used)	Yes ☒	No ☐
Will the proposal require the use or installation of a stockpile site? There will be two existing stockpile sites that would be used for this proposal. The first is located at the southern end of the proposal site within the compound site. The second is located about 1 kilometre south of Michelago, and about 30 kilometres north of Bredbo. 	Yes ☒	No ☐

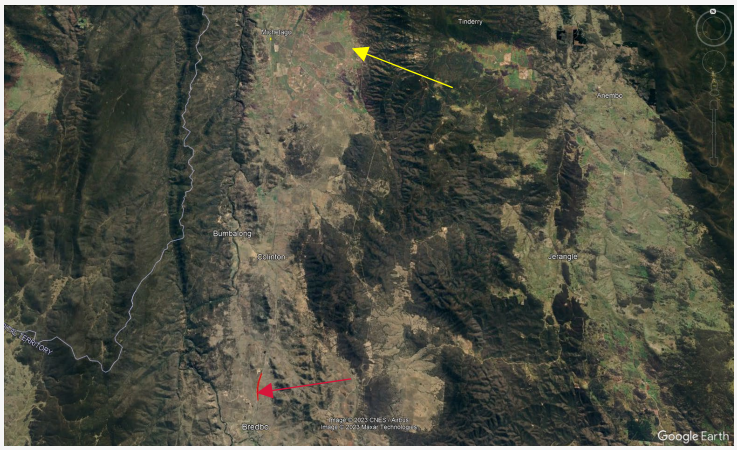


Figure 2-5: Existing stockpile site located 1km south of Michelago, about 30km north of Bredbo (shown by yellow arrow, proposal in red)

Are any other ancillary facilities required (eg temporary plants, parking areas, access tracks)? Temporary plant and parking There would be several machines that would be parked within the existing northbound shoulder during construction. This would be done when it is safe and viable to do so. Machines that are unable to be left on site due to safety concerns for road users would be moved to overnight parking at the designated compound location. Access tracks All access to the project will be from the road and within the footprint of the assessed area. No access via the private property will be required (except on acquired land). Turnaround points Designated turnaround points have been allocated to the quarry entrance approximately 250 metres north from the end of the proposed project. The southern turnaround point is located within the compound area.	Yes ☐	No ☒

2.1.5 Proposed date of commencement

The proposal is due to commence in April 2023 until May 2023 and is expected to restart in October 2023 and be completed by May 2024. Timeframes are indicative only.

2.1.6 Estimated length of construction period

The work is expected to take 4 months to complete. Timeframes are indicative only. The project will have an operating window of October to May due to the winter closure of road works in the region.

2.2 Need and options

2.2.1 Options considered

The options considered for the proposal included:

Option 1: Do nothing. Proposal outcomes would not be achieved, road user safety would not be improved.

Option 2: Construct a 900m length northbound overtaking about 2km north of Bredbo as per the brief. This option has been considered as it meets the objectives of the program to help reduce the incidence and severity of crashes along this key corridor, while enhancing the efficient movement of local community, tourists and freight. It also provides the greatest economic and environmental impact, the impact on the environment is minor.

Option 3: Construction of a northbound overtaking lane 1.0km to 2.2km north of Bredbo. This option partly meets the objective of providing an overtaking opportunity commencing just north of the Silver Brumby Estate intersection but adjacent to a large watercourse. Beginning the overtaking lane directly after the intersection would create a risk from road users accelerating to overtake in close proximity to the intersection. The large watercourse would need to be re-aligned to accommodate the proposed road formation widening making this option environmentally sensitive and potentially costly.

The preferred option is Option 2, which meets the objectives of the proposal. While it has the greatest economic and environmental impact, the impact on the environment is minor.

2.2.2 Justification for the proposal

The proposal is required to improve road user safety through providing safer opportunities for overtaking to help reduce the incident and severity of crashes along this key corridor.

It is part of a broader strategy to improve safety and efficiency along the Monaro Highway to accommodate increased seasonal traffic during snow season.

The REF has examined and considered possible all matters affecting or likely to affect the environment by reason of the proposed activity. The proposal would result in both positive and negative impact. Safeguards are identified in this review of environmental factors to manage and mitigate the identified negative impact.

On balance, it is considered the adverse environmental impact of the proposal is outweighed by the useful effects and the proposal is therefore justified. This REF has determined the proposal is unlikely to have a significant impact on the environment and an Environmental Impact Statement is not required.

2.3 Statutory and planning framework

2.3.1 State Environmental Planning Policy (Transport and Infrastructure) 2021

T&ISEPP aims to facilitate the effective delivery of infrastructure across the state, including for roads and road infrastructure facilities. Clause 2.108 of the T&ISEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent.

As the proposal is appropriately characterised as development for the purposes of a road or road infrastructure facilities and is to be carried out by or on behalf of Transport, it can be assessed under Division 5.1 of the EP&A Act. Development consent from council is not required.

The proposal is not located adjacent to land reserved under the National Parks and Wildlife Act 1974. The proposal is located about 500 metres from the Scottsdale Reserve operated by Bush Heritage Australia. The proposal does not affect land or development regulated by State Environmental Planning Policy No. 14 – Coastal Wetlands, State Environmental Planning Policy No. 26 – Littoral Rainforests or State Environmental Planning Policy (Major Projects) 2005. Therefore, no ISEPP consultation is required.

2.3.2 Other relevant legislation and environmental planning instruments

Cooma-Monaro Local Environmental Plan 2013

Cooma-Monaro Local Environmental Plan (LEP) 2013 aims to make local environmental planning provisions for land in the Cooma-Monaro in accordance with the relevant standard environmental planning instrument. The proposal is located adjacent to land zoned RU1 Primary Production, and R5 Large Lot Residential and is located within SP2 Classified Road.

The objectives of zone SP2 are:

- To provide for infrastructure and related uses
- To prevent development that is not compatible with or that may detract from the provision of infrastructure

The objectives of zone RU1 are:

- To encourage sustainable primary production by maintaining and enhancing the natural resources base
- To encourage diversity in primary industry enterprises and systems appropriate for the area
- To minimise the fragmentation and alienation of resource lands

- To minimise conflict between land uses within this zone and land uses within adjoining zones
- To encourage land uses that are unlikely to generate significant additional traffic relative to the capacity and safety of a road, or create or increase a condition of ribbon development on any road
- To encourage land uses that are unlikely to create unreasonable or uneconomic demands for the provision or extension of public amenities or services
- To protect the water quality of receiving watercourses and groundwater systems
- To protect the visual landscape values of the rural area

The objectives of zone R5 are:

- To provide residential housing in a rural setting while preserving, and minimising impacts on, environmentally sensitive locations and scenic quality.
- To ensure that large residential lots do not hinder the proper and orderly development of urban areas in the future.
- To ensure that development in the area does not unreasonably increase the demand for public services or public facilities.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To promote an innovative and flexible approach to rural residential development.

The proposed work is being carried out within the existing road reserve (SP2) and would not significantly impact any land gazetted in zones RU1 or R5.

NSW *Environmental Planning and Assessment Act 1979*

The Environmental Planning and Assessment Act 1979 (EP&A Act) provides the framework for the assessment of Transport activities. Transport proposals are assessed and approved or determined under the following regimes:

1. **Division 5.1 of Part 5** applies to the majority of Transport road projects. Usually a review of environmental factors (REF) is prepared to assess the environmental impact of a project prior to commencing the work.

2. **Division 5.2 of Part 5** applies to State significant infrastructure. These major projects require approval from the Minister for Planning. An environmental impact statement is prepared in accordance with the requirements of the Director-General of the Department of Planning and Environment.

3. **Part 4** applies to projects that require development consent from a consent authority (usually a local council). A statement of environmental effects or environmental impact statement (for designated development) is prepared to assess environmental impact.

4. **Division 4.1 of Part 4** applies to State significant development. These major projects require approval from the Minister for Planning and Infrastructure. An environmental impact statement is prepared in accordance with the requirements of the Director-General of the Department of Planning and Environment.

Clause 5A and 5C of the EP&A Act requires that the **significance** of the impact of the proposal on terrestrial and aquatic threatened species, populations and endangered ecological communities is assessed as follows:

1. **Part 5.1** – the proponent must demonstrate the proposal will improve or maintain biodiversity outcomes. Threatened species assessment guidelines have been developed to assist in making this assessment. Assessment of biodiversity issues is to be in accordance with the requirements of the Director-General of the Department of Planning and Environment.

2. **Part 5** (and Part 4 where relevant) – a Test of Significance (or Five-part Test) is prepared in accordance with Clause 5A(2).

NSW *Biodiversity Conservation Act 2016*

The purpose of the BC Act is:

- To conserve biological diversity at bioregional and state scales
- To maintain the diversity and quality of ecosystems
- To support biodiversity conservation in the context of a changing climate
- To assess the extinction risk of species and ecological communities, and identify key threatening processes
- To establish a framework to avoid, minimise and offset the impacts of proposed development and land use change on biodiversity.

The threatened species assessment process under section 5A of the EP&A Act includes a Test of Significance (also known as the Five-part test). These factors must be considered by decision makers regarding the effect of a proposed development or activity on threatened species, populations or ecological communities, or their habitats.

An assessment of the potential impacts of the proposal on threatened species, populations, ecological communities, and Outstanding Biodiversity Values listed on the BC Act was carried out in accordance with section 5A of the EP&A Act. A Biodiversity assessment including a Test of Significance (or Five-part test) was conducted to characterise the significance of any potential

impacts within Appendix 3 and concluded that there would be no significant impact on threatened species, populations or ecological communities, or their habitats.

NSW *Protection of the Environment Operations Act 1997*

The object of the Act is to achieve the protection, restoration, and enhancement of the quality of the NSW environment. The Act provides for the issuing of three types of environment protection notices: clean-up, prevention, and prohibition notices.

Clean-up notices can be issued to deal with pollution incidents (e.g., a spill of pollutants). Prevention notices can be issued where an activity is being carried out in an environmentally unsatisfactory manner. Clean-up and prevention notices are issued by the regulatory authority for the activity or premises concerned. In emergencies, the EPA can issue a clean-up notice even though it is not the regulatory authority in the circumstances.

NSW *National Parks and Wildlife Act 1974*

The objectives of this Act are the conservation of nature, objects, places, or features of cultural value within the landscape, fostering public appreciation understanding and enjoyment of nature and cultural heritage and their conservation and providing for the management of land reserved under this Act in accordance with the management principles applicable for each type of reservation. Further, the objects are to be achieved by applying the principles of ESD.

This proposal would not impact on any land, objects, places, or features of cultural value (Aboriginal and non-Aboriginal) reserved under this Act. Nonetheless, this REF applies the principles of ESD.

Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

Under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) a referral is required to the Australian Government for proposed 'actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land'. These are considered in Appendix B and chapter 6 of the REF.

The implications of the approval and the associated assessment processes are detailed in the TfNSW Environmental Impact Assessment Practice Note – Environment Protection and Biodiversity Conservation Act 1999 – Strategic Assessment (EIA-N07). The practical effect of the approval is that Transport projects assessed under Part 5 of the EP&A Act:

- Must address and consider potential impacts on nationally listed threatened species, populations, ecological communities, and migratory species, including application of the "avoid, minimise, mitigate and offset" hierarchy.
- Do not require referral to the Federal Department of the Environment for these matters, even if the activity is likely to have a significant impact

The assessment of the proposal's impact on matters of national environmental significance and the environment of Commonwealth land found that there is unlikely to be a significant impact on relevant matters of national environmental significance. Accordingly, the proposal has not been referred to the Australian Government Department of Climate Change, Energy, the Environment and Water.

2.4 Community and agency consultation

2.4.1 SEPP (Transport and Infrastructure) consultation

Part 2.2 of the SEPP (Transport and Infrastructure) 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:

Table 2-3: Consultation required with Council

Is consultation with Council required under sections 2.10 - 2.12 and 2.14 of the SEPP (Transport and Infrastructure)?		
Are the works likely to have a substantial impact on the stormwater management services which are provided by council?	Yes ☐	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?	Yes ☐	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?	Yes ☐	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?	Yes ☐	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?	Yes ☐	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?	Yes ☐	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?	Yes ☐	No ☒
Is the proposal within the coastal vulnerability area and is inconsistent with a certified coastal management program applying to that land?	Yes ☐	No ☒
Are the works located on flood liable land? If so, will the works change flooding patterns to more than a minor extent?	Yes ☐	No ☒

Table 2-4: Consultation with other public authorities

Is consultation with a public authority (other than Council) required under sections 2.13, 2.15 and 2.16 of the SEPP (Transport and Infrastructure)?		
Are the works located on flood liable land? (to any extent) (SEPP (Transport and Infrastructure) s2.13). If so, do the works comprise more than minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance?	Yes ☐	No ☒
Are the works adjacent to a national park, nature reserve or other area reserved under the National Parks and Wildlife Act 1974, or on land acquired under that Act?	Yes ☐	No ☒
Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	Yes ☐	No ☒
Do the works include a fixed or floating structure in or over navigable waters?	Yes ☐	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?	Yes ☐	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).	Yes ☐	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).	Yes ☐	No ☒
Are the works on land in a mine subsidence district within the meaning of the *Mine Subsidence Compensation Act 1961*?	Yes ☐	No ☒

Table 2-5: Notification of council and occupiers of adjoining land

Do Council and occupiers of adjoining land need to be notified under section 2.110 of the SEPP (Transport and Infrastructure)?		
Does the proposal include a car park intended for the use by commuters using regular bus services?	Yes ☐	No ☒
Does the proposal include a bus depot?	Yes ☐	No ☒
Does the proposal include a permanent road maintenance depot or associated infrastructure, such as garages, sheds, tool houses, storage yards, training facilities and workers amenities?	Yes ☐	No ☒

2.4.2 Other agency and community consultation

While no ISEPP consultation is required, Transport would notify the Snowy Monaro Regional Council of the proposed work.

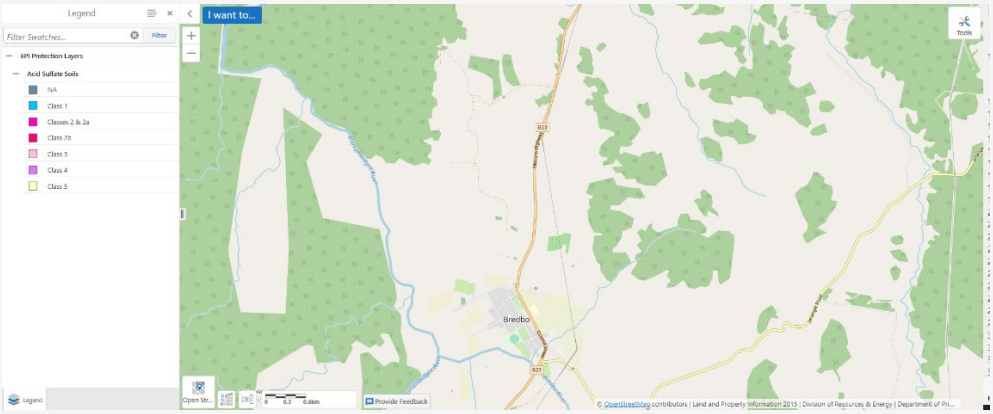
Variable Message Signs (VMS) would be installed at the site prior to work commencing advising of the proposed work and subsequent impact on road users. Transport would also advertise the proposed work on Live Traffic NSW.

3. Environmental assessment

This section provides a detailed description of the potential environmental impacts associated with the construction and operation of the proposal. All aspects of the environmental potentially impacted upon by the proposal are considered. This includes consideration of the factors specified in the Guidelines for Division 5.1 Assessments (DPE, 2022) and section 171 of the Environmental Planning and Assessment Regulation 2021. The matters of national environmental significance under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 are also considered in section 5. Site-specific safeguards are provided to ameliorate the identified potential impacts.

3.1 Soil

Table 3-1: Soil

Description of existing environmental and potential impacts		
Are there any known occurrences of salinity or acid sulfate soils in the area? 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  Figure 3-1: Acid sulfate soils within the vicinity of the proposal	Yes ☐	No ☒
Does the proposal involve the disturbance of large areas (e.g., >2ha) for earthworks? The proposed area of disturbance is 1.247ha	Yes ☐	No ☒
Does the site have constraints for erosion and sedimentation controls such as steep gradients or narrow corridors?	Yes ☐	No ☒
Are there any sensitive receiving environments that are located in or nearby the likely proposal area or that would likely receive stormwater discharge from the proposal?	Yes ☐	No ☒
Is there any evidence within or nearby the likely footprint of potential contamination?	Yes ☐	No ☒
Is the likely proposal footprint in or nearby highly sloping landform?	Yes ☐	No ☒
Is the proposal likely to result in more than 2.5ha (area) of exposed soil?	Yes ☐	No ☒

Safeguards

Safeguards to be implemented are:

1. Erosion and sediment control measures must be implemented and maintained to:

- Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets
- Reduce water velocity and capture sediment on site
- Minimise the amount of material transported from site to surrounding pavement surfaces
- Divert clean water around the site.

(in accordance with the Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book)).

2. Erosion and sedimentation controls must be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request.
3. Erosion and sediment control measures must not be removed until the work is complete, and areas are stabilised.

3.2 Waterways and water quality

Table 3-2: Waterways and water quality

Description of existing environmental and potential impacts		
Is the proposal located within, adjacent to or near a waterway? Five single cell culverts are being extended on the west of the road. There are no active waterways that use these culverts but is within the catchment area of the Murrumbidgee River.	Yes ☐	No ☒
Is the location known to flood or be prone to water logging? The land is likely to flood from time to time. Wet weather contingencies would be outlined and managed in accordance with the Environmental Work Method Statement (EWMS).	Yes ☐	No ☒
Is the proposal located within or immediately adjacent to the area managed by WaterNSW covered by chapter 8 of State Environmental Planning Policy (Biodiversity and Conservation) 2021 (SEPP (Biodiversity and Conservation))?	Yes ☐	No ☒
Would the proposal be undertaken on a bridge or ferry?	Yes ☐	No ☒
Is the proposal likely to require the extraction of water from a local water course (not mains)?	Yes ☐	No ☒

Safeguards

No additional safeguards are considered necessary.

3.3 Noise and vibration

Table 3-3: Noise and vibration

Description of existing environmental and potential impacts		
Are there any residential properties or other noise sensitive areas near the location of the proposal that may be affected by the work (i.e., church, school, hospital)? During construction? Two residential properties occur within a vicinity of the proposal and could be potential sensitive receivers. One property is located 52 metres from the proposal and the second is located 419 metres away (Figure 3-2).	Yes ☒	No ☐
During operation?	Yes ☐	No ☒
Is the proposal going to be undertaken only during standard working hours? Standard working hours Monday-Friday: 7:00am to 6.00pm Saturday: 8:00am to 1:00pm Sunday and Public Holidays: No work	Yes ☒	No ☐
Is any explosive blasting required for the proposal?	Yes ☐	No ☒
Would construction noise or vibration from the proposal affect sensitive receivers? Construction noise estimator by Transport has been used to determine these mitigation measures and can be found in Appendix 7. The existing noise category was defined as R0 with the Noisiest Individual Plant Estimator tool identifying the grader as the nosiest individual plant, with a distance of 50 metres to the closest sensitive receiver. The distance will vary as the works will continually shift along the length of the proposed overtaking lane, 50 metres is the minimum distance that works will occur from the sensitive receiver. The noise calculations shown in Appendix 7 confirm that notification is required for the resident 50 metres from the proposal. Sensitive receivers would require mitigation measures if work occurs outside standard works hours.	Yes ☒	No ☐
Would operation of the proposal alter the noise environment for sensitive receivers? There would be an extra lane added for the overtaking lane. Transport has collected background monitoring noise at the closest sensitive receiver (52 metres from the proposal) to observe for any alteration in noise from this proposal. **Background Noise Levels (L_{A90})** — **Day** 39 — **Evening** 30 — **Night** 30[1](25) [1] Number in brackets represents the measured (actual) background noise level, which is below the minimum NPfI value of 30 dB(A) during the night period. Therefore, minimum NPfI value of 30 dB(A) has been assigned as the background noise level Distance from potential sensitive receivers The addition of the additional lane along the same alignment of the existing road on the western side of the road will decrease the distance of the edge line to the resident by approximately 3.5 metres. No additional mitigation measures are required as this distance to receiver does not increase the L_{A90} by 2 dbl as outlined in the TfNSW EMF-NV-GD-0024 Road Noise Mitigation Guideline.	Yes ☒	No ☐

A traffic counter about 2 kilometres south Bredbo in 2022 showed a daily traffic volume count of 5,936 with 85% of these being light vehicles. The proposed overtaking lane would not alter the daily traffic volume count in the area.		
Would the proposal result in vibration being experienced by any surrounding properties or infrastructure during operation?	Yes ☐	No ☒

Safeguards

Safeguards to be implemented are:

4. Works would be carried out during normal working hours (i.e., 7am to 6pm Monday to Friday; 8am to 1pm Saturdays).
5. Noise must be minimised during construction using the "standard actions for noise minimisation" identified in the Transport Construction Noise and Vibration Guideline. Measures including allowing adequate distance that rollers can come to adjacent buildings and/or using non-vibrating rollers will be used to minimise or prevent vibration impact.
6. All plant must be shut down when not in use and parked / started as far as possible from sensitive receivers.
7. Where practical, site noise must be minimised including radio use, yelling, impact noise, simultaneous noise and plant operation.
8. The resident located 52m from the proposal will be notified at least 7 days prior to commencement of any works associated with the activity that may have an adverse noise or vibration impact. The notification will provide details of:
    - The project
    - The construction period and construction hours
    - Contact information for project management staff
    - Complaint and incident reporting
    - How to obtain further information.

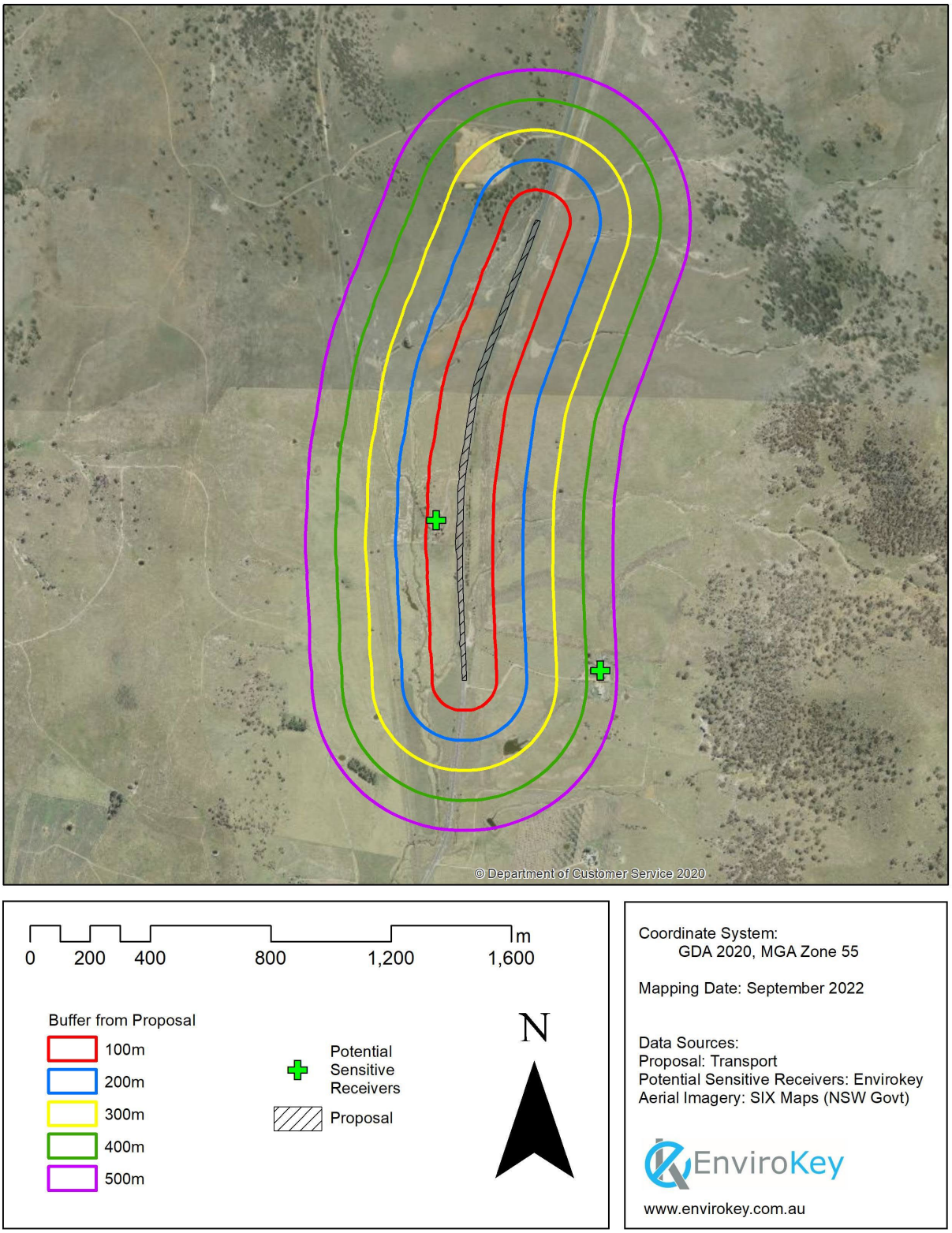


Figure 3-2: Potential Receivers within the vicinity of the proposal

3.4 Air quality

Table 3-4: Air quality

Description of existing environmental and potential impacts		
Is the proposal likely to result in large areas (>2ha) of exposed soils?	Yes ☐	No ☒
Are there any dust-sensitive receivers located within the vicinity of the proposal during the construction period? There are two potential sensitive residential receivers located within the vicinity of the proposal. The first house is located about 52 metres from the proposal and the second house is located about 419 metres from the proposal (**Error! Reference source not found.**). Given the close proximity of the house located 52 metres west of the proposal the risk of reduced air quality from dust must be managed. Mitigation measures must be outlined within the CEMP to ensure effective dust control and strategies to minimise the impact of dust, offensive odor and other air pollutants on this sensitive receiver.	Yes ☒	No ☐
Is there likely to be an emission to air during construction? This would be minor and would be exhaust emissions as a result of plant and equipment use, including excavators and trucks.	Yes ☒	No ☐

Safeguards

Safeguards to be implemented are:

9. Measures (including watering or covering exposed areas) are to be used to minimise or prevent air pollution and dust.
10. Plan and carry out all construction activities to avoid where practicable, or minimise, the generation of dust and vehicle emissions
11. Air quality mitigation strategies must be prepared and implemented as part of the CEMP, and must include the following as a minimum:
    - Identification of potential risks/impacts due to the work/activities as dust generation activities;
    - Management measures to minimise the potential impacts;
    - A process for monitoring dust on site and weather conditions;
    - A process for progressive stabilisation of disturbed surfaces with the aim of minimising exposed surfaces and windblown dust. Stabilising works must be monitored daily by your ESR for
    - Compliance; and windblown dust. Stabilising works must be monitored daily by your ESR for compliance; and
    - Contingency plans to be implemented in the event of non-compliances and/or complaints about dust.

3.5 Aboriginal heritage

Table 3-5: Aboriginal heritage

Description of existing environmental and potential impacts		
Would the proposal involve disturbance in any area that has not been subject to previous ground disturbances?	Yes ☐	No ☒
Has an online Aboriginal Heritage Information Management System (AHIMS) search been completed? Details are provided in Appendix C.	Yes ☒	No ☐
Is there potential for the proposal to impact on any items of Aboriginal heritage?	Yes ☐	No ☒

Would the proposal involve the removal of mature native trees?	Yes ☐	No ☒
Is the proposal consistent with the requirements of the legacy *Roads and Maritime Procedure for Aboriginal cultural heritage consultation and investigation* (PACHCI)? The proposal is consistent with the PACHCI stage one assessment and was assessed as being unlikely to have an impact on Aboriginal cultural heritage.	Yes ☒	No ☐

Safeguards

Safeguards to be implemented are:

12. If Aboriginal heritage items are uncovered during the works, all works in the vicinity of the find must cease and the TfNSW Aboriginal Cultural Heritage Advisor and Environment Manager be contacted immediately. Steps in the Transport for NSW *Standard Management Procedure: Unexpected Archaeological Finds, 2011*, must be followed.

3.6 Non-Aboriginal Heritage

Table 3-6: Non-Aboriginal heritage

Description of existing environmental and potential impacts		
Have online heritage database searches been completed? • NSW Heritage database • Commonwealth EPBC heritage list • Australian Heritage Places Inventory • Cooma-Monaro Local Environmental Plan 2013 Heritage searches were carried out on 18 August 2022. Non-aboriginal heritage searches are shown in Appendix E.	Yes ☒	No ☐
Are there any items of non-Aboriginal heritage or heritage conservation areas listed on relevant heritage databases/registers that are located within the vicinity of the proposal? There are two heritage items north of the proposal, however they are well distant from the proposal, and would not be impacted by the proposal. These are the Railway tunnel – Scotsdale located at 3897 Monaro Highway. The second being the Cottage – The Oaks located at 4215 Monaro Highway (Figure 3-3).	Yes ☐	No ☒
Is the proposal likely to occur in or near features that indicate potential archaeological remains?	Yes ☐	No ☒

Safeguards

Safeguards to be implemented are:

13. If unexpected archaeological remains are uncovered during the work, all work must cease in the vicinity of the material/find and the steps taken in the Transport *Standard Management Procedure: Unexpected Archaeological Finds* must be followed. The Transport Regional Environment Manager must be contacted immediately.

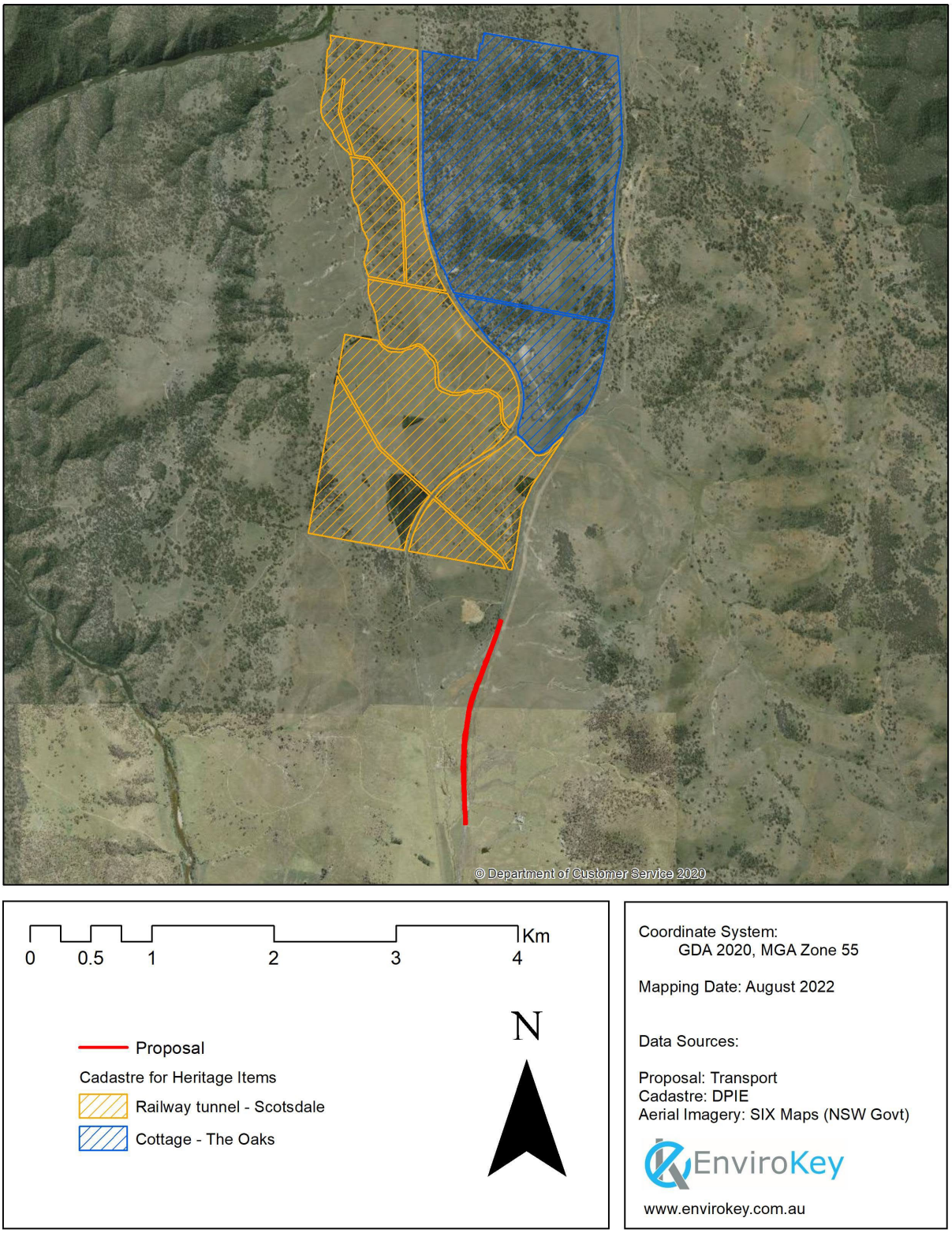


Figure 3-3: Heritage items within a vicinity of the proposal

3.7 Biodiversity

Table 3-7: Biodiversity

Description of existing environmental and potential impacts		
Have relevant database searches been carried out? Searches for the following databases were carried out in July 2022: • OEH Bionet NSW Atlas of Wildlife • Protected Matters Search Tool • Weedwise Database	Yes ☒	No ☐
Did the database searches identify any endangered ecological communities, threatened flora and/or threatened or protected fauna, or migratory species in or within the vicinity of the proposed works? Both Commonwealth and State listed matters must be considered. A detailed Biodiversity Assessment (BA) was prepared to assess the potential impacts of the proposed work. This is provided in full detail in Appendix B. The database searches identified a number of threatened flora and/or threatened or migratory fauna species within a 10 kilometre buffer of the proposed work (Figures 3-4 to 3-7). A threatened and migratory species evaluation for the potential for these species to occur onsite has been undertaken (See Appendix B). A field survey was undertaken on 24th August 2022 by two experienced ecologists, during which non-native vegetation and one Plant Community Type (Figure 3-8) was recorded. One threatened flora species was also identified during the field surveys, this being Silky Swainson-pea (*Swainsona sericea*) which is listed as Vulnerable under the BC Act (Figure 3-8). Two plants were identified within the study area, with one of these within the proposed footprint. A detailed biodiversity impact assessment was carried out to determine the potential impacts of the proposal. This is provided in full within Appendix B. A Test of Significance for the potential impact to this threatened flora species and other threatened or migratory species with the potential to occur within the proposal area is provided (See Appendix B). This concluded that the proposed work is unlikely to have a significant effect on threatened species, communities, populations and their habitats. A series of site-specific safeguards are recommended for implementation.	Yes ☒	No ☐
Is the proposal likely to impact nationally listed threatened species, ecological communities, or migratory species? PCT 3341 is listed as a threatened ecological community under the BC Act. It is not nationally threatened and the threatened flora species, Silky Swainson-pea is not listed under the EPBC Act. The proposal would not impact any nationally threatened ecological communities. The study area and surrounds may provide habitat for listed threatened species and migratory species. This have been assessed further in the Biodiversity Assessment (Appendix B).	Yes ☐	No ☒
Would the proposal require the removal of any other vegetation? The proposal would require the removal of about 0.05 hectares of native vegetation and up to 0.46 hectares of cleared/non-native land. Further details are provided in Appendix B.	Yes ☒	No ☐
Would the proposal affect any tree hollows or hollow logs?	Yes ☐	No ☒
Are there any known areas of outstanding biodiversity value or areas mapped as 'littoral rainforest' or 'coastal wetland' under chapter 2 of SEPP (Resilience and Hazards) in or within the vicinity of the proposed work?	Yes ☐	No ☒
Would the proposal provide any additional barriers to the movement of wildlife?	Yes ☐	No ☒
Would the proposal disturb any natural waterways or aquatic habitat?	Yes ☐	No ☒

Would the proposal disturb any crevices or other locations (such as on bridges and culverts) for potential bat habitat? The proposal involves extensions of 5 to 10 metres in length of five existing culverts along the road and the reinstatement of an existing property access culvert located on the western side of the road. While no bats were observed in the culverts through onsite inspection, they do provide potentially suitable habitat.	Yes ☒	No ☐

Safeguards

14. Safeguards to be implemented are: An exclusion zone is to be set up at the limit of clearing to avoid accidental impacts to retained areas of vegetation.
15. The single Silky Swainson-pea would be transplanted prior to any proposed work commencing as part of a threatened species management plan. The plan must be prepared by a suitably qualified and experienced person. The Biodiversity assessment assumes the single plant would not survive the transplant (as a worst-case scenario).
16. If unexpected threatened fauna or flora species are discovered, stop works immediately and follow the TfNSW *Unexpected Threatened Species Find Procedure* in the *TfNSW Biodiversity Guidelines 2011 – Guide 1 (Pre-clearing process)*.The unexpected species find procedure is to be followed under *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) if threatened flora, fauna or ecological communities, not assessed in the biodiversity assessment, are identified in the study area.
17. Pre-clearing surveys will be undertaken in accordance with *Guide 1: Pre-clearing process of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011)
18. Vegetation removal will be undertaken in accordance with *Guide 4: Clearing of vegetation and removal of bushrock* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).
19. Fauna will be managed in accordance with *Guide 9: Fauna handling* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).
20. Parking should be limited to existing hard stand areas, or within any area designated ancillary site as identified within Section 2.1.4.
21. Weed species will be managed in accordance with *Guide 6: Weed management* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).

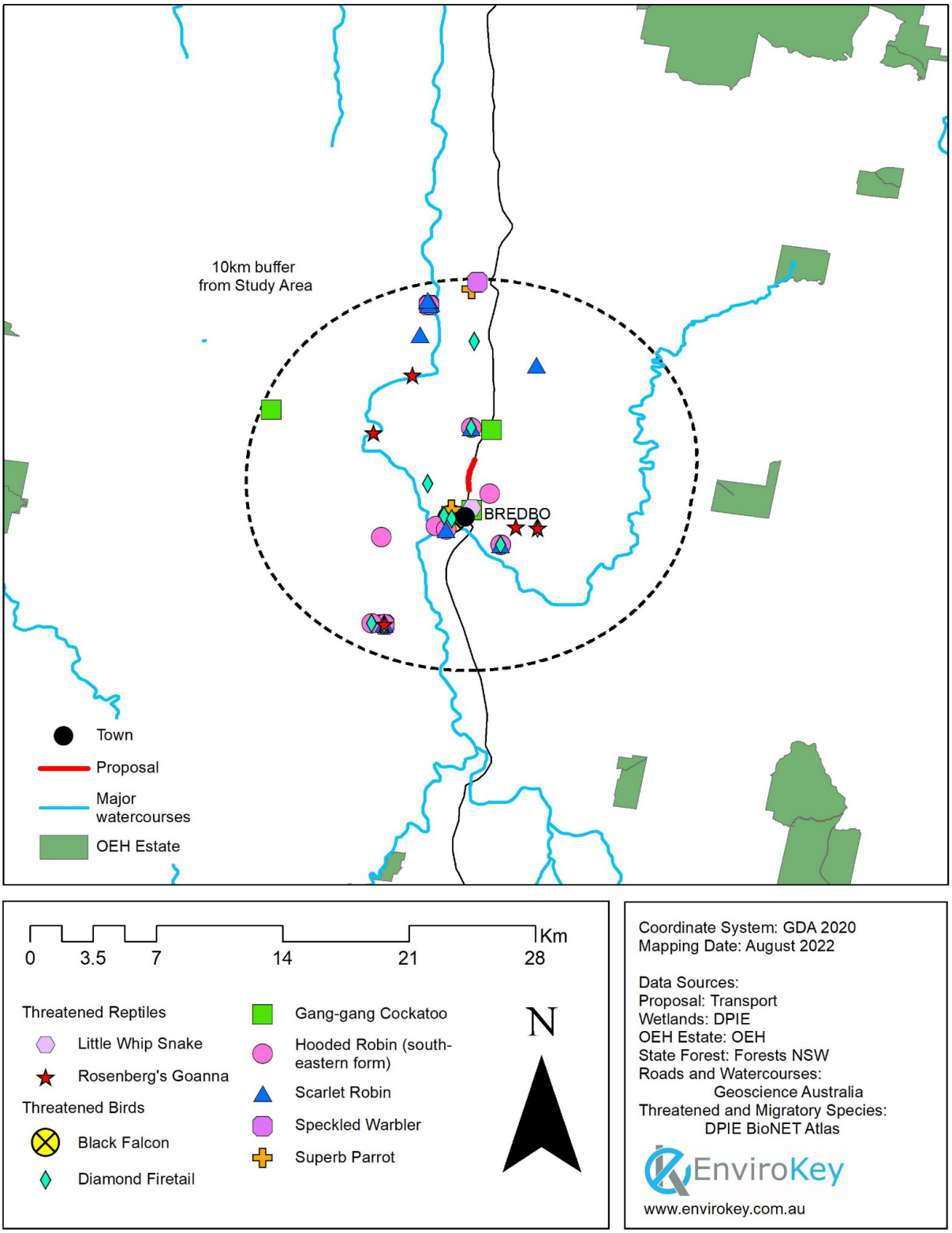


Figure 3-4: Existing records of threatened species within the vicinity of the proposal

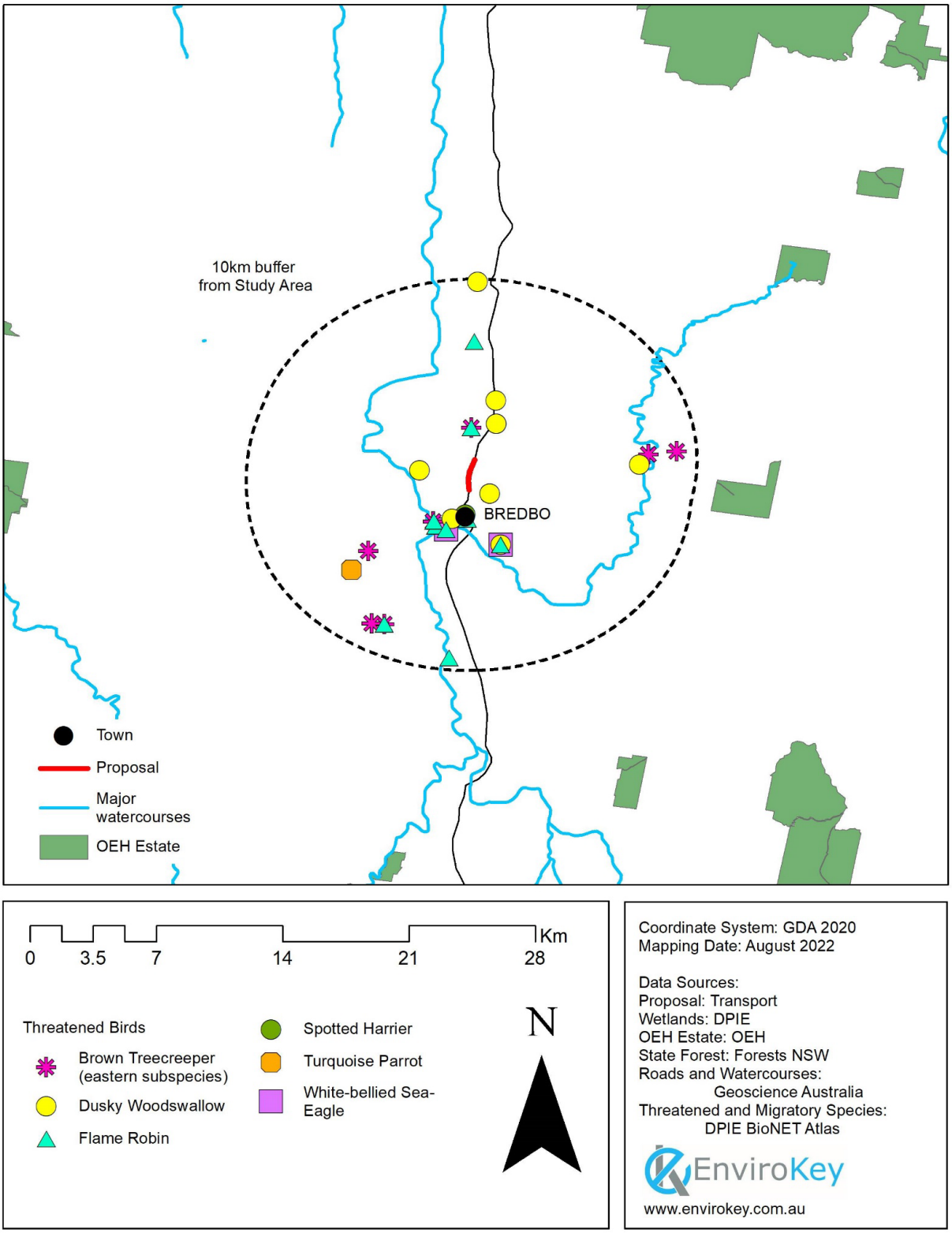


Figure 3-5: Existing records of threatened species within the vicinity of the proposal

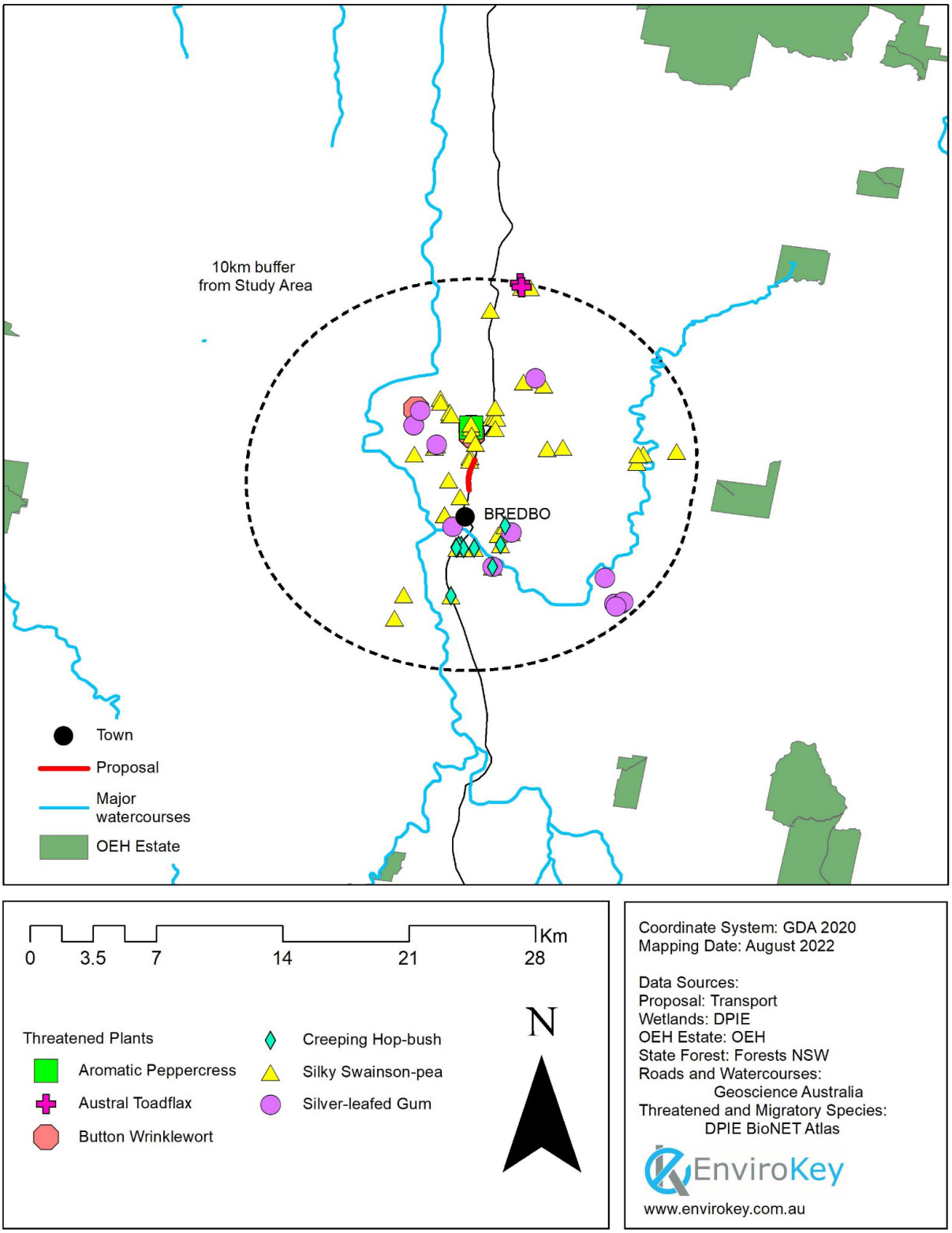


Figure 3-6: Existing records of threatened species within the vicinity of the proposal

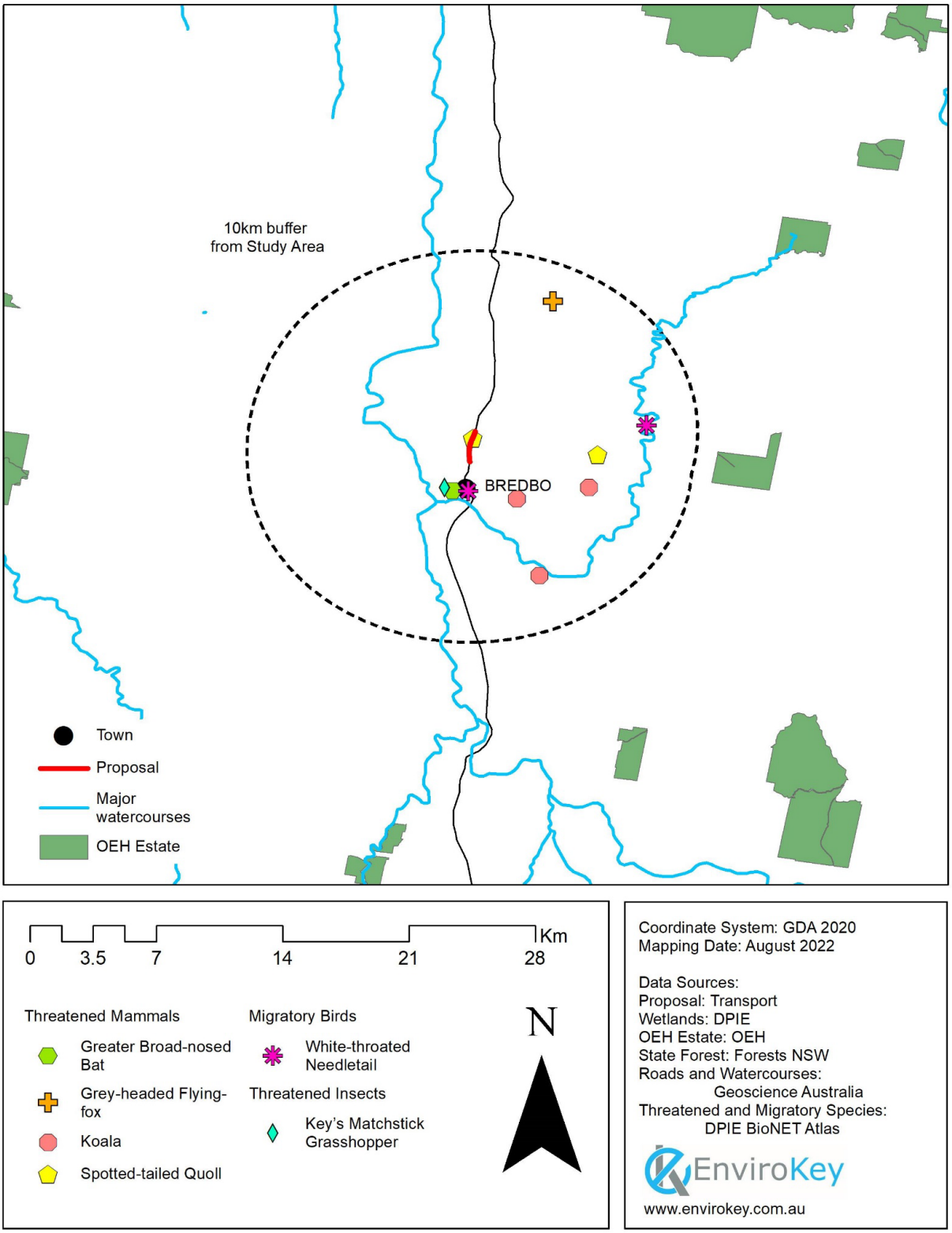


Figure 3-7: Existing records of threatened species within the vicinity of the proposal

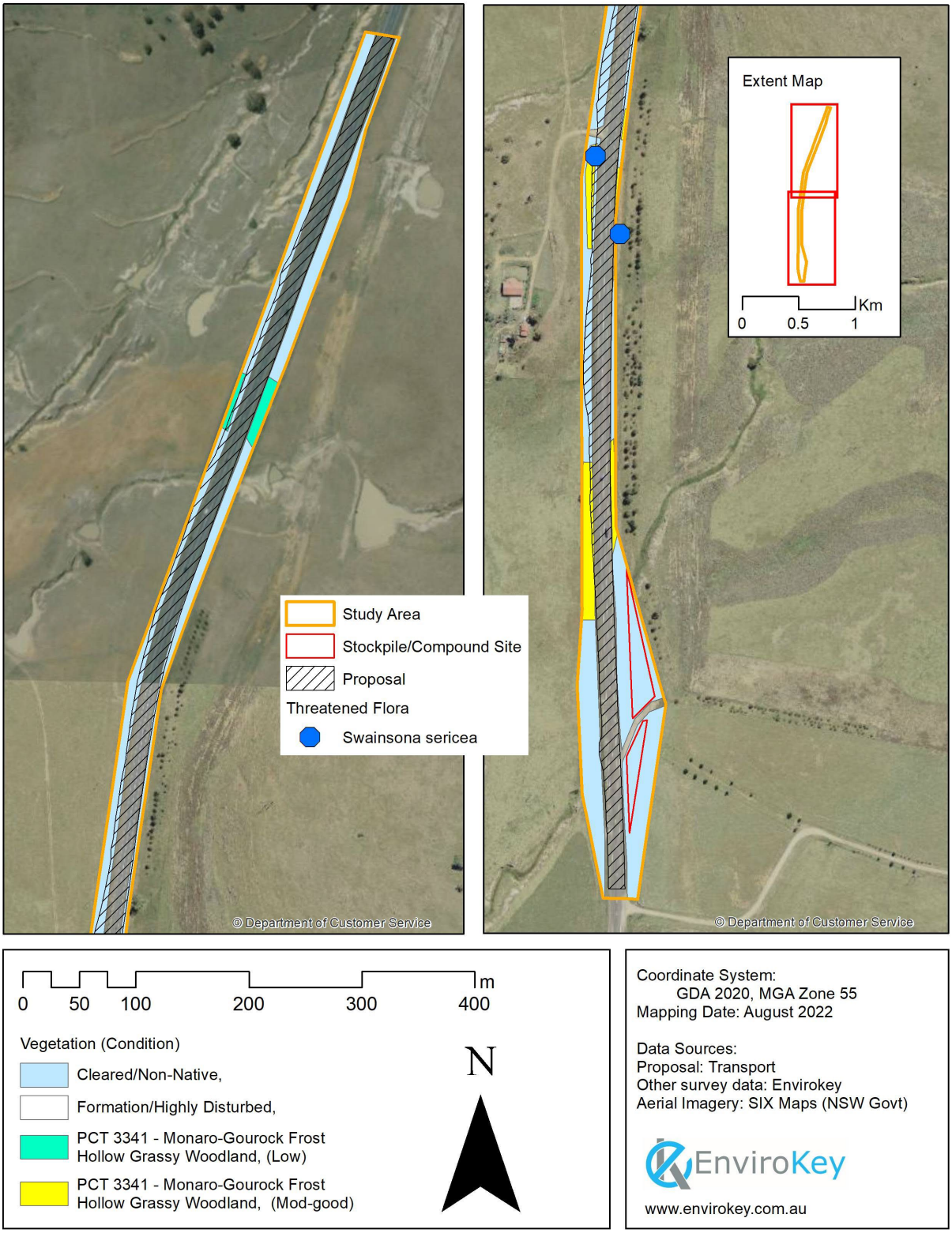


Figure 3-8: Plant community types recorded within the study area.

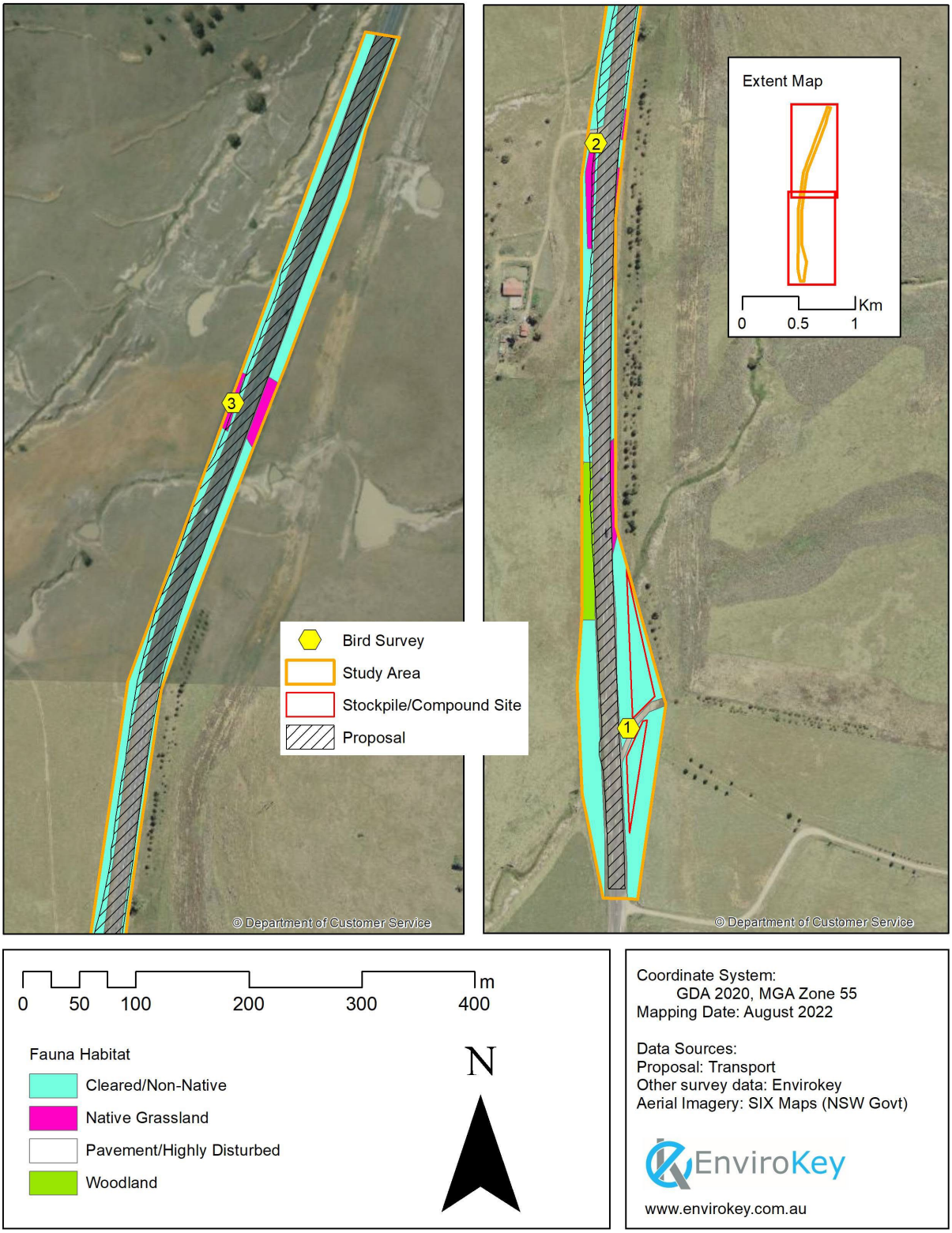


Figure 3-9: Fauna habitat types recorded within the study area.

3.8 Trees

Table 3-8: Trees

Description of existing environmental and potential impacts		
Does the proposal involve pruning, trimming or removal of any tree/s? Four eucalyptus trees (within the 20-50cm DBH range) would be removed as part of the proposal and are about 12-15 metres high. They form part of PCT3341 and the Woodland habitat.  Figure 3-10: Trees proposed to be removed	Yes ☒	No ☐
Do the trees form part of a streetscape, an avenue or roadside planting?	Yes ☐	No ☒
Have the trees been planted by a community group, Landcare group or by council or is the tree a memorial or part of a memorial group e.g., has a plaque? There are native tree plantings on the eastern side of the road, outside of the road corridor. These form part of the "Corridors of Green". These tree plantings would be not impacted by the proposal.  Figure 3-11: Native tree plantings on the eastern side of the road	Yes ☐	No ☒
Do the trees form part of a heritage listing or have other heritage value?	Yes ☐	No ☒

Safeguards

Safeguards to be implemented are:

24. The Transport Tree and hollow replacement guidelines (July 2022) would be followed.

3.9 Traffic and transport

Table 3-9: Traffic and transport

Description of existing environmental and potential impacts		
Is the proposal likely to result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during construction? The proposal can largely be completed outside of the existing pavement. However, when work does need to occur it would require the closure of one lane.	Yes ☒	No ☐
Is the proposal likely to result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during operation?	Yes ☐	No ☒
Is the proposal likely to affect any other transport nodes or transport infrastructure (e.g., bus stops, bus routes) in the surrounding area? Or result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during operation?	Yes ☐	No ☒

Safeguards

Safeguards to be implemented are:

25. A Traffic Guidance Scheme will be prepared in accordance with the 'Traffic control at work sites manual' (TfNSW, 2022) and Australian Standard 1742.3 Manual of uniform control devices

3.10 Socio-economic

Table 3-10: Socio-economic

Description of existing environmental and potential impacts		
Is the proposal likely to impact on local business?	Yes ☐	No ☒
Is the proposal likely to require any property acquisition? Property acquisition is required for the culvert extensions. Transport would consult with affected landowners about acquisition. Areas of acquisition will be 9048m^2. The property to the west of the road will be the only land required for acquisition. The Property Acquisition Plan is detailed within Appendix A.	Yes ☒	No ☐
Is the proposal likely to alter any access for properties (either temporarily or permanently)? The proposal will have ancillary facilities with access points to two properties. The first is the compound site at 3467 Monaro Highway on private property. The second is a gate to a property at the existing stockpile site just south of the proposal. However, access would be maintained to these properties at all times.	Yes ☐	No ☒
Is the proposal likely to alter any on-street parking arrangements (either temporarily or permanently)?	Yes ☐	No ☒
Is the proposal likely to change pedestrian movements or pedestrian access (either temporarily or permanently)?	Yes ☐	No ☒
Is the proposal likely to impact on any items or places of social value to the community (either temporarily or permanently)?	Yes ☐	No ☒

Is the proposal likely to reduce or change visibility of any businesses, farms, tourist attractions or the like (either temporarily or permanently)?	Yes ☐	No ☒

Safeguards

Safeguards to be implemented are:

26. All property acquisitions would be carried out in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*, the *Roads Act 1993* and Transport for NSW Land Acquisition Guide (Roads and Maritime, 2012b).

3.11 Landscape character and visual amenity

Table 3-11: Landscape character and visual amenity

Description of existing environmental and potential impacts		
Is the proposed work over or near an important physical or cultural element or landscape? (For example, heritage items and areas, distinctive or historic built form, National Parks, conservation areas, scenic highways etc.)?	Yes ☐	No ☒
Would the proposal obstruct or intrude upon the character or views of a valued landscape or urban area?	Yes ☐	No ☒
Would the proposal require the removal of mature trees or stands of vegetation, either native or introduced? The proposal would require up to 0.05 hectares of native vegetation with up to 0.03 hectares of this being a small patch of woodland. Additionally, up to 0.46 hectares of cleared/non-native land would be impacted.	Yes ☒	No ☐
Would the proposal result in large areas of shotcrete visible from the road or adjacent properties?	Yes ☐	No ☒
Would the proposal involve new noise walls or visible changes to existing noise walls?	Yes ☐	No ☒
Would the proposal involve the removal or reuse of large areas of road corridor, landscape, either verges or medians? The proposal would involve reuse of the road corridor to create the overtaking lane. It would involve fill and some cutting along the western side of the road. However, given the length of the proposal, this is not considered to be a large amount.	Yes ☐	No ☒
Would the proposal involve substantial changes to the appearance of a bridge (including piers, girders, abutments, and parapets) that are visible from the road or residential areas?	Yes ☐	No ☒
If involving lighting, would the proposal create unwanted light spillage on residential properties at night (in construction or operation)?	Yes ☐	No ☒
Would any new structures or features to be constructed, result in over shadowing to adjoining properties or areas?	Yes ☐	No ☒

Safeguards

No additional safeguards are required.

3.12 Waste

Table 3-12: Waste

Description of existing environmental and potential impacts		
Is the proposal likely to generate >200 tonnes of waste material (contaminated and /or non-contaminated material)? The following quantities of earthworks have been calculated: Earthworks, 'cut to fill' and/or 'spoil site to fill' and/or 'quarry to fill' = 5,070m^3 Unsuitable material (re-use on site or managed as guided by the waste hierarchy) = 4,200m^3 Estimated material generated from earthworks: 870m^3	Yes ☐	No ☒
Is the proposal likely to require a license from EPA?	Yes ☐	No ☒
Is the proposal likely to require the removal of asbestos?	Yes ☐	No ☒

Safeguards

Safeguards to be implemented are:

27. A waste management plan must be developed for the work that identifies all waste types and estimated quantities potentially produced. The plan must identify how the resource management hierarchy principles are to be applied:
    - Avoid unnecessary resource consumption as a priority
    - Apply resource recovery (including reuse of materials, reprocessing, recycling, and energy recovery)
    - Use off-site disposal as a last option
    - There is to be no disposal or re-use of construction waste on to other land
    - Waste is not to be burnt on site
    - Waste material, other than vegetation and tree mulch, is not to be left on site once the works have been completed
    - Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day
    - The plan must incorporate all recommendations of the specialist studies
    - The plan must identify how any waste (contaminated or non-contaminated) is handled, transported, stored, disposed or re-used.
28. If vegetation is to be mulched and transported off site for beneficial reuse, it is to be assessed for the presence of weeds, pest, and other disease and a Mulch Management Plan prepared in accordance with TfNSW Technical Procedure and EPA requirements
29. Mulch is to be used back on site as erosion and sediment controls or site rehabilitation purposes.
30. Vehicles transporting waste or other materials that may produce odours or dust must be covered during transportation.

4. Consideration of State and Commonwealth environmental factors

4.1 Environmental Planning and Assessment Regulation 2021 factors

The following factors, listed in both the Guidelines for Division 5.1 Assessments (DPE, 2022) and section 171(2) of the Environmental Planning and Assessment Regulation 2021, have been considered to assess the likely impacts of the proposal on the natural and built environment. This consideration is required to comply with sections 5.5 and 5.7 of the EP&A Act.

Table 4-1: Consideration of section 171 of the EP&A Regulation factors

Environmental factor	Impact
a) Any environmental impact on a community? The proposed works would cause minor short-term environmental impacts with delays to traffic – this would be minimal as most of the work would occur outside of the current formation. Other impacts would be construction noise impacts on residents. There would be long term positive benefits from improved road user safety. Potential negative impacts would be minimised with the implementation of safeguards described in Section 3 of this Minor Works REF.	Minor negative, short term Minor positive, long-term
b) Any transformation of a locality? The proposed work would have a very minor transformation on the locality as most of the works are confined within the road reserve. There would be a small transformation to the acquired land to provide access to extended culverts.	Minor negative, long-term
c) Any environmental impact on the ecosystems of a locality? Minor vegetation removal is anticipated for the purpose of the proposed work. These impacts would be minimised with the implementation of the safeguards given in Section 3 of this REF.	Minor negative, long-term
d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality? There would be a minor reduction on the aesthetic and environmental quality at the proposal site. This reduction would not extend to the wider locality as the works are confined to the existing road formation and just outside of it. There would be improved recreational value from increased road user safety in this section of the Monaro Highway.	Minor negative, long-term Minor positive, long-term
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 proposed work is unlikely to have an effect on a locality, place or building of significance or other special value for present or future generations given the minor nature of the proposal, and that the safeguards of the Minor Works REF are fully implemented.	Nil
f) Any impact on habitat of any protected animals (within the meaning of the *Biodiversity Conservation Act 2016*)? The proposal would have a minor impact on habitat due to the limited nature of clearing and the implementation of safeguards in Section 3 and Appendix 3.	Minor negative, short term
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 proposal would not endanger any species of animal, plant or other form of life, whether living on land, in water or in the air due to the limited scope of works for the proposed activities and the implementation of the safeguards given in Section 3 of this REF.	Nil
h) Any long-term effects on the environment? The proposed work would have positive long-term effects on the environment due to improved safety and efficiency for road users. Impacts as a result of the proposal can be	Moderate positive, long-term

Environmental factor	Impact
minimised with the implementation of the safeguards detailed in Section 3 of this Minor Works REF.	Minor negative, long-term
i) Any degradation of the quality of the environment? There would be up to 0.05 hectares of native vegetation that would be removed as part of this proposal. The potential impacts would be minimised with the implementation of safeguards in Section 3 and in the Biodiversity Assessment in Appendix B.	Minor negative, long-term
j) Any risk to the safety of the environment? The proposed work would have minimal risk to the safety of the environment. Potential impacts would be minimised with the implementation of the safeguards given in Section 3 in this Minor Works REF. There would be an increased benefit to the safety of the environment for road users.	Minor negative, long-term
k) Any reduction in the range of beneficial uses of the environment? The proposal would cause a minor reduction in the use of the road from lane closures, which would potentially increase travelling time for road users in the short-term. However, these closures would be limited throughout the construction period, as the majority of the work can occur outside of the current formation. A traffic plan will be completed as per safeguards in Section 3 to minimise these impacts. There would be no long-term reduction in the range of beneficial uses of the environment as a result of the maintenance works, there would be a long-term increase from increased road user safety from the overtaking lane.	Minor negative, short-term Moderate positive, long-term
l) Any pollution of the environment? The proposed work would potentially cause pollution to the environment given the use of fossil fuelled machinery resulting in the burning of fuels or an oil spill. However, the potential impact would be minimised with the implementation of the safeguards provided in Section 3 of this Minor Works REF.	Minor negative, long-term
m) Any environmental problems associated with the disposal of waste? There are no environmental problems anticipated for the disposal of waste. The waste generated during the proposal would be either be reused in the proposal or contained at nearby stockpiles or removed for disposal to approved recycling facilities or to licensed landfill in accordance with the safeguards in Section 3 of this REF.	Nil
n) Any increased demands on resources, natural or otherwise which are, or are likely to become, in short supply? The proposed work would not significantly increase demands on resources, which are, or are likely to become, in short supply. Relatively small amounts of materials would be required for the proposed work. The safeguards listed in Section 3 of this Minor Works REF would be implemented to minimise any impacts.	Nil
o) Any cumulative environmental effect with other existing or likely future activities? The proposed work is unlikely to have any cumulative environmental effects with other existing or likely future activities along Monaro Highway. The potential impact on the environment would be minimised with the implementation of the safeguards given in Section 3 in this Minor Works REF.	Nil
p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?	N/A
q) Any impact on applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1? The proposal aligns with the Local Strategic Planning Statement for Snowy Monaro Regional Council adopted in 2020. It specifically aligns with Planning Priority 10 – identify	Minor positive, long-term

Environmental factor	Impact
and integrate transport corridors and connections with the right types and levels of development. As Monaro Highway connects the region to Canberra and beyond and provides an important connection to the snow, the proposal will improve safety for road users.	
r) Any impact on other relevant environmental factors? In considering the potential impacts of this proposal all relevant environmental factors have been considered, refer to Chapter 3 of this REF.	Nil

4.2 Matters of National Environmental Significance

Under the environmental assessment provisions of the EPBC Act, the following matters of national environmental significance are required to be considered to:

- Assist in determining whether the proposal should be referred to the Australian Government Department of Climate Change, Energy, the Environment and Water
- For nationally listed threatened species, ecological communities and migratory species, whether the impacts are significant and should be assessed via a Project REF.

Table 4-2: Matters of national environmental significance

Environmental factor	Impact
a) Any impact on a World Heritage property?	Nil
b) Any impact on a National Heritage place?	Nil
c) Any impact on a wetland of international importance (often called 'Ramsar' wetlands)?	Nil
d) Any impact on nationally threatened species, ecological communities or migratory species? There is unlikely to be any impacts on nationally listed species or ecological communities as an assessment determined the habitat unsuitable. A detailed assessment is provided in Appendix B.	Nil
e) Any impact on a Commonwealth marine area?	Nil
f) Does the proposal involve a nuclear action (including uranium mining)?	Nil
Additionally, any impact (direct or indirect) on the environment of Commonwealth land?	Nil

5. Summary of safeguards and environmental management measures

This section provides a summary of the site specific environmental safeguards and management measures identified in described in chapters 3 and 4 of this REF. These safeguards will be implemented to reduce potential environmental impacts throughout construction and operation. A framework for managing the potential impacts is provided with reference to environmental management plans and relevant Transport QA specifications. Any potential licence and/or approval requirements required prior to construction are also listed.

Table 5-1: Summary of site-specific safeguards for proposed work

Factor	Impact
Soil	1. Erosion and sediment control measures must be implemented and maintained to: • Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets • Reduce water velocity and capture sediment on site • Minimise the amount of material transported from site to surrounding pavement surfaces • Divert clean water around the site. (in accordance with the Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book)). 2. Erosion and sedimentation controls must be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request. 3. Erosion and sediment control measures must not be removed until the work is complete, and areas are stabilised.
Waterways and water quality	No additional safeguards are considered necessary.
Noise and vibration	4. Works would be carried out during normal working hours (i.e., 7am to 6pm Monday to Friday; 8am to 1pm Saturdays). 5. Noise must be minimised during construction using the “standard actions for noise minimisation” identified in the Transport Construction Noise and Vibration Guideline. Measures including allowing adequate distance that rollers can come to adjacent buildings and/or using non-vibrating rollers will be used to minimise or prevent vibration impact. 6. All plant must be shut down when not in use and parked / started as far as possible from sensitive receivers. 7. Where practical, site noise must be minimised including radio use, yelling, impact noise, simultaneous noise and plant operation. 8. the resident located 52m from the proposal will be notified at least 7 days prior to commencement of any works associated with the activity that may have an adverse noise or vibration impact. The notification will provide details of: - The project - The construction period and construction hours - Contact information for project management staff - Complaint and incident reporting - How to obtain further information.
Air quality	9. Measures (including watering or covering exposed areas) are to be used to minimise or prevent air pollution and dust.

	10. Plan and carry out all construction activities to avoid where practicable, or minimise, the generation of dust and vehicle emissions 11. Air quality mitigation strategies must be prepared and implemented as part of the CEMP, and must include the following as a minimum: • Identification of potential risks/impacts due to the work/activities as dust generation activities; • Management measures to minimise the potential impacts; • A process for monitoring dust on site and weather conditions; • A process for progressive stabilisation of disturbed surfaces with the aim of minimising exposed surfaces and windblown dust. Stabilising works must be monitored daily by your ESR for • Compliance; and windblown dust. Stabilising works must be monitored daily by your ESR for compliance; and • Contingency plans to be implemented in the event of non-compliances and/or complaints about dust.
Aboriginal heritage	12. If Aboriginal heritage items are uncovered during the works, all works in the vicinity of the find must cease and the Transport Aboriginal Cultural Heritage Advisor and Environment Manager be contacted immediately. Steps in the Transport *Standard Management Procedure: Unexpected Archaeological Finds, 2011*, must be followed.
Non-Aboriginal heritage	13. If unexpected archaeological remains are uncovered during the work, all work must cease in the vicinity of the material/find and the steps taken in the Transport *Standard Management Procedure: Unexpected Archaeological Finds* must be followed. The Transport Regional Environment Manager must be contacted immediately.
Biodiversity	14. An exclusion zone is to be set up at the limit of clearing to avoid accidental impacts to retained areas of vegetation. 15. The single Silky Swainson-pea would be transplanted prior to any proposed work commencing as part of a threatened species management plan. The plan must be prepared by a suitably qualified and experienced person. The Biodiversity assessment assumes the single plant would not survive the transplant (as a worst-case scenario). 16. The unexpected species find procedure is to be followed under *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) if threatened ecological communities, not assessed in the biodiversity assessment, are identified in the proposal site. 17. Pre-clearing surveys will be undertaken in accordance with *Guide 1: Pre-clearing process of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) 18. Vegetation removal will be undertaken in accordance with *Guide 4: Clearing of vegetation and removal of bushrock* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011). 19. Fauna will be managed in accordance with *Guide 9: Fauna handling* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011). 20. Parking should be limited to existing hard stand areas, or within any area designated ancillary site as identified within Section 2.1.4. 21. Weed species will be managed in accordance with *Guide 6: Weed management* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).
Trees	22. The Transport Tree and hollow replacement guidelines (July 2022) would be followed.
Traffic and transport	23. A traffic control plan will be prepared in accordance with the 'Traffic control at work sites manual' (RTA, 2010a) and Australian Standard 1742.3 Manual of uniform control devices

Socio-economic	24. All property acquisitions would be carried out in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*, the *Roads Act 1993* and Transport for NSW Land Acquisition Guide (Roads and Maritime, 2012b).
Landscape character and visual amenity	No additional safeguards are required.
Waste	25. A waste management plan would be developed for the work that identifies all waste types and estimated quantities potentially produced. The plan would identify how the resource management hierarchy principles are to be applied: • Avoid unnecessary resource consumption as a priority • Apply resource recovery (including reuse of materials, reprocessing, recycling, and energy recovery) • Use off-site disposal as a last option • There is to be no disposal or re-use of construction waste on to other land • Waste is not to be burnt on site • Waste material, other than vegetation and tree mulch, is not to be left on site once the works have been completed • Working areas are to be maintained, kept free of rubbish, and cleaned up at the end of each working day • The plan must incorporate all recommendations of the specialist studies • The plan must identify how any waste (contaminated or non-contaminated) is handled, transported, stored, disposed, or re-used. 26. If vegetation is to be mulched and transported off site for beneficial reuse, it is to be assessed for the presence of weeds, pest, and other disease and a Mulch Management Plan prepared in accordance with TfNSW Technical Procedure and EPA requirements. 27. Mulch is to be used back on site as erosion and sediment controls or site rehabilitation purposes. 28. Vehicles transporting waste or other materials that may produce odours or dust must be covered during transportation.
General	29. All fuels and chemicals are to be managed appropriately on site with spill response materials accessible at all times. This will be achieved though: a) Refueling or storage of fuels, chemicals and liquids are to occur on an impervious bunded area, which is to be located a minimum of 50 metres away from waterways. b) An emergency spill kit must be kept on site at all times and maintained throughout the construction work period. The spill kit must be appropriately sized for the volume of substances at the work site. All staff are to be aware of the location of the spill kit. c) Vehicles and plant must be properly maintained and regularly inspected for fluid leaks, and ensure that no wash-down occurs on site. 30. The maintenance of established stockpile sites during construction must be in accordance with the *Stockpile Site Management Guideline*, (EMS-TG-10).

5.1 Licensing and approvals

No licenses and/or approvals are required for the proposal.

5.2 Other requirements

Table 5-2: Other requirements

Requirement		
Environmental management plan sent to SMES 10 days prior to starting works for review.	Yes ☒	No ☐

5.3 Certification

This minor works REF provides a true and fair review of the proposal in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposal.

Prepared by

Signature

Name:	Zoe Sass
Position:	Project Officer
Company name:	EnviroKey Pty Ltd
Date:	13/02/2023

Minor Works REF reviewed by:

Signature

Name:	Steve Sass
Position:	Director/Principal Ecologist
Company name:	EnviroKey Pty Ltd
Date:	13/02/2023

5.4 Environment staff review

The Minor Works REF has been reviewed and considered against the requirements of sections 5.5 and 5.7 of the *Environmental Planning and Assessment Act 1979*.

In considering the proposal, this assessment has examined and taken into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of that activity as addressed in the Minor Works REF and associated information. This assessment is considered to be in accordance with the factors required to be considered under clause 171 of the Environmental Planning and Assessment Regulation 2021.

The proposal described in the Minor Works REF will have some environmental impacts which can be ameliorated satisfactorily. Having regard to the safeguard and management measures proposed, this assessment has considered that these impacts are unlikely to be significant and therefore an approval for the proposal does not need to be sought under Division 5.2 of the *Environmental Planning and Assessment Act 1979*.

The assessment has considered the potential impacts of the activity on areas of outstanding value and on threatened species, ecological communities, or their habitats for both terrestrial and aquatic species as defined by the *Biodiversity Conservation Act 2016* and the *Fisheries Management Act 1994*.

The proposal described in the Minor Works REF will not affect areas of outstanding value. The activity described in the Minor Works REF will not significantly affect threatened species ecological communities or their habitats. Therefore, a species impact statement is not required.

The assessment has also addressed the potential impacts on the activity on matters of national environmental significance and any impacts on the environment of Commonwealth land and concluded that there will be no significant impacts. Therefore, there is no need for a referral to be made to the Australian Government Department of the Environment and Energy for a decision by the Commonwealth Minister for the Environment and Energy on whether assessment and approval is required under the *Environment Protection and Biodiversity Conservation Act 1999*.

The Minor Works REF is considered to meet all relevant requirements.

5.5 Environment staff recommendation

It is recommended that the proposal to northbound overtaking lane north of Bredbo on Monaro Highway as described in this Minor Works REF proceed subject to the implementation of all safeguards identified in the Minor Works REF and compliance with all other relevant statutory approvals, licences, permits and authorisations.

The Minor Works REF has examined and taken into account to the fullest extent possible all matters likely to affect the environment by reason of the activity and established that the activity is not likely to significantly affect the environment or threatened species, ecological communities or their habitats.

The Minor Works REF has concluded that there will be no significant impacts on matters of national environmental significance or any impacts on the environment of Commonwealth land.

The Minor Works REF determination will remain current for five years until February 2023 at which time it shall lapse if works have not been physically commenced. The pre-construction checklist must be completed prior to the commencement of any works.

Recommended by:

Signature 

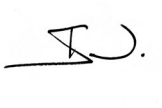
Name: Sharon Barbaro

Position: A/ Environment and Sustainabilty Manager
Transport for NSW

Date: 28/2/2023

Noted by:

Signature



Name: Ian Nerrie

Position: Project Contract Manager
Transport for NSW

Date: 3/04/2023

5.6 Determination

In accordance with the above recommendation and sections 5.5 and 5.7 of the EP&A Act, I determine that Transport for NSW may proceed with the activity.

Signature

Name: Stephen Onions

Position: Senior Manager Project Services South

Date: 3rd April, 2023

5.7 EP&A Regulation publication requirement

Table 5-3: EP&A Regulation publication requirement

Requirement		
Does this Minor Works REF need to be published under section 171(4) of the EP&A Regulation?	Yes ☒	No ☐

6. References

DEWHA 2009. EPBC Act Policy Statement 1.1 Significant Impact Guidelines, Matters of National Environmental Significance. *Department of the Environment, Water, Heritage and the Arts.*

DICKMAN, C. 1994. Mammals of New South Wales: past, present and future. *Australian Zoologist,* 29**,** 158-165.

DPE/BCS 2022. Threatened species, populations and ecological communities of NSW. *NSW Office of Environment & Heritage. ,* www.threatenedspecies.environment.nsw.gov.au.

DPIE/BCS 2022. Threatened species, populations and ecological communities of NSW. *NSW Office of Environment & Heritage. ,* www.threatenedspecies.environment.nsw.gov.au.

DPIE/OEH 2022. BioNET Vegetation Classification. *https://www.environment.nsw.gov.au/NSWVCA20PRapp/LoginPR.aspx?ReturnUrl=%2fNSWVCA20PRapp%2fsearch%2fpctsearch.aspx*.

GARNETT, S. T. & BAKER, G. B. 2020. The Action Plan for Australian Birds: Flame Robin. 739-741.

HIGGINS, P., PETER, J. & STEELE, W. (eds.) 2001. *Handbook of Australian, New Zealans and Antarctic Birds. Volume 5: Tyrant-flycatchers to Chats,* Melbourne: Oxford University Press.

7. Definitions

Table 7-1: Definitions

Term	Definition
BC Act	Biodiversity Conservation Act 2016 (NSW)
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW). Provides the legislative framework for land use planning and development assessment in NSW
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth). Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process.
ESD	Ecologically sustainable development. Development which uses, conserves and enhances the resources of the community so that ecological processes on which life depends, are maintained and the total quality of life, now and in the future, can be increased
FM Act	Fisheries Management Act 1994 (NSW)
Heritage Act	Heritage Act 1977 (NSW)
ISEPP	State Environmental Planning Policy (Infrastructure) 2007
NPW Act	National Parks and Wildlife Act 1974 (NSW)
Transport	Transport for NSW
SEPP	State Environmental Planning Policy. A type of planning instrument made under Part 3 of the EP&A Act
QA Specifications	Specifications developed by Transport for NSW for use with road work and bridge work contracts let by Transport for NSW

Appendix A: Construction Plans

https://objective.transport.nsw.gov.au:8643/id:A48574063/document/versions/published

Appendix B: Biodiversity Assessment

Transport
for NSW

Biodiversity assessment report

HW19 Monaro Highway, Northbound overtaking lane, 2km north of Bredbo

February 2023

NSW GOVERNMENT

transport.nsw.gov.au

Table of contents

List of tables

List of figures

Executive summary

EnviroKey were engaged by Transport for New South Wales (Transport) to prepare a Biodiversity Assessment (BA) for a proposal for a northbound overtaking lane, 2 kilometres north of Bredbo on the Monaro Highway (HW19). The proposed work would improve the safety and efficiency of the single carriageway that connects Canberra to Cooma and provides a link to the Snowy Mountains.

The key impact from the proposal is the direct permanent removal of up to 0.06 hectares of native vegetation. In addition, temporary impacts would also occur for the site compound/stockpile site that would be rehabilitated at the conclusion of the proposal.

The majority of the study area is covered by Cleared/non-native vegetation, with the smaller, fragmented patches of native vegetation remaining. These are mostly derived native grassland only, with a single patch comprising overstorey species.

A single native plant community type (PCT) were identified within the study area as follows:

- PCT 3341 Monaro-Gourock Frost Hollow Grassy Woodland

PCT 3341 is listed as Monaro Tableland Cool Temperate Grassy Woodland threatened ecological community and is classified as Critically Endangered Ecological Community (CEEC) under the NSW *Biodiversity Conservation Act 2016* (BC Act).

One threatened species was recorded. This being the Silky Swainson-pea (*Swainsona sericea*), with two plants identified within the study area. Silky Swainson-pea is listed as vulnerable under the BC Act. A large population is known from the Bredbo locality. Given past construction and maintenance associated disturbances within and directly adjacent to the existing road formation, it is unlikely that the study area would contain any further plants of this species. One of these plants (the individual on the western side of the existing formation), would be impacted should the proposal proceed. This BA provides a recommendation for the translocation of this single plant, but does not rely on the success of this translocation in the assessment of impacts.

Overall, this assessment has concluded that the proposal is '*unlikely*' to have a significant effect on any listed threatened flora and fauna species, communities, and their habitats in accordance with the BC Act. Therefore, a species impact statement is not required.

A series of mitigation measures are proposed that have been developed with specific regard to the proposal using the Transport *Biodiversity Guidelines: Protecting and Managing Biodiversity on Transport projects* to minimise potential impact to biodiversity.

1. Introduction

1.1 Proposal background

Monaro Highway (HW19) is a two-lane flexible pavement of single carriageway that connects Canberra to Cooma and provides a link to the Snowy region (**Figure 1-1**). The proposal is to improve safety for road users along Monaro Hwy.

1.2 The proposal

Monaro Highway (HW19) is a two-lane flexible pavement of single carriageway that connects Canberra to Cooma and provides a link to the Snowy region. The key objective of the proposal is to improve safety and efficiency by constructing a northbound overtaking lane about 2 kilometres north of Bredbo.

Key features of the proposal include:

- Widening of the northbound lane by 6.0m from existing edge of seal to allow for construction of an overtaking lane and new road shoulder.
- Proposed length of overtaking lane is 900m.
- Pipe culvert extension at five locations.
- 300m of type SO concrete gutter.
- Installation of new line marking and signage.

Two existing stockpile sites are located at the southern end of the proposal and about 1 kilometre south of Michelago. A compound site would be established at 3647 Monaro Highway on private property. The locality is defined as a 550m buffer around the proposal which is consistent with the BAM. The proposal footprint is identified in Figure 1-1.

1.2.1 Assessment areas

The study area applied to this BA is the road corridor that contains the proposed impact area supplied by Transport.

Figure 1-1: Proposal context

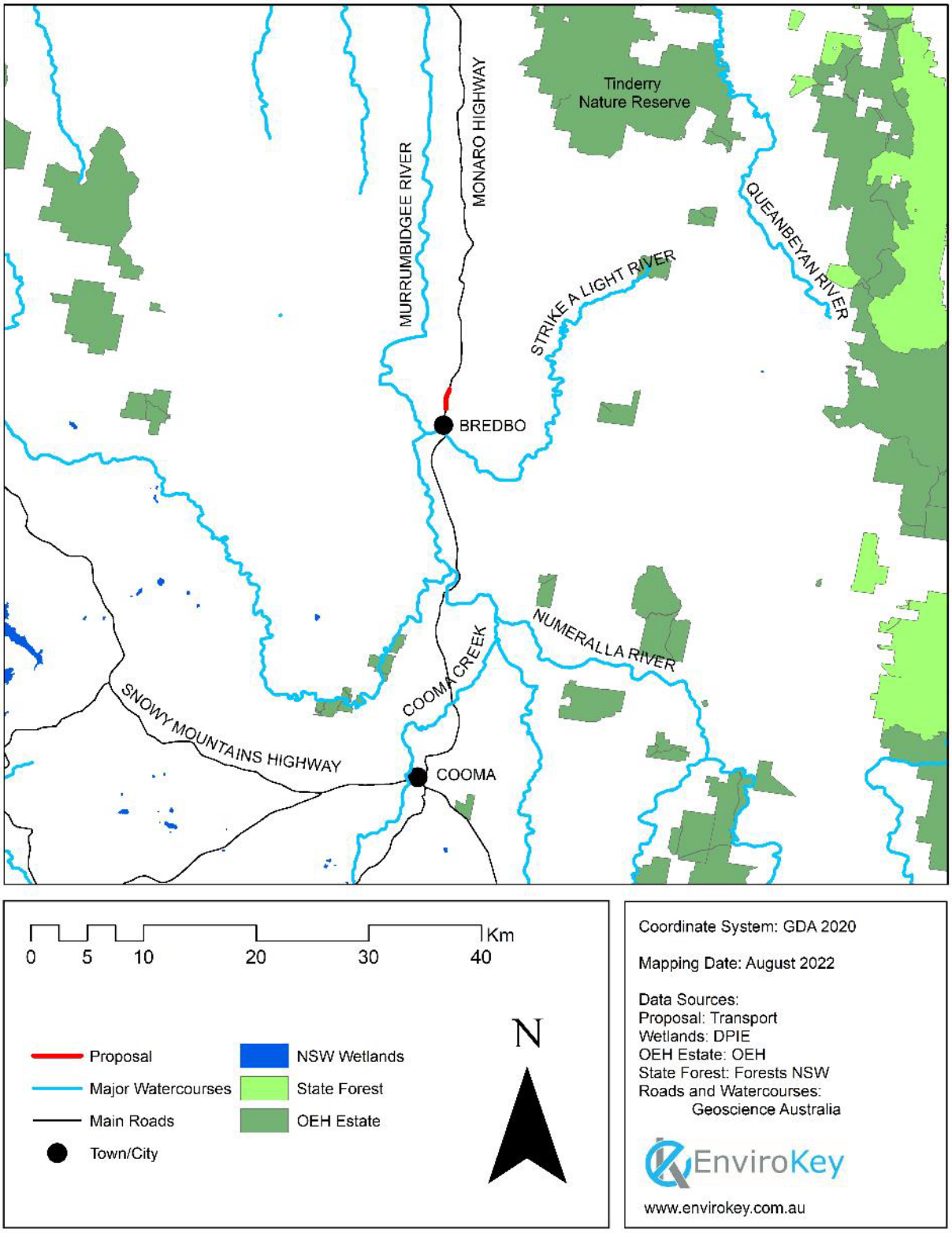


Figure 1-2: The proposal

1.3 Legislative context

A Review of Environmental Factors (REF) is prepared to satisfy Transport for NSW (TfNSW) duties under s.5.5 of the EP&A Act to "examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity" and s.5.5 in making decisions on the likely significance of any environmental impacts. This biodiversity impact assessment forms part of the REF being prepared for the HW19 Monaro Highway Northbound overtaking lane, 2kms north of Bredbo and assesses the biodiversity impacts of the proposal to meet the requirements of the EP&A Act.

The BC Act requires that the significance of the impact on threatened species, populations and threatened ecological communities is assessed using the test listed in Section 7.3 of the BC Act. Similarly, Part 7A of the FM Act requires that significance assessments are undertaken in accordance with Division 12 of the FM Act. Where a significant impact is likely to occur, a species impact statement (SIS) must be prepared in accordance with the Environment Agency Head's requirements, or a biodiversity development assessment report (BDAR) must be prepared by an accredited assessor in accordance with the biodiversity assessment method (BAM) (DPIE 2020a).

In September 2015, a 'strategic assessment' approval was granted by the Federal Minister in accordance with the EPBC Act. The approval applies to TfNSW road activities being assessed under Division 5.1 (formerly Part 5) of the EP&A Act with respect to potential impacts on nationally listed threatened species, ecological communities and migratory species.

As a result, TfNSW road proposals assessed via an REF:

- Must address and consider potential impacts on EPBC Act listed threatened species, populations, ecological communities and migratory species, including application of the "avoid, minimise, mitigate and offset" hierarchy
- Do not require referral to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for these matters, even if the activity is likely to have a significant impact
- Must use the Biodiversity Assessment Method (BAM) to calculate credits that would offset significant impacts on EPBC Act listed threatened species, populations, ecological communities and migratory species.

Assessments of impact significance are required for all relevant biodiversity values in accordance with the *Matters of National Environmental Significance: Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999* (DoE 2013).

2. Methods

2.1 Personnel

Table 2-1: Personnel

Name	Role	Qualifications
Steve Sass	Principal Ecologist	B.App.Sci (Env.Sci) (Hons) GradCertCaptVertMngt (CSU) Biodiversity accredited assessor (BAAS17047)
Linda Sass	Senior Ecologist	Ass.Deg.Gn.St (Science), BA, DipEd (Sec)
Zoe Sass	Project Officer (GIS)	B.Sci/BA (Biology/Geography)

2.2 Background research

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 [28.07.2022]
- BioNet Vegetation Classification database – reviewed [28.07.2022]
- Department of Agriculture, Water, and the Environment (DAWE) Protected Matters Search Tool – searched [28.07.2022]
- SEED Layer Intersection Tool
- NSW DPI Fisheries Spatial Data Portal
- NSW State Vegetation Type Map: (DPE, 2022)
- The Commonwealth Bureau of Meteorology's Atlas of Groundwater Dependent Ecosystems (GDE): http://www.bom.gov.au/water/groundwater/gde/map.shtml

2.3 Vegetation assessment

2.3.1 Vegetation mapping

To better understand the extent of native vegetation within the general vicinity of the proposal an assessment using the Biodiversity Assessment Methodology (BAM) was carried out on the existing vegetation community datasets that occur within the study area. These being State Vegetation Type (SVT) Map (DPE, 2022).

These existing datasets identify two plant community types (PCT) within a 550-metre radius of the proposal (Table 2-2, Figure 2-1). The SVT mapping datasets are produced through a combination of previous map sets, GIS modelling, but with limited ground validation, they often have widespread inaccuracies, including not mapping existing vegetation with a PCT unit. However, the SVT mapping does provide an indicative analysis of the potential PCT that may occur in the vicinity of the proposal, and these were used to guide field surveys and understanding of vegetation types and extent beyond the boundaries of the proposal.

Table 2-2: Existing vegetation mapping (NSW State Vegetation Type Map) within a 550-metre buffer of the proposal length

Plant community type (PCT)	Threatened ecological community	Area (ha)
PCT 3375: Monaro-Queanbeyan Rolling Hills Grassy Forest	-	6.25
PCT 3376: Southern Tableland Grassy Box Woodland	CEEC	4.58

2.3.2 Vegetation survey and classification

Threatened species searches and general vegetation surveys were carried out on 24 August 2022 and 14 September 2022 (**Figure 3-1** to **Figure 3-4**). A total of 8 hours of field surveys were completed by two persons.

The aims of the flora surveys were to:

Determine all vegetation communities present within the study area, their condition and extent, with reference to the OEH plant community type (PCT) classification

- Identify potential Threatened Ecological Communities (TECs) within the study area and determine their condition and extent
- Identify whether threatened flora species are present within the study area, and whether it is likely that any have the potential to occur within the habitats present
- Identify areas of high weed infestation.

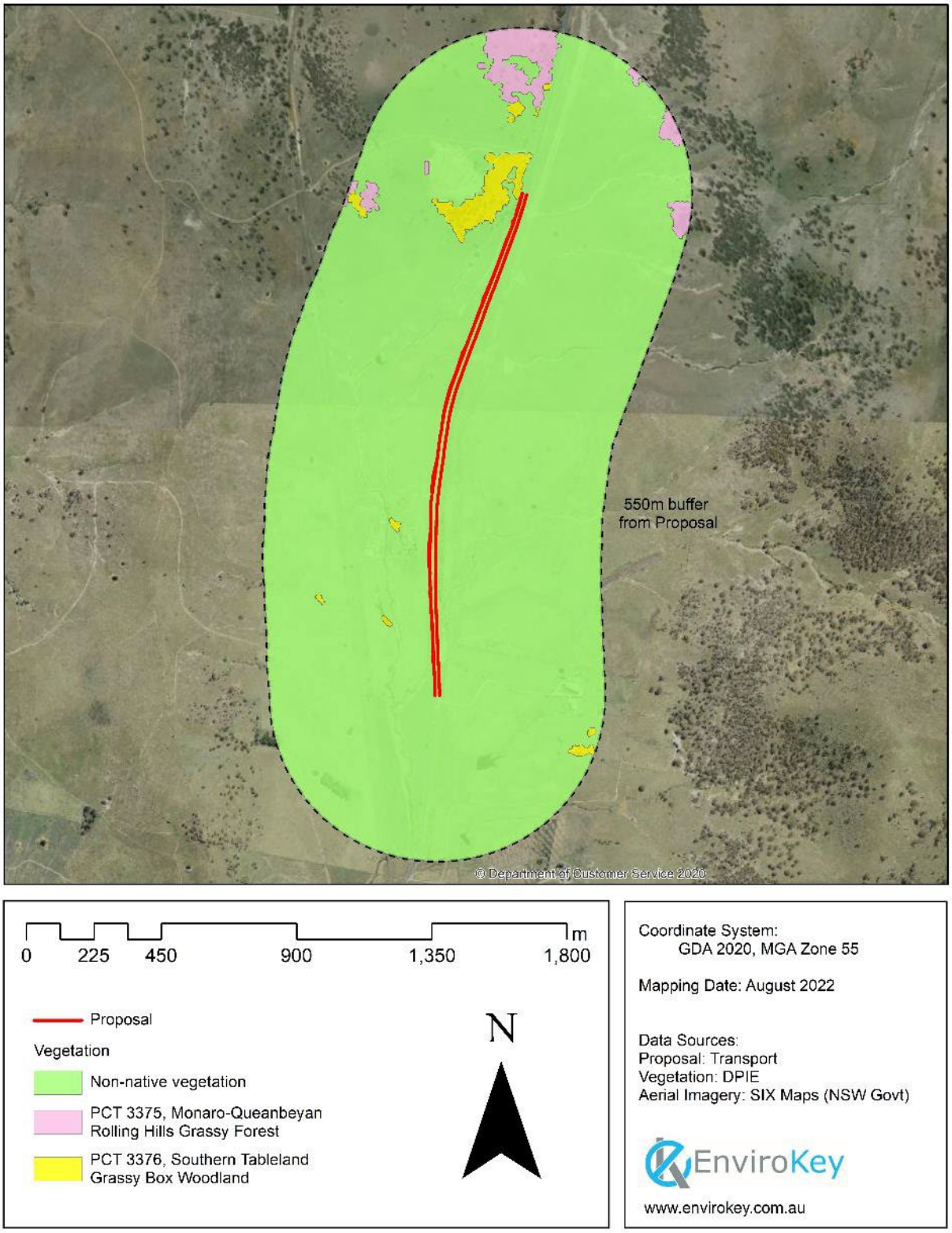
Species and vegetation communities identified from the background searches as potentially occurring in the study area were targeted during the surveys.

Flora survey methods were based on the *Threatened Species Survey and Assessment: Guidelines for developments and activities* (DEC, 2004) using the random meander method. All habitat variations were covered across the study area.

Native vegetation communities/types were classified in accordance with the NSW Vegetation Information System (DPIE/OEH, 2022). Threatened ecological communities (if present) were classified in accordance with relevant State and Federal threatened ecological community descriptions (DPIE/BCS, 2022b, SPRAT, 2017).

Exotic species were checked for priority weed status on the Department of Primary Industries website (DPI, 2022).

Figure 2-1: Existing regional vegetation mapping within a 550-metre buffer of the study area



2.4 Threatened species assessment

2.4.1 Habitat suitability assessment

The desktop analysis, database searches and literature review found that threatened and migratory biota are regularly recorded in the locality. **Figure 2-2** to **Figure 2-5** provides the spatial locations of records of these biota within the locality of the proposal (10 kilometre radius).

A habitat assessment for the threatened and migratory species with potential to occur within the vicinity of the proposal is provided in Appendix A. This revealed that a total of four threatened or migratory biota were known to or had a moderate to high potential to occur in the vicinity of the proposal.

EnviroKey completed a general Habitat Assessment along the proposal length. No hollow-bearing trees (HBT) were identified during the field survey.

2.4.2 Targeted flora surveys

Walking transects were completed in all areas of native vegetation were carried out on 24 August 2022 and 14 September 2022 to target threatened flora known to occur in the vicinity of the proposal.

2.4.3 Targeted fauna surveys

Targeted fauna surveys were carried out on 24th August 2022 and 14th September 2022. The following surveys were carried out within the study area:

Diurnal Bird Survey

Diurnal bird surveys were conducted using the widely accepted 'standardised method' (Watson, 2003). Any species of bird observed or identified from call recognition, were recorded during the field survey period. Surveys were completed across a range of environmental variables to encompass the range of avifaunal assemblages and their periods of activity.

Systematic Reptile Search

Reptile hand searches were completed at each fauna survey location. These were carried out by an experienced ecologist well known for their reptile expertise, by actively seeking basking animals and searching through leaf litter, roadside rubbish, and under fallen timber for inactive reptiles.

Systematic Amphibian Search

Where habitat was present, an experienced ecologist search for active frogs, as well as inactive frogs by searching through leaf litter, roadside rubbish and under fallen timber.

2.5 Limitations

A common limitation of many biodiversity studies is the short period of time in which they are conducted. 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 or in the very wet conditions during and prior to the field surveys. Given this, further analysis was conducted to evaluate which threatened and migratory biota were likely to occur within the vicinity of the proposal based on the presence of habitat. This is detailed within Appendix A.

The techniques used in this investigation are considered adequate to gather the data necessary to assess the impacts of the proposal on the flora species and vegetation communities found in the study area.

Figure 2-2: Existing threatened bird and reptile records within the vicinity of the proposal

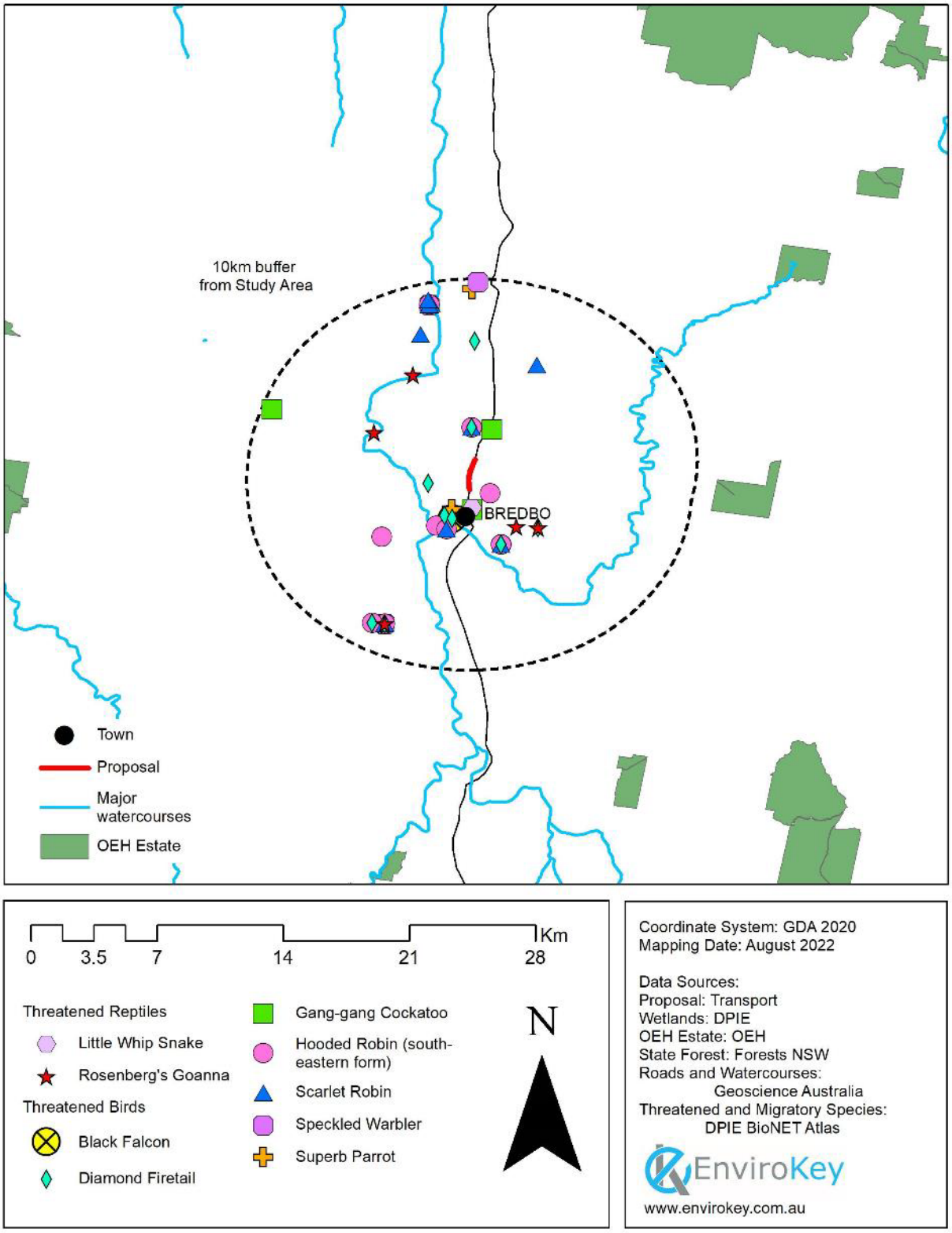


Figure 2-3: Existing threatened bird records within the vicinity of the proposal

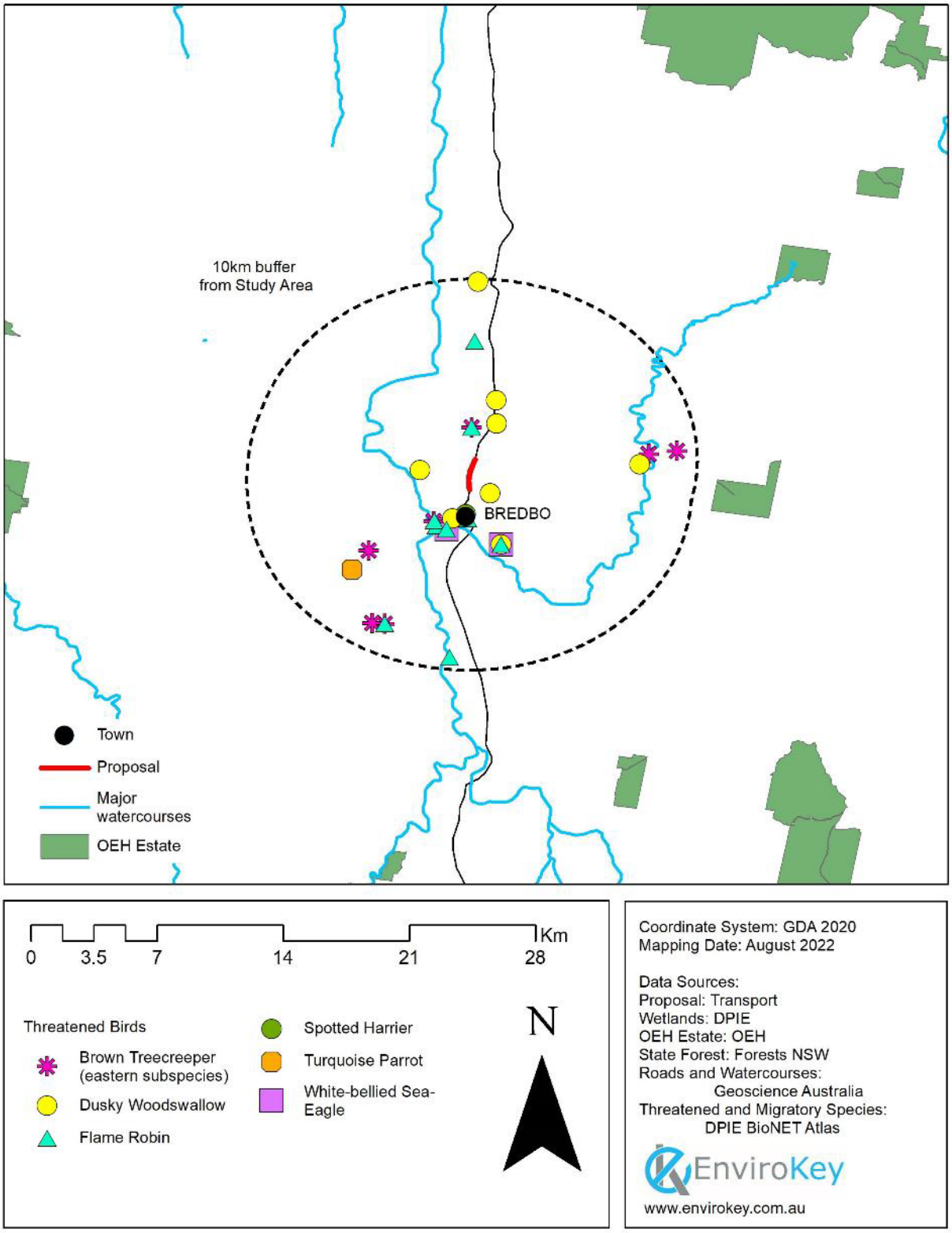


Figure 2-4: Existing threatened flora records within the vicinity of the proposal

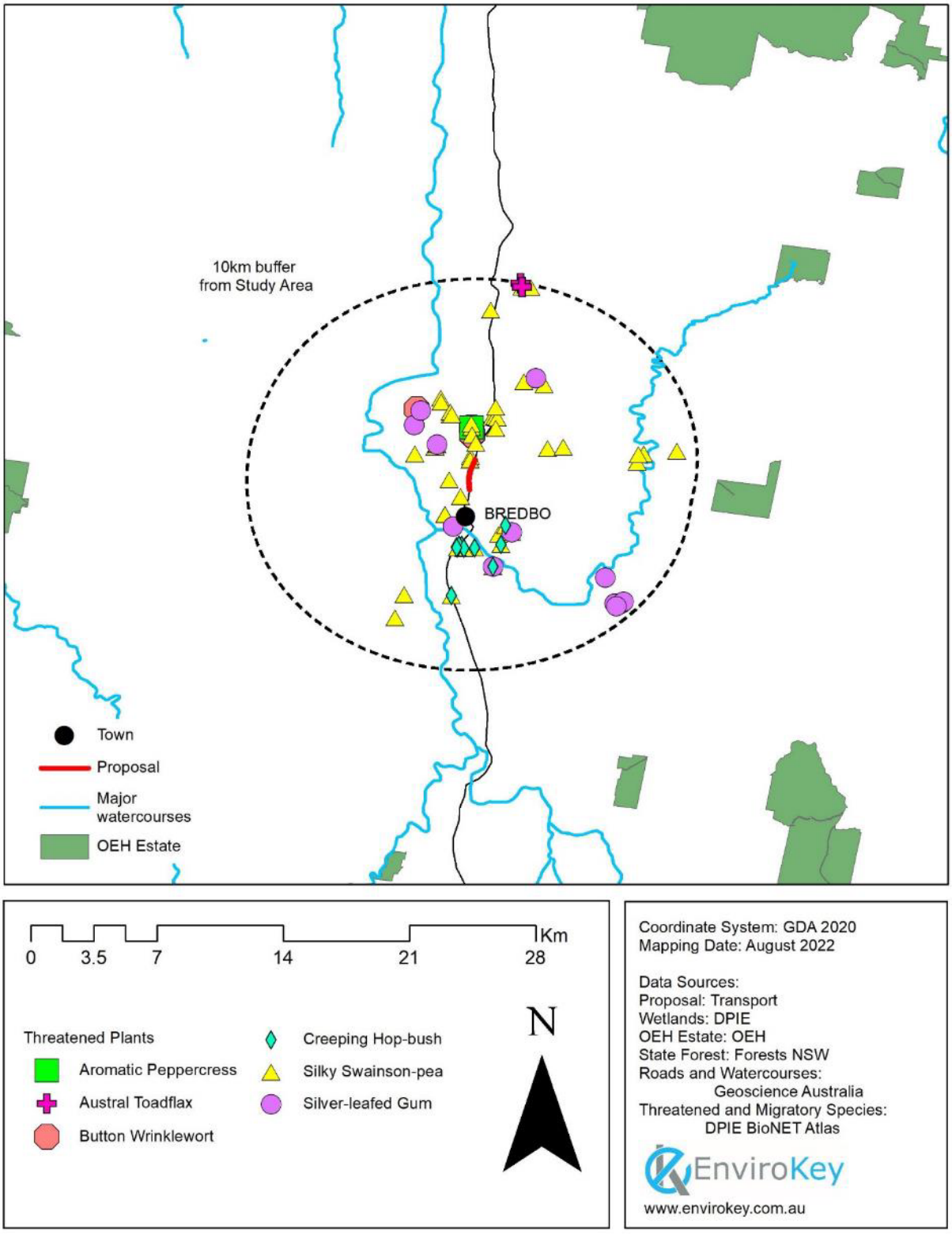
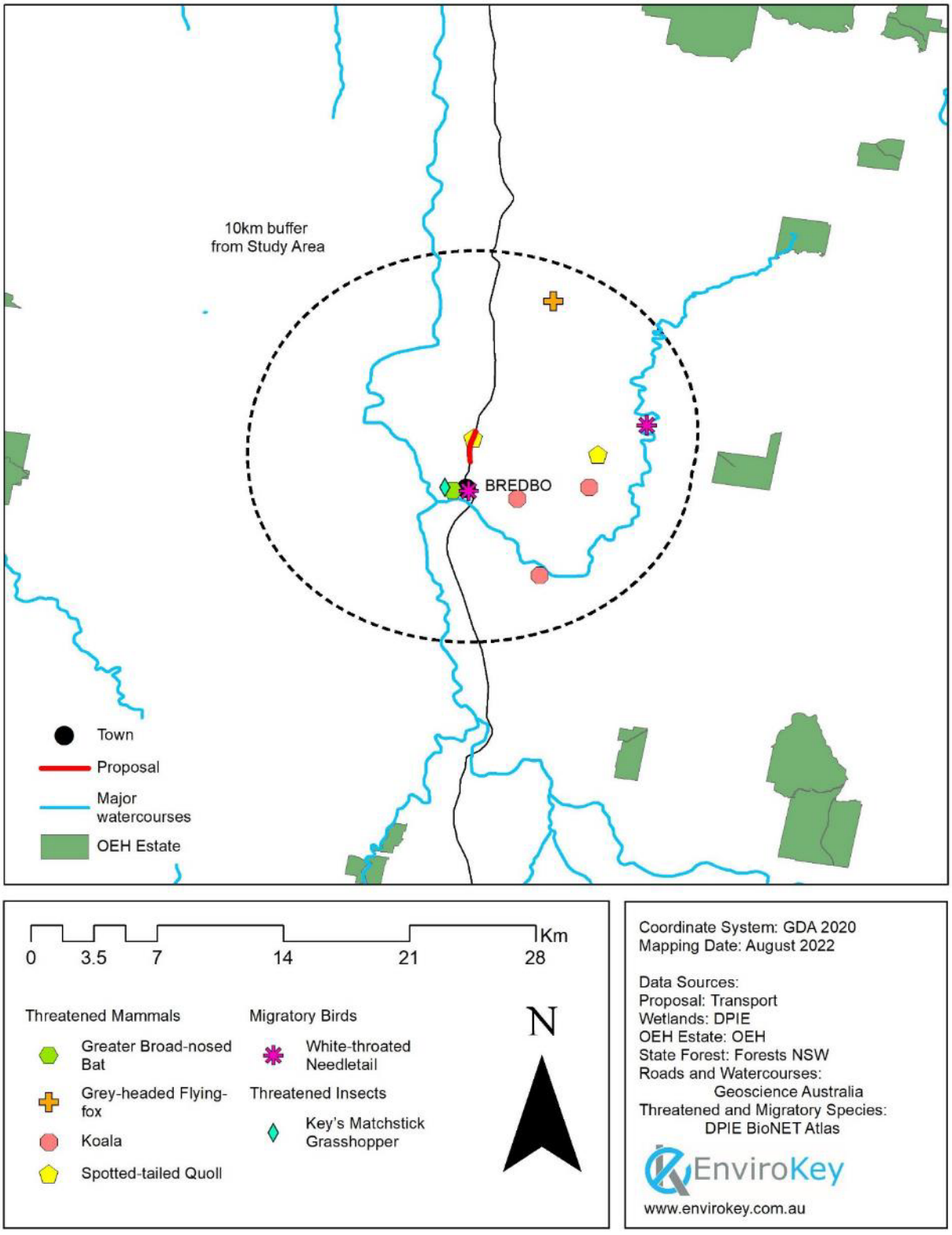


Figure 2-5: Existing threatened mammal and migratory bird records within the vicinity of the proposal



3. Existing environment

3.1 Plant community types and vegetation zones

The field survey revealed the confirmed presence of one PCT and the extent of this is provided in **Figure 3-1**. The field survey also revealed inaccuracies in the existing mapping datasets, where areas of native vegetation are mapped as non-native vegetation. Given this, the accuracy value of the existing vegetation community mapping is doubtful. Table 3-1 identifies the PCT and its extent within the study area and photographs within this section identify the existing environment including the two existing stockpile sites and compound site.

Table 3-1: Plant community types and vegetation condition

Plant community type (PCT)	Threatened ecological community	Area (ha)	
		Subject land	Study area
Monaro-Gourock Frost Hollow Grassy Woodland (3341) (Low)	Critically Endangered (BC Act)	0.005	0.09
Monaro-Gourock Frost Hollow Grassy Woodland (3341) (Moderate-good)	Critically Endangered (BC Act)	0.05	0.27
Cleared/Non-native		0.56	2.76
Formation/Highly Disturbed		2.48	2.7

3.1.1 PCT 3341: Monaro-Gourock Frost Hollow Grassy Woodland

Description

The study area contained mostly a native grassland, likely to have been this community given the presence of Snowy Gum. Areas mapped as Low condition has poor native species diversity.

PCT ID	3341
PCT name	Monaro-Gourock Frost Hollow Grassy Woodland
Vegetation class	Tableland Clay Grassy Woodlands
Vegetation formation	Grassy Woodlands
Estimate of per cent cleared	86 %
Area in subject land	0.055 ha
Conservation status	Critically Endangered, BC Act
Vegetation zones (condition)	Low: 0.005 ha; Moderate-good 0.05 ha (0.03 ha as woodland)

Justification for PCT selection:

While the study area was mapped as contained PCT 3376, the site was dominated by Snow Gum (Eucalyptus pauciflora) which is not part of that PCT. A review of PCT within the locality using the NSW Trees Near Map Application in combination with the NSW Vegetation Information System classification, identified PCT 3341 as the "best-fit" for the study area.

Floristic and structural summary of PCT 3341 within the study area

Growth form	Typical species
Trees	*Eucalyptus pauciflora*
Shrubs	-

Grass and grass-like	*Themeda triandra, Elymus scaber, Poa sieberiana, Microlaena stipoides*
Forb	*Plantago sp, Hypericum gramineum, Swainsona sericea*
Fern	-
Other	-
Exotic	*Phalaris sp., Holcus lanatus*

Condition states

Three condition classes were identified during the field survey within PCT 3341. These being

- Moderate-Good – this condition class includes native grassland of relatively good diversity (0.02 ha) and woodland (0.03 ha) and is located within the central and southern portions of the proposal
- Low – this condition class includes only native grassland with low flora diversity (0.0005 ha) and is located in the northern section of the proposal.

Large areas dominated by non-native vegetation occur throughout the study area.

Photo 3-1: Vegetation zone Moderate to good within PCT 3341

Photo 3-2: Vegetation zone Low condition within PCT 3341

Photo 3-3: Vegetation zone Moderate to good native grassland PCT 3341

3.2 Cleared/non-native vegetation

The majority of the study area comprises land that has been previously extensively modified by the previous road construction and maintenance activities, and now consists mostly of non-native vegetation. These includes Phalaris grass, Yorkshire Fog, African Lovegrass and other exotic grasses and forbs.

Photo 3-4: Cleared/non-native vegetation within the road corridor

3.3 Threatened ecological communities

One threatened ecological community (TEC) was recorded during the field survey. This was identified using the BioNET Vegetation Information which assigns PCTs to different TECs (DPIE/OEH, 2022).

Monaro Tableland Cool Temperate Grassy Woodland TEC occurs as PCT 3341 Monaro-Gourock Frost Hollow Grassy Woodland.

Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion is the name given to the ecological community dominated by Snow Gum (*Eucalyptus pauciflora).* The woodland is characterised by a sparse or very sparse tree layer which can be comprised of the single tree species *E. pauciflora* or with any of *Acacia melanoxylon* (blackwood), *E. rubida* (candlebark), *E. stellulata* (black sallee) and/or *E. viminalis* (ribbon gum) as co-dominants. The structure and species composition of the community varies depending on disturbance history and declining moisture availability or increasing levels of soil water logging.

The community can occur as a secondary grassland where trees have been removed but the understorey composition remains largely intact. The composition can be difficult to separate from natural temperate grassland, with landscape cues such as the presence of snow gum in a similar landscape position used as a guide.

Figure 3-1: Plant communities within the study area

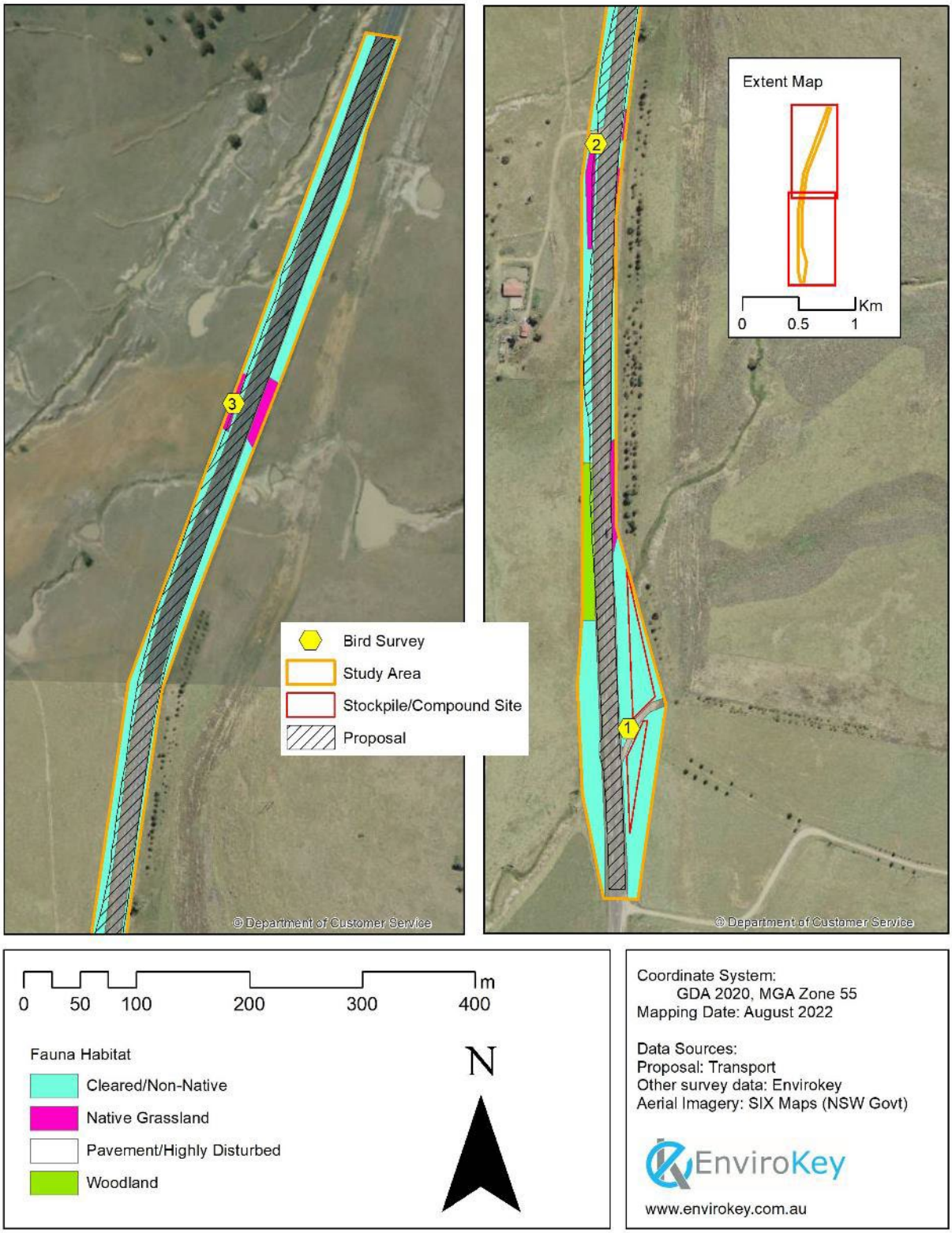
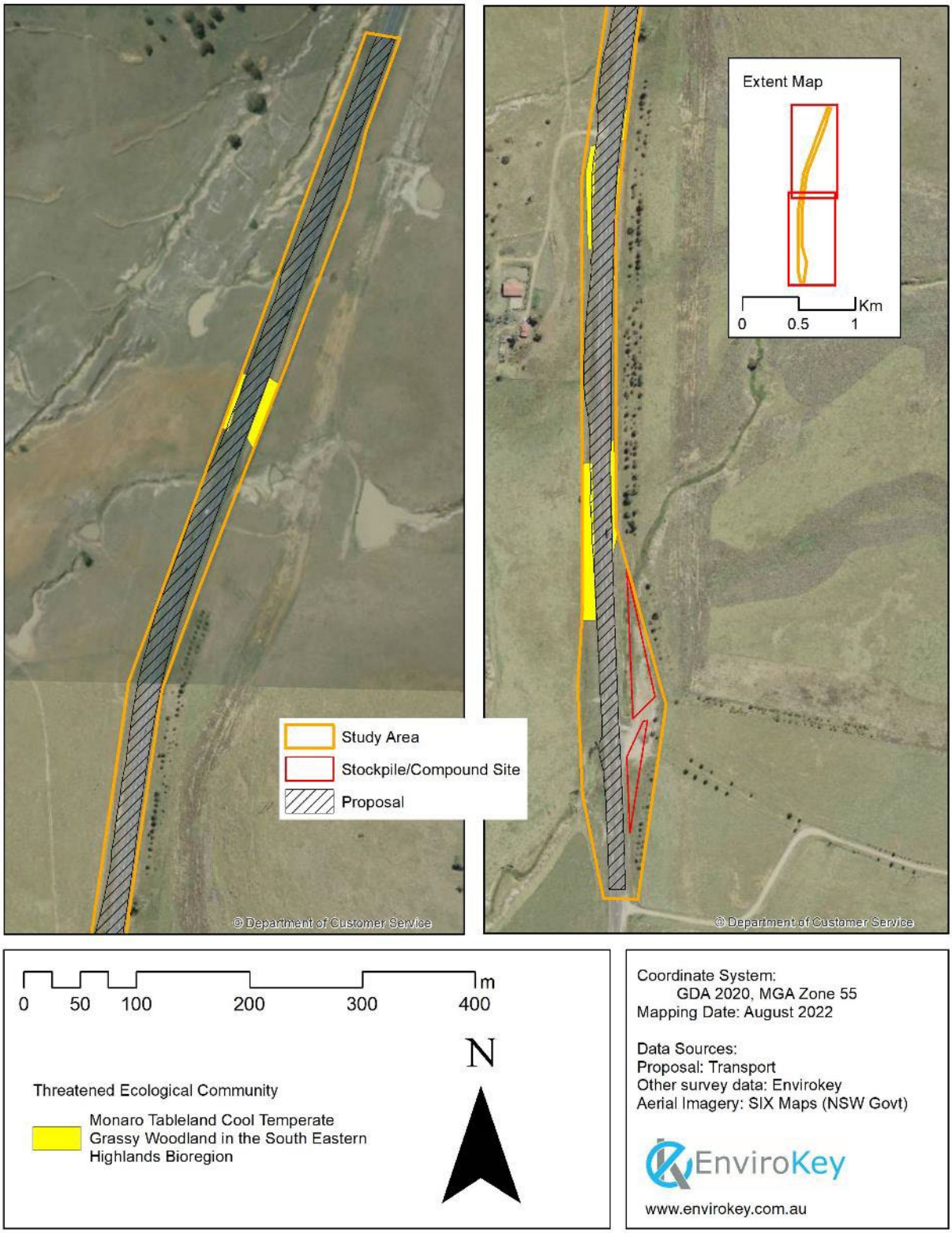


Figure 3-2: Threatened ecological community extent within the study area



3.4 Threatened species

The field survey revealed the presence of one threatened species, Silky Swaison-Pea. There were two threatened biota that could have a likely presence within the study area. These threatened species either records or with a moderate likelihood of occurrence are as follows:

- Diamond Firetail
- Dusky Woodswallow
- Silky Swainson-pea

Table 3-2: Threatened species surveys results

Species name	BC Act	EPBC Act	Identification method (not recorded, assumed, recorded, expert report)	Survey effort compliant?[1]	Results
Stagonopleura guttata (Diamond Firetail)	V	-	Assumed	-	Moderate likelihood of occurrence
Artamus cyanopterus cyanopterus (Dusky Woodswallow)	V	-	Assumed	-	Moderate likelihood of occurrence.
Swainsona sericea (Silky Swainson-pea)	V	-	Recorded	-	Recorded

Diamond Firetail

Diamond Firetail occur in a wide variety of habitats including grassy Eucalypt woodlands, open forests, mallee, Natural Temperate Grassland, riparian areas (rivers and creeks), and occasionally in lightly wooded farmland.

The field survey did not confirm the presence of Diamond Firetail within the road corridor, but they are likely to occur there.

Dusky Woodswallow

Dusky Woodswallow occur in a wide range of habitats including open Eucalypt forests, woodlands, shrub lands, heathlands, farmland on the edges of woodland or forest and very occasionally in moist forest or rainforest. Most of the breeding activity occurs on the western slopes of the Great Dividing Range, a region dominated by woodland and open dry forest.

The field survey did not confirm the presence of Dusky Woodswallow within the road corridor, but they are likely to occur there.

Silky Swaison-pea

Silky Swainson-pea are found in Natural Temperate Grassland and Snow Gum Eucalyptus pauciflora Woodland on the Monaro, Box-gum Woodland and occasionally in association with cypress-pines *Callitris* spp. Its stronghold is in the Monaro region.

The field survey found the presence of Silky Swainson-pea within the road corridor.

4. Avoidance and minimisation

A key part of TfNSW's management of biodiversity for this proposal is the application of the 'avoid, minimise, mitigate and offset' hierarchy as follows:

1. Avoid and minimise impacts.
2. Mitigate impacts.
3. Offset impacts in accordance with TfNSW guidelines.

The proposal design is mostly located within Cleared/non-native vegetation, with impacts to native vegetation and threatened species relatively minor. The narrow road corridor does not provide opportunity to alter the design to avoid further impacts. However, the current design minimises impacts to Silky Swainson-pea as the proposed overtaking lane will be added to the existing road alignment (ie, the centre line position is not shifting).

Stockpile and compound sites would be located in existing areas used for these purposes, while machinery storage is proposed within the existing farm space adjacent to the proposal.

5. Impact assessment

5.1 Construction direct impacts

Road construction, operation and associated maintenance can have a range of potential impacts to biodiversity. The potential impacts as a result of this proposal are summarised below and in the following sections. These include:

- Removal of native vegetation
- Removal of threatened flora
- Removal of threatened fauna species habitat and habitat features
- Injury and mortality
- Invasion and spread of weeds
- Noise, light, and vibration.

5.1.1 Removal of native vegetation

Clearing of native vegetation is a key threatening process (KTP) listed under the BC Act and the EPBC Act.

The proposal would result in the removal of up to 0.05 hectares of native vegetation that is consistent with a plant community type (PCT). The area of impact has been calculated using a geographic information system (GIS) shapefile of the proposed impact areas which was then overlain onto our vegetation mapping prepared from the field surveys. The potential extent of clearing expected as a result of the proposal is listed in Table 5-1.

Table 5-1: Summary of direct impacts on native vegetation

Veg. zone	Plant community type (PCT)	Broad condition class	TEC	Area to be impacted (ha or m^2)[1]
1	PCT 3341: Monaro-Gourock Frost Hollow Grassy Woodland (3341)	Low	Critically Endangered (BC Act)	<0.01
2	PCT 3341: Monaro-Gourock Frost Hollow Grassy Woodland (3341)	Moderate-good	Critically Endangered (BC Act)	0.05
NOTE 1: Area to be cleared based on ground-truthed vegetation mapping within the subject land.				

5.1.2 Removal of threatened flora

One threatened flora species were recorded in this field survey, this being Silky Swainson-pea. Two individuals plants were recorded, one of which is within the proposed impact footprint.

Table 5-2: Summary of direct impacts on threatened flora

Species name	EPBC Act	BC Act	Potential occurrence (Moderate, High, Recorded)	Associated habitat in subject land	Impact (ha or individuals)
Silky Swainson-pea	-	V	Recorded	PCT 3341	1

5.2 Indirect and operational impacts

5.2.1 Edge effects on adjacent native vegetation and habitat

The proposal is likely to have no negative affect on the existing edge effects that already occur in this highly fragment landscape. Substantial edge effects are already present being created by non-native vegetation incursion into areas of native vegetation, and existing agricultural activities adjacent to the road corridor.

5.2.2 Wildlife connectivity and habitat fragmentation

The proposal is likely to have no negative affect on the potential wildlife corridors or markedly increase habitat fragmentation given the absence of a corridor in the vicinity of the proposed work. Particularly in the context of the proposed work and that potential wildlife corridors remain within the locality and broader landscape.

The proposal would not substantially increase habitat fragmentation above pre-existing levels given the current detailed design.

5.3 Cumulative impacts

There are no other Transport projects are being considered within the direct vicinity of the proposal. Overall, the proposed work is considered relatively minor in nature in the context of the existing landscape and the configuration of the proposal, and therefore, cumulative impacts are unlikely from the proposal.

5.4 Assessments of significance

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.

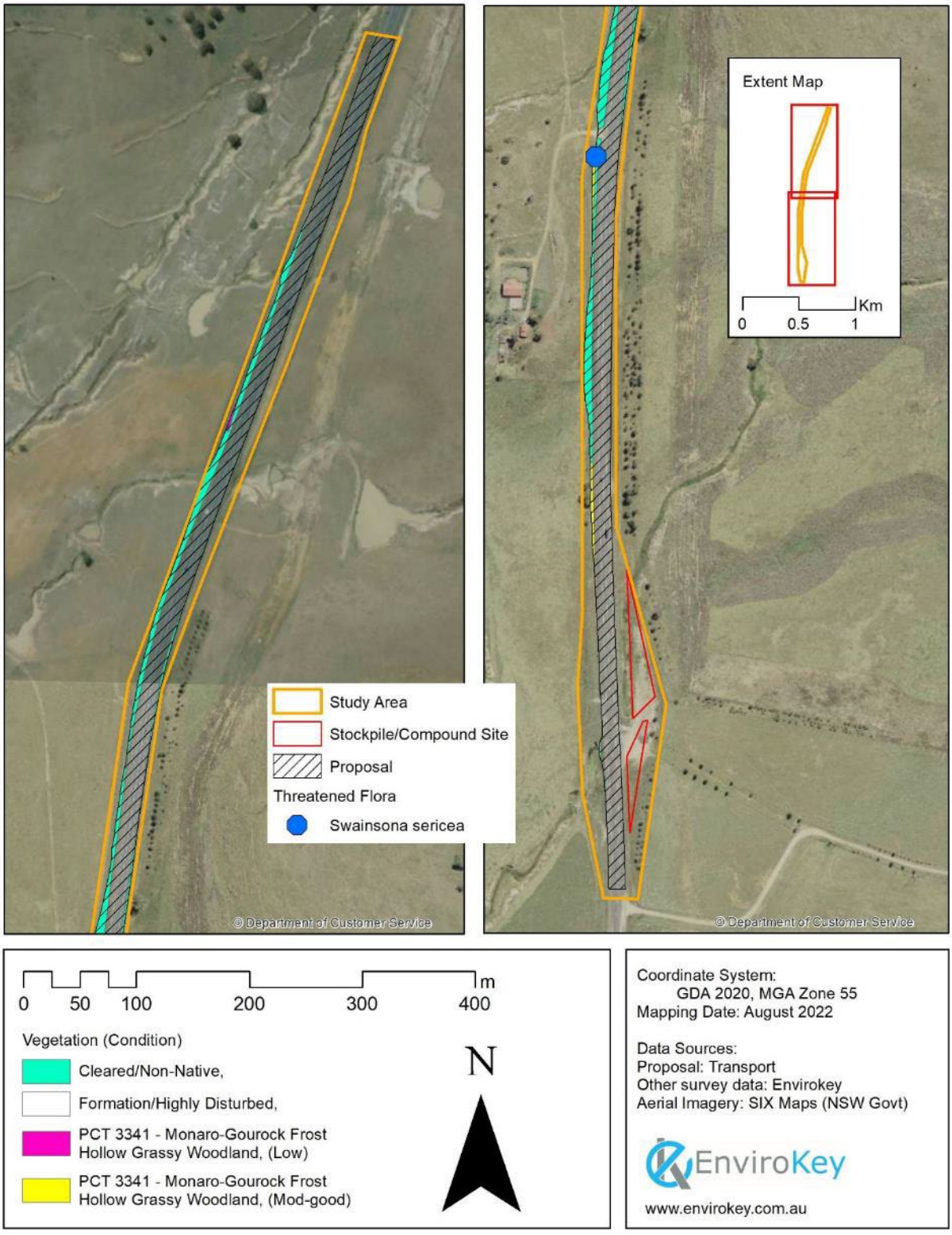
The Test of Significance (Appendix B) has determined that the proposed activity is *'unlikely'* to have a *'significant effect'* on species that are known from the study area, or that have been assessed as having a moderate to high potential of occurring in the study area. They include the following biota and their habitats:

- Diamond Firetail
- Dusky Woodswallow
- Silky Swainson-pea
- Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion

Table 5-3: Summary of BC Act significance assessments findings

Significance assessment question *(per Section 7.2 of the BC Act and Threatened Species Test of Significance Guidelines (OEH 2018))*						
Threatened species, or communities	a	b	c	d	e	Likely significant impact?
Diamond Firetail	N	X	N	N	N	No
Dusky Woodswallow	N	X	N	N	N	No
Silky Swainson-pea	N	X	N	N	N	No
Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion	X	N	N	N	N	No
***Y** = Yes (negative impact), **N** = No (no or positive impact), **X** = Yes/No answer not applicable, **?** = unknown impact.*						

Figure 5-1: Proposed impact areas as a result of the proposal



6. Mitigation

Measures to minimise impacts on threatened species have been recommended as part of this assessment and are summarised in Table 6-1.

Safeguards and management measures proposed have been developed by referring to the best practice management measures found in the Transport for NSW *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (2011) and site-specific mitigation measures have been specifically developed for the proposed work as deemed necessary.

Table 6-1: Mitigation measures

ID	Impact	Mitigation measure	Timing and duration	Likely efficacy of mitigation	Residual impacts anticipated?	Responsibility
B01	Removal of native vegetation	An exclusion zone is to be set up at the limit of clearing to avoid accidental impacts to retained areas of vegetation.	Prior to construction	Effective	None	Transport
B02		Vegetation removal will be undertaken in accordance with *Guide 4: Clearing of vegetation and removal of bushrock* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	During construction	Effective	None	Transport
B03	Removal of threatened fauna habitat	The unexpected species find procedure is to be followed under *Guide 1: Pre-clearing process* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) if threatened fauna, not assessed in the biodiversity assessment, are identified in the proposal site.	During construction	Proven	None	Transport
B04	Removal of threatened flora	Pre-clearing surveys will be undertaken in accordance with *Guide 1: Pre-clearing process* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	Detailed design	Effective	None	Transport
B05		The single Silky Swainson-pea would be transplanted prior to any proposed work commencing as part of a threatened species management plan. The plan must be prepared by a suitably qualified and experienced person. The Biodiversity Assessment assumes the single plant would not survive the transplant (as a worst-case scenario).	During construction	Proven	None, but single plant could still be lost (assumed lost in this BAR)	Transport
B06	Injury and mortality of fauna	Fauna will be managed in accordance with *Guide 9: Fauna* handling of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	During construction	Effective	None	Transport
B07	Invasion and spread of weeds	Weed species will be managed in accordance *with Guide 6: Weed management* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	During construction	Effective	None	Transport

7. Conclusion

This assessment has confirmed that the study area occurs within a highly modified agricultural landscape. Our field surveys identified one plant community type (PCT) as well as native tree plantings and areas of existing formation/highly disturbed/cleared land dominated by exotic flora. However, the threatened flora species, Silky Swainson-pea, was identified within the road corridor, and is well known from the Bredbo district. Two plants were identified during the target field surveys, one of which is located within the proposal footprint. A recommendation of this BAR is to transplant this species, as has been successfully completed for other Transport projects for Silky Swainson-pea in the past. The one PCT present is also consistent with a threatened ecological community.

For threatened and migratory biota that are known to or have a moderate to high likelihood of occurring within the study area, and therefore, be impacted by the proposal, significance assessments in accordance with the BC Act were completed. These concluded that the proposal is unlikely to have a significant impact on any threatened biota. Therefore, a species impact statement or a referral to the Commonwealth is not required.

A number of mitigation measures have been recommended to minimise and mitigate impacts from the proposal for threatened species, and specifically to the impact to Silky Swainson-pea. Overall, the measures aim to mitigate impacts to threatened species, threatened fauna species habitat and habitat features, and other potential impacts identified by this BAR.

8. Glossary

Term	Definition
Accredited person or assessor	Means as person accredited under section 6.10 (of the BC Act) to prepare reports in accordance with the BAM.
Biodiversity Assessment Method	The Biodiversity Assessment Method is established under section 6.7 of the BC Act. The BAM is established for the purpose of assessing certain impacts on threatened species and threatened ecological communities (TECs), and their habitats, and the impact on biodiversity values.
Biodiversity Assessment Method Calculator	Biodiversity Assessment Method Calculator (BAM-C) – the online computer program that provides decision support to assessors and proponents by applying the BAM and referred to as the BAM-C. The BAM-C contains biodiversity data from the BioNet Vegetation Classification and the Threatened Biodiversity Data Collection that the assessor is required to use in a BAM assessment. The BAM-C applies the equations used in the BAM, including those to determine the number and class of biodiversity credits required to offset the impacts of a development, or created at a biodiversity stewardship site. It is published by the Department (DPIE 2020a).
Biodiversity credit report	The report produced by the BAM-C that sets out the number and class of biodiversity credits required to offset the remaining adverse impacts on biodiversity values at a development site, or on land to be biodiversity certified, or that sets out the number and class of biodiversity credits that are created at a biodiversity stewardship site (DPIE 2020a).
Biodiversity offsets	The gain in biodiversity values achieved from the implementation of management actions on areas of land, to compensate for losses to biodiversity values from the impacts of development (DPIE 2020a).
Biodiversity Offsets and Agreement Management System	The online system used to administer the Biodiversity Offsets Scheme. The BOAMS is used by accredited assessors (to carry out specific BAM-related tasks involving access to the BAM-C to perform assessments, submit data, generate credits and calculate a credit price), by landholders (to apply for a Biodiversity Stewardship Agreement and manage ongoing reporting obligations for their agreement) and by proponents of developments (to view their credit obligation or the payment required to the Biodiversity Conservation Fund).
Biodiversity risk weighting	A factor of the formulas used by the BAM to calculate credits. The biodiversity risk weighting (BRW) is a score given to each vegetation zone and species based on the 'sensitivity to loss' versus the 'sensitivity to gain'. The value is set for threatened species and listed in the TBDC. The BRW for vegetation is calculated for each vegetation zone by the BAM-C using a factor of the 'sensitivity to loss' of the PCT or TEC (located in the BioNet vegetation classification) and the 'sensitivity to gain' of the ecosystem credit species (in the TBDC) that are predicted to occur.
Biodiversity Stewardship site	Refers to land which is the subject to a Biodiversity Stewardship Agreement under the BC Act.
BioNet Atlas	The DPIE database of flora and fauna records (formerly known as the NSW Wildlife Atlas). The Atlas contains records of plants, mammals, birds, reptiles, amphibians, some fungi, some invertebrates (such as insects and snails listed under the BC Act) and some fish (DPIE 2020a).
BioNet Vegetation classification	Refers to the vegetation community-level classification for use in vegetation mapping programs and regulatory biodiversity impact assessment frameworks in NSW. Refer About BioNet Vegetation Classification | NSW Environment and Heritage (DPE 2020a).
Construction footprint	The area to be directly impacted by the proposal during construction activities. See also definition for subject land.

Cumulative impact	The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Refer to Clause 228(2) of the EP&A Regulation 2000 for cumulative impact assessment requirements.
Direct impact	Direct impacts on biodiversity values include those related to clearing native vegetation and threatened species habitat and impacts on biodiversity values prescribed by the Biodiversity Conservation Regulation 2017 (the BC Regulation) (DPIE 2020a).
Ecosystem credit species	Threatened species or components of species habitat that are identified in the Threatened Species Data Collection as requiring assessment for ecosystem credits. This is analogous with the definition of 'predicted species'.
Ecosystem credits	A measurement of the value of threatened ecological communities, threatened species habitat for species that can be reliably predicted to occur with a PCT, and PCTs generally. Ecosystem credits measure the loss in biodiversity values at a development, activity, clearing or biodiversity certification site and the gain in biodiversity values at a biodiversity stewardship site (DPIE 2020a).
Habitat	An area or areas occupied, or periodically or occasionally occupied, by a species, population or ecological community, including any biotic or abiotic component (DPIE 2020a).
Indirect impact	Impacts that occur when the proposal affects native vegetation and threatened species habitat beyond the development footprint or within retained areas (e.g. transporting weeds or pathogens, dumping rubbish). This includes impacts from activities related to the construction or operational phase of the proposal and prescribed impacts (DPIE 2020a).
Landscape assessment area	The area which includes the subject land and a 1500 m buffer surrounding the outside edge of the boundary of the subject land or 500 m along each side of the centre line of a linear-shaped proposal
Local population	The population that occurs in the study area. The assessment of the local population may be extended to include individuals beyond the study area if it can be clearly demonstrated that contiguous or interconnecting parts of the population continue beyond the study area, according to the following definitions: • *The local population of a threatened plant species 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.* • *The local population of resident fauna species 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 utilise habitats in the study area.* • *The local population of migratory or nomadic fauna species comprises those individuals that are likely to occur in the study area from time to time or return year to year (OEH 2018).*
Matter of national environmental significance	A matter of national environmental significance (MNES) is any of the nine defined components protected by a provision of Part 3 of the EPBC Act (Commonwealth).
Mitigation	Action to reduce the severity of an impact.
Native vegetation	Has the same meaning as in section 1.6 of the BC Act and section 60B of the LLS Act. In summary, a) trees (including any sapling or shrub or any scrub) b) understorey plants c) groundcover (being any type of herbaceous vegetation)

	d) plants occurring in a wetland. A plant is native to New South Wales if it was established in New South Wales before European settlement (BC Act). Native vegetation does not extend to marine vegetation (being mangroves, seagrasses or any other species of plant that at any time in its life cycle must inhabit water other than fresh water). Marine vegetation is covered by the provisions of the FM Act.
NSW (Mitchell) landscape	Landscapes with relatively homogeneous geomorphology, soils and broad vegetation types, mapped at a scale of 1:250,000 (DPIE 2020a).
Operational footprint	The area that will be subject to ongoing operational impacts from the proposal. This includes the road, surrounding safety verges and infrastructure, fauna connectivity structures and maintenance access tracks and compounds.
Patch size	An area of native vegetation that: • *occurs on the development site or biodiversity stewardship site* • *includes native vegetation that has a gap of less than 100 m from the next area of native vegetation (or ≤30 m for non-woody ecosystems).* Patch size may extend onto adjoining land that is not part of the development site or biodiversity stewardship site (DPIE 2020a).
PlantNET	An online database of the flora of New South Wales which contains currently accepted taxonomy for plants found in the State, both native and exotic.
Population	A group of organisms, all of the same species, occupying a particular area (DPIE 2020a).
Spatial datasets	Spatial databases required to prepare a BAR • *BioNet NSW (Mitchell) Landscapes – Version 3.1* • *NSW Interim Biogeographic Regions of Australia (IBRA region and sub-regions) – Version 7* • *NSW soil profiles* • *hydrogeological landscapes* • *acid sulfate soils risk* • *digital cadastral database* • *Vegetation Information Systems maps* • *Geological sites of NSW.*
Species credit species	Threatened species or components of species habitat that are identified in the Threatened Species Data Collection as requiring assessment for species credits (DPIE 2020a). This is analogous with the definition of 'candidate species'.
Species credits	The class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates. Species that require species credits are listed in the Threatened Biodiversity Data Collection (DPIE 2020a).
Species polygon	An area of land identified in Chapter 5 (of the BAM) that contains habitat or is occupied by a threatened species (DPIE 2020a).
Study area	The area directly affected by the proposal (subject land or construction footprint) and any additional areas likely to be affected by the proposal, either directly or indirectly.
Subject land	Land subject to a development, activity, clearing, biodiversity certification or a biodiversity stewardship proposal. It excludes the landscape assessment area which surrounds the subject land (i.e., the area of land in the 1500 m buffer zone around the subject land or 500m buffer zone for linear proposals). In the case of a biodiversity certification proposal, subject land includes the biodiversity certification assessment area (DPIE 2020a). See also definition for construction footprint.

Threatened Biodiversity Data Collection	A publicly assessable online database (registration required) which contains information for listed threatened species, populations and ecological communities (DPIE 2020a). Part of the BioNet database, published by the EHG and accessible from the BioNet website at www.bionet.nsw.gov.au.
Vegetation integrity (score)	The condition of native vegetation assessed for each vegetation zone against the benchmark for the PCT. The vegetation integrity score is the quantitative measure of vegetation condition calculated by the BAM-C (DPIE 2020a).
Vegetation zone	A relatively homogeneous area of native vegetation on a development site, clearing site, land to be biodiversity certified or biodiversity stewardship site that is the same PCT and has the same broad condition state (DPIE 2020a).

9. Abbreviations

Term	Definition
AOBV	Area of Outstanding Biodiversity Value
BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method calculator
BC Act	Biodiversity Conservation Act 2016 (NSW)
BC Regulation	Biodiversity Conservation Regulation 2017 (NSW)
BDAR	Biodiversity Development Assessment Report
BOAMS	Biodiversity Offsets and Agreement Management System
BOS	Biodiversity Offset Scheme
BRW	Biodiversity risk weighting
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DIWA	Directory of Important Wetlands in Australia
DPE	Department of Planning and Environment
DPI	Department of Primary Industries
EEC	Endangered ecological community
EHG	NSW Environment and Heritage Group within the Department of Planning and Environment
EIS	Environmental Impact Statement
EP&A Act	*Environment Planning and Assessment Act 1979* (NSW)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
Fisheries NSW Policy and guidelines	Fisheries NSW Policy and guidelines for fish habitat conservation and management (Update 2013)
FM Act	Fisheries Management Act 1994 (NSW)
GDE	Groundwater dependent ecosystems
IBRA	Interim Biogeographically Regionalisation of Australia
MNES	Matters of national environmental significance
PCT	Plant community type
PMST	Protected Matters Search Tool
REF	Review of Environmental Factors
SAII	Serious and Irreversible Impacts
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SSD	State Significant Development
SSI	State Significant Infrastructure
TBDC	Threatened Biodiversity Data Collection
TECs	Threatened ecological communities (VECs, EECs and CEECs)
TfNSW	Transport for NSW
VEC	Vulnerable Ecological Community

10. References

DEC 2004. Threatened Species Survey and Assessment: Guidelines for developments and activities (working draft). *NSW Department of Environment & Conservation, Hurstville, NSW.*

DECC 2007. Threatened Species Assessment Guidelines: The Assessment of Significance. *Department of Environment & Climate Change, Hurstville, N.S.W.*

DPE 2022. NSW State Vegetation Type Map: version C1.1.M1. *http://data.environment.nsw.gov.au/dataset/*.

DPI. 2022. *NSW Priority Weed Declarations* [Online]. Available: http://www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds/noxweed [Accessed].

DPIE/BCS. 2022a. *BioNET: The website for the Atlas of NSW Wildlife: A whole-of-government system for flora and fauna sightings information* [Online]. Available: www.bionet.nsw.gov.au [Accessed].

DPIE/BCS 2022b. Threatened species, populations and ecological communities of NSW. *NSW Office of Environment & Heritage. ,* www.threatenedspecies.environment.nsw.gov.au.

DPIE/OEH 2022. NSW Vegetation Information System: Classification. *http://www.environment.nsw.gov.au/NSWVCA20PRapp/default.aspx*.

ENVIROKEY 2013. Silky Swainson-pea Management Plan: Gocup Road (MR279), South Meadow Creek. *A report by EnviroKey for Roads and Maritime Services South West Region. Report No. EM.0533. Final Report. Version 1. 16th December 2013*.

SPRAT 2017. Species Profile and Threats Database - EPBC Act listed biota. *http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl*.

WATSON, D. M. 2003. The 'standardized search' : An improved way to conduct bird surveys. *Austral Ecology,* 28**,** 515:525.

Appendix A: Habitat suitability assessment

Use the below criteria to determine the likelihood that a threatened species could occur in the study area. The criteria are designed for use in a BAR only and is not applicable for use in a BDAR (i.e., where the BAM-C is being used). Only recorded sightings from BioNet are valid for these criteria.

Likelihood	Criteria
Recorded	The species was observed in the study area during the current survey or has been recorded within the past five years (known from a reputable source).
High	A species is considered highly likely to occur in the study area if: • *There are previous credible records on BioNet within the study area from the last 10 years and suitable habitat is present.* **OR** • *The species is highly mobile, is dependent on identified suitable habitat within the study area (i.e., for breeding or important life cycle periods such as winter flowering resources) and has been recorded recently (within five years) on BioNet in the locality. This also includes species known or likely to visit the study area during regular seasonal movements or migration.*
Moderate	A species is considered moderately likely to occur in the study area if: • *Any suitable habitat (e.g., foraging) is present in the study area, the species is highly mobile and has been recorded in the locality in the last 10 years on BioNet. The species may be unlikely to maintain sedentary populations, however, may seasonally use resources within the study area opportunistically or during migration. The species is unlikely to be dependent (i.e., for breeding or important life cycle periods such as winter flowering resources) on habitat within the study area.* **OR** • *The species is not highly mobile, is dependent on identified suitable habitat features (e.g., hollows, rocky outcrops) within the study area and has been recorded in the locality in the last 10 years on BioNet.* **OR** • *For flora species that are associated with PCTs in the study area (see TBDC) or have been recorded in the locality in the last 10 years on BioNet – the associated PCT/habitat present in the study area is not degraded and the species was not targeted by surveys in accordance with the BAM and relevant survey guidelines. In addition, for flora species known to occur in disturbed areas (e.g., orchids), records from any time within the locality may warrant inclusion in this category.*
Low	A species is considered to have a low likelihood of occurring in the study area if: • *For highly mobile species, the species may be an occasional visitor, but habitat similar to the study area is widely distributed in the locality, meaning that the species is not dependent (i.e., for breeding or important life cycle periods such as winter flowering resources) on habitats in the study area and the species has not been recorded in the locality in the last 10 years on BioNet.* **OR** • *The species is not highly mobile, is dependent on identified suitable habitat features (e.g., hollows, rocky outcrops) within the study area and has not been recorded in the locality in the last 10 years on BioNet.* **OR** • *For flora species that are associated with PCTs in the study area (see TBDC) and the species was not identified following targeted surveys in accordance with the BAM and relevant survey guidelines. Flora species that have been recorded in the locality on BioNet at any time, associated suitable habitat (see the TBDC) is not present in the study area, though similar habitats of the same vegetation formation is present in the study area.*

Unlikely	Suitable habitat for the species is absent from the study area.

Habitat suitability assessment table

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
FROGS					
Alpine Tree Frog *Litoria verreauxii alpina*	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	Unlikely
Booroolong Frog *Litoria booroolongensis*	E	E	Lives in permanent streams with some fringing vegetation cover. Can be found sheltering under rocks or amongst vegetation near stream edge.	0	Unlikely
Giant Burrowing Frog *Heleioporus australiacus*	V	V	Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based.	0	Unlikely
Green and Golden Bell Frog *Litoria aurea*	E	V	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha spp.)* or spikerushes (*Eleocharis spp.*) Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (Gambusia holbrooki), have a grassy area nearby and diurnal sheltering sites available.	0	Unlikely
Southern Bell Frog *Litoria raniformis*	E	V	Usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys.	0	Unlikely
Southern Corroboree Frog *Pseudophryne corroboree*	CE	CE	Summer breeding habitat is pools and seepages in sphagnum bogs, wet tussock grasslands and wet heath.	0	Unlikely

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Yellow-spotted Tree Frog *Litoria castanea*	CE	CE	Require large permanent ponds or slow flowing 'chain-of-ponds' streams with abundant emergent vegetation such as bulrushes and aquatic vegetation.	0	Unlikely
MICRO BATS					
Eastern False Pipistrelle *Falsistrellus tasmaniensis*	V		Roosts in eucalypts hollows as well as loose bark on trees or on buildings. Prefers moist habitats with trees taller than 20m.	0	Low
Greater Broad-nosed Bat *Scoteanax rueppellii*	V		Uses woodland, moist, and dry eucalypt forests and rainforest, mostly found in tall wet forest.	1	Low
Large Bent-winged Bat *Miniopterus orianae oceanensis*	V		Prefers caves but also uses derelict mines, storm water tunnels, buildings, and other built structures for roosting. They hunt in forested areas.	0	Low
Large-eared Pied Bat *Chalinolobus dwyeri*	V	V	Found in well-timbered areas containing gullies often staying loyal to the same cave for many years. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (Petrochelidon ariel).	0	Low
Southern Myotis *Myotis Macropus*	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	Low
BIRDS					
Australasian Bittern *Botaurus poiciloptilus*	E	E	Prefers permanent freshwater wetlands with tall, dense vegetation. Spends the day in reeds or rushes and feeds mostly at night	0	Unlikely

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Australian Painted Snipe *Rostratula australis*	E	E	Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	0	Unlikely
Barking Owl *Ninox connivens*	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 *Falco subniger*	V		The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions	1	Unlikely
Black-necked Stork *Ephippiorhynchus asiaticus*	E		Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers are the key habitat in NSW for the Black-necked Stork. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries.	0	Unlikely
Blue-billed Duck *Oxyura australis*	V		The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation.	0	Unlikely
Brown Treecreeper (eastern subspecies) *Climacteris picumnus victoriae*	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.	12	Low
Common Sandpiper *Actitis hypoleucos*		M	A small sandpiper that is widely distributed in small numbers along the coast of Australia and in many inland regions.	0	Unlikely
Curlew Sandpiper *Calidris ferruginea*	E	CE M	Widespread occurrence along the coast and inland.	0	Unlikely

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Diamond Firetail *Stagonopleura guttata*	V		Found in grassy woodlands including Box-Gum Woodlands and Snow Gum Woodland	12	Moderate
Dusky Woodswallow *Artamus cyanopterus cyanopterus*	V		Found mostly in dry, open eucalypt forests and woodlands. Depending on location and climate, it can be migratory.	9	Moderate
Eastern Curlew *Numenius madagascarensis*		CE M	Australia's largest shorebird. Flies to Russia and China annually to breed, returning to Australia to feed. They are found on found on intertidal mudflats and sandflats, often with beds of seagrass, on sheltered coasts, especially estuaries, mangrove swamps, bays, harbours and lagoons.	0	Unlikely
Fork-tailed Swift *Apus pacificus*		M	Almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher. In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas.	0	Unlikely
Flame Robin *Petroica phoenicea*	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.	17	Low
Freckled Duck *Stictonetta naevosa*	V		Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds.	0	Unlikely
Gang-gang Cockatoo *Callocephalon fimbriatum*	V		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	Unlikely

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Glossy Black-Cockatoo *Calyptorhynchus lathami*	V		Inhabit open forests and woodlands. She-oak is an important food source and they feed almost exclusively on several species (*Casurina and Allocasaurina*).	0	Unlikely
Hooded Robin (south-eastern form) *Melanodryas cucullata cucullata*	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.	16	Unlikely
Latham's Snipe *Gallinago hardwickii*		M	Habitat in Australia includes permanent and ephemeral wetlands.	0	Unlikely
Little Eagle *Hieraaetus morphnoides*	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, *Acacia* woodland and riparian woodland in arid and semi-arid regions.	0	Unlikely
Little Lorikeet *Glossopsitta pusilla*	V		Uses riparian habitats and forages in open eucalypt forests and woodland. Roosts in treetops, often separate from feeding areas. Urban areas, paddocks and roadside remnants with flowering trees can help sustain viable populations	0	Unlikely
Magpie Goose *Anseranas semipalmata*	V		Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges.	0	Unlikely
Masked Owl *Tyto novaehollandiae*	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 *Pachycephala olivacea*	V		Mostly inhabit wet forests above about 500m. During the winter months they may move to lower altitudes	0	Unlikely

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Painted Honeyeater *Grantiella picta*	V	V	Inhabits Boree/Weeping Myall (Acacia pendula), Brigalow (A.harpophylla) and Box-Gum Woodlands and Box-Ironbark Forests. Feeds on mistletoes preferably the genus *Amyema*	0	Unlikely
Pectoral Sandpiper *Calidris melanotos*		M	A small to medium sandpiper. In Australia it can be found in both shallow fresh and salt water. The sandpiper flies to Russia and Northern America to breed.	0	Unlikely
Pilotbird *Pycnoptilus floccosus*		V	Found in wet sclerophyll forests in temperate zones in moist gullies with dense undergrowth and dry sclerophyll forests and woodlands occupying dry slopes and ridges	0	Unlikely
Pink Robin *Petroica rodinogaster*	V		Inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies as well as	0	Unlikely
Powerful Owl *Ninox strenua*	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.	0	Unlikely
Rainbow Bee-eater *Merops ornatus*		M	Occurs mainly in open forests and woodlands, shrublands, and in various cleared or semi-cleared habitats, including farmland and areas of human habitation (Higgins 1999). It usually occurs in open, cleared or lightly-timbered areas that are often, but not always, located in close proximity to permanent water	0	Unlikely
Regent Honeyeater *Anthochaera phrygia*	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
Rufous Fantail *Rhipidura rufifrons*		M	Found in rainforest, dense wet forests, swamp woodlands and mangroves, preferring deep shade, and is often seen close to the ground. During migration, it may be found in more open habitats or urban areas	0	Unlikely

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Satin Flycatcher *Myiagra cyanoleuca*		M	The Satin Flycatcher is found in tall forests, preferring wetter habitats such as heavily forested gullies, but not rainforests.	0	Unlikely
Scarlet Robin *Petroica boodang*	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	11	Low
Sharp-tailed Sandpiper *Calidris acuminate*		M	Occurs in Australia during the non-breeding part of the year. Found on both the coast and inland areas. Flies north to Siberia to breed.	0	Unlikely
Speckled Warbler *Chthonicola sagittata*	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.	3	Low
Spotted Harrier *Circus assimilis*	V		Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe.	1	Unlikely
Square-tailed Kite *Lophoictinia isura*	V		Found in timbered habitats including dry woodlands and open forests. Prefers timbered watercourses.	0	Unlikely
Superb Parrot *Polytelis swainsonii*	V	V	Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest.	2	Unlikely
Swift Parrot *Lathamus discolor*	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 *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Forest Red Gum *E. tereticornis*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens*. Commonly used lerp infested trees include Inland Grey Box *E. microcarpa*, Grey Box *E. moluccana*, Blackbutt *E. pilularis*, and Yellow Box *E. melliodora*	0	Unlikely

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Turquoise Parrot *Neophema pulchella*	V		Habitats include edges of eucalypt woodland near clearings, timbered ridges and creeks in farmlands.	1	Unlikely
Varied Sittella *Daphoenositta chrysoptera*	V		This species is sedentary and known to inhabit most forest/woodland habitats.	0	Unlikely
White-bellied Sea-eagle *Haliaeetus leucogaster*	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.	2	Low
White-fronted Chat *Epthianura albifrons*	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 *Hirundapus caudacutus*		V M	Once believed they did not land in Australia, but now shown to roost in trees. They are more common in coastal areas compared to inland	2	Low
Yellow Wagtail *Motacilla flava*		M	Occurs in a variety of habitats, favouring damp or wet vegetation. Forages on the edges of rivers, dams and wetlands.	0	Unlikely
INVERTEBRATES					
Golden Sun Moth *Synemon plana*	E	V	Occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which groundlayer is dominated by wallaby grasses Austrodanthonia spp. Grasslands dominated by wallaby grasses are typically low and open - the bare ground between the tussocks is thought to be an important microhabitat feature for the Golden Sun Moth, as it is typically these areas on which the females are observed displaying to attract males.	0	Unlikely

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Key's Matchstick Grasshopper *Keyacris scurra*	E		Typically found in native grasslands and grassy woodlands but it has also been recorded in other vegetation associations usually containing a native grass understory (especially kangaroo grass *Themeda triandra*) and known food plants (*particularly Asteraceae*).	1	Low
MAMMALS					
Eastern Pygmy-possum *Cercartetus nanus*	V		Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred	0	Unlikely
Broad-toothed Rat *Mastacomys fuscus*	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	Unlikely
Brush-tailed Phascogale *Phascogale tapoatafa*	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
Brush-tailed Rock-wallaby *Petrogale penicillata*	E	V	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north.	0	Unlikely
Grey-headed flying fox *Pteropus poliocephalus*	V	V	Found in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heath and swamps as well as urban gardens and cultivated fruit crops	1	Unlikely
Koala *Phascolarctos cinereus*	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.	3	Unlikely

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Long-nosed Potoroo *Potorous tridactylus*	V	V	Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. A sandy loam soil is also a common feature.	0	Unlikely
Smoky Mouse Pseudomys fumeus	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	Unlikely
Spotted-tailed Quoll *Dasyurus maculatus*	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 *Petaurus norfolcensis*	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
White-footed Dunnart *Sminthopsis leucopus*	V		The White-footed Dunnart is found in a range of different habitats across its distribution, including coastal dune vegetation, coastal forest, tussock grassland and sedgeland, heathland, woodland and forest.	0	Unlikely
Yellow-bellied Glider *Petaurus australis*	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.	0	Unlikely
REPTILES					

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Grassland Earless Dragon *Tympanocryptis pinguicolla*	E	E	Restricted to a small number of Natural Temperate Grassland sites dominated by wallaby grasses (Nothodanthonia spp.), spear grasses (Austrostipa spp.), Poa Tussock (Poa sieberiana), Red Grass (Bothriochloa macra), and occasionally Kangaroo Grass (Themeda australis). Introduced pasture grasses occur at many of the sites supporting this species, which has also been captured in secondary grassland.	0	Unlikely
Little Whip Snake *Suta flagellum*	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. Found on well drained hillsides, mostly associated with scattered loose rocks.	1	Unlikely
Pink-tailed Legless Lizard *Aprasia parapulchella*	V	V	Habitat sites are generally sloping, open woodland areas with native grassy ground layer, particularly dominated by Kangaroo Grass (Themeda australis) Sites are well drained with rocky outcrops or scattered, partially buried rocks.	0	Unlikely
Rosenberg's Goanna *Varanus rosenbergi*	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.	5	Unlikely
Striped Legless Lizard *Delma impar*	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	Unlikely
FISH					
Macquarie Perch *Macquaria australasica*	E (FM Act)	E	Found in the upstream reaches of the Murray-Darling Basin. Found in rivers and lakes.	0	None

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Murray Cod *Maccullochella peelii*		V	Prefers deep, slow flowing turbid water in rivers and streams with boulders or undercut banks.	0	None
Trout Cod *Maccullochella macquariensis*	E (FM Act)	CE	Found in the southern Murray-Darling river system, this fish inhabits fast flowing freshwater streams.	0	None
PLANTS					
Araluen Gum *Eucalyptus kartzoffiana*	V	V	Grows near rivers, in grassy or shrubby woodland or in wet sclerophyll forest on moderately fertile sandy soil on granite.	0	None
Araluen Zieria *Zieria adenophora*	CE	E	Araluen Zieria occurs in shrubland amongst large granite boulders and granite tors on a steep west facing hillside.	0	None
Aromatic Peppercress *Lepidium hyssopifolium*	E	E	In NSW the species was known to have occurred in both woodland with a grassy understorey and in grassland.	1	Low
Austral Toadflax *Thesium australe*	V	V	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast.	2	Low
Baeuerlen's Gentian *Gentiana baeuerlenii*	E	E	In Namadgi National Park the species grows as an inter-tussock herb of grassland and sedgeland (Poa labillardieri and Carex gaudichaudii) in a moist area on the lower slope of a broad valley.	0	Unlikely
Black Gum *Eucalyptus aggregata*	V	V	Grows in the lowest parts of the landscape. Grows on alluvial soils, on cold, poorly-drained flats and hollows adjacent to creeks and small rivers.	0	Unlikely

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Blue-tongued Greenhood *Pterostylis oreophila*	CE	CE	Grows along sub-alpine watercourses under more open thickets of Mountain Tea-tree in muddy ground very close to water. They are less commonly grows in peaty soils and sphagnum mounds. While more frequently found in low-light conditions it appears to also be able to tolerate full sun	0	Unlikely
Bombay Bossiaea *Bossiaea bombayensis*	V		Bombay Bossiaea grows in the steeply incised valley of the Shoalhaven River, near Braidwood on the Southern Tablelands. It is mainly found on sandy, rocky slopes and terraces above the frequent flood line in a shrubland of Callitris endlicheri, Grevillea arenaria, Lomandra longifolia, Micrantheum hexandrum, Pomaderris andromedifolia and Leptospermum polygalifolium.	0	Unlikely
Buttercup Doubletail *Diuris aequalis*	E	E	Recorded in forest, low open woodland with grassy understorey and secondary grassland on the higher parts of the Southern and Central Tablelands (especially on the Great Dividing Range).	0	Unlikely
Button Wrinklewort *Rutidosis leptorrhynchoides*	E	E	Occurs in Box-Gum Woodland, secondary grassland derived from Box-Gum Woodland or in Natural Temperate Grassland; and often in the ecotone between the two communities. Grows on soils that are usually shallow, stony red-brown clay loams; tends to occupy areas where there is relatively less competition from herbaceous species (either due to the shallow nature of the soils, or at some sites due to the competitive effect of woodland trees).	5	Low
Creeping Hop-bush *Dodonaea procumbens*	V	V	Grows in Natural Temperate Grassland or fringing eucalypt woodland of Snow Gum (Eucalyptus pauciflora). Grows in open bare patches where there is little competition from other species. Found on sandy-clay soils, usually on or near vertically-tilted shale outcrops.	12	Low, site searched
Delicate Pomaderris *Pomaderris delicata*	CE	CE	At both known sites the Delicate Pomaderris grows in dry open forest dominated by Eucalyptus sieberi with a dense she-oak understorey. Soils are shallow and derived from sandstone and siltstone. Nothing is known about the response of the species to fire and other disturbance.	0	Unlikely

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Dwarf Kerrawang *Commersonia prostrata*	E	E	Occurs on sandy, sometimes peaty soils in a wide variety of habitats: Snow Gum (Eucalyptus pauciflora) Woodland and Ephemeral Wetland floor at Rowes Lagoon; Blue leaved Stringybark (E. agglomerata) Open Forest at Tallong; and in Brittle Gum (E. mannifera) Low Open Woodland at Penrose; Scribbly Gum (E. haemostoma)/ Swamp Mahogany (E. robusta) Ecotonal Forest at Tomago.	0	Low
Few-seeded Bossiaea *Bossiaea oligosperma*	V	V	Occurs on stony slopes or ridges on sandstone in the Yerranderie area. Occurs in low woodland on loamy soil in the Windellama area.	0	Unlikely
Hoary Sunray *Leucochrysum albicans subsp. tricolor*		E	Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils	0	Unlikely
Kydra Dampiera *Dampiera fusca*	E		Recorded in montane heath, also amongst rock platform and tors interspersed with closed heath. Habitat in the Canberra area is generally restricted to granite ridgetops and plateaux on very shallow soils supporting heath, scrub and heathy snow gum and/or mallee woodland.	0	Unlikely
Kydra Westringia *Westringia kydrensis*	E	E	Occurs in heathland with larger shrubs of Allocasuarina nana and Banksia canei. Grows on shallow rocky granite or quartzite soils.	0	Unlikely
Large-fruit Fireweed *Senecio macrocarpus*		V	Occurs in grassland, sedgeland, woodland and shrubland, generally on relatively heavy soils.	0	Unlikely
Leafy Anchor Plant *Discaria nitida*	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	Unlikely
Lemon Zieria *Zieria citriodora*	E	V	Lemon Zieria grows in low woodland of Eucalyptus mannifera - E. macrorhyncha - E. dives with a shrub understorey	0	Unlikely

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Mauve Burr-daisy *Calotis glandulosa*	V	V	Found in montane and subalpine grasslands in the Australian Alps. Found in subalpine grassland (dominated by Poa spp.), and montane or natural temperate grassland dominated by Kangaroo Grass (Themeda australis) and Snow Gum (Eucalyptus pauciflora) Woodlands on the Monaro and Shoalhaven area.	0	Unlikely
Michelago Parrot-pea *Dillwynia glaucula*	E		Occurs on exposed patches of clay or on rocky outcrops in eucalypt woodland often dominated by Scribbly Gum (Eucalyptus rossii), Snow Gum (E. pauciflora), Broad-leafed Peppermint (E.dives) and Red Stringybark (E. macrorhyncha).	0	Unlikely
Monaro Golden Daisy *Rutidosis leiolepis*	V	V	Found in Natural Temperate Grassland on the Monaro. Occurs in sub-alpine grasslands in Kosciuszko National Park. Grows on basalt, granite and sedimentary substrates.	0	Unlikely
Omeo Storksbill *Pelargonium sp. Striatellum*	E	E	It has a narrow habitat that is usually just above the high-water level of irregularly inundated or ephemeral lakes, in the transition zone between surrounding grasslands or pasture and the wetland or aquatic communities.	0	Unlikely
Paddys River Box *Eucalyptus macarthurii*	E	E	Occurs on grassy woodland on relatively fertile soils on broad cold flats.	0	Unlikely
Pale Pomaderris *Pomaderris pallida*	V	V	This species usually grows in shrub communities surrounded by Brittle Gum (Eucalyptus mannifera) and Red Stringybark (E. macrorhyncha) or Callitris spp. woodland.	0	Unlikely
Rough Eyebright Euphrasia scabra	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	Unlikely

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Round-leafed Wilsonia *Wilsonia rotundifolia*	E		Grows in mud in coastal saltmarsh and inland saline or brackish lake beds. It may be a clonal species so large population may be from a few genetically distinct individuals.	0	Unlikely
Silver-leafed Gum *Eucalyptus pulverulenta*	V	V	Grows in shallow soils as an understorey plant in open forest, typically dominated by Brittle Gum (Eucalyptus mannifera), Red Stringybark (E. macrorhynca), Broad-leafed Peppermint (E. dives), Silvertop Ash (E. sieberi) and Apple Box (E. bridgesiana).	16	Low, site searched, not present
Silky Swainson-pea *Swainsona sericea*	V		Found in box-gum woodlands and regenerates from seed after fire	51	Recorded
Small-leaved Gum *Eucalyptus parvula*	E	V	Grows at and above an elevation of 1100 m in acidic soil on cold wet grassy flats.	0	Unlikely
Small Purple-pea *Swainsona recta*	E	E	Grows in association with understorey dominants that include Kangaroo Grass *Themeda australis*, poa tussocks *Poa spp*., and spear-grasses *Austrostipa spp*.	0	Unlikely
Spiny Pepper-cress *Lepidium aschersonii*	V	V	Found on ridges of gilgai clays dominated by Brigalow (Acacia harpophylla), Belah (Casuarina cristata), Buloke (Allocasuarina luehmanii) and Grey Box (Eucalyptus microcarpa). In the south has been recorded growing in Bull Mallee (Eucalyptus behriana). Often the understorey is dominated by introduced plants. The species grows as a a component of the ground flora, in grey loamy clays.	0	Unlikely
Swamp Everlasting *Xerochrysum palustre*		V	Grows in swamps and bogs which are often dominated by heaths, also grows at the edges of bog margins on peaty soils with a cover of shrubs or grasses	0	Unlikely

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Tarengo Leek Orchid *Prasophyllum petilum*	E	E	Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River Tussock Poa labillardieri, Black Gum Eucalyptus aggregata and tea-trees Leptospermum spp. near Queanbeyan and within the grassy groundlayer dominated by Kanagroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT).	0	Unlikely
Thick Lip Spider Orchid *Caladenia tessellata*	E	V	Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil.	0	Unlikely
Trailing Monotoca *Monotoca rotundifolia*	E		The New South Wales populations of Trailing Monotoca occur in shrubland or Snow Gum woodland from 1250 to 1360m asl.	0	Unlikely
Dillwynia tenuifolia	V		In western Sydney, may be locally abundant particularly within scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest on tertiary alluvium or laterised clays. May also be common in transitional areas where these communities adjoin Castlereagh Scribbly Gum Woodland. At Yengo, is reported to occur in disturbed escarpment woodland on Narrabeen sandstone.	0	Unlikely
Pimelea bracteata	CE	CE	In wet heath and along creek banks at higher altitudes in the Kiandra area	0	Unlikely
Prasophyllum sandrae	CE		Grows in the groundlayer of grassy woodland dominated by Swamp Gum (Eucalyptus ovata). Grows within Kangaroo Grass (Themeda australis) and poa tussocks (Poa spp.).	0	Unlikely
ECOLOGICAL COMMUNITIES					

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Alpine Sphagnum Bogs and Associated Fens		E	This ecological community generally has sharp boundaries and is easily delineated from other alpine vegetation communities. Many of its plant species rarely occur in other vegetation assemblages. Although it is not always the dominant genus, it can usually be defined by the presence or absence of Sphagnum spp., the most common of which is *Sphagnum cristatum. It* can be found across alpine, subalpine and montane environments, often (but not always) above the climatic treeline. The climatic treeline is generally identified as the 10ºC isotherm (average summer temperature), which marks the point above which trees do not survive.		None
Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion	CEEC		Characterised by the presence or prior occurrence of snow gum, and associated candlebark, ribbon gum, black sallee or blackwood. The trees may occur as pure stands dominated by Snow Gum, or with other characteristic trees as co-dominant to sub-dominant. Non-characteristic trees may occur as subdominant.		Recorded
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.		None

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
Natural Temperate Grassland of the South Eastern Highlands		CE	Natural Temperate Grassland is a natural grassland community dominated by a range of perennial grass species and, in highly intact sites, containing a large range of herbaceous species in many plant families, including daisies, peas, lilies, orchids and plants in many other families, all collectively known as forbs, or "wildflowers" in the case of the more showy species. The community is often treeless, though trees of a range of species may occur in low densities, either as isolated individuals or in clumps. The altitudinal range of the community is between 500 m and 1200 m asl. The community is found on broad sweeping plains with poor drainage and cold air inversions that promote frosts which inhibit tree growth; on all topographical locations, including upper-slopes, crests and plateaux on basalt landscapes; and in frost hollows in areas otherwise dominated by woodlands or forests. The community may also occur in a landscape mosaic with several woodland communities.		None
Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions	EEC		Tableland Basalt Forest in the Sydney Basin and South-eastern Highlands Bioregions is the name given to the ecological community found on plateaus and tablelands with loam or clay soils derived primarily from basalt, but may also be derived from mudstones, granites, alluvium and other substrates. The community typically has an open canopy of eucalypts with sparse shrubs and a dense groundcover of herbs and grass, although disturbed stands may lack either or both of the woody strata.		None
Upland Wetlands of the New England Tablelands (New England Tableland Bioregion) and the Monaro Plateau (South Eastern Highlands Bioregion)		E	Majority occur on basalt-occurred soils (about 80%), the resat occur on soils primarily from granite or silcrete. They occur in depressions in the landscape. The wetlands vary depending whether they are near permanent, intermittent or ephemeral. This community occurs between 700-1400m above seal level and have a temperate climate with an annual rainfall of less than 1000mm.		None
Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	CEEC		The trees may occur as pure stands dominated by snow Gum, or with candlebark as co-dominant to sub-dominant. Non-characteristic trees may occur as subdominant.		None

Common Name (Scientific Name)	BC Act	EPBC Act	Habitat requirements	Number of records	Likelihood of occurrence
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.		None

Appendix B: Tests of Significance (BC Act)

In Section 7.3 of the BC Act are 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, populations or 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 and hence if a Species Impact Statement is required (DECC, 2007).

The above table found that a number of threatened biota or threatened ecological communities listed under the BC Act are known to or have the potential to occur within the study area based on the evaluation completed. Given this, further assessment by application of the Test of Significance is completed on the following biota:

- Diamond Firetail
- Dusky Woodswallow
- Silky Swainson-pea
- Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion

Diamond Firetail/Dusky Woodswallow

(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,

Diamond Firetail occur in a wide variety of habitats including grassy eucalypt woodlands, open forests, mallee, Natural Temperate Grassland, riparian areas (rivers and creeks), and occasionally in lightly wooded farmland (DPIE/BCS, 2022b). Dusky Woodswallow is well known from open grassy areas, farmlands, and woodlands. They are also known to use tree plantings.

DPIE/BCS (2022) identify that the following threats to these species:

- Clearing and fragmentation of woodland, open forest, grassland and mallee habitat for agriculture and residential development, and firewood collection.
- Poor regeneration of open forest and woodland habitats.
- Invasion of weeds, resulting in the loss of important food plants.
- Modification and destruction of ground- and shrub layers within habitat through: removal of native plants, litter and fallen timber; introduction of exotic pasture grasses; heavy grazing and compaction by stock; and frequent fire.
- Predation of eggs and nestlings by increased populations of native predators such as the Pied Currawong *Strepera graculina*.
- Risk of local extinction due to small, isolated populations.
- Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners.

While the field survey did not record any Diamond Firetail or Dusky Woodswallow within the road corridor, the habitat assessment within Appendix A found that likely potential habitat occurs in the study area.

The landscape is already highly fragmented, so the threat of clearing is relevant for this proposal. The loss of up to 0.05 hectares of native vegetation and 0.46 hectares of cleared land is considered negligible in the context of the cleared land within the road corridor and woodland in the broader region and that both species frequently occupy cleared areas of non-native vegetation and farmland. Native vegetation also occurs across the wider locality which would remain unaffected confirming that extensive areas of potential and known habitat would remain. Recommendations detailed within section 6 provide a framework for minimising potential direct and indirect impacts to these species.

With consideration of these factors, it is '*unlikely'* that the proposal could have an adverse effect on the life cycle of Diamond Firetail and Dusky Woodswallow such that a viable local population (should one occur there) is likely to be placed at risk of extinction.

(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,

The proposed work would result in the removal of up to 0.51 hectares of native vegetation and cleared land.

The proposal would not isolate or fragment other areas of habitats further than the impact that pre-exists given the ability of these species to move (fly), the small nature of proposed work, and the extent and quality of woodlands and native vegetation within the road corridor, adjacent to the study area as well as the wider locality, which would remain unaffected by the proposed work.

For these biota, the potential and known habitat to be removed is considered to be of minor importance to the long-term viability of these biota in the locality given the extent of vegetation within a 550m buffer of 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 from vicinity of the proposal.

(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.

While the proposed activity – road works – is not recognised as a key threatening process (KTP) under the BC Act, the Clearing of native vegetation is of potential relevance.

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 on 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 clearing of about 0.05 hectares of native vegetation is necessary to carry out the proposal to provide a northbound overtaking lane along this section of the Monaro Highway. In the context of the native vegetation within a 550 metre buffer of the proposal (10.83 hectares) less than 1% would be impacted. Native vegetation and non-native vegetation also occurs across the wider locality which would remain unaffected confirming that extensive areas of potential habitat would remain.

Conclusion

This Test of Significance has determined that the proposed activity is *'unlikely'* to have a *'significant effect'* on Diamond Firetail, Dusky Woodswallow or their habitats.

Silky Swainson-pea

(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,

The Silky Swainson-pea (*Swainsona sericea*) is known from over 80 distinct populations known within NSW. Previous records are scattered throughout NSW, from south at the border of NSW and VIC to the northern portion of the state (DPIE/BCS, 2022b). There is a large cluster of records located on the eastern border of Act and NSW (EnviroKey, 2013).

A variety of habitats are utilised by Silky Swainson-Pea including rocky outcrops, sandhills and riverine plains. It occurs in grassland and eucalypt woodland communities such as Natural Temperate Grassland and Snow Gum (*Eucalyptus pauciflora*) Woodland up on the Monaro. In the Southern Tablelands and South West Slopes areas, Silky Swainson-Pea can also be found in areas of Box-Gum Woodland.

This species is known to flower from September to November and has the ability to produce numerous flowers and seeds under favourable conditions, however vegetative reproduction appears to be the more common method of reproduction. Silky Swainson-Pea regenerates from seed after fire. Some light grazing may also assist by reducing the grass cover and allowing easier germination and establishment. Grazing and weed invasion is believed to have a large impact on this species as a result of agricultural activity. Its stronghold is in the Monaro region and based on the BioNET records, there is an extensive population in the Bredbo locality (DPIE/BCS, 2022a) (see Figure 2-4). Two individual plants were recorded within the study area. One plant on a high cutting on the eastern side of the existing formation, and the second plant was on the western side of the formation and within the proposed impact area.

DPE/BCS (2022b) identify that the following threats to this species:

- Loss and degradation of habitat and/or populations for residential developments.
- Populations exhibit variations in ploidy level indicating that they are separate taxa.
- Loss and degradation of habitat and/or populations by invasion of weeds.
- Loss and degradation of habitat and/or populations by intensification of grazing regimes.
- Loss and degradation of habitat and/or populations from road works (particularly widening or re-routing).

The proposal will result in a direct impact to a single plant (see Figure 5-2). However, a large population occurs in the Bredbo locality, and based on BioNET data, this population comprises at least several hundred plants. While the removal of a single plant is unlikely to have a significant effect in the context of the local population of at least several hundred plants, it is recommended that an attempt to translocate this plant be carried out as part of a threatened species management plan.

Regardless of the success or failure of this translocation of the single plant from with the proposed impact area, it would be *unlikely* that the Proposal could have an adverse effect on the life cycle of Silky Swainson-Pea, such that a viable local population is likely to be placed at risk of extinction.

(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,

This species is 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,

The proposed work would result in the removal of a single Silky Swainson-pea.

The Proposal will not isolate or fragment other areas of habitats further than those impacts that pre-exist given the lineal nature habitats present, and the extent of the local population (see existing records in section 2).

This biota has a stronghold in the Monaro region and given the minor nature of the proposed removal for the proposal, it is unlikely that the habitat to be removed is important to the long-term survival of these biota in the locality particularly given that several hundred plants are known from the railway line to the Monaro Highway.

(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 from vicinity of the proposal.

(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.

While the proposed activity – road works – is not recognised as a key threatening process (KTP) under the BC Act, the *Clearing of native vegetation* is of relevance.

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 on 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 clearing of about 0.05 hectares of native vegetation is necessary to carry out the proposal to provide a northbound overtaking lane along this section of the Monaro Highway. In the context of the native vegetation within a 550 metre buffer of the proposal (10.83 hectares) less than 1% would be impacted. Native vegetation also occurs across the wider locality which would remain unaffected confirming that extensive areas of native vegetation would remain.

Conclusion

This Test of Significance has determined that the proposed activity is *'unlikely'* to have a *'significant effect'* on Silky Swainson-pea or their habitats. We also recommend the translocation of the single plant to be impacted should the proposal proceed.

Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion critically endangered 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,

This ecological community 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 0.05 hectares of this EEC would be removed. This EEC is somewhat limited in the road reserve, is not a mature woodland and currently likely to be contributing little to the ongoing viability of the local population of this TEC. Further, woodland within the wider locality remains unaffected by the proposal. Given this, the removal of this minor area of EEC is unlikely to have an adverse effect on the extent of this EEC to the extent that it would be placed at risk of extinction.

The proposed work would not substantially or adversely modify the composition of the EEC such that it would 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,

The proposed work would result in the removal of up to 0.05 hectares of this TEC.

The proposal would not isolate or fragment other areas of habitats further than the impact that pre-exists given the nature of proposed work covering a short distance, and the TEC within a 550 metre buffer of the study area as well as the wider locality, which would remain unaffected by the proposed work.

The known habitat to be removed is considered to be of some importance to the long-term viability of this TEC in the locality.

(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 from vicinity of the proposal.

(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.

While the proposed activity – road upgrade – is not recognised as a key threatening process (KTP) under the BC Act, the *Clearing of native vegetation* is of potential relevance.

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 on 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 clearing of about 0.05 hectares of this TEC is necessary to carry out the proposal. In the context of the TEC within the road corridor and the wider locality, impacts are relatively minor.

Conclusion

This Test of Significance has determined that the proposed activity is *'unlikely'* to have a *'significant effect'* on Monaro Tableland Cool Temperate Grassy Woodland CEEC.

NSW GOVERNMENT

Appendix C: PACHCI Stage 1 and Clearance Letter

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Bredbo O/T Lane

Client Service ID : 681892

RMS NSW Bega

153 Auckland Street
Bega New South Wales 2035

Attention: Ian Nerrie

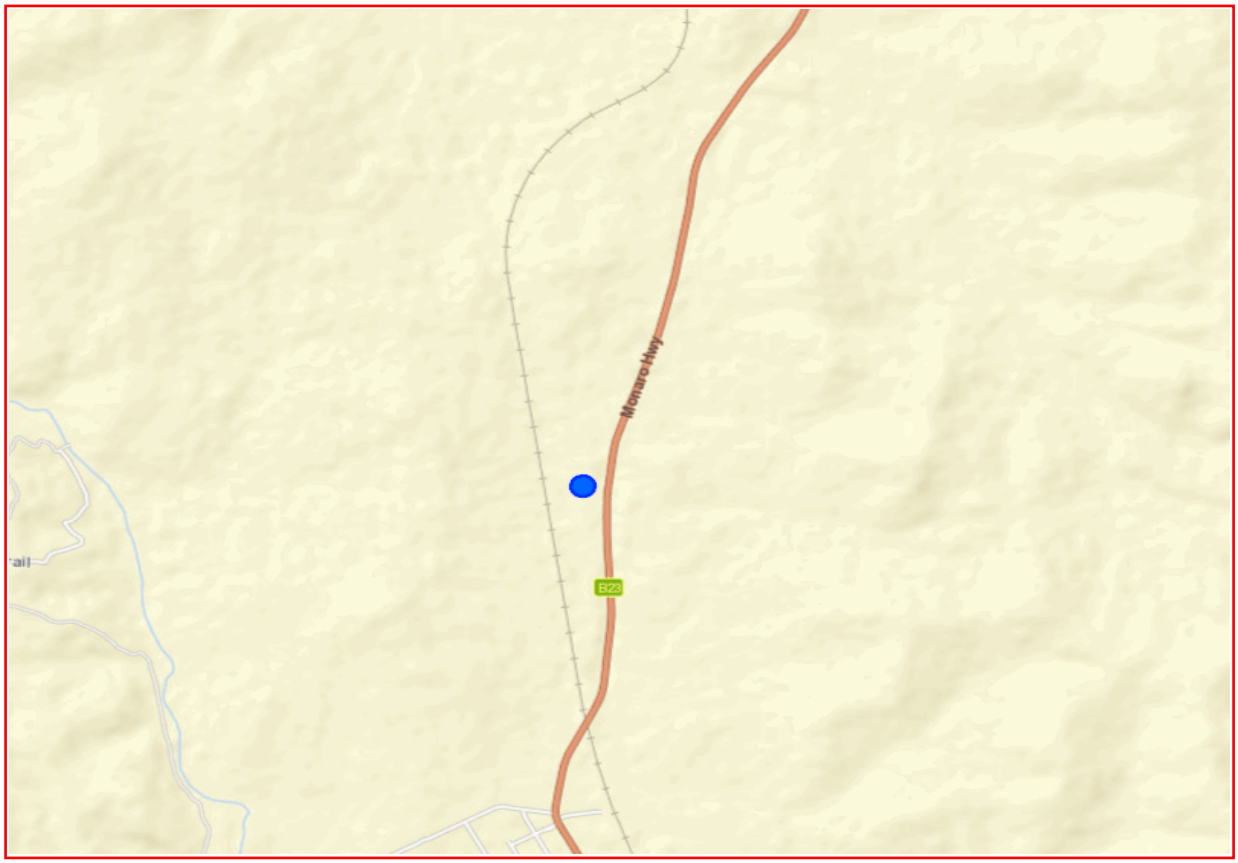
Email: ian.nerrie@transport.nsw.gov.au

Date: 11 May 2022

Dear Sir or Madam:

AHIMS Web Service search for the following area at Address : 3647 MONARO HIGHWAY BREDBO 2626 with a Buffer of 50 meters, conducted by Ian Nerrie on 11 May 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) 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.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

13 July 2022

Ian Nerrie
Project/Contract Manager
153 Auckland Street
BEGA, NSW, 2550

Dear Ian,

Preliminary assessment results for Overtaking Lane North of Bredbo – HW19 – Monaro Highway based on Stage 1 of the *Procedure for Aboriginal cultural heritage consultation and investigation* (the procedure).

The project, as described in the Stage 1 assessment, was assessed as being unlikely to have an impact on Aboriginal cultural heritage.

The assessment is based on the following due diligence considerations:

- The project is unlikely to harm known Aboriginal objects or places.
- The AHIMS search did not indicate moderate to high concentrations of Aboriginal objects or places in the study area.
- The study area does not contain landscape features that indicate the presence of Aboriginal objects, based on the Heritage NSW's *Due diligence Code of Practice for the Protection of Aboriginal objects in NSW* and the Transport for NSW's procedure.
- The cultural heritage potential of the study area appears to be reduced due to past disturbance.
- There is an absence of sandstone rock outcrops likely to contain Aboriginal art.

Your project may proceed in accordance with the environmental impact assessment process, as relevant, and all other relevant approvals.

If the scope of your project changes, you must contact me and your regional environmental staff to reassess any potential impacts on Aboriginal cultural heritage.

If any potential Aboriginal objects (including skeletal remains) are discovered during the course of the project, all works in the vicinity of the find must cease. Follow the steps outlined in the Transport for NSW's *Unexpected Archaeological Finds Procedure*.

For further assistance in this matter do not hesitate to contact me.

Yours sincerely

Cheyenne Noble Tovehi
Aboriginal Cultural Heritage Officer – Southern

Appendix D: Protected Matters Search Tool Results

Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

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

Report created: 28-Jul-2022

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.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	42
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	17
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	2
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	6
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places			[Resource Information]
Name	State	Legal Status	Buffer Status
Natural			
Australian Alps National Parks and Reserves	ACT	Listed place	In buffer area only

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	800 - 900km upstream from Ramsar site	In feature area
Hattah-kulkyne lakes	600 - 700km upstream from Ramsar site	In feature area
Riverland	700 - 800km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	800 - 900km 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
Alpine Sphagnum Bogs and Associated Fens	Endangered	Community likely to occur within area	In feature area
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community likely to occur within area	In feature area
Upland Wetlands of the New England Tablelands (New England Tableland Bioregion) and the Monaro Plateau (South Eastern Highlands Bioregion)	Endangered	Community likely to occur within area	In buffer area only
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to 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			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
FISH			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Maccullochella macquariensis Trout Cod [26171]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat known to occur within area	In feature area
FROG			
Litoria castanea Yellow-spotted Tree Frog, Yellow-spotted Bell Frog [1848]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Litoria verreauxii alpina Alpine Tree Frog, Verreaux's Alpine Tree Frog [66669]	Vulnerable	Species or species habitat may occur within area	In buffer area only
INSECT			
Synemon plana Golden Sun Moth [25234]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population) 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
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Phascolarctos cinereus (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 known to occur within area	In feature area
Pseudomys fumeus			
Smoky Mouse, Konoom [88]	Endangered	Species or species habitat may occur within area	In buffer area only
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			
Calotis glandulosa			
Mauve Burr-daisy [7842]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dodonaea procumbens			
Trailing Hop-bush [12149]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eucalyptus aggregata			
Black Gum [20890]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Eucalyptus pulverulenta			
Silver-leaved Mountain Gum, Silver-leaved Gum [21537]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lepidium aschersonii			
Spiny Pepper-cress [10976]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium hyssopifolium			
Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat known to occur within area	In feature area
Leucochrysum albicans subsp. tricolor			
Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat likely to occur within area	In feature area
Pimelea bracteata			
[8125]	Critically Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Pomaderris pallida](#) Pale Pomaderris [13684]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Prasophyllum petilum](#) Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area	In feature area
[Pterostylis oreophila](#) Blue-tongued Orchid, Kiandra Greenhood [22903]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
[Rutidosis leptorhynchoides](#) Button Wrinklewort [67251]	Endangered	Species or species habitat known to occur within area	In feature area
[Senecio macrocarpus](#) Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In feature area
[Swainsona recta](#) Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area	In buffer area only
[Thesium australe](#) Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Xerochrysum palustre](#) Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat may occur within area	In buffer area only
REPTILE			
[Aprasia parapulchella](#) Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Delma impar](#) Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Tympanocryptis pinguicolla](#) Grassland Earless Dragon [66727]	Endangered	Species or species habitat may occur within area	In feature area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis 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 [12281]	NSW	In buffer area only
Commonwealth Land - Commonwealth Trading Bank of Australia [12282]	NSW	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca 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
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Namadgi	National Park	ACT	In buffer area only
Scottsdale	Conservation Reserve	NSW	In feature area

Regional Forest Agreements		[Resource Information]
Note that all areas with completed RFAs have been included.		
RFA Name	State	Buffer Status
Southern RFA	New South Wales	In feature area

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Rural Sub-division between Monaro Highway & Murrumbidgee River	2002/591	Controlled Action	Completed	In feature area
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
Aerial baiting for wild dog control	2006/2713	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Aerial Baiting For Wild Dogs	2005/2342	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
INDIGO Marine Cable Route Survey (INDIGO)	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.

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

Appendix E: Non-aboriginal heritage database searches

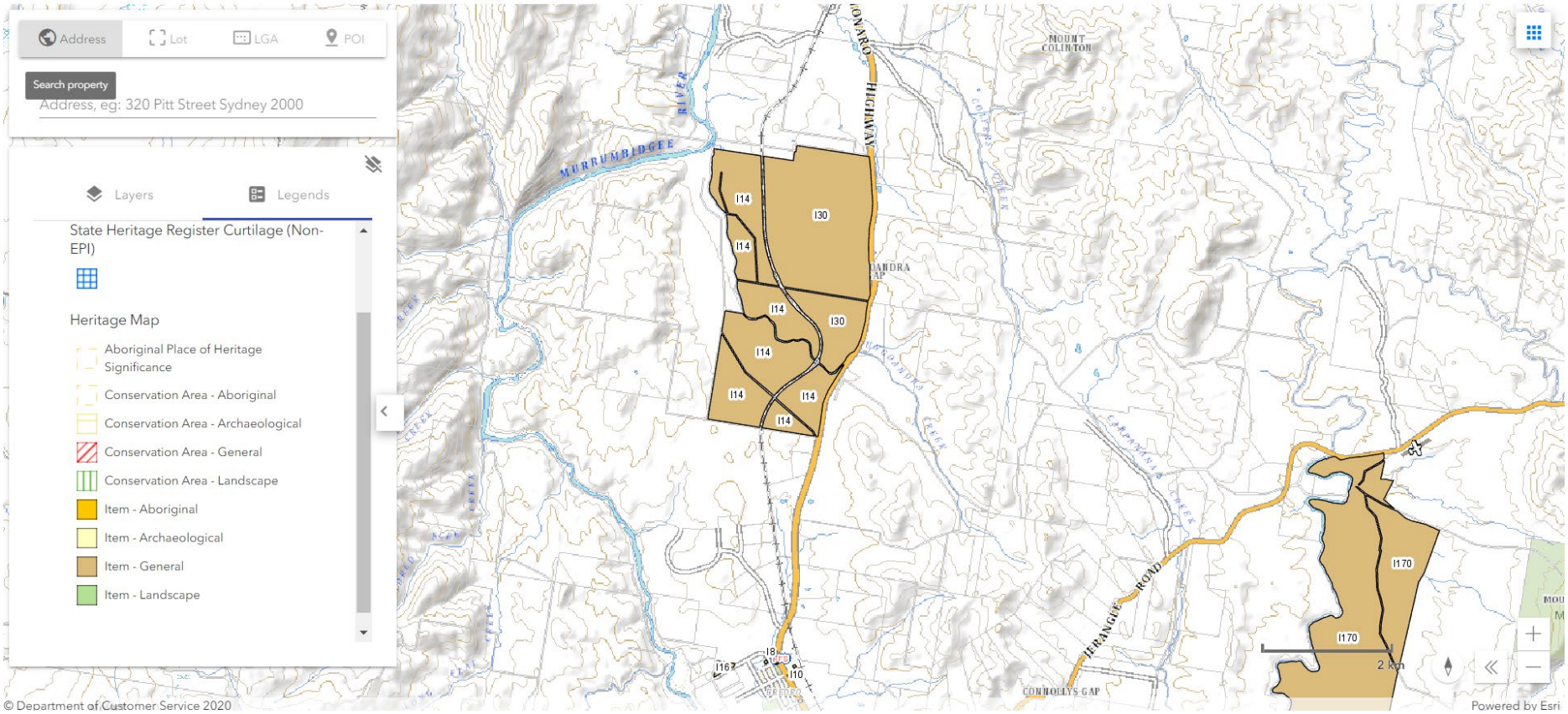
Search Results

14 results found.

Back Creek Battery Complex		Bredbo, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)
Brayshaws Homestead Precinct	Boboyan Rd	Tharwa, ACT, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Bredbo River Rail Bridge	Goulburn Bombala Railway	Bredbo, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Cappawidgee Eucalyptus Pulverulenta Site		Bredbo, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Cowra Creek 1890 - 1910 Township Area		Bredbo, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)
Dowling Fire Trail North Site	Dowling Fire Trail	Bredbo, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Dowling Fire Trail South Site	Dowling Fire Trl	Bredbo, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Haere Mai Grassland	Monaro Hwy	Bredbo, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)
Ingelara Creek Rail Bridge	Goulburn Bombala Rly	Michelago, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Niannia Grassland	Monaro Hwy	Bredbo, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)

Polar Star and Associated Sites	Bredbo, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)
The Ridge (BHP Township and Associated Sites)	Bredbo, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)
Waanyarra Eucalyptus Pulverulenta Site	Bredbo, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Westermans Homestead Boboyan Rd	Tharwa, ACT, Australia	(Registered) Register of the National Estate (Non-statutory archive)

Report Produced: Thu Aug 18 16:50:22 2022



Bredbo	Railway tunnel—Scotsdale	3897 Monaro Highway		Local	I14
Bredbo	Bredbo Inn	1 Cooma Street	Lot 100, DP 621286	Local	I8
Bredbo	Bredbo Public School	24 Cooma Street	Lot 97, DP 750525	Local	I10
Bredbo	Bredbo Cemetery	90 Yayouk Street	Lot 7003, DP 94969	Local	I16

Colinton	Cottage—The Oaks	4215 Monaro Highway	Lot 6, DP 861396	Local	I30
Jerangle	Cottage—Old Bredbo	1124 Jerangle Road	Lot 2, DP 225603	Local	I170

Appendix F: Construction Noise Estimator

Representative distance (m)	52

Scenario	SWL L_{Aeq} (dB(A))	Is there line of sight to receiver?
Bulk earthworks	123	Yes

Total SPL $L_{Aeq(15minute)}$ (dBA)	***76***

		Residential receiver
Noise Management Level (dB(A))	**Standard hours**	***40***
	Day (OOHW)	***35***
	OOHW Period 1	***35***
	OOHW Period 2	***35***
Level above background (dB(A))	**Standard hours**	***46***
	Day (OOHW)	***46***
	OOHW Period 1	***46***
	OOHW Period 2	***46***
Level above NML (dB(A))	**Standard hours**	***36***
	Day (OOHW)	***41***
	OOHW Period 1	***41***
	OOHW Period 2	***41***
Additional mitigation measures	**Standard Hours**	***N, V, PC, RO***
	Day (OOHW)	***V, IB, N, R1, DR, PC, SN***
	OOHW Period 1	***V, IB, N, R1, DR, PC, SN***
	OOHW Period 2	***AA, V, IB, N, PC, SN, R2, DR***

Representative distance (m)	419

Scenario	SWL L_{Aeq} (dB(A))	Is there line of sight to receiver?
Bulk earthworks	123	Yes

Total SPL $L_{Aeq(15minute)}$ (dBA)	***52***

		Residential receiver
Noise Management Level (dB(A))	**Standard hours**	***40***
	Day (OOHW)	***35***
	OOHW Period 1	***35***
	OOHW Period 2	***35***
Level above background (dB(A))	**Standard hours**	***22***
	Day (OOHW)	***22***
	OOHW Period 1	***22***
	OOHW Period 2	***22***
Level above NML (dB(A))	**Standard hours**	***12***
	Day (OOHW)	***17***
	OOHW Period 1	***17***
	OOHW Period 2	***17***
Additional mitigation measures	**Standard Hours**	***N, V***
	Day (OOHW)	***V, N, R1, DR***
	OOHW Period 1	***V, N, R1, DR***
	OOHW Period 2	***V, IB, N, PC, SN, R2, DR***

NSW GOVERNMENT