Preliminary Environmental Investigation - Oaky River Dam to Armidale Water Pipeline Project – Biodiversity Assessment

1. Introduction

At the request of NSW Public Works Advisory, on behalf of Armidale Regional Council ('Council'), an investigation of various sections of a proposed 52 kilometre (km) long water main pipeline that is to be located between the existing Oaky River Dam (this located east of Armidale) and the Armidale Water Treatment Plant (WTP) has been carried out.

The inspections was undertaken by Deryk Engel B.Env.Sc (Hons) (zoologist) and Paul Burcher B.App.Sc. (botanist) between the 19 and 21 July 2023.

The objectives of the Preliminary Environmental Investigation (PEI) were to:

- obtain information on the ecology of those sections of the proposed water main alignment that were accessible and could be surveyed
- obtain information to inform a Biodiversity Assessment Report, this required to inform the Review of Environmental Factors that is being prepared for the project
- provide initial advice to both Public Works Advisory and Council on any ecological constraints identified along the sections of water main surveyed.
    - Including any matters pertaining to the Biodiversity Assessment Method (BAM) Calculator and likely offsetting costs.

Where access was possible and permission to enter had been granted, the alignment of the proposed water main was either:

- driven, with spot checks conducted on foot at various locations (such as those locations where threatened plants have been previously recorded)
- traversed on foot.

When conducting the foot surveys:

- the presence, and extent/limits of, any populations of threatened plants was determined
- the boundaries of Plant Community Types (PCT) that correspond to threatened ecological communities identified
- the accuracy of the State vegetation mapping assessed
- the identification of the structure of the dominant fauna habitats present noted.

During the site inspections, particularly whilst conducting the foot surveys:

- any fauna species observed, or heard calling, within, or near to, the alignment of the proposed water main was noted
- any indirect evidence such as tracks, scats, scratchings and diggings that would suggest the presence of a particular fauna species recorded

- leaf litter and ground debris searches for sheltering reptiles and amphibians conducted
- targeted searches for any species of State and/or national conservation concern, as listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and NSW *Biodiversity Conservation Act 2016* (BC Act), or either occurrences of their likely habitat areas or any indirect evidence that would suggest their presence (such as white wash accumulations, large stick nests, crushed casuarina cones), recorded.

Prior to carrying out the fieldwork, relevant government agency databases and any previous studies conducted in the region were reviewed to identify the diversity of ecological communities, flora and fauna species known for, or potentially occurring in, the study region. The identification of those known or potentially occurring native species and communities within this portion of the Armidale Regional LGA, particularly those listed under the EPBC, BC and/or *Fisheries Management Act 1994* (FM Act), thereby permits the tailoring of the field survey strategies to the detection of these plants and animals, or their vegetation associations and/or necessary habitats.

Access to those sections of the proposed pipeline alignment investigated was possible, with no adverse weather conditions, seasonal constraints or incidents of reduced site visibility encountered. The sections of the proposed pipeline alignment surveyed are all located within Crown Lands (Travelling Stock Reserves [TSR]) and adjacent to Kempsey and Grafton Roads.

It is acknowledged that access to the lands that occur in proximity to Oaky River and the Armidale WTP had not been obtained at the time of the investigation[1]. As such, these sections of the proposed water main alignment, and those that occur within private land, were not surveyed. It is also acknowledged that the investigation was conducted during a winter month, a time when a number of fauna species would be hibernating, in torpor or absence as they have migrated north or to lower altitudes.

To inform this PEI, a precautionary approach to the presence of threatened species has been adopted, particularly if these animals and plants would not be detected during a winter survey (such as hollow-dependent Yangochiroptera [microbats]). If instances of the vegetation it is associated with or resources important to its life-cycle requirements [e.g. hollow-bearing trees, developed woodlands] were noted, the species was considered present until such time as a targeted survey can be conducted.

It is acknowledged that, during the site investigation, some sections of the proposed water main alignment were noted to be mapped as being located under powerline easements and where other services (such as telecommunication lines) occur. Some sections also appear to occur on batter slopes and in the middle of unsealed roads. Given the predicted width of the works trench, this being 1.25 metres (m) wide by an average of 1.5 m to 2.5 m deep, and the need to clear a corridor of vegetation 10 m wide, it is unclear if the readjustment of existing services etc is to occur and if this requires additional site and fauna habitat disturbance/vegetation clearing.

Some sections of the proposed water main alignment also appear to be located within mature bushland, whilst in close proximity, cleared access tracks and unsealed roads are present. Use of these proximate tracks etc. would reduce the extent of native vegetation that requires clearing.

[1] Inspections of these have been penciled in for the 21 August 2023

2. Desktop search

2.1 Vegetation mapping

Vegetation of the locality has been mapped and described in the NSW State Vegetation Type Map [SVTM] (State Government of NSW and Department of Planning and Environment 2023). Mapping identifies the most likely PCT to occur in a given polygon. The SVTM indicated the presence of the following PCTs within 10 metres (m) of the proposed water main alignment (Figures 1-1 and 1-2)[2]:

- 3099 Northern Escarpment Shatterwood Dry Rainforest
- 3254 Northern Hinterland Tallowwood-Forest Oak Grassy Forest
- 3286 Northern Escarpment Blackbutt Cool Moist Forest
- 3288 Northern Escarpment Messmate Moist Grassy Forest
- 3344 New England Ribbon Gum Grassy Forest
- 3351 Armidale Creekflat Snow Gum Woodland-Scrub
- 3352 Armidale Quartz Hills Stringybark Forest
- 3353 Guyra Silvertop Stringybark Moist Forest
- 3358 New England Fuzzy Box Grassy Forest
- 3359 New England Hills Stringybark-Box Woodland
- 3461 Macleay Gorges Stringybark-Red Gum Grassy Forest
- 3501 Eastern New England Ranges Blackbutt Forest
- 3505 Northeast New England Stringybark Grassy Forest
- 3944 New England Tableland Carex Fens.

2.1.1 Threatened ecological communities

Three of the PCTs mapped along the water main alignment are within the geographical limits of threatened ecological communities (TECs) listed on the BC Act and EPBC Act. Table 1 summarises the relationship between the PCTs and TECs.

2.1.2 Mainland Islands

The Armidale Plateau has been identified as a ‘mainland island’ (Ecological Australia 2009). Mainland islands are prioritised based on an assessment of their overall conservation value and level of threat, particularly threats from vertebrate pests (Ecological Australia 2009 page 1).

The overall objective of the mainland islands project was to develop a priority listing of Australian mainland islands of high conservation value which may be adversely affected, or are at high risk of being adversely affected, by vertebrate invasive species (Ecological Australia 2009 page 2).

The Armidale Plateau is ranked 29 out of 100 islands identified with key biodiversity values such as the presence of 29 threatened species, 2 threatened communities, native vegetation and high species richness being noted (DCCEEW 2023b).

[2] To facilitate viewing, PCTs within 100 m of the alignment have been mapped.

Figure 1-1. PCTs in the western half of the study area.

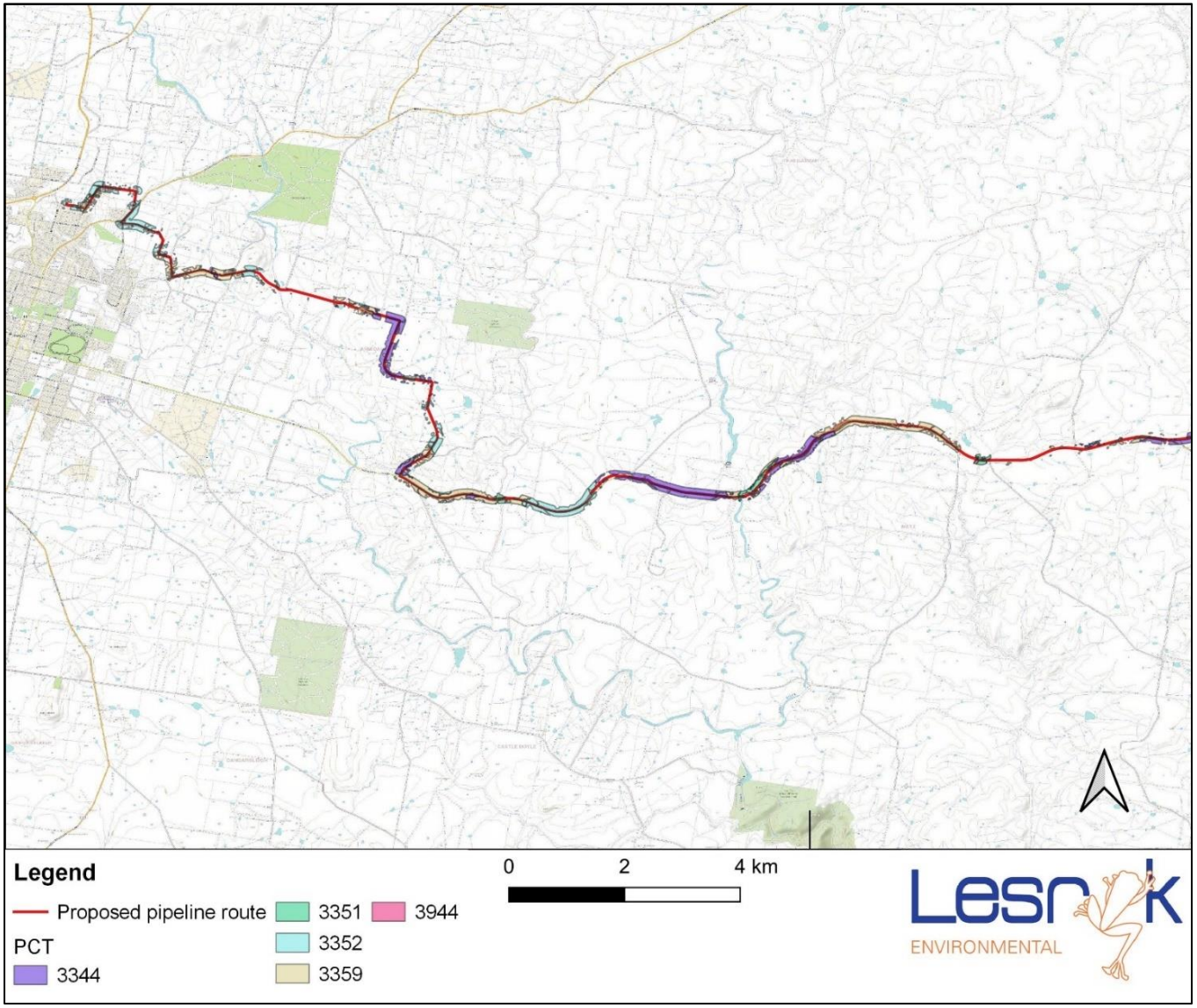


Figure 1-2. PCTs in the eastern half of the study area.

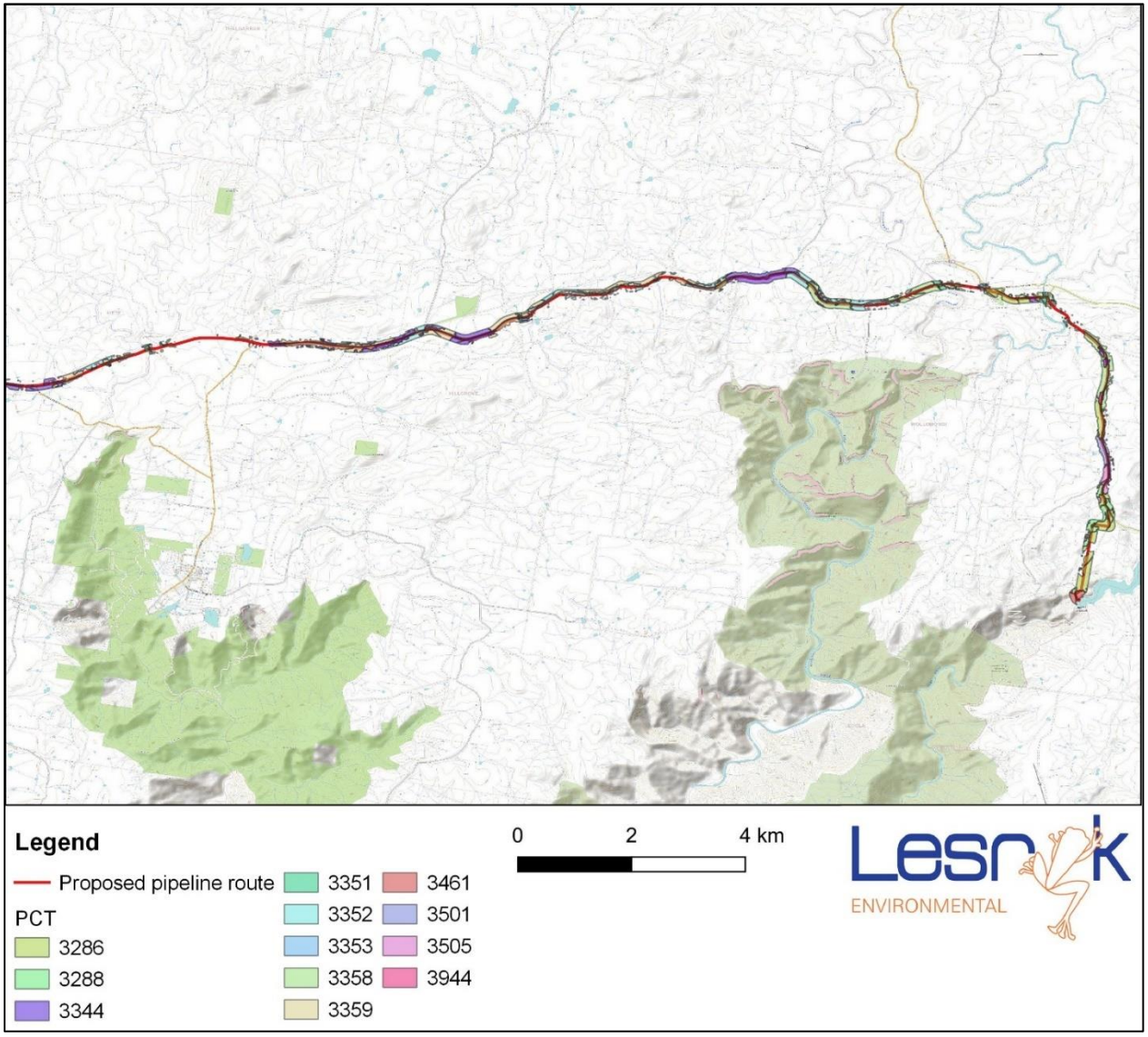


Table 1: Conservation significance of vegetation mapped as occurring at the subject site.

PCT	BC Act	EPBC Act
3344 New England Ribbon Gum Grassy Forest	New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion endangered ecological community (EEC) where dominated by New England Peppermint and on valley landforms on basalt, sedimentary or acid-volcanic substrates	New England Peppermint Grassy Woodland EEC where dominated by New England Peppermint and on valley landforms on basalt.
	Ribbon Gum—Mountain Gum—Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion EEC where it occurs on the undulating basalt plateau of the New England Tableland bioregion and is *not* dominated by New England Peppermint	
3359 New England Hills Stringybark-Box Woodland	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland[3] critically endangered ecological community **(**CEEC) where dominated, or previously likely to have been dominated, by White Box and/or Yellow Box and/or Blakely's Red Gum	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC where dominated, or previously likely to have been dominated, by White Box and/or Yellow Box and/or Blakely's Red Gum and meets certain condition criteria in the listing advice of the CEEC
3944 New England Tableland Carex Fens	Carex Sedgeland of the New England Tableland, Nandewar, Brigalow Belt South and NSW North Coast Bioregions EEC	*Not listed*

2.2 Threatened species

A review of the BioNet database (Department of Planning and Environment [DPE] 2023a) identified 12 threatened plant species, and 50 threatened fauna species, listed under the BC Act or the EPBC Act that have been previously recorded within 10 km of the proposed water main alignment (Attachment 1; Figures 2-1 and 2-2) [note: the locations where some species were recorded overlap].

2.2.1 Flora

Two threatened flora species have previously been recorded along the proposed water main alignment, these being:

- Narrow-leaved Black Peppermint (*Eucalyptus nicholii*), which is listed as a vulnerable species on the BC Act and EPBC Act.
- Northern Blue Box (*Eucalyptus magnificata*), which is listed as endangered on the BC Act.

[3] 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.

2.2.2 Animals

Based on the observation made during the course of the field investigation, this noting that matters such as mature woodlands, hollow-bearing trees, width of bushland bands, proximity of similar habitat and presence of drainage lines, those threatened animals that could occur as locally viable populations within the wooded sections of the pipeline surveyed are listed in Attachment 1.

Of those species listed in Attachment 1, 11 animals that are identified within the Threatened Biodiversity Profile Data Collection, as being Species Credit Species for the purposes of the Biodiversity Assessment Method, could occur as resident populations with those section of the water main alignment surveyed (Table 2).

Table 2: Species Credit Species that could occur as resident populations within the bushland portions of the lengths of water main alignment surveyed.

Species	Reason
Koala *Phascolarctos cinereus*	Suitable woodland with known Koala feed trees present.
Squirrel Glider *Petaurus norfolcensis*	Suitable woodland with hollow-bearing trees present.
Southern Greater Glider *Petauroides volans*	Suitable woodland with hollow-bearing trees present. Presumed to be tolerant of occupying linear bands of vegetation.
Southern Myotis *Myotis macropus*	Suitable woodland with hollow-bearing trees present.
Bush Stone-curlew *Burhinus grallarius*	Suitable woodland areas present.
Square-tailed Kite *Lophoictinia isura*	Suitable woodland areas present.
Little Eagle *Hieraaetus morphnoides*	Suitable woodland areas present.
South-eastern Glossy Black-Cockatoo subsp. *Calyptorhynchus lathami lathami*	High. Suitable hollow-bearing trees and stands of Casuarina present. Searches of these did not reveal any crushed casuarina cones (indicative of the feeding behaviour of this bird).
Barking Owl *Ninox connivens*	High. Suitable habitat present.
Regent Honeyeater *Anthochaera phrygia*	High. Suitable habitat present.
Glandular Frog *Litoria subglandulosa*	Moderate. Suitable streams in dry eucalypt woodlands present.

For reference, locations where the Species Credit Species have been previously recorded have been provided (Figure 2-3).

A number of the threatened species listed in Attachment 1 are predicated to forage within/over, and occupy the woodland areas surveyed on occasion. Whilst these species may occur on occasion, it is not considered that they would be present as resident populations due to matters such as the insufficient width of woodland remnants, lack of extensive occurrences of their necessary habitat resources and so forth.

Within the areas surveyed, locally viable populations of a number of Ecosystem Credit Species listed in Attachment 1, such as the hollow-dependent microbats, would be present.

Figure 2-1. Threatened flora records

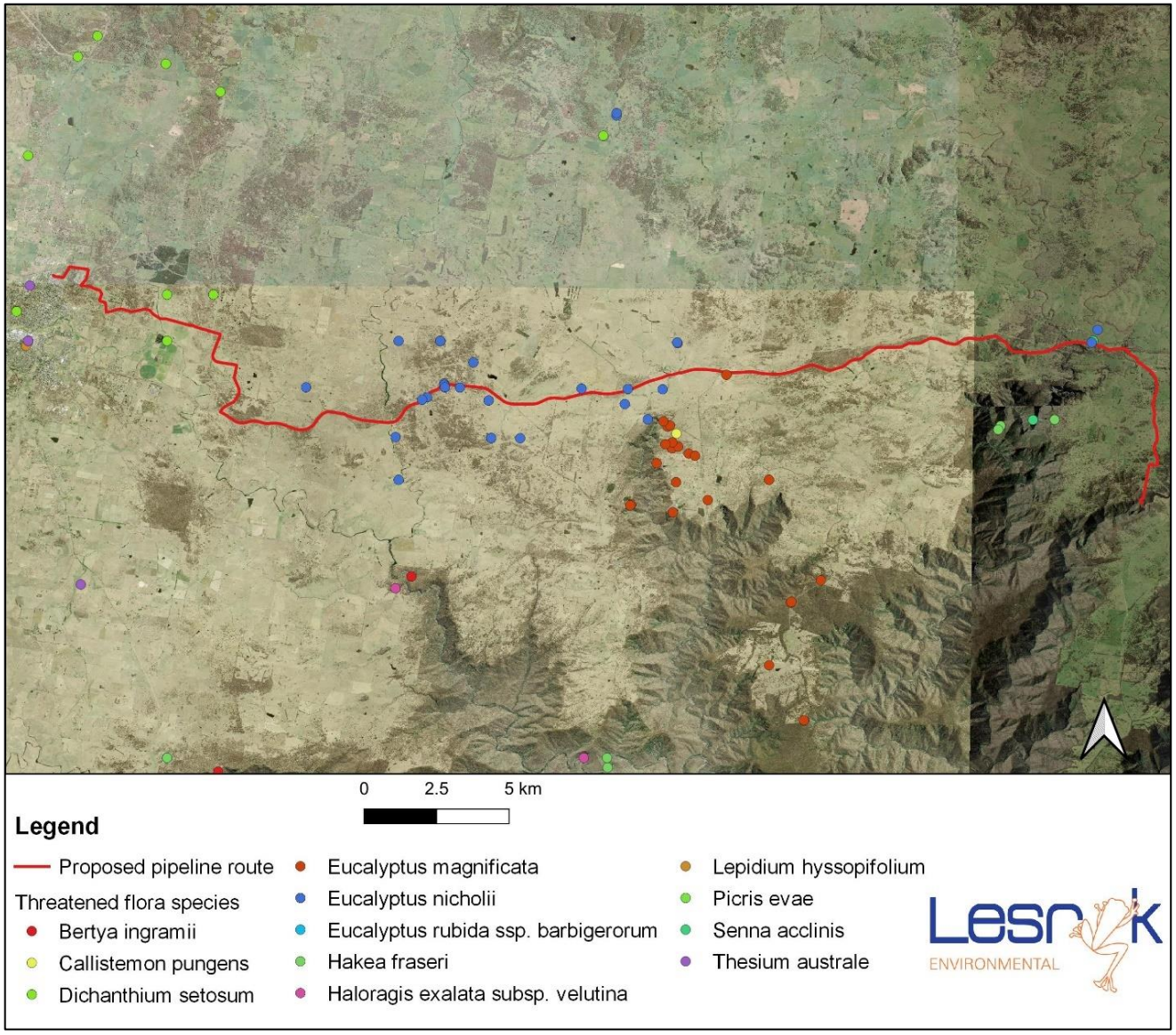


Figure 2-2. Threatened fauna records

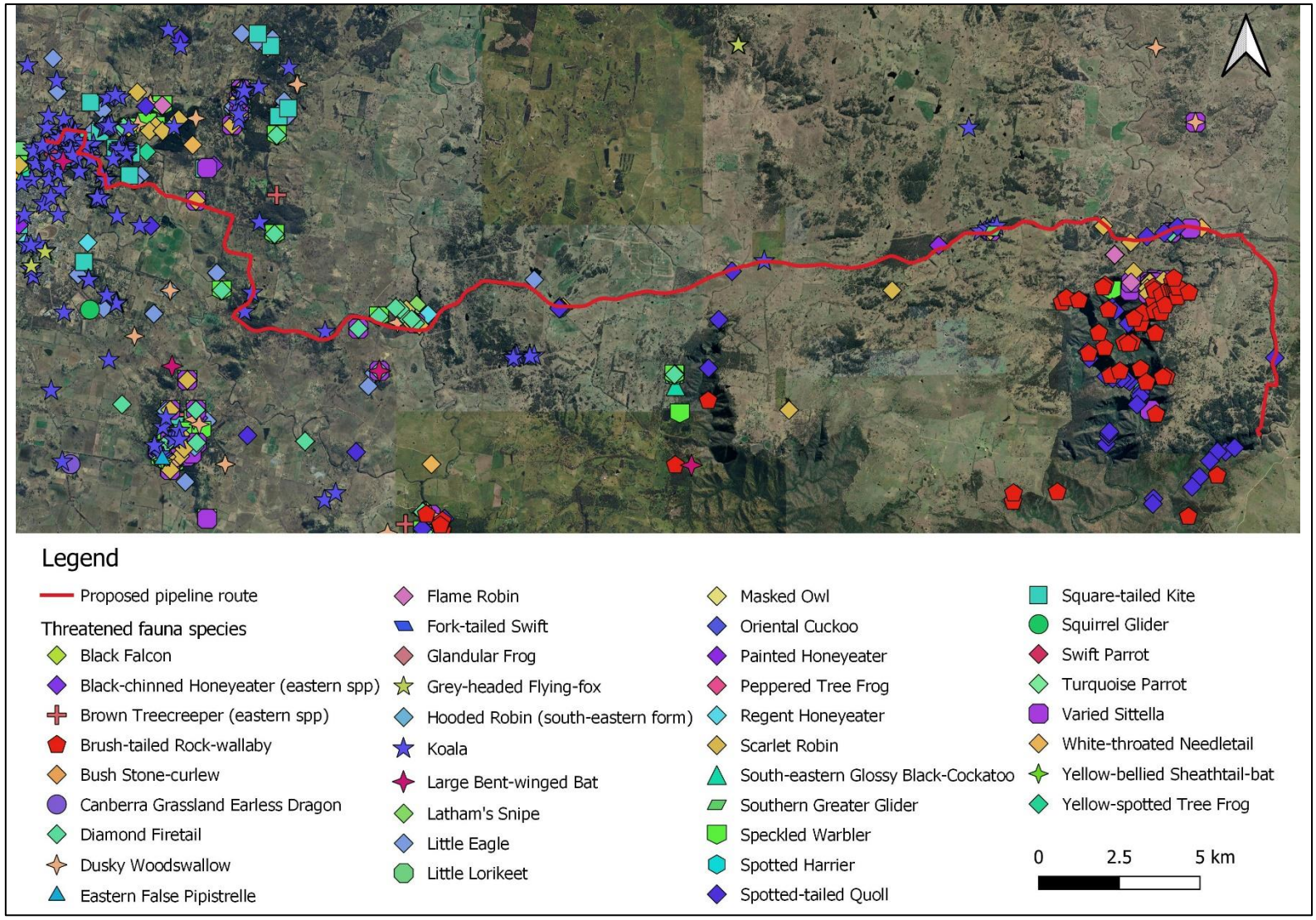
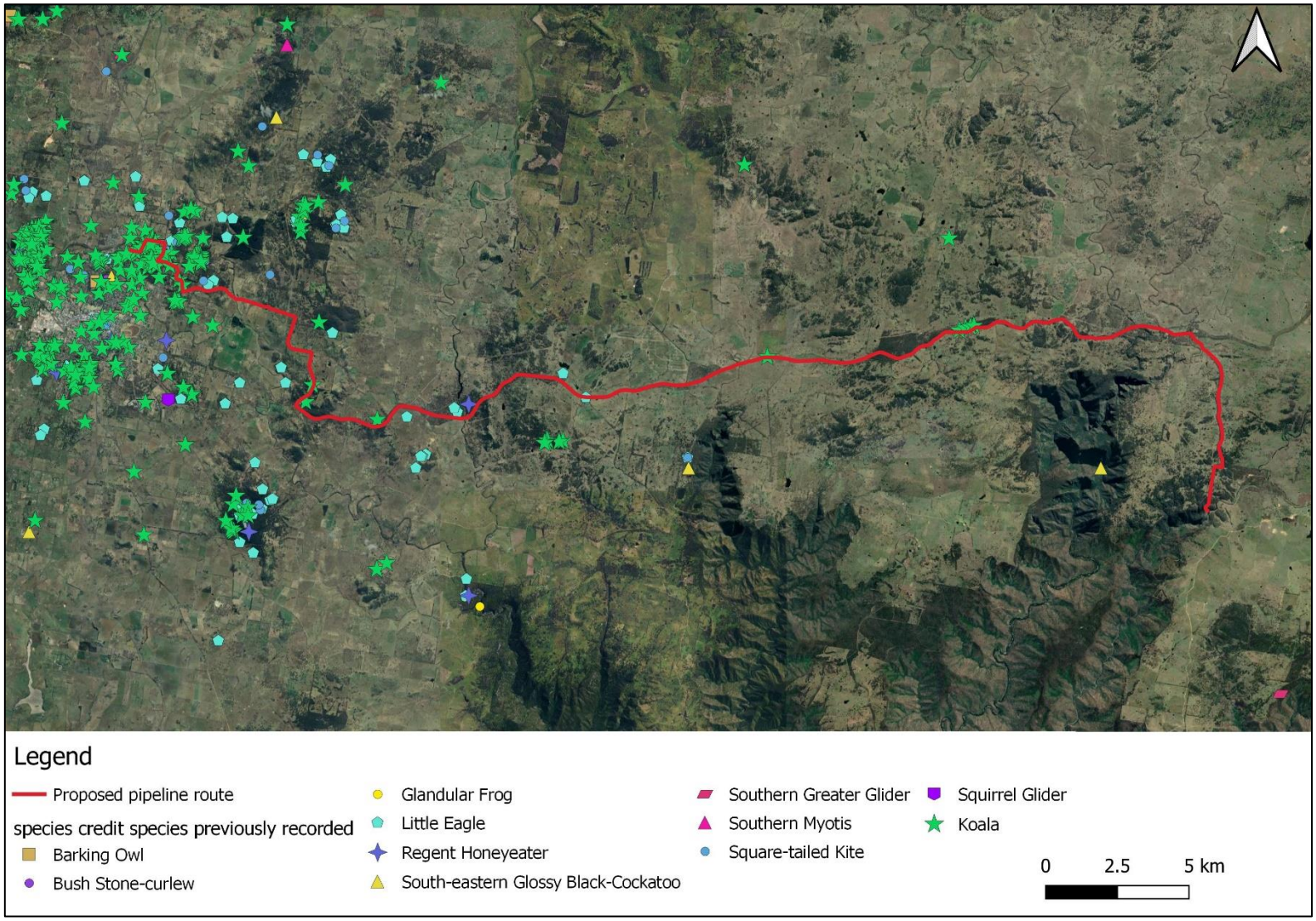


Figure 2-3. Previous locations where Species Credit Species have been recorded



Reference to the Department of Primary Industries Fisheries (DPI-Fisheries) NSW Spatial Data Portal indicates that the majority of major drainage lines present between Armidale and Oakey River Dam are mapped as Key Fish Habitat [search: Northern Rivers]. As the works are proposed to involve open trenching where drainage lines are encountered, consultation with DPI-Fisheries would be required.

It is highly likely that, within a number of the drainage lines present, particularly the larger and permanent creeks, that populations of both the Southern Purple Spotted Gudgeon (*Mogurnda adspersa*) and Siver Perch (*Bidyanus bidyanus*) would be present (Department of Primary Industries 2023b). These species are listed as Endangered and Vulnerable respectively under the FM Act, the Silver Perch also listed as Critically Endangered under the EPBC Act. Whilst unlikely to be significantly affected in the long-term, trenching works at the various creek crossings could have a short-term impact on these species, particularly if present and the works cause an isolation of areas of their aquatic habitat.

Wildlife habitats and corridors

Components of the areas that the proposed water main alignment traverses have been identified as encompassing key fauna habitat (NSW Government 2023a) (Figure 3.4). The key fauna habitats map is a regional representation that displays the likelihood of occurrence of key habitats for fauna at the regional scale (NSW Government 2023a).

Removal of native vegetation to permit the works, and the maintenance of the required cleared pipeline easement, is predicted to have an adverse impact on one or more of the key fauna habitats present.

The Gara River is mapped as being a fauna corridor and the locality is identified as being a climate change corridor (NSW Government 2023b) (Figure 3-2).

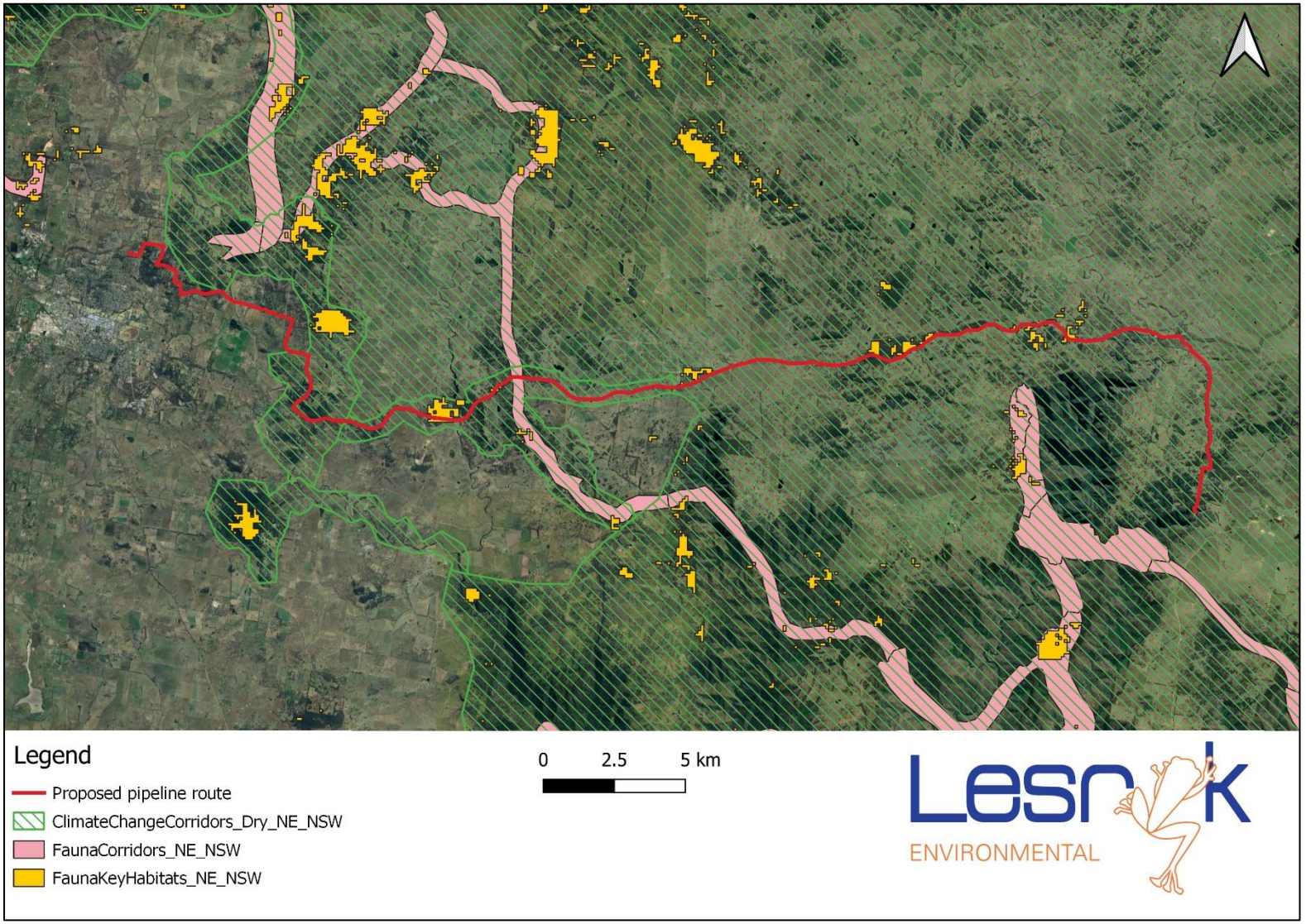
The fauna corridor mapping was determined on the presence of potential landscape linkages (habitat corridors) and based on the predicted distributions of priority fauna species assemblages. The corridors map is a regional representation displaying the most likely occurrence of linking corridors for fauna at a regional scale (NSW Government 2023b).

The establishment of the water main will not have a significant effect on the Gara River fauna corridor.

At a local level, given the extent of clearing in the region due to agriculture and other farming practices, the vegetation that is present with the existing Travelling Stock Route and road reserve would be important for the dispersal, movement, foraging and interbreeding needs of native species, particularly a number of the threatened animals previously recorded in the region. The removal of the native vegetation, and resultant cleared easement width, would fragment and isolate native species habitat and interbreeding populations.

It is noted that the linear areas of vegetation observed within those sections of water main investigated currently provide connectivity between conservation reserves such as the Oxley Wild Rivers National Park (this present to the south of the water main alignment) and Cathedral Rocks National Park (to the north-east).

Figure 3.4. Wildlife corridors.



State Environmental Planning Policy (Biodiversity and Conservation) 2021.

Chapter 4 - Koala Habitat Protection 2021

This Policy seeks to encourage the proper conservation and management of areas that provide habitat for Koalas.

The Armidale Regional LGA is identified under Schedule 2 of SEPP (Biodiversity and Conservation) 2021 (SEPP), and is part of the Northern Tablelands Koala management area.

It is acknowledged that a Koala Plan of Management does not exist for the area investigated.

Within the sections of the water main alignment survey, Koala habitat use trees are present and there are records for this species being detected in proximity to Grafton Road (Figure 2-3).

Given the presence of Koala use trees, and records for this species in proximity to the water main alignment, it is likely that, with reference to the following definitions provided under the SEPP, components of the works would be undertaken within Core Koala habitat:

a) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas are recorded as being present at the time of assessment of the land as highly suitable koala habitat, or

b) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas have been recorded as being present in the previous 18 years.

3. Field results

3.1 Threatened ecological communities

The following TECs were recorded along the proposed water main alignment:

- The BC Act listed CEEC White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and the EPBC Act listed CEEC White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland (hereafter referred to as Box-Gum Woodland and Derived Native Grassland).
- The BC Act listed EEC Carex Sedgeland of the New England Tableland, Nandewar, Brigalow Belt South and NSW North Coast Bioregions.

Numerous stands of the Box-Gum Woodland and Derived Native Grassland CEEC occur along the proposed water main alignment (Figures 3-1, 3-2 and 3-3). At this stage, no differentiation has been made in the accompanying mapping between instances of EPBC Act stands of the community and those that would qualify under the BC Act, which has a lower threshold for inclusion. However, it can generally be said that stands of the community in the western third of the study area tend be in poorer condition than those in the east and upon further sampling may be found to not qualify as the EPBC Act community.

The Carex Sedgeland EEC was found at two locations (Figure 3-2), namely:

- beside Limerick Creek, west of the intersection of Waterfall Way and Metz Road (Chainages 27820-27900)
- beside Cooney Creek (Chainages 29680 and 29860).

Figure 3-1. Threatened ecological communities in the west of the study area.

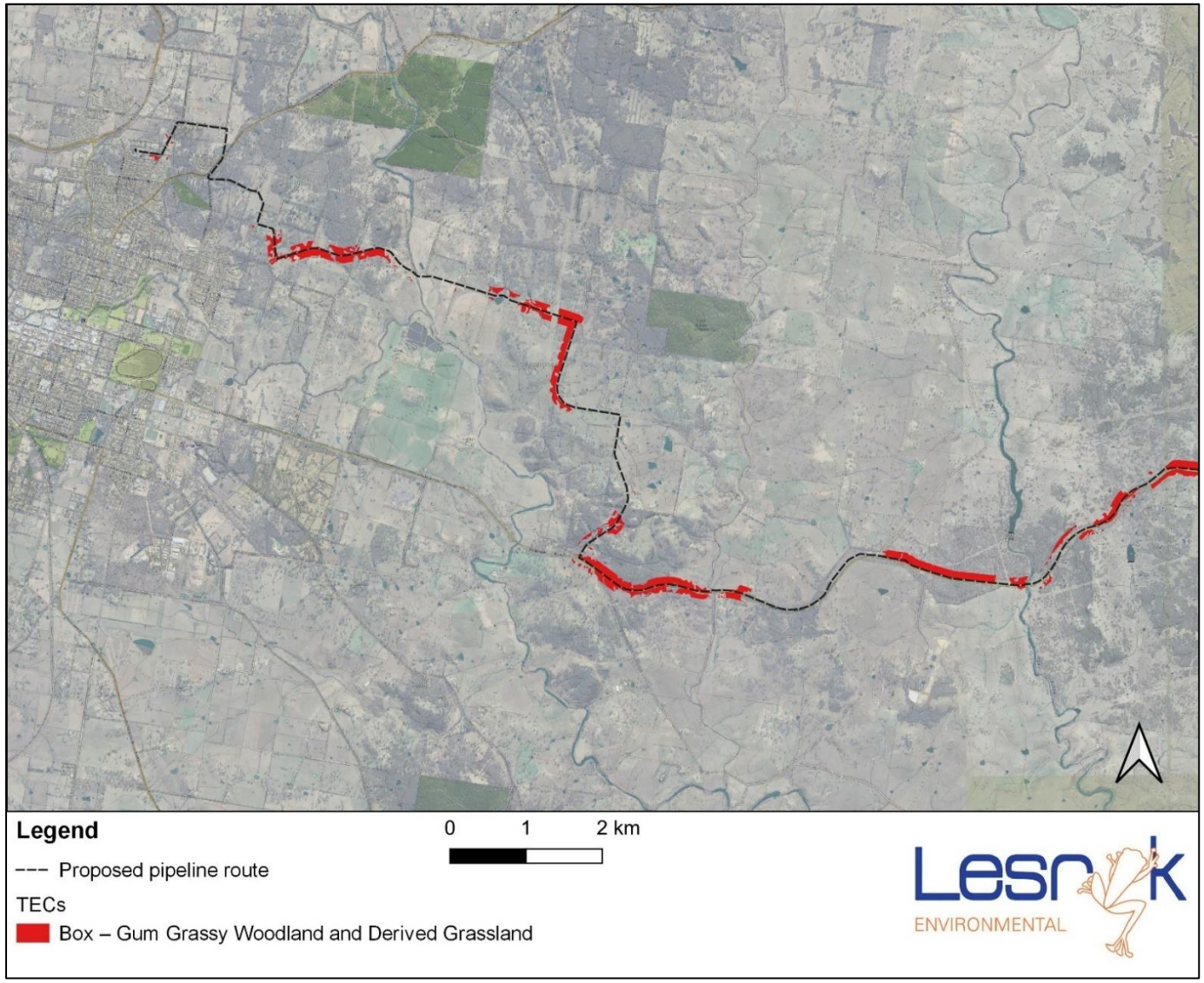


Figure 3-2. Threatened ecological communities in the central section of the study area.

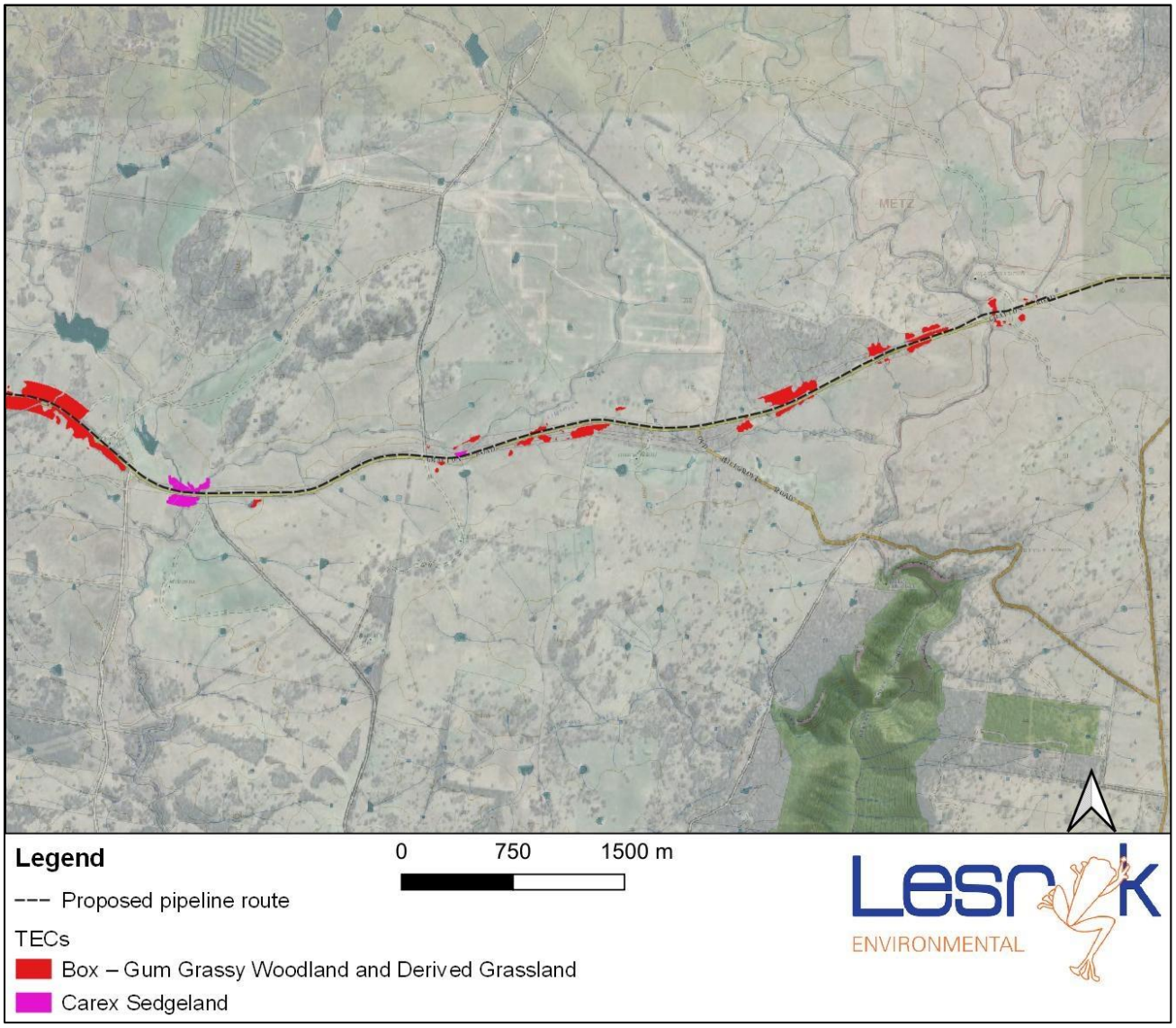
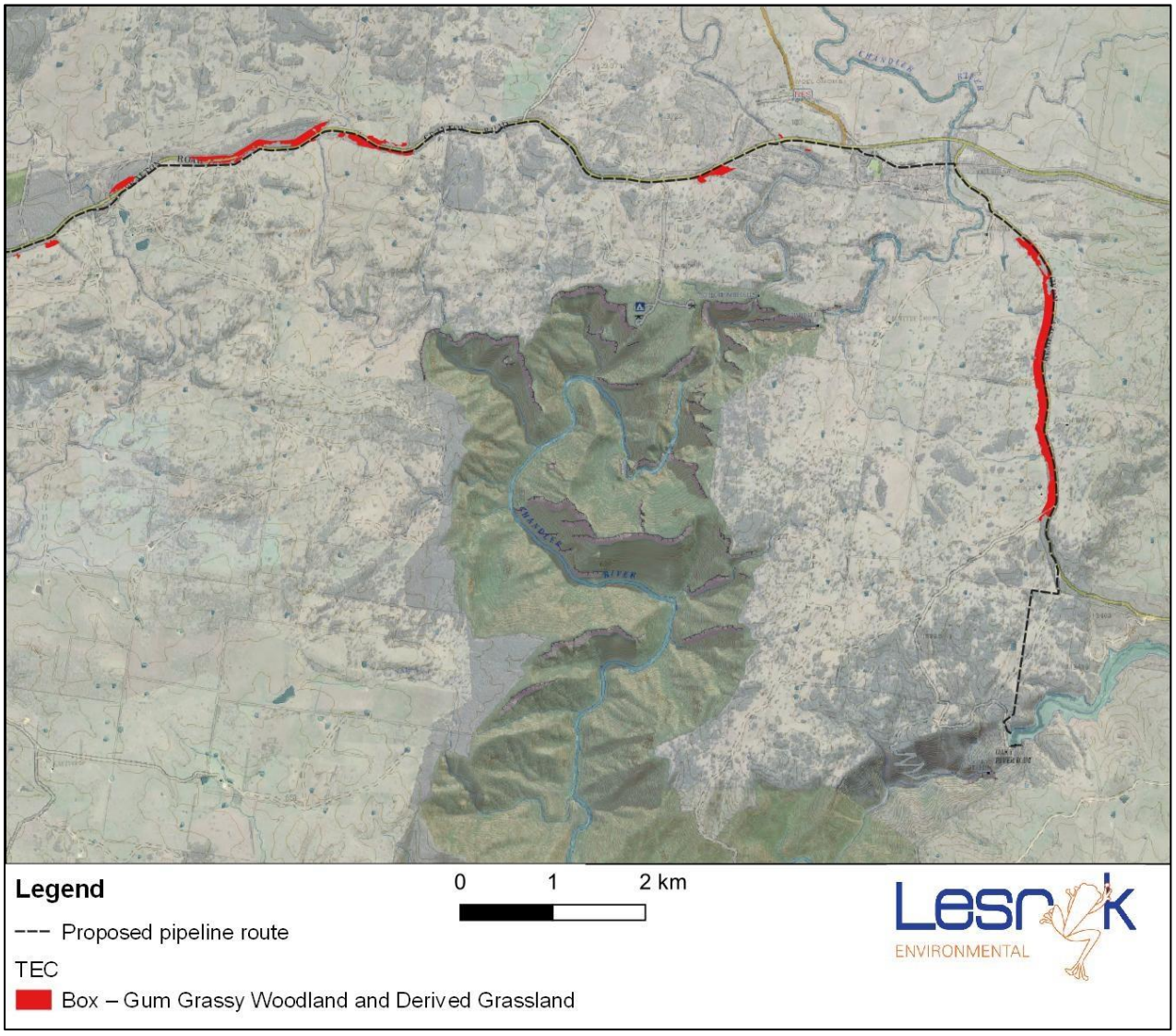


Figure 3.3. Threatened ecological communities in the eastern section of the study area.



Should the water main be located along the alignment surveyed, estimates for loss of:

- Box Gum Woodland and Derived Native Grassland is predicted to be 18.34 hectares
- Carex Sedgeland EEC, 0.24 hectares.

Instances of PCT 3344 New England Ribbon Gum Grassy Forest were found in the study area. However, none of these occurred on basaltic soils and thus are not considered to be part of the BC Act EEC Ribbon Gum—Mountain Gum—Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion.

No instances of PCT 3344 dominated by New England Peppermint were recorded. Therefore, the EPBC Act EEC New England Peppermint Grassy Woodland EEC and its BC Act equivalent New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion are not present

3.2 Threatened species

Flora

The EPBC Act and BC Act listed Narrow-leaved Black Peppermint and the BC Act listed Northern Blue Box were confirmed to be extant during the field investigation.

Five individuals of Narrow-leaved Black Peppermint (*Eucalyptus nicholii*) were found north of Waterfall Way approximately 1.35 km north-east of where it crosses Gara River (Figure 3.4). In relation to the proposed water main alignment, these plants occurs between Chainages 3340 and 3380.

A large population of Northern Blue Box numbering in the hundreds occurs on both sides of Waterfall Way either side of its intersection with Stockton Road (Figure 3.4). In relation to the proposed water main alignment, the species occurs between Chainages 21460 and 22460.

Considering the alignment proposed, all Narrow-leaved Black Peppermint individuals will be cleared and a large number of the Northern Blue Box plants removed. The proposal will also cause the fragmentation and isolation of the remaining Northern Blue Box plants as well as the removal of habitat for each of these species.

Fauna

A variety of native and introduced animals were recorded within, or occurring close to, the sections of the water main alignment surveyed. Of these, the Little Lorikeet (*Glossopsitta pusilla*) is listed under the BC Act as Vulnerable.

Several Little Lorikeets were observed flying over a strip of bushland that is present within the water main alignment near a property named ‘Oakey Dokey’ (this present on the southern side of Kempsey Road) (observer standing at Easting 411180; Northing 6619118 when lorikeets observed). When observed, the individuals seen were noted to be flying over the bushland remnants, as opposed to foraging within these. It is acknowledged that, at the time of the investigation, Musk Lorikeets (*Glossopsitta concinna*) and Rainbow Lorikeets (*Trichoglossus moluccanus*) were observed mating and feeding on eucalypt inflorescences.

Figure 3.4. Threatened flora locations.

Though none were observed investigating any hollow-bearing trees, suitable resources for the breeding requirements of Lorikeets are present within all of the areas surveyed.

During the site inspection no large stick nests, white wash accumulations or scats indicative of a threatened species were observed within the sections of the water main alignment surveyed. In addition, though targeted surveys were conducted to the south of Thorpleigh Road, even though suitable plants are present, no crushed casuarina cones indicative of the foraging behaviour of the Glossy Black-cockatoo was noted.

Though not recorded, as a number of fruiting casuarinas were present, the area south of the Thorpleigh and Grafton Roads intersection would be suitable for the foraging requirements of the Glossy Black-cockatoo.

3.3 European heritage

Whilst beyond the scope of the PEI it is noted that, whilst conducting the fauna survey, a rock culvert with rock headwalls was located on the northern side of Grafton Road, about 2 km west of Silverton Road (at Easting 386644; Northing 6621830). The culvert was present under a defined track / former road, this channelling runoff under this structure. The culvert is present within the alignment of the proposed water main and would be removed to achieve the objectives of the proposal.

Though not specifically targeted, no other features that could, based on the adoption of the precautionary principle, be of heritage value were noted in proximity to the culvert.

The European Heritage value of this item is unknown though its character and position in the landscape may have some value.

If it has not already been considered, the presence of this item should be provided to the project's archaeologist.

4. Constraints and Opportunities

While much of the proposed water main alignment traverses cleared land, a significant amount of intact native vegetation would need to be cleared to achieve the objectives of the proposal. This includes habitat of the following listed biota:

- The BC Act and EPBC Act listed CEEC Box – Gum Woodland and Derived Native Grassland
- The BC Act listed EEC Carex Sedgeland
- A population of the BC Act and EPBC Act listed Narrow-leaved Black Peppermint
- A large population of the BC Act listed Northern Blue Box
- large areas of potential habitat for the following BC Act listed threatened fauna species that are species credit species under the Biodiversity Assessment Method (BAM): Koala, Squirrel Glider, Southern Greater Glider, Southern Myotis, Bush Stone-curlew, Square-tailed Kite, Little Eagle, South-eastern Glossy Black-Cockatoo, Barking Owl and Regent Honeyeater.
    - Of these, the Koala, Southern Greater Glider, South-eastern Glossy Black-Cockatoo and Regent Honeyeater are also listed on the EPBC Act.

The presence of these TECs, and habitat for these threatened species is considered a significant constraint on the proposed activity.

It is considered that, were the water main to be constructed along the proposed alignment, in relation to Section 7.2 and 7.3 of the BC Act it would significantly affect threatened species, or ecological communities and their habitats. Therefore, a Species Impact Statement (SIS) or a Biodiversity Development Assessment Report (BDAR) would have to accompany the Review of Environmental Factors.

One of the initial components of a BDAR is the application of the avoid and minimise principle. Similarly, the object of a SIS is to minimise or mitigate impacts to a level where impacts are not significant to any of the biota that are the subject of the SIS. The simplest way to avoid and minimise impacts in this case is to adjust the water main alignment such that it traverses already cleared private land adjacent to those section of the Travelling Stock Reserves and road reserves that contain intact native vegetation. Adoption of an alignment that avoids or minimises the removal of native vegetation would mean that the proposal is unlikely to significantly affect threatened species, communities, or their habitats, obviating the need for a SIS or BDAR.

If the proposed water main alignment cannot be modified such that it does not significantly affect threatened species or ecological communities, there would be significant costs involved in offsetting the loss of habitat. Were a BDAR undertaken, the impacts of the proposed development on biodiversity would be assessed and any unavoidable impacts would have to be offset by retiring biodiversity credits of a certain number and type. This can be done in three ways:

- identifying then purchasing the required 'like for like' credits in the market through the Biodiversity Offsets Scheme (BOS) public registers
- If there is a suitable site, developing a Biodiversity Stewardship Agreement (BSA) with the BCT to meet the credit requirements.
- Using the offsets payment calculator to determine the cost of the credit obligation, and pay this amount into the Biodiversity Conservation Fund (BCF).

To demonstrate the number of credits that may be generated solely by the impacts of the proposal on PCT 3359 (which is a component of the Box – Gum Woodland and Derived Native Grassland CEEC), Lesryk ran data through the publicly accessible BAM calculator[4]. In conducting this exercise, a number of assumptions were made, the most important of which was in relation to the generation of the vegetation integrity score. The data entered for these components was set at 75% of the Community Condition Benchmarks published for PCT 3359 in the BioNet Vegetation Classification Database (DPE 2023b). Furthermore, PCT 3359 in the proposal area was treated as one patch with uniform condition *in toto*. To accurately determine the vegetation integrity scores for patches of different condition and composition would require a considerable amount of field sampling and data entry (this beyond the scope of this report).

It was found that, based on the assumptions, that in relation to PCT 3359 the proposed activity would generate 937 credits that would have to be retired to satisfy the requirements of the BOS. Were there a lack of like for like credits in the market or a suitable site for a BSA could not be found, then the third option for retiring credits (payment into the BCF) would apply. Whilst currently credit prices are unavailable without applying directly to the Biodiversity Conservation Trust, the most recent prices per credit for the Box-Gum Woodland and Derived Native Grassland CEEC were in the range of $4500 to $4800. Assuming the lower of these, $4,216,500 would have to be paid into the Fund. This is for this CEEC alone and does not include credits that would be generated by the clearing of other PCTs and threatened species habitat in the proposal area. Nor does it include the costs for undertaking a BDAR.

In relation to the EPBC Act, it is considered that the proposal, as it stands, would have a significant impact on the Box – Gum Woodland and Derived Native Grassland CEEC, the local Koala population and potentially the other nationally listed threatened fauna previously recorded if present. Therefore, the proposal would be a controlled action requiring referral to the Federal Minister for the Environment for determination. As part of this process, it is likely that the Minster would require that either the

[4] https://www.lmbc.nsw.gov.au/bamcalc

proposal be amended such that there is not a significant impact or, should that not be possible, the proponent demonstrate that sufficient offset mechanisms have been employed such as using the Commonwealth's offset guide or entry into the BOS.

5. Conclusion and recommendations

A preliminary biodiversity assessment was undertaken of the proposed Oaky River Dam to Armidale Water Pipeline Project. It was found that the proposal area contains significant amounts of native vegetation including:

- Box – Gum Woodland and Derived Native Grassland, which is listed as a critically endangered ecological community on both the BC and EPBC Acts
- Carex Sedgeland, which is listed as an endangered ecological community on the BC Act
- A population of Narrow-leaved Black Peppermint, which is listed as vulnerable on both the BC and EPBC Acts
- A population of Northern Blue Box, which is listed as endangered on the BC Act.
- Large areas of potential habitat for numerous fauna species listed as vulnerable or endangered on the BC and EPBC Acts
- Local corridors that permit the movement of native species and the dispersal of plant propagules.

These threatened biota are considered a significant ecological constraint on the proposal proceeding as planned.

It is recommended that the alignment be modified such that the amount of native vegetation removal is minimised. This could be achieved by situating the alignment of the proposed pipeline within cleared/lightly timbered lands adjacent to the current alignment. Retaining the currently proposed alignment would, in relation to Section 7.2 of the BC Act, significantly affect threatened species; consequently, a Species Impact Statement or Biodiversity Development Assessment Report would be required.

In relation to the EPBC Act, the matter would be a controlled action requiring referral to the Minister for the Environment.

The European Heritage value of the rock culvert recorded should be considered.

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Attachment 1**:** Threatened flora and fauna species previously recorded in the study region and their likelihood of occurrence

Key

V - vulnerable E - endangered CE - critically endangered M - migratory
SCS - Species Credit Species
ECS - Ecosystem Credit Species

A State or nationally listed threatened species is considered to have a:

- **High** likelihood of occurrence if it has been recorded within 10 km of the study area and there is either suitable habitat present or the potential for the species to fly over the site (while species may fly over, it is acknowledged that for some species no suitable habitat will be present within the study area).
- **Moderate** likelihood of occurrence if they have a predicted occurrence (via the EPBC Act PMST or BioNet geographic search) and there is either suitable habitat present or the potential for the species to fly over the site (while species may fly over, it is acknowledged that for some species no suitable habitat will be present within the study area).
- **Low** likelihood of occurrence if suitable habitat for an animal is not present regardless of whether they have been recorded within 10 km or have a predicted occurrence.

Note: Species underlined are those which only the EPBC PMST predicted as having habitat in the search area. All other species have been recorded within 10 km of the study area.

Note: As these habitats are not present, no pelagic, estuarine, wetland or fish species have been included in the following table.
Given that the proposed work is not located within the Commonwealth marine area, this being from 3 to 200 nautical miles from the coast, no species listed as marine under the EPBC Act have been considered; nor has the marine status of any species been acknowledged.

* - habitat requirements were generally extracted from DCCEEW (2023c), OEH (2023), Harden (1992-2002), Frith (2007), Churchill (2008), Cogger (2014) and Van Dyck and Strahan (2008) with other references used being identified in the bibliography.

Common Name	Status		Primary habitat requirements	Number BioNet records	SCS or ECS?	Likelihood of Occurrence[5]
	EPBC Act	BC Act				
Narrow-leaved Bertya *Bertya ingramii*	E	E	Occurs only on the New England Tablelands of NSW. Was previously known only from two small populations in the Oxley Wild Rivers National Park but was historically more widespread on the Tablelands. A third population was discovered in Oxley Wild Rivers National Park in 2006. Grows among rocks or in thin soils close to cliff-edges in dry woodland with she-oaks, wattles and tea-trees. Not associated with any PCTs in the project area.	1	SCS	Low.
Callistemon pungens		V	Occurs in south-east Queensland and the northern tablelands of northeast NSW. In NSW, it occurs from near Inverell to the eastern escarpment in New England, along rocky watercourses usually with sandy granite (or occasionally basalt) creek beds, and generally among naturalised species. Associated with PCTs 3359, 3361.	1	SCS	Low
Pygmy Cypress Pine *Callitris oblonga*	V	V	Represented by two subspecies in NSW and one in Tasmania. The subspecies *parva* occurs in northern NSW on the eastern edge of the New England Tablelands and the subspecies *corangensis* is only known to occur naturally in the Corang River catchment. Usually grows in sand along watercourses in shrubland and open woodland in granite country; it also occurs in drier sites, including exposed ridges. Associated with PCT 3351.	15	SCS	Low.
Dichanthium setosum	V	V	Often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture. Associated canopy species include *Eucalyptus albens, E.melanophloia, E.melliodora* &, *E.viminalis*. Associated with PCTs 3344, 3352, 3359	13	SCS	Moderate.

[5] For the site to support, and be important to the lifecycle requirements of, a viable local population of this species.

Common Name	Status		Primary habitat requirements	Number BioNet records	SCS or ECS?	Likelihood of Occurrence[5]
	EPBC Act	BC Act				
Northern Blue Box *Eucalyptus magnificata*		E	Known in NSW from only a few widely separate populations on the New England Tablelands, around Hillgrove east of Armidale and in the Glen Innes and Tenterfield region, where they occur individually or in small populations. Most populations occur on travelling stock routes or private property. Only a single population occurs in a conservation reserve, in Oxley Wild Rivers National Park. The species also occurs in two Queensland locations. Inhabits moderately hilly sites and at the edge of gorges, usually at altitudes from 900 - 1050 m where it grows in grassy open forest or woodland on shallow, sandy or loamy soils. Associated with PCTs 3344, 3352, 3359	22	SCS	High. Recorded at subject site.
Narrow-leaved Black Peppermint *Eucalyptus nicholii*	V	V	Restricted to an area between Walcha–Niangala to just north of Glen Innes. It occurs in grassy or sclerophyll woodland in association with many other eucalypts that grow in the area. Associated with PCTs 3288, 3344, 3352, 3359	32	SCS	High. Recorded at subject site.
Blackbutt Candlebark *Eucalyptus rubida subsp. barbigerorum*	V	V	Known from scattered populations on the New England Tablelands from Guyra to the Tenterfield area. Most populations occur on private property however the species is recorded in Barayamal and Guy Fawkes National Parks. It inhabits grassy woodland on medium or high fertility soils, often on cold flats. Associated with PCT 3344.	2	SCS	Low.
Gorge Hakea *Hakea fraseri*	V	V	Found only in the upper Macleay River gorges, and the escarpment country in Oxley Wild Rivers National Park. Mainly occurs on the dry and steep rocky slopes of river gorges. Not associated with any PCTs in the project area.	4	SCS	Low.
Tall Velvet Sea-berry *Haloragis exalata subsp. velutina*	V	V	Grows in damp places near watercourses in woodland on the steep rocky slopes of gorges. Associated with PCTs 3254, 3288, 3359	4	SCS	Low.

Common Name	Status		Primary habitat requirements	Number BioNet records	SCS or ECS?	Likelihood of Occurrence[5]
	EPBC Act	BC Act				
Aromatic Peppercress *Lepidium hyssopifolium*	E	E	Known to have occurred in both woodland with a grassy understorey and in grassland. Likely to be locally extinct – record is from 1958. Not associated with any PCTs in the project area.	1	SCS	Low.
Rainforest Cassia *Senna acclinis*		E	Occurs in coastal districts and adjacent tablelands of NSW from the Illawarra in NSW to Queensland. Grows on the margins of subtropical, littoral and dry rainforests. Not associated with any PCTs in the project area.	2	SCS	Unlikely.
Austral Toadflax *Thesium australe*	V	V	Root parasite that is often found in damp sites in grassland or grassy woodland in association with Kangaroo Grass (*Themeda australis*). Associated with PCTs 3288, 3344, 3351, 3359.	3	SCS	Moderate.
MAMMALS						
Spotted-tailed Quoll *Dasyurus maculatus*	E	V	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.	155	ECS	Low. Width of vegetation bands unlikely to support locally viable population. Transient individual likely to be present.
Koala *Phascolarctos cinereus*	E	E	Open eucalypt forest and woodland, containing a variety of 'preferred' food tree species.	827	SCS	High. Suitable woodland with known feed trees present
Brush-tailed Rock-wallaby *Petrogale penicillata*	V	E	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges.	116	SCS	Low. No suitable habitat.
Squirrel Glider *Petaurus norfolcensis*		V	Inhabits woodlands and dry sclerophyll forests, usually in diverse stands of shrubs and trees. Shelters and breeds in tree hollows, and is primarily an insectivorous animal but, has also been known to ingest plant exudates.	1	SCS	High. Suitable woodland with hollow-bearing trees present.

Common Name	Status		Primary habitat requirements	Number BioNet records	SCS or ECS?	Likelihood of Occurrence[5]
	EPBC Act	BC Act				
Southern Greater Glider *Petauroides volans*	E	E	Largely restricted to eucalypt forests and woodlands, utilising tree hollows.	19	SCS	High. Suitable woodland with hollow-bearing trees present. Presumed to be tolerant of occupying linear bands of vegetation.
Grey-headed Flying-fox *Pteropus poliocephalus*	V	V	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	428	SCS/ECS	Medium. No flying-fox camps record within the areas surveyed. Expected to forage within water main alignment when Eucalypts in flower.
Yellow-bellied Sheathtailbat *Saccolaimus flaviventris*		V	Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory.	1	ECS	High. Suitable woodland with hollow-bearing trees present.
Hoary Wattled Bat *Chalinolobus nigrogriseus*		V	Occurs in dry open eucalypt forests, favouring forests dominated by Spotted Gum, boxes and ironbarks, and heathy coastal forests where Red Bloodwood and Scribbly Gum are common. Because it flies fast below the canopy level, forests with naturally sparse understorey layers may provide the best habitat. Roosts in hollows and rock crevices.	1	ECS	High. Suitable woodland with hollow-bearing trees present.
Eastern False Pipistrelle *Falsistrellus tasmaniensis*		V	Prefers moist habitats, with trees taller than 20 m. Generally, roosts in hollow-bearing trees (eucalypts), but has also been found under loose bark on trees or in buildings.	3	ECS	High. Suitable woodland with hollow-bearing trees present.

Common Name	Status		Primary habitat requirements	Number BioNet records	SCS or ECS?	Likelihood of Occurrence[5]
	EPBC Act	BC Act				
Southern Myotis *Myotis macropus*		V	Generally, roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface.	1	SCS	High. Suitable woodland with hollow-bearing trees present.
Greater Broad-nosed Bat *Scoteanax rueppellii*		V	Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Usually roosts in tree hollows but also in buildings.	3	ECS	High. Suitable woodland with hollow-bearing trees present.
Large Bent-winged Bat *Miniopterus orianae oceanensis*		V	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures.	10	SCS/ECS	As above.
New Holland Mouse *Pseudomys novaehollandiae*	V		Open heathland, open woodland with a heathland understorey and vegetated sand dunes.	3	ECS	High. Suitable woodlands present.
Hastings River Mouse *Pseudomys oralis*	E	E	A variety of dry open forest types with dense, low ground cover and a diverse mixture of ferns, grass, sedges and herbs. Access to seepage zones, creeks and gullies is important, as is permanent shelter such as rocky outcrops and fallen logs.	9	ECS	Low. No suitable habitat.
BIRDS						
Fork-tailed Swift *Apus pacificus*	M			4		
White-throated Needletail *Hirundapus caudacutus*	V, M		Almost exclusively aerial. Takes insects on wing over a range of habitat types. Recorded most often above wooded areas, including open forest and rainforest.	35	n/a	Low. Considered but not recorded. Could occur on occasion but unlikely to be significantly affected.
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.	1	ECS	Low. Considered but not recorded. Could occur on occasion but unlikely to be

Common Name	Status		Primary habitat requirements	Number BioNet records	SCS or ECS?	Likelihood of Occurrence[5]
	EPBC Act	BC Act				
						significantly affected.
Spotted Harrier *Circus assimilis*		V	Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands.	2	ECS	High. No large stick nests or individuals observed but the habitat present is suitable for life cycle requirements of this species.
Square-tailed Kite *Lophoictinia isura*		V	Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses.	30	SCS/ECS	High. No large stick nests or individuals observed but the habitat present is suitable for life cycle requirements of this species.
White-bellied Sea-eagle *Haliaeetus leucogaster*		V	Found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia.	2	SCS/ECS	High. No large stick nests or individuals observed but the habitat present is suitable for life cycle requirements of this species.
Little Eagle *Hieraaetus morphnoides*		V	Occupies open eucalypt forest, woodland or open woodland. Sheoak or *Acacia* woodlands and riparian woodlands of interior NSW are also used.	325	SCS/ECS	High. No large stick nests or individuals observed but the habitat present is suitable for life cycle requirements of this species.
Black Falcon *Falco subniger*		V	Found along tree-lined watercourses and in isolated stands of trees, mainly in arid and semi-arid areas.	3	ECS	High. No large stick nests or individuals observed but the habitat present is suitable for life

Common Name	Status		Primary habitat requirements	Number BioNet records	SCS or ECS?	Likelihood of Occurrence[5]
	EPBC Act	BC Act				
						cycle requirements of this species.
Bush Stone-curlew *Burhinus grallarius*		E	Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber.	1	SCS	Moderate. Not recorded but could be present within woodland areas. Occurrences of the recorded exotic species (dogs and foxes) may influence presence.
Latham's Snipe *Gallinago hardwickii*	M		Wet, treeless, tussocky grasslands, short grasses and/or marshes along freshwater streams and channels, though it can also be found in any vegetation around freshwater wetlands, in sedges, grasses, lignum, reeds and rushes, saltmarshes, creek edges, crops and pastures.	4	n/a	High. Suitable habitat present in association with Carex sedgeland.
Crested Tern *Thalasseus bergii*	M		Coastal estuaries and oceanic environment. Seldom seen on inland waterways, preferring islands, beaches, lakes and inlets.	1	n/a	Low. No suitable habitat.
South-eastern Glossy Black-Cockatoo *Calyptorhynchus lathami lathami*	V	V	Inhabits eucalypt woodland and feeds almost exclusively on *Allocasuarina* fruits.	169	SCS/ECS	High. Suitable hollow-bearing trees and stands of *Allocasuarina* present. Searches of these did not reveal any crushed casuarina cones (indicative of the feeding behaviour of this bird).
Little Lorikeet *Glossopsitta pusilla*		V	Forages primarily in the open Eucalypt forest and woodland canopies, particularly along water courses; occasionally in Angophoras, Melaleucas and other tree species, also riparian habitats are used.	17	ECS	High. Recorded.

Common Name	Status		Primary habitat requirements	Number BioNet records	SCS or ECS?	Likelihood of Occurrence[5]
	EPBC Act	BC Act				
Turquoise Parrot *Neophema pulchella*		V	Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland.	1	ECS	High. Suitable habitat present.
Swift Parrot *Lathamus discolor*	CE, Ma	E	Eucalypt forests. When over-wintering on the mainland, this species is dependent on winter-flowering eucalypt species.	3	SCS/ECS	High. Suitable over-wintering foraging habitat present.
Oriental Cuckoo *Cuculus optatus*	M		Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland.	1	n/a	High. Suitable habitat present.
Powerful Owl *Ninox strenua*		V	Inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest.	6	SCS/ECS	Moderate. Likely to forage over area but not considered to be roosting within those portions surveyed.
Barking Owl *Ninox connivens*		V	Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland.	3	SCS/ECS	High. Suitable habitat present.
Masked Owl *Tyto novaehollandiae*		V	Lives in dry eucalypt forests and woodlands from sea level to 1100 m.	24	SCS/ECS	Moderate. Likely to forage over area but not considered to be roosting within those portions surveyed.
Brown Treecreeper (Eastern subsp) *Climacteris picumnus victoriae*	V	V	The western boundary of the range of *Climacteris picumnus victoriae* runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell and along this line the subspecies intergrades with the arid zone subspecies of Brown Treecreeper *Climacteris picumnus picumnus* which then occupies the remaining parts of the state. 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.	136	ECS	High. Suitable habitat present.

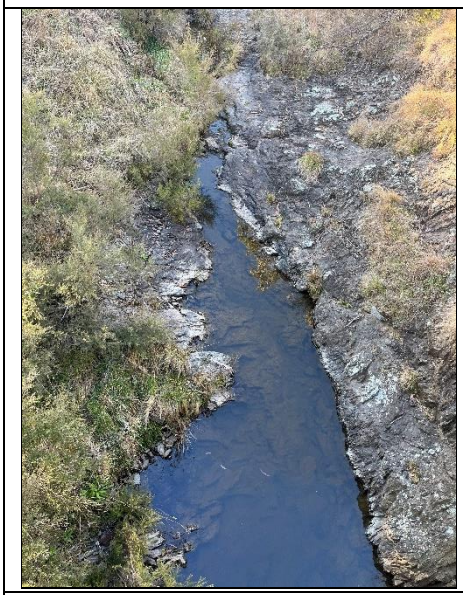
Common Name	Status		Primary habitat requirements	Number BioNet records	SCS or ECS?	Likelihood of Occurrence[5]
	EPBC Act	BC Act				
Speckled Warbler *Chthonicola Sagittata*		V	Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy.	181	ECS	High. Suitable habitat present.
Regent Honeyeater *Anthochaera phrygia*	CE	CE	Inhabits dry open forest and woodland. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes.	8	SCS/ECS	High. Suitable habitat present.
Painted Honeyeater *Grantiella picta*	V	V	Inhabits Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus *Amyema*.	4	ECS	High. Suitable habitat present.
Black-chinned Honeyeater *Melithreptus gularis gularis*		V	Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (*Eucalyptus sideroxylon*), White Box (*E. albens*), Inland Grey Box (*E. microcarpa*), Yellow Box (*E. melliodora*), Blakely's Red Gum (*E. blakelyi*) and Forest Red Gum (*E. tereticornis*).	4	ECS	High. Suitable habitat present.
Varied Sittella *Daphoenositta chrysoptera*		V	Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and *Acacia* woodland.	96	ECS	High. Suitable habitat present.
Dusky Woodswallow *Artamus cyanopterus cyanopterus*		V	Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris.	197	ECS	High. Suitable habitat present.
Scarlet Robin *Petroica boodang*		V	Lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs.	183	ECS	High. Suitable habitat present.
Flame Robin *Petroica phoenicea*		V	Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys.	5	ECS	High. Suitable habitat present.
Hooded Robin (south-eastern) *Melanodryas cucullata cucullata*	E	V	Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas.	24	ECS	High. Suitable habitat present.

Common Name	Status		Primary habitat requirements	Number BioNet records	SCS or ECS?	Likelihood of Occurrence[5]
	EPBC Act	BC Act				
Diamond Firetail *Stagonopleura guttata*		V	Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum *Eucalyptus pauciflora* Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland.	70	ECS	High. Suitable habitat present.
REPTILES						
Canberra Grassland Earless Dragon *Tympanocryptis lineata*	CE	CE	Historically, the Grassland Earless Dragon ranged from Bathurst to Cooma, including the ACT region. The only populations now known are in the ACT and adjacent NSW at Queanbeyan, and on the Monaro Basalt Plains between Cooma and south-west of Nimmitabel. 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. Within its habitat, apparently prefers areas with a more open structure, characterised by small patches of bare ground between the grasses and herbs.	1	SCS	Low. No suitable habitat recorded within those sections of the pipeline surveyed.
AMPHIBIANS						
Yellow-spotted Tree Frog *Litoria castanea*	CE	CE	Historically, this species occurred in two separate highland ranges: on the New England Tableland, and on the southern and central tablelands from Bathurst to Bombala. Following the chytrid virus pandemic in the 1970s, this species went unrecorded for 30 years and was believed to be extinct, until it was rediscovered in 2009 on the Southern Tablelands. This population - near Yass - remains the only known extant site of the species. Requires large permanent ponds or slow	1	SCS	Low. Presumed to be locally extinct.

Common Name	Status		Primary habitat requirements	Number BioNet records	SCS or ECS?	Likelihood of Occurrence[5]
	EPBC Act	BC Act				
			flowing 'chain-of-ponds' streams with abundant emergent vegetation such as bulrushes and aquatic vegetation.			
Peppered Tree Frog *Litoria piperata*	V	CE	The species has not been definitively recorded in the wild since the 1990s. It was previously found on the New England Tablelands from south of Armidale to the Gibraltar Range, at an altitude of 800 to 1000 m. Recorded in streamside vegetation and under rocks and fallen timber along rocky streams flowing eastward from the Tablelands.	1	SCS	Low. Presumed to be locally extinct.
Glandular Frog *Litoria subglandulosa*		V	Known only from stream habitats on the eastern escarpment of the Great Dividing Range from the "The Flags" near Walcha in the south to Girraween National Park in the north, a distance of about 250 km. Located adjacent to streams in rainforest, moist and dry eucalypt forest or in subalpine swamps.	2	SCS	Moderate. Suitable streams in dry eucalypt woodlands present.
Stuttering Frog *Mixophyes balbus*	V	E	Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range.	6	SCS	Low. No suitable habitat present.

Attachment 2: Photographic record of area investigated

	Structure of the woodland present near Oakey Dokey.
	Structure of the woodland present within road reserve.
	Structure of the woodland present within road reserve.

	The character of Carex sedgeland.
	The character of Carex sedgeland.
	The character of one of the existing drainage lines present within the area surveyed.

	Character of Travelling Stock Route west of Middle Farm Road.
	Character of rock culvert recorded.
	Character of rock culvert recorded.