APPENDIX 3
PRELIMINARY BIODIVERSITY ASSESSMENT REPORT (ECOLOGICAL AUSTRALIA)

Valley of the Winds Wind Farm - Biodiversity Scoping Report

UPC\AC Renewables Australia Pty Ltd

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DOCUMENT TRACKING

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Template 2.8.1

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Abbreviations

Abbreviation	Description
BAM	Biodiversity Assessment Method
BC Act	NSW Biodiversity Conservation Act 2016
CEEC	Critically Endangered Ecological Community
DNG	Derived Native Grassland
DoEE	Commonwealth Department of Environment and Energy
DPIE	NSW Department of Planning, Industry and Environment
EEC	Endangered Ecological Community
ELA	Eco Logical Australia Pty Ltd
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FM Act	NSW Fisheries Management Act 1994
GIS	Geographic Information System
GPS	Global Positioning System
IBRA	Interim Biogeographic Regionalisation for Australia
LGA	Local Government Area
LLS	Local Land Service
NSW	New South Wales
PCT	Plant Community Type
SSD	State Significant Development
TEC	Threatened Ecological Community
VIS	Vegetation Information System

Executive Summary

Eco Logical Australia (ELA) were engaged by UPC\AC Renewables Australia Pty Ltd (UPC) to undertake a Biodiversity Scoping Report for the proposed Valley of the Winds Wind Farm (the project) approximately 5 km south west of Coolah, NSW (the study area; Figure 1). This report represents the findings of the first stage of investigations into the biodiversity values present within the study area.

The project is to gain approval for, and then construct approximately 175 wind turbines and supporting infrastructure including a high voltage transmission line which would run approximately 65 kilometres to the existing Bayswater to Mt Piper 500 kV transmission line. The wind farm would be located close to the township of Coolah, in the Warrumbungle Local Government Area (LGA). The wind turbines will be broadly located in three areas known as the Mount Hope, Girragulang, and Leadville clusters. The project would supply approximately 800 megawatts (MW) of electricity into the National Electricity Market (NEM).

Specifically, the report is intended to provide high level advice on the ecological constraints present such as threatened species, populations, ecological communities, or their habitats, listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and to inform the request for Secretary's Environmental Assessment Requirements (SEARs) as part of a Scoping Report being prepared by Ramboll Australia Pty Ltd (Ramboll).

A preliminary database assessment was undertaken to identify the likely biodiversity constraints that may be present within the study area. This included a review of: aerial imagery; bioregion mapping; Land tenure; land systems; vegetation; hydrology; flora and fauna database searches; and land use mapping.

The desktop analysis identified that the study area potentially contained biodiversity constraints, in particular threatened species, populations, and ecological communities and their habitats listed under both the BC Act and EPBC Act.

In order to validate the desktop assessment, a preliminary field study was undertaken across the study area from 18 – 20 November 2019 by ELA ecologists Alex Pursche and Martin Sullivan. Specialist staff from Ramboll as well as UPC were also present for the field assessment. Specifically, the objective of the field study was to consider habitat availability for key biodiversity values within the study area. The field study also served to inform any planning for future detailed assessment.

The field study broadly supported the desktop assessment and confirmed that a significant portion of the proposed development is located on agricultural lands that also contain a mix of woodlands and forests consistent with threatened ecological communities (TECs) listed under both the NSW *Biodiversity Conservation Act 2016* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

The field study identified the following broad vegetation communities:

- White Box Grey Box Woodland on basalt soils
- Tumbledown Red Gum – Rough-barked Apple Forest on sandstone outcrops
- Rusty Fig – Rough-barked Apple forest on sheltered slopes and in gullies

- Ironbark-Stringybark forest on sandstone
- Inland Grey Box woodland on alluvial soils
- Fuzzy Box Woodland on alluvial soils
- Cleared land including cropping, pasture and existing infrastructure

Of the vegetation communities observed, many are consistent with the following TECs:

- White Box Yellow Box Blakely's Red Gum Woodland (BC Act Endangered Ecological Community (EEC)) was observed extensively throughout the locality. Components of this TEC are consistent with the EPBC Act Critically Endangered Ecological Community (CEEC) White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box Gum Woodland).
- Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions which is listed as an EEC under the BC Act. This TEC is not listed under the EPBC Act, although components of it may fit the description of Box Gum Woodland.
- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions which is listed as an EEC under the BC Act. This TEC is listed as an EEC under the EPBC Act as Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia, although components of it may fit the description of Box Gum Woodland.

Other flora and fauna species listed under the BC Act and/or EPBC Act are considered likely to occur within the study area and will require detailed field studies as part of an Environmental Impact Statement (EIS).

From the site assessment, the following trends in the landscape were identified which should be incorporated into further project refinement:

- A significant portion of the study area is disturbed agricultural land with little or no biodiversity value.
- The plasticity of a wind farm development will allow for avoidance of most areas of biodiversity constraint.
- There are some areas of TEC that will be unavoidable, however micrositing of wind turbines and refinement of roads and transmission easements should minimise impacts within the landscape.

The project will require assessment and approval from the New South Wales Government. As the project proposed has potential to significantly impact habitat for Matters of National Environmental Significance (MNES) protected under the EPBC Act, the project will also require assessment and approval from the Commonwealth Minister for the Environment. This study details the likely assessment pathway by each of these authorities.

Based on the current proposed study area, the following recommendations are made to avoid and minimise impacts to biodiversity:

- Refine the project footprint to maximise avoidance of biodiversity values.
- Prioritise existing cleared land and/or treeless native pasture for infrastructure.
- Define appropriate setbacks for wind turbines from significant areas of native vegetation to minimise potential bird and bat strike.

- Identify and maximise avoidance of potential bird and bat movement corridors across the landscape.
- Incorporate biodiversity (including likely offsets) into the project design considerations including route options analysis.

Should the project continue to the EIS stage and undertake detailed studies, ELA recommends the proponent engage with NSW and Commonwealth regulators to establish the assessment detail required for further studies, as many of the mandatory guidelines for biodiversity assessment are not designed for projects of this size. Specifically, the following items should be discussed:

- The nature, size, and spatial configuration of this project make it difficult to demonstrate adequacy of assessment under the current NSW and Commonwealth guidelines which are centred around simple, accessible, discrete portions of land
- The Biodiversity Assessment Methodology (BAM) would require a three-fold replication of assessments, as the project spans three bioregions. This will compound the complexity of the assessment and make it difficult to demonstrate compliance against the BAM, as well as complicate any public scrutiny of the assessment. We recommend that a simplified assessment method is developed and agreed prior to EIS to ensure this complexity doesn't confound the impact assessment process.
- Bird and bat strike, including the assessment of aerospace utilisation which is poorly defined in the BAM and should be clarified further to ensure a robust assessment can be undertaken
- The ongoing drought conditions are likely supressing the detectability of many threatened flora species. This should be discussed with the NSW and Commonwealth regulators to determine an appropriate level of assessment for the EIS.

1. Introduction

1.1 Background

This biodiversity scoping report has been prepared to support a development application by UPC\AC Renewables Australia Pty Ltd (UPC\AC) to construct and operate the Valley of the Winds wind farm (the project). The project would supply approximately 800 megawatts (MW) of electricity into the National Electricity Market (NEM).

The project would consist of approximately 175 wind turbines and supporting infrastructure including a high voltage transmission line which would run approximately 65 kilometres to the existing Bayswater to Mt Piper 500 kV transmission line. The wind farm would be located close to the township of Coolah, in the Warrumbungle Local Government Area (LGA).

The project meets the threshold for State Significant Development (SSD) under Clause 20 of Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011*. The project is also being referred to the Commonwealth Department of Agriculture, Water and the Environment (DAWE) for potential impacts to matters of national environmental significance protected by the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The project can be broadly partitioned into two separate assessment areas:

- the 'Wind Farm' – consisting of the Mount Hope, Girragulang, and Leadville turbine clusters, and all associated internal infrastructure, being the property boundary of participant landholders. Proposed wind turbine locations have been shown on maps within this report, but will be subject to change through detailed design; and
- the 'Transmission Options' – being three options for connecting the Wind Farm to the grid, shown as a 10km wide 'Transmission line investigation corridor' in which the final transmission line will be located. Only one of these transmission options would be carried forward to the EIS phase. For the purposes of this preliminary assessment, the centreline of the transmission line investigation corridor has been shown as the indicative transmission route.

These areas are shown on Figure 1 and Figure 2. For this scoping study, the following terms are used throughout in relation to the Wind Farm and Transmission Options:

- The subject site – being the likely area of impact from a 60m buffer around either the Wind Farm or Transmission Options (not shown on maps due to project scale).
- The biodiversity study area – being a 500 m buffer around the Proposed wind turbine locations, or Indicative transmission route (noting that the biodiversity study area will be subject to change and will be centred around the final development footprint)
- The locality – being a 10k m buffer around either the Wind Farm or Indicative transmission route.

No detailed biodiversity assessment has been conducted to date. This assessment is not a standalone assessment of all biodiversity values present, but provides initial advice including ground-truthed data relating to the study area. This assessment:

- Identified biodiversity constraints from a detailed desktop assessment.

- Confirms the presence of some of these constraints through a rapid site inspection.
- Provides advice to avoid and minimise impacts.
- Provides advice on the requirements for the Secretary's Environmental Assessment Requirements (SEARs).

1.2 NSW assessment

As an SSD project, impacts to biodiversity are to be assessed in accordance with the NSW Biodiversity Assessment Method (BAM). The BAM requires survey and mapping of Plant Community Types (PCTs), vegetation integrity (condition) assessment, and targeted survey for predicted threatened flora and fauna species (species credits only). The BAM then requires the proponent to respond to biodiversity values present and avoid and minimise the likely impacts of the proposal. Specifically, the proponent must justify any unavoidable impacts, including impacts to prescribed matters (as identified in the BAM), as well as avoid any Serious and Irreversible Impacts. The BAM simplifies the summary of unavoidable impacts into a credit requirement (being ecosystem or species credits).

All unavoidable impacts must then be offset in accordance with the BAM, whereby credits are generated at a separate landholding (known as a stewardship site) for ongoing management and predicted gains in biodiversity value.

The requirements for assessment through the BAM are identified in the Secretary's Environmental Assessment Requirements (SEARs). The SEARs have not yet been issued for the project, and the primary purpose of this study is to inform the Department of Planning, Industry, and Environment when drafting the SEARs. The SEARs may identify additional assessment requirements for biodiversity impacts not considered by the BAM, which must be documented separately within the EIS.

1.3 Commonwealth assessment

Under the EPBC Act, Matters of National Environmental Significance (MNES) are protected. The NSW BAM does not currently include consideration of MNES. A referral under the EPBC Act is required if a project could or is likely to have a significant impact on MNES. Proponents may also choose to lodge a referral for project certainty, even if significant impacts are unlikely.

While the BAM is not formally accredited under the Bilateral Agreement, it can be 'accredited for use' on a case by case basis which would streamline the assessment by having the NSW Government assess the project and prepare an assessment report for consideration by the Commonwealth.

Under the *Bilateral agreement made under section 45 of the EPBC act relating to environmental assessment* (the bilateral agreement; DotE 2015), a proposed action does not require assessment under Part 8 of the EPBC Act, if the action is to be assessed under Part 4 Division 4.1 or Part 5.1 of the EP&A Act, provided the assessment:

- Contains an assessment of all impacts the action has on each MNES (which will be specifically included in our Biodiversity Development Assessment Report).
- Contains enough information about the controlled action and its relevant impacts to allow the Commonwealth Minister to make an informed decision whether or not to approve the action.
- Addresses all matters outlined in Schedule 4 of the Environment Protection and Biodiversity Conservation Regulations 2000 (EPBC Regs; DotE 2000).

Under the *Amending Agreement No1* issued on 24 March 2020 between the NSW and Commonwealth Governments, the bilateral agreement will now apply to State Significant Development assessments carried out under the BAM, and would apply to the assessment phase of the project. The Commonwealth government would still retain authority to issue their own approval under the bilateral agreement.

1.3.1 Commonwealth Biodiversity Offsets

The EPBC Act Environmental Offsets Policy (DSEWPaC 2012) outlines the Commonwealth Government's approach to the use of environmental offsets ('offsets') under the EPBC Act.

Offsets are defined as measures that compensate for the *residual adverse impacts* of an action on the environment. Unless a significant impact is likely on a particular MNES, then offsets are not required. Where appropriate, offsets are considered during the assessment phase of an EIS under the EPBC Act. This policy provides transparency around how the suitability of offsets is determined. The suitability of a proposed offset is considered as part of the decision as to whether or not to approve a proposed action under the EPBC Act.

While the BAM provides proponents with a large amount of flexibility for biodiversity offsets in NSW (such as payment to the Biodiversity Conservation Fund, or variation to 'like for like' offsets), this is not available for MNES as the Commonwealth will only approve 'like for like' offsets which are secured in a reasonable timeframe post approval.

Consideration of potential offsets is therefore likely required under both the BAM and the EPBC Act. Ensuring potential offsets meet both frameworks is essential to minimise duplication and streamline approvals.

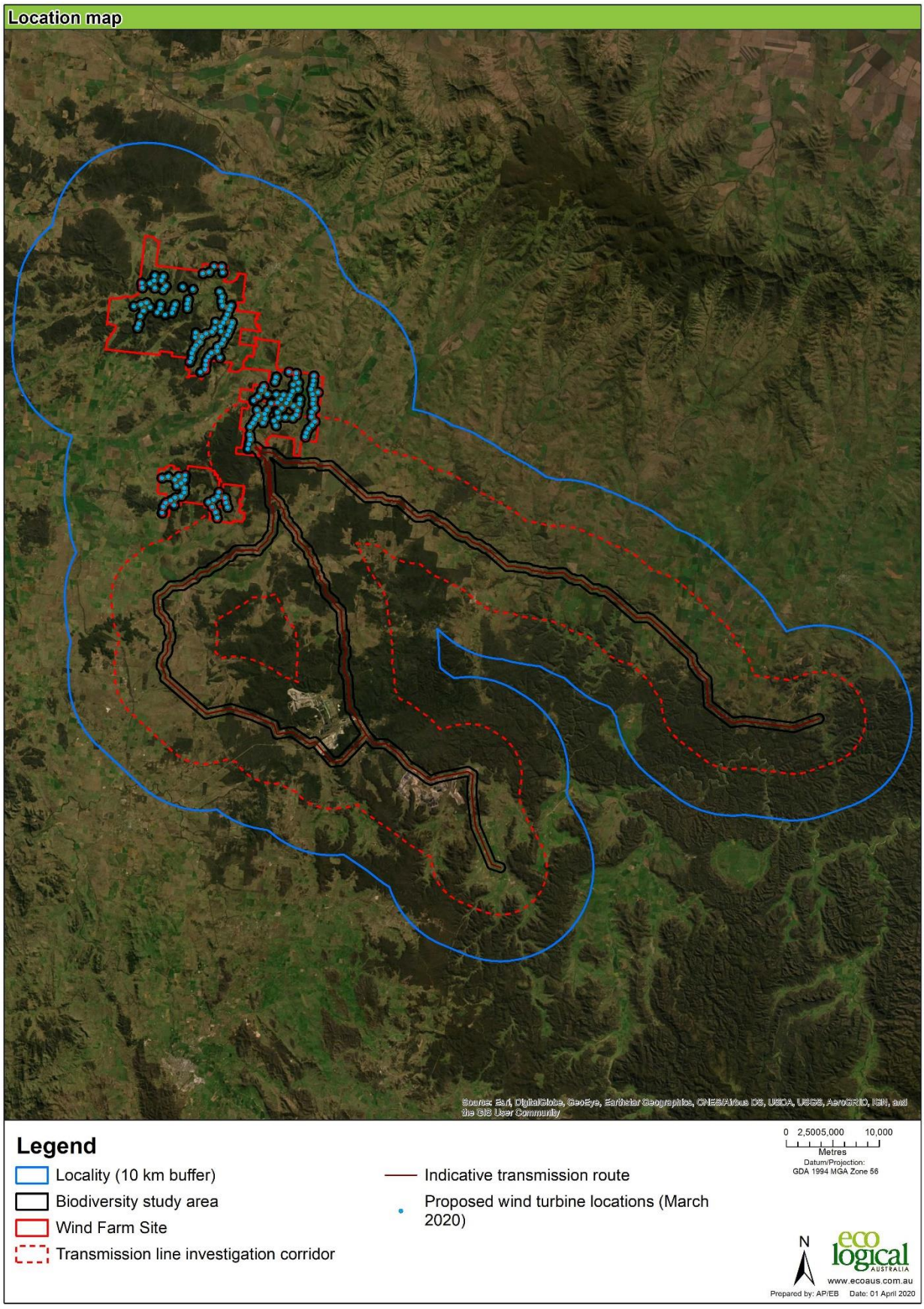

Figure 1 Location Map

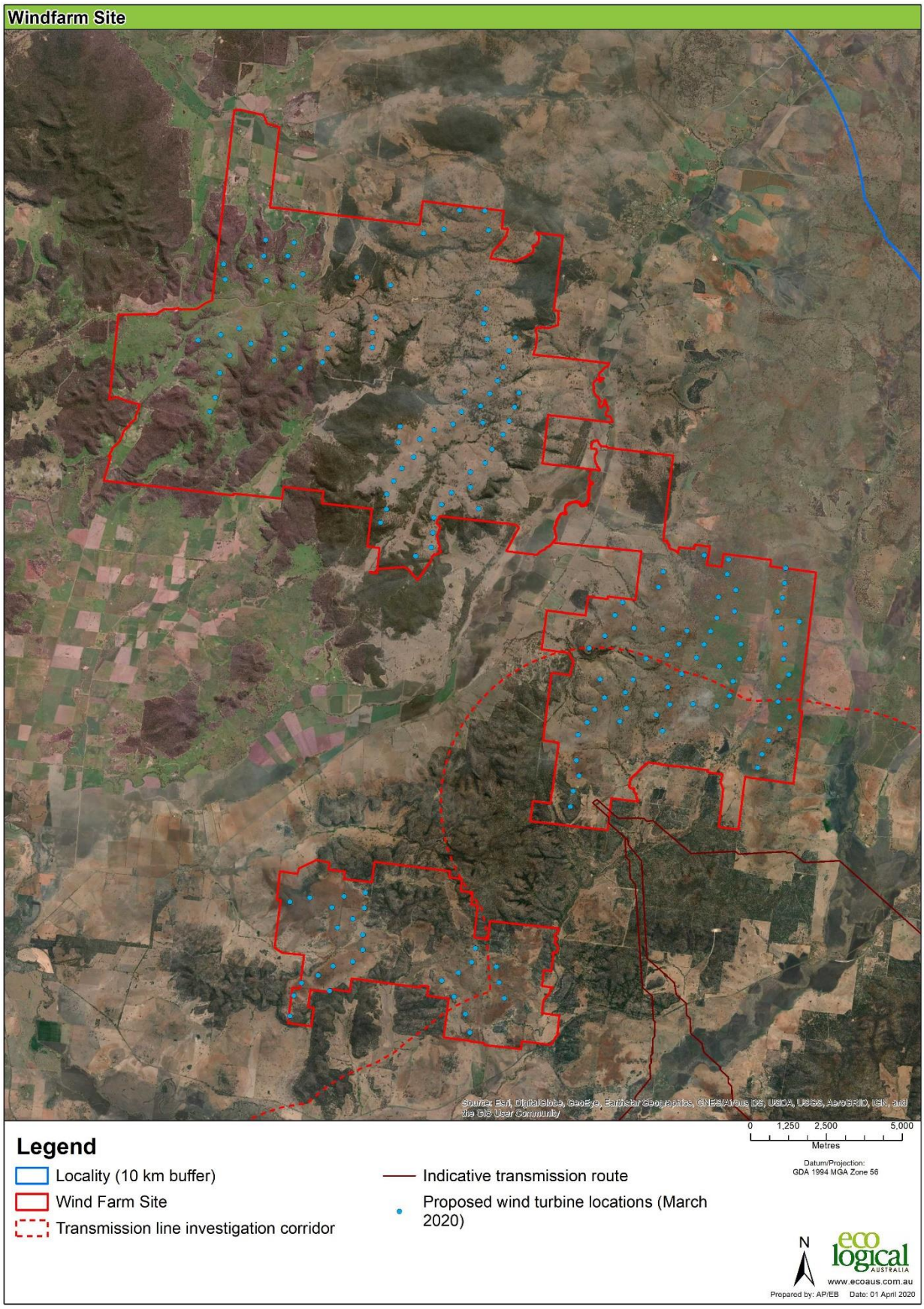

Figure 2 Wind Farm Site Map

2. Methods

2.1 Database review

A database review was conducted for all publicly available datasets for the locality. A summary of the datasets interrogated is described in the table below.

Table 1 Database review sources

Data type	Data source
Aerial imagery	ESRI, high-resolution stereo ADS40 imagery (NSW Government)
Bioregions	Interim Biogeographic Regionalisation for Australia, Version 7
NSW (Mitchell) Landscapes	NSW (Mitchell) Landscapes Version 2
Plant Community Type Mapping	State Vegetation Type Map: Upper Hunter v1.0. VIS_ID 4894 Central Tablelands Vegetation, API. VIS_ID 4163
Threatened Ecological Communities	NSW Final Determinations Commonwealth Listing Advice
Local Government Areas	Australian Local Government Association Council Maps and Boundaries - National Map 06/11/19
Flora & fauna database searches	Commonwealth Department of the Environment (DotE) Protected Matters Online Search Tool (10 km radius) 10/11/19; BioNet records from the locality 11/12/19 NSW DPIE Areas of Outstanding Biodiversity Value Register DPIE Species Profile and Threats Database 08/11/19 DPIE Threatened Species Profile Database 06/11/19 The Biodiversity Assessment Method (2017)
Key Fish Habitat	NSW DPIE Fisheries Spatial Data Portal 06/11/19,
Rivers & Streams	NSW DPIE Strahler Stream Order 08/11/2019
Wetlands	SEED NSW Wetlands mapping 08/11/2019
Burnt Areas	Google Earth Engine Burnt Areas Map (DPIE, 2020)
Important Areas	Regent Honeyeater Important Areas Map (DPIE, 2020)

2.2 Field study

The purpose of the site reconnaissance was to capture preliminary rapid data with the aim of validating desktop data and increasing site-based knowledge. The scope of this current assessment was driven by available land access and client priorities. This is not a full site assessment of all project infrastructure, rather a broad view on the project to help understand key issues and biodiversity constraints.

Two data types were the primary focus of the data collection:

- Rapid Data Points (RDP): At each RDP the dominant canopy, midstorey and groundcover species; structural cover condition; vegetation structure; PCT; priority or environmental weed species and cover; threatened species and count; soil texture; fire history; vegetation condition; landform element and pattern; notes; photo number; surveyor; and date were recorded. RDPs

are less comprehensive than full floristic vegetation plots, however they allow for rapid identification of PCTs which could then be interpreted through Aerial Photographic Interpretation.

- Rapid Vegetation Integrity Assessment (RVIA): At each RVIA a high-level estimate of vegetation composition, structure, and function was collected broadly in accordance with the data inputs required under the BAM. This method was not a compliant BAM survey, but seeks to provide an estimate into the vegetation condition, to allow the proponent to avoid areas of high biodiversity value and estimate the potential offset liability.

In addition, any threatened species observed were recorded.

All site reconnaissance was undertaken by Senior ELA Ecologists Martin Sullivan and Alex Pursche from 18 – 20 November 2019.

2.3 Threatened species, populations, and ecological communities likelihood assessment

Following completion of the desktop assessment and site reconnaissance, a likelihood assessment was undertaken for all threatened species, populations, or ecological communities identified.

Candidate species returned by flora and fauna database searches, were assigned to one of the following categories based on the habitat types known to the study areas:

- “known” = known to occur;
- “likely” = a medium to high probability that the species uses the site;
- “potential” = suitable habitat for the species occurs on the site, but there is insufficient information to categorise the species as likely to occur, or unlikely to occur;
- “unlikely” = a very low to low probability that the species uses the site.

3. Results

3.1 Database review

Findings of the database review are summarised in the table below and shown on Figures 3 - 14.

Table 2 Database review results

Data type	Data source	Key findings
Aerial imagery	ESRI, NSW Government	Aerial imagery available for all of Wind Farm and Transmission Options Significant areas of cleared land due to agriculture. Scattered woodland and forest vegetation present.
Bioregions	Interim Biogeographic Regionalisation for Australia, Version 7	Three Bioregions (Figure 3) present across both Wind Farm and Transmission Options: • Brigalow Belt South • South Western Slopes • Sydney Basin
Subregions	Interim Biogeographic Regionalisation for Australia, Version 7	Six Subregions (Figure 4) present across both Wind Farm and Transmission Options: • Inland Slopes • Kerrabee • Liverpool Ranges • Pilliga • Talbragar Valley • Wollemi
Mitchell Landscapes	NSW (Mitchell) Landscapes Version 2	Seventeen Mitchell Landscapes present across both Wind Farm and Transmission Options: • Cope Hills Granite • Capertee Plateau* • Coolah Tops* • Sydney Basin Diatremes • Gulgong Ranges* • Goonoo Slopes* • Goulburn River Channels and Floodplains • Goulburn River Gorges • Upper Goulburn Valleys and Escarpment • Liverpool Range Valleys and Footslopes • Lees Pinch Foothills • Merrygoen Hills and Slopes • Marron Hills • Talbragar – Upper Macquarie Terrace Sand • Trinkey Plateau • Upper Castlereagh Alluvial Plains* • Wollemi Ranges* It should be noted that the project is unlikely to impact on landscapes marked with an asterix (*)

Data type	Data source	Key findings
		above, as they occur outside of the proposed study area.
Plant Community Type Mapping	State Vegetation Type Map: Upper Hunter v1.0. VIS_ID 4894 Central Tablelands Vegetation, API. VIS_ID 4163	PCT mapping available across both Wind Farm and Transmission Options, across two map sheets: • State Vegetation Type Map: Upper Hunter v1.0. VIS_ID 4894 • Central Tablelands Vegetation, API. VIS_ID 4163 The most commonly mapped PCTs in the Wind Farm include: • PCT511 Queensland Bluegrass - Redleg Grass - Rats Tail Grass - spear grass - panic grass derived grassland of the Nandewar Bioregion and Brigalow Belt South Bioregion • PCT484 Derived tall spear grass Plains Grass grassland on mainly basalt hills of the Liverpool Plains, Liverpool Range and in the upper Hunter Valley (Merriwa district), south-eastern Brigalow Belt South Bioregion • PCT434 White Box grass shrub hill woodland on clay to loam soils on volcanic and sedimentary hills in the southern Brigalow Belt South Bioregion The most commonly mapped PCTs collectively in the Transmission Options include: • PCT483 Grey Box x White Box grassy open woodland on basalt hills in the Merriwa region, upper Hunter Valley • PCT484 Derived tall spear grass Plains Grass grassland on mainly basalt hills of the Liverpool Plains, Liverpool Range and in the upper Hunter Valley (Merriwa district), south-eastern Brigalow Belt South Bioregion • PCT800 Derived grasslands of the Merriwa Plateau
Threatened Ecological Communities	NSW DPIE Vegetation Types Database State Vegetation Type Map: Upper Hunter v1.0. VIS_ID 4894 Central Tablelands Vegetation, API. VIS_ID 4163	Database assessment (based on mapped PCTs and TEC associations) has identified 14 TECs listed under the BC Act. Many of these are unlikely to be impacted, as the extent of many of these TECs does not occur within the study area. Of the 14 identified TECs under the BC Act, the following may occur within either Wind Farm and Transmission Options:

Data type	Data source	Key findings
		• Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions • Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions • White Box Yellow Box Blakelys Red Gum Woodland Similarly, the database assessment (based on the Protected Matters Search Tool) identified that seven (7) TECs listed under the EPBC Act. Of these, only two are likely to occur within both Wind Farm and Transmission Options: • Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia • White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland The extent on known occurrence of many of these TECs is outside the locality.
Local Government Areas	Australian Local Government Association Council Maps and Boundaries - National Map 06/11/19	The Wind Farm and Transmission Options spans three Local Government Areas (LGA) being Warrumbungle, Upper Hunter and Mid-Western Regional LGAs.
Flora & fauna database searches	Commonwealth Department of the Environment (DotE) Protected Matters Online Search Tool (10 km radius) 10/11/19; Bionet records from the locality 11/12/19 DPIE Species Profile and Threats Database 08/11/19 DPIE Threatened Species Profile Database; NSW DPIE 06/11/19	The database assessment identified that within the Locality there are previous records of 55 fauna species and 36 flora species listed under the BC Act. Of these species, the majority of likely species are woodland birds that are ecosystem credits under the BAM, and not listed under the EPBC Act. Broadly, the following species credit species may be identified during any subsequent assessment: • Breeding habitat for Barking Owl, Masked Owl, and Powerful Owl • Brush-tailed Rock Wallaby, Squirrel Glider, habitats in the southern areas of the Transmission Options • Breeding habitat for Microchiropteran bats such as Large-eared Pied Bat • Important habitat for Regent Honeyeater or Swift Parrot Within the study area the following flora species are likely: • *Acacia ausfeldii* • *Androcalva rosea* • *Cymbidium canaliculatum*

Data type	Data source	Key findings
		Within the locality there are 34 fauna species and 28 flora species listed under the EPBC Act. The following species listed under the EPBC Act are considered likely to occur in the study area • Regent Honeyeater • Fork-tailed Swift • Swift Parrot • Superb Parrot • Large-eared Pied Bat • Corben's Long-eared Bat • Brush-tailed Rock-wallaby • Koala Further details regarding the distribution, habitats, and ecology of each threatened species are provided in Appendix A.
Key Fish Habitat	NSW DPIE Fisheries Spatial Data Portal 06/11/19,	Key fish habitat has been identified for: • Purple-spotted Gudgeon • Darling River Hardyhead • Eel-tailed Catfish Many of these are likely to be unaffected by the wind farm.
Rivers & Streams	NSW DPIE Strahler Stream Order 08/11/2019	There are numerous first and second order streams across the Wind Farm and Transmission Options Study Areas. Major waterways identified in the database review includes: • Goulburn River • Talbragar River • Coolaburragundy River • Munmurra River • Krui River • Bow River Many of these are likely to be unaffected by the wind farm.
Wetlands	SEED NSW Wetlands mapping 08/11/2019	No wetlands were identified
Conservation areas	NPWS Estate Legal State Forest Travelling Stock Routes Crown land	Within the locality, the following conservation areas have been identified: • Durrigere State Conservation Area • Goulburn River National Park • Goulburn River State Conservation Area • Munghorn Gap Nature Reserve • Weetalibah Nature Reserve
Landuse	NSW Landuse layer 2017 Native vegetation regulatory map: Method statement	The majority of the locality is consistent with 2.1.0 Grazing native vegetation and 3.2.0 Grazing modified pastures. Approximately 50% of the locality is consistent with Category 2 Regulated Land under the NSW *Local Land Services Act 2013* (LLS Act).

Data type	Data source	Key findings
Land Zoning	Warrumbungle, Upper Hunter and Mid-Western Regional Local Environment Plans	The majority of land zoning within the locality is RU1 – Primary Production
Burnt Areas	Google Earth Engine Burnt Areas Map (DPIE, 2020)	Portions of severely burnt bushland in Goulburn River National Park along Transmission route option C.
Important Areas	Regent Honeyeater Important Areas Map (DPIE, 2020)	'Important areas' mapped for Regent Honeyeater along all three transmission route options.

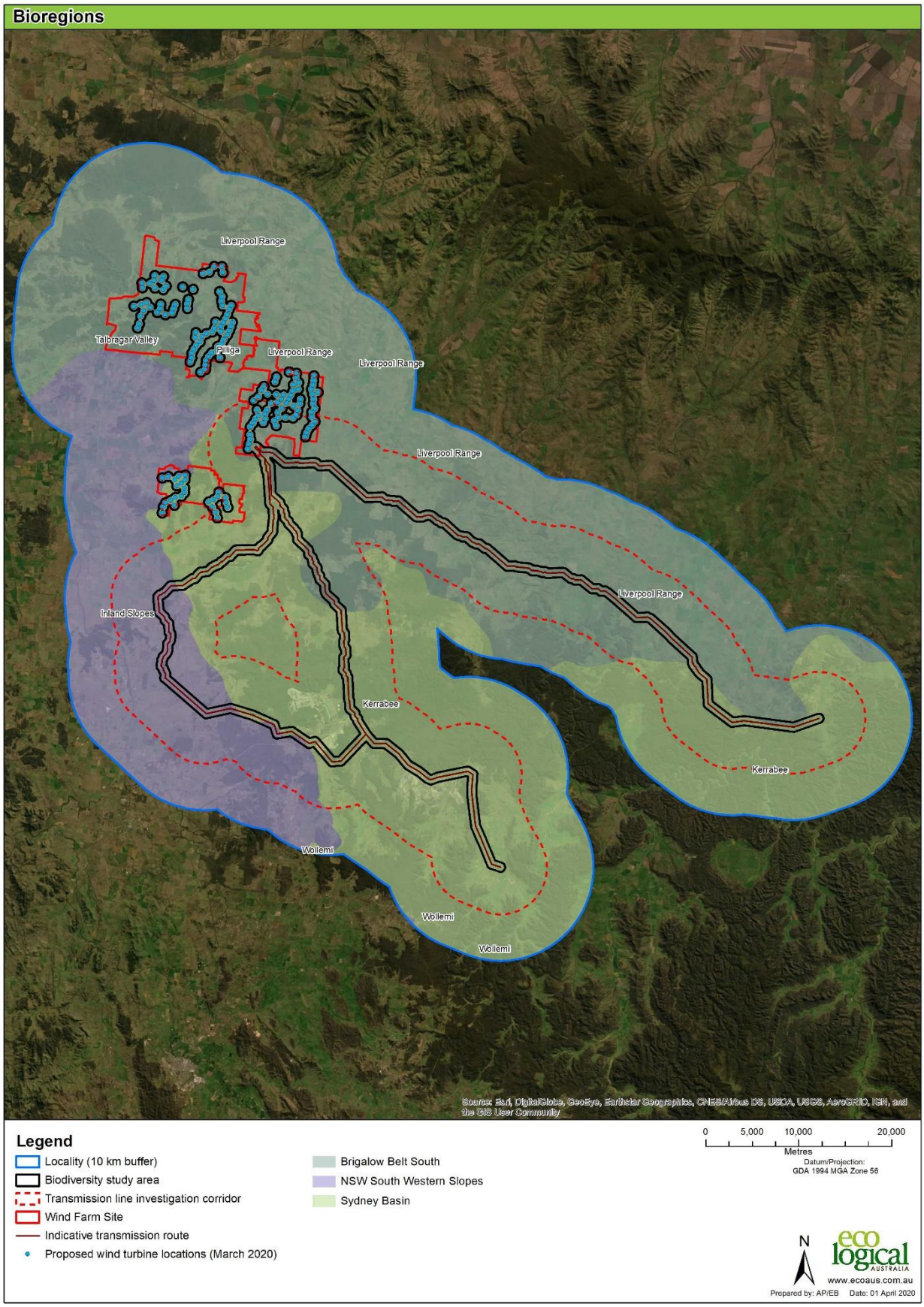

Figure 3 Bioregions

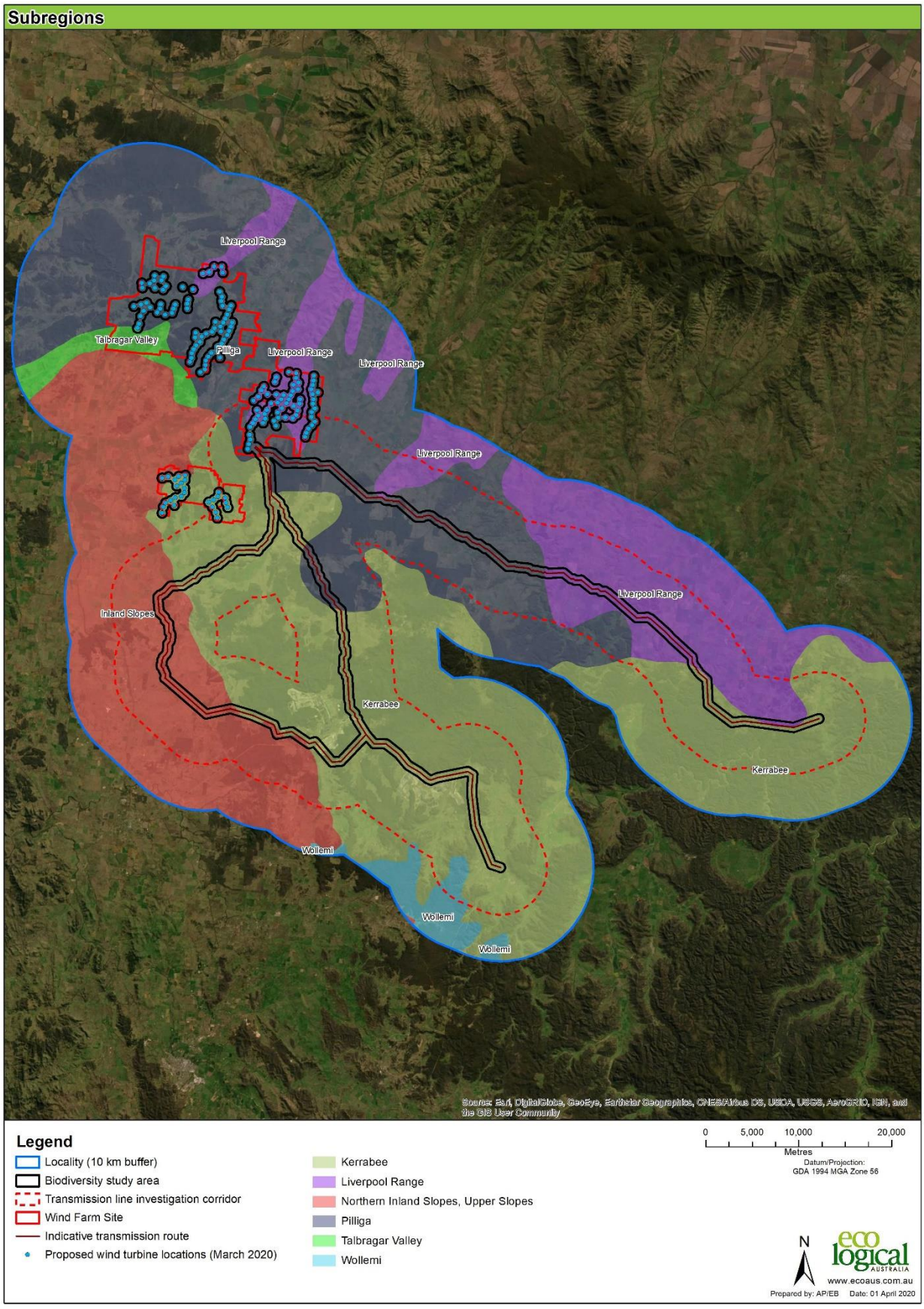

Figure 4 Subregions

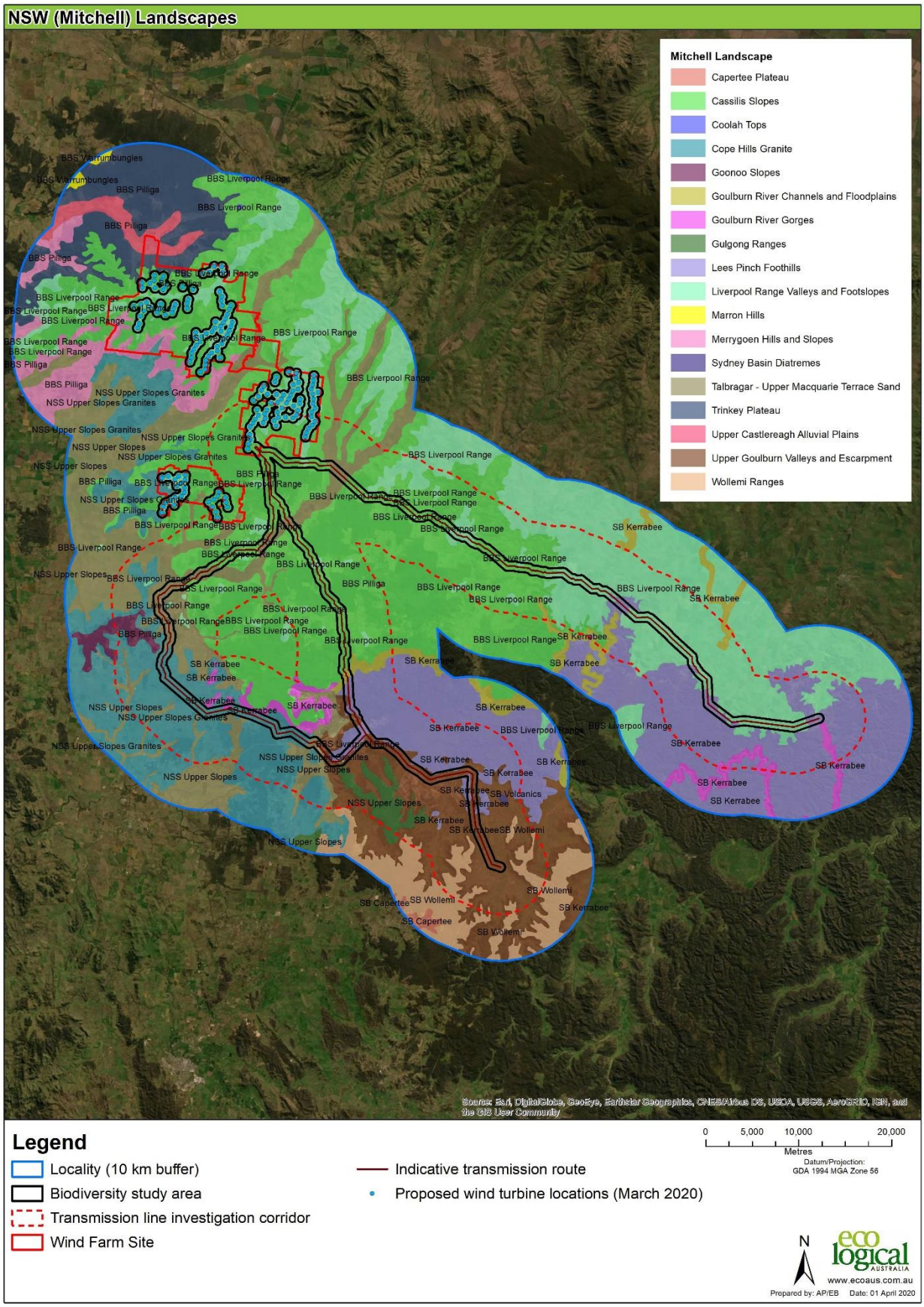

Figure 5 NSW landscapes

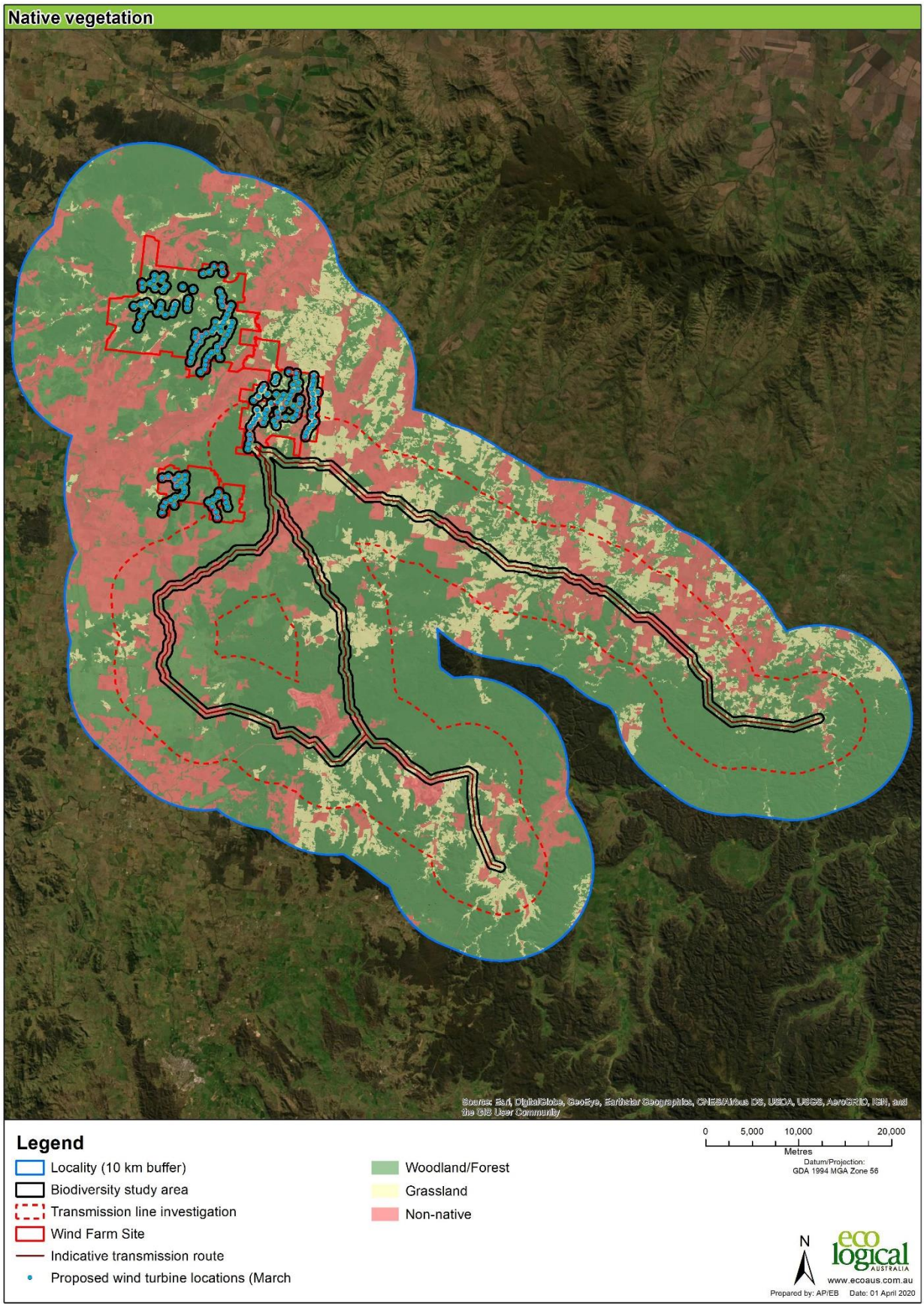

Figure 6 Mapped native vegetation

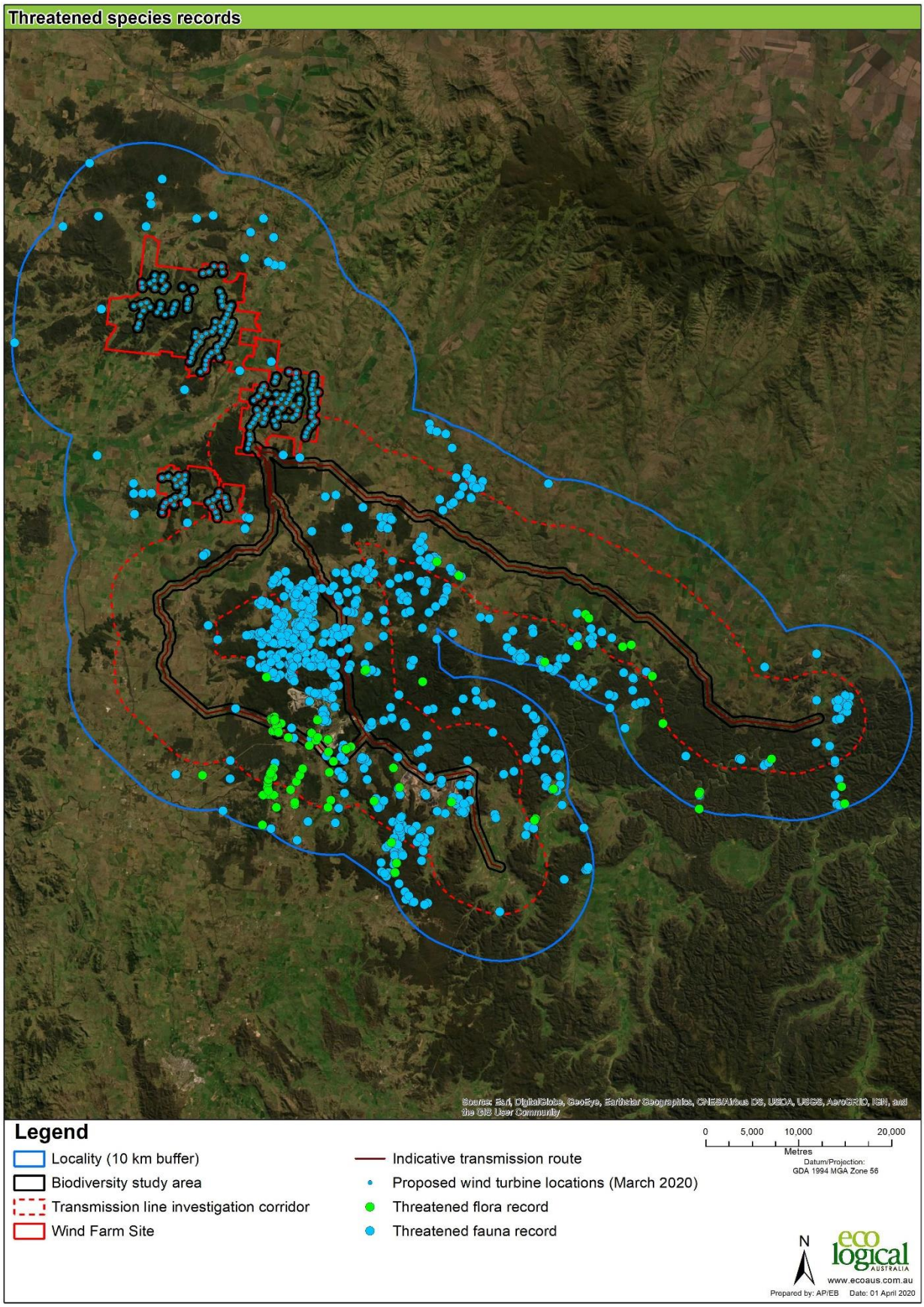

Figure 7 Threatened species

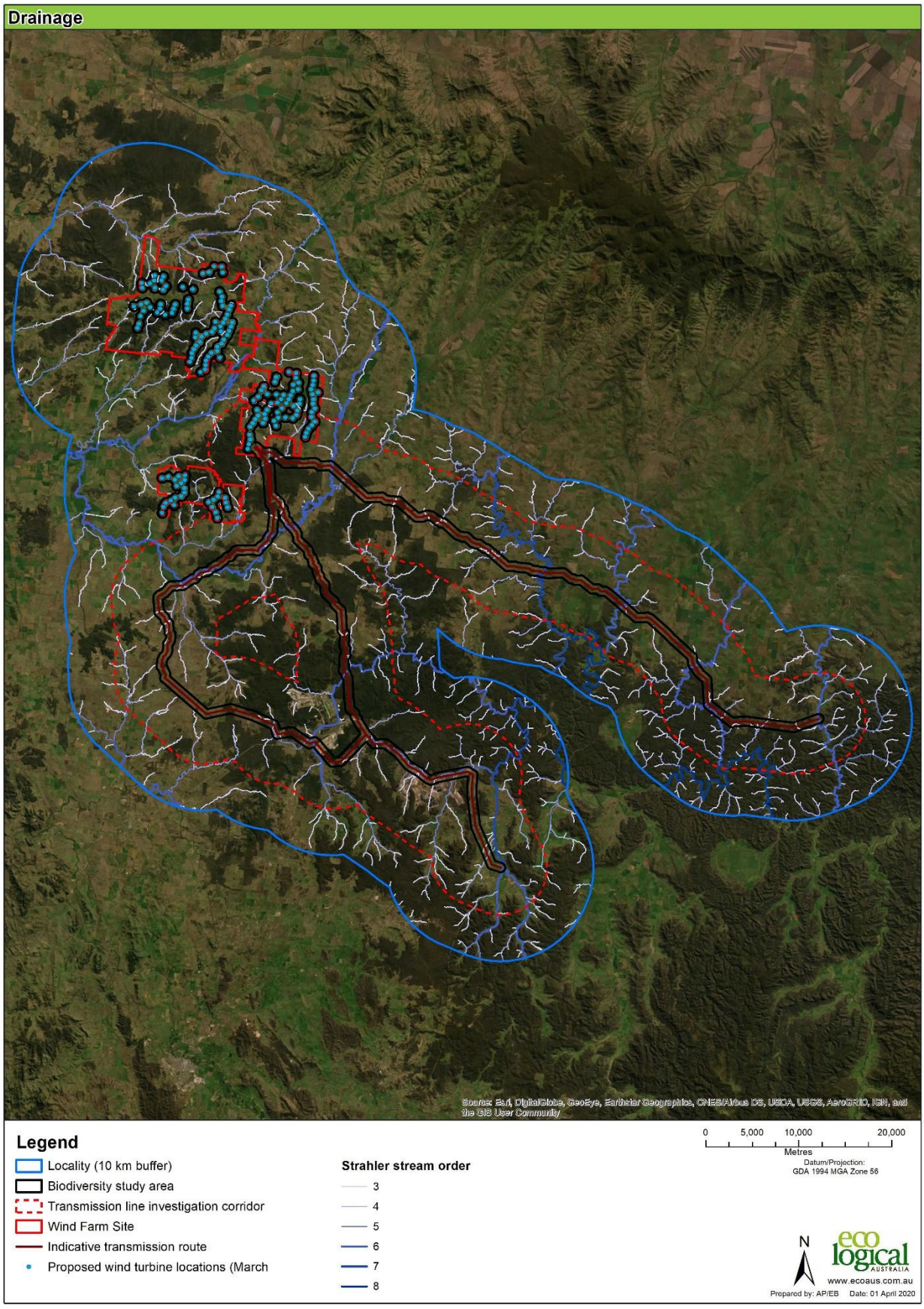

Figure 8 Drainage

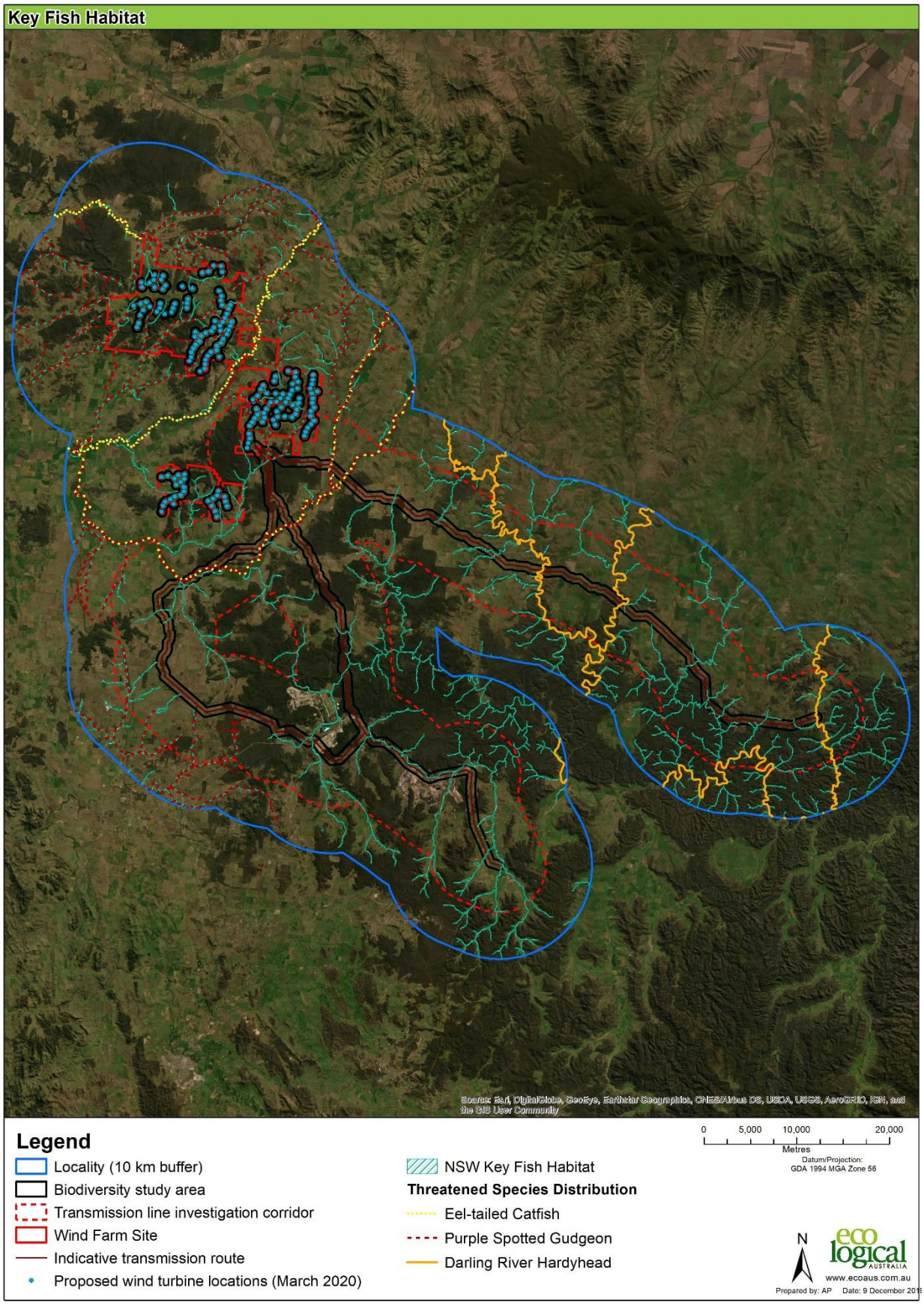

Figure 9 Key Fish Habitat

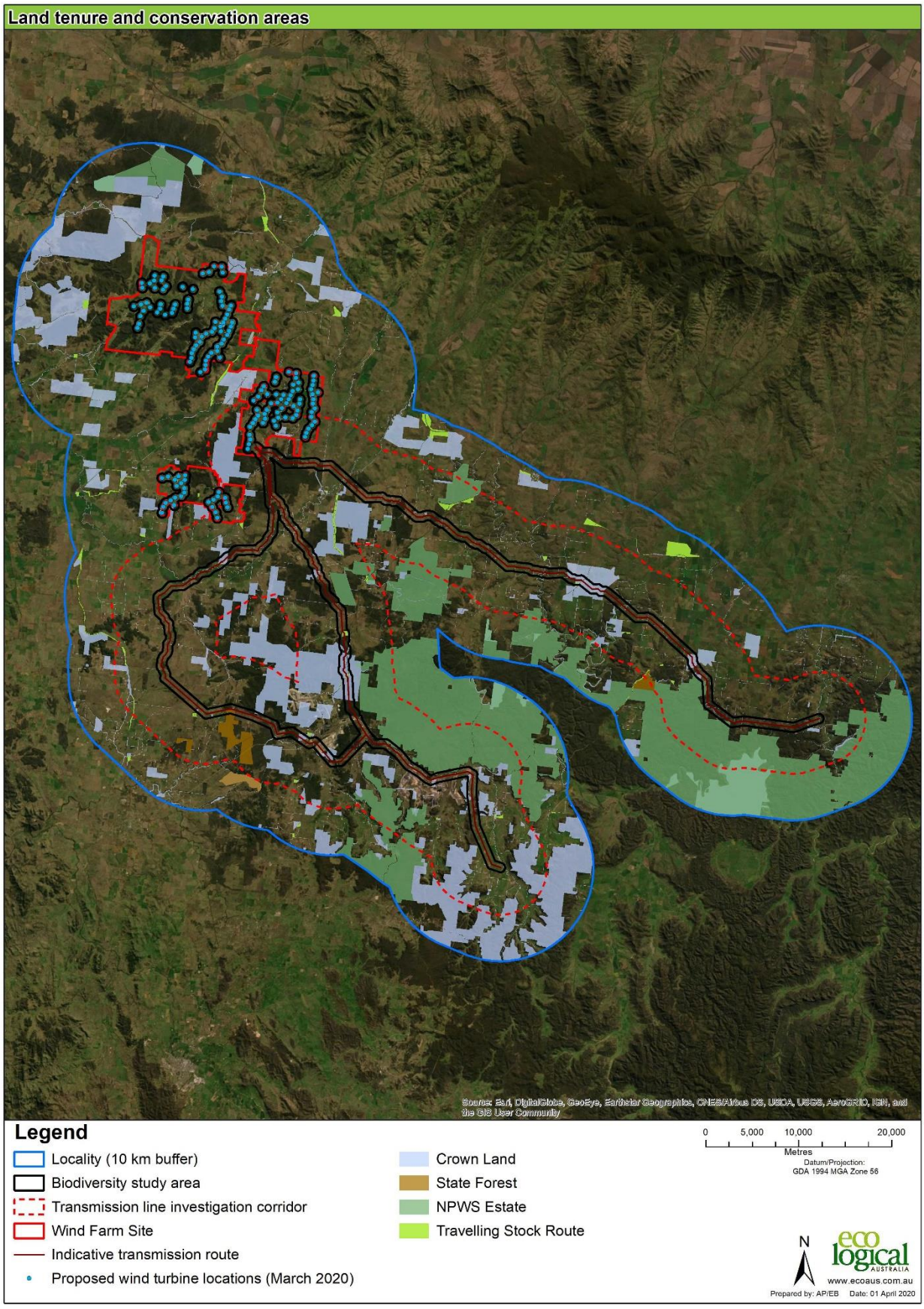

Figure 10 Land tenure and conservation Areas

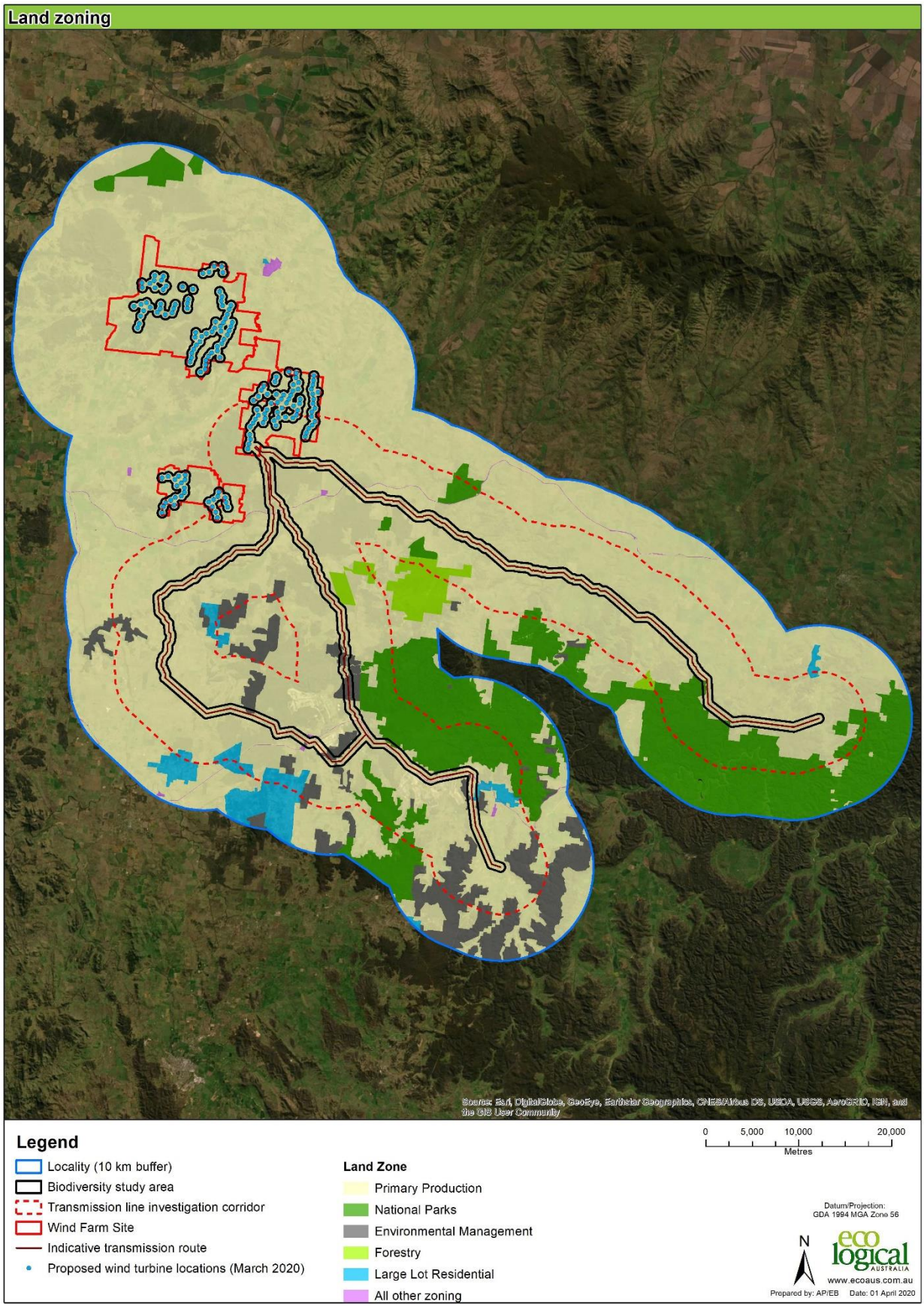

Figure 11 Land zoning

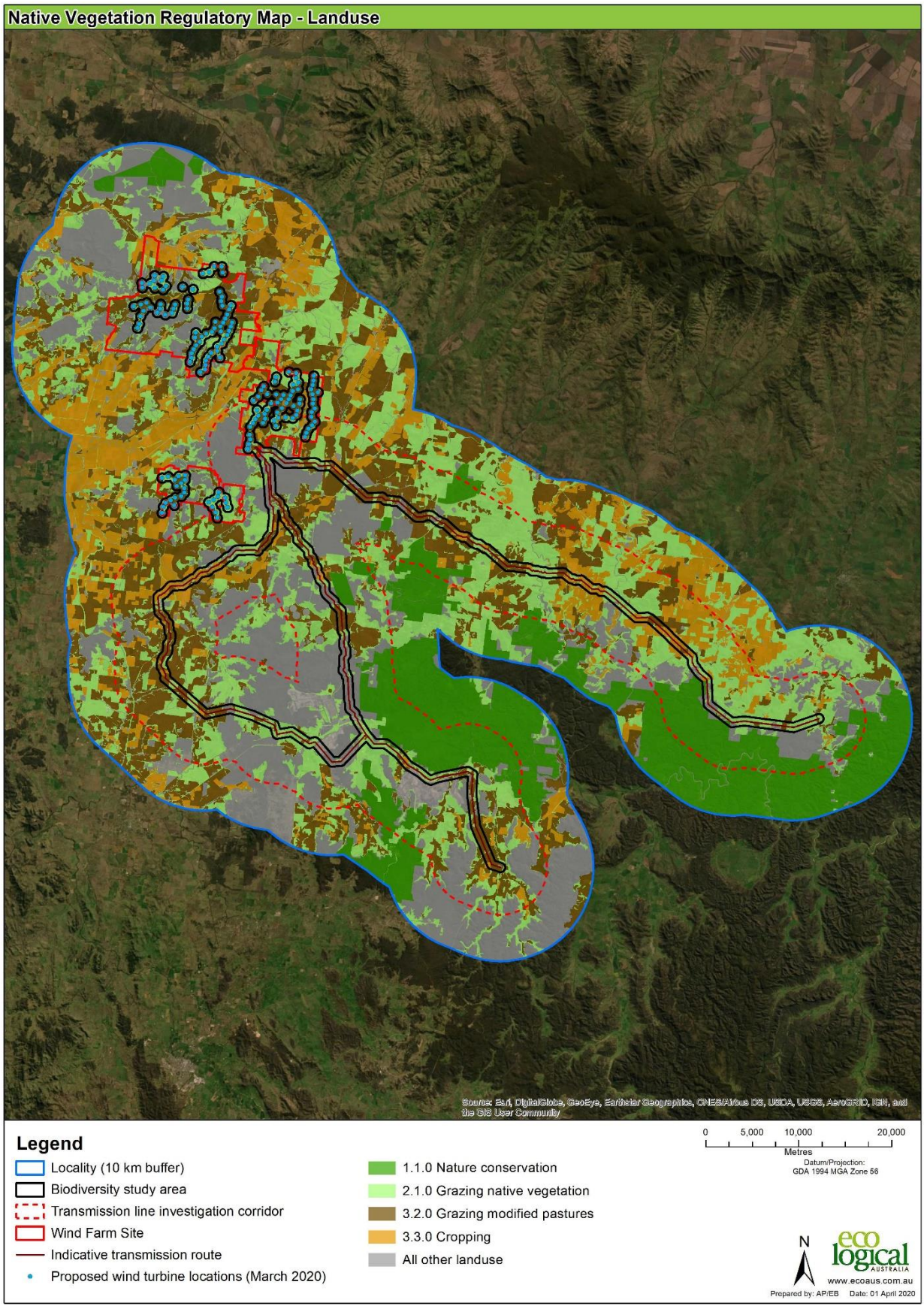

Figure 12 Landuse

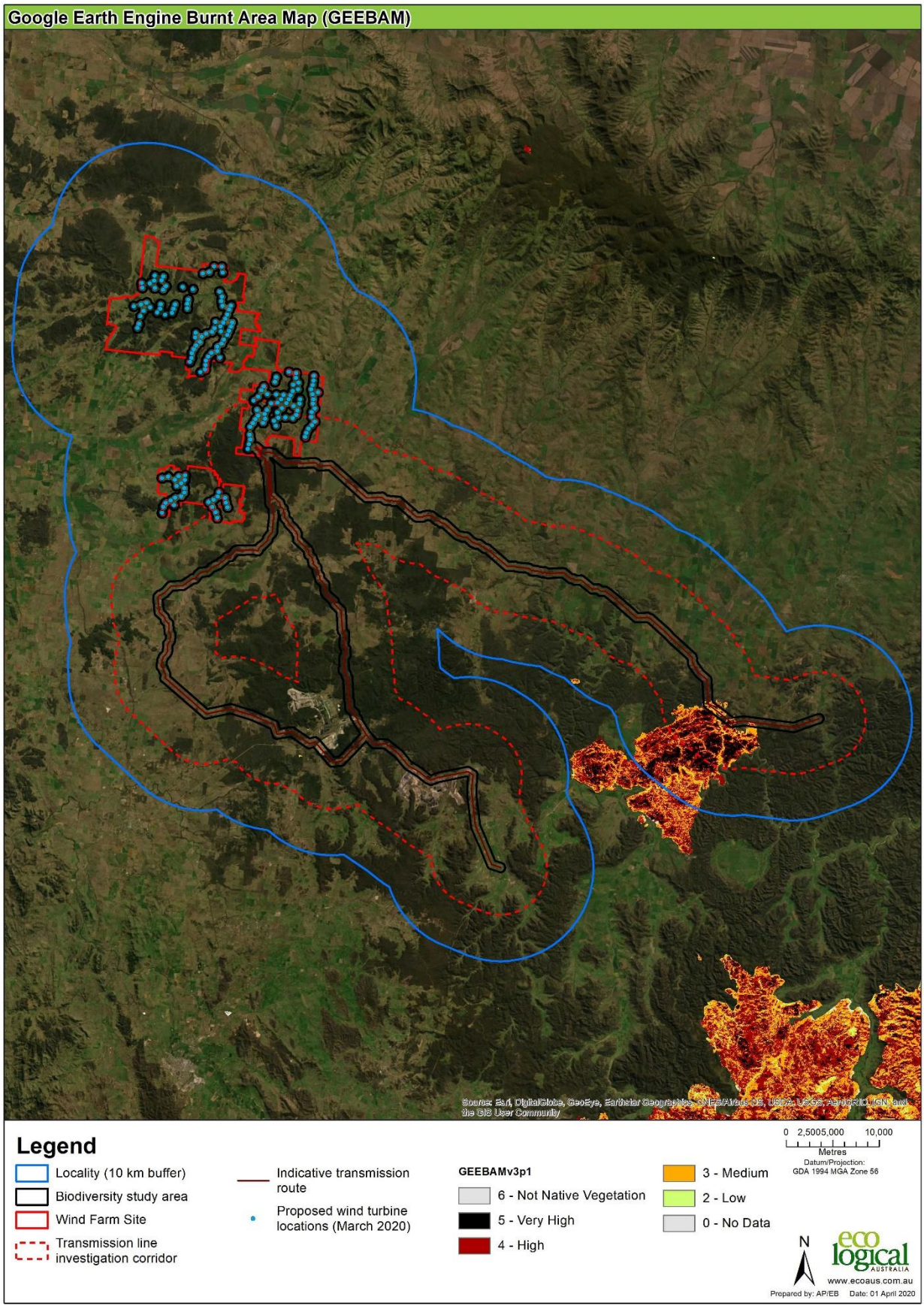

Figure 13 Burnt Areas in 2019/2020 summer period

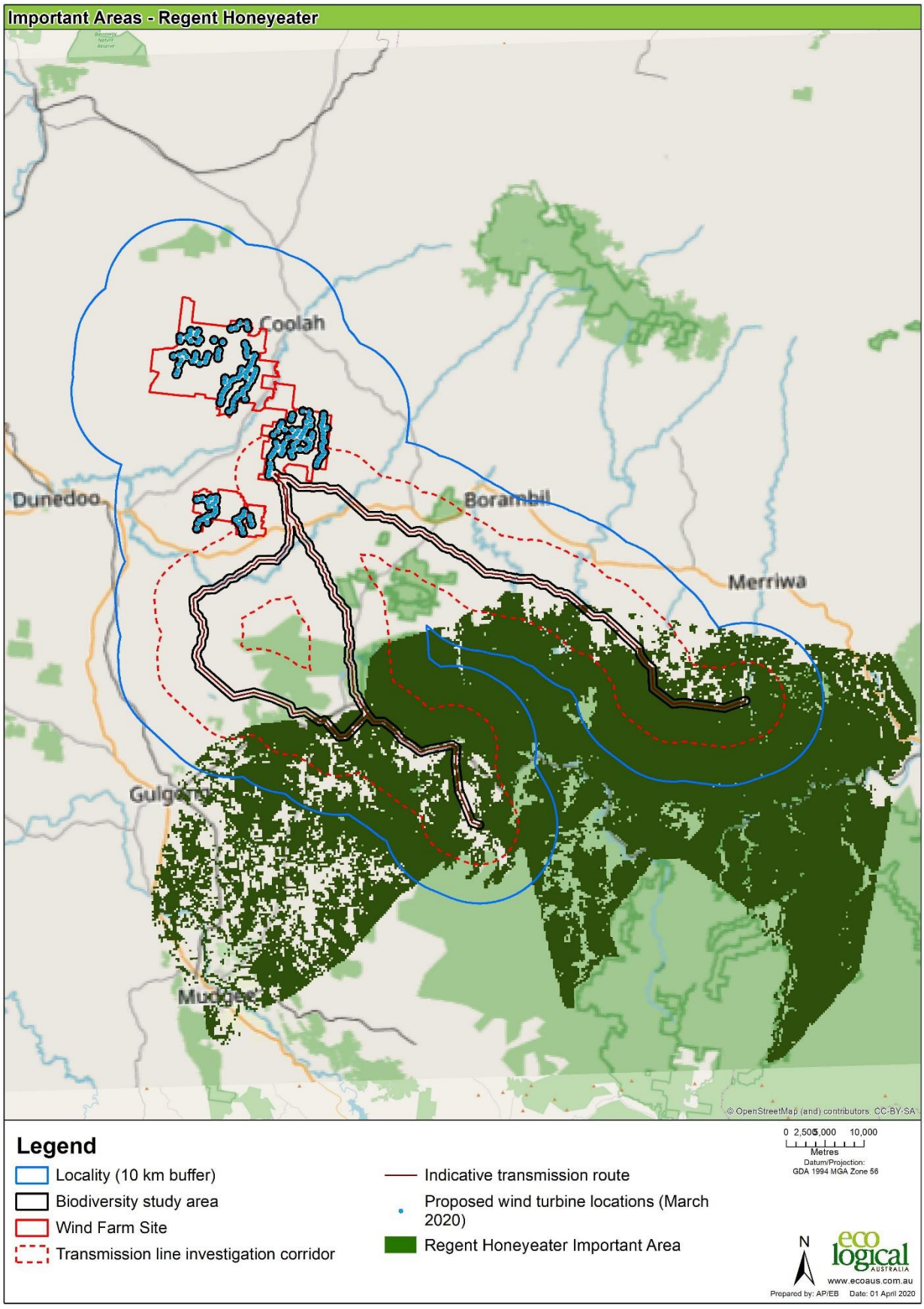

Figure 14 Regent Honeyeater Important Areas

3.2 Site reconnaissance results

The site reconnaissance accessed all three wind farm areas (Black Stump, Mount Hope, and Leadville) with data captured at 58 locations as shown on Figure 15. All vegetation within the wind farm study area was severely degraded by the current drought conditions which reduce both diversity and cover of native plants. Principally, the majority of turbine locations and infrastructure in the wind farm is located on grazing land. The condition of this grazing land is variable across the landscape, but in most part there is little or no biodiversity value. It was noted during the site reconnaissance that micro siting of turbines and other infrastructure could achievably retain most woodland and forest vegetation within the study area. The better examples of native vegetation centre around the slopes adjacent to the study areas at Black Stump and Mount Hope clusters.

Vegetation within the Leadville area is the most poorly degraded within the study area, due to ongoing agricultural practices and lack of rainfall in recent years. This is further exacerbated by a significant uncontrolled fire in 2017, which burnt a considerable portion of remnant vegetation between the Black Stump and Leadville areas. Due to below average rainfall since this fire, and the intensity of the fire, vegetation has not recovered and there is a pronounced absence of ground cover in the areas subject to the burn. These areas may take up to 50 years to recover from this fire event.

All remaining areas of the study area were subject to ongoing agricultural practices including sheep and cattle grazing, and ground cover enhancement through superphosphate and seeding of exotic pasture species.

The site reconnaissance identified six broad native vegetation types across the study areas. The table below identified the dominant species, listing status under the BC Act and/or EPBC Act, as well a broad description of the extent of each community observed during the site inspection. Representative photographs of each vegetation type are shown in the photographs below.

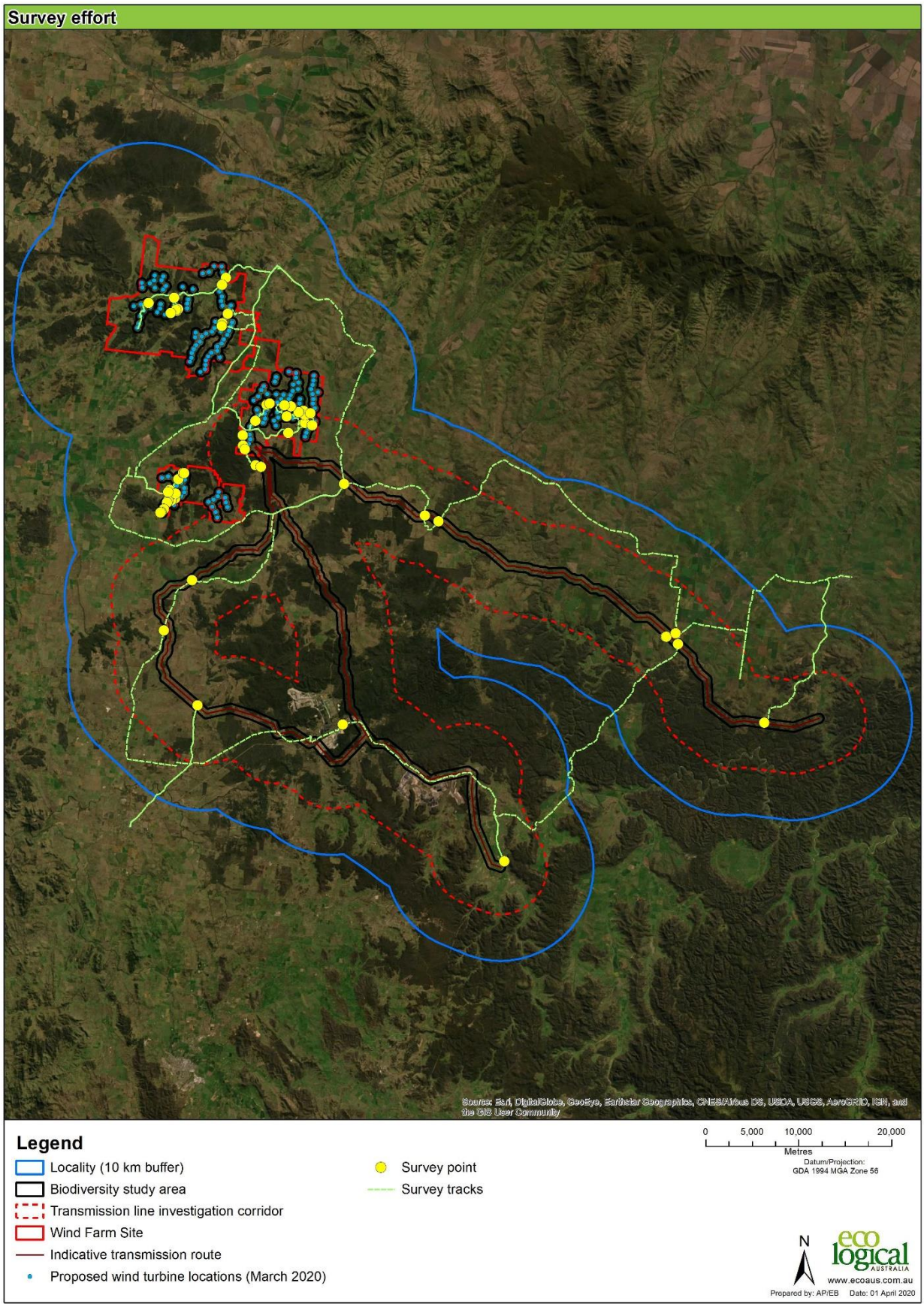

Figure 15 Survey effort

Table 3 Vegetation types identified

Vegetation community	Dominant species	BC Act	EPBC Act	Wind Farm	Transmission Options
White Box Grey Box Woodland on basalt soils	*Eucalyptus albens x moluccana* *Eucalyptus melliodora* *Eucalyptus blakelyi*	Endangered Ecological Community*	Critically Endangered Ecological Community	Present throughout	Present throughout
Tumbledown Red Gum – Rough-barked Apple Forest on sandstone outcrops	*Eucalyptus dealbata* *Angophora floribunda* *Eucalyptus punctata*	Not listed	Not listed	Occurs on slopes adjacent to turbine locations. Unlikely to be affected.	Scattered patches throughout landscape.
Rusty Fig – Rough-barked Apple forest on sheltered slopes and in gullies	*Ficus rubiginosa* *Angophora floribunda*	Not listed	Not listed	Occurs on slopes adjacent to turbine locations. Unlikely to be affected.	Not identified.
Ironbark-Stringybark forest on sandstone	*Eucalyptus crebra* *Eucalyptus punctata* *Eucalyptus sparsifolia*	Not listed	Not listed	Occurs on slopes adjacent to turbine locations. Unlikely to be affected.	Dominant feature surrounding mining areas of Transmission Option A and Option B.
Inland Grey Box woodland on alluvial soils	*Eucalyptus microcarpa* *Eucalyptus melliodora*	Endangered Ecological Community	Endangered Ecological Community	None identified	Scattered patches throughout landscape
Fuzzy Box Woodland on basalt	*Eucalyptus conica* *Eucalyptus melliodora*	Endangered Ecological Community	Not listed	None identified	Scattered patches throughout landscape
Cleared land	Exotic pastures	Not listed	Not listed	Present throughout. Occurs between areas of native vegetation.	Present throughout. Occurs between areas of native vegetation.

*This Endangered Ecological Community is proposed to be up-listed as a Critically Endangered Ecological Community

Photograph 1 White Box Grey Box Woodland on basalt soils

Photograph 2 Tumbledown Red Gum – Rough-barked Apple Forest on sandstone outcrops

Photograph 3 Rusty Fig – Rough-barked Apple forest on sheltered slopes and in gullies

Photograph 4 Ironbark-Stringybark forest on sandstone recovering post fire

Photograph 5 Inland Grey Box woodland on alluvial soils

Photograph 6 Fuzzy Box Woodland on alluvial soils

3.3 Consideration of burnt areas

Following a protracted period of drought, bushfires burnt a significant portion of NSW over the 2019 – 2020 summer. The area of land burnt was atypical for a regular summer, and included more than a third of natural areas in NSW. Fires were also significantly more intense than regular bushfires, with extensive damage to vegetation including complete removal of all vegetative strata. As such these fires have put additional stress on a range of threatened species that were already under ecological duress from a range of threatened processes (such as land clearing).

A review by the Wildlife and Threatened Species Bushfire Recovery Expert Panel (the Expert Panel) identified 119 species listed under the EPBC Act that have lost a significant area of habitat as described in the *Rapid analysis of impacts of the 2019-20 fires on animal species, and prioritisation of species for management response* (Commonwealth of Australia, 2020). The Expert Panel identified the following priority actions for these 119 species, to avoid exacerbating their decline:

- Protect unburnt areas that provide refuge habitats
- Undertake feral predator and herbivore control to reduce the pressure on native species where appropriate.
- Conduct emergency salvage of plant and animal species for ex-situ conservation or wild-to-wild translocation.
- Continue rapid on-ground assessment for species and communities of concern.
- Provide supplementary shelter, food, and water for animals where appropriate.

Of the 119 species identified, five are regionally known to occur within or nearby to the project locality, including Regent Honeyeater, Koala, Greater Glider, Brush-tailed Rock-wallaby, and Tiger Quoll.

Careful consideration of biodiversity during the EIS phase will be required, and areas of habitat should be avoided to prevent further impacts to these species.

3.4 Preliminary impact assessment

The preliminary calculation has considered the area of forest/woodland mapped under each transmission option. This also considers the area of grassland and non-native vegetation impacted under each option, to provide a high level consideration of the total biodiversity impacts of the proposal.

Based on a high level observation of the frequency of each vegetation type encountered across the study area, an assumption that 50% of the native vegetation (including woodland/forest and grassland) is a listed TEC under either the BC Act and/or EPBC Act. This may be higher or lower depending on the PCTs present and the corresponding Final Determinations under the BC Act or Listing Advice under the EPBC Act. The results of the preliminary impact assessment is captured in the table below.

Table 4 Preliminary impact calculations

Name	Wind Farm	Transmission Option A	Transmission Option B	Transmission Option C	Study Area	Locality
Number of mapped PCTs	22	29	28	18	60	131
Area native (woodland/forest)	1,398	348	302	219	17,052	226,609
Area native (grassland)	336	202	193	256	5,972	56,896
Area native (total)	1,734	550	495	475	23,024	283,505
% woodland/forest	81%	63%	61%	46%	74%	80%

Name	Wind Farm	Transmission Option A	Transmission Option B	Transmission Option C	Study Area	Locality
Area Non-native	370	480	221	267	8,068	102,906
% Area Vegetated	82%	53%	69%	64%	74%	73%
Impact to TEC (based on 50%)	867	275	247	237	n/a	n/a
Total Area	**2,105**	**1,030**	**716**	**742**	**31,092**	**386,412**

Based on this assumption (using data from regional mapping) the total impact to TEC's could be greater than 237 ha. This impact assessment is based on regional mapping and is not refined from on-ground studies. Important considerations when interpreting this information includes:

- The study area is less vegetated than the regional mapping would suggest. This has resulted in an inflated area of impact in the table above, in particular the wind farm site which is largely cleared land.
- The impact assessment assumes a 60m buffer of impacts around all infrastructure, which is likely an overestimate of the actual impacts of the project. Impacts related to the turbine locations and connecting infrastructure are more likely to be localised and can be planned around areas of biodiversity values.
- Of the three transmission options, Option C will clear the least amount of native vegetation, and contains less forest/woodland than the other options. The surrounding lands around Option C also provide the greatest flexibility in avoiding impacts to biodiversity, with large areas of cleared land present.
- This table does not incorporate areas of land that may be excluded from assessment (being cleared land, Category 1 land under the LLS Act, etc).
- This table does not include species credit polygons, which are additional considerations at the time of assessment.

3.5 Cumulative impacts

Preliminary consideration has been given to the potential cumulative impacts of the project. A review has been conducted of all approved Major Projects (www.planningportal.nsw.gov.au/major-projects) in the relevant LGAs within the past three (3) years, considering the total impact of other approved projects locally. Projects currently under assessment have not been considered at this stage.

The following approved projects were identified in the Mid-western Regional, Warrumbungle, and Upper Hunter Local Government Areas:

- Liverpool Range Wind Farm (SSD 6696)
- Crudine Ridge Wind Farm Mod1 (SSD-6697 Mod 1)
- Wollar Solar Farm (SSD-9254)
- Beryl Solar Farm (SSD-8183)
- Moolarben Coal Expansion (MP08_0135 Mod 3 & MP05_0117 Mod-14)
- Ulan Coal Mine (MP08_0184 Mod-3 &4)

These projects included approved impacts of up to 1,463 ha of native vegetation, of which 1,063 ha (73%) was considered to be TEC. Further analysis of cumulative impacts will be considered at the EIS phase.

4. Discussion

The database assessment identified that within the Locality there are previous records of 55 fauna species and 36 flora species listed under the BC Act. Of these species, 32 BC Act and/or EPBC Act listed fauna species are considered likely to occur within the study area. All of these species except for three (Squirrel Glider, Brush-tailed Rock-wallaby, and Koala) are aerial avian or Microchiropteran bat species that may be potentially impacted by the construction and operation of the Wind Farm. Two of these species, Regent Honeyeater and Swift parrot, as well as Koala are likely to be high level constraints to the development of the project and will require careful consideration during the project planning. These species are listed under both NSW and Commonwealth legislation, are iconic, and are key considerations to regulators regionally. All three of these species are locally widespread, and nomadic in the landscape. The habitat resources for each species are generally limited, patchy, and degraded. Therefore, any impacts to these patches is generally a key consideration in this region. Specifically, Regent Honeyeater and Swift Parrot utilise Eucalypt resources throughout the region during annual migration/dispersal events. Koala is more sedentary than these two woodland birds (relatively), however, does move through the landscape and so habitat islands of woodlands are important to this species.

In addition, several Microchiropteran bats, including BC Act and EPBC Act listed Large-eared Pied Bat, are known to occur in proximity to the development. Large-eared Pied Bat is locally known from the southern portion of Transmission options A and B. This species breeds in maternity caves, of which only three are known in NSW. One of these locations is nearby to the Ulan Coal Mine. Habitat present at the maternity cave is not dissimilar to those sandstone cliffs present nearby to the proposed turbine locations. As such consideration of the projects proximity to any breeding sites would need to be carefully considered. This should be investigated as part of formal studies under the BAM, and if any breeding habitat is identified, then the project footprint should respond to this by designing around areas of high sensitivity.

Within the study area the most likely flora species to be impacted is *Acacia ausfeldii* which is locally common in the Ulan region (Transmission Options A and B). Further details regarding the distribution, habitats, and ecology of each threatened species are provided in Appendix A. Formal survey of the final transmission option and wind farm area would need to be completed, in accordance with NSW guidelines, prior to EIS submission.

All of these threatened species would require formal assessment in accordance with the Biodiversity Assessment Methodology (BAM) under the BC Act at the EIS phase. Under the BAM, there are two distinct categories of threatened species:

- Ecosystem species, which are readily predicted by habitat surrogates; and
- Species credits, which are not readily predicted by habitat or vegetation.

Ecosystem credits do not require any formal assessment under the BAM. These species are predicted to occur based on the vegetation types present. Any ecosystem species however, that are listed under the EPBC Act, would require their own assessment in a separate component of the assessment report.

Species credit species require targeted survey and if identified (or likely based on other data), then habitat must be mapped. Species credits carry their own offset obligation and are additional to assessment of native vegetation. Some species credits are identified as potentially 'Serious and

Irreversible Impacts (SAII)' which carry additional consideration by the regulator. This includes impacts (amongst others) to breeding habitats for Microchiropteran bats, or 'mapped important areas' for species like Regent Honeyeater and Swift Parrot. The NSW government publishes a list of potential SAII which is publicly available. Should the project potentially impact any candidate SAII, it would be advisable to design around these areas.

Of the Threatened Ecological Communities identified in the database assessment, only three are likely to occur within the study area, all of which were identified during the site inspection:

- White Box Yellow Box Blakely's Red Gum Woodland (BC Act EEC) was observed extensively throughout the locality. Components of this TEC are consistent with the EPBC Act CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box Gum Woodland).
- Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions which is listed as an EEC under the BC Act. This TEC is not listed under the EPBC Act, although components of it may fit the description of Box Gum Woodland.
- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions which is listed as an EEC under the BC Act. This TEC is listed as Vulnerable under the EPBC Act.

All native vegetation, regardless of TEC status, would require assessment at the EIS phase.

Based on the regional mapping identified in the desktop assessment, a preliminary impact calculation has been undertaken to inform any considerations of the project design.

Based on preliminary assessment, Transmission Option C has the lowest % cover of forest/woodland and primarily impacts grasslands and exotic pastures. This is an important consideration during project planning, as areas of woodland/forest vegetation also provide habitat for threatened fauna species which can be impacted by the wind farm development and operation. Refinement of both vegetation mapping and the development footprint (for both the wind farm and transmission options) would assist in allowing the proponent to demonstrate avoidance and minimisation of impacts. This would allow the project to avoid areas of high biodiversity value, reduce survey requirements, and consequently reduce any residual impact and offset liability.

Although not a part of this preliminary scope, the project siting is within close proximity to areas of forest and sandstone cliffs that will provide habitat for birds and michrochiropteran bats. Identifying the areas of greatest activity, through a landscape utilisation study, would also allow the project to design around areas of high activity and minimise ongoing impacts from bird and bat strike.

5. Conclusion and recommendations

Based on the current proposed study area, the following recommendations are made to avoid and minimise impacts to biodiversity:

- Refine the project footprint to maximise avoidance of biodiversity values.
- Prioritise existing cleared land and/or treeless native pasture for infrastructure.
- Define appropriate setbacks for wind turbines from significant areas of native vegetation to minimise potential bird and bat strike.
- Identify and maximise avoidance of potential bird and bat movement corridors across the landscape.
- Incorporate biodiversity (including likely offsets) into the project design considerations including route options analysis.

These are detailed below.

Refine the project footprint to maximise avoidance of biodiversity values

The currently proposed study area (which includes multiple options for transmission routes) contains potential habitat for numerous threatened species, including Regent Honeyeater, Koala, and Swift Parrot, which have high legislative and social constraint on impacts to their habitats. Broadly, whilst these species are unlikely to utilise the entire study area at once, there are very little differences in any of the habitat types present and these species could use most components of the study area. In particular, areas that have extensive grazing history are likely to be more appropriate locations for this development.

Conducting a micrositing exercise will assist in improving the feasibility of the project, by placing roads, turbines, and powerlines in areas that minimise the impacts to biodiversity. This could also include detailed specialist biodiversity studies (such as habitat mapping, PCT mapping, etc) to identify key areas of habitat for threatened species so that the project can 'design around' these sensitive areas.

Any reduction in the extent of the project footprint in areas of biodiversity constraint will improve the viability of the project.

Identify and maximise avoidance of potential bird and bat movement corridors across the landscape

Conducting a bird and bat utilisation study early within the project development process will allow the project to identify key risk areas to bird and bat strike from the ongoing operation of the wind farm. Similar to the micrositing exercise described above, this would allow the project to place turbines in areas of low (or no) activity by bird and bat species.

Prioritise existing cleared land and/or treeless native pasture for infrastructure

Incorporating biodiversity considerations into the project design by maintaining habitat corridors between and throughout the study area will reduce the severity of impacts for this project. This can include:

- Avoiding impacts to vegetated easements between turbine areas to maintain connectivity of habitats.

- Conducting bird and bat utilisation studies to understand high traffic areas within the study area at rotor swept area height.
- Incorporate biodiversity (including likely offsets) into the project design considerations including route options analysis.

In NSW, biodiversity now carries a fiscal cost to the impacts of development. This is guided by the BAM and is quantified through the requirement for retiring credits in accordance with the Biodiversity Offsets Scheme. Credits are quantified on the development site, and then must be offset by either:

- Retiring credits generated at a Biodiversity Stewardship Site (BSS).
- Purchasing and then retiring credits generated at a third party's BSS.
- Making a contribution to the Biodiversity Conservation Trust (BCT), at the value stipulated by the Biodiversity Offsets Payment Calculator (BOPC).
- Funding a conservation activity, that relates to the impacted entities within the development site, to the monetary value prescribed by the BOPC.

It should be noted that making a contribution to the BCT is unlikely to be a viable offsetting strategy under the EPBC Act, and the Commonwealth Minister for the Environment would need to endorse the BCT for this project.

The cost of offsets can be substantial for a project of this size. Generally, the BAM will require offset ratio's for ecosystem credits in excess of 10:1 (offset: impact) and this can result in a significant down-stream cost of operation for the project. Species credits would be additional to this. Designing around areas that generate credits can reduce the total cost of a project, as well as improve approval success of the project.

Engage with NSW and Commonwealth regulators prior to proceeding with further studies

Should the regulators see merit in pursuing development of the current study area, ELA recommend that the proponent establish an assessment framework for the project under both NSW and Commonwealth legislation. Many of the statutory guidelines for survey effort are designed for sites and stratification units of 50 or 100 ha, which would require a significant amount of work to demonstrate compliance if hundreds of survey sites are required.

An agreed methodology and stratification units should be discussed with the regulator to give clear guidance on any further studies. This should include gaining endorsement for Bilateral Agreement to apply, including the use of the BAM to quantify impacts to biodiversity. Specifically, the following items should be discussed:

- The nature, size, and spatial configuration of this project make it difficult to demonstrate adequacy of assessment under the current NSW and Commonwealth guidelines which are centred around simple, accessible, discrete portions of land.
- The BAM would require a three-fold replication of assessments, as the project spans three bioregions. This will compound the complexity of the assessment and make it difficult to demonstrate compliance against the BAM, as well as complicate any public scrutiny of the assessment. We recommend that a simplified assessment method is developed and agreed prior to EIS to ensure this complexity doesn't confound the impact assessment process.

- Bird and bat strike, including the assessment of aerospace utilisation is poorly defined in the BAM and should be clarified further to ensure a robust assessment can be undertaken.
- The current drought is likely supressing the detectability of many threatened flora species. This should be discussed with the NSW and Commonwealth regulators to determine an appropriate level of assessment for the EIS.

Appendix A Likelihood of occurrence assessment

Table 5 Preliminary likelihood of occurrence - Flora

Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Acacia ausfeldii	Ausfeld's Wattle	V		East of Dubbo in the Mudgee-Ulan-Gulgong area of the NSW South Western Slopes bioregion, as well as the Brigalow Belt South, South Eastern Highlands and the Sydney Basin bioregions.	Eucalypt woodland in sandy soil; often in remnant roadside patches of woodland.	Associated species include *Eucalyptus albens, E. blakelyi* and *Callitris* spp., with an understorey dominated by *Cassinia* spp. and grasses. Likely to have a dormant soil seedbank from which germination is stimulated by fire. Established plants are likely to be killed by fire. Flowers from August to October.	Likely
Androcalva rosea (syn. *Commersonia rosea*)		E1	E	Only known from four localities in the Sandy Hollow district of the upper Hunter Valley.	Scrub or heath vegetation with occasional emergents of *Eucalyptus crebra* (Narrow-leaved Ironbark), *Callitris endlicheri* (Black Cypress Pine) or *E. caleyi subsp. caleyi,* on skeletal sandy soils.	Observed flowering in August, November, January and February. Given that fire had occurred within 6 - 12 months prior to the location of this species at three of the four sites, it may be a fire ephemeral.	Likely

Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
*Androcalva procumbens (*syn. *Commersonia procumbens)*		V	V	Endemic to NSW, found in the Dubbo-Mendooran-Gilgandra region, the Pilliga and Nymagee areas, the Upper Hunter region, and in Goonoo SCA.	Sandy sites, disturbed habitats such as roadsides, quarry edges and gravel stockpiles. Often found in Eucalyptus dealbata- E. sideroxylon woodland, Melaleuca uncinata scrub, and mallee with Calytrix tetragona understorey.	Fruiting period is summer to autumn. Flowers from August to December. Appears to produce seed which persists for some time in the seed bank. Large numbers of seedlings have been observed germinating after fire at sites where the species was not apparent above ground before the fires. Clusters of individuals may be clonal.	Potential

Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Cryptostylis hunteriana	Leafless Tongue Orchid	V	V	In NSW, recorded mainly on coastal and near coastal ranges north from Victoria to near Forster, with two isolated occurrences inland north-west of Grafton.	Coastal heathlands, margins of coastal swamps and sedgelands, coastal forest, dry woodland, and lowland forest.	The larger populations typically occur in woodland dominated by *Eucalyptus sclerophylla* (Scribbly Gum), *E. sieberi* (Silvertop Ash), *Corymbia gummifera* (Red Bloodwood) and *Allocasuarina littoralis* (Black Sheoak); appears to prefer open areas in the understorey of this community. Being leafless it is expected to have limited photosynthetic capability and probably depends upon a fungal associate to meet its nutritional requirements from either living or dead organic material. In addition to reproducing from seed, it is also capable of vegetative reproduction and thus forms colonies which can become more or less permanent at a site.	No

Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Cymbidium canaliculatum	Cymbidium canaliculatum population in the Hunter Catchment	E2		The Hunter population occurs as far south as Weston and Pokolbin in the Lower Hunter, but is centred in the Upper Hunter, predominantly north of Singleton. Isolated occurrences are also known from the Merriwa plateau, Bylong valley and the Gungal area near Goulburn River.	Grows on trees in sclerophyll forest or woodland, where its host trees typically occur on Permian Sediments of the Hunter Valley floor. Within the Hunter Catchment, most commonly found in *Eucalyptus albens* (White Box) dominated woodlands.	Recruitment, germination and persistence is reliant on rotting wood and mycorrhizal fungal associations. Flowers from September to November.	Likely
Cynanchum elegans	White-flowered Wax Plant	E1	E	Restricted to eastern NSW, from Brunswick Heads on the north coast to Gerroa in the Illawarra region, and as far west as Merriwa in the upper Hunter River valley.	Dry rainforest; littoral rainforest; *Leptospermum laevigatum-Banksia integrifolia subsp. integrifolia* (Coastal Tea-tree– Coastal Banksia) coastal scrub; *Eucalyptus tereticornis* (Forest Red Gum) or *Corymbia maculata* (Spotted Gum) open forest and woodland; and *Melaleuca armillaris* (Bracelet Honeymyrtle) scrub.	Flowering occurs between August and May, with a peak in November. The fruit can take up to six months to mature. Seed production is variable and unreliable. Seeds are wind dispersed. It is considered to be unlikely that a soil seed bank for this species exists. Plants are capable of suckering from rootstock in response to occasional slashing or grazing. The fire response of the species is unknown.	No

Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Dichanthium setosum	Bluegrass	V	V	In NSW, found on the New England Tablelands, North West Slopes and Plains and the Central Western Slopes.	Cleared woodland, grassy roadside remnants and highly disturbed pasture, on heavy basaltic black soils and red-brown loams with clay subsoil.	Associated species include *Eucalyptus albens, Eucalyptus melanophloia, Eucalyptus melliodora, Eucalyptus viminalis, Myoporum debile, Aristida ramosa, Themeda triandra, Poa sieberiana, Bothriochloa ambigua, Medicago minima, Leptorhynchos squamatus, Lomandra aff. longifolia, Ajuga australis, Calotis hispidula and Austrodanthonia, Dichopogon, Brachyscome, Vittadinia, Wahlenbergia* and *Psoralea* species. Flowering time is mostly in summer.	Potential
Diuris tricolor	Pine Donkey Orchid	V		Sporadically distributed on the western slopes of NSW, from south of Narrandera all the way to the north of NSW.	Grassy sclerophyll forest, often occurring with *Callitris* spp. (Cypress Pine). Sandy soils and red earth soil.	Associated species include *Callitris glaucophylla, Eucalyptus populnea, Eucalyptus intertexta,* Ironbark and *Acacia* species. The understorey is often grassy with herbaceous plants such as *Bulbine* species. Usually flowers between early September to late October. The species is a tuberous, deciduous terrestrial orchid.	Potential

Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Eucalyptus aggregata	Black Gum	V	V	In NSW, found in the Central and Southern Tablelands, in the South Eastern Highlands Bioregion and on the western fringe of the Sydney Basin Bioregion.	Alluvial soils, on cold, poorly-drained flats and hollows adjacent to creeks and small rivers. Usually occurs in open woodland with a grassy groundlayer.	Often grows with other cold-adapted eucalypts, such as Snow Gum or White Sallee (*Eucalyptus pauciflora),* Manna or Ribbon Gum *(E. viminalis),* Candlebark *(E. rubida),* Black Sallee *(E. stellulata)* and Swamp Gum *(E. ovata).*	No
Eucalyptus camaldulensis	Eucalyptus camaldulensis population in the Hunter catchment	E2		Disjunct population occurring from Bylong, south of Merriwa, to the east at Hinton, on the bank of the Hunter River.	Riparian and floodplain woodland, often with Eucalyptus tereticornis, E. melliodora, Casuarina cunninghamiana subsp. cunninghamiana and Angophora floribunda.		Potential
Eucalyptus cannonii	Capertee Stringybark	V		Predominantly restricted to the central tablelands and slopes of NSW from east of Bathurst, to Wallerwang near Lithgow, north along the western edge of Wollemi National Park and north-west to Mudgee. Also north of Goulburn River National Park between Dunedoo and Merriwa.	Sclerophyll woodland on shallow soil on rises.	Flowers from January to April. The seed is spread by wind or gravity, generally in close proximity (within 30 m) to the parent plant; no dormancy mechanism. Hybrids with other stringybarks *(Eucalyptus macrorhyncha, Eucalyptus sparsifolia, Eucalyptus tenella)* have been observed. Mature trees survive hot fires, resprouting from epicormic buds; however, frequent fires may kill seedlings and weaken mature trees.	Potential

Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Euphrasia arguta		E4A	CE	In NSW, recently recorded only from Nundle area of the north western slopes and tablelands, from near the Hastings River and from the Barrington Tops.	Eucalypt forest with a mixed grass and shrub understorey, disturbed areas, along roadsides.	Annual habit and has been observed to die off over the winter months, with active growth and flowering occurring between January and April. As with other species of *Euphrasia,* this species is semi-parasitic and attaches to the roots of other associated plants.	No
Homoranthus darwinioides		V	V	Central tablelands and western slopes of NSW, occurring from Putty to the Dubbo district. Found west of Muswellbrook between Merriwa and Bylong, and north of Muswellbrook to Goonoo SF.	Woodland with shrubby understorey, usually in gravely sandy soils.	Associated species include *Callitris endlicheri, Eucalyptus crebra, E. fibrosa, E. trachyphloia, E. beyeri subsp. illaquens, E. dwyeri, E. rossii, Leptospermum divaricatum, Melaleuca uncinata, Calytrix tetragona, Allocasuarina* spp. and *Micromyrtus* spp. Flowers in spring or from March to December.	Potential
Indigofera efoliata	Leafless Indigo	E1	E	Possibly now extinct; previously located along the Dubbo to Minore railway line and road, on Wallaringa and Geurie properties and in Goonoo State Forest.	Recorded in *Eucalyptus crebra* and *Callitris glaucophylla* dry sclerophyll forest, and in *E. microcarpa* and *C. glaucophylla* tall woodland in stony red-brown sandy loam.	It almost certainly dies back to a substantial underground rootstock in unfavourable seasons and it is possible that aerial parts do not appear at all unless there is significant rainfall.	Potential

Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Kennedia retrorsa		V	V	Believed to be restricted to the Mount Dangar area and the adjacent Goulburn River catchment.	Ranges from sheltered forest in riparian areas to steep, exposed rocky ridgelines.	Peak flowering occurs September to December. Seeds are produced October to December and are released at maturity, between December and January. Likely to be fire sensitive, but some individuals may survive in certain protected situations. Current estimates are that reproductive maturity is not reached until approximately three years following germination, however, peak maturity may not be reached until 4 - 6 years.	Potential
Lasiopetalum longistamineum		V	V	Mt Dangar - Gungal area within Merriwa and Muswellbrook Local Government Areas. Also recorded within the Goulburn River National Park.	Rich alluvial deposits.	Flowers in spring. Little information is known about the ecology or biology of this species. Response to fire is unknown.	Potential
Leucochrysum albicans var. tricolor	Hoary Sunray	P	E	In NSW it occurs on the Southern Tablelands and adjacent areas in an area roughly bounded by Albury, Bega and Goulburn.	Grassland, woodland and forest, generally on relatively heavy soils.	Highly dependent on the presence of bare ground for germination. In some areas, disturbance is required for successful establishment.	Potential

Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Leucopogon confertus	Torrington Beard-heath	E1	E	Known only from an early record near Torrington on the New England Tablelands.	Open forest and woodland on rocky granite areas.		No
Ozothamnus tesselatus		V	V	Restricted to a few locations in an east-west zone south of Bunnan and between west Bylong and east Ravensworth.	Eucalypt woodland.		Potential
Pomaderris brunnea	Brown Pomaderris	E1	V	In NSW, found around the Colo, Nepean and Hawkesbury Rivers, including the Bargo area and near Camden. It also occurs near Walcha on the New England tablelands.	Moist woodland or forest on clay and alluvial soils of flood plains and creek lines.	Flowers appear in September and October. The species has been found in association with *Eucalyptus amplifolia, Angophora floribunda, Acacia parramattensis, Bursaria spinosa* and *Kunzea ambigua*.	No
Pomaderris cotoneaster	Cotoneaster Pomaderris	E1	E	Recorded in NSW from the Nungatta area, northern Kosciuszko National Park (near Tumut), the Tantawangalo area in South-East Forests National Park and adjoining freehold land, Badgery's Lookout near Tallong, the Yerranderie area, the Canyonleigh area and Ettrema Gorge in Morton National Park.	Generally dry sclerophyll forest, often on skeletal soil.	Little is known about the ecology of the species. It is probably killed by fire but plants have been observed to re-sprout from the stem following death of the crown from apparent drought. Populations are not apparently influenced by local variations in habitat - it is not obvious why they are only growing where they are.	No

Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Pomaderris Queenslandica	Scant Pomaderris	E1		In NSW, known from several locations on the north coast, New England Tablelands and North West Slopes, including near Torrington and Coolata.	Moist eucalypt forest, sheltered woodlands with a shrubby understorey, and occasionally along creeks.		Potential
Pomaderris sericea	Silky Pomaderris	E1	V	In NSW, known only from Morton National Park near Bundanoon and from Wollemi National Park.	Open forest on sandstone.	Flowering (in Victoria) takes place in October.	Potential
Prasophyllum petilum	Tarengo Leek Orchid	E1	E	Four sites in NSW: at Boorowa, Captains Flat, Ilford and Delegate. Also experimentally introduced at Bowning Cemetery NSW.	Natural Temperate Grassland, grassy woodland, and Box-Gum woodland.	Flowers in October at Boorowa and Ilford, and December at Captains Flat and Delegate. Flowers are followed by fleshy seed capsules in summer. Plants retreat into subterranean tubers after fruiting, so are not visible above-ground.	No

Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Prostanthera cryptandroides subsp. cryptandroides	Wollemi Mint-bush	V	V	Between Lithgow and Sandy Hollow on the NSW central west slopes, central tablelands and western parts of the central coast botanical regions. One record for the northern tablelands near Tenterfield.	Dry sclerophyll forest, often in rocky sites.	Associated communities include: Narrabeen Rocky Heath, Narrabeen Acacia Woodland, Narrabeen Exposed Woodland; Open Heath of *Calytrix tetragona, Leptospermum parviflorum* and *Isopogon dawsonii;* and Open Scrubland of *Eucalyptus dwyeri, Baeckea densifolia, Dillwynia floribunda, Aotus ericoides* and *Hemigenia cunefolia.* Flowers from September to May; however is likely to flower sporadically at any time of the year depending on seasonal conditions. The species is fire-sensitive, with recruitment occurring from the soil seed bank.	Potential
Prostanthera discolor		V	V	Restricted to a few localities from Bylong to the Baerami Valley within the Rylstone and Muswellbrook local government areas.	Dry sclerophyll forest in the side gullies of main creeklines, often on rocky or well-drained alluvial substrates.	Flowering usually occurs September to October and flowers are likely to be pollinated by insects. Fire sensitive, with adults killed by fire and recruitment occurring from a soil seed bank.	Potential

Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Prostanthera stricta	Mount Vincent Mint-bush	V	V	*Prostanthera stricta* occurs from Mt Vincent to Genowlan Mountain in the Central Tablelands. *Prostanthera aff. stricta* is found at Dingo Creek and the Widden and Baerami Valleys in the Central Western Slopes.	Heath, scrub, open forest or tall open forest or in adjacent transitional communities. Most known sites of *Prostanthera aff. stricta* are within the riparian zone.	Flowers from winter to spring. *Prostanthera aff. stricta* is capable of clonal reproduction by layering of branches when growing in the riparian zone. Likely to be fire sensitive, with recruitment occurring from the soil seed bank.	No
Pultenaea glabra	Smooth Bush-Pea	V	V	Restricted to the higher Blue Mountains and has been recorded from the Katoomba-Hazelbrook and Mount Victoria areas, with unconfirmed sightings in the Mount Wilson and Mount Irvine areas.	Swamp margins, hillslopes, gullies and creekbanks, within dry sclerophyll forest and tall damp heath on sandstone.	Flowers September to November, fruit matures October to December. Fire sensitive, with adults killed by fire and recruitment occurring from a persistent soil stored seed bank. Seed germination will not occur in the absence of fire as the hard-coated seed requires heat to break seed dormancy.	No
Swainsona recta	Small Purple-pea	E1	E	Queanbeyan and Wellington-Mudgee areas. Historically also recorded at Carcoar, Culcairn and Wagga Wagga.	Grassland, open woodland and open forests dominated by *Eucalyptus blakelyi* (Blakely's Red Gum), *E. melliodora* (Yellow Box), *E. rubida* (Candlebark Gum) and *E. goniocalyx* (Long-leaf Box).	Plants die back in summer, surviving as a rootstocks until they shoot again in autumn. Flowers throughout spring, with a peak in October. Seeds ripen at the end of the year. Generally tolerant of fire, which also enhances germination by breaking the seed coat and reduces competition from other species.	Potential

Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Swainsona sericea	Silky Swainson-pea	V		In NSW, recorded from the Northern Tablelands to the Southern Tablelands and further inland on the slopes and plains. Also an isolated record from the far north-west of NSW.	Natural Temperate Grassland and *Eucalyptus pauciflora* (Snow Gum) Woodland on the Monaro, and Box-Gum Woodland in the Southern Tablelands and South West Slopes.	Sometimes found in association with cypress-pines *Callitris* spp. Regenerates from seed after fire.	Potential
Thesium australe	Austral Toadflax	V	V	In eastern NSW it is found in very small populations scattered along the coast, and from the Northern to Southern Tablelands.	Grassland on coastal headlands or grassland and grassy woodland away from the coast.	Often found in association with *Themeda australis* (Kangaroo Grass). A root parasite that takes water and some nutrient from other plants, especially Kangaroo Grass. Flowers in spring.	Potential
Tylophora linearis		V	E	In NSW, found in the Barraba, Mendooran, Temora and West Wyalong districts in the northern and central western slopes. Records include Crow Mountain near Barraba, Goonoo, Pilliga West, Cumbil, and Eura State Forests, Coolbaggie Nature Reserve, Goobang National Park, and Beni Conservation Area	Dry scrub, open forest, dry woodlands of Eucalyptus fibrosa, Eucalyptus sideroxylon, Eucalyptus albens, Callitris endlicheri, Callitris glaucophylla and Allocasuarina luehmannii.	Also grows in association with *Acacia hakeoides, Acacia lineata, Melaleuca uncinata, Myoporum species* and *Casuarina* species. Flowers in spring, with flowers recorded in November or May with fruiting probably 2 to 3 months later.	Potential

Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Wollemia nobilis	Wollemi Pine	E4A	E	A relict species confined to Wollemi National Park canyons.	Occurs in a deep gorge of Narrabeen Group Triassic sandstone. Some individuals occur on ledges or in crevices in the cliffs within warm temperate rainforest with surrounding dry sclerophyll woodland.	Vegetative reproduction occurs through meristems carried in the axils of vertical shoots developing into bud primordial with the bark. . A monoecious species. Male strobili appear mid-summer, maturing in spring, while female cones appear mid to late summer and are pollinated the following spring.	No
Zieria ingramii	Keith's Zieria	E1	E	Known only from Goonoo SCA, about 40 km north-east of Dubbo. An old record also exists east of Mogriguy on the Mendooran Road.	*Eucalyptus-Callitris* woodland or open forest with a shrubby to heathy understorey, on sandy loams.	Flowering time is in spring and plants bear fruit in summer. Plants can produce flowers and fruits any time between July and March.	No

Table 6 Preliminary likelihood of occurrence - Fauna

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Amphibia	*Heleioporus australiacus*	Giant Burrowing Frog	V	V	South eastern NSW and Victoria, in two distinct populations: a northern population in the sandstone geology of the Sydney Basin as far south as Ulladulla, and a southern population occurring from north of Narooma through to Walhalla, Victoria.	Heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based.	Breeding habitat of this species is generally soaks or pools within first or second order streams. They are also commonly recorded from 'hanging swamp' seepage lines and where small pools form from the collected water.	Potential
Amphibia	*Litoria booroolongensis*	Booroolong Frog	E1	E	Restricted to NSW and north-eastern Victoria, predominantly along the western-flowing streams of the Great Dividing Range. Several populations have recently been recorded in the Namoi catchment.	Permanent streams with some fringing vegetation cover such as ferns, sedges or grasses.	Breeding occurs in spring and early summer and tadpoles metamorphose in late summer to early autumn. Eggs are laid in submerged rock crevices and tadpoles grow in slow-flowing pools	No
Amphibia	*Mixophyes iteratus*	Giant Barred Frog	E1	E	Coast and ranges from Eumundi in south-east Qld to Warrimoo in the Blue Mountains.	Freshwater permanent/semi-permanent streams, generally at lower elevation. Riparian rainforest or wet sclerophyll forest is favoured.	Breeding takes place from late spring to summer.	No

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Actitis hypoleucos*	Common Sandpiper		M	Summer migrant. In NSW, widespread along coastline and also occurs in many areas inland.	Coastal wetlands and some inland wetlands, especially muddy margins or rocky shores. Also estuaries and deltas, lakes, pools, billabongs, reservoirs, dams and claypans, mangroves.	Breeds in Eurasia, uncommon summer migrant to Australia (August to May). Some overwinter.	No
Aves	*Anthochaera phrygia*	Regent Honeyeater	E4A	CE	Inland slopes of south-east Australia, and less frequently in coastal areas. In NSW, most records are from the North-West Plains, North-West and South-West Slopes, Northern Tablelands, Central Tablelands and Southern Tablelands regions; also recorded in the Central Coast and Hunter Valley regions.	Eucalypt woodland and open forest, wooded farmland and urban areas with mature eucalypts, and riparian forests of *Casuarina cunninghamiana (*River Oak).	Two of three known key breeding areas are in NSW: the Capertee Valley and Bundarra-Barraba region.	Likely
Aves	*Apus pacificus*	Fork-tailed Swift		M	Recorded in all regions of NSW.	Riparian woodland., swamps, low scrub, heathland, saltmarsh, grassland, Spinifex sandplains, open farmland and inland and coastal sand-dunes.	Non-breeding visitor to all states and territories of Australia, arriving from its breeding grounds in Siberia around October, and departing in April.	Likely

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Ardea alba*	Great Egret			Widespread, occurring across all states/territories. Also a vagrant on Lord Howe and Norfolk Island.	Swamps and marshes, grasslands, margins of rivers and lakes, salt pans, estuarine mudflats and other wetland habitats.	Mostly forages in shallow to moderately deep water for fish, insects, crustaceans, molluscs, frogs, lizards, snakes and small birds and mammals.	Potential
Aves	*Ardea ibis*	Cattle Egret			Widespread and common across NSW.	Grasslands, wooded lands and terrestrial wetlands.	Uses predominately shallow, open and fresh wetlands including meadows and swamps with low emergent vegetation and abundant aquatic flora.	Likely
Aves	*Botaurus poiciloptilus*	Australasian Bittern	E1	E	Found over most of NSW except for the far north-west.	Permanent freshwater wetlands with tall, dense vegetation, particularly *Typha* spp. (bullrushes) and *Eleocharis* spp. (spikerushes).	Feed mainly at night on frogs, fish, yabbies, spiders, insects and snails.	No
Aves	*Burhinus grallarius*	Bush Stone-curlew	E1		In NSW, found sporadically in coastal areas, and west of the divide throughout the sheep-wheat belt.	In NSW, it occurs in lowland grassy woodland and open forest.	It forages nocturnally in irrigated paddocks, grasslands, woodlands, domestic gardens, saltmarsh, mangroves, and playing fields.	Potential

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Calidris acuminata*	Sharp-tailed Sandpiper		M	Summer migrant. Widespread in most regions of NSW, especially in coastal areas, but sparse in the south-central Western Plain and east Lower Western Regions.	Shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation.	Breeds Arctic Siberia, summer migrant to Australia August-April. Some overwinter.	No
Aves	*Calidris ferruginea*	Curlew Sandpiper	E1	CE, M	Occurs along the entire coast of NSW, and sometimes in freshwater wetlands in the Murray-Darling Basin.	Littoral and estuarine habitats, including intertidal mudflats, non-tidal swamps, lakes and lagoons on the coast and sometimes inland.	It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed.	No
Aves	*Calidris melanotos*	Pectoral Sandpiper		M	Summer migrant to Australia. Widespread but scattered in NSW. East of the Great Divide, recorded from Casino and Ballina, south to Ulladulla. West of the Great Divide, widespread in the Riverina and Lower Western regions.	Shallow fresh to saline wetlands, including coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	Breeds in northern Russia and North America, migrates to non-breeding areas in South America. Recorded in Australia from September to June.	No

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Callocephalon fimbriatum*	Gang-gang Cockatoo	V		In NSW, distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. Isolated records known from as far north as Coffs Harbour and as far west as Mudgee.	Tall mountain forests and woodlands in summer; in winter, may occur at lower altitudes in open eucalypt forests and woodlands, and urban areas.	Favours old growth attributes for nesting and roosting.	Likely
Aves	*Calyptorhynchus lathami*	Glossy Black-Cockatoo	V		In NSW, widespread along coast and inland to the southern tablelands and central western plains, with a small population in the Riverina.	Open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur.	Feeds almost exclusively on the seeds of several species of she-oak *(Casuarina* and *Allocasuarina* species), shredding the cones with the massive bill. Dependent on large hollow-bearing eucalypts for nest sites. A single egg is laid between March and May.	Likely
Aves	*Certhionyx variegatus*	Pied Honeyeater	V		Arid and semi-arid areas, and occasionally east to the slopes and plains and the Hunter Valley.	*Acacia aneura* (Mulga), mallee, spinifex and eucalypt woodlands.	Feeds on nectar from various species of *Eremophila* spp. (emu-bushes), mistletoes and various other shrubs; also eats saltbush fruit, berries, seed, flowers and insects.	Potential

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Chthonicola sagittata*	Speckled Warbler	V		From south-eastern Qld, the eastern half of NSW and into Victoria, as far west as the Grampians, mostly on hills and tablelands of the Great Dividing Range and rarely on coast.	*Eucalyptus*-dominated communities with a grassy understorey and sparse shrub layer, often on rocky ridges or in gullies.	The diet consists of seeds and insects, with most foraging taking place on the ground around tussocks and under bushes and trees.	Likely
Aves	*Circus assimilis*	Spotted Harrier	V		Found throughout the Australian mainland, except in densely forested or wooded habitats, and rarely in Tasmania.	Grassy open woodland, inland riparian woodland, grassland, shrub steppe, agricultural land and edges of inland wetlands.	Builds a stick nest in a tree and lays eggs in spring (or sometimes autumn), with young remaining in the nest for several months..	Likely
Aves	*Climacteris picumnus victoriae*	Brown Treecreeper (eastern subspecies)	V		From eastern through central NSW, west to Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell.	Eucalypt woodlands and dry open forest.	Up to 80% of the diet is comprised of ants. Also feeds on other invertebrates (including spiders, insects larvae, moths, beetles, flies, hemipteran bugs, cockroaches, termites and lacewings), nectar from Mugga Ironbark (*Eucalyptus sideroxylon*) and paperbarks, and sap, along with lizards and food scraps.	Likely

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Daphoenositta chrysoptera*	Varied Sittella	V		Distribution in NSW is nearly continuous from the coast to the far west.	Inhabits eucalypt forests and woodlands, mallee and *Acacia* woodland.	Feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy.	Likely
Aves	*Epthianura albifrons*	White-fronted Chat	V		Occurs mostly in the southern half of the state, in damp open habitats along the coast, and near waterways in the western part of the state.	Saltmarsh vegetation, open grasslands and sometimes low shrubs bordering wetland areas.	The species is insectivorous, feeding mainly on flies and beetles caught from or close to the ground.	No
Aves	*Erythrotriorchis radiatus*	Red Goshawk	E4A	V	In NSW, extends to ~30°S. Recent records confined to the Northern Rivers region north of the Clarence River.	Open woodland and forest, often along or near watercourses or wetlands. In NSW, preferred habitats include mixed subtropical rainforest, *Melaleuca* swamp forest and coastal riparian *Eucalyptus* forest.	Red Goshawks mainly eat medium to large birds, but they also take mammals, reptiles and insects.	No

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Falco subniger*	Black Falcon	V		Sparsely distributed in NSW, occurring mostly in inland regions.	Woodland, shrubland and grassland, especially riparian woodland and agricultural land. Often associated with streams or wetlands.	Black Falcons nest in winter to late spring in the old stick nests of corvids or sometimes other raptor species. These tend to be located at the top of emergent trees in woodland, particularly riparian woodland.	Potential
Aves	*Gallinago hardwickii*	Latham's Snipe		M	Migrant to east coast of Australia, extending inland west of the Great Dividing Range in NSW.	Freshwater, saline or brackish wetlands up to 2000 m above sea-level; usually freshwater swamps, flooded grasslands or heathlands.	Non-breeding migrant to Australia, arriving between July-November from its breeding grounds in Japan and far-eastern Russia, and departing by late February.	No
Aves	*Glossopsitta pusilla*	Little Lorikeet	V		In NSW, found from the coast westward as far as Dubbo and Albury.	Dry, open eucalypt forests and woodlands, including remnant woodland patches and roadside vegetation.	Nomadic movements are common, influenced by season and food availability.	Likely
Aves	*Grantiella picta*	Painted Honeyeater	V	V	Widely distributed in NSW, predominantly on the inland side of the Great Dividing Range but avoiding arid areas.	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.*	Yes

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	V		Distributed along the coastline of mainland Australia and Tasmania, extending inland along some of the larger waterways, especially in eastern Australia.	Freshwater swamps, rivers, lakes, reservoirs, billabongs, saltmarsh and sewage ponds and coastal waters. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, forest and urban areas.	The breeding season extends from June to January (or sometimes February) in southern Australia. Breeding habitat is usually close to water, but may occur up to a kilometre away.	Potential
Aves	*Hamirostra melanosternon*	Black-breasted Buzzard	V		Areas receiving less than 500 mm rainfall from north-western NSW and north-eastern SA to the east coast at about Rockhampton, then across northern Australia south almost to Perth.	Inland habitats, including timbered watercourses, grasslands and sparsely timbered woodlands.	Mostly preys on reptiles, small mammals, birds, including nestlings, carrion and large eggs.	Potential
Aves	*Hieraaetus morphnoides*	Little Eagle	V		Throughout the Australian mainland, with the exception of the most densely-forested parts of the Dividing Range escarpment.	Open eucalypt forest, woodland or open woodland, including sheoak or *Acacia* woodlands and riparian woodlands of interior NSW.	Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter.	Potential

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Hirundapus caudacutus*	White-throated Needletail		V, M	All coastal regions of NSW, inland to the western slopes and inland plains of the Great Divide.	Occur most often over open forest and rainforest, as well as heathland, and remnant vegetation in farmland.	Breeds in eastern Siberia, north-eastern China and Japan. The species arrives in Australia in September–October, and most depart by April.	Potential
Aves	*Lathamus discolor*	Swift Parrot	E1	CE	Migrates from Tasmania to mainland in Autumn-Winter. In NSW, the species mostly occurs on the coast and south west slopes.	Box-ironbark forests and woodlands.	Favoured feed trees include winter flowering species such as *Eucalyptus robusta* (Swamp Mahogany), *Corymbia maculata* (Spotted Gum), *C. gummifera* (Red Bloodwood), *E. sideroxylon* (Mugga Ironbark), and *E. albens* (White Box). Commonly used lerp infested trees include *E. microcarpa* (Inland Grey Box), *E. moluccana* (Grey Box) and *E. pilularis* (Blackbutt).	Likely

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Leipoa ocellata*	Malleefowl	E1	V	Arid and semi-arid zones. In NSW, populations occur in the south west mallee centred on Mallee Cliffs NP and extending east to near Balranald; in the Scotia mallee west of the Darling River; and in the Goonoo forest near Dubbo. Recorded less recently in the Pilliga forests, around Cobar and Goulburn River NP.	Predominantly mallee communities. Less frequently found in other eucalypt woodlands, such as Inland Grey Box, Ironbark or Bimble Box Woodlands, or other woodlands dominated by Mulga or native Cypress Pine species.	A pair may occupy a range of between 50 and 500 ha. Mainly forage in open areas on seeds of Acacias and other native shrubs (*Cassia, Beyeria, Bossiaea*), buds, flowers and fruits, insects, and cereals if available.	No
Aves	*Lophoictinia isura*	Square-tailed Kite	V		In NSW, it is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding migrant to the south-east, including the NSW south coast.	Timbered habitats including dry woodlands and open forests, particularly timbered watercourses.	It is a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy, picking most prey items from the outer foliage.	Likely
Aves	*Melanodryas cucullata cucullata*	Hooded Robin (south-eastern form)	V		Found throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies *picata.*	Open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas.	Often perches on low dead stumps and fallen timber or on low-hanging branches, using a perch-and-pounce method of hunting insect prey.	Potential

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Melithreptus gularis gularis*	Black-chinned Honeyeater (eastern subspecies)	V		Widespread in NSW from the tablelands and western slopes of the Great Dividing Range to the north-west and central-west plains and the Riverina. Also Richmond and Clarence River areas and a few scattered sites in the Hunter, Central Coast and Illawarra regions.	Open forests or woodlands dominated by box and ironbark eucalypts, or by smooth-barked gums, stringybarks, river sheoaks and tea-trees.	Nectar is taken from flowers, and honeydew is gleaned from foliage.	Potential
Aves	*Merops ornatus*	Rainbow Bee-eater		M	Distributed across much of mainland Australia, including NSW.	Open forests and woodlands, shrublands, farmland, areas of human habitation, inland and coastal sand dune systems, heathland, sedgeland, vine forest and vine thicket.	The breeding season extends from August to January.	Likely
Aves	*Monarcha melanopsis*	Black-faced Monarch		M	In NSW, occurs around the eastern slopes and tablelands of the Great Divide, inland to Coutts Crossing, Armidale, Widden Valley, Wollemi National Park and Wombeyan Caves. It is rarely recorded farther inland.	Rainforest, open eucalypt forests, dry sclerophyll forests and woodlands, gullies in mountain areas or coastal foothills, Brigalow scrub, coastal scrub, mangroves, parks and gardens.	The species spends summer and autumn in eastern Australia, and winters in southern and eastern Papua New Guinea from March to August.	Potential

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Monarcha trivirgatus*	Spectacled Monarch		M	Coastal eastern Australia south to Port Stephens in NSW.	Mountain/lowland rainforest, wooded gullies, riparian vegetation including mangroves.	Summer breeding migrant to north-east NSW and south-east QLD from September/October to May. Nests in a tree fork or in hanging vines, 1 m - 6 m above the ground, often near water.	No
Aves	*Motacilla flava*	Yellow Wagtail		M	Regular summer migrant to mostly coastal Australia. In NSW recorded Sydney to Newcastle, the Hawkesbury and inland in the Bogan LGA.	Swamp margins, sewage ponds, saltmarshes, playing fields, airfields, ploughed land, lawns.	Breeds Europe to Siberia and west Alaska,. Regular summer migrant to Australia (November-April).	No
Aves	*Myiagra cyanoleuca*	Satin Flycatcher		M	In NSW, widespread on and east of the Great Divide and sparsely scattered on the western slopes, with very occasional records on the western plains.	Eucalypt-dominated forests, especially near wetlands, watercourses, and heavily-vegetated gullies.	Satin Flycatchers move north in autumn to spend winter in northern Australia and New Guinea and returning south in spring. In NSW, they depart between February and March and return between September and October.	Potential

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Neophema pulchella*	Turquoise Parrot	V		Occurs along the length of NSW from the coastal plains to the western slopes of the Great Dividing Range.	Eucalypt and cypress pine open forests and woodlands, ecotones between woodland and grassland, or coastal forest and heath.	Prefers to feed in the shade of a tree and spends most of the day on the ground searching for the seeds or grasses and herbaceous plants, or browsing on vegetable matter.	Likely
Aves	*Ninox connivens*	Barking Owl	V		Wide but sparse distribution in NSW, avoiding the most central arid regions. Core populations exist on the western slopes and plains and in some northeast coastal and escarpment forests.	Woodland and open forest, including fragmented remnants and partly cleared farmland, wetland and riverine forest.	It roosts in dense shaded foliage in large trees. Nesting occurs in hollows in large, old eucalypts, either living or dead.	Likely
Aves	*Ninox strenua*	Powerful Owl	V		In NSW, it is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains.	Woodland, open sclerophyll forest, tall open wet forest and rainforest.	It roosts by day in dense vegetation comprising species such as *Syncarpia glomulifera* (Turpentine), *Allocasuarina littoralis* (Black She-oak), *Acacia melanoxylon* (Blackwood), *Angophora floribunda* (Rough-barked Apple), *Exocarpus cupressiformis* (Cherry Ballart) and eucalypt species.	Likely

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Numenius madagascariensis*	Eastern Curlew		CE, M	Summer migrant to Australia. Primarily coastal distribution in NSW, with some scattered inland records.	Estuaries, bays, harbours, inlets and coastal lagoons, intertidal mudflats or sandflats, ocean beaches, coral reefs, rock platforms, saltmarsh, mangroves, freshwater/brackish lakes, saltworks and sewage farms.	Breeds in Russia and north-eastern China, summer migrant to Australia August to May.	No
Aves	*Oxyura australis*	Blue-billed Duck	V		Widespread in NSW, but is most concentrated in the southern Murray-Darling Basin area.	Coastal and inland wetlands and swamps.	Blue-billed Ducks usually nest solitarily in Cumbungi over deep water between September and February.	Potential
Aves	*Pandion cristatus*	Eastern Osprey	V		Common around the northern NSW coast, and uncommon to rare from coast further south. Some records from inland areas.	Rocky shorelines, islands, reefs, mouths of large rivers, lagoons and lakes.	Feed on fish over clear, open water.	No
Aves	*Pedionomus torquatus*	Plains-wanderer	E1	CE	Most recent records in NSW are from the western Riverina, in an area bounded by Hay and Narrandera in the north, the Cobb Highway in the west, the Billabong Creek in the south, and Urana in the east.	Semi-arid, lowland native grasslands that typically occur on hard red-brown soils.	Most of the grassland habitat of the Plains-wanderer is <5 cm high, but some vegetation up to a maximum of 30 cm is important for concealment.	No

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Petroica boodang*	Scarlet Robin	V		In NSW, it occurs from the coast to the inland slopes.	Dry eucalypt forests and woodlands, and occasionally in mallee, wet forest, wetlands and tea-tree swamps.	Feed on small insects and other invertebrates which are taken from the ground, or off tree trunks and logs; they sometimes forage in the shrub or canopy layer.	Likely
Aves	*Petroica phoenicea*	Flame Robin	V		In NSW, breeds in upland areas, and in winter many birds move to the inland slopes and plains, or occasionally to coastal areas. Likely that there are two separate populations in NSW, one in the Northern Tablelands, and another ranging from the Central to Southern Tablelands.	Breeds in upland tall moist eucalypt forests and woodlands. In winter uses dry forests, open woodlands, heathlands, pastures and native grasslands. Occasionally occurs in temperate rainforest, herbfields, heathlands, shrublands and sedgelands at high altitudes.	Feeds on small invertebrates which they take from the ground or off tree trunks, logs and other coarse woody debris.	Likely
Aves	*Petroica rodinogaster*	Pink Robin	V		North to near Bombala in south-eastern NSW. Disperses north and west in winter, sometimes as far north as the central coast of NSW.	Rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies.	Insects and spiders are the main dietary items. Breeds between October and January.	Likely

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Polytelis swainsonii*	Superb Parrot	V	V	In NSW, occurs on inland slopes of the Great Divide and on adjacent plains, especially along the major river-systems.	Box-gum woodland, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest.	Nest in small colonies, often with more than one nest in a single tree. Breed between September and January.	Likely
Aves	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler (eastern subspecies)	V		In NSW, occurs on the western slopes of the Great Dividing Range, and as far as Louth and Balranald on the western plains. Also occurs in woodlands in the Hunter Valley and in some locations on the north coast	Open woodland habitats; favours Box-gum woodlands on the slopes and Box-cypress and open Box woodlands on alluvial plains.	The species is insectivorous and forages on trunks and branches of trees or on the ground. It builds conspicuous dome-shaped stick nests in shrubs or eucalypt saplings, which are also used for roosting each night.	Likely
Aves	*Rhipidura rufifrons*	Rufous Fantail		M	Coastal and near coastal districts of northern and eastern Australia, including on and east of the Great Divide in NSW.	Wet sclerophyll forests, subtropical and temperate rainforests. Sometimes drier sclerophyll forests and woodlands.	The southern subspecies *Rhipidura rufifrons rufifrons* is migratory, being virtually absent from south-east Australia in winter.	No
Aves	*Rostratula australis*	Australian Painted Snipe	E1	E	In NSW most records are from the Murray-Darling Basin. Other recent records include wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys.	Swamps, dams and nearby marshy areas.	Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds.	No

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Stagonopleura guttata*	Diamond Firetail	V		Widely distributed in NSW, mainly recorded in the Northern, Central and Southern Tablelands, the Northern, Central and South Western Slopes and the North West Plains and Riverina, and less commonly found in coastal areas and further inland.	Grassy eucalypt woodlands, open forest, mallee, Natural Temperate Grassland, secondary derived grassland, riparian areas and lightly wooded farmland.	Feeds exclusively on the ground, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects.	Likely
Aves	*Tringa nebularia*	Common Greenshank		M	Summer migrant to Australia. Recorded in most coastal regions of NSW; also widespread west of the Great Dividing Range, especially between the Lachlan and Murray Rivers and the Darling River drainage basin, including the Macquarie Marshes, and north-west regions.	Terrestrial wetlands (swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans, saltflats, sewage farms and saltworks dams, inundated rice crops and bores) and sheltered coastal habitats (mudflats, saltmarsh, mangroves, embayments, harbours, river estuaries, deltas, lagoons, tidal pools, rock-flats and rock platforms).	Breeds Scotland to Siberia. Summer migrant to Australia September to April.	No

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Aves	*Tyto novaehollandiae*	Masked Owl	V		Recorded over approximately 90% of NSW, excluding the most arid north-western corner. Most abundant on the coast but extends to the western plains.	Dry eucalypt forests and woodlands from sea level to 1100 m.	Often hunts along the edges of forests, including roadsides.	Likely
Mammalia	*Chalinolobus dwyeri*	Large-eared Pied Bat	V	V	Recorded from Rockhampton in Qld south to Ulladulla in NSW. Largest concentrations of populations occur in the sandstone escarpments of the Sydney basin and the NSW north-west slopes.	Wet and dry sclerophyll forests, Cyprus Pine dominated forest, woodland, sub-alpine woodland, edges of rainforests and sandstone outcrop country.	Roosts in caves, rock overhangs and disused mine shafts and as such is usually associated with rock outcrops and cliff faces. It also possibly roosts in the hollows of trees.	Likely
Mammalia	*Falsistrellus tasmaniensis*	Eastern False Pipistrelle	V		South-east coast and ranges of Australia, from southern Qld to Victoria and Tasmania. In NSW, records extend to the western slopes of the Great Dividing Range.	Tall (greater than 20m) moist habitats.	Predominately roosts in Eucalypt tree hollows. It has also been found to roost under loose bark on trees and in man-made structures.	Potential

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Mammalia	*Miniopterus schreibersii oceanensis*	Eastern Bentwing-bat	V		In NSW it occurs on both sides of the Great Dividing Range, from the coast inland to Moree, Dubbo and Wagga Wagga.	Rainforest, wet and dry sclerophyll forest, monsoon forest, open woodland, paperbark forests and open grassland.	It forages above and below the tree canopy on small insects, especially moths. The bats congregate at the same maternity roosts each year to give birth and rear young. In the southern part of the species' range this occurs during spring.	Likely
Mammalia	*Nyctophilus corbeni*	Corben's Long-eared Bat	V	V	Distribution coincides approximately with the Murray Darling Basin; the Pilliga Scrub region is the distinct stronghold for this species.	Mallee, *Allocasuarina luehmannii* (bulloke) and box eucalypt- dominated communities, especially box/ironbark/cypress-pine vegetation.	Roosts in tree hollows, crevices, and under loose bark.	Likely
Mammalia	*Petaurus norfolcensis*	Squirrel Glider	V		Widely though sparsely distributed on both sides of the Great Dividing Range in eastern Australia, from northern Qld to western Victoria.	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.	Live in family groups of a single adult male one or more adult females and offspring. Require abundant tree hollows for refuge and nest sites.	Likely

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Mammalia	*Petrogale penicillata*	Brush-tailed Rock-wallaby	E1	V	In NSW they occur from the Qld border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit.	Rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges.	Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees.	Likely
Mammalia	*Phascolarctos cinereus*	Koala	V	V	In NSW it mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range. There are sparse and possibly disjunct populations in the Bega District, and at several sites on the southern tablelands.	Eucalypt woodlands and forests.	Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Inactive for most of the day, feeding and moving mostly at night.	Likely
Mammalia	*Pseudomys novaehollandiae*	New Holland Mouse		V	Fragmented distribution across eastern NSW.	Open heathlands, woodlands and forests with a heathland understorey, vegetated sand dunes.	It is a social animal, living predominantly in burrows shared with other individuals.	Potential

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Mammalia	*Pteropus poliocephalus*	Grey-headed Flying-fox	V	V	Along the eastern coast of Australia, from Bundaberg in Qld to Melbourne in Victoria.	Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	Potential
Mammalia	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	V		There are scattered records of this species across the New England Tablelands and North West Slopes. Rare visitor in late summer and autumn to south-western NSW.	Almost all habitats, including wet and dry sclerophyll forest, open woodland, open country, mallee, rainforests, heathland and waterbodies.	It forages for insects above the canopy in eucalypt forests, and closer to the ground in more open country. It is dependent on suitable hollow-bearing trees to provide roost sites.	Likely
Mammalia	*Scoteanax rueppellii*	Greater Broad-nosed Bat	V		Both sides of the great divide, from the Atherton Tableland in Qld to north-eastern Victoria, mainly along river systems and gullies. In NSW it is widespread on the New England Tablelands.	Woodland, moist and dry eucalypt forest and rainforest.	Usually roosts in tree hollows, but has also been found in buildings.	Potential

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Mammalia	*Vespadelus troughtoni*	Eastern Cave Bat	V		Found in a broad band on both sides of the Great Dividing Range south to Kempsey, with records from the New England Tablelands and the upper north coast of NSW. The western limit appears to be the Warrumbungle Range, and there is a single record from southern NSW, east of the ACT.	Dry open forest and woodland, near cliffs or rocky overhangs, cliff-lines in wet eucalypt forest and rainforest.	A cave-roosting species; has been recorded roosting in disused mine workings, occasionally in colonies of up to 500 individuals.	Likely
Reptilia	*Aprasia parapulchella*	Pink-tailed Legless Lizard	V	V	In NSW, only known from the Central and Southern Tablelands, and the South Western Slopes.	Sloping, open woodland areas with predominantly native grassy groundlayers, rocky outcrops or scattered, partially-buried rocks.	Commonly found beneath small, partially-embedded rocks and appear to spend considerable time in burrows below these rocks; the burrows have been constructed by and are often still inhabited by small black ants and termites.	Unlikely
Reptilia	*Delma impar*	Striped Legless Lizard	V	V	In NSW, occurs in the Southern Tablelands, the South West Slopes and possibly on the Riverina.	Natural Temperate Grassland, secondary and modified grassland, open Box-Gum Woodland.	Shelter in tussock-forming grasses or under surface rocks.	Unlikely

Class	Scientific Name	Common Name	BC Act	EPBC Act	Distribution	Habitat	Ecology	Likelihood of occurrence
Reptilia	*Hoplocephalus bungaroides*	Broad-headed Snake	E1	V	Largely confined to Triassic and Permian sandstones within the coast and ranges in an area within approximately 250 km of Sydney.	Dry and wet sclerophyll forests, riverine forests, coastal heath swamps, rocky outcrops, heaths, grassy woodlands.	Nocturnal. Shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring.	Potential

Table 7 Native vegetation regulatory map Landuse mapping (2017)

Name	Wind Farm	Transmission Option A	Transmission Option B	Transmission Option C	Study Area	Locality
1.1.0 Nature conservation	--	--	--	0.4	149.5	46969.6
1.3.0 Other minimal use	73.4	117.2	201.5	96.9	5078.0	77181.9
2.1.0 Grazing native vegetation	530.0	335.0	209.0	214.0	9524.1	105428.1
3.2.0 Grazing modified pastures	1346.0	397.4	265.8	249.3	12171.6	85095.0
3.3.0 Cropping	120.0	126.2	25.4	171.5	3067.9	53385.0
Other land uses (combined areas)	34.6	54.1	13.7	9.2	1100.1	18296.7
Total	**2104**	**1030**	**715**	**741**	**31,091**	**386,356**
Native vegetation regulatory map category						
Category 1	70%	55%	41%	57%	51%	37%
Category 2	30%	45%	59%	43%	48%	50%
Excluded land	0%	0%	0%	0%	1%	13%

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