

Crookwell 3 Wind Farm

Biodiversity Management Plan

Crookwell Development Pty Ltd

21 April 2022

Final




Report No. 19262RP3

The preparation of this report has been in accordance with the brief provided by the Client and has relied upon the data and results collected at or under the times and conditions specified in the report. All findings, conclusions or commendations contained within the report are based only on the aforementioned circumstances. The report has been prepared for use by the Client and no responsibility for its use by other parties is accepted by Cumberland Ecology.

Version	Date Issued	Amended by	Details
1	12/03/2021	CEP, TM, KW	First draft for consultation with BCD
2	21/04/2022	CEP, MP	Revised BMP following consultation

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Position: Director

Signed: 

Date: 21 April, 2022

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Glossary

Term/Acronym	Definition
BAM	Biodiversity Assessment Method
BC Act	NSW <i>Biodiversity Conservation Act 2016</i>
BDAR	Biodiversity Development Assessment Report
Biosecurity Act	NSW <i>Biosecurity Act 2015</i>
BMP	Biodiversity Management Plan (this document)
BOS	Biodiversity Offsets Scheme
CEEC	Critically Endangered Ecological Community
DPIE	NSW Department of Planning, Industry and Environment
DAWE	Commonwealth Department of Agriculture, Water and Environment
DNG	Derived Native Grassland
EEC	Endangered Ecological Community
EES	Environment, Energy and Science Group (a part of DPIE)
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i>
GPS	Global Positioning System
ha	Hectares
IPC	Independent Planning Commission
km	Kilometres
kV	KiloVolts
LEC	Land and Environment Court of NSW
LGA	Local Government Area
Micro-siting	Process of optimising the wind turbine locations up to 100 m from each turbine's nominated location
MNES	Matters of National Environmental Significance
NSW	New South Wales
OEH	Former NSW Office of Environment and Heritage
PCT	Plant Community Type
The Project	The proposed Crookwell 3 Wind Farm
Project Site	The distinct parcel of land within which the project will be constructed, as defined in the Development Consent (SSD 6695).
Rural Fires Act	NSW <i>Rural Fires Act 1997</i>
RFS	Rural Fire Service
SEPP	State Environmental Planning Policy
SoFaC	Statement of Facts and Contentions

Term/Acronym	Definition
SSD	State Significant Development
Study area	Areas which have been subject to detailed assessment of ecological values related to the project
Subject land	The area that will be disturbed for construction of the project, comprised of both temporary impacts and permanent impacts. The same area that is subject to the BAM assessment in the revised BDAR prepared by Cumberland Ecology.
TBDC	Threatened Biodiversity Database Collection
TEC	Threatened Ecological Community
TSC Act	NSW <i>Threatened Species Conservation Act 1995</i> (repealed)
WoNS	Weed of National Significance
WM Act	NSW <i>Water Management Act 2000</i>

1. Introduction

Cumberland Ecology was commissioned by Crookwell 3 Development Pty Ltd (Crookwell Development) to prepare a Biodiversity Management Plan (BMP) for the Crookwell 3 Wind Farm project (the project). The project was granted State Significant Development Consent (SSD 6695) under the New South Wales (NSW) *Environmental Planning and Assessment Act 1979* (EP&A Act) by the Land and Environment Court (LEC) of NSW on 14 October 2020.

This BMP provides a comprehensive framework for the implementation of the biodiversity impact mitigation measures proposed for the project, whilst addressing the NSW Development Consent conditions issued by the LEC. The BMP will ensure that the project's conservation objectives are met and that impacts to biodiversity are adequately managed during the construction phase and operation phase of the project.

1.1. Background

1.1.1. Project Location

The project is located approximately 17 km south-east of Crookwell and 25 km north-west of Goulburn in NSW, adjacent to the existing Crookwell 2 Wind Farm, within the Upper Lachlan Shire Local Government Area (LGA). The project is proposed to be concentrated within a distinct parcel of land (the 'project site'), which will be accessed off Woodhouselee Road, via Graywood Siding Road (see **Figure 1**). The project site is approximately 1,080 ha in size and is formally described as:

- Lots 1-2, DP 1074987;
- Lot 2, DP 1139846;
- Lots 13-14, DP 784346;
- Lot 191, DP 750054;
- Lots 290 and 326, DP 750052; and
- Lot 7011, DP 96802.

Additional ancillary infrastructure, comprising mainly access tracks and underground cabling connecting to the existing Crookwell 2 substation, extends outside of the project site.

The project site comprises farming properties primarily used for livestock grazing. Native vegetation occurring across the project site varies from patches of open forest and woodland to derived native grasslands, whilst the remainder of the site comprises exotic planted vegetation and exotic grasslands that have historically been subject to pasture improvement.

Topography across the project site ranges between 765 metre (m) to 931 m Australian Height Datum. Generally, the project site occurs in an undulating to hilly landscape with small areas of steeply sloping land, generally near watercourses.

No major watercourses occur within the project site, however a number of smaller streams (Strahler category 1-3) such as Steeves Creek passes through the site. Some of the first and second order streams are likely to be

largely ephemeral, based on observations in the field. Various levels of 'dirt track' crossings over creeks are present within the farming properties. Steeves Creek eventually converges into a larger stream, the Pejar Creek, which is located outside of the project site near the western boundary.

1.1.2. Project Description

The project comprises the development of a new wind farm and generally involves the construction, operation, maintenance and decommissioning of:

- Up to 16 wind turbine sites consisting of a three-blade rotor mounted onto a tower with the following specifications:
 - Maximum rotor diameter of 130 m;
 - Maximum hub height of 95 m;
 - Maximum tip height of 157 m.
- Up to 16 individual kiosks for the housing of 33kV transformers and 33 kV switchgears and associated control systems to be in the vicinity of the wind turbine towers;
- Internal unsealed tracks for turbine access;
- Upgrades to local road infrastructure as necessary to provide access to the project site;
- Underground electrical and communication cable network linking turbines to each other within the project site and then using either an underground or overhead connection between the Crookwell 3 Project boundary and the Crookwell 2 Wind Farm to reach the Crookwell 2 substation;
- Up to three wind monitoring masts fitted with various instruments; and
- Up to two temporary concrete batching plants during the construction phase only, to supply concrete for the foundations of the turbines and other associated structures.

Grid connection would be achieved from a connection to the existing 330kV electricity transmission line which runs through the project site.

The approved project layout is shown in **Figure 2**.

1.1.3. Boundaries Relevant to the BMP Project Boundary

This BMP utilised the following terms for the remainder of this document, which are shown in **Figure 3**:

- Subject land: The final approved disturbance footprint area that will be disturbed for construction of the project, comprised of both temporary impacts and permanent impacts. The same area that is subject to the Biodiversity Assessment Method (BAM) assessment in the revised Biodiversity Development Assessment Report (BDAR) prepared by Cumberland Ecology (Ref. 19262 dated 05-04-2022);

- Project site: The distinct parcel of land within which the project will be constructed, as defined in **Section 1.1.1**; and
- Study Area: Areas which have been subject to detailed assessment of ecological values related to the project.

An identification of permanent and temporary disturbance areas within the subject land is shown in **Figure 4**.

1.2. Aims and Objectives

This BMP has been prepared to meet the requirements of condition 23 of the Development Consent for SSD 6695. The aims of this BMP are to present a comprehensive plan for the management of flora and fauna within the subject land that makes provisions for:

- Minimising human disturbance to native flora, fauna, and their habitats;
- Minimising vegetation disturbance or clearing;
- Minimising impacts to threatened species and communities;
- Controlling threats to remnant native vegetation;
- Managing the impacts of feral animals and weeds;
- Undertake rehabilitation of temporary disturbance areas; and
- Monitoring and reporting activities to inform adaptive management of the subject land.

1.3. Interaction with Other Management Plans

A range of other management plans are required to be prepared under the project's Conditions of Consent. These include:

- Noise Management Plan;
- Stormwater Management Plan;
- Bird and Bat Adaptive Management Plan;
- Heritage Management Plan;
- Traffic Management Plan;
- Emergency Plan; and
- Environmental Management Strategy.

Where relevant, this BMP should be read in conjunction with the aforementioned plans.

1.4. Document Structure

The structure of the remainder of the BMP is as follows:

- Chapter 2: provides an overview of the statutory requirements and approvals process for the project, including the NSW Development Consent conditions relevant to this BMP and details of the consultation that has taken place with government agencies;
- Chapter 3: provides a summary of the existing flora and fauna values within the subject land and study area and a brief summary of the predicted impacts of the project;
- Chapter 4: provides details of the proposed short, medium and long-term biodiversity management measures to be undertaken within the subject land. This focuses mainly on biodiversity management in the subject land, including activities to be undertaken on areas to be cleared prior to the removal of trees such as pre-clearance surveys and salvage of habitat features, protocols to be followed during clearing and other policies and procedures to be followed during the operation of the windfarm, such as vehicle driving policies and induction requirements;
- Chapter 5: provides details on the monitoring program that will be undertaken including performance criteria and responsibilities for monitoring;
- Chapter 6: provides details of the reporting requirements of the monitoring and auditing process; and
- Chapter 7: provides details of the review process for this BMP.

2. Statutory Requirements

2.1. NSW Assessment Process

2.1.1. Overview

The project has a long assessment history, stretching over 10 years from the submission of the original development application. The original development application (MP 10_0034) was lodged in March 2010 and was subsequently refused by the Independent Planning Commission (IPC) in October 2019, following a lengthy assessment and consultation process, which saw a reduction of the subject land from 30 to 23 wind turbines. For the purpose of the original assessment, several biodiversity studies were completed by Anderson Environmental Consulting (AEC 2010, 2011) and ERM (ERM 2013b, a, 2016).

On 24 April 2020, Crookwell Development filed a Class 1 appeal in the LEC against the IPC's refusal of the development application (Appeal No. 2020/123021). Ecological issues for the development application, as raised in IPC's Statement of Facts and Contentions (SoFaC) largely related to insufficient information available to assess the project's impacts on biodiversity. For the purpose of the appeal, Cumberland Ecology prepared a Biodiversity Development Assessment Report (original BDAR) (Cumberland Ecology. 2020) for the project.

Following the provision of additional information to assess the project's impacts on biodiversity (among other issues), the project was approved by the LEC on 14 October 2020 subject to a number of consent conditions.

2.1.2. Conditions of Consent

The Conditions of Consent issued under Section 4.38 of the EP&A Act and approved by the LEC, include the specific requirement for a Biodiversity Management Plan to be prepared. This is provided as consent condition item number 23, which outlines that:

"Prior to the commencement of construction, the Applicant must prepare a Biodiversity Management Plan for the development to the satisfaction of the Secretary."

Table 1 outlines the relevant consent conditions for the NSW Development Consent to the BMP and where they have been addressed within this document.

A number of other biodiversity related conditions are contained within the NSW Development Consent; however, these are addressed in separate documents.

Table 1 Compliance with Consent Condition Number 23

Consent Condition	Section in BMP
23. Prior to the commencement of construction, the Applicant must prepare a Biodiversity Management Plan for the development to the satisfaction of the Secretary. This plan must:	
a) be prepared in consultation with BCD; and	Section 2.3
(b) include:	
a description of the measures that would be implemented for:	
- minimising the amount of native vegetation clearing within the approved development footprint;	Section 4.2

Consent Condition	Section in BMP
- minimising the loss of key fauna habitat, including tree hollows;	Section 4.3
- minimising the impacts on fauna on site, including undertaking pre-clearance surveys;	Section 4.4
minimising the potential indirect impacts on threatened species, including: fauna species, including the Gang Gang Cockatoo (<i>Callocephalon fimbriatum</i>) and Squirrel Glider (<i>Petaurus norfolcensis</i>)	Section 4.2, 4.9
pre-clearing protocols including pre-clearing fauna surveys;	Section 4.5.1
rehabilitating and revegetating temporary disturbance areas;	Section 4.8
protecting native vegetation and key fauna habitat outside the approved disturbance area;	Section 4.9
maximising the salvage of resources within the approved disturbance area – including vegetative and soil resources – for beneficial reuse (including fauna habitat enhancement) during the rehabilitation and revegetation of the site;	Salvage of vegetation and habitat features addressed in Section 4.10 and salvage of soil resources addressed in Section 4.11
collecting and propagating seed (where relevant);	Section 4.12
controlling weeds and feral pests;	Section 4.13 and 4.14
controlling erosion;	Section 4.15
bushfire management;	Section 4.16
A detailed program to monitor and report on the effectiveness of these measures.	Monitoring addressed in Section 5 and reporting in Section 6
Following the Secretary's approval, the Applicant must implement the Biodiversity Management Plan.	Responsibilities for monitoring of implementation addressed in Section 5

2.2. Agency Consultation

The NSW Development Consent states that the BMP must be prepared to the satisfaction of the Secretary of the Department of Planning, Industry and Environment (DPIE) and in consultation with Biodiversity Conservation Division (BCD) of DPIE.

Details of consultation with DPIE and BCD are outlined below:

- Revision 1 of the BMP was submitted to BCD in March 2021 for consultation purposes;
- Comments on the BMP were received from BCD in letter received on 17 September 2021; and
- Revision 2 of the BMP was submitted to BCD in April 2022, incorporating comments from BCD.

2.3. Relevant State Legislation

Key NSW legislation relevant to this BMP includes the following, which are detailed further in **Table 2**:

- *Environment Planning and Assessment Act 1979* (EP&A Act);
- *Biodiversity Conservation Act 2016* (BC Act);
- *Biosecurity Act 2015* (Biosecurity Act);
- *Rural Fires Act 1997* (Rural Fires Act); and
- *Water Management Act 2020* (WM Act).

Table 2 Key Legislation

Legislation	Purpose and Relevance
<i>Environment Planning and Assessment Act 1979</i>	The EP&A Act is the overarching planning legislation in NSW that provides for the creation of planning instruments that guide land use. The EP&A Act also provides for the protection of the environment, including the protection and conservation of native animals and plants including threatened species, populations and ecological communities, and their habitats.
<i>Biodiversity Conservation Act 2016</i>	The BC Act is currently the key piece of legislation in NSW relating to the protection and management of biodiversity and threatened species, and it replaced the NSW <i>Threatened Species Conservation Act 1995</i> in 2017. The BC Act aims to protect and encourage the recovery of threatened species, populations and communities that are listed under the Act through threat abatement and species recovery programs. This <i>BMP</i> has been prepared to address the potential impacts of the Project on species and communities listed under the BC Act.
<i>Biosecurity Act 2015</i>	The Biosecurity Act came into force in 2017, and provides for the identification, classification and control of priority weeds in NSW. Under the Biosecurity Act, weeds have been placed into the following weed management categories based on their environmental characteristics and distribution: Prevention; Eradication; Containment and Asset Protection. This <i>BMP</i> has been prepared to reflect the listings of weeds in the Biosecurity Act and has used these listings to prioritise weeds for control.
<i>Rural Fires Act 1997</i>	The main objectives of the Rural Fires Act are to provide for the prevention, mitigation and suppression of bush fires in rural fire districts.
<i>Water Management Act 2020</i>	The objectives of the WM Act are to provide for the sustainable and integrated management of the water systems of NSW and to protect, enhance and restore water sources, associated ecosystems and ecological processes. Controlled activities carried out in, on, or under waterfront land are regulated by the WM Act.

2.4. Other Relevant Plans and Guidelines

Other plans and guidelines relevant to this BMP include the following:

- Guide to Managing Box Gum Grassy Woodlands (Rawlings et al. 2010); and
- NSW Planning Guidelines: Wind Farms (DPI. 2011)(draft guidelines).

3. Overview of the Existing Environment

Development Consent condition 21 for the project requires that prior to the commencement of construction, the baseline mapping of vegetation and key habitat within the final subject land is updated. The updated mapping of the subject land and study area was undertaken by Cumberland Ecology on 21-22 January 2021 and have been submitted to BCD and DPIE separately to this BMP for their comment and approval.

This BMP has been prepared based on the updated baseline mapping of vegetation and key habitat. Compared to the original BDAR previously prepared by Cumberland Ecology (2020), the updated mapping includes revisions of:

- Plant Community Types (PCTs), including refinements of map unit boundaries and assignment of PCTs; and
- Key fauna habitat for the Squirrel Glider, Gang-gang Cockatoo, Little Eagle, Pink-tailed Legless Lizard and Striped Legless Lizard, including mapping of hollow-bearing trees.

3.1. Existing Flora and Fauna Values

3.1.1. Overview

The vegetation within the project site and wider study area has been highly modified, as a result of historical vegetation clearing and the establishment of improved pastures to support grazing by sheep. As a result, native vegetation cover is largely limited to steep slopes and ridges that have not been cleared. Native vegetation in the remainder of the site is highly modified and fragmented and consists of remnant woodland patches, regrowth and derived native grasslands (DNG).

The remaining land within the study area comprises cleared land, including public roads and farm tracks, dams and watercourses, as well as areas of non-native vegetation, including planted non-endemic trees and exotic vegetation, and pastures comprising exotic grasslands.

3.1.2. Plant Community Types

Cumberland Ecology originally mapped the vegetation in the study area and subject land for the original BDAR in 2020. The vegetation mapping was then updated in January 2021, and included in the revised BDAR, and will be subject to agreement with DPIE per consultation requirements of condition 21 of the Development Consent Conditions for the project.

Four PCTs were identified in the study area, of which three are likely to be directly impacted by the project. **Table 3** lists the PCTs within the study area and subject land, as well as their associated vegetation zones representing different condition states and their Threatened Ecological Community (TEC) status. The distribution of PCTs within the study area is shown in **Figure 5**.

In addition to the four PCTs, three planted and/or exotic communities were identified in study area to which no PCT has been assigned.

Table 3. Approximate areas of PCTs and other vegetation within the study area and subject land

PCT #	PCT Name	Condition	BC Act Status	EPBC Act Status	Study Area (ha)	Subject Land (ha)
1093	Red Stringybark - Brittle Gum - Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion	Intact	-	-	94.66	0.88
1093	Red Stringybark - Brittle Gum - Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion	Acacia regrowth	-	-	8.90	0.39
1093	Red Stringybark - Brittle Gum - Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion	DNG	-	-	254.82	4.84
1097	Ribbon Gum - Narrow-leaved Peppermint grassy open forest on basalt plateaux, Sydney Basin Bioregion and South Eastern Highlands Bioregion	Intact	EEC	-	4.54	0.00
1155	Silvertop Ash - Narrow-leaved Peppermint open forest on ridges of the eastern tableland, South Eastern Highlands Bioregion and South East Corner Bioregion	Intact	-	-	139.06	0.41
1155	Silvertop Ash - Narrow-leaved Peppermint open forest on ridges of the eastern tableland, South Eastern Highlands Bioregion and South East Corner Bioregion	Regrowth	-	-	27.02	0.55
1155	Silvertop Ash - Narrow-leaved Peppermint open forest on ridges of the eastern tableland, South Eastern Highlands Bioregion and South East Corner Bioregion	DNG	-	-	61.15	1.69
1330	Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	High condition	CEEC	CEEC	0.91	0.09
1330	Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	Low condition	CEEC	-	10.63	0.19

PCT #	PCT Name	Condition	BC Act Status	EPBC Act Status	Study Area (ha)	Subject Land (ha)
1330	Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	DNG	CEEC	-	7.75	0.32
N/A	Pine		-	-	6.64	0.00
N/A	Willow		-	-	2.82	0.00
N/A	Exotic Grasslands		-	-	613.13	22.28
Total					1237.13	31.65

BC Act Status / EPBC Act Status: EEC= Endangered Ecological Community; CEEC= Critically Endangered Ecological Community

3.1.3. Threatened Ecological Communities

Two TECs listed under the BC Act and/or the EPBC Act occur within the study area. The TEC with the largest extent within the study area is the community known as “White Box - Yellow Box - Blakely’s Red Gum Grassy Woodland and Derived Native Grassland” (Box Gum Woodland), which is listed as a Critically Endangered Ecological Community (CEEC) under both the BC Act and EPBC Act. Box Gum Woodland CEEC occurs in three condition states in the study area.

A small area of the TEC “Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions” (Tableland Basalt Forest), which is listed as an Endangered Ecological Community (EEC) under the BC Act, also occurs within the study area in the western section of the project site. However, there are no occurrences of the Tableland Basalt Forest EEC within the subject land.

During the updated vegetation mapping surveys undertaken in January 2021, additional areas of Box Gum Woodland CEEC were mapped compared to what was previously identified in the original BDAR (Cumberland Ecology, 2020), including areas of DNG as well as a small patch that conforms to the EPBC Act listed version of the TEC within the access road alignment (Graywood Siding Road).

Table 4 summarises the PCTs identified within the subject land that conform to TECs as listed under the BC Act and EPBC Act, whilst their distribution is shown in **Figure 6**.

Table 4 Approximate areas of threatened ecological communities within the study area and subject land

TEC/PCT	BC Act Status	EPBC Act Status	Study Area (ha)	Subject Land (ha)
Tableland Basalt Forest				
1097: Ribbon Gum - Narrow-leaved Peppermint grassy open forest on basalt plateaux, Sydney Basin Bioregion and South Eastern Highlands Bioregion	EEC	-	4.54	0.00
Box Gum Woodland				
1330: Yellow Box - Blakely’s Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion (high condition)	CEEC	CEEC	0.91	0.09
1330: Yellow Box - Blakely’s Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion (low condition)	CEEC	-	10.63	0.19
1330: Yellow Box - Blakely’s Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion (DNG)	CEEC	-	7.75	0.32
Subtotal Box Gum Woodland			19.30	0.60

BC Act Status / EPBC Act Status: EEC= Endangered Ecological Community; CEEC= Critically Endangered Ecological Community

3.2. Flora

3.2.1. General Species

Over 150 flora species have been recorded within the study area during Cumberland Ecology's surveys for the revised BDAR and updated vegetation mapping, comprised of approximately 66% native species and 34% exotic species.

The dominant plant families within the study area include the Myrtaceae, Fabaceae, Asteraceae and the Poaceae families. The Poaceae (grasses) family has the highest diversity of species, including both native and introduced pasture species.

3.2.2. Exotic Species

The vegetation within study area has been modified through the establishment of improved pasture and some exotic amenity plantings such as windrows/hedgerows. In addition to exotic pasture grasses and pasture legumes, pasture weeds such as thistles and *Arctotheca calendula* (Cape Weed) are abundant and are present in native vegetation communities to varying extents.

Of the exotic species recorded, two are listed as State Priority Weeds under the Biosecurity Act, as detailed within **Table 5**. The two State Priority Weeds are also Weeds of National Significance (WoNS). State and Regional Priority Weeds are required to be managed as detailed in the South East Regional Strategic Weed Management Plan (NSW Local Land Services 2017) to comply with the General Biosecurity Duty that all land owners/managers and persons who deal with weeds are required to fulfil under the Biosecurity Act.

The South East Regional Strategic Weed Management Plan 2017 – 2022 (NSW Local Land Services 2017) also lists other Weeds of Regional Concern. Four Weeds of Regional Concern were recorded within the study area and are also detailed within **Table 5**. The Biosecurity Act provides powers to Local Control Authorities to take action in relation to these weeds in particular circumstances, for example where a weed threatens a high value asset and prevention, elimination or reduction of the risk is feasible and reasonable.

Table 5 Priority Weeds, Weeds of Regional Concern and WoNS within the study area

Scientific Name	Common Name	Biosecurity Act Status	WoNS
<i>Holcus lanatus</i>	Yorkshire Fog	Other Weeds of Regional Concern	-
<i>Onopordum acanthium</i>	Scotch Thistle	Other Weeds of Regional Concern	-
<i>Pinus radiata</i>	Radiata Pine	Other Weeds of Regional Concern	-
<i>Rosa rubiginosa</i>	Sweet Briar	Other Weeds of Regional Concern	-
<i>Rubus fruticosus</i> spp. agg.	Blackberry complex	State Priority Weed (Asset Protection)	Yes
<i>Salix fragilis</i>	Crack Willow	State Priority Weed (Asset Protection)	Yes

3.2.3. Threatened Species

A small number of threatened flora species have previously been recorded within the locality (i.e. within 5km radius) of the study area, as detailed within **Table 6**. Nevertheless, the BioNet Atlas (EES 2020) does not hold any records of threatened flora species within the study area. Furthermore, no threatened flora species were detected during previous surveys by Anderson Environmental Consulting or ERM, for the original development application for the project, and none were predicted to occur.

Targeted searches for the revised BDAR were undertaken for all threatened flora species with the potential to occur based on the PCTs present, and the quality of habitat, in March and May 2020 and in November 2022 by Cumberland Ecology. Nonetheless, no threatened flora species were detected within the study area.

Table 6 Threatened flora recorded within the locality of the study area

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count
<i>Acacia bynoeana</i>	Bynoe's Wattle	E	V	1
<i>Diuris aequalis</i>	Buttercup Doubletail	E	V	18
<i>Eucalyptus aggregata</i>	Black Gum	V	V	4
<i>Leucochrysum albicans</i> var. <i>tricolor</i>	Hoary Sunray	-	E	5

BC Act Status / EPBC Act Status: V = Vulnerable; E = Endangered

3.3. Fauna

3.3.1. Fauna Habitat Values

As previously noted, the majority of the study area has previously been cleared for agricultural practices, with woodland and forest vegetation now limited to isolated paddock trees, fragmented patches surrounded by paddocks including within gullies, and intact patches along ridgetops or steeper slopes. Despite the historic clearing and land degradation from agricultural practices, the matrix of woodland patches and cleared areas still supports habitat for a range of native vertebrate fauna species, including amphibians, reptiles, birds, microbats and arboreal and terrestrial mammals. Key habitat features within the study area include:

- Riparian environments associated with the drainage lines and farm dams that occur in the study area, suitable for fauna species dependent on these habitats such as amphibians and reptiles;
- Terrestrial habitat features such as ground and shrub layer vegetation, leaf litter, rock outcrops and coarse woody debris suitable as shelter for small terrestrial fauna species;
- Hollow-bearing trees and stags suitable as shelter and breeding habitat for a range of hollow-dependent fauna, such as diurnal birds, owls and microchiropteran bats;
- Known raptor nest trees, mainly one potential Little Eagle nest located in the southern section of the project site; and

- Blossom-producing trees and shrubs suitable as forage for a range of nectarivores, including birds, arboreal mammals and flying foxes.

During surveys in March and May 2020, Cumberland Ecology mapped hollow-bearing trees within the study area, with a focus on forest and woodland patches in close proximity to proposed turbine sites and other areas within the subject land. Updated mapping of key habitat features, including hollow-bearing trees was undertaken in January 2021 for the final disturbance footprint (subject land) (**Figure 7**).

3.3.2. General Species

This section summarises the fauna species recorded within the study area during Cumberland Ecology's surveys for the revised BDAR. The details below should not be considered as an exhaustive list of species, and a suite of other fauna species are expected to occur within the study area.

3.3.2.1. Birds

A total of 46 bird species were recorded across the study area during surveys for the revised BDAR. The species of birds recorded largely comprised common, widespread species in wooded agricultural landscapes in south eastern Australia. The birds observed during the surveys (including incidental sightings) were flying moderate to short distances between trees, perching or moving between patches of vegetation. Sightings largely comprised scattered individuals or small groups (<5 individuals), apart from a sighting of relatively large flocks (>30 individuals) of Common Starlings and larger groups (~10-20 individuals) of Sulphur-crested Cockatoos and Galahs. Except for raptors, birds were rarely observed flying directly above or crossing the ridgetops.

Data for the past decade, as recorded by Anderson Environmental Consultants and ERM in their assessment reports for the project, indicated the presence of an additional 82 bird species beyond those recorded during surveys for the revised BDAR.

3.3.2.2. Mammals

A total of 12 microchiropteran bat species were positively identified across the ultrasonic recordings and harp trapping conducted for the revised BDAR. The most common/abundant species, based on numbers of recorded calls and occurrence within harp traps, include:

- Lesser Long-eared Bat (*Nyctophilus geoffroyi*);
- Gould's Wattled bat (*Chalinolobus gouldii*);
- Eastern Broad-nosed Bat (*Scotorepens onion*);
- Little Forest Bat (*Vespadelus vulturnus*); and
- Large Forest Bat (*Vespadelus darlingtoni*).

Two threatened microbat species were also detected as detailed in **Section 3.4.2** below.

Other native mammal species identified during surveys for the revised BDAR included two species of possum, two macropod species, the Short-beaked Echidna, the Yellow-footed Antechinus and the Common Wombat.

3.3.2.3. Reptiles and Amphibians

Two reptiles and no amphibians were detected in surveys for the revised BDAR.

3.3.1. Exotic Species

In addition to large flocks of Common Starlings, the following pest mammal species were detected in surveys for the revised BDAR:

- European Fox (*Vulpes vulpes*);
- European Hare (*Lepus europaeus*); and
- European Rabbit (*Oryctolagus cuniculus*).

3.3.2. Threatened Species

Following targeted surveys for the revised BDAR, five threatened species that are species credit species under the BAM were either detected or assumed to be present in the subject land, being the Gang-gang Cockatoo, Squirrel Glider, Little Eagle, Pink-tailed Legless Lizard and Striped Legless Lizard. Details of these species and their associated key habitat, which was used for mapping species polygons for species credit calculations in accordance with the BAM, is provided further below.

In addition to these species credit species, a number of ecosystem credit species were detected during surveys for the revised BDAR. These are species for which offset credits under the BOS are provided by offsets generated for impacts to native vegetation communities, and for which additional species offset credits are not required. These species include the following:

- Threatened bat species for which calls were recorded using ultrasonic detectors:
 - Large Bent-winged Bat (*Miniopterus orianae oceanensis*); and
 - Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*).
- Threatened birds recorded during bird surveys:
 - Dusky Woodswallow (*Artamus cyanopterus cyanopterus*);
 - Scarlet Robin (*Petroica boodang*); and
 - Varied Sittella (*Daphoenositta chrysoptera*).

Three migratory bird species listed under the EPBC Act - the Glossy Ibis, the Satin Flycatcher and the White-throated Needletail – have also been recorded historically in the study area by Anderson Environmental Consultants (2010) and ERM (2013b). However, none of these species were recorded during surveys for the revised BDAR.

Although also not recorded during Cumberland Ecology's field surveys, the threatened Little Eagle (*Hieraaetus morphnoides*) is likely present in the study area based on the presence of a potential Little Eagle nest in the

southern section of the project site (**Figure 7**). The species has also been recorded previously on site by ERM (2013b). As a result, the species was assumed as present in the revised BDAR.

i. Gang-gang Cockatoo

The Gang-gang Cockatoo (*Callocephalon fimbriatum*) is listed as vulnerable under the BC Act, and was recorded in the eastern extent of the project site. Key breeding habitat for the species is defined in the Threatened Biodiversity Database Collection (TBDC) as a 200 m buffer around nest trees, i.e. Eucalypt trees with hollows greater than 10 cm in diameter.

Key habitat for the Gang-gang Cockatoo has been mapped within the subject land only, as shown in **Figure 8**, as no clearing of suitable nest trees will occur outside of this boundary.

ii. Squirrel Glider

The Squirrel Glider (*Petaurus norfolcensis*) is listed as vulnerable under the BC Act. While it was not recorded during surveys undertaken for the revised BDAR, it has been previously recorded by ERM (2013a) in the eastern portion of the project site and since there is suitable habitat present within the subject land, the Squirrel Glider was assumed present as a pre-cautionary measure.

Key habitat for the species within the subject land comprises all woodland and forest vegetation within the site but does not include derived native grassland conditions (**Figure 8**).

iii. Little Eagle

The Little Eagle (*Hieraaetus morphnoides*) is listed as vulnerable under the BC Act. While it was not recorded during surveys undertaken for the revised BDAR, it has been previously recorded by ERM (2013b). There is also a potential nest for the species within the southern section of the project site. As a result, the Little Eagle was assumed present as a pre-cautionary measure.

Habitat constraints for the species is defined in TBDC as a 300m buffer around suitable nest trees. However, as the trees within the subject land have not been mapped individually, a conservative approach was taken, and as a result the key habitat for the species was mapped as all native vegetation within the subject land

iv. Pink-tailed Legless Lizard

The Pink-tailed Legless Lizard (*Aprasia parapulchella*) is listed as vulnerable under the BC Act and EPBC Act. The species has been assumed present for the project as a precautionary measure, as not targeted surveys or the species were undertaken.

Habitat constraints for the species is defined in TBDC as a 50m buffer around all areas of rocky habitat. As a result, key habitat for the species has been mapped as all areas within 50m buffer of rocky areas (**Figure 8**).

v. Striped Legless Lizard

The Striped Legless Lizard (*Delma impar*) is listed as vulnerable under the BC Act and EPBC Act. The species has been assumed present for the project as a precautionary measure, as not targeted surveys or the species were undertaken.

Key habitat for the species has been mapped as all areas of native vegetation in the subject land that are listed in the TBDC as associated with the Striped Legless Lizard, i.e. areas of PCT 1330 (**Figure 8**).

3.4. Impacts of the Project

The largest direct impact of the project is the removal of native vegetation communities, including areas of TECs, that also provides habitat for a wide range of flora and fauna species. There will also be a loss of known and potential threatened fauna habitat for the species credit species Gang-gang Cockatoo, Squirrel Glider, Little Eagle, Pink-tailed Legless Lizard and Striped Legless Lizard, as well as for a suite of ecosystems credit species such as the Large Bent-winged Bat, Yellow-bellied Sheath-tail-bat, Dusky Woodswallow, Scarlet Robin and Varied Sittella.

A total of approximately 9.37 ha of native forest, woodland and grassland habitat will be removed by the project, comprising four different PCTs in varying conditions. The majority of the native vegetation to be cleared comprise PCTs that are non-threatened, however some areas of Box Gum Woodland CEEC will also be removed. Limitations for disturbance to specific communities have been provided in the NSW Development Consent (condition 20) issued by the LEC at:

- 0.32 ha of Derived grassland of the South Eastern Highland Bioregion and South East Corner Bioregion (PCT 797) EEC;
- 0.22 ha of Tableland Basalt Forest EEC (PCT 1097); and
- 1.5 ha of Box Gum Woodland CEEC (PCT 1330).

Total vegetation clearing will not exceed the limitations outlined above. Furthermore, the identified location for a potential Little Eagle nest will not be impacted by the project.

In addition to direct impacts associated with vegetation clearing and loss of habitat, the project is predicted to result in a number of indirect impacts on biodiversity, including:

- Habitat fragmentation (reduced connectivity);
- Increased vehicle strikes;
- Inadvertent impacts on adjacent habitat or vegetation;
- Reduced viability of adjacent habitat due to edge effects;
- Reduced viability of adjacent habitat due to noise, dust or light spill; and
- Transport of weeds and pathogens from the site to adjacent vegetation.

In addition to these impacts, the operation of wind turbines has the potential to result in impacts to aerial fauna species, which include:

- Turbine strike or collision risk, by which individual species occurring in proximity to a wind farm could collide with wind turbines; and

- Barrier effects by which the construction of wind turbines has the potential to alter flight behaviour of birds and bats through avoidance of obstructions (turbines).

These impacts are likely to affect threatened and non-threatened bird and bat species in particular the Wedge-tailed Eagle, Brown Goshawk, Large Bent-winged Bat and White-striped Freetail Bat, as well as to White-throated Needletail, Glossy Ibis and the Satin Flycatcher that are listed as migratory species under the EPBC Act. Impacts from turbine strikes and/or barrier effect will be addressed in the Bird and Bat Adaptive Management Plan that will be prepared for the project under Consent condition 24.

4. Biodiversity Management Measures

This chapter outlines the short, medium and long-term biodiversity management measures to be taken within the subject land to minimise the impact of the project on biodiversity. A biodiversity constraints map has been included in **Appendix A**, which should be referred to where relevant when undertaking the biodiversity management measures outlined in this chapter.

4.1. Inductions and Staff Education

Inductions for staff, contractors and visitors to the subject land and project site will be conducted to make them aware of the ecological issues present in these areas and to ensure they know their role and responsibilities to the protection and/or minimisation of impacts to all native biodiversity. Inductions will address the location of sensitive flora and fauna and the policies being implemented to protect the biodiversity values within the project site.

The induction will include information on the following activities that are prohibited unless these activities are required as part of ongoing management practices:

- Fires;
- Removal of firewood;
- Removal of rocks, sand or gravel;
- Clearing of native vegetation;
- Recreational hunting;
- Baiting (unless permitted as part of the control of feral animals);
- Trapping or shooting (unless permitted as part of the control of feral animals); and
- Use of fertilisers.

The induction will also include identification of key threats to threatened fauna species and reference the mitigation measures being undertaken within the subject land.

Additional targeted and specific inductions will be provided for staff and contractors directly involved in clearing of native vegetation in relation to the two-staged clearing protocols, exclusions zones and types of flora and fauna, in particular threatened species.

It will be made clear to those receiving inductions and staff education, that an individual's failure to satisfactorily comply with site directions and rules could result in that individual being subject to disciplinary action.

Records of inductions and staff education will be maintained. Such records are to include:

- The person receiving the training;
- The date the training was received;
- The name of the person conducting the training; and

- A summary of the training provided to the trainee.

4.2. Minimising Native Vegetation Clearing

4.2.1. Micro-siting of Infrastructure

In accordance with condition 10 (Schedule 2) of the Development Consent for the project, micro-siting of wind turbines and ancillary infrastructure is permitted without further approval requirements if the final locations chosen are in compliance with the micro-siting restrictions outlined in Table 1 for condition 10 and does not result in non-compliance with other consent conditions.

The micro-siting undertaken during the design phase of the project involves careful consideration and inspection of each proposed turbine location to determine its most optimal position, considering factors such as power generation and ability to construct and transport the turbines, whilst ensuring the locations remain consistent with the Development Conditions of consent. Minimising biodiversity impacts are also an important factor to consider for the project when undertaking micro-siting.

In summary, the final position of the wind turbines for the project need to consider:

- Compliance with the micro-siting restrictions under condition 10 of the Development Consent;
- Optimising the energy yield of the project;
- Minimise vegetation clearing of TECs and known and potential habitat for the Squirrel Glider and Gang-gang Cockatoo, as well as hollow-bearing trees;
- Maximise distance between wind turbine and hollow-bearing trees as well as a potential Little Eagle nest;
- Enabling safe access for equipment and personnel during construction and operation phases; and
- Identifying safe and structural sound positioning of hardstand and foundation footprint.

Once the final turbine locations are selected, similar consideration for the remaining ancillary infrastructure is undertaken. The final layouts for the project's access tracks will focus on utilising existing locations for roads and farm tracks, in already cleared land, to the greatest extent possible to avoid and minimise vegetation clearing.

During the construction phase, further micro-siting may also be required in the event of unexpected biodiversity related finds, or the occurrence of other factors that could have negative implications for the construction and/or operation of the project.

In all instances, micro-siting of wind turbines and ancillary infrastructure should be undertaken to avoid and minimise vegetation clearing and habitat removal of Box Gum Woodland CEEC, Tableland Basalt Forest EEC, hollow-bearing trees, as well as key habitat for the Gang-gang Cockatoo, Squirrel Glider, Little Eagle, Pink-tailed Legless Lizard, and Striped Legless Lizard. Ecological impacts should not be increased by the micro-siting process during construction, compared to the clearing areas and BAM credit calculations for each entity

identified in the final revised BDAR. Rather, the impacts described in the final revised BDAR represents an upper limit for the project, beyond which no additional impacts on biodiversity values will occur.

4.2.2. Marking Limits of Clearing

Disturbance of vegetation will be limited to the minimum necessary for each stage of construction.

The limits of clearing will be marked either by high visibility tape on trees, metal/wooden pegs, fencing or an equivalent boundary marker that will be installed any time prior to clearing. To avoid unnecessary or inadvertent vegetation and habitat removal or impacts on fauna, disturbance will be restricted to the delineated area and no stockpiling of equipment, machinery, soil or vegetation will occur beyond this boundary.

The Environmental Officer will be responsible for ensuring that the clearing limit markers are installed and maintained to ensure that disturbance is limited to the approved subject land boundary.

4.2.3. Post-clearing Inspection

Following the completion of vegetation clearing, a post-clearing inspection will be undertaken by a qualified ecologist to verify the actual clearing footprint, to ensure that clearing has not occurred beyond marked areas/subject land boundary. The results of the post-clearing inspection will seek to inform the accuracy of the project’s credit obligation.

The post-clearing inspection will ground-truth the areas that have been disturbed by the project, with a focus on areas comprising native vegetation (vegetation zones) as reflected in the revised BDAR. Rapid assessment points and GPS photo points will be used to verify the evidence of disturbance or lack thereof in relation to the demarcated approved subject land boundary.

Reporting requirements associated with the post-clearing inspection are detailed in **Chapter 6** of this BMP.

4.3. Minimising Loss of Key Fauna Habitat

Measures to minimise loss of key fauna habitat in the subject land are detailed in **Table 7**.

Table 7 Fauna habitat within the subject land and impact minimisation measures

Species Type	Habitat Type	Minimisation Measures
Reptiles	Rock outcrops	Rock disturbance limited to subject land.
	Tussock grass areas	Any rock removed from the subject land to be replaced adjacent to the subject land, subject to landholder agreement.
		Disturbance to derived native grasslands limited to subject land.
Water birds	Farm dams	Disturbance to farm dams to be avoided by the subject land.
Amphibians	Ephemeral drainage lines	Ephemeral drainage lines will be avoided by the subject land wherever possible and impacts will be limited to crossings.

Species Type	Habitat Type	Minimisation Measures
		<p>Crossings will be designed to minimise erosion and impedance of flows. Works will be undertaken during dry periods where possible.</p> <p>Erosion and sediment control measures to be installed to avoid indirect impacts from run-off.</p>
Microbats	Tree hollows, man-made structures	<p>Micro-siting wind turbines and associated infrastructure away from hollow bearing trees to the greatest extent possible.</p> <p>Undertaking pre-clearance surveys to determine if roosts, nests or dens are visible in any hollow-bearing trees (refer Section 4.5).</p>
Hollow-dependent species	Tree hollows, hollow bearing logs	<p>Micro-siting wind turbines and associated infrastructure away from hollow bearing trees to the greatest extent possible.</p> <p>Undertaking pre-clearance surveys to determine if roosts, nests or dens are visible in any hollow-bearing trees (refer Section 4.5).</p> <p>Hollow bearing logs requiring removal and cleared larger woody debris will be relocated into adjacent habitat (subject to landowner agreement) or placed on rehabilitated disturbance areas post-construction.</p>
Squirrel Glider	Native woodland and forest (PCT 1093, 1155 and 1330)	<p>Minimise native vegetation clearance of woodland and forest (refer Section 4.2).</p> <p>Micro-siting wind turbines and associated infrastructure away from hollow bearing trees to the greatest extent possible.</p> <p>Undertaking pre-clearance surveys to determine if roosts, nests or dens are visible in any hollow-bearing trees (refer Section 4.5).</p> <p>Demarcate habitat as per Section 4.2.2.</p>
Gang Gang Cockatoo	Eucalypt trees with hollows greater than 10 cm in diameter	<p>Micro-siting wind turbines and associated infrastructure away from hollow bearing trees to the greatest extent possible.</p> <p>Undertaking pre-clearance surveys to determine if roosts, nests or dens are visible in any hollow-bearing trees (refer Section 4.5).</p> <p>Demarcate habitat as per Section 4.2.2.</p>
Little Eagle	Potential nest	<p>As described in the revised BDAR, there are no turbines proposed in close proximity to the potential Little Eagle nest in the project site. Wind turbines will not be micro-sited any closer to the known potential nest location.</p>

Species Type	Habitat Type	Minimisation Measures
		In the event that additional Little Eagle nests, or other raptor nests, are identified during construction, advice from an ecologist will be sought to ensure impacts are minimised.
Raptors, microbats, migratory birds	All areas, aerial space	Additional relevant mitigation measures to be detailed in Bird and Bat Adaptive Management Plan and implemented.

4.4. Minimising Impacts to Fauna

Minimising impacts to fauna in the subject land, including threatened species, will be undertaken through the implementation of a two-step risk minimisation process:

1. Identifying and managing likely fauna presence through the implementation of a pre-clearance procedure; and
2. Active management during the clearing phase.

In all instances, only a person suitably qualified and experienced (such as an ecologist, wildlife carer or veterinarian) with appropriate licenses from NSW Parks and Wildlife will capture and relocate any fauna. Relocation will be undertaken in consultation with the Project Ecologist.

Fauna that is harmed during site activities will be taken to a vet or wildlife carer. Suitable release areas will be identified by the qualified ecologist based on site conditions. Release areas will prioritise adjacent areas of similar suitable habitat, or where adjacent similar habitat is not available, suitable habitat otherwise identified by the Project Ecologist.

Descriptions of the pre-clearance and clearance procedures are outlined below in **Section 4.5.1** and **Section 4.5.2** respectively.

4.5. Pre-Clearance and Clearing Activities

4.5.1. Pre-Clearance Surveys

A fauna pre-clearing survey will be undertaken by a qualified ecologist prior to any vegetation clearance within the subject land. Habitat features that have a high potential to support native fauna species will be identified prior to any clearing activities. These include significant rock outcrops and in particular trees bearing hollows that have potential to contain species such as bats, gliders, possums, reptiles and birds. Trees to be cleared that contain hollows or nests that have a high potential to contain fauna will be identified, recorded, flagged with fluorescent marking tape, and marked with a large (> 1 m) "H" using spray paint on two sides of the tree.

Trees that are suitable for 'salvage' will be identified by a qualified ecologist and marked with further fluorescent tape.

Any fauna utilising the subject land will be recorded, and where possible, these will be encouraged to leave the area prior to clearing. The location of suitable nearby habitat for the release of fauna that may be encountered during the pre-clearing process will be identified and marked on a map. Fauna pre-clearance surveys are to be conducted no later than two weeks before commencement of clearing and/or salvage activities to ensure sufficient time for identification of suitable hollows.

Reporting requirements associated with the pre-clearance surveys are detailed in **Chapter 6** of this BMP.

4.5.2. Clearing Process

4.5.2.1. Staging of Clearing

For the duration of vegetation clearing, a qualified ecologist must be present at all times to actively seek, capture and release any native fauna that may be disturbed and flee from felled trees to limit the impacts to native fauna caused by clearing.

The clearing will be conducted using a two-stage clearing process as follows:

- Stage 1: Clearing will commence following the identification of potential habitat features by a qualified ecologist (**Section 4.5.1**). Hollow-bearing trees marked during pre-clearing surveys will not be cleared during the first stage; however, all vegetation around these trees will be cleared to enable isolation of the feature. Other habitat features, such as hollow-bearing logs, can be removed during Stage 1 only if done under supervision by a qualified ecologist. Identified hollow-bearing trees will be left at a minimum overnight after Stage 1 clearing to allow resident fauna to voluntarily move from the area.
- Stage 2: After hollow-bearing trees have been left overnight, the trees will be cleared using the following protocols:
 - Trees marked as containing hollows will be shaken by machinery prior to clearing to encourage any animals remaining to leave the hollows and move on;
 - Use a bulldozer or excavator to start pushing the tree over. Move the bulldozer over the roots and continue gently pushing the tree over;
 - Remove branches with hollows and sections of trunk and set aside for immediate transfer to a storage area for placement within retained vegetation; and
 - All hollows will be investigated by an ecologist for the presence of fauna following felling of the tree.

The felled habitat tree will be left overnight to allow any remaining fauna time to leave the hollows and disperse to adjacent habitat. For isolated felled trees, an additional investigation for the presence of fauna will be undertaken by a Project Ecologist.

4.5.2.2. Additional Clearing Protocols

For trees identified during the pre-clearance survey as containing nestlings or juveniles, the trees will be cleared using the following protocols:

- Trees will be inspected after a minimum of one night after Stage 1 clearing works are undertaken to determine if animals are still present;
- If animals have self-relocated following Stage 1 clearing works, the tree will be removed using the Stage 2 clearing protocols; and
- If animals have not self-relocated following Stage 1 clearing works, the habitat tree will be left in-situ and inspected to determine animal presence. The following measures will be taken following these inspections:
 - Once animals have self-relocated, clearing can be undertaken in accordance with Stage 2 protocols; and
 - If animals have not self-relocated within one-week of cessation of clearing activities, the animals are to be removed from the tree using an Elevated Work Platform or by a tree climber. Captured animals are to be relocated to nearby remnant vegetation or if found to be injured/sick are to be taken to a veterinary clinic for treatment. If the animals are unlikely to survive, they will be humanely euthanized.

4.5.3. Fauna Relocation

Any uninjured fauna captured during clearing will be moved to a relocation site. All fauna handling will be carried out by licenced wildlife carers and/or ecologists.

The location of relocation sites will be determined prior to the commencement of clearing of woodland/forest vegetation and paddock trees. Relocation sites will be established in areas of suitable habitat and will include areas of remnant vegetation retained within the study area. Relocation sites will only be utilised if the habitat resources present are the same in extent and composition to those within the area cleared.

All persons working on vegetation clearing will be briefed about the possible fauna present and what procedures should be undertaken in the event of an animal being injured or disturbed. All fauna handling will be carried out by licensed wildlife carers and/or ecologists.

4.5.4. Injured Fauna Rescue

An ecologist will be present while clearing to rescue animals injured during the clearance operation. Any animals that are inadvertently injured will be taken to the nearest veterinary clinic for treatment, or if the animal is unlikely to survive, it will be humanely euthanized.

Results and outcomes of fauna rescue activities shall be documented for Animal Ethics and NSW Parks and Wildlife licence reporting and detail the incidence of sick or injured animals and the actions taken to care for the fauna, if available from the veterinary clinics.

The closest veterinary clinic or wildlife carers are:

- Crookwell Veterinary Hospital, 24-hour Phone: (02) 4832 1977; and
- Wildlife Information and Rescue Service (WIRES), Phone (02) 4822 388 or 1300 094 737.

4.5.5. Unexpected Threatened Species Find Protocol

In the event of an unexpected threatened species find within the subject land, in particular during pre-clearing and clearing activities, the protocols outlined below will be followed. This protocol applies to threatened species not previously assessed as known to potentially occurring within the study area (see **Chapter 3**).

1. Threatened species found during preclearance survey;
2. Photographs to be taken to help verify species identity;
3. Stop all work in the vicinity of the find;
4. Notify site Environmental Manager who will notify the Project Ecologist;
5. Project Ecologist to verify species identity;
6. If observation verified as a threatened species, work is to stop, otherwise work can recommence;
7. Environment agency to be notified and additional mitigation measures developed for threatened species (if required);
8. Mitigation measures to be implemented;
9. Work to recommence under supervision of the Project Ecologist.

4.6. Access Control

Measures will be implemented to control access to the subject land and project site to minimise disturbance to biodiversity values, including:

- Provision of designated access roads;
- Maintaining existing fencing;
- Fencing and restricting no-access areas; and
- Installing signage indicating access restrictions.

Access control measures are to be implemented as required for the life of the project.

4.7. Vehicle Driving Policy

A Vehicle Driving Policy will be prepared by the Environmental Officer in consultation with the civil contractor and implemented in the subject land and study area with speed restrictions to minimise the risk to fauna, especially collision risks on internal roads due to the proximity of woodland habitat. Speeds on internal roads within the subject land should not exceed 60 km/hr.

All vehicles that enter the subject land and wider study area must be fit-for-task and should follow the designated tracks throughout the subject land, where possible. That notwithstanding, it will be necessary for equipment or vehicles to leave existing access tracks from time to time for maintenance and/or monitoring

purposes. In addition, equipment may be required to conduct maintenance activities on tracks to maintain safe access and for bushfire management.

4.8. Rehabilitation and Revegetation of Temporary Disturbance Areas

The rehabilitation and revegetation of areas subject to temporary disturbance as well as areas to be rehabilitated as part of the decommissioning of the project in the subject land will aim to:

- Return disturbed areas to ensure that they are safe, stable and non-polluting and reduce the total area exposed at any time and will include the re-creation of habitat for fauna; and
- Aim to return vegetation consistent with existing vegetation communities (PCTs), through direct seeding or planting of plants grown from locally collected seed.

No native vegetation occurs in the temporary disturbance areas for the project (**Figure 5**). As a result, no revegetation of the temporary disturbance areas to target PCTs is required.

In relation to the decommissioning of the project, the indicative PCTs for rehabilitation will be informed by the slope position or geology as detailed in **Table 8**. Species suitable for planting/direct seeding for each PCT are provided in **Appendix B**. Furthermore, in accordance with consent condition 43, as part of the decommissioning of the project, the entire subject land will need to be restored to "*native vegetation as generally identified in the EIS*". As a result, the areas of native vegetation detailed for the subject land in **Table 3** of **Section 3.1.2** of this BMP, with the location shown in **Figure 5** (also shown in detail within the approved revised BDAR as vegetation zones), will be rehabilitated and revegetated in accordance with condition 43.

Table 8 Landform/geology to determine PCTs for rehabilitation

PCT #	PCT Name	Landform/geology
1093	Red Stringybark - Brittle Gum - Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion (intact)	Mid slopes
1097	Ribbon Gum - Narrow-leaved Peppermint grassy open forest on basalt plateaux, Sydney Bioregion and South Eastern Highlands Bioregion (BC Act TEC)	Plateau tops on basalt
1155	Silvertop Ash - Narrow-leaved Peppermint open forest on ridges of the eastern tableland, South Eastern Highlands Bioregion and South East Corner Bioregion (intact)	Ridge-top and upper slopes on shale
1330	Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion (BC Act TEC)	Lower slopes

Rehabilitation will be undertaken progressively in all temporary impact areas and areas to be rehabilitated as part of the decommissioning of the project. Internal access roads that are not required for agricultural use following construction will be rehabilitated, unless agreed otherwise with landowner under written agreement.

Prior to the commencement of rehabilitation activities, the Environment Officer will establish the pre-existing conditions and identify the proposed methods for rehabilitation.

The Environment Officer will be responsible for ensuring that all rehabilitated areas are to be fenced off in consultation with the land holder or protected with tree guards to ensure plants are not browsed by livestock or pest species. Where revegetated areas are likely to be subject to impacts from feral herbivores, targeted control of pest species in accordance with measures details in **Section 4.14** should be undertaken concurrently with the revegetation operations to ensure the success of establishing seedlings.

4.8.1. Rehabilitation Objectives

Specific objectives for the rehabilitation of temporary disturbance areas as well as areas to be rehabilitated as part of the decommissioning of the project are provided in **Table 9**. The rehabilitation objectives should be reviewed as part of the overall review of this BMP (**Chapter 7**) and updated as required.

Table 9 Rehabilitation Objectives

Feature	Objective
Project disturbance footprint/subject land (as a whole)	-landform is stabilised and non-polluting
Revegetation	-return native vegetation consistent with the PCTs that existed prior to disturbance in the subject land, as detailed in the revised BDAR and in this BMP, using local provenance seed. All structural elements of the PCT should be present, with all dominant canopy and mid-storey species from the list included in Appendix B to be planted, as well as a minimum of 10 species for the ground layer. All revegetated areas should achieve 80% coverage of native plants as an indication of revegetation success.
Weeds	- no priority weeds to be present in revegetated areas, and <10% cover of any other weed species
Erosion	-ensure areas with disturbed soil surfaces are stabilised
Salvaged Habitat Resources	- return salvaged habitat resources after rehabilitation (direct seeding and/or planting) has taken place
Wind turbine pads	- to be covered with rock and soil and be revegetated consistent with the relevant PCTs detailed in the revised BDAR using local provenance seed
Above ground wind turbine infrastructure	-to be decommissioned and removed (unless otherwise agreed)
Above ground ancillary infrastructure	-to be decommissioned and removed (unless an agreed alternative use is identified)
Internal access roads	-to be decommissioned and removed (unless an agreed alternative use is identified, and agreed with the land holder)

4.9. Protecting Native Vegetation and Key Fauna Habitat outside the Subject Land

The following mitigation measures will be implemented to protect native vegetation and key fauna habitat outside the subject land:

- Where practicable, project vehicles are to remain within the subject land at all times to minimise additional vegetation disturbance;
- Laydown or temporary disturbance areas will be sited in already disturbed areas (such as Exotic Pasture) to avoid any unnecessary clearing of native vegetation and habitat;
- Minimise spread of weeds through the implementation of weed control measures detailed in **Section 4.13**;
- No vegetation clearing to be undertaken outside the subject land;
- Additional targeted and specific inductions to be undertaken for staff and contractors directly involved in clearing of native vegetation in relation to general clearing procedures, limits of clearing and exclusion zones; and
- To ensure the above, the limits of clearing will be marked out in accordance with **Section 4.2.2**.

4.10. Salvage of Habitat Features

A selection of habitat features will be salvaged for use within revegetation and rehabilitation areas, as well as within undisturbed vegetation adjacent to the subject land. As outlined in **Section 4.5.1**, habitat items that are suitable for 'salvage' will first be identified by a qualified ecologist during pre-clearance surveys and marked with fluorescent tape.

Due to the potential damage of habitat features during felling, actual salvage items will then be confirmed following clearing. Habitat features to be selected for salvage include:

- Hollow-bearing limbs, that are assessed as having structural integrity. A range of size classes of hollows are required, and the following criteria should be used to determine which hollows are suitable for salvage:
 - For woodland forming habitat to the Squirrel Glider, a suitable hollow would be defined as anything ≤ 5 cm in diameter and
 - For woodland forming habitat to the Gang-gang Cockatoo, a suitable hollow would be defined as anything ≥ 9 cm in diameter;
- Fallen timber (over 10 cm in diameter and 1 m in length), that are assessed as having structural integrity; and
- Bush rocks (>50 cm in width) assessed as structurally suitable for relocation.

The following procedures apply to habitat features salvaged within a clearing area:

- Type of habitat feature, and likely threatened species that use that feature, will be recorded;
- Original location of habitat feature will be recorded using a GPS; and
- Habitat features to be marked using fluorescent tape on the feature.

The salvage target for each clearing event will be 100% of suitable confirmed habitat features identified within each clearing site.

All salvaged items will be relocated to a temporary stockpile area within the subject land prior to relocation. The location of any stockpiling areas will be identified prior to each clearing event. Salvaged features will generally not remain within temporary stockpile areas for more than one year.

Salvaged items such as bush rock and fallen timber will not be returned until after rehabilitation (direct seeding and/or planting) has taken place. Salvaged hollows will be installed in suitable trees in retained vegetation, adjacent to the subject land, as identified by a qualified ecologist. The installation of salvaged hollows in trees should also be supervised by a qualified ecologist, to ensure that it occurs at an appropriate height for the target species, and is facing the correct direction. The location of each installed hollow will be recorded with a GPS. Each of the installed salvaged hollows will be monitored annually as part of the monitoring program outlined in **Chapter 5**.

Woody vegetation that is not salvaged will be mulched and re-spread over the topsoil of the clearing site. Any weed species with the potential to establish in mulch from seed or other propagules, such as *Rubus fruticosus* spp. agg. will not be mulched.

4.11. Soil Management

4.11.1. Topsoil Management

For areas where topsoil is required to be removed, this is to be stripped and salvaged for use in rehabilitation. Topsoil from areas of native vegetation including DNG is a priority for salvage of topsoil. Topsoil from areas of exotic grassland will be salvaged but not utilised in other areas due to the likely detrimental impact of the weed propagules present in the soil.

Topsoil will be stripped after clearing to the depth determined from soil surveys, while avoiding stripping of subsoil. Following stripping the soil may be briefly stockpiled while ameliorants (such a gypsum, lime or organic matter) is added, before being transported for use in rehabilitation.

Topsoil should be used immediately on any adjacent areas that are ready for rehabilitation, so as to minimise the decline of soil stored seed and micro-organisms. In the event that no areas are ready for rehabilitation, topsoil is to be stored for later use in rehabilitation. Topsoil that is to be used for rehabilitation should ideally not be stored for longer than a maximum of six (6) months following disturbance (unless required to reduce weed seed bank).

Topsoil will only be stored in cleared areas, or exotic pasture. Stored topsoil will be adequately covered to minimise seed viability decline. Stockpiles should be inspected annually for growth of weeds and any Priority weeds treated in accordance with **Section 4.13**.

If stored topsoil becomes heavily impacted by weeds prior to reapplication in rehabilitation areas, the following strategies should apply:

- An alternative substrate should be used; or
- Affected topsoil should be covered and stored for a longer period to ensure the weed seed bank expires before reapplication.

Topsoil will be spread to a minimum depth of 200mm when respreading topsoil in areas being rehabilitated. If the subsoil layer has become hard or compacted, this should be deep ripped on the contour following respreading of topsoil to aid infiltration.

4.11.2. Subsoil Management

Subsoil typically contains a range of properties that makes it unsuitable for use as a growth media: high salinity, high sodicity and low nutrient availability. As such the use of subsoil will be avoided as a growth media, except where soil testing indicates that it can be used alone or blended with topsoil and effectively improved through the addition of ameliorants. In the event that subsoil requires removal it will be stripped separately to topsoil, after which subsoil will be removed and subsequently placed below topsoil in the recreated soil profile as part of rehabilitation earthworks.

4.12. Collecting and Propagating Seed

Seed will be collected from native vegetation for later use in rehabilitation and revegetation to ensure genetic diversity is maintained. Local seed collection will be undertaken by a qualified vegetation management contractor and will commence at least 24 months prior to the cessation of operations, in order to collect suitable volumes of seed to commence rehabilitation works as part of the decommissioning phase of the project. It should be noted that no temporary disturbance areas associated with the construction of the project comprise native vegetation, hence no revegetation and associated seed collection is required for temporary disturbance areas.

Seed collection will be conducted throughout the year and from all areas shown in **Figure 9**, as required by the seeding times of target species. Indicative species to be targeted for seed collection, with particular focus on species characteristic of TECs, are shown in **Appendix B**. Many species will produce seed in late spring or summer (following winter or early spring flowering) and/or autumn (e.g. *Microlaena stipoides* and *Acacia* species), whilst *Eucalyptus* species can hold their seed in the canopy for up to a year after seed is produced.

Seed collection will continue annually to ensure volumes of seed are maintained.

Suitable seed collection techniques include:

- Brush harvesting, to obtain seeds from a diversity of understorey species;
- Suction or vacuum harvesting of grass species with less persistent seed units (e.g. *Microlaena stipoides*);
- Hay strewing - this may be appropriate if a recipient site is ready to receive seed at the time of harvest; and

- On-ground collection of Eucalypt fruit.

Seed should be collected by a qualified vegetation management contractor and stored in a refrigerated facility to ensure long-term seed viability. Some seed will also be germinated to provide tubestock for planting. This may be contracted out to a native plant nursery located off site. Prior to seed collection, this BMP should be updated by the project ecologist in consultation with a qualified vegetation management contractor with the target seed application rates for each of the species identified in **Appendix B**, including timeframes for seed application to meet the specified seed application rates.

A licence or permit is required to collect seeds from threatened species or TECs. All personnel that are engaged to collect seeds must hold relevant and valid collection licences. All seed collection will be undertaken following the Florabank Guidelines, Native Seed Collection Methods (Australian Seed Centre and Mortlock, 1999). Any batches of seed more than two years old will be tested for viability on an annual basis (with viability recorded) and if seed becomes unviable, replacement batches of seed will be collected.

Stored seed will also be tested for the presence of weed species. Where excessive weed seed is detected in stored samples, replacement batches of seed will be procured from species included in **Appendix B** from a suitable alternative source, as determined by the qualified vegetation management contractor in consultation with the project ecologist.

4.13. Weed Management

Weed management activities will be undertaken in the subject land in a manner that will ensure adjacent agricultural land and retained native vegetation is not significantly impacted, and that vegetation regeneration and rehabilitation activities in the subject land are not impeded. Weeds will be proactively managed in the subject land to avoid the spread of existing weeds and to manage any incursions which arise throughout construction and operation of the project.

Weed removal will have regard to the following, to minimise impacts upon existing vegetation and habitats:

- Avoid over-clearing and remove only targeted species;
- Limit spread of weeds from disturbance areas or off-site areas to weed control areas by washing down vehicles and equipment prior to moving them out of designated clearance areas;
- Employ minimal disturbance techniques to avoid soil and surrounding vegetation disturbance, and replacement of disturbed mulch/leaf-litter;
- Remove fruiting/seeding parts of weeds carefully, to minimise spread of plant propagules; and
- Use of chemicals and sprays only during suitable weather conditions (i.e. not during wet or windy conditions), and only during appropriate seasons.

Based on the BAM plot data collected to date, a number of areas with high concentrations of high threat weeds have been identified (**Figure 10**). Vehicle movements in these areas should be limited, aside from the required construction work. Where vehicle movement in these areas cannot be avoided, all plant equipment and machinery will be inspected and subject to wash down protocols in designated wash down areas (indicative

locations shown in **Figure 10**) immediately after exposure to ensure weed material from the high weed concentration areas do not establish or spread into adjacent retained vegetation. Any weed materials will need to be carefully removed off site in a manner appropriate to the species to prevent the spread of propagules to uncleared areas of native vegetation, both on and off site. Identified washdown areas should be subject to more frequent monitoring for weed outbreaks, as part of the ongoing weed monitoring described in this BMP.

Prior to undertaking targeted weed control activities, the relevant contractor should undertake baseline weed mapping surveys to identify areas of weed infestations within the subject land to target as a priority. The results from the baseline weed mapping surveys will also be used to update the mapping of areas identified as high concentration weed areas, as shown in **Figure 10**. Identified locations for washdown areas should also be updated as required to reflect the results of the baseline weed mapping.

The first priority for weed treatment will be targeting mature individuals of priority weeds and other weeds of regional concern. Many of these species are perennial and take several years to reach reproductive maturity so are easily controlled providing juveniles are continuously eradicated before reaching maturity.

Post-treatment inspections should be undertaken regularly to verify that identified priority weed infestations have been eradicated. Where required, follow-up weed control should be undertaken. Ongoing weed monitoring is further described in **Chapter 5**.

Weed control methods will be implemented in accordance with the NSW Weed Control Handbook (DPI. 2018).

4.13.1. Use of Herbicides

All herbicides should be used according to recommendations on the herbicide label. Appropriate Personal Protective Equipment (PPE) should be worn, and consideration given to time of day, likelihood of rainfall, wind direction and likely impact on native species as per guidelines on the label. Use of glyphosate will be appropriate for most species. Glyphosate is the preferred herbicide for use in environmentally sensitive areas as it is rapidly broken down by microbes in the soil so residue is short lived and will not affect remnant and planted native individuals in the long-term following application.

It is important to note that there can be legal restrictions and permit requirements for use of specific herbicides for specific plants, and chemical labels and permit requirements always need to be researched prior to herbicide application. Herbicide permits need to be obtained from the Australian Pesticides and Veterinary Management Authority.

Records should of all herbicides used on site should be kept by the contractor and provided to the Project Environment Officer.

Manual and mechanical removal will be an appropriate form of control for some species, and all chemical treatment should be carried out in accordance with best practice guidelines.

Revegetation activities should not occur within 10 days of herbicide application.

4.14. Feral Pest Management

The following pest fauna species are known from the study area;

- European Fox (*Vulpus vulpes*)
- European Hare (*Lepus europaeus*)
- European Rabbit (*Oryctolagus cuniculus*)

In addition to these species, a range of other pest fauna species have the potential to be present such as feral cats and wild dogs. These species have the potential to both compete with native species for resources and cause damage to land and vegetation.

Measures to ensure that feral pests are not introduced or encouraged within the subject land as a result of the project activities must be implemented as part of the project. All ongoing fauna pest control should be undertaken in cooperation with the landowners and in accordance with the requirements of the Local Land Services.

The management of feral fauna is intended to be adaptive and will be informed/reviewed based on the key findings and recommendations of the feral monitoring. Initially the goal will be to reduce the existing populations substantially, with subsequent efforts concentrating on maintaining consistently low levels of feral animals to minimise impacts on native vegetation and fauna.

Ongoing management of feral pests should also have consideration to appropriate waste management measures as well as prompt removal of any animal carcasses as a result of potential turbine strikes, to reduce foraging opportunities for scavengers such as foxes and wild dogs.

4.15. Erosion and Sediment Control

Erosion and the migration of sediment from the subject land into adjacent vegetation and ephemeral creeks has the potential to facilitate weed invasion through the introduction of weed seeds and nutrients that favour weed species. This potential impact will be avoided through the implementation of appropriate erosion and sediment control measures such as:

- Stabilisation of areas of bare soil using jute matting or mulch (to be applied to areas most prone to erosion due to the limited availability of mulch from salvaged material);
- Stabilisation of areas of bare soil by re-vegetating immediately with appropriate local native plants;
- Minimisation of soil stockpiling and appropriate placement of soil stockpile (if required);
- Stabilising soil stockpiles by seeding with a sterile cover crop (e.g. Japanese millet (summer) or oats (winter));
- Control of sediment by installing erosion fences downslope of all construction works, prior to commencement of any earthworks to avoid potentially nutrient and seed rich run-off entering neighbouring areas of vegetation; and
- Undertaking rehabilitation within six (6) months following disturbance (i.e. areas will not be left for extended time without vegetation cover).

A Stormwater Management Plan is required to be prepared, in accordance with the Conditions of Consent, which will include measures to minimise erosion and sedimentation inputs, with relevant sections prepared in accordance with Managing Urban Stormwater, Soils, and Construction (Landcom, 2004).

4.16. Bushfire Management

The subject land and wider study area poses a moderate to low bush fire risk to due to the limited fuel source, the existing vegetation composition and current agricultural land use practices. However, some patches of native vegetation on ridgetops can experience build-up of fuel loads over time from dense vegetation and leaf litter drop. A combination of relatively low rainfall, the dry nature of the landscape and high fuel loads could pose a risk of wildfires under extreme weather conditions on a local scale.

The project will be designed to provide asset protection in accordance with Planning for Bushfire Protection 2006 prepared by the Rural Fire Service (RFS). Project operations will be suitably equipped to respond to any fires on site and if required, assist the RFS and other emergency services as much as possible if there is a fire in the vicinity of the Project area. The Emergency Management Plan to be prepared will include procedures to manage potential wildfires in the vicinity of the study area.

5. Monitoring Program

Monitoring, inspections and audits of environmental control measures detailed in **Chapter 4** will be undertaken to record the effectiveness of pre- and post-construction control measures. Performance criteria for monitoring, inspections and audits, corrective actions in the event that performance criteria are not met, and responsibilities are detailed in **Table 10**.

While some monitoring will need to be undertaken by a suitably qualified ecologist (under supervision of the Project Ecologist), other inspections should be undertaken by the Project's Environmental Officer. Works undertaken by subcontractors will require collection of records and reporting to the Environmental Officer.

The monitoring program, and associated performance criteria and frequency/timing of monitoring, should be reviewed and updated as required as per the review of this BMP described in **Chapter 7**.

Table 10 Proposed monitoring, performance criteria and responsibilities for implementation

Item monitored	Performance criteria	Method of monitoring	Frequency/timing	Trigger	Corrective actions	Responsibilities
Inductions	All Project staff and contractors inducted	Review records of inductions of contractors and staff	Prior to work on the Project area	Project staff and contractors not inducted	Undertake additional inductions	Environmental Officer
Marked limits of clearing	All vegetation beyond the subject land is protected and demarcated	Inspection of fencing and other markings	Following installation Six monthly inspection	Demarcated areas have been disturbed	Record extent of impact and report incident Additional marking or fencing if required Include area for remediation/rehabilitation if suitable	Environmental Officer
Threatened species habitat	All threatened species habitat protected and demarcated	Inspection of fencing and other markings	Following installation Six monthly inspection	Demarcated threatened species habitat have been disturbed	Record extent of impact and report incident Additional marking or fencing Include area for remediation/rehabilitation if suitable	Project Ecologist
Habitat features	All suitable habitat features identified for clearing and salvage 100% of confirmed habitat features identified salvaged	Preclearance surveys	No later than 2 weeks prior to clearing	Habitat features, or salvage items have not been identified prior to clearing	Additional survey to identify features. Targets to be adjusted if not achievable	Project Ecologist to verify on completion
Clearing	All cleared habitat features inspected	Inspection of all habitat features	During clearing	Habitat items cleared without presence of ecologist	Further inspections if required	Project Ecologist to verify on completion

Fauna relocation	All captured fauna relocated to suitable area	Records of all fauna relocated	During clearing	Fauna relocation not occurring	Fauna relocated by qualified ecologist	Project Ecologist to record all fauna species relocated
Injured fauna	All injuries/fatalities recorded	Review of Animal Ethics and NSW National Parks and Wildlife Licence reporting	During clearing	Injuries/fatalities not recorded	Project ecologist to ensure all injuries/fatalities recorded	Project Ecologist
Access control	The access control measures detailed in Section 4.6 have been implemented to control access to minimise disturbance to biodiversity values.	Twice annual check of control measures	Ongoing	Access control measures found not to be implemented and/or followed	Undertake access control measures Complete additional inductions and training with contractors and staff	Environmental Officer
Rehabilitation (prior conditions)	Pre-existing conditions (vegetation/soils etc. identified)	Inspection of pre-existing conditions	Prior to clearing	Inspection of pre-existing conditions not fully completed	Further survey	Environmental Officer
Rehabilitation fencing	All rehabilitation areas fenced off	Inspection of fencing	Following planting	All rehabilitation areas not adequately fenced off	Additional fencing	Environmental Officer
Ongoing rehabilitation monitoring	Rehabilitation areas consistent with objectives in Table 9	Inspection of survival of plantings, land-form and weeds	Quarterly during construction period	Rehabilitation areas not consistent with objectives in Table 9	Further rehabilitation works such as topsoil spreading or planting and weed control	Environmental Officer
	Species diversity and cover consistent with objectives in Table 9	BAM plot survey	1,3, 6 & 12 months after rehabilitation activity, then ongoing annual monitoring	Species diversity and cover not consistent with objectives in Table 9	Planting of additional species	Project Ecologist

			until 5-year mark			
	Salvaged hollows successfully installed in trees	Inspection of installed salvaged hollows	Annual monitoring	Salvages hollows not installed properly and not functional	Installation of nest boxes to compensate for cleared hollows and/or to replace not functional boxes.	Project Ecologist
Salvage of habitat features	100% of suitable confirmed hollows salvaged	Inspection of hollows salvaged	Ongoing, after each clearing event	<100% of suitable confirmed hollows salvaged	Revise felling to salvage additional features	Environmental Officer
Return of salvaged features	All stockpiled features returned	Inspection of rehabilitated areas and stockpiles	After rehabilitation	Stockpiled features not returned	Spread any remaining features	Environmental Officer
Soil resources	Depth of soil for stripping identified	Soil survey	Prior to stripping	Depth of soil for stripping not adequately identified	Complete additional soil survey	Soil scientist/specialist
Seed collection	Location, weight, and species of seed collected to be recorded	Review of seed collection	Following collection	Seed collection details found not to be documented	Obtain additional records	Seed collection contractor to provide to Environmental officer
	Seed collected from a diversity of species	Review of seed collection	Following collection	Seed volumes found to be deficient for species groups (e.g. Eucalypts, Acacias) or strata.	Undertake seed collection targeted to species/strata.	Environmental officer/ Project Ecologist
Weed distribution	Location of all priority weed infestations mapped	Weed survey	Prior to clearing	Location of priority weed infestations not mapped	Additional surveys to map all priority weed locations	Project Ecologist

Weed management	Priority weeds eradicated	Post treatment inspections	Within one month of treatment	Priority weeds not eradicated	Undertake follow-up weed control	Environmental Officer to inspect
	Details of all chemicals used	Herbicide records	Within one month of treatment	Details of chemicals used not recorded	Ensure all records provided Implement further training with contractors	Weed control contractor to provide
Ongoing weed monitoring	No new weed infestation areas identified, and no spread of existing weed infestations	Inspection of mapped weed infestation areas and adjacent areas	Six-monthly inspection for first two years post construction, then ongoing annual inspections	Weeds have spread beyond the areas of infestation identified during the weed baseline mapping	Develop a plan for ongoing weed management in areas where weeds are identified, and implement where necessary	Project Ecologist
Pest control	Details of animals killed recorded for Animal Ethics reporting	Review records of animals killed	Within one month of control	Details of animals killed not recorded	Ensure all records provided Implement further training with contractors	Pest control contractor to provide
	Implement measures to make sure feral pests are not introduced or encouraged in the project site	Review procedures in consultation with landowners	Ongoing	No feral control measures implemented	Implement feral control measures Undertaken baseline surveys of feral pest densities if required	Environmental Officer in consultation with landowners
Erosion and sediment control	No damage to erosion and sediment control structures	Inspection of erosion and sediment control measures	Following significant rainfall events	Damage detected to erosion and sediment control structures	Repair damaged structures	Environmental Officer
	No significant (rill or gully) erosion	Inspection of all cleared land	Following significant rainfall events	Significant erosion detected	Repair erosion	Environmental Officer

5.1.1. Monitoring Records and Audits

The Project Environment Officer is responsible for ensuring that the monitoring is completed in accordance with **Table 10**. Results of monitoring should be recorded by the Project Environment Officer as part of a compliance checklist, detailing the outcome of the inspection, compliance with the performance criteria, and requirements for any corrective actions as a minimum.

Results of all monitoring will be maintained at the Project office for supply to relevant agencies upon request.

Following the commencement of construction, regular (i.e. 6 monthly) internal audits by the Project Environment Officer should be undertaken to evaluate the project's compliance with this document. All records should be stored safely and be readily accessible for auditing.

An Independent Environmental Audit of the environmental performance of the project must also be conducted within 12 months of the commencement of construction and every three years thereafter. All relevant reporting and records from the will be made available to the Independent Environmental Auditor.

Additionally, unscheduled auditing may be undertaken by NSW DPIE/BCD at any stage to evaluate the project's compliance.

6. Reporting Requirements

6.1. Pre-clearance Mapping and Reporting

A range of mapping/studies are required to determine conditions prior disturbance. This includes:

- A soils study to determine topsoil depths for stripping (Contractor/Environmental Officer);
- A weed survey to identify infestations of Priority weeds (Project Ecologist); and
- Mapping and identification of hollow bearing trees and habitat features to be avoided/salvaged (Project Ecologist).

These mapping studies should be commissioned well in advance of clearing to assist with micro-siting, and all mapping and data recorded for comparison with later monitoring as required.

6.2. Preclearance Survey Reports

Specific reports to prepared by the Project Ecologist for the vegetation clearance protocol and threatened species management will include:

- Preclearance Survey Report; and
- Clearance Supervision Report.

6.3. Reporting during Construction

The Environment Officer will provide weekly reporting to Crookwell Development during the construction phase. Weekly reporting will:

- Detail any areas identified requiring ecologist assessment and areas where habitat features will need to be relocated;
- identify the location of any pre-clearance surveys undertaken;
- Detail areas cleared during the week;
- Detail of any fauna relocated/rescued;
- Identification of erosion and sediment control measures required;
- Identification of weeds requiring treatment;
- Details of seed collected; and
- Detail of soil or salvage featured stockpiles and any other management undertaken.

All inspection and monitoring records are to be retained onsite for the duration of construction works and will be produced as required for auditing purposes.

Records of threatened species occurring within the subject land are to be kept by the Environmental Officer and by the Project Ecologist for collation and annual reporting.

6.4. Post-clearing Inspection Reporting

A Post-clearing Inspection Report will be prepared by a qualified ecologist following the completion of the post-clearing inspection, as detailed in **Section 4.2.3**. The report will include the result of the inspection, including photos and GPS coordinates as evidence of clearing extent.

The Project Environment Officer will be responsible for submitting the report to the BCD once completed.

6.5. Annual Reporting

The Project Environment Officer will prepare an annual report describing environmental performance of the project against this BMP and the Conditions of Consent.

The reports will include the results of monitoring undertaken in accordance with **Chapter 5**, including identification of threatened species and a description of any environmental incidents and non-conformances. Additionally, the report will recommend any adaptations or additions to the BMP (if required).

6.6. Record Keeping

Records of all environmental activities will be maintained by the Project Environment Officer to demonstrate compliance with this BMP and the Conditions of Consent.

All data will be collected and entered electronically and stored for later use and analysis. Data will be added annually so that it will form a data matrix that is amenable to analysis using a range of statistics where relevant.

Where required, records will be maintained for specific reporting associated with Animal Ethics approval and NSW Parks and Wildlife Licence requirements.

7. Review

This BMP is to be reviewed within five years of the commencement of construction, and every five years thereafter. This BMP may also be required to be reviewed in response to a change in construction program or work methods, the occurrence of an incident, the submission of an audit report, or modification to the Conditions of Consent.

Where the review leads to a revision of the BMP, then the revised document must be submitted to the Secretary of the DPIE for approval.

The Project Environment Officer will be responsible for the review of this BMP, and to ensure that it is undertaken in consultation with the BCD and DPIE.

8. References

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Rawlings, K., D. Freudenberger, and D. Carr. 2010. A Guide to Managing Box Gum Grassy Woodlands. Caring for our Country Environmental Stewardship, Canberra.

APPENDIX A :

Biodiversity Constraints
Mapping

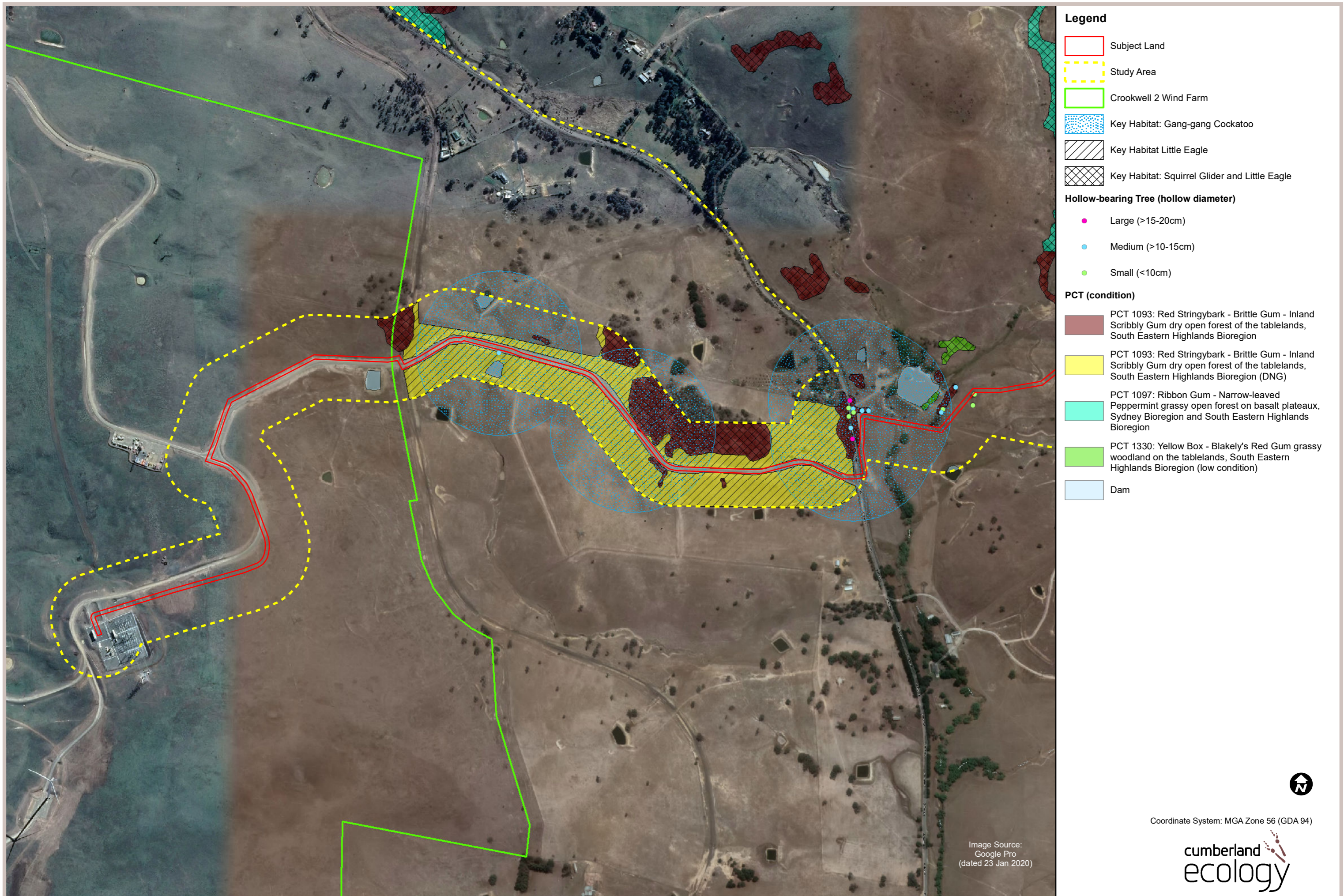


Figure A.1. Biodiversity constraints map - western section

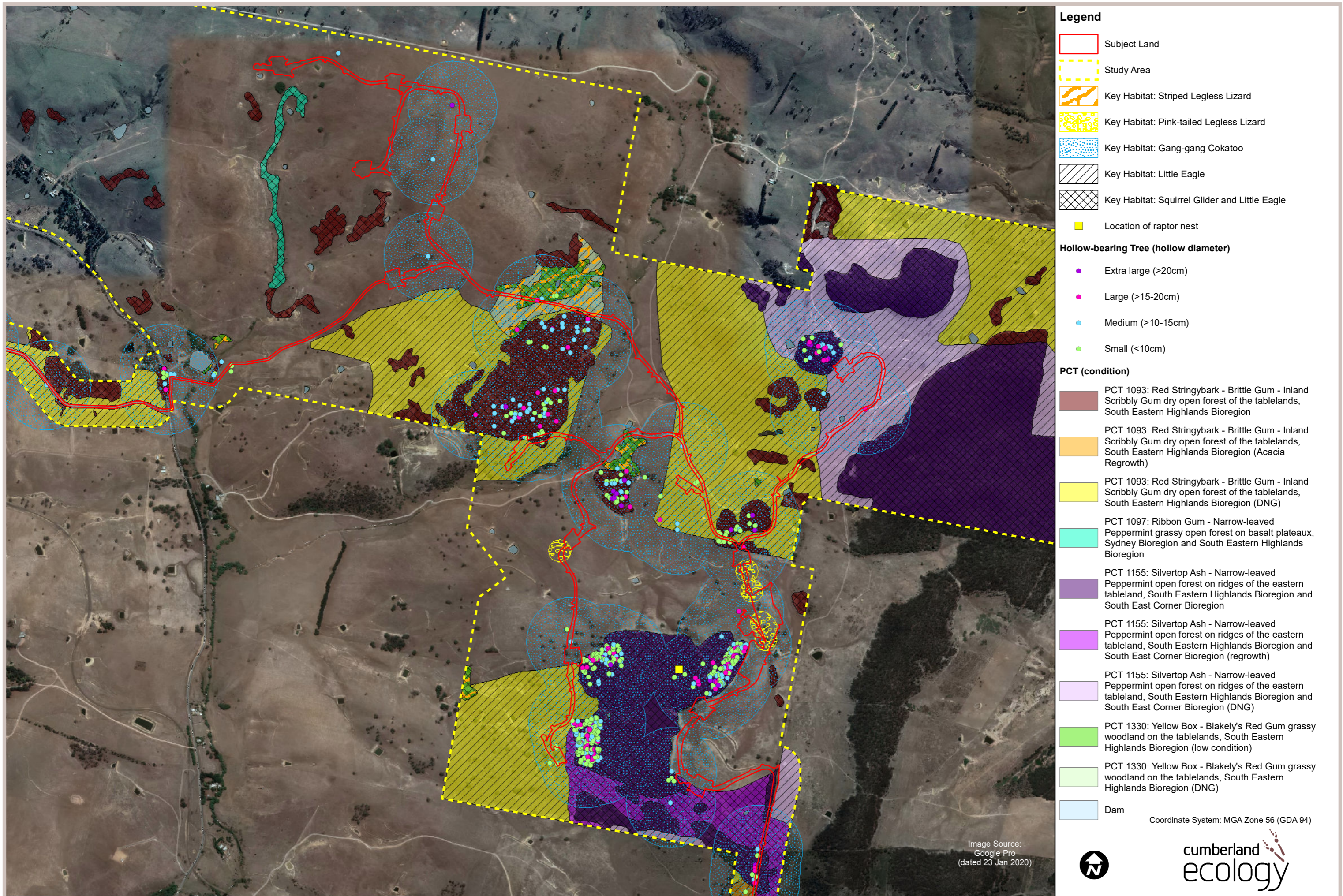


Figure A.2. Biodiversity constraints map - eastern section

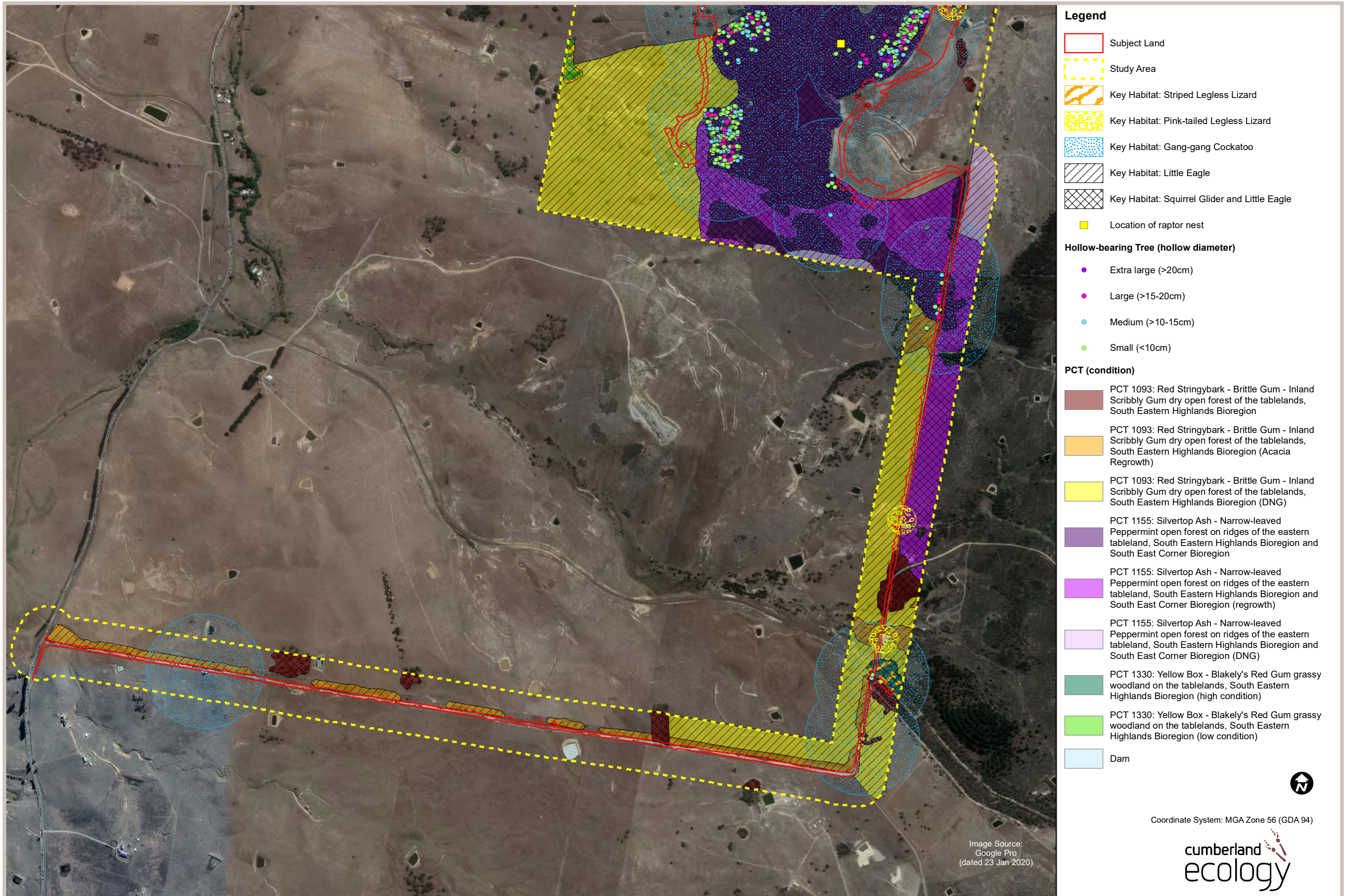


Figure A.3. Biodiversity constraints map - southern section

APPENDIX B :

Planting List for
Rehabilitation and for
Seed Collection

Table 11 Species recommended for seed collection and/or planting in rehabilitation areas for each PCT

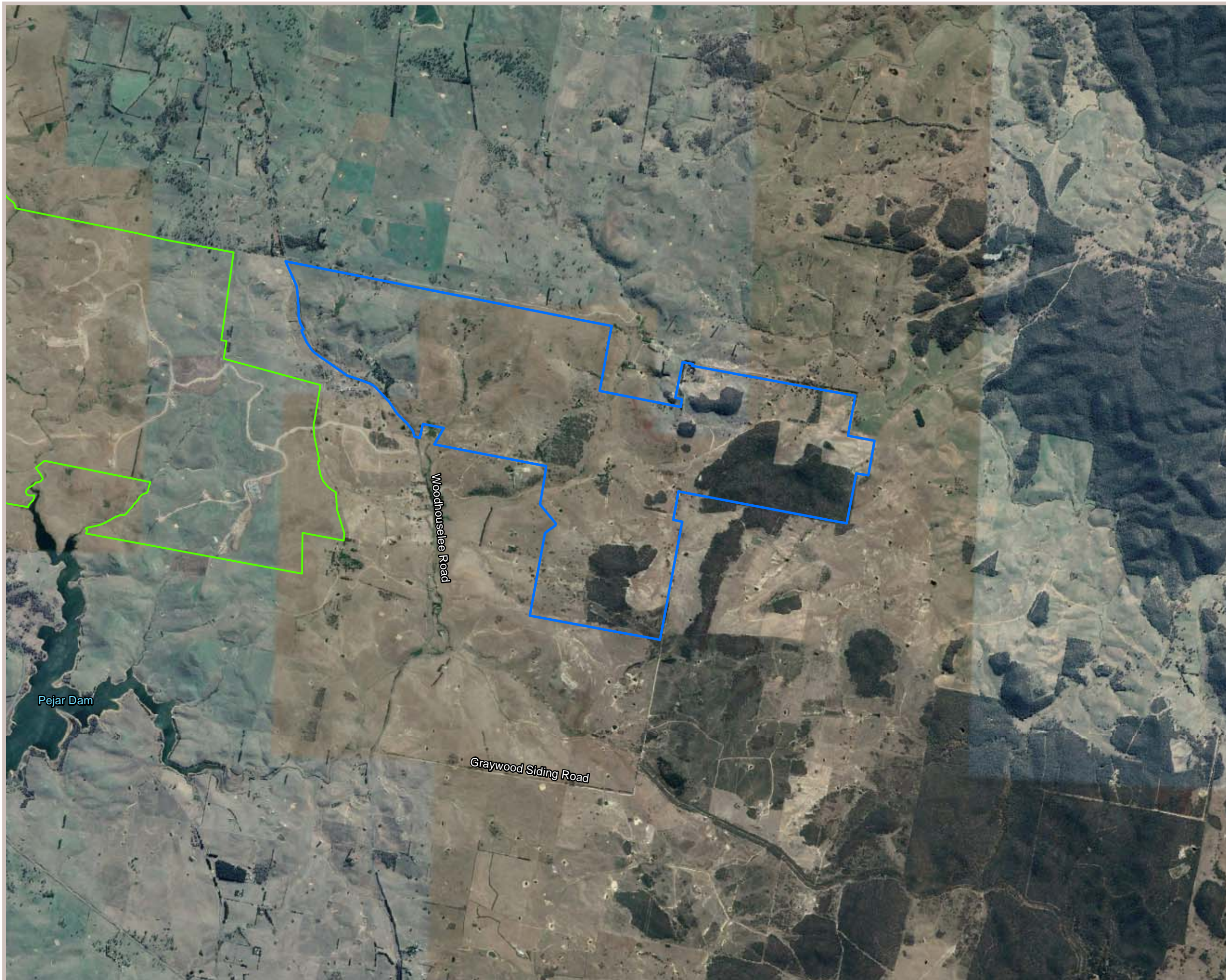
Species Name	Common Name	PCT 1093	PCT 1097	PCT 1155	PCT 1330
Canopy trees					
<i>Acacia melanoxylon</i>	Blackwood Wattle		x		
<i>Allocasuarina littoralis</i>	Black She-Oak	x			
<i>Eucalyptus blakelyi</i>	Blakely's Red Gum				x
<i>Eucalyptus bridgesiana</i>	Apple Box				x
<i>Eucalyptus dives</i>	Broad-leaved Peppermint	x		x	x
<i>Eucalyptus macrorhyncha</i>	Red Stringybark	x			x
<i>Eucalyptus mannifera</i>	Brittle Gum	x			x
<i>Eucalyptus melliodora</i>	Yellow Box				x
<i>Eucalyptus radiata</i>	Narrow-leaved Peppermint		x	x	
<i>Eucalyptus rossii</i>	Inland Scribbly Gum	x			
<i>Eucalyptus sieberi</i>	Silvertop Ash			x	
<i>Eucalyptus viminalis</i>	Ribbon Gum		x		x
Small trees, shrubs and vines					
<i>Acacia dealbata</i>	Silver Wattle	x	x		x
<i>Acacia decora</i>	Western Silver Wattle	x			
<i>Acacia decurrens</i>	Black Wattle	x			
<i>Acacia falciformis</i>	Broad-leaved Hickory	x		x	
<i>Acacia lanigera</i>	Woolly Wattle	x		x	
<i>Acacia ulicifolia</i>	Prickly Moses	x		x	
<i>Billardiera scandens</i>	Hairy Apple Berry	x		x	
<i>Bossiaea prostrata</i>		x		x	
<i>Cassinia arcuata</i>	Sifton Bush	x		x	
<i>Cassinia quinquefaria</i>		x		x	
<i>Daviesia genistifolia</i>	Broom Bitter Pea	x		x	
<i>Daviesia latifolia</i>	Bitter-pea	x		x	
<i>Daviesia leptophylla</i>		x		x	
<i>Dillwynia sericea</i>	Egg and Bacon Peas, Parrot Peas			x	
<i>Hardenbergia violacea</i>	False Sarsaparilla	x		x	
<i>Hibbertia obtusifolia</i>	Hoary Guinea Flower	x		x	
<i>Hovea linearis</i>		x		x	
<i>Pimelea linifolia</i>	Slender Rice Flower	x		x	

Species Name	Common Name	PCT 1093	PCT 1097	PCT 1155	PCT 1330
<i>Pultenaea microphylla</i>	A Bush Pea			x	
Ground layer species					
<i>Acaena novae-zelandiae</i>	Bidgee-widgee		x		x
<i>Acaena ovina</i>	Acaena		x		x
<i>Aristida ramosa</i>	Purple Wiregrass	x		x	
<i>Austrostipa rudis</i>		x	x		x
<i>Austrostipa scabra</i>	Speargrass	x	x		x
<i>Bothriochloa macra</i>	Red Grass				x
<i>Chloris truncata</i>	Windmill Grass				x
<i>Chrysocephalum apiculatum</i>	Common Everlasting				x
<i>Desmodium varians</i>	Slender Tick-trefoil		x		x
<i>Dianella longifolia</i>	Blueberry Lily	x		x	
<i>Dianella revoluta</i>	Blueberry Lily	x		x	
<i>Dichelachne crinita</i>	Longhair Plumegrass	x		x	
<i>Echinopogon ovatus</i>	Forest Hedgehog Grass	x	x	x	
<i>Einadia trigonos</i>	Fishweed		x		x
<i>Elymus scaber</i>	Common Wheatgrass				x
<i>Geranium solanderi</i>	Native Geranium				x
<i>Gonocarpus tetragynus</i>	Poverty Raspwort	x		x	x
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>		x		x	
<i>Goodenia hederacea</i>	Ivy Goodenia	x		x	x
<i>Hydrocotyle laxiflora</i>	Stinking Pennywort	x			x
<i>Joycea pallida</i>	Silvertop Wallaby Grass	x		x	
<i>Juncus filicaulis</i>		x			x
<i>Lomandra filiformis</i>		x			x
<i>Lomandra glauca</i>	Pale Mat-rush	x		x	
<i>Lomandra multiflora</i>	Many-flowered Mat-rush	x		x	
<i>Luzula meridionalis</i>		x			
<i>Microlaena stipoides</i>	Weeping Grass	x	x	x	x
<i>Patersonia sericea</i>	Silky Purple-Flag			x	
<i>Poa sieberiana</i>	Snow Grass	x	x	x	
<i>Rytidosperma caespitosum</i>	Ringed Wallaby Grass	x	x		
<i>Stellaria pungens</i>	Prickly Starwort		x	x	



Species Name	Common Name	PCT 1093	PCT 1097	PCT 1155	PCT 1330
<i>Stylidium graminifolium</i>	Grass Triggerplant		x	x	x
<i>Themeda australis</i>	Kangaroo Grass		x	x	x
<i>Veronica plebeia</i>	Trailing Speedwell	x		x	
<i>Viola betonicifolia</i>			x		
<i>Vittadinia cuneata</i>	A Fuzzweed				x
<i>Wahlenbergia gracilis</i>	Sprawling Bluebell			x	x
<i>Wahlenbergia stricta</i>	Tall Bluebell			x	x

FIGURES





Legend

-  Project Site
-  Crookwell 2 Wind Farm

Pejar Dam

Woodhouselee Road

Graywood Siding Road

Image Source:
Google Pro
(dated 23 Jan 2020)



Coordinate System: MGA Zone 56 (GDA 94)

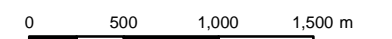
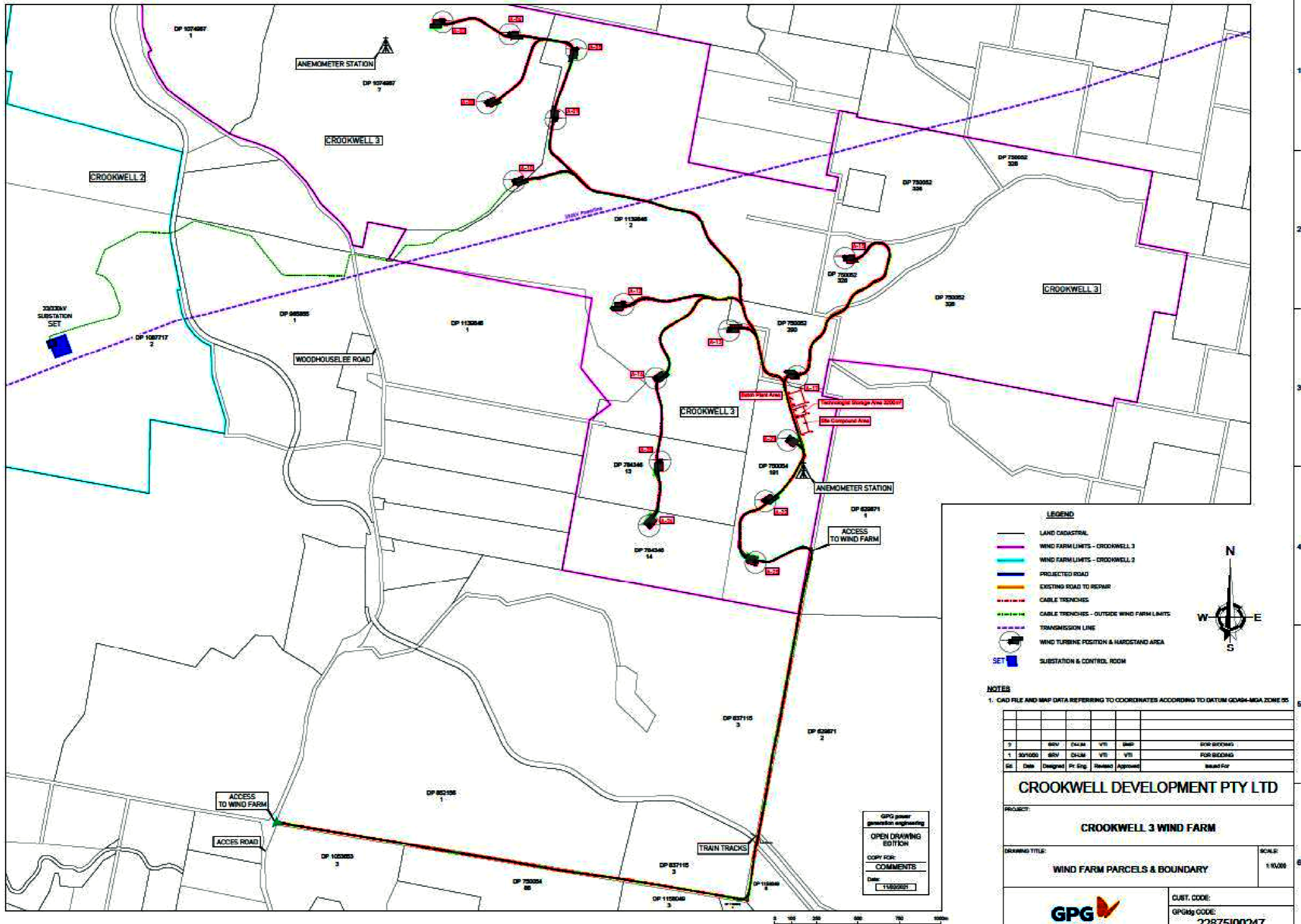


Figure 1. Project location



LEGEND

- LAND CADASTRAL
- WIND FARM LIMITS - CROOKWELL 3
- WIND FARM LIMITS - CROOKWELL 2
- PROJECTED ROAD
- EXISTING ROAD TO REPAIR
- CABLE TRENCHES
- CABLE TRENCHES - OUTSIDE WIND FARM LIMITS
- TRANSMISSION LINE
- WIND TURBINE POSITION & HARDSTAND AREA
- SET SUBSTATION & CONTROL ROOM

NOTES

1. CAD FILE AND MAP DATA REFERRING TO COORDINATES ACCORDING TO DATUM GDA84-MGA ZONE 55

NO	REV	DATE	BY	CHKD	APPD	ISSUED FOR
1	30/10/20		SRV	DLAM	VTH	FOR BIDDING
			SRV	DLAM	VTH	FOR BIDDING
DR	Date	Designer	Pr. Eng.	Released	Approved	Issued For

CROOKWELL DEVELOPMENT PTY LTD

PROJECT: **CROOKWELL 3 WIND FARM**

DRAWING TITLE: **WIND FARM PARCELS & BOUNDARY** SCALE: 1:10,000

GPG power generation engineering
 OPEN DRAWING
 EDITION
 COPY FOR:
 COMMENTS
 Date: 1/10/2020

CUST. CODE:
 GPGkg CODE:
 22R75IMY947

Figure 2. Approved layout of the project

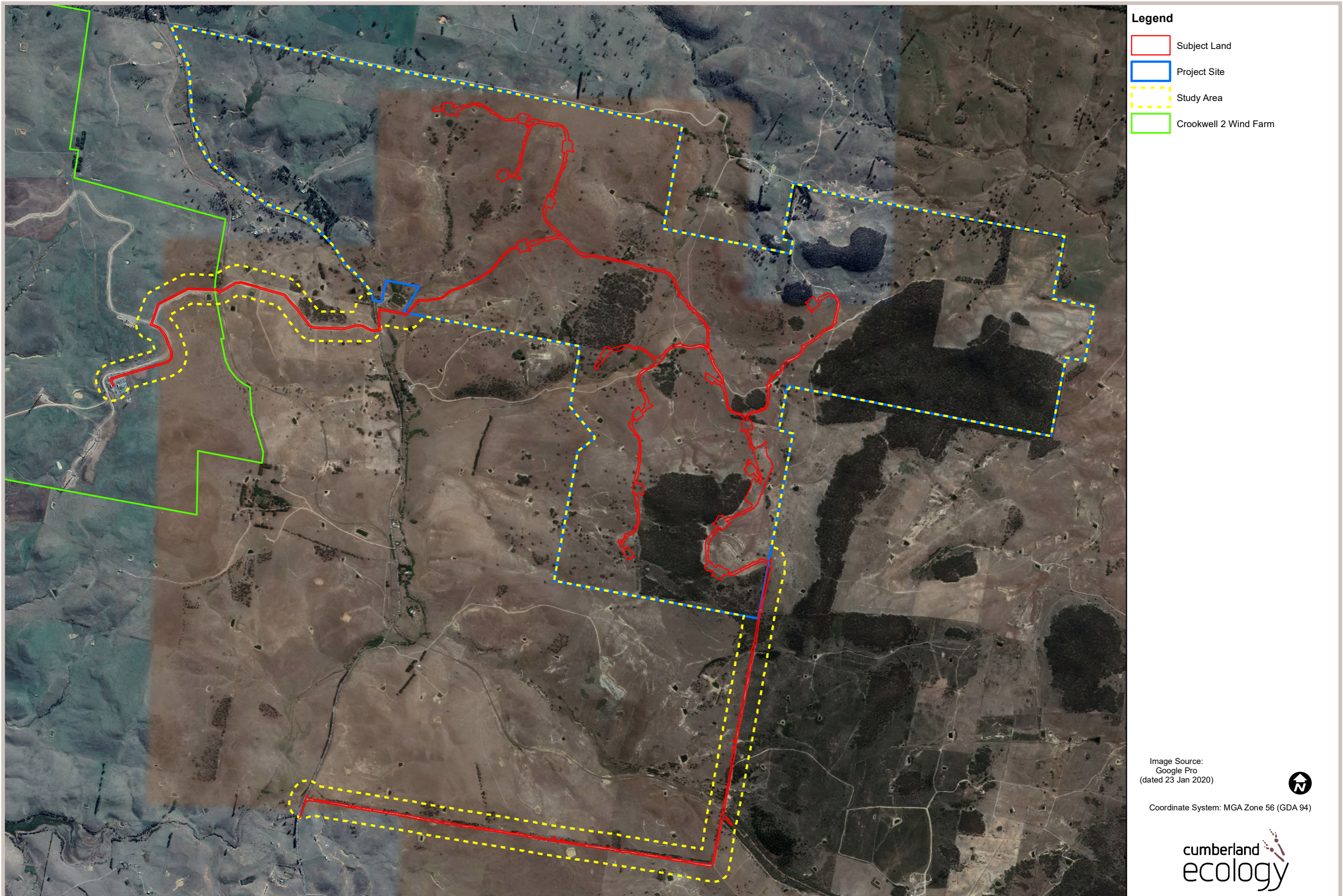
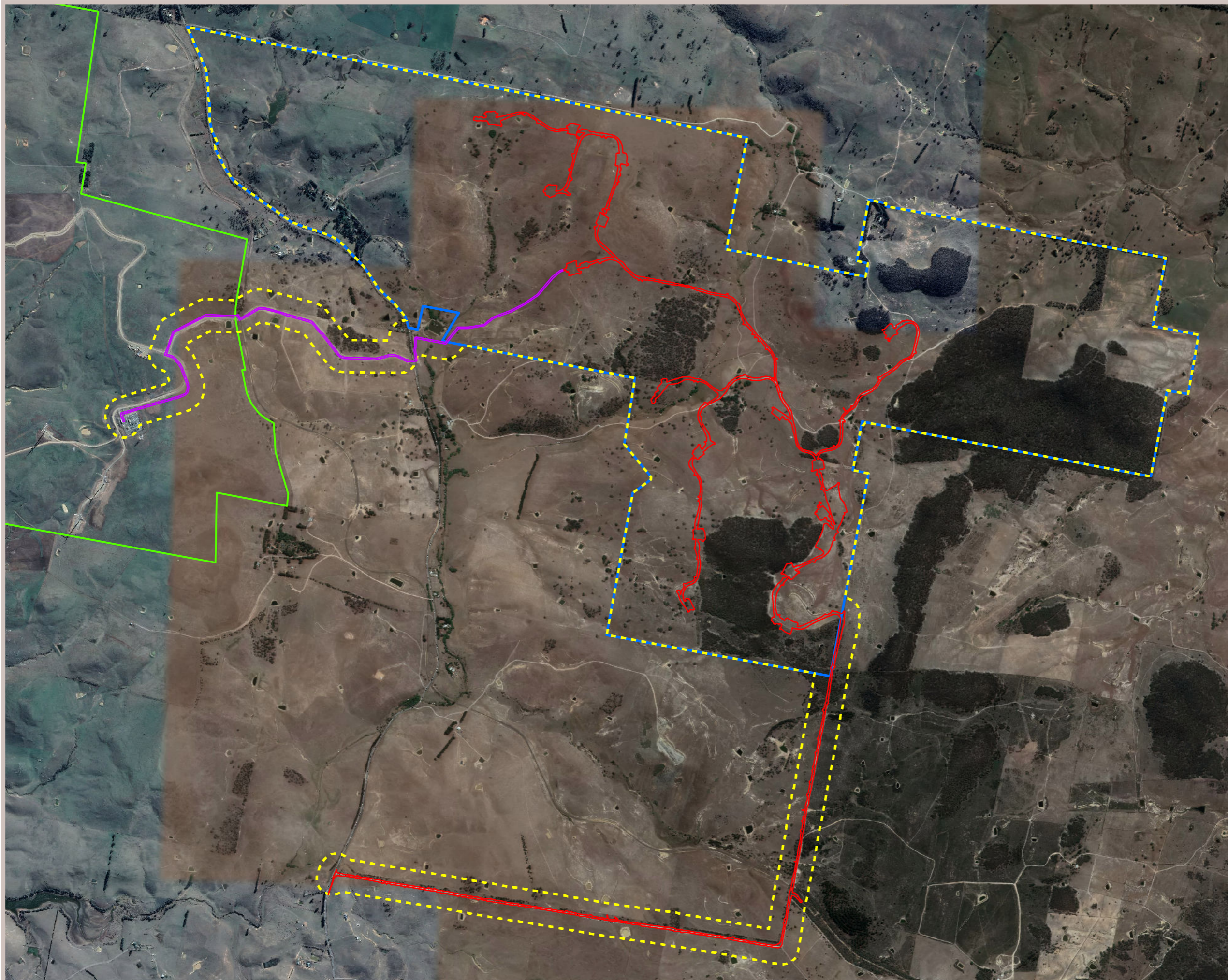


Figure 3. The study area, project site and subject land

0 500 1,000 1,500 m



- Legend**
- Project Site
 - Study Area
 - Crookwell 2 Wind Farm
- Subject Land**
- Permanent disturbance area
 - Temporary disturbance area

Image Source:
Google Pro
(dated 23 Jan 2020)



Coordinate System: MGA Zone 56 (GDA 94)



Figure 4. Identification of permanent and temporary disturbance areas in the subject land



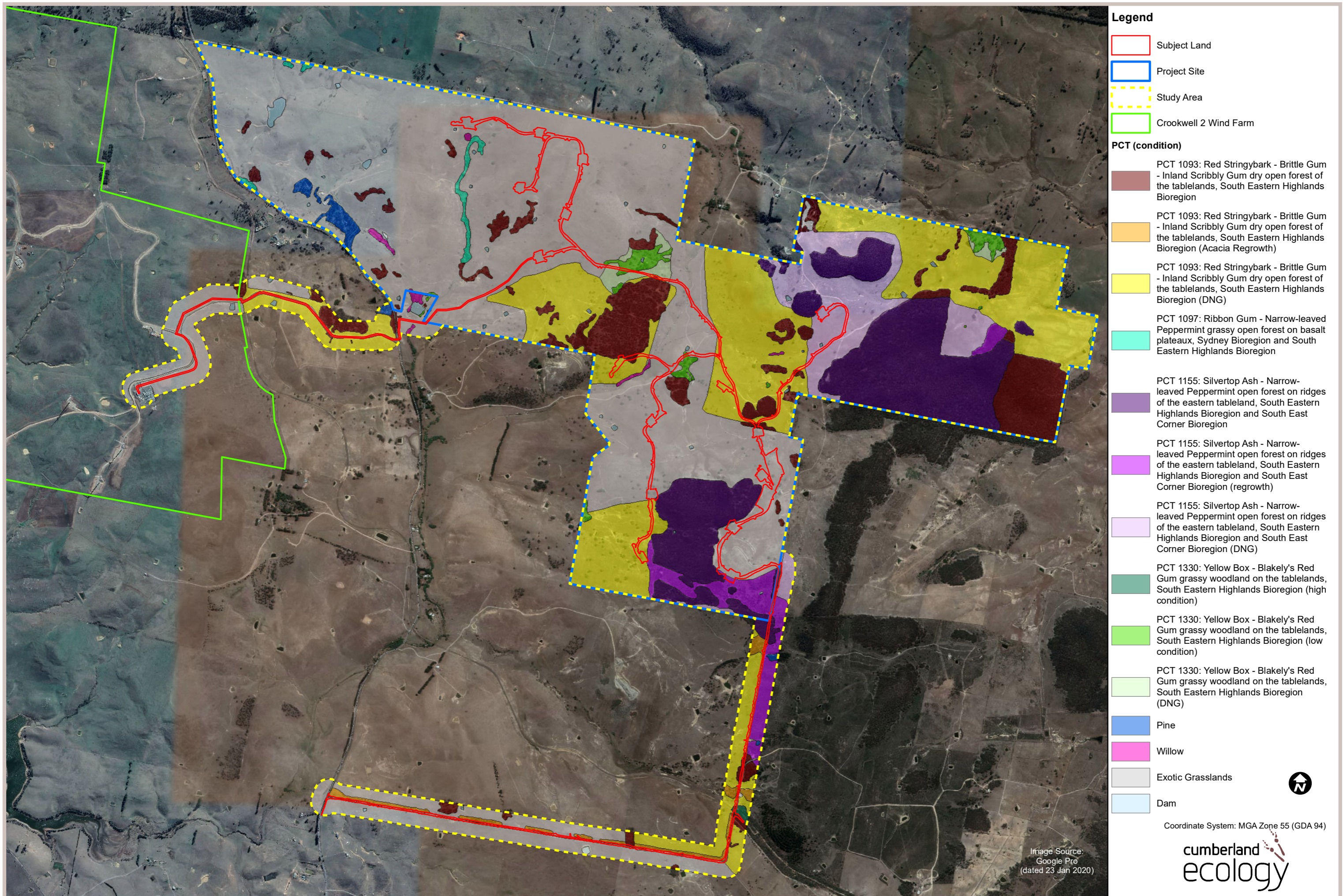


Figure 5. Vegetation mapping within the study area and subject land

0 500 1,000 1,500 m

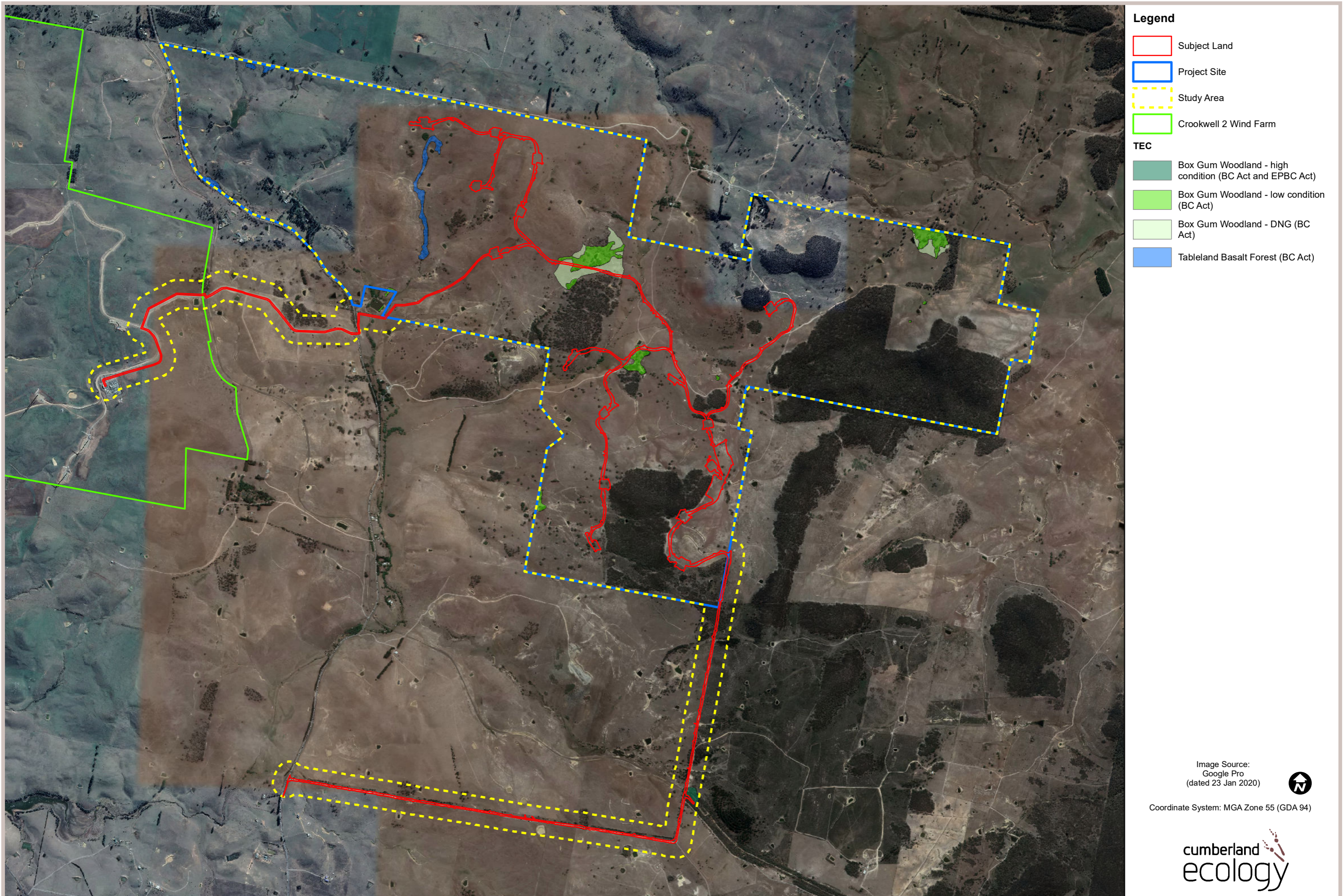


Figure 6. Threatened Ecological Communities in the study area and subject land

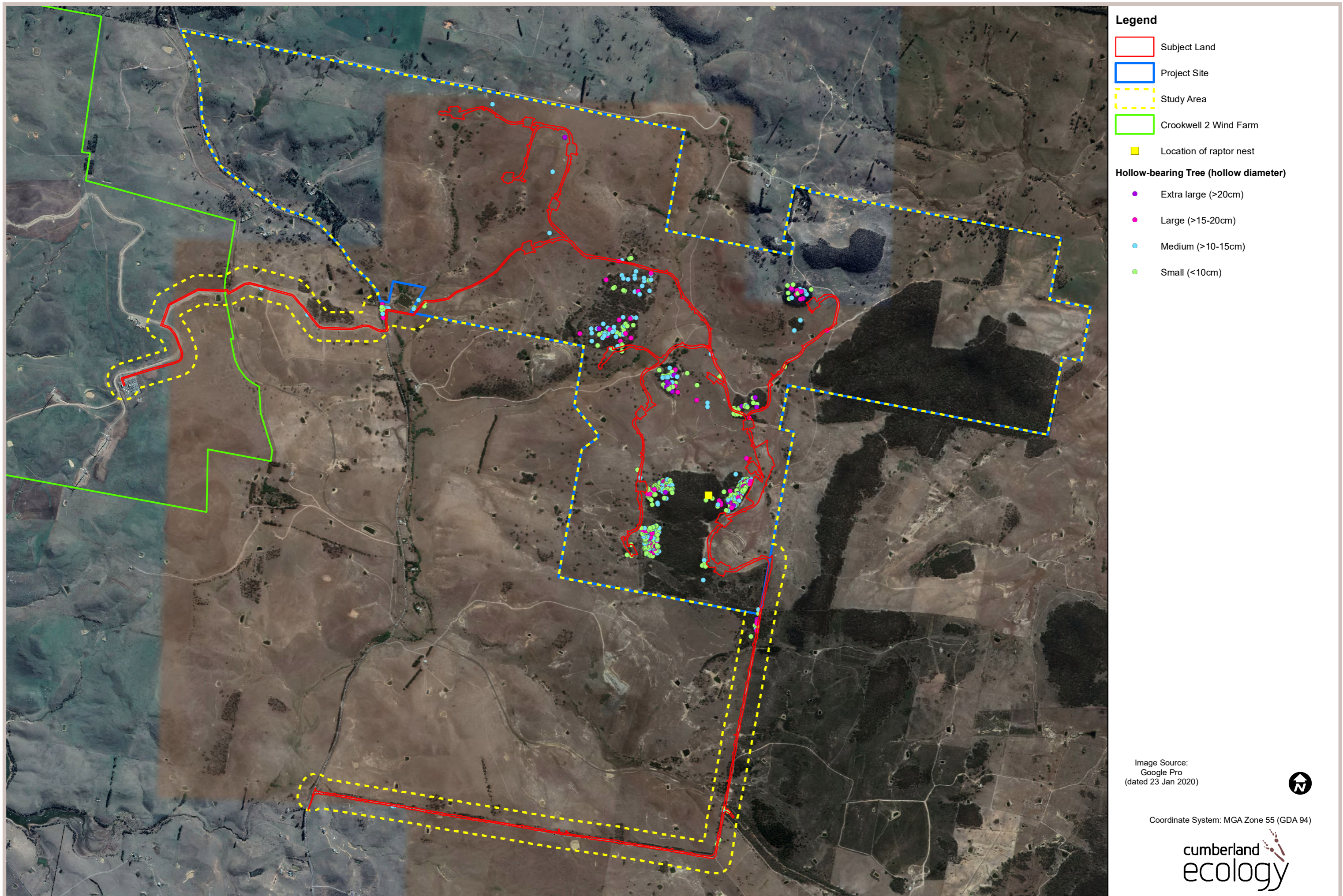


Figure 7. Location of hollow bearing trees and raptor nest locations within and adjacent to the subject land

0 500 1,000 1,500 m

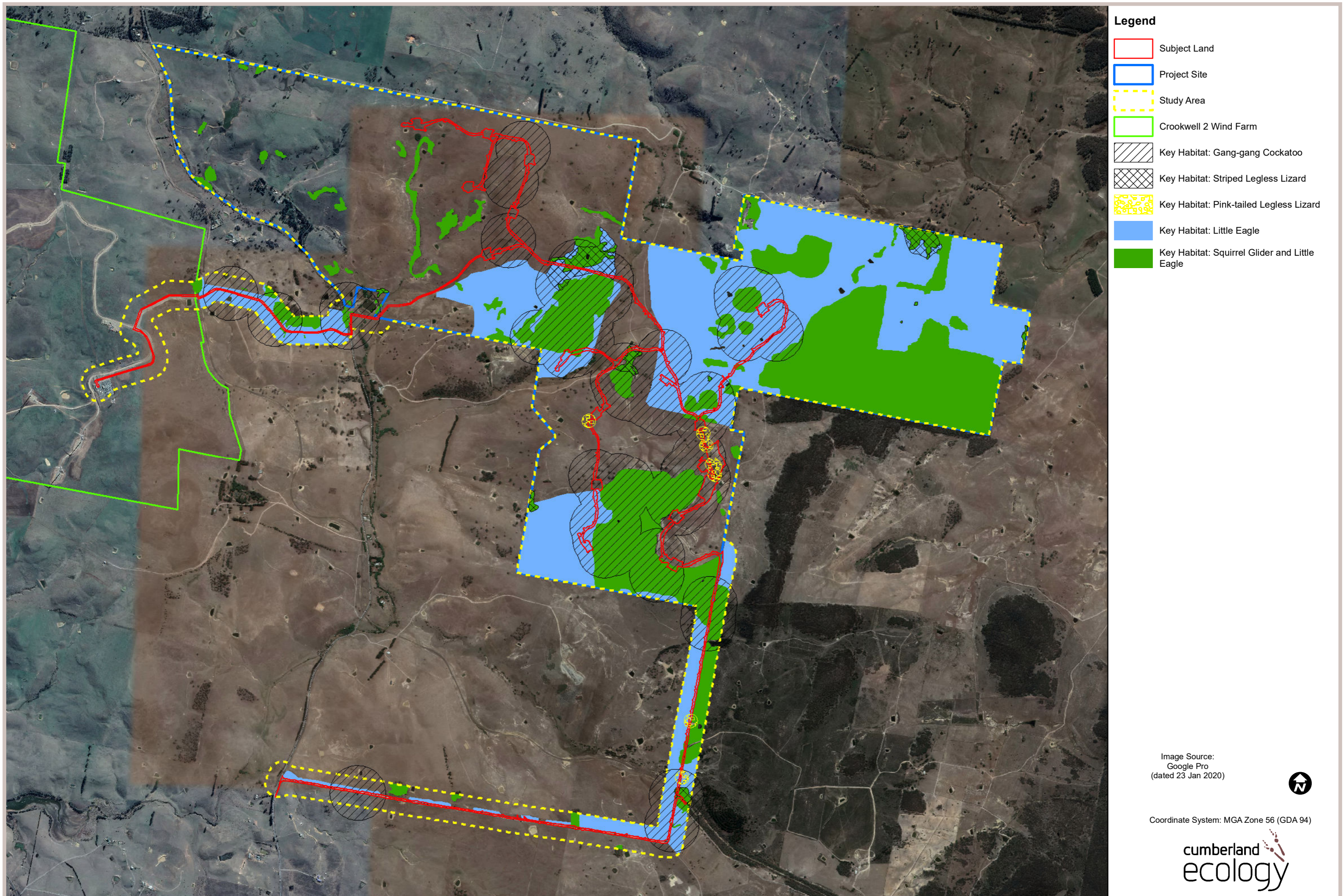


Figure 8. Key habitat for the Gang-gang Cockatoo, Little Eagle, Pink-tailed Legless Lizard, Striped Legless Lizard and Squirrel Glider within and adjacent to the subject land

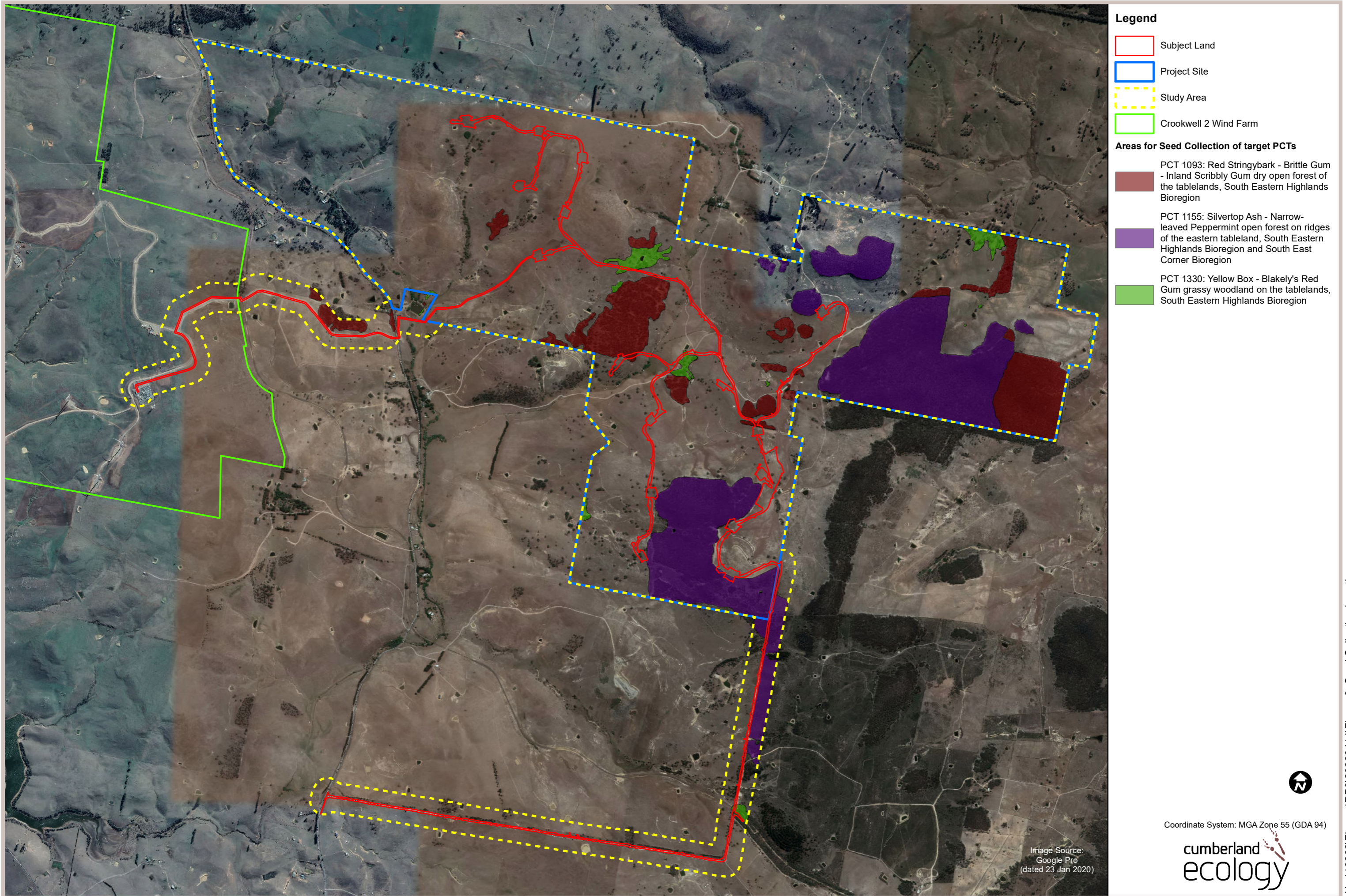


Figure 9. Indicative locations for seed collection for each target PCT

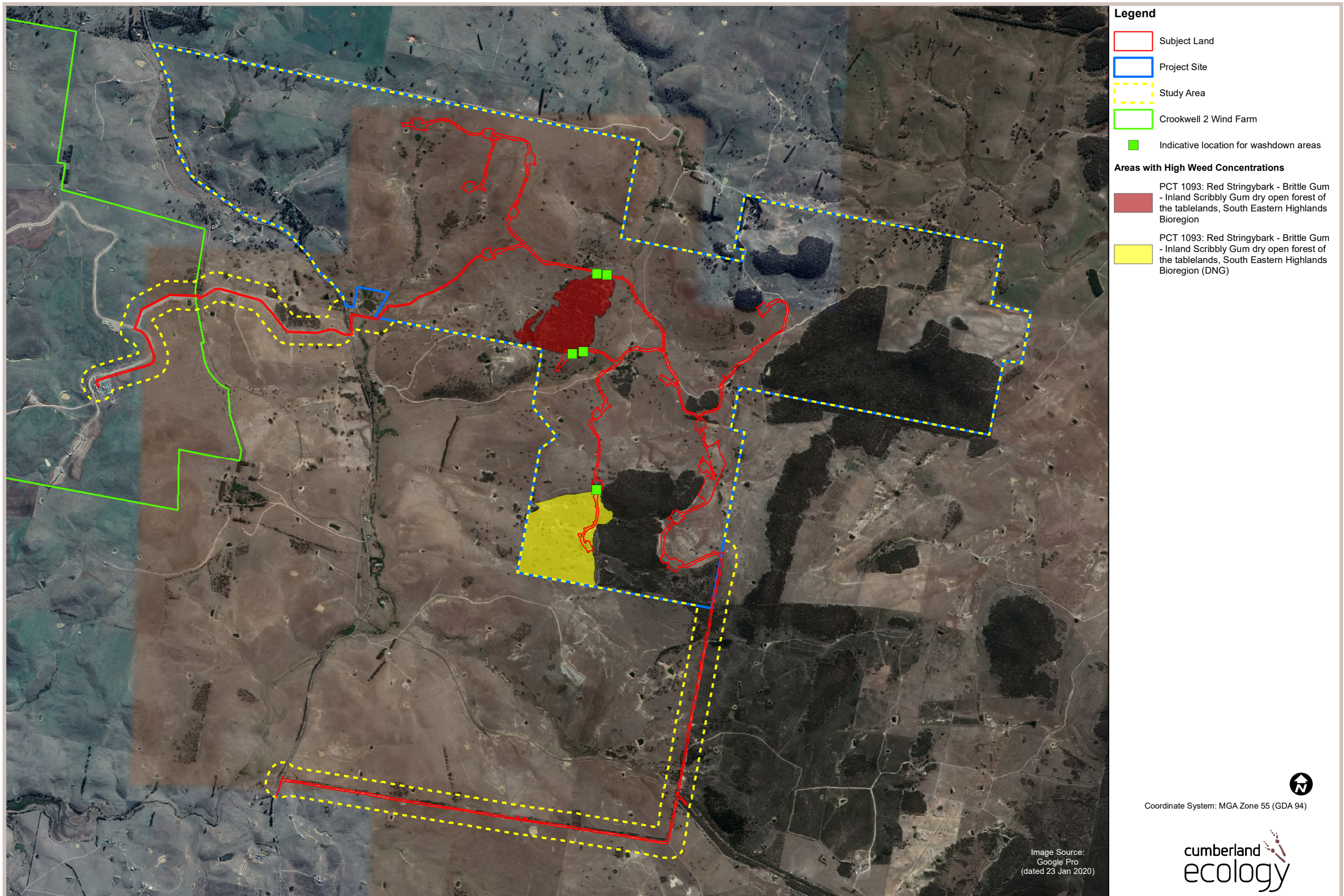


Figure 10. Identification of areas with high weed concentrations and indicative locations for washdown areas

0 500 1,000 1,500 m