Appendix F

Biodiversity Development Assessment Report



Biodiversity Development Assessment Report, Subdivision Lot 1 DP1253903, Wallerawang, NSW

Certified by Addy Watson of AREA Environmental & Heritage Consultants Pty Ltd BAM accredited assessor (BAAS19066)





Final Report Dec 2022

Document control

Version	Date	Author	Details
V3.0	02/12/20222	M. Glover AREA Environmental & Heritage Consultants	Final issued with development application

The document control table is to be updated only when versions of the Biodiversity Development Assessment Report are issued to the decision-makers, rather than internal versions.

Summary

Timberfix (the proponent) proposes to subdivide 17.43 hectares of land at 19 Barton Avenue, Wallerawang NSW (Lot 1 DP1253903). The proposal includes:

- 55 residential allotments
- two public open space lots for stormwater management
- internal access roads

The proposal would impact approximately 17.22 hectares of native vegetation (development footprint), with 0.10 hectares excluded to avoid impact to native vegetation. Given the impact area exceeds the area threshold under the Biodiversity Conservation Regulation 2017, a Biodiversity Development Assessment Report (BDAR) is required.

AREA Environmental & Heritage Consultants Pty Ltd (AREA) was engaged by Integrated Consulting on behalf of the proponent to prepare this BDAR. It includes an assessment of landscape, vegetation and threatened species values within the development site as well as potential matters of Serious and Irreversible Impact (SAII) listed in NSW under the *Biodiversity Conservation Act 2016* (BC Act) and or the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This BDAR uses the following terms:

Development site: the area surveyed for the assessment prior to identifying the constraints and exclusions and extends to the boundary of Lot 1 DP1253903.

Development footprint: the area of land that would be directly impacted by the proposal, including all construction, operational and decommissioning impacts. This term is equivalent to 'subject land', generally used in a BDAR.

A combination of desktop and field-based surveys were used to inform this report. Field assessments were undertaken in September, November and December 2020 and October 2022, comprising vegetation surveys in accordance with the Biodiversity Assessment Method (BAM), transects and remote sensing techniques consistent with the relevant threatened species survey guidelines.

The development site occurs on cleared land with small patches or remnant woody vegetation. The landscape is undulating, steep, hilly with an elevation range of 880 to 922 metres Australian Hight Datum. All vegetation in the development site was mapped as Plant Community Type (PCT) 351 - Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion (Table E1). One BC Act and EPBC Act listed species, the vulnerable Black Gum (Eucalyptus aggregata), was recorded, and no Threatened Ecological Communities.

Of the native vegetation that would be impacted, 17.20 hectares is of poor condition (Zone 1) and 0.02 hectares is of moderate condition (Zone 2) (Figure E1). An offsetting requirement is triggered for impacts to Zone 2 vegetation. A summary of offset requirements is provided in Tables E2 and E3.

The proponent would avoid impact to the Black Gum by establishing a temporarily fenced tree protection zone excluding it from the development footprint thereby prohibiting tree clearing or inadvertent impact. Impacts to moderate condition PCT351 vegetation would be minimised by limiting the impact area to a 6-metre access handle and installing temporary fencing to prevent impact during construction (Figure E1). Impacts to the moderate condition PCT351 vegetation would trigger one ecosystem credit.

Figure E1



Table E1 PCTs identified within the development site

PCT ID	PCT name	Development footprint area (ha)
351	Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion.	17.22
	Total area	17.22

Table E2 Impacts that require an offset – ecosystem credits

Vegetation zone	РСТ	TEC/EC	Impact area (ha)	Number of ecosystem credits required
Zone 2	351	Not a TEC or EC	0.02	1

Table E3 Impacts that require an offset – species credits

Common name	Scientific name	Loss of habitat (ha) or individuals	Number of species credits required
N/A	N/A	N/A	N/A

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Shortened forms

APZ	asset protection zone
BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method Calculator
BC Act	Biodiversity Conservation Act 2016 (NSW)
BC Regulation	Biodiversity Conservation Regulation 2017 (NSW)
BDAR	Biodiversity Development Assessment Report
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
HTW	high threat weed
IBRA	Interim Biogeographic Regionalisation for Australia
LLS Act	Local Land Services Act 2013 (NSW)
MNES	matters of national environmental significance
NSW	New South Wales
PCT	plant community type
SAII	serious and irreversible impact
SEARs	Secretary's Environmental Assessment Requirements
TBDC	Threatened Biodiversity Data Collection
TEC	threatened ecological community

Declarations

i. Certification under clause 6.15 *Biodiversity Conservation Act 2016*

I certify that this report has been prepared based on the requirements of, and information provided under, the Biodiversity Assessment Method and clause 6.15 of the <i>Biodiversity Conservation Act 2016</i> (BC Act).			
Signature:			
Date:02/12/2022			
BAM Assessor Accreditation no:BSSA19066			

This BDAR has been prepared to meet the requirements of BAM 2020. Appendix A provides an assessment of compliance with the minimum information requirements outlined in BAM Appendix K.

ii. Details and experience of author/s and contributors

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iii. Conflict of interest

I declare that I have considered the circumstances and there is no actual, perceived or potential conflict of interest.				
This declaration has been made in the interests of full disclosure to the decision-maker.				
Signature:				
Date:25/11/2022				
BAM Assessor Accreditation no:BSSA17082				

Stage 1: Biodiversity assessment

1. Introduction

1.1 Proposed development

1.1.1 Development overview

Timberfix (the proponent) proposes to subdivide the property at 19 Barton Avenue, Wallerawang NSW (Lot 1 DP 1253903) covering 17.43 hectares (Figure 1).

The proposal requires consent under Part 4 of the Environment Planning and Assessment Act 1979.

1.1.2 Location

The proposal is located in the Lithgow Local Government Area (Figure 2).

1.1.3 Proposed development and the development site

The proposal includes 55 residential allotments, two public open space lots that would be used for stormwater management (Section 1.1.3) (Figure 3).

The development site is 880 to 922 metres Australian Hight Datum and zoned entirely as R5 – Large Lot Residential, with a mapped land use of grazing native vegetation.

There are three first Strahler Order hydrological features within the development footprint, which terminate in Lake Wallace approximately 250 metres to the east.

Based on the Plant Community Type present (Section 4.2), soils are likely to comprise shallow, yellow to red podzolic clay to loam soils derived from sedimentary, metamorphic and igneous substrates.

The site would be managed as an Asset Protection Zone and has been designed to avoid impacts to the BC Act and EPBC Act listed vulnerable Black Gum and areas of vegetation in a moderate condition (Figure 10).

1.1.4 Other documentation

N/A

1.2 Biodiversity Offsets Scheme entry

The proposal exceeds the area threshold under the Biodiversity Conservation Regulation 2017. Entry in the Biodiversity Offset Scheme is therefore required.

1.3 Excluded impacts

There are no excluded impacts associated with this proposal.

1.4 Matters of national environmental significance

The proposal is not a controlled action and does not need a referral under the EPBC Act. A reported generated using the Commonwealth Protected Matters Search Tool identified Matters of National Environmental Significance (MNES) and other matters protected under the EPBC Act, predicted to occur within 1500 metres of the development site (Appendix B). Results relevant to this BDAR are summarised below:

Matters of National Environment Significance	Results
World Heritage Properties	0
National Heritage Places	0
Wetlands of International Importance (Ramsar Wetlands)	0
Great Barrier Reef Marine Park	0
Commonwealth Marine Area	0
Threatened Ecological Communities	2
Threatened Species	36
Migratory Species	12
Nuclear actions (including uranium mines)	0
Other matters protected unde	r the EPBC Act
Commonwealth Land	1
Commonwealth Heritage Places	0
Listed Marine Species	19

Whales and other cetaceans	0
Critical Habitats	0
Commonwealth Reserves Terrestrial	0
Australian Marine Parks	0
Habitat Critical to the Survival of Marine Turtles	0
Extra BDAR relevant in	formation
State and Territory Reserves	0
Regional Forest Agreements	0
Nationally Important Wetlands	0

1.5 Information sources

Table 1: Desktop review resources

Title	Web address			
Legislation				
Commonwealth Environment Protection & Biodiversity Conservation Act 1999	Environment Protection and Biodiversity Conservation Act 1999 (legislation.gov.au)			
Environmental Planning and Assessment Act 1979	https://www.legislation.nsw.gov.au/view/html/inforce/current/act-1979-203			
Fisheries Management Act 1994	https://www.legislation.nsw.gov.au/view/html/inforce/current/act-1994-038			
National Parks and Wildlife Act 1974	https://www.legislation.nsw.gov.au/view/html/inforce/current/act-1974-080_			
Threatened Species Conservation Act 1995	https://legislation.nsw.gov.au/view/whole/html/inforce/2016-11-25/act-1995-101_			
Water Management Act 2000	https://www.legislation.nsw.gov.au/view/html/inforce/current/act-2000-092_			
	Biodiversity			
BAM 2020 https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity-offsets-scheme/accredited-assessors/biodassessment-method-2020				
BioNet - BioNet Atlas - BioNet Vegetation Classification	https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet			

Title	Web address
- BioNet NSW (Mitchell) Landscapes v3.1	
Threatened Species Survey and Assessment Guidelines: Field Survey Methods for Fauna – Amphibians (DECCW, 2009)	https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/amphibians-field-survey-methods-090213.pdf
Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC 2004)	https://www.environment.nsw.gov.au/-/media/OEH/Corporate- Site/Documents/Animals-and-plants/Threatened-species/draft- threatened-biodiversity-survey-guide.pdf_
Survey requirements (birds, bats, reptiles, frogs, fish and mammals) for species listed under the EPBC Act	https://www.environment.gov.au/system/files/resources/b1c6b237-12d9-4071-a26e-ee816caa2b39/files/survey-guidelines-mammals.pdf_
Guide to Surveying Threatened Plants (DPIE, 2020)	https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/surveying-threatened-plants-and-habitats-nsw-survey-guide-biodiversity-assessment-method-200146.pdf_
DPIE Threatened Species website	https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species_
PlantNET	http://plantnet.rbgsyd.nsw.gov.au/
Threatened Species Assessment Guideline - The Assessment of Significance (DPI, 2008)	Threatened Species Assessment Guidelines (nsw.gov.au)
Significant Impact Guidelines 1.1 - Matters of National Environmental Significance	https://www.environment.gov.au/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance_
Principles for the use of biodiversity offsets in NSW	https://www.environment.nsw.gov.au/biodivoffsets/oehoffsetprincip.htm_
NSW Native Vegetation Regulatory Map	https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=NVRMap_
NSW Biodiversity Values Map	https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap_

Table 2: Spatial data

GIS layer name	Reference
IBRA bioregions and subregion	NSW data portal
NSW landscape regions	Mitchell Landscapes V3
Rivers and streams	Six Viewer / SEED WMS topographic layer
Wetlands	Directory of Important Wetlands
Waterways	Waterway NSW Final
Key Fish Habitat	DPI Key Fish Habitat GIS layer
Native vegetation extent	Central Tablelands State Vegetation Plant Community Type map 4778 and ESRI Satellite

2. Methods

2.1 Site context methods

2.1.1 Landscape features

Satellite imagery and spatial data (Table 1) were used to determine landscape features of the development site. Field surveys were undertaken to ground-truth desktop results and confirm feature extent (Section 3.2).

2.1.2 Native vegetation cover

Satellite, aerial imagery and spatial data (Table 1) were used to determine native vegetation cover of the development site. Field surveys were undertaken to ground-truth desktop results and confirm extent and condition of native vegetation and to confirm any areas of excluded or exempt land under the *Local Land Services Act 2013* (LLS Act) (Section 3.3).

2.2 Native vegetation, threatened ecological communities and vegetation integrity methods

2.2.1 Existing information

A review of relevant ecological databases and literature (Section 1.5) was undertaken to characterise the development site including vegetation type, likelihood of occurrence of, and potential impacts to biodiversity values.

2.2.2 Mapping native vegetation extent

Native vegetation within the subject area was classified using the NSW vegetation classification framework.

The 'State Vegetation Type Map: Central Tablelands SVM v1p0_PCT_E_4778 spatial layer provided a baseline for determining Plant Community Types (PCT) with potential to occur within the development site. The BioNet Vegetation Classification application was used to understand community composition and any Threatened Ecological Communities (TEC) associated with PCT.

Satellite and SIX Maps historic aerial imagery were used to determine native vegetation extent of the development site.

Desktop results were ground-truthed by field assessment including plot-based vegetation surveys in accordance with Biodiversity Assessment Method (BAM) 2020 (Section 2.2.3). Areas of PCT identified within the development site were zoned according to vegetation condition.

Assessment identified the Plant Community Types and confirmed the presence/ absence of any Threatened Ecological Communities. Biodiversity Assessment Method 2017 (BAM) vegetation plots were completed.

All trees were recorded for size group, species, and potential habitat (hollows) (Table 3).

Trees size groups are allocated based on the Biodiversity Assessment Method 2017 (BAM 2017) diameter at breast height (DBH) measures.

Table 3: Tree size groups allocated based on BAM sizes

Tree Group	Size (DBH)
C1	<5
C2	5-9cm
C3	10-19cm
C4	20-29cm
C5	30-49cm
C6	40-79cm
C7	80+cm

2.2.3 Plot-based vegetation survey

BAM (2020) is approved by the NSW government as it is scientifically robust, transparent and repeatable, providing a consistent approach for assessing impacts on biodiversity values.

Supported by desktop results, the development site was first assessed to broadly indicate what Plant Community Types (PCT) and zones were likely present and where to apply BAM plots. Plots were placed in representative native vegetation zones likely to be impacted by the proposal.

Species composition (Native, Exotic, High Threat Weeds (HTW), vegetation integrity, function, PCT and TEC presence were assessed using four 20 by 20 metre and 20 by 50 metre vegetation plots, in accordance with BAM 2020. The attributes measured provided an indication of the biodiversity presence and quality of habitat. Transects were also used to determine the presence of any threatened flora species (Appendix C). If the presence of a listed threatened species was detected in a plot, relevant NSW or Commonwealth guidelines were employed to find others in or next to the plot to indicate the extent of the local viable population.

Areas of non-native vegetation were also identified using the processes outlined above including areas comprising exotic species or grazed paddocks.

Effort was made to place all vegetation plots within the development site, however, some plots extended beyond the footprint to ensure vegetation representative of the same vegetation type and condition as the vegetation within the development site was captured.

Plot data collected was entered into the BAM-C and credit reports provided in Appendix D.

2.2.4 Vegetation integrity survey

See Section 2.2.3.

2.3 Threatened flora survey methods

2.3.1 Review of existing information

A list of threatened flora and associated habitat and microhabitat constraints, predicted to occur in the subject area, was automatically generated using BAM-C based on site context including IBRA region and sub region, predicted PCTs and NSW (Mitchell) Landscape.

Aerial imagery, contour maps and vegetation maps were also reviewed to identify habitat constraints and microhabitats for threatened species. The following additional resources were used to inform field and threatened species:

Databases used to identify potentially occurring threatened species and habitat constraints

Database / resource	Search area	Date accessed
NSW DPIE BioNet Atlas	W DPIE BioNet Atlas Approximately 1.5-kilometre radius around the	
	development site	
MNES Protected Matters Search Tool (DCCEEW)	A 1.5-kilometre radius around the development site	September 2022

2.3.2 Habitat constraints assessment

Using the existing information (Section 2.3.1), a field assessment was undertaken to confirm presence of associated habitat and microhabitat constraints. Hollow bearing trees were recorded, and any other potential habitat noted and used to inform targeted threatened species surveys as required.

2.3.3 Field surveys

Field surveys were conducted in three stages:

- 1. Initial field assessment including completion of BAM plots, targeted survey for listed species as applicable (section 2.2.3)
- 2. Targeted frog and arboreal mammal survey (section 2.4.3)

3. Additional, opportunistic site visit.

Figure 6 describes field survey methods and location.

2.4 Threatened fauna survey methods

2.4.1 Review of existing information

A review of relevant ecological databases and literature (section 1.5) was undertaken to characterise the development site and likelihood of occurrence of, and potential impacts to biodiversity values.

The likelihood of threatened species occurrence in the development site was informed by field surveys and suitable habitat including any habitat constraints recorded. Where threatened species were considered likely to occur, the potential impact of the proposal on these species was determined.

Opportunistic sightings of fauna were also recorded including any indirect evidence such as scats, tracks, calls, fur, feathers, sloughed skins feeding scars on trees etc.

2.4.2 Habitat constraints assessment

Using the existing information (section 2.4.1), a field assessment was undertaken to confirm presence of associated habitat and microhabitat constraints. Hollow bearing trees were recorded, and any other potential habitat noted and used to inform targeted threatened species surveys as required.

2.4.3 Field surveys

Desktop results (e.g., BioNet, predicted species and MNES records) were used to inform field surveys for threatened fauna. Targeted surveys were undertaken in September, November and December 2020 including:

- four evening frog surveys at a minimum of two hours across the two dams targeting the Gold and Green Bell Frog (*Litoria aurea*) (Endangered BC Act, Vulnerable EPBC Act), and
- four weeks of baited camera traps targeting the Vulnerable Brush-tailed Phascogale (*Phascogale tapoatafa*) and Squirrel Glider (*Petaurus norfolcensis*) under the BC Act
- one day of walking transects in September, complimented by opportunistic observations during November and December surveys for Koala (*Phascolarctos cinereus*).

Surveys followed / or was consistent with threatened species survey guidelines including:

- NSW Survey Guide for Threatened Frogs (NSW DPE 2020)
- NSW DPE BioNet Atlas for Phascogale and Squirrel Glider.
- NSW DPE Koala (Phascolarctos cinereus) Biodiversity Assessment Method Survey Guide.

2.5 Weather conditions

The average environmental conditions experienced during surveys on the development site, taken from the nearest weather station are set out in Table 4 (BOM, 2020).

Table 4 Environmental conditions during threatened species surveys

Survey undertaken (e.g., method / targeted species)	Date	Time	Temperature (min. & max.)	Wind (light, mod)	Rainfall (mm)	Other conditions relevant to the species
Vegetation and other threatened species as applicable during the time on the site	15/09/2020	all day	3.5 – 19.4	not available	0	
Gold and Green Bell Frog (L. aurea)	16-20/11/2020	night	10.3-31.5	not available	0	
Brush-tailed Phascogale (<i>P. tapoatafa</i>), Squirrel Glider (<i>P. norfolcensis</i>)	18/11-16/12/2020	night	18.9-31.5	not available	70.7	

2.6 Limitations

No limitations have been identified.

3. Site context

3.1 Assessment area

Figure 2 Location Map shows the assessment area, which includes the development site and the area of land within the 1500 metre buffer zone surrounding the footprint as required for a site-based development.

3.2 Landscape features

Landscape features identified within the development site and assessment area are shown on Figure 1 and Figure 2, respectively. The development site is undulating, steep, hilly with an elevation of 878 to 928 metres (AHD). A discussion of relevant landscape features is provided below.

3.2.1 IBRA bioregions and IBRA subregions

The development site and assessment area occur in the South Eastern Highlands Interim Biogeographic Regionalisation for Australia (IBRA) bioregion and Capertee Uplands IBRA subregion.

3.2.2 Rivers, streams, estuaries and wetlands

The development site and assessment area occur in the Warragamba catchment. A significant waterbody within the assessment area is Lake Wallace approximately 150 metres East of the development site. Numerous first to third Strahler Order waterways also occur throughout the assessment area. Three first Strahler Order waterways occur in the development site which terminate at Lake Wallace and two dams (Figure 2).

3.2.3 Habitat connectivity

There is habitat connectivity throughout the development site to grasslands adjacent to the southern boundary which may serve as movement corridors for threatened species. The proposal would cause fragmentation and loss of habitat in these areas.

There is no connectivity with habitat outside the development site along the north, north-west and north-east given the land is largely bound by Barton Avenue and residential housing.

3.2.4 Karst, caves, crevices, cliffs, rocks or other geological features of significance

No karst, caves, crevices, cliffs, rocks or other geological features of significance occur within the development site.

3.2.5 Areas of outstanding biodiversity value

Biodiverse riparian land occurs within the assessment area no less than approximately 850 metres from the development site at the closest point. No areas of outstanding biodiversity value, as identified under the BC Act, occur within the development site (

Figure 4).

3.2.6 NSW (Mitchell) landscape

The development site overlaps the Capertee Plateau NSW (Mitchell) landscape (Figure 2) and is described below:

Name	Description	Percent cleared
Capertee Plateau	Wide valleys, low rolling hills below sandstone cliffs on Permian conglomerates, sandstones, and shales with coal at the base of the Sydney Basin and exposure of underlying Devonian shale, siltstone or quartzite. Small areas of Tertiary basalt. General elevation 800 to 1000m, local relief 100-120m. Isolated flat top mountains in the valleys formed as pinnacles or remnant pieces of plateau. Shoulder slopes with stone pillars or 'pagodas' above steep canyons on tributary streams falling into gorges. Low gradient swampy streamlines. Shallow stony texture-contrast profiles, usually with gritty well drained A-horizons, over tough yellow or grey poorly drained clays. Bouldery debris with clay matrix below cliffs (talus). Organic sand in swamps. Red brown structured loams on basalt. Woodlands of; rough-barked apple (Angophora floribunda), red stringybark (<i>Eucalyptus macrorhyncha</i>), red box (<i>Eucalyptus polyanthemos</i>), yellow box (<i>Eucalyptus melliodora</i>), Blakely's red gum (Eucalyptus blakelyi) with shrubby understorey and wallaby grass (<i>Austrodanthonia sp.</i>) in open valleys. Scribbly gum (<i>Eucalyptus sclerophylla</i>), red stringybark (<i>Eucalyptus macrorhyncha</i>), red box and broad-leaved ironbark (<i>Eucalyptus fibrosa</i> ssp. fibrosa) on talus slopes. Silvertop ash (<i>Eucalyptus sieberi</i>) and Sydney peppermint (<i>Eucalyptus piperita</i>) on sandstone peaks. Dwarf casuarina (<i>Allocasuarina nana</i>), tea-tree (<i>Leptospermum sp.</i>), and sedge on pagoda margins.	59

3.2.7 Additional landscape features identified in SEARs

No SEARs were required for this proposal.

3.2.8 Soil hazard features

This subsection does not apply for this proposal as it does not require approval from the Native Vegetation Panel under Part 5A of the *Local Land Services Act 2013*, or the Vegetation SEPP.

3.3 Native vegetation cover

Native vegetation cover within the assessment area was estimated to be 17 percent. This was largely determined using satellite imagery and observations during the field assessment. Based on the type of vegetation observed within the subject area, upper stratum vegetation was assumed to be similar throughout the assessment area.

Treeless areas were considered non-native vegetation and treed areas were mapped as native vegetation with the exception of planted non-native species most likely *Pinus radiata* plantation. Polygons were drawn around trees and tree clusters with groundcover between trees also being included as native vegetation.

Table 5 summarises the extent of native vegetation cover within the assessment area. Figure 2 Location Map shows native vegetation cover within the assessment area.

Table 5 Native vegetation cover in the assessment area

Assessment area (ha)	1004
Total area of native vegetation cover (ha)	167

Percentage of native vegetation cover (%)	17
Class (0-10, >10-30, >30-70 or >70%)	>10-30

4. Native vegetation, threatened ecological communities and vegetation integrity

4.1 Native vegetation extent

The field assessment confirmed that native vegetation occurs throughout the entire development site and is of variable quality (Figure 7).

4.1.1 Changes to the mapped native vegetation extent

There are no significant differences between the actual native vegetation extent and that shown on the aerial imagery used in the figures.

4.1.2 Areas that are not native vegetation

The field assessment confirmed the non-native vegetation occurs within the subject area including several individual exotic Pines, approximately 200 Poplar, patches of Blackberry and African Love Grass.

4.2 Plant community types

4.2.1 Overview

Vegetation within the development site has been assessed as aligning with the BioNet Vegetation Classification PCT351 identified within Table 6, its extent is shown in Figure 8 and further described in the following subsections.

Table 6 PCTs identified within the development site

PCT ID	PCT name	Development footprint area (ha)
351	Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion.	17.22
	Total area	17.22

4.2.2 PCT351 Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion

4.2.2.1 PCT overview

PCT351 was assessed as occurring over 100 percent of the development site as described in Table 7 using the data contained within the BioNet Vegetation Classification.

PCT351 is widespread across western and central parts of South Eastern Highlands Bioregion from Orange to Yass. It includes a mid to tall open forest dominated by Brittle Gum (*Eucalyptus mannifera subsp. Mannifera*) often with Red Stringybark (*E. macrorhyncha*), Broad-leaved Peppermint (*E. dives*), Long-leaved Box (*E. goniocalyx*) and occasionally Argyle Apple (*E. cinerea*), a sparse shrub layer of *Dillwynia* species, *Daviesia leptophylla*, *Acacia gunnii, Hibbertia obtusifolia, Monotoca scoparia, Gompholobium huegelii, Pultenaea*

procumbens, and a sparse to mid-dense ground cover comprising a variety of grass species and mat-rushes, forbs and a climber (*Hardenbergia violacea*) (NSW DPIE 2022).

PCT351 occurs on shallow, yellow to red podzolic clay to loam soils derived from sedimentary, metamorphic and igneous substrates on footslopes and hillslopes in hill and plateau landform patterns on the western side of the northern half of the South Eastern highlands Bioregion with some patches in the upper NSW South-western Slopes Bioregion generally between Orange and Yass (NSW DPIE 2022).

Table 7 PCT351 Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion

PCT ID	351
PCT name	Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Vegetation formation	Dry Sclerophyll Forests (Shrubby sub-formation)
Vegetation class	Southern Tableland Dry Sclerophyll Forests
Per cent cleared value (%)	60
Extent within development site (ha)	17.43

4.2.2.2 Condition states

PCT351 was recorded in two condition states within the development site, 17.20 hectares is in poor condition (Zone 1) where the upper and mid stratum have been removed, with occasional areas of young regrowth, and 0. 02 hectares is in moderate condition (Zone 2) where the upper stratum is intact including mature trees. Photo 1 and Photo 2 are representative of these condition states.

Photo 1 PCT351 - Moderate condition



Photo 2 PCT351 - Poor condition



4.2.2.3 Justification of PCT selection

At the time of writing this report, new PCTs have been described for this IBRA subregion, however they are yet to take effect, and be available for analysis.

The following steps were used to select PCT351 as the best fit PCT for this disturbed landscape.

A bulk export PCT list was filtered by:

- upper stratum species: Brittle Gum (Eucalyptus mannifera)
- mid stratum species: Myrtle Tea-tree (Leptospermum myrtifolium)
- ground stratum genus: Poa

These filter parameters provided a short list of two:

- PCT344 Argyle Apple Acacia mearnsii valley open forest of the Yass Rye Park region of the South Eastern Highlands Bioregion and adjoining NSW South Western Slopes Bioregion
- PCT351 Brittle Gum Broad-leaved Peppermint Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion

The BioNet Vegetation Classification database identifies PCT351 as being associated with the Capertee Uplands IBRA subregion and the Hill End IBRA subregion which lies less than two kilometres to the southeast of the development footprint, and as being associated with this PCT, and less than eight kilometres to the west.

No such association is provided for PCT344. Further, the description for PCT344 indicates it is mainly distributed around the Yass to Rye Park region which is more than 150 kilometres from the development site.

PCT351 was concluded to be the pest fit PCT.

4.2.2.4 Alignment with TECs

Plant Community Type 351 is associated with one Threatened Ecological Community (TEC) - *Mt Canobolas Xanthoparmelia Lichen Community* (Part) which is listed as Endangered under the BC Act.

This community is restricted to Mt Canobolas, and suitable habitat for this community does not occur in the study area. This community is not present in the development site.

4.3 Threatened ecological communities

The field assessment confirmed there are no Threatened Ecological Communities in the development site.

4.4 Vegetation zones

The BAM Streamlined assessment module – Small area was used for this BDAR. Two vegetation zones were identified as occurring in the development site, representing the same PCT in two condition states. BAM Subsection 4.3.2 was used to determined patch size class and the number of vegetation integrity survey plots needed.

The field assessment determined 17.20 hectares to be in poor condition (Zone 1), and 0.02 hectares in moderate condition (Zone 2). Table 8 summarises vegetation zone and patch size class information.

Figure 8 shows the extent of each zone within the subject area.

Table 8 Vegetation zones and patch sizes

Vegetation zone ID	PCTID number and name	Condition / other defining feature	Area (ha)	Patch size class (select multiple if areas of native vegetation are discontinuous)	No. vegetation integrity plots required	No. vegetation integrity plots completed	No. vegetation integrity plots used in assessment	Plot IDs of vegetation integrity plots used in assessment
Zone 1	351 Brittle Gum - Broad- leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion	Poor	17.43	□ <5 ha □ 5–24 ha □ 25–100 ha ⊠ >100 ha	3	3	3	Plots1-3
Zone 2	351 Brittle Gum - Broad- leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion	Moderate	0.13	□ <5 ha □ 5–24 ha □ 25–100 ha ⊠ >100 ha	1	1	1	Plot 4

4.5 Vegetation integrity (vegetation condition)

4.5.1 Vegetation integrity survey plots

Vegetation composition, structure and function were assessed using the minimum number of plots per zone in accordance with the BAM Table 3.

4.5.2 Scores

The vegetation integrity scores for the vegetation within the subject area is shown in Table 9. Appendix C provides full vegetation survey data.

Table 9 Vegetation integrity scores

Vegetation zone ID	Composition condition score	Structure condition score	Function condition score (where relevant)	Vegetation integrity score	Hollow bearing trees present?
Zone 1 (PCT351)	13.8	2.1	0.2	1.7	No
Zone 2 (PCT351)	40.8	56.1	72.2	54.9	Yes

4.5.3 Use of benchmark data

Community Condition Benchmarks as per the BAM calculator (in line with the BioNet Vegetation Classification) was used to assess vegetation integrity attributes in each zone.

5. Habitat suitability for threatened species

5.1 Identification of threatened species for assessment

5.1.1 Ecosystem credit species

Table 10 lists ecosystem credit species (and their sensitivity to gain class) likely to occur on or use the development site. One ecosystem credit species (*Grantiella picta* – Painted Honeyeater) predicted to occur in the development site has been excluded as required habitat constraints are not present.

Table 10 Predicted ecosystem credit species

Common name	Scientific name	Listin	g status	Dual credit	Sources	Species retained for	Reason for exclusion	Vegetation zone ID species retained	Sensitivity to gain
namo		BC Act	EPBC Act	species		further assessment?	from further assessment	within, including PCTID	class
Barking Owl (foraging)	Ninox connivens	V	-	Yes	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	High
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	V	-	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	High
Diamond Firetail	Stagonopleura guttata	V	-	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	Moderate
Dusky Woodswallow	Artamus cyanopterus	V	-	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	Moderate

Common name	Scientific name	Listin			Dual Sources credit	Species retained for	Reason for exclusion	Vegetation zone ID species retained	Sensitivity to gain
Tidino.		BC Act	EPBC Act	species		further assessment?	from further assessment	within, including PCTID	class
Flame Robin	Petroica phoenicea	V	-	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	Moderate
Gang-gang Cockatoo (foraging)	Callocephalon fimbriatum	V	Е	Yes	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	Moderate
Grey-headed Flying-fox (foraging)	Pteropus poliocephalus	V	V	Yes	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	High
Large Bent- winged Bat (foraging)	Miniopterus orianae oceanensis	V	-	Yes	 ☑ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey 	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	High
Little Eagle (foraging)	Hieraaetus morphnoides	V	-	Yes	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	Moderate
Masked Owl (foraging)	Tyto novaehollandiae	V	-	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	High

Common name	Scientific name	Listing	g status	Dual credit	Sources	Species retained for	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCTID	Sensitivity to gain
		BC Act	EPBC Act	species		further assessment?			class
Powerful Owl (foraging)	Ninox strenua	V	-	Yes	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	High
Scarlet Robin	Petroica boodang	V	-	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	Moderate
Speckled Warbler	Chthonicola sagittata	V	-	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	High
Spotted- tailed Quoll	Dasyurus maculatus	V	E	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	High
Painted Honeyeater	Grantiella picta	V	V	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	No	Habitat constraint: Mistletoes not present at a density of >5 per hectare.	Zone1 PCT351 Zone 2 PCT351	Moderate
Turquoise Parrot	Neophema pulchella	V	-	No	☑ BAM-C☐ TBDC☐ Previous survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	High
					☐ Current survey				

Common name	Scientific name	Listing status		Dual credit	Sources	Species retained for	Reason for exclusion	Vegetation zone ID species retained	Sensitivity to gain
		BC Act	EPBC Act	species		further assessment?	from further assessment	within, including PCTID	class
Varied Sittella	Daphoenositta chrysoptera	V	-	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	Moderate
White- throated Needletail	Hirundapus caudacutus	-	V	No	☐ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	High
Yellow- bellied Sheathtail- bat	Saccolaimus flaviventris	V	-	No	☐ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351	High

5.1.2 Species credit species

Table 11 (flora) and Table 12 (fauna) list all species credit species predicted to occur in the development site as per the BAM-C and results of field survey. Ten species credit species predicted to occur in the development site have been excluded from further survey as required habitat constraints are not present.

Table 11 Predicted flora species credit species

Common name	Scientific name	Listing sta	itus	Sources	Species	Reason for exclusion	Vegetation
		BC Act	EPBC Act		retained for further assessment?	from further assessment	zone ID species retained within, including PCTID
Acacia meiantha	Acacia meiantha	E	E	⋈ BAM-C□ TBDC□ Previous survey□ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351
Black Gum	Eucalyptus aggregata	V	V	⋈ BAM-C□ TBDC□ Previous survey□ Current survey	Yes	N/A	Zone 2 PCT351
Silver-leaved Gum	Eucalyptus pulverulenta	V	V	⋈ BAM-C□ TBDC□ Previous survey□ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351
Grevillea divaricata	Grevillea divaricata	E	-	⋈ BAM-C□ TBDC□ Previous survey□ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351
Hoary Sunray	Leucochrysum albicans var. tricolor	-	Е	⋈ BAM-C□ TBDC□ Previous survey□ Current survey	Yes	N/A	Zone1 PCT351 Zone 2 PCT351

Table 12 Predicted fauna species credit species

Common name	Scientific name	Listing s	tatus	Dual	Sources	Species	Reason for exclusion	Vegetation
		BC Act	EPBC Act	credit species		retained for further assessment?	from further assessment	zone ID species retained within, including PCTID
Gang-gang Cockatoo (breeding)	Callocphalon fimbiatum	V	E	Yes	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	No	Habitat constraints: No suitable breeding habitat of 9cm hollows present within the development site.	N/A
Large-eared Pied Bat	Chalinolobus dwyeri	V	V	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	No	Habitat constraints: No suitable habitat of cliffs rocky areas,caves, overhands escarpments, outcrops or crevices within two kilometres of the development site.	N/A
Little Eagle (breeding)	Hieraaetus morphnoides	V	-	Yes	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	No	Habitat constraints: No evidence of nest trees in the development site.	N/A
Green and Golden Bell Frog	Litoria aurea	Е	E	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351
Booroolong Frog	Litoria booroolongensis	E	E	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone1 PCT351

Common name	Scientific name	Listing sta	itus	Dual	Sources	Species	Reason for exclusion	Vegetation
		BC Act	EPBC Act	:PBC species further assessment		from further assessment	zone ID species retained within, including PCTID	
Large Bent- winged Bat (breeding)	Miniopterus orianae oceanensis	V	-	Yes	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	No	Habitat constraints: 'Caves;Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records with microhabitat code"IC – in cave; observation type code " nest-roost; with numbers of individuals >500'	N/A
Barking Owl (breeding)	Ninox connivens	V	-	Yes	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	No	Habitat constraints: No suitable breeding habitat of living or dead trees with hollows greater than 20cm diameter and greater than 4m above the ground within the development site.	N/A
Powerful Owl (breeding)	Ninox strenua	V	-	Yes	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	No	Habitat constraints: No suitable breeding habitat of living or dead trees with hollows greater than 20cm diameter within the development site.	N/A

Common name	Scientific name	Listing st	atus	Dual	Sources	Species	Reason for exclusion	Vegetation
		BC Act	EPBC Act	credit species		retained for further assessment?	from further assessment	zone ID species retained within, including PCTID
Purple Copper Butterfly/Bathurst Copper Butterfly	Paralucia spinifera	Е	V	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	No	Only occurs on <i>Bursaria</i> spinosa subsp. lasiophylla which was not recorded in the development site.	N/A
Squirrel Glider	Petaurus norfolcensis	V	-	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone2 PCT351
Brush-tailed Rock-wallaby	Petrogale penicillata	Е	V	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	No	Habitat constraints: No suitable habitat of rocky escarpments, gorges, steep slopes, boulder piles, rock outcrops or clifflines within 1km of the development site.	N/A
Bruch-tailed Phascogale	Phascogale tapoatafa	V	-	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone2 PCT351
Koala (breeding)	Phascolarctos cinereus	E	E	No	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	Yes	N/A	Zone2 PCT351

Common name	Scientific name	Listing st	atus	Dual	Sources	Species	Reason for exclusion	Vegetation
		BC Act	EPBC Act	credit species		retained for further assessment?	from further assessment	zone ID species retained within, including PCTID
Grey-headed Flying-fox (breeding)	Pteropus poliocephalus	V	V	Yes	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	No	Habitat constraints: No suitable habitat for breeding camps within the development site.	N/A
Masked Owl (breeding)	Tyto novaehollandiae	V	-	Yes	☑ BAM-C☐ TBDC☐ Previous survey☐ Current survey	No	Habitat constraints: No suitable breeding habitat of living or dead trees with hollows greater than 20cm diameter within the development site.	N/A

5.2 Presence of candidate species credit species

The remaining candidate species credit species requiring further survey are outlined in Table 13 and Table 14. Only one threatened species (*Eucalyptus aggregata*) was recorded during targeted species surveys (

Figure 9).

Table 13 Determining the presence of candidate flora species credit species on the development site

Common name	Scientific name	Listing	status	Method used to	Present?	Further assessment
		BC Act	EPBC Act	determine presence		required? (BAM Subsections 5.2.5 and 5.2.6)
Acacia meiantha	Acacia meiantha	E	E	Targeted threatened species survey	No	No
Black Gum	Eucalyptus aggregata	V	V	Targeted threatened species survey	Yes	No
Silver-leaved Gum	Eucalyptus pulverulenta	V	V	Targeted threatened species survey	No	No
Grevillea divaricata	Grevillea divaricata	E	-	Targeted threatened species survey	No	No
Hoary Sunray	Leucochrysum albicans var. tricolor	-	E	Targeted threatened species survey	No	No

Table 14 Determining the presence of candidate fauna species credit species on the development site

Common name	Scientific name	Listing	status	Method used to	Present?	Further assessmen	
		BC EPB Act C Act		determine presence		t required? (BAM Subsections 5.2.5 and 5.2.6)	
Green and Golden Bell Frog	Litoria aurea	E	E	Targeted threatened species survey	No	No	

Common name	Scientific name	Listing	status	Method used to	Present?	Further assessmen
		BC Act	EPB C Act	determine presence		t required? (BAM Subsections 5.2.5 and 5.2.6)
Booroolong Frog	Litoria booroolongensis	E	Е	Targeted threatened species survey	No	No
Squirrel Glider	Petaurus norfolcensis	V	-	Targeted threatened species survey	No	No
Bruch-tailed Phascogale	Phascogale tapoatafa	V	-	Targeted threatened species survey	No	No
Koala (breeding)	Phascolarctos cinereus	E	E	Targeted threatened species survey	No	No

5.3 Threatened species surveys

Targeted threatened species used to determine presence or absence of threatened flora and fauna species are shown the Table 15 and Table 16. Methods were consistent with species survey guidelines as described in Section 2.4.

Table 15 Threatened species surveys for candidate flora species credit species on the development site

Common	Scientific name	Threatened	flora spec	ies surve	ys	Present?	Further
name		Survey method (transects or grids)	Timing of survey - within recommended period? (BAM-C / TBDC)		(hours & no. people)		required (BAM Subsections 5.2.5 and 5.2.6)
Acacia meiantha	Acacia meiantha	Walking transects Plots	⊠ Yes Sept	□ No	1 day 2 people	No	No
Black Gum	Eucalyptus aggregata	Walking transects Plots	⊠ Yes Sept	□ No	1 day 2 people	Yes	No
Silver- leaved Gum	Eucalyptus pulverulenta	Walking transects Plots	⊠ Yes Sept	□ No	1 day 2 people	No	No
Grevillea divaricata	Grevillea divaricata	Walking transects Plots	□ Yes Sept	⊠ No	1 day 2 people	No	No

Common	Scientific name	Threatened	l flora spec	Present?	Further		
name		Survey method (transects or grids)	Timing of – within recommer period? (BAM-C /	nded	ded (hours & no. people)		assessment required (BAM Subsections 5.2.5 and 5.2.6)
Hoary Sunray	Leucochrysum albicans var. tricolor	Walking transects Plots	⊠ Yes Sept	□ No	1 day 2 people	No	No

Table 16 Threatened species surveys for candidate fauna species credit species on the development site

Common	Scientific	Threatened fa	auna spe	cies surve	ys	Pr	Further
name	name	Survey method (e.g. harp trap, Elliott trap, bioacoustics, etc.)	Timing of survey – within recommended period? (BAM-C / TBDC)		Effort (hours & no. people)	Present	assessment required (BAM Subsections 5.2.5 and 5.2.6)
Green and Golden Bell Frog	Litoria aurea	Aural surveys	⊠ Yes Nov, Dec	□ No	4 survey nights 2hrs/night 1 person	No	No
Squirrel Glider	Petaurus norfolcensis	Baited camera traps Walking transects	⊠ Yes Nov, Dec	□ No	4 weeks	No	No
Bruch- tailed Phascogale	Phascogale tapoatafa	Baited camera traps Walking transects	⊠ Yes Nov, Dec	□ No	4 weeks	No	No
Koala (breeding)	Phascolarctos cinereus	SAT survey Walking transects	⊠ Yes Sept	□ No	2 days (two visits)	No	No

5.4 Expert reports

No expert reports were used.

5.5 More appropriate local data (where relevant)

No local data was used to assess habitat suitability.

5.6 Area or count, and location of suitable habitat for a species credit species (a species polygon)

The field assessment recorded one candidate flora species credit species in the development site – *Eucalyptus aggregata* (Black gum) listed as vulnerable under the BC Act and EPBC Act (Table 17). A total of one individual was identified: C7 (DBH 80+cm) tree. The C7 tree included one hollow.

Using the standards for protection of trees on development sites (AS 4970-2009), an 11.5-meter buffer was applied based on the DBH of the largest tree. This figure takes into account the root area and crown area requiring protection and would make up a Tree Protection Zone in accordance with the standard. This standard was applied due to the absence of polygon guidance in the Threatened Biodiversity Data Collection.

Figure 9 shows the extent of this species and the associated buffer which would be imposed for its protection within the development site.

Table 17 Results for present species (recorded within the development site)

Common name	Scientific name	Biodiversity risk weighting (BAM-C & TBDC*)	SAII entity** (BAM-C & TBDC)	Habitat constraints / microhabitats present on the development site / vegetation zone	Abundance - No. individual plants present on development site (flora with unit of measure of count)	Extent (ha) of suitable habitat present on site (flora or fauna with unit of measure of area)	TBDC species specific recommendations e.g. buffers, general comments (where relevant)	Habitat condition (vegetation integrity score for each vegetation zone in the polygon – area species only)
Black gum	Eucalyptus aggregata	High (2)	No	PCT351 Zone 2	9	0.03	Nil	Moderate

6. Identifying prescribed impacts

Table 18 summarises potential prescribed impacts in relation to the proposal.

Section 8.3 of this BDAR summarises potential prescribed impacts associated with the proposal and Section 8.4 outlines mitigations against all residual impacts, including prescribed impacts.

Table 18 Prescribed impacts identified

Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature. Where relevant, threatened species or fauna that are part of a TEC or EC, that are at risk of vehicle strike
Karst, caves, crevices, cliffs, rocks or other geological features of significance	□Yes / ⊠No	No significant geological features occur in the development site.	N/A
Human-made structures	□Yes / ⊠No	Dams occur in the development site and are addressed in the Waterbodies section of this table. No other significant human-made structures occur in the development site.	N/A
Non-native vegetation	⊠Yes / □No	Non-native vegetation is interspersed among native vegetation throughout the development site.	No threatened entities have been recorded using non-native vegetation and therefore are unlikely to be impacted by loss of non-native vegetation.
Habitat connectivity	□Yes / ⊠No	Habitat and associated vegetation within the development site is at the extent of its range. Impacts to vegetation from the proposal would not result in fragmentation of habitat corridors nor impact to connectivity of adjacent habitat of similar composition and quality.	No threatened entities have been recorded using habitat within the development site and are therefore unlikely to be impacted by its loss.
Waterbodies, water quality and hydrological processes	⊠Yes / □No	Two dams are present in the development site and have been for some time with evidence that they are providing habitat for aquatic species such as frogs.	No threatened entities were recorded using the farm dams therefore are unlikely to be impacted by potential changes to these dams.
Wind turbine strikes (wind farm development only)	□Yes / ⊠No	N/A	N/A
Vehicle strikes	□Yes / ⊠No	N/A	N/A

Stage 2: Impact assessment (biodiversity values and prescribed impacts)

7. Avoid and minimise impacts

7.1 Avoid and minimise direct and indirect impacts

7.1.1 Project location

The proposed development is located in a cleared landscape, with some remnant vegetation and habitat suitable for threatened species (

Figure 310).

7.1.2 Project design

The proponent has sought to reduce impacts to biodiversity values within its project design and the inclusion of excluded areas for the protection of vegetation (Figure 5 and Section 7.4).

There are two areas within the development site which would be avoided by this proposal and have therefore been considered as excluded impact. where exclusions would apply. These relate to Zone 2 moderate condition vegetation including an area containing the BC Act and EPBC Act listed vulnerable Black Gum (*Eucalyptus aggregata*). Exclusion measures for avoiding and minimising impacts include the establishment of a tree protection / vegetation protection zone on the relevant lots, prohibiting development, tree clearing or services within the designated area (Figure 5).

7.2 Avoid and minimise prescribed impacts

7.2.1 Project location

The proponent has indirectly avoided and minimised prescribed impacts in its site selection in an area that:

- does not contain geologically significant areas and human-made structures which may be used by threatened entities,
- is previously cleared and where non-native vegetation is low quality and human-made waterbodies do not support threatened species, and
- provides no habitat connectivity.

7.2.2 Project design

Although the project location contains two dams and non-native vegetation, no threatened entities were recorded as using these habitats. No project design changes are required.

7.3 Other measures considered

N/A

7.4 Summary of measures to avoid and minimise impacts

Table 19 sets out the measures that would be implemented to avoid and minimise impacts to Black Gum (*E. aggregata*) and PCT351 in moderate condition (Zone 2).

Table 19 Avoidance and minimisation measures for direct, indirect and prescribed impacts

Action	Outcome (Describe the outcome of implementing the measure, with reference to specific entities identified in Sections 4 and 5)	Timing	Responsibility
Modified project design (Figure 10) to include a fenced Tree Protection Zone (~11.5 metre buffer) established in the proposed Lot 13 prohibiting access using Tree Protection signage consistent with AS4970-2009 Protection of trees on development sites (Australian Standards)	Impacts to the BC and EPBC listed Black Gum (E. aggregata) are avoided.	Planning phase Prior to deployment of plant equipment and commencement of construction activities.	Proponent
Underground and aboveground utility services would avoid the Tree Protection Zone as far as reasonably practicable and undertaken in accordance with AS4970-2009 Protection of trees on development sites (Australian Standards).	Disturbance of Black Gum (E. aggregata) is avoided.	Construction phase	Proponent
Modified project design and limiting area of impact to a 6-metre access handle (Figure 10) and installing temporary fencing to restrict construction to this corridor.	Impacts to PCT351 Zone 2 is minimised.	Planning phase Prior to deployment of plant equipment and commencement of construction activities.	Proponent

8. Impact assessment

8.1 Direct impacts

8.1.1 Residual direct impacts

Impacts likely to occur in the development site after steps are taken to avoid and minimise impacts are set out in Table 20. Figure 10 shows areas of direct impact.

Table 20 Summary of residual direct impacts

Direct impact (Describe the impact on PCT/TEC/EC or threatened species and their habitat)	BC Act status	EPBC Act status	SAII entity	Project phase/timing of impact (e.g. construction, operation, rehabilitation)	Extent (ha, number of individuals)
Vegetation clearance in the development footprint would impact 0.02 hectares of moderate condition (Zone 2) and 17.20 hectares of poor condition (Zone 1) native vegetation.	N/A	N/A	No	Construction	17.22 hectares
Contamination, erosion, exposed soil and stockpiles are potential direct impacts. Soils would be disturbed where vegetation removal and construction would occur. Disturbed soils have the potential to negatively impact the environment if not appropriately managed. Regular testing, erosion and sediment control measures should be implemented.	N/A	N/A	No	Construction and operation	Within the development footprint and surrounding study area
Dust emissions during construction would potentially impact air quality which would require mitigation.	N/A	N/A	No	Construction	The development footprint and surrounding study area

8.1.2 Change in vegetation integrity score

Table 21 shows the change in vegetation integrity for residual direct impacts on native vegetation.

Table 21 Impacts to vegetation integrity

Vegetation PCTID Management Area			Before development			After development			Change			
zone		zone	(ha)	Composition	Structure	Function	VI score	Composition	Structure	Function	VI score	Change in VI score
Zone 1	351	N/A	17.2	13.8	2.1	0.2	1.7	0	0	0	0	-1.7
Zone 2	351	N/A	0.02	40.8	56.1	72.2	54.9	0	0	0	0	-54.9

8.2 Indirect impacts

Table 22 shows residual indirect impacts which may occur on native vegetation, threatened entities and their habitat beyond the development footprint.

Table 22 Summary of residual indirect impacts

Indirect impact (Describe impact, e.g. transport of weeds and pathogens form the site to adjacent vegetation)	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long- term/ short- term/ medium- term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences
Introduction and spread of disease and pathogens from the site to adjacent vegetation	Native vegetation surrounding the development footprint	Assessment area	Ongoing	Life of project	During construction and operation	Unlikely if adequately mitigated
Introduction and spread of weeds and pests from the site to adjacent vegetation	Native vegetation surrounding the development footprint	Assessment area	Ongoing	Life of project	During construction and operation	Unlikely if adequately mitigated
Dust, Noise and Vibration impacts to surrounding vegetation and habitat values	Native vegetation surrounding the development footprint	Assessment area	Ongoing	Life of project	During construction and operation	Unlikely if adequately mitigated

8.3 Prescribed impacts

8.3.1 Waterbodies, water quality and hydrological processes

Two dams are present in the development footprint and have been for some time with evidence that they are providing habitat for aquatic species such as frogs. One dam is located in a proposed road corridor and the other in an easement. The impact to/ removal of both dams would occur during construction activities. No threatened entities were recorded using the farm dams therefore are unlikely to be impacted by potential changes to these dams.

8.3.2 Non-native vegetation

Non-native vegetation is interspersed among native vegetation, throughout the development footprint. It comprises pine and poplar species as well as blackberry and African Love Grass which may provide habitat for threatened species. Non-native vegetation would be impacted during construction activities. No threatened entities have been recorded using non-native vegetation and therefore are unlikely to be impacted by loss of non-native vegetation.

8.4 Mitigating residual impacts – management measures and implementation

Table 23 details proposed mitigation and management measures for residual impacts.

Table 23 Summary of proposed mitigation and management measures for residual impacts (direct, indirect and prescribed)

Mitigation measure (specify if none proposed and ensure an adaptive management strategy is developed and addressed in Section Error! Reference source not found.)	Method/techniq ue	Timing	Frequen cy	Responsibili ty	Likely efficacy (includin g risk of failure)	MNES (when relevan t)
Staff inductions	Ensure all staff working on the project are inducted on site environmental procedures (i.e., vegetation management, sediment and erosion control, protective fencing, weeds, hygiene protocols, ethical procedures for	Prior to any employee commenci ng work	As required	HR officer	Likely	N/A

Mitigation measure (specify if none proposed and ensure an adaptive management strategy is developed and addressed in Section Error! Reference source not found.)	Method/techniq ue	Timing	Frequen cy	Responsibili ty	Likely efficacy (includin g risk of failure)	MNES (when relevan t)
	handling fauna displaced on the site, site speed limits, biodiversity considerations etc).					
Physical vegetation clearing boundary at the approved clearing limit is to be identified and effectively communicated to personnel	The delineation of such a boundary may include the use of temporary fencing or parawebbing and marked as 'No-Go Zones'. Regular inspections should be undertaken to ensure all retained vegetation/fauna habitat is clearly marked and that fencing is in place, where appropriate.	Prior to construction	As required	Project manager/ Environment Officer	Likely	N/A
Vegetation clearance occurs as per biodiversity recommendatio ns to minimise impacts	 Preclearing inspection should be undertaken by a qualified ecologist An ecologist or spotter/catcher should be present for the removal of hollow bearing trees, logs or stags which could contain native fauna 	During and post constructio n	As required	Project manager/ Environment Officer	Likely	N/A

Mitigation measure (specify if none proposed and ensure an adaptive management strategy is developed and addressed in Section Error! Reference source not found.)	Method/techniq ue • Avoid clearing	Timing	Frequen cy	Responsibili ty	Likely efficacy (includin g risk of failure)	MNES (when relevan t)
	in Spring where possible Implement staged habitat removal Reuse fallen timber for habitat Compensate for the loss of large hollows using nest-boxes or creating tree hollows through pruning remaining trees					
Manage dust, stockpiles, waste rock	Devise a soil and waste rock management strategy	Prior to construction	Review as required	Project manager/ Environment Officer	Likely	N/A
Manage water (run off, wastewater etc) onsite	Devise a Water management strategy	Prior to construction	Review as required	Project manager/ Environment Officer	Likely	N/A
Manage waste onsite	Devise a Waste management strategy	Prior to construction	Review as required	Project manager/ Environment Officer	Likely	N/A
Manage dust and air quality onsite	Devise an Air quality management strategy	Prior to construction	Review as required	Project manager/ Environment Officer	Likely	N/A
Manage biodiversity onsite	Devise a Biodiversity management strategy	Prior to constructio n	Review as required	Project manager/ Environment Officer	Likely	N/A
Prevent bushfire	Devise a Bushfire management strategy	Prior to constructio n	Review as required	Project manager/ Environment Officer	Likely	N/A

Mitigation measure (specify if none proposed and ensure an adaptive management strategy is developed and addressed in Section Error! Reference source not found.)	Method/techniq ue	Timing	Frequen cy	Responsibili ty	Likely efficacy (includin g risk of failure)	MNES (when relevan t)
Manage noise onsite	Devise a Noise management strategy	Prior to construction	Review as required	Project manager/ Environment Officer	Likely	N/A
Prevent weed, pest and disease occurrences	Devise a Biosecurity management strategy	Prior to construction	Review as required	Project manager/ Environment Officer	Likely	N/A

For each measure listed in Table 23, further details on implementation in Table 24.

Table 24 Mitigation and management measures

Measure/action	Monitoring and evaluation strategy (Data, frequency, timing and reporting)	Performance criteria (linked to monitoring and evaluation strategy)	Adaptive management threshold (trigger for adaptive management plan/actions)	Adaptive management response (when triggered)
Staff inductions	Annual review of currency and effectiveness	Staff performance	Staff incidences	Review induction material, investigate and action response.
Demark clearing limits	Regular inspections (daily) should be undertaken to ensure all retained vegetation/fauna habitat is clearly marked and that fencing is in place, where appropriate	Clearing undertaken effectively, safely and within approved limits	Vegetation clearing or other impact outside approved limits	Cease work, report and notify, investigate and action response.
Vegetation clearance occurs as per biodiversity recommendations	Regular inspections (daily) should be undertaken to ensure vegetation	Clearing undertaken effectively, safely and within approved limits	Vegetation clearing or other impact outside approved limits,	Cease work, report and notify, investigate and action response.

Measure/action	Monitoring and evaluation strategy (Data, frequency, timing and reporting)	Performance criteria (linked to monitoring and evaluation strategy)	Adaptive management threshold (trigger for adaptive management plan/actions)	Adaptive management response (when triggered)
to minimise impacts	clearance occurs as per recommendations		injury to wildlife reported	
Manage dust, stockpiles, waste rock	Regular monitoring and inspections (monthly)	No incidence recorded or reported	Incident recorded	Report and notify, investigate and action response.
Manage water (run off, wastewater etc) onsite	Regular monitoring and inspections (monthly)	No incidence recorded or reported	Incident recorded	Report and notify, investigate and action response.
Manage waste onsite	Regular monitoring and inspections (monthly)	No incidence recorded or reported	Incident recorded	Report and notify, investigate and action response.
Manage dust and air quality onsite	Regular monitoring and inspections (monthly)	No incidence recorded or reported	Incident recorded	Report and notify, investigate and action response.
Manage biodiversity onsite	Regular monitoring and inspections (monthly)	No incidence recorded or reported	Incident recorded	Report and notify, investigate and action response.
Prevent bushfire	Regular monitoring and inspections (monthly)	No incidence recorded or reported	Incident recorded	Report and notify, investigate and action response.
Manage noise onsite	Regular monitoring and inspections (monthly)	No incidence recorded or reported	Incident recorded	Report and notify, investigate and action response.
Prevent weed, pest and disease occurrences	Regular monitoring and inspections (monthly)	No incidence recorded or reported	Incident recorded	Report and notify, investigate and action response.
Rehabilitate post exploration	TBC, would occur at the end of the life of the project	No incidence recorded or reported	Incident recorded	Report and notify, investigate and action response.

9. Serious and irreversible impacts

9.1 Assessment for serious and irreversible impacts on biodiversity values

No candidate Serious and Irreversible Impacts were identified

10. Impact summary

10.1 Determine an offset requirement for impacts

10.1.1 Impacts on native vegetation and TECs or ECs (ecosystem credits)

Impacts on native vegetation that do and do not require offsets are provided in Table 25 and Table 26.

Table 25 Impacts that do not require offset – ecosystem credits

Vegetation zone	PCT name	TEC	Impact area (ha)	TEC association	Entity at risk of an SAII?	Current VI score
Zone 1	351 Brittle Gum - Broad- leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion	N/A	17.2	N/A	No	1.7

Table 26 Impacts that require an offset – ecosystem credits

Vegetation zone	PCT name	TEC	Impact area (ha)	Current VI score	Future VI score	Change in VI score	Biodiversity risk weighting	Number of ecosystem credits required
Zone 2	351 Brittle Gum - Broad- leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion	N/A	0.02	54.9	-54.9	100	1.75	1

Vegetation zone	PCT name	TEC	Impact area (ha)	Current VI score	Future VI score	Change in VI score	Biodiversity risk weighting	Number of ecosystem credits required
							Total credits	1

10.1.2 Impacts on threatened species and their habitat (species credits)

Impacts on threatened species (species credits) that require an offset are provided in Table 27.

Table 27 Impacts that require an offset – species credits

Common name	Scientific name	BC Act status	EPBC Act status	Loss of habitat (ha) or individuals	Biodiversity risk weighting	Number of species credits required
N/A	N/A	N/A	N/A	N/A	N/A	N/A
					Total credits	N/A

10.1.3 Indirect and prescribed impacts

There are no indirect and prescribed impacts that remain after measures to avoid, minimise, and mitigate have been applied, so further offsetting is not required.

10.2 Impacts that do not need further assessment

Table 28 identifies impacts that do not need further assessment for ecosystem credits (as per BAM Section 9.3(1–2.).

Table 28 Impacts that do not need further assessment for ecosystem credits

Impact	Location within development footprint	Justification why no further assessment is required		
Non-native vegetation	Figure 7	BAM Section 9.3 (1)		
No vegetation – two dams	Figure 7	No listed threatened entities were recorded using dams. No further assessment is required under BAM Section 9.3 (2)		

11. Biodiversity credit report

A summary of the biodiversity credits for the proposal is provided in Table 29 and Table 30. Appendix D provides the complete credit reports.

11.1 Ecosystem credits

Table 29 Ecosystem credit class and matching credit profile

Ecosystem credit	Attributes shared with matching credits								
	PCT name	PCT vegetation class	PCT vegetation formation	Associated TEC or EC	Offset trading group (BAM Section 10.2, Tables 4 & 5)	Hollow bearing trees present?	IBRA subregion (in which proposal is located)		
1	351 Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north- western part (Yass to Orange) of the South Eastern Highlands Bioregion	Southern Tableland Dry Sclerophyll Forests. This includes PCT's: 299, 344, 349, 351, 352, 653, 701, 727, 728, 730, 888, 957, 1093, 1177	Dry Sclerophyll Forests (Shrubby sub- formation)	Not a TEC	Southern Tableland Dry Sclerophyll Forests >=50% and <70%	Yes	Captertee Uplands		

11.2 Species credits

Table 30 Species credit class and matching credit profile

Species credit	Attributes shared with matching credits						
	Name of threatened species	Kingdom	BC Act status	EPBC Act status	IBRA region		
N/A	N/A	N/A	N/A	N/A	N/A		

12. References

Australian Standards AS4970-2009 Protection of trees on development sites, Australian Standards, viewed September 2022, 2020 pdf extract from AS4970-2009

EPBC Act Referral Guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory), Commonwealth of Australia, 2014.

NSW Department of Planning, Industry and Environment 2022, *BioNet Vegetation Classification*, viewed September 2022,

https://www.environment.nsw.gov.au/NSWVCA20PRapp/default.aspx.

NSW Department of Planning, Industry and Environment 2020, NSW Survey Guide for Threatened Frogs. A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method, State of NSW and DPIE 2020.

NSW Department of Planning, Industry and Environment 2020, BioNet Atlas, viewed October 2020.

https://www.environment.nsw.gov.au/AtlasApp/UI Modules/TSM /ProfileEdit.aspx?pId=106 13&pType=SpeciesCode and

https://www.environment.nsw.gov.au/AtlasApp/UI_Modules/TSM_/ProfileEdit.aspx?pId=106 04&pType=SpeciesCode.

13. Figures

Figure 1 Site Map

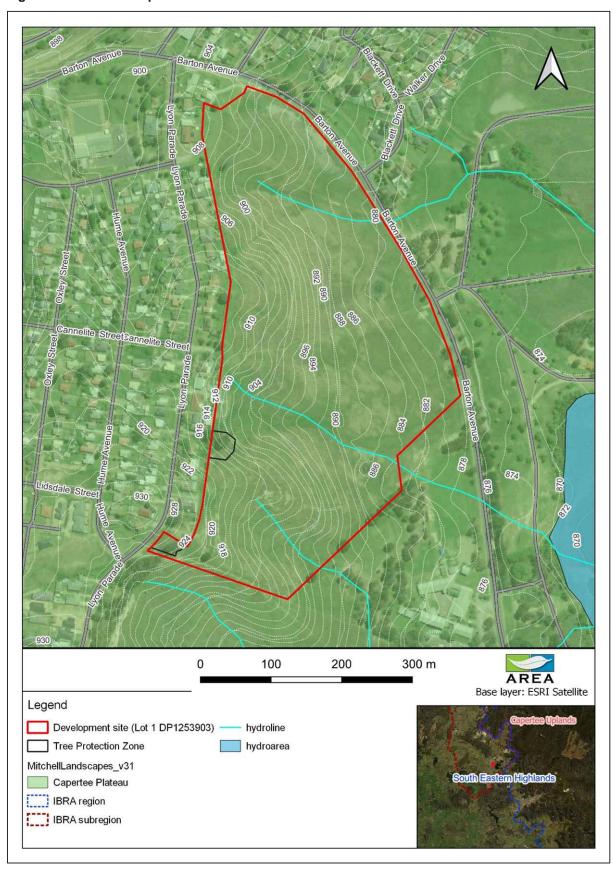


Figure 2 Location map

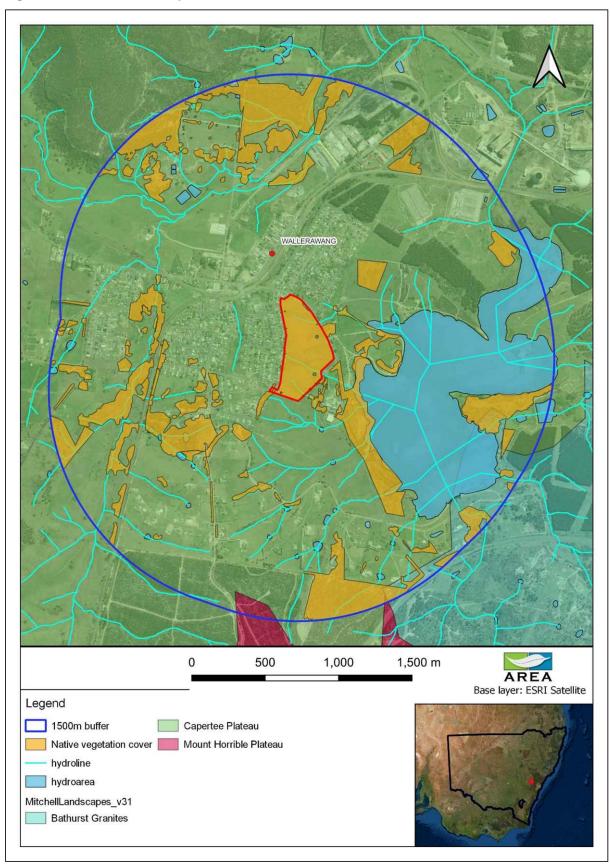


Figure 3 Development layout

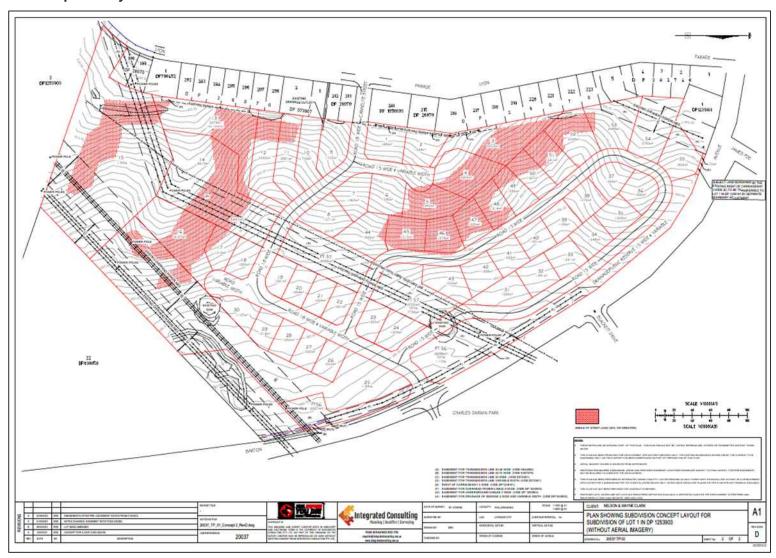


Figure 4 Biodiversity Values Map

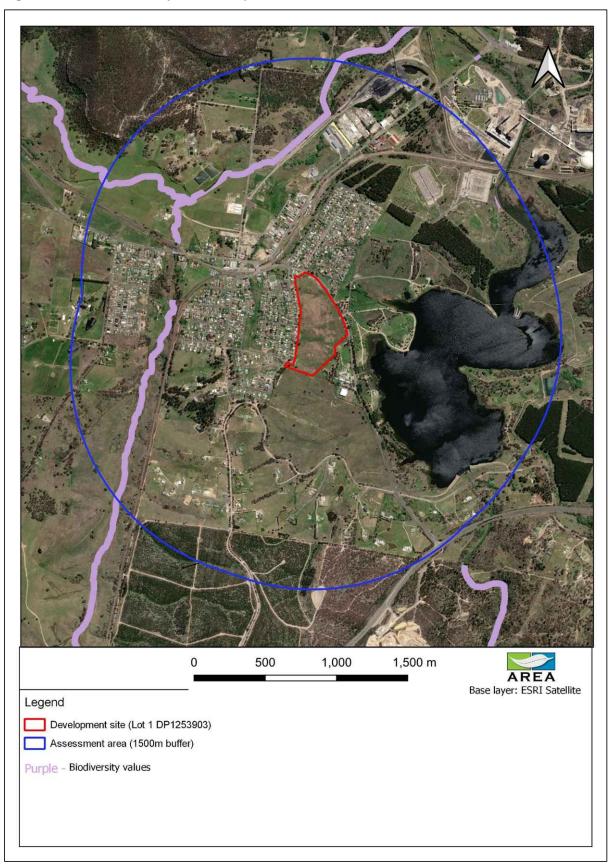


Figure 5 Excluded impacts

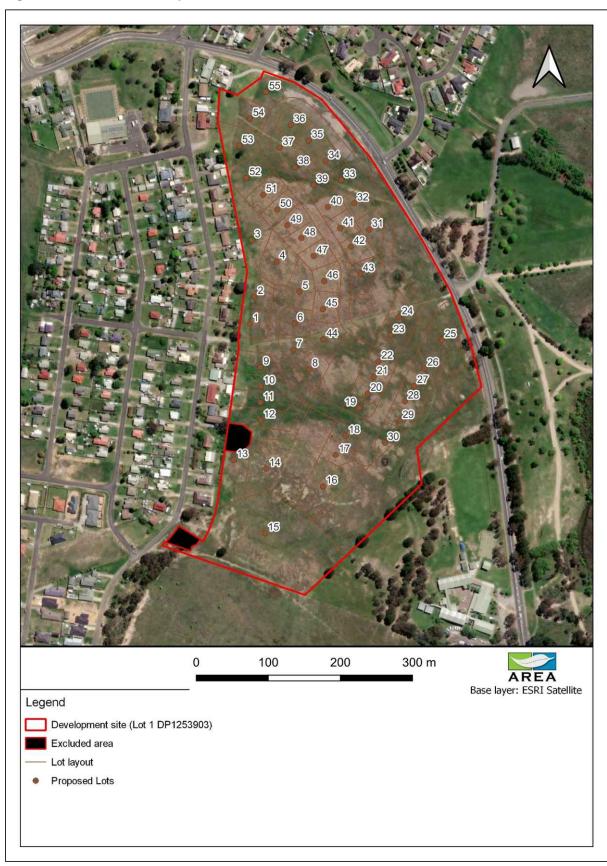


Figure 6 Field survey locations

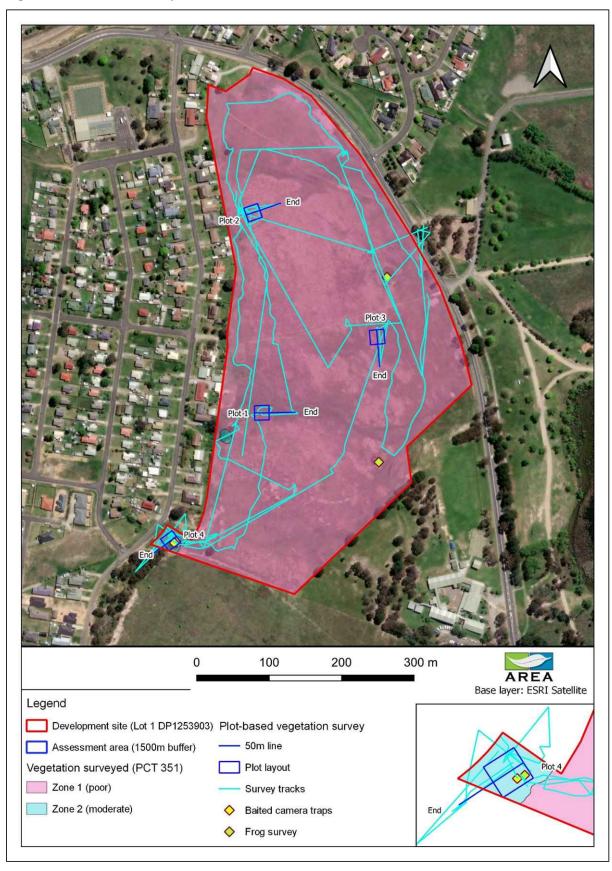


Figure 7 Native vegetation extent

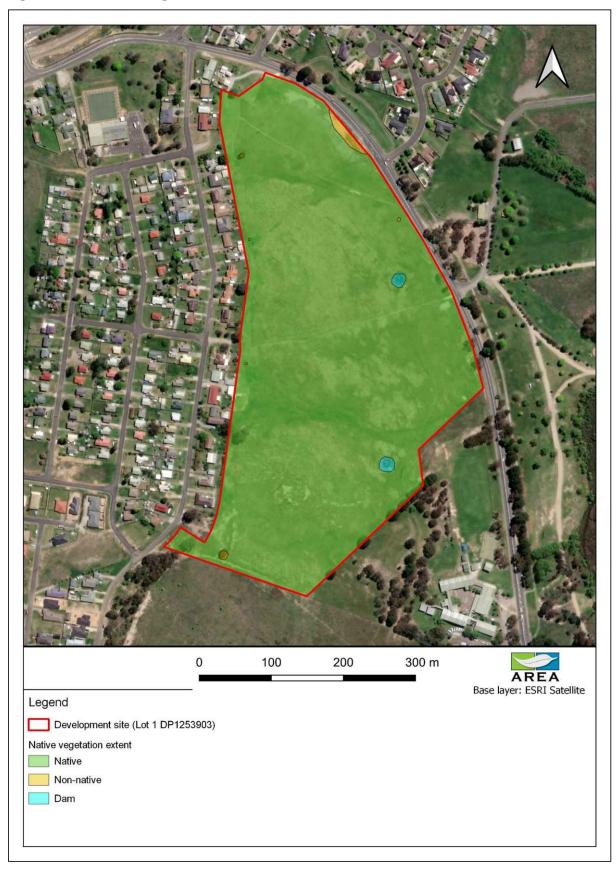
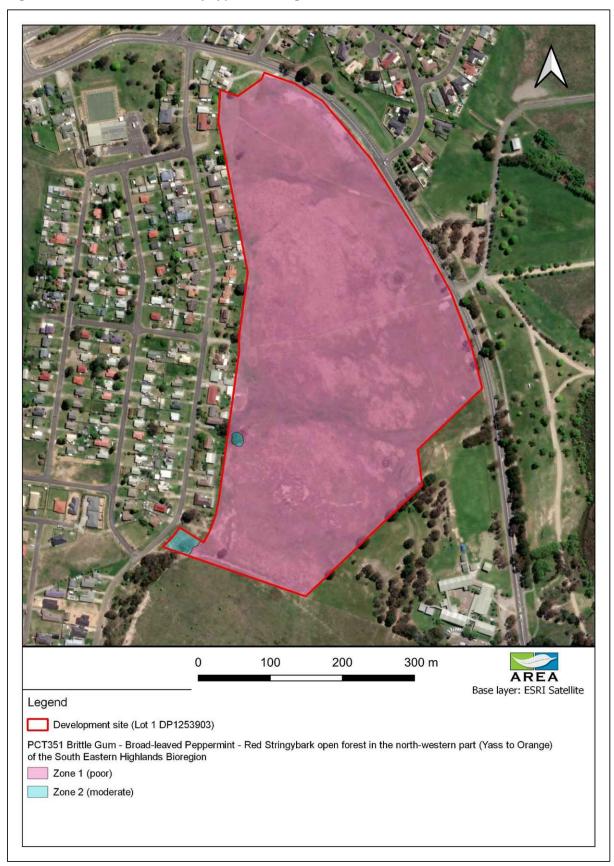


Figure 8 Plant community types and vegetation zones



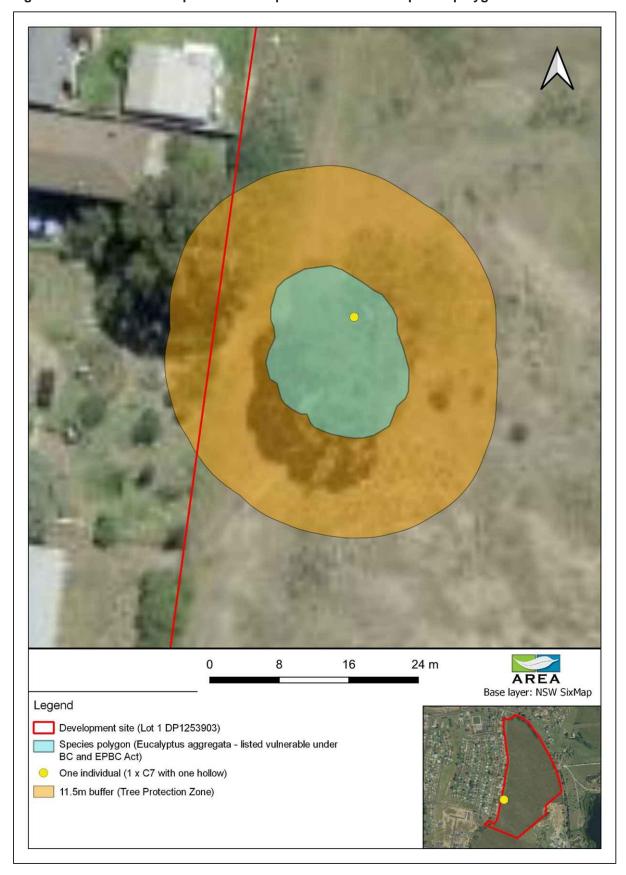
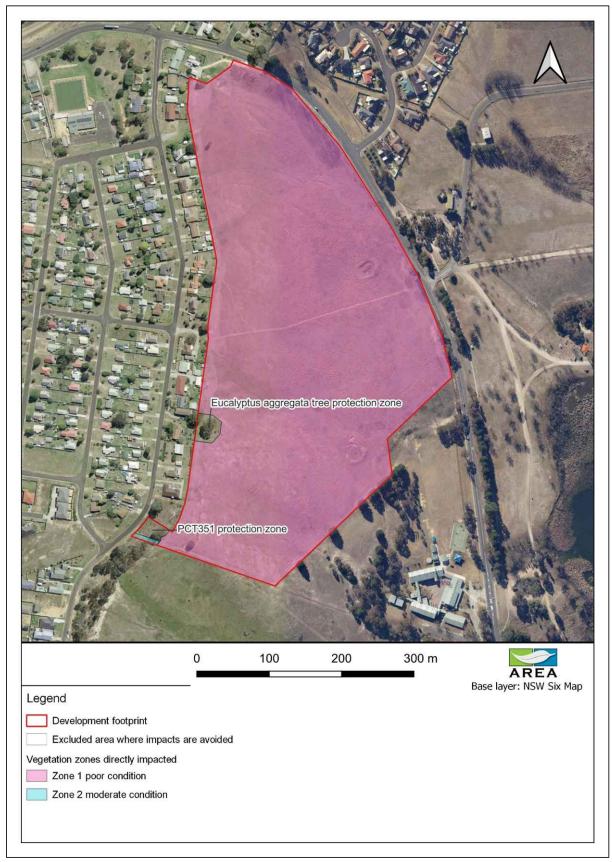


Figure 9 Candidate species credit species records and species polygons

Figure 10 Final impacts likely to occur on the development footprint



0 10 20 30 m AREA Base layer: ESRI Satellite Legend Development footprint Offset requirements

Figure 11 Thresholds for assessing and offsetting impacts

Offset
No offset

Appendix A: BDAR requirements compliance

The operational manuals (Stage 1 and Stage 2) provide further operational guidance for the preparation of a BDAR and are companion documents to the BAM. In preparing BDARs, assessors should read the operational manuals in conjunction with the BAM. Some best practice items outlined in the operational manuals that are not reflected in BAM Appendix K have been added in red within Table 31.

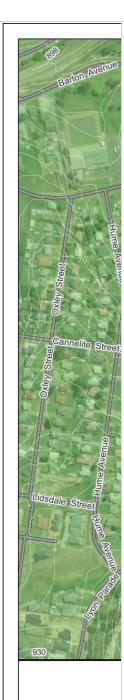
Table 31 Assessment of compliance with BDAR minimum information requirements

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Introduction	Chapters 2 and 3	Information	
		Introduction to the biodiversity assessment including:	_
		☐ brief description of the proposal	<1.1.1>
		☐ identification of subject land boundary, including:	<1.1.3>
		☐ operational footprint	
		 construction footprint indicating clearing associated with temporary/ancillary construction facilities and infrastructure 	
		☐ general description of the subject land	<1.1.3>
		☐ sources of information used in the assessment, including reports and spatial data	<1.5>
		☐ identification and justification for entering the BOS	<1.2>
		Maps and tables	
		☐ Map of the subject land boundary showing the final proposal footprint, including the construction footprint for any clearing associated with temporary/ancillary construction facilities and infrastructure	<figure 1<="" td=""></figure>
		, , , , , , , , , , , , , , , , , , , ,	te Map

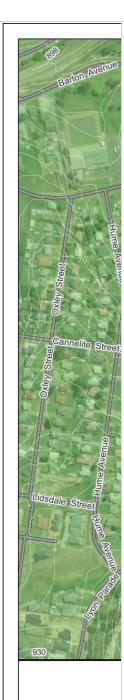


BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
			>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Landscape	Sections 3.1 and 3.2, Appendix E	Information	
		Identification of site context components and landscape features, including:	_
		$\ \square$ general description of subject land topographic and hydrological setting, geology and soils	<1.1.3>
		$\ \square$ per cent native vegetation cover in the assessment area (as described in BAM Section 3.2)	
		☐ IBRA bioregions and subregions (as described in BAM Subsection 3.1.3(2.))	<3.2.1>
		☐ rivers and streams classified according to stream order (as described in BAM Subsection 3.1.3(3.) and Appendix E)	<3.2.2>
		☐ wetlands within, adjacent to and downstream of the site (as described in BAM Subsection 3.1.3(3.))	<3.2.2>
		☐ connectivity of different areas of habitat (as described in BAM Subsection 3.1.3(5–6.))	<3.2.3>
		☐ karst, caves, crevices, cliffs, rocks and other geological features of significance and for vegetation clearing proposals, soil hazard features (as described in BAM Subsections 3.1.3(7.) and 3.1.3(12.))	<3.2.4>
		☐ areas of outstanding biodiversity value occurring on the subject land and assessment area (as described in BAM Subsection 3.1.3(8–9.))	<3.2.5>
		\square any additional landscape features identified in any SEARs for the proposal	<3.2.7>
		☐ NSW (Mitchell) landscape on which the subject land occurs	<3.2.6>
		details of field reconnaissance undertaken to confirm the extent and condition of landscape features and native vegetation cover (as described in Operational Manual Stage 1 Section 2.4)	<2.1>
		Maps and tables	
		☐ Site Map	<figure 1<="" td=""></figure>
		☐ Property boundary	Si to Man
		☐ Boundary of subject land	te Map
		☐ Cadastre of subject land (including labelling of Lot and DP or section plan if relevant)	
		☐ Landscape features identified in BAM Subsection 3.1.3	



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
			>
		 □ Location Map □ Digital aerial photography at 1:1,000 scale or finer □ Boundary of subject land □ Assessment area (i.e. the subject land and either 1500 m buffer area or 500 m buffer for linear development) □ Landscape features identified in BAM Subsection 3.1.3 □ Additional detail (e.g. local government area boundaries) relevant at this scale 	<error! found.="" not="" reference="" source=""></error!>
		Landscape features identified in BAM Subsection 3.1.3 and to be shown on the Site Map and/or Location Map include:	_
		□ IBRA bioregions and subregions □ rivers, streams and estuaries □ wetlands and important wetlands □ connectivity of different areas of habitat □ karst, caves, crevices, cliffs, rocks and other geological features of significance and if required, soil hazard features □ areas of outstanding biodiversity value occurring on the subject land and assessment area □ any additional landscape features identified in any SEARs for the proposal □ NSW (Mitchell) landscape on which the subject land occurs	<figure 1="" map<="" si="" td="" te=""></figure>



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
			& Error! Reference source not found.>
		Data	
		☐ All report maps as separate jpeg files	_
		Individual digital shape files of:	_
		☐ subject land boundary	_
		assessment area (i.e. subject land and 1500 m buffer area) boundary	_
		☐ cadastral boundary of subject land	_
		☐ areas of native vegetation cover	_
		☐ landscape features	_

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Native vegetation	Chapter 4, Appendix A and Appendix H	Information	
		☐ Identify native vegetation extent within the subject land, including cleared areas and evidence to support differences between mapped vegetation extent and aerial imagery (as described in BAM Section 4.1(1–3.) and Subsection 4.1.1)	<4.1 & Figure 7>
		☐ Provide justification for all parts of the subject land that do not contain native vegetation (as described in BAM Subsection 4.1.2)	<0>
		☐ Review of existing information on native vegetation including references to previous vegetation maps of the subject land and assessment area (described in BAM Section 4.1(3.) and Subsection 4.1.1)	<2.2.2>
		☐ Describe the systematic field-based floristic vegetation survey undertaken in accordance with BAM Section 4.2	<0>
		☐ Where relevant, describe the use of more appropriate local data, provide reasons that support the use of more appropriate local data and include the written confirmation from the decision-maker that they support the use of more appropriate local data (as described in BAM Subsection 1.4.2 and Appendix A)	<insert relevant<br="">reference & Appendix G></insert>
		For each PCTwithin the subject land, describe:	_
		☐ PCTname and ID	<4.1 & Figure 7>
		□ vegetation class	<0>
		☐ extent (ha) within subject land	<2.2.2>
		 evidence used to identify a PCTincluding any analyses undertaken, references/sources, existing vegetation maps (BAM Section 4.2(1–3.)) 	<0>
		☐ plant species relied upon for identification of the PCTand relative abundance of each species	<insert relevant<br="">reference and Appendix G></insert>
		☐ if relevant, TEC status including evidence used to determine vegetation is the TEC (BAM Subsection 4.2.2(1–2.))	<4.1 & Figure 7>
		☐ estimate of per cent cleared value of PCT(BAM Subsection 4.2.1(5.))	<0>
		Describe the vegetation integrity assessment of the subject land, including:	_

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ identification and mapping of vegetation zones (as described in BAM Subsection 4.3.1)	<4.4 & Error! Reference source not found.>
		☐ description of vegetation zones within the subject land (as described in Operational Manual Stage 1 Table 2 and Subsection 3.3.2)	<4.4 & Error! Reference source not found.>
		☐ area (ha) of each vegetation zone	<4.4>
		\square assessment of patch size (as described in BAM Subsection 4.3.2)	<4.4>
		□ survey effort (i.e. number of vegetation integrity survey plots) as described in BAM Subsection 4.3.4(1–2.)	<4.5.1>
		☐ use of relevant benchmark data from BioNet Vegetation Classification (as described in BAM Subsection 4.3.3(5.))	<4.5.3>
		Where use of more appropriate local benchmark data is proposed (as described in BAM Subsection 1.4.2, BAM Subsection 4.3.3(5.) and BAM Appendix A):	_
		\square identify the PCTor vegetation class for which local benchmark data will be applied	<4.5.3>
		☐ identify published sources of local benchmark data (if benchmarks obtained from published sources)	
		 describe methods of local benchmark data collection (if reference plots used to determine local benchmark data) 	
		 provide justification for use of local data rather than BioNet Vegetation Classification benchmark values 	<4.5.3>
		 provide written confirmation from the decision-maker that they support the use of local benchmark data 	<appendix g=""></appendix>
		Maps and tables	
		☐ Map of native vegetation extent within the subject land at scale not greater than 1:10,000 including identification of all areas of native vegetation including areas that are ground cover only, cleared areas (as described in BAM Section 4.1(1–3.)) and all parts of the subject land that do not contain native vegetation (BAM Subsection 4.1.2)	<figure 7=""></figure>
		☐ Map of PCTs within the subject land (as described in BAM Section 4.2(1.))	<figure 8=""></figure>
		☐ Map of vegetation zones within the subject land (as described in BAM Subsection 4.3.1)	<error! found.="" not="" reference="" source=""></error!>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ Map the location of floristic vegetation survey plots and vegetation integrity survey plots relative to PCTboundaries	< Figure 6>

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	☐ Map of TEC distribution on the subject land and table of TEC listing, status and area (ha)	<



Legend

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BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
			& Error! Reference source not found.>
		☐ Map of patch size locations for each native vegetation zone and table of patch size areas (as described in BAM Subsection 4.3.2)	<error! &="" 8="" found.="" not="" reference="" source="" table=""></error!>
		Table of current vegetation integrity scores for each vegetation zone within the site and including:	_
		□ composition condition score	<table 9=""></table>
		☐ structure condition score	
		☐ function condition score	
		☐ presence of hollow bearing trees	
		Data	
		☐ All report maps as separate jpeg files	_
		☐ Plot field data (MS Excel format)	
		☐ Plot field datasheets	<appendix f=""></appendix>
		Digital shape files of:	_
		☐ PCTboundaries within subject land	_
		☐ TEC boundaries within subject land	_
		☐ vegetation zone boundaries within subject land	_
		☐ floristic vegetation survey and vegetation integrity plot locations	_
Threatened species	Chapter 5	Information	
		Identify ecosystem credit species likely to occur on the subject land, including:	_
		☐ list of ecosystem credit species derived from the BAM-C (as described in BAM Subsection 5.1.1 and Section 5.2(1.))	>
		☐ justification and supporting evidence for exclusion of any ecosystem credit species based on geographic limitations, habitat constraints or vagrancy (as described in BAM Subsections 5.2.1 and 5.2.2)	<5.1.1>
		\square justification for addition of any ecosystem credit species to the list	<5.1.1>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		Identify species credit species likely to occur on the subject land, including:	_
		☐ list of species credit species derived from the BAM-C (as described in BAM Subsection 5.1.1)	<table &="" 11="" 12="" table=""></table>
		☐ justification and supporting evidence for exclusions based on geographic limitations, habitat constraints or vagrancy (as described in BAM Subsections 5.2.1 and 5.2.2)	<5.1.2>
		☐ justification and supporting evidence for exclusions based on degraded habitat constraints and/or microhabitats on which the species depends (as described in BAM Subsection 5.2.2)	<5.1.2>
		☐ justification for addition of any species credit species to the list	<5.1.2>
		From the list of candidate species credit species, identify:	_
		□ species assumed present within the subject land (if relevant) (as described in BAM Subsection 5.2.4(2.a.))	<table &="" 13="" 14="" table=""></table>
		□ species present within the subject land on the basis of being identified on an important habitat map for a species (as described in BAM Subsection 5.2.4(2.d.))	
		☐ species for which targeted surveys are to be completed to determine species presence (BAM Subsection 5.2.4(2.b.))	
		□ species for which an expert report is to be used to determine species presence (BAM Subsection 5.2.4(2.c.))	
		Present the outcomes of species credit species assessments from:	_
		☐ threatened species survey (as described in BAM Section 5.2.4)	<table &="" 15="" 16="" table=""></table>
		 expert reports (if relevant) including justification for presence of the species and information used to make this determination (as described in BAM Subsection 5.2.4, Section 5.3, Box 3) 	<5.4>
		Where survey has been undertaken include detailed information on:	_
		☐ survey method and effort (as described in BAM Section 5.3)	<table &="" 15="" 16="" table=""></table>
		☐ justification of survey method and effort (e.g. citation of peer-reviewed literature) if approach differs from the department's taxa-specific survey guides or where no relevant guideline has been published	<5.3>
		☐ timing of survey in relation to requirements in the TBDC or the department's taxa-specific survey guides. Where survey was undertaken outside these guides include justification for the timing of surveys	<table &="" 15="" 16="" 5.3="" table=""></table>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ survey personnel and relevant experience	<declarations ii=""></declarations>
		☐ describe any limitations to surveys and how these were addressed/overcome	<5.3>
		Where an expert report has been used in place of survey (as described in BAM Section 5.3, Box 3), include:	-
		 □ justification of the use of an expert report □ identify the expert, provide evidence of their expert credentials and departmental approval of expert status □ all requirements of Box 3 have been addressed in the expert report 	<5.4>
		Where use of local data is proposed (BAM Subsection 1.4.2):	_
		 □ identify relevant species □ identify data to be amended □ identify source of information for local data, e.g. published literature, additional survey data, etc. □ justify use of local data in preference to VIS Classification or TBDC data 	<5.5>
		\square provide written confirmation from the decision-maker that they support the use of local data	<appendix g=""></appendix>
		Species polygon completed for species credit species present within the subject land (assumed present or determined on the basis of survey, expert report or important habitat map) ensuring that:	-
		☐ the unit of measure for each species is documented	<table &="" 17="" error!="" found.="" not="" reference="" source=""></table>
		for species assessed by area:	_
		☐ the polygon includes the extent of suitable habitat for the target species within the subject land (as described in BAM Subsection 5.2.5)	<pre><error! found.="" not="" reference="" source=""></error!></pre>
		 a description of, and evidence-based justification for, the habitat constraints, features or microhabitats used to map the species polygon including reference to information in the TBDC for that species and any buffers applied 	<5.6>
		for species assessed by counts of individuals:	_
		☐ the number of individual plants present on the subject land (as described in BAM Subsection 5.2.5(3.))	<5.6>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		the method used to derive this number (i.e. threatened species survey or expert report) and evidence-based justification for the approach taken	<5.6>
		☐ the polygon includes all individuals located on the subject land with a buffer of 30 m around the individuals or groups of individuals on the subject landimpact	<error! found.="" not="" reference="" source=""></error!>
		☐ Identify the biodiversity risk weighting for each species credit species identified as present within the subject land (as described in BAM Section 5.4)	<table &="" 17="" error!="" found.="" not="" reference="" source=""></table>
		Maps and tables	
		☐ Table showing ecosystem credit species in accordance with BAM Subsection 5.1.1, and identifying:	
		☐ the ecosystem credit species removed from the list	<table 10=""></table>
		☐ the sensitivity to gain class of each species	<table 10=""></table>
		☐ Table detailing species credit species in accordance with BAM Section 5.2 and identifying:	<table &="" 11="" 12="" table=""></table>
		the species credit species removed from the list of species because the species is considered vagrant, out of geographic range or the habitat or microhabitat features are not present	<table &="" 11="" 12="" table=""></table>
		the candidate species credit species not recorded on the subject land as determined by targeted survey, expert report or important habitat map	<table &="" 13="" 14="" table=""></table>
		☐ Table detailing species credit species recorded or assumed as present within the subject land, habitat constraints or microhabitats associated with the species, counts of individuals (flora)/extent of suitable habitat (flora and fauna) (as described in BAM Subsection 5.2.6) and biodiversity risk weighting (BAM Section 5.4)	<5.6 & Table 17 & Error! Reference source not found.>
		☐ Map indicating the GPS coordinates of all individuals of each species recorded within the subject land and the species polygon for each species (as described in BAM Subsection 5.2.5)	<error! found.="" not="" reference="" source=""></error!>
		Data	
		☐ Digital shape files of suitable habitat identified for survey for each candidate species credit species	_
		☐ Survey locations including GPS coordinates of any plots, transects, grids	
		☐ Digital shape files of each species polygon including GPS coordinates of located individuals	_
		☐ Species polygon map in jpeg format	_

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ Expert reports and any supporting data used to support conclusions of the expert report	
		☐ Field datasheets detailing survey information including prevailing conditions, date, time, equipment used, etc.	

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Prescribed impacts	Chapter 6	Information	
		Identify potential prescribed biodiversity impacts on threatened entities, including:	_
		 karst, caves, crevices, cliffs, rocks and other geological features of significance (as described in BAM Subsection 6.1.1) occurrences of human-made structures and non-native vegetation (as described in BAM Subsection 6.1.2) corridors or other areas of connectivity linking habitat for threatened entities (as described in BAM Subsection 6.1.3) waterbodies or any hydrological processes that sustain threatened entities (as described in BAM Subsection 6.1.4) 	<table 18=""></table>
		☐ protected animals that may use the proposed wind farm development site as a flyway or migration route (as described in BAM Subsection 6.1.5)	<pre><error! found.="" not="" reference="" source=""></error!></pre>
		□ where the proposed development may result in vehicle strike on threatened fauna or on animals that are part of a threatened ecological community (as described in BAM Subsection 6.1.6)	<table 18=""></table>
		☐ Identify a list of threatened entities that may be dependent upon or may use habitat features associated with any of the prescribed impacts	
		☐ Describe the importance of habitat features to the species including, where relevant, impacts on life cycle or movement patterns (e.g. Subsection 6.1.3)	<6>
		Where the proposed development is for a wind farm:	_
		☐ identify a candidate list of protected animals that may use the development site as a flyway or migration route, including: resident threatened aerial species, resident raptor species and nomadic and migratory species that are likely to fly over the proposal area (as described in BAM Subsection 6.1.5)	<error! found.="" not="" reference="" source=""></error!>
		□ provide details of targeted survey for candidate species of wind farm developments undertaken in accordance with BAM Subsection 6.1.5(2–3.)	<error! found.="" not="" reference="" source=""></error!>
		□ predict the habitual flight paths for nomadic and migratory species likely to fly over the subject land and map the likely habitat for resident threatened aerial and raptor species (BAM Subsection 6.1.5(4.))	<figure 1="" map<="" site="" td=""></figure>



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
			& Error! Reference source not found.>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		Where the proposal may result in vehicle strike:	_
		 identify a list of threatened fauna or protected fauna species that are part of a TEC and at risk of vehicle strike due to the proposal 	<table 18=""></table>
		Maps and tables	
		☐ Map showing location of any prescribed impact features (i.e. karst, caves, crevices, cliffs, rocks, human-made structures, etc.)	<figure 1="" map<="" site="" td=""></figure>



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BDAR section	BAM ref.		Page reference(s) in the BDAR
			& Error! Reference source not found.>
		☐ Map showing location of potential vehicle strike locations	<figure 1="" map<="" site="" td=""></figure>



BDAR section	BAM ref.		Page reference(s) in the BDAR
			>
		☐ Maps of habitual flight paths for nomadic and migratory species likely to fly over the site and maps of likely habitat for threatened aerial species resident on the site (for wind farm developments only)	<figure 1="" map<="" site="" th=""></figure>



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
			& Error! Reference source not found.>
		Data	
		☐ Digital shape files of prescribed impact feature locations	_
		☐ Prescribed impact features map in jpeg format	_
Avoid and minimise impacts	Chapter 7	Information	
		Demonstration of efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the proposal location in accordance with Chapter 7, including an analysis of alternative:	_
		 modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology 	<0 & 0>
		 routes that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed route 	<7.1.1 & 7.2.1>
		☐ alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location	<7.1.1 & 7.2.1>
		 alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site 	<7.1.1 & 7.2.1>
		☐ Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design (as described in BAM Sections 7.1 and 7.2)	<0 & 0>
		☐ Identification of any other site constraints that the proponent has considered in determining the location and design of the proposal (as described in BAM Subsection 7.2.1(3.))	<7>
		☐ Detail measures or options considered but not implemented because they are not feasible and/or practical (e.g. due to site constraints)	<7.3>
		Maps and tables	
		☐ Table of measures to be implemented to avoid and minimise the impacts of the proposal, including action, outcome, timing and responsibility	<table 19=""></table>
		☐ Map of alternative footprints considered to avoid or minimise impacts on biodiversity values; and of the final proposal footprint, including construction and operation	<error! a="" for="" not="" result="" table.="" valid=""></error!>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ Maps demonstrating indirect impact zones where applicable	<pre><error! found.="" not="" reference="" source=""></error!></pre>
		Data	
		Digital shape files of:	_
		☐ alternative and final proposal footprint	_
		☐ direct and indirect impact zones	_
		☐ Maps in jpeg format	_
Assessment of impacts	Chapter 8, Sections 8.1 and 8.2	Information	
		☐ Determine the impacts on native vegetation and threatened species habitat, including a description of direct impacts of clearing of native vegetation, threatened ecological communities and threatened species habitat (as described in BAM Section 8.1)	<table 20=""></table>
		Assessment of indirect impacts on vegetation and threatened species and their habitat including (as described in BAM Section 8.2):	-
		\square description of the nature, extent, frequency, duration and timing of indirect impacts of the proposal	<table 22=""></table>
		 documenting the consequences to vegetation and threatened species and their habitat including evidence-based justifications 	<8.2>
		☐ reporting any limitations or assumptions, etc. made during the assessment	<8.2>
		☐ identification of the threatened entities and their habitat likely to be affected	<table 22=""></table>
		Assessment of prescribed biodiversity impacts (as described in BAM Section 8.3) including:	_
		assessment of the nature, extent frequency, duration and timing of impacts on the habitat of threatened species or ecological communities associated with:	_
		☐ karst, caves, crevices, cliffs, rocks and other features of geological significance	<pre><error! found.="" not="" reference="" source=""></error!></pre>
		☐ human-made structures	<pre><error! found.="" not="" reference="" source=""></error!></pre>
		☐ non-native vegetation	<8.3.2>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		 connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range 	<pre><error! found.="" not="" reference="" source=""></error!></pre>
		☐ movement of threatened species that maintains their life cycle	<pre><error! found.="" not="" reference="" source=""></error!></pre>
		 water quality, waterbodies and hydrological processes that sustain threatened species and threatened ecological communities 	<8.3.1>
		☐ assessment of the impacts of wind turbine strikes on protected animals	<error! found.="" not="" reference="" source=""></error!>
		☐ assessment of the impacts of vehicle strikes on threatened species of animals or on animals that are part of a TEC	<error! found.="" not="" reference="" source=""></error!>
		☐ evaluate the consequences of prescribed impacts	<1.1>
		☐ describe impacts that are uncertain	<8.2 & 1.1>
		☐ document limitations to data, assumptions and predictions	<8.2 & 1.1>
		Maps and tables	
		☐ Table showing change in vegetation integrity score for each vegetation zone as a result of identified impacts	<table 21=""></table>
		Data	
		N/A	_
Mitigation and management of impacts	Chapter 8, Sections 8.4 and 8.5	Information	
		Identification of measures to mitigate or manage impacts in accordance with the recommendations in BAM Sections 8.4 and 8.5 including:	_
		☐ techniques, timing, frequency and responsibility	<table 23=""></table>
		☐ identify measures for which there is risk of failure	
		 evaluate the risk and consequence of any residual impacts 	

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ document any adaptive management strategy proposed	<pre><error! found.="" not="" reference="" source=""></error!></pre>
		Identification of measures for mitigating impacts related to:	_
		☐ displacement of resident fauna (as described in BAM Subsection 8.4.1(2.))	<8.4>
		☐ indirect impacts on native vegetation and habitat (as described in BAM Subsection 8.4.1(3.))	
		☐ mitigating prescribed biodiversity impacts (as described in BAM Subsection 8.4.2)	
		☐ Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (BAM Section 8.5)	<pre><error! found.="" not="" reference="" source=""></error!></pre>
		Maps and tables	
		☐ Table of measures to be implemented before, during and after construction to mitigate and manage impacts of the proposal, including action, outcome, timing and responsibility	<table 23=""></table>
		Data	
		N/A	_
Impact summary	Chapter 9	Information	
		Identification and assessment of impacts on TECs and threatened species that are at risk of a serious and irreversible impacts (SAII, in accordance with BAM Section 9.1) including:	_
		☐ addressing all criteria in Subsection 9.1.1 for each TEC listed as at risk of an SAII present on the subject land	<pre><error! &="" error!="" found.="" not="" reference="" source=""></error!></pre>
		☐ for each TEC, report the extent of the TEC in NSW	<pre><error! found.="" not="" reference="" source=""></error!></pre>
		☐ addressing all criteria in Subsection 9.1.2 for each threatened species at risk of an SAII present on the subject land	<error! &="" error!="" found.="" not="" reference="" reference<="" source="" td=""></error!>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
			source not found.>
		☐ for each threatened species, report the population size in NSW	<error! found.="" not="" reference="" source=""></error!>
		 ☐ documenting assumptions made and/or limitations to information ☐ documenting all sources of data, information, references used or consulted ☐ clearly justifying why any criteria could not be addressed 	<pre><error! found.="" found.—error!="" not="" reference="" source=""></error!></pre>
		☐ Identification of impacts requiring offset in accordance with BAM Section 9.2	Table 26 & Table 27>
		☐ Identification of impacts not requiring offset in accordance with BAM Subsection 9.2.1(3.)	<table 25=""></table>
		☐ Identification of areas not requiring assessment in accordance with BAM Section 9.3	<table 28=""></table>
		Maps and tables	
		☐ Map showing the extent of TECs at risk of an SAII within the subject land	<error! found.="" not="" reference="" source=""></error!>
		☐ Map showing location of threatened species at risk of an SAII within the subject land	<error! found.="" not="" reference="" source=""></error!>
		Map showing location of:	_
		☐ impacts requiring offset	<figure 11=""></figure>
		☐ impacts not requiring offset	<figure 11=""></figure>
		☐ areas not requiring assessment	<figure 11=""></figure>
		Data	
		Digital shape files of:	-
		☐ extent of TECs at risk of an SAII within the subject land	-
		☐ location of threatened species at risk of an SAII within the subject land	-
		☐ boundary of impacts requiring offset	_

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ boundary of impacts not requiring offset	_
		☐ boundary of areas not requiring assessment	_
		☐ Maps in jpeg format	_
Impact summary	Chapter 10	Information	
		Ecosystem credits and species credits that measure the impact of the development on biodiversity values, including:	_
		☐ future vegetation integrity score for each vegetation zone within the subject land (Equation 25 and Equation 26 in BAM Appendix H)	< Table 26>
		☐ change in vegetation integrity score (BAM Subsection 8.1.1)	
		□ number of required ecosystem credits for the direct impacts of the proposal on each vegetation zone within the subject land (BAM Subsection 10.1.2)	
		☐ biodiversity risk weighting for each	Table 26 & Table 27>
		 □ number of required species credits for each candidate threatened species that is directly impacted on by the proposal (BAM Subsection 10.1.3) 	<table 27=""></table>
		Maps and tables	
		☐ Table of PCTs requiring offset and the number of ecosystem credits required	< Table 26>
		☐ Table of threatened species requiring offset and the number of species credits required	<table 27=""></table>
		Data	
		☐ Submitted proposal in the BAM Calculator	_
Biodiversity credit report	Chapter 10	Information	
		☐ Description of credit classes for ecosystem credits and species credits at the development or clearing site or land to be biodiversity certified (BAM Section 10.2)	<table &="" 29="" 30="" table=""></table>
		☐ BAM credit report in pdf format	<appendix h=""></appendix>
		Maps and tables	
		☐ Table of credit class and matching credit profile	<table 30=""></table>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		Data	
		☐ BAM credit report in pdf format	<appendix h=""></appendix>

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Appendix B: Matters of national environmental significance

The Commonwealth Protected Matters Search Tool was used to generate a report on Matters of National Environmental Significance predicted to occur within 1500-meter radius of the development site as set out below.

In summary, each EPBC Act listed species is either unlikely to be present and impacted or is addressed under NSW legislation. This BDAR, by implementing the burden of proof through BAM (2020), confirms MNES species and ecosystems are unlikely to occur and would not be significantly impacted, therefore a Referral under the EPBC Act is not required.



EPBC Act Protected Matters Report

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

Report created: 22-Sep-2022

Summary

Details

Matters of NES

Other Matters Protected by the EPBC Act

Extra Information

Caveat

Acknowledgements

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	36
Listed Migratory Species:	12

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	19
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

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

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities

[Resource Information]

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

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

Community Name Threatened Category Presence Text

Natural Temperate Grassland of the South Eastern Highlands Critically Endangered within area

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived

Native Grassland

Critically Endangered Community may occur within area

Listed Threatened Species [Resource Information]

Threatened Category

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

Scientific Name

BIRD
Anthochaera phrygia

Regent Honeyeater [82338] Critically Endangered Species or species habitat known to occur within area

Botaurus poiciloptilus

Australasian Bittern [1001] Endangered Species or species

habitat may occur within area

Presence Text

Calidris ferruginea

Curlew Sandpiper [856] Critically Endangered Species or species

habitat may occur within area

Callocephalon fimbriatum

Gang-gang Cockatoo [768] Endangered Species or species

habitat likely to occur

within area

Calyptorhynchus lathami lathami

South-eastern Glossy Black-Cockatoo Vulnerable Species or species

[67036] habitat likely to occur

within area

Scientific Name	Threatened Category	Presence Text
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat may occur within area
<u>Falco hypoleucos</u> Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
<u>Grantiella picta</u> Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
<u>Lathamus discolor</u> Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
FISH		
Macquaria australasica		
Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Prototroctes maraena		
Australian Grayling [26179]	Vulnerable	Species or species habitat may occur within area
FROG		

Scientific Name	Threatened Category	Presence Text
<u>Litoria booroolongensis</u> Booroolong Frog [1844]	Endangered	Species or species habitat likely to occur within area
INSECT		
Paralucia spinifera Bathurst Copper Butterfly, Purple Copper Butterfly, Bathurst Copper, Bathurst Copper Wing, Bathurst-Lithgow Copper, Purple Copper [26335]	Vulnerable	Species or species habitat likely to occur within area
MAMMAL		
Chalinolobus dwyeri		
Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (SE main Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	land population) Endangered	Species or species habitat likely to occur within area
<u>Petauroides volans</u> Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area
Phascolarctos cinereus (combined popula	ations of Old, NSW and th	ne ACT)
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area
<u>Pseudomys novaehollandiae</u> New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area
<u>Pteropus poliocephalus</u> Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area
PLANT		
Eucalyptus aggregata		
Black Gum [20890]	Vulnerable	Species or species habitat likely to occur

Scientific Name	Threatened Category	Presence Text
Eucalyptus pulverulenta Silver-leaved Mountain Gum, Silver- leaved Gum [21537]	Vulnerable	Species or species habitat may occur within area
<u>Euphrasia arguta</u> [4325]	Critically Endangered	Species or species habitat may occur within area
Leucochrysum albicans subsp. tricolor Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat may occur within area
<u>Persoonia marginata</u> Clandulla Geebung [10852]	Vulnerable	Species or species habitat may occur within area
Pomaderris brunnea Rufous Pomaderris, Brown Pomaderris [16845]	Vulnerable	Species or species habitat may occur within area
<u>Prasophyllum petilum</u> Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area
Prasophyllum sp. Wybong (C.Phelps OR	C 5269)	
a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area
<u>Pultenaea glabra</u> Smooth Bush-pea, Swamp Bush-pea [11887]	Vulnerable	Species or species habitat may occur within area
<u>Thesium australe</u> Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species		[Resource Information
Scientific Name	Threatened Category	Presence Text
	Juliana Juliana	
Migratory Marine Birds		

Scientific Name	Threatened Category	Presence Text
Apus pacificus Fork-tailed Swift [678]	-	Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area
<u>Motacilla flava</u> Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
<u>Calidris acuminata</u> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
<u>Calidris ferruginea</u> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
<u>Calidris melanotos</u> Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands

[Resource Information]

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

Commonwealth Land Name

State

Communications, Information Technology and the Arts - Telstra Corporation Limited

Commonwealth Land - Australian Telecommunications Commission [12474] NSW

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species
		habitat may occur within area
		within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species
• • • • • • • • • • • • • • • • • • • •		habitat likely to occur
		within area overfly
		marine area
Bubulcus ibis as Ardea ibis		
Cattle Egret [66521]		Species or species
,		habitat may occur
		within area overfly
		marine area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species
energy consequences		habitat may occur
		within area
California formations		
<u>Calidris ferruginea</u> Curlew Sandpiper [856]	Critically Endangered	Species or species
Curiew Sandpiper [656]	Childally Endangered	habitat may occur
		within area overfly
		marine area

Scientific Name	Threatened Category	Presence Text
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species
		habitat may occur
		within area overfly
		marine area
Chalcites osculans as Chrysococcyx osc	culans	
Black-eared Cuckoo [83425]		Species or species
		habitat may occur
		within area overfly
		marine area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species
		habitat may occur
		within area overfly
		marine area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species
		habitat likely to occur
		within area
Hirundapus caudacutus	V 1 11	
White-throated Needletail [682]	Vulnerable	Species or species
		habitat known to
		occur within area
		overfly marine area
Lathamus discolor	0.1. 1. 5.1	0
Swift Parrot [744]	Critically Endangered	Species or species
		habitat likely to occur
		within area overfly
		marine area
Merops ornatus		Consider and the
Rainbow Bee-eater [670]		Species or species
		habitat may occur
		within area overfly
		marine area
Monarcha melanopsis		0
Black-faced Monarch [609]		Species or species
		habitat may occur
		within area overfly marine area
		maille alea
Motacilla flava		0
Yellow Wagtail [644]		Species or species
		habitat may occur
		within area overfly
		marine area

0 1 77 11	TI 1 10 1	3
Scientific Name	Threatened Category	Presence Text
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area
Rostratula australis as Rostratula bengha	lensis (sensu lato)	
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area

Extra Information

EPBC Act Referrals			[Resource Information
Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Not controlled action (particular manne	er)		
Aerial baiting for wild dog control	2006/2713	Not Controlled Action (Particular Manner)	Post-Approval

SubRegion	BioRegion	Website	
Sydney	Sydney Basin	BA website	

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Appendix C: Vegetation survey data

Data from plot-based vegetation surveys and vegetation integrity survey plots across the development site is provided in Table 32 and in the JPEGs below. A separate MS Excel copy is provided to accompany submission of this BDAR.

Table 32 Vegetation survey data and locations

plot	pct	area	patchsize	condition class	zone	easting	northing	bearing	compTree	compShrub	compGrass	compForbs	compFerns	compOther	strucTree	strucShrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollowtrees	funLitterCover	funLenFallenLogs	funTreeStem5to9	funTreeStem10to19	funTreeStem20to29	funTreeStem30to49	funTreeStem50to79	funTreeRegen	funHighThreatExotic	Plot-based vegetation survey?	Vegetation integrity survey?
1	351	17.43	10000	Poor	56	227310	6298768	80	0	0	4	1	0	0	0	0	0.1	0.1	0	0	0	0	4.2	0	0	0	0	0	0	0	0.5	⊠ Yes	⊠ Yes
2	351	17.43	10000	Poor	56	227298	6299042	100	0	2	5	5	0	0	0	0.5	5.9	0.5	0	0	0	0	11	0	0	0	0	0	0	0	75	⊠ Yes	⊠ Yes
3	351	17.43	10000	Poor	56	227478	6298883	250	0	0	1	1	0	0	0	0	5	0.1	0	0	0	0	4	0	0	0	0	0	0	0	45	⊠ Yes	⊠ Yes
4	351	0.13	10000	Moderate	56	227202	6298598	225	1	4	6	4	0	0	20	2.2	51.4	2.3	0	0	4	1	33	3	⊠ Yes	⊠ Yes	3	4	4	⊠ Yes	2.2	⊠ Yes	⊠ Yes

	В	AM P	lot – F	Field Surve	y Form	I OIL		Site S	heet no:	lion
			Surv	ey Name	Plot lo	dentifier		R	ecorders	
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Likely Vegeta			[41]	2 - 60 to 40 to 22 (4.50)			non.	the o m po	inc. - V	Confidence:
Plant Commi		ı	Ort	351					EEC:	H M L Confidence:
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	orbs	1		30 – 49 cm				Hallows 200	m+ Eucaly	des all species of rplus, Corymbia, hora, Lophostemo
-110	erns	0		20 – 29 cm					and Sy	yncarpia
	Other	0		20 - 29 CM				0	presen	ollows count only the
_	rees	0		10 – 19 cm	1	cle	lick	0	count	ning hollows, not the of hollows in that Only count as 1 stem
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vascular -	Brasses etc.	41	0	< 5 cm	1	ck	tick	This size cla records tre	e stem,	g stem may be a dea
	orbs	0		1			- 1	regeneration	on I	
growth —		^	'	Length of log	gs (m)					total
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High Threat We The sale may be added to be	eed cover % conglished after conglished after and regulated after a r	O · · · · · · · · · · · · · · · · · · ·	4 centege gr	(210 cm dismets in length) Each size class DBH vatues aniculated stem is included to literate the literature of the lite	is noted as a decurs may find the count may find the count 20am across are ground 2. \Quad \texts{\Quad \texts{ \texts{\Quad \texts{\Quad \texts{\Quad \texts{ \texts{\qua	be needed frestimate if it is are recorded to cover (%) 4 34	or a size class it is required by the different for the purpose of	For a multi-sine large tree less of habitations of habitations on alternate anches (less	temmed tree, category for the of some threat %) Re of some threat sides and 5 m. than 10 cm in	Vegetation Class, only the largest fivin all vegetation class, ered species.
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	Date	15_		W. Man		1	Addy	-	110100				
ID	BAM Code	GF Code	Full species no survey. Data f	ame mandatory, or a ur rom here will be used to	nique means o o assign growt	f identifying separate taxa h form counts and covers	within a	N, E or HTE	Cover	Abund	stratu m	vouc her	Hei ht (m)
1	~	_	Rubis	fruticosus		Blackbern	1	HTE	0.5	3	m	-	0-3
2	-	-	Husch	seris radio so lanceola anthum od	rata	Flat word		E	0.5		G	-	0'
3	-	-	Pantas	a lanceola	10	RIDWOH		E	0.5		Ci	-	0.
4	-		ANTINO	by munthum	oratum	NIO.		ŧ	90	5000	a	-	0.7
5	_		Modic	CECO 50				E	0.1	20	a	-	6.
6	96		Cupenis	50		y'-		N	1	2000	à	-	6.
7	-	_	Acotos	ella vulgo ena colosio serriola	KIS	Sheepsocre	l	E	ob.	50	G	_	0.2
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9	_		L'acture	sercials		Prickley Lating	2 3	É	0.1	15	4	-	0-1
10	_	-/	Tarasac	WW SO		dandelon.		E	0.1	5	a	-	0
11	66	g	- thi heart	MILL OF		Grass Sp		N	2	200	a	-	6 -
12	44	7	PIASIA	Species				N.	0.6	50	9	_	0.
13	_	-	WEED	species				E	0-1	10	4	1	6-1
14	FG	f	HOLICIA	as Suma Vistin	dolenia			N	0.1	5	6	_	0.
15	aa	-	Cany	approsso	2			N	11	20	a	_	0-1
16	1		Correr	pprosse				11/	-	EK.	- 01		
17													
18									-110-11				
19			1	Count	COV	29							1
20			Ta	0	0	×							
21			50	0	0								
22			aa	4	4.	6							
23			FG	1	0.	-	-	-					
24			EG	0	1	-1							
25			06	0	1 0								
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GF Code: see Growth Form definitions in BAM Appendix 1. Identify top 3 dominants in the veg zone. N: native, E: exotic, HTE: high threat exotic. Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded.

Form version designed 15 September 2017

Printed 23 August 2020

Date Sount of Grasses etc.	IBRA reg Plot D PCT Replot marker of	gion limensions 351 applicable orient plot	20 x 20 li		Orien fro			O Magne	ce:
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Count of Grasses etc.		80 + cm		1	1		non		
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Native —	5	50 – 79 cm					tree	for that veg cla-	55.
tichness Forbs	5	30 – 49 cm				Hollows 20	icm+ Euc	alypius, Corymh	iiθ,
Ferns	0	20 – 29 cm						ophora, Lophos: Syncarpia	emon
Other	0	20 – 29 cm					pres	ence of a stem	
Trees	0	10 – 19 cm	lic		7(0)5	0	sour	t of hollows in the	at
Sum of Shrubs Cover	0.5	5 – 9 cm	Tie	4	free		pert	Confidence: H M L Confidence: H M L Confidence: H M L In and living eucalypt* and living native suculypt (Non Euc) s separately needed is presence licky unless a large of that veg class. udes all species of typtius, Corymbia, phora, Lophostemos byncamba phora, Lophostemos byncamba phora, Lophostemos byncamba color yound as 1 stem and phollows not the of hollows in that Only count as 1 stem and phollows post the stem and phollows post the stem and phollows post that the color of the stem and phollows post that the color of the stem and phollows post that the stem and phollows post the stem and phollows post the stem and phollows pholi	multi-
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growth Forbs	0.6	Length of lo	gs (m)			regenera	ion		_
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AM Attribute (1 x 1 m plots)		(8/) I I		estimate if it are recorde	is required b	the large free oses of habita	stemmed tre category for c of some thre	e, only the larges that vegetation of atened species.	t living lass.
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מו	BAM Code	GF Code	Full species survey. Da	s name mandato fa from here will	ny, or a unique mear be used to assign gr	ns of identifying separate tex owth form counts and cover	a within a	N, E or HTE	Cover	Abund	stratu m	vouc her	He
1	Sa	5		spermu	m myrti	folium Teat	ree	N	0.3	3	W	-	0.
2	Sa	S	LISSO	in the	shigosa	hear	h	N	0.2	5	m	_	0
3	44	~	lomo		1: forms			N	0.5	100	Ca	-	0
4	Ga	1	Diano		voluta			N	0-1	15	6	-	0 -
5	-		Erasi	ostis c	unvula			HTE	75	5000	6	-	0.
6	-	-	flypa		adicata	Flatue	ed	E	0.1	50	G	-	0
7	-	_	Antho	xanthu	n odora			E	2	50	a	-	0
8	-	-	Aceto	sella v	ulgaris	Sheep S	orrel	E	0.5	100	4	-	0
9	Fa	+	Oxals	s peren	nans	,		N	01	10	9	-	0
10	-		WEED	Sp				E	0.1	10	a	-	0
11	_	-	WEED	SP				E	0.1	15	a	-	0
12	96	1	Caper	us so		*		N	0.1	200	9	-	0
13	-		Plant	tago 10	nuolata	RID WOYK		E	0.1	10	a	-	0
14	_	-	Wary &	dee blue	ish muly	a Grass SP		E	2	200	4	-	0
15	FG	F	Crass	rula col	orata 0	Stone cr	90	N	0-1	10	- 9	-	0
16	fa	+	Forle	sp		long bué leave		N	0 -1	30	G	-	0.
17	-	-	Weed	50	V	rain leaf		E	0.2	20	a	-	0
18	96	9	Them	eda aus	Ivalis	Kanjaroo	11056	N	0.1	5	G	-	0
19	Fa	£	FOIL			arled le	at	N	0.1	1	4	-	6
20	Fa		Micro	his unif	olia			N	0-1	20	6	-	0.
21	49	9	althou	person	101 (1000)	Sp.		N	5	500	a	-	0
22					- 0	-1							
23			,										
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GF Code: see Growth Form definitions in BAM Appendix 1. Identify top 3 dominants in the veg zone. N: native, E: exotic, HTE: high threat exotic. Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded.

Form version designed 15 September 2017

Printed 23 August 2020

Zone 56 Easting		Bi	AIVI	Plot - F	ield Surve	y Form			Site She	et no:	t of
Zone 56			1	Surv	ey Name	Plot Id	entifier	T	Reco	orders	
56 Easting	te 15	10912	0	W.Was	N	Plot	3	Addu	Watson	Ann	a Oarby
Easting		Datum DA		IBRA regi	711		Photo #			Zone II	
		Northing 9880	2	Plot Di	mensions	20 x 20 i	in 20 x 50		tation of midline	250	Magnetic °
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		0.00	-	٥.							H M L Confidence:
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					spaceuse, crient pic a FA plot should be						
	Attribut		Su	m values	BAM Attribu	ute (20 x 50 r	- Contractor	tem Clas	ses and Hollows Hollowst		living eucalypt*
(400	Trees	4-		0		1		1	TIONOVS	non-out	and fiving native salypt (Non Euc)
	Shrub	s		0	80 + cm			-	0		separately seded is presence
Count of	Grass	es etc.		1	50 – 79 cm					only (tic	ck) unless a large
Native Richness	Forbs			1	30 – 49 cm	-			Hollows 20cm+	* includ	es all species of
	Ferns			0	20 - 43 CM			-	FIUIDWS ZUUM*	Angoph	iora, Lophosternon
	Other			0	20 – 29 cm					†For ho	flows count only the
	Trees			0	10 – 19 cm	1	R .	Bek	0	presenc	e of a stem ng hellows, not the
	Shrub	s		0	5 – 9 cm		fi .	enk.		stem O	nly count as 1 stem
Sum of	_				0 - 0 0111						
Cover of native	Grass	es etc.		5					This size class	bearing	stem may be a dead
Cover of native vascular plants by	Grass	200 000000	0	5	< 5 cm	ii	He .	lisk	This size class records tree regeneration	Data needed is presence only (tick) unless a large tree for that veg class. * includes all species of Eucalyptus, Corymbia, Antiophora, Lophosternon and Syncapia * For hollows count only the presence of a stem contelling to those, not the count of notions in that stem Only count as 1 stem per tree where tree is multistemmer. The hollow-bearing stem may be a deat atem. **Total O** **Total	
Cover of native vascular		-		-	Length of io	ogs (m)	ite:	elak.	records tree regeneration	bearing	total
Cover of native vascular plants by growth	Forbs			• 1	Length of lo (≥10 cm diame in length)	ogs (m) eter, >50 cm		Tales	records tree regeneration	bearing stem.	total O
Cover of native vascular plants by growth	Ferns Other			. 1	Length of ic (≥10 cm diame in length) Each size clas CBH values ar	ogs (m) eter, >50 cm	resent by the	living tree	records tree regeneration	stem.	total O /egetation Class,
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GF Code: see Growth Form definitions in BAM Appendix 1. Identify top 3 dominants in the veg zone. N: native, E: exotic, HTE: high threat exotic. Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded.

Form version designed 15 September 2017

Printed 23 August 2020

		BAN	Plot - F	ield Surve	y Form			Site She	eet no:	101
			Surv	ey Name	Plot Iden	tifier		Rec	orders	
Dat	e 15109	20	W. WO	ang	4		Ado	ly Wats	on A	na Dary
Zone 56	GDA-		IBRA reg	ion		Photo #			Zone ID	
Easting 2720	2 6298	98	Plot Di	mensions	20 x 20 in 20	0 × 50		tation of midline		Magnetic °
	etation Class			2 an 4.40 (1-40 F-40)				n die e in point	-	Confidence:
Plant Com	munity Type		PCT	351.				E	EC:	Confidence:
				oplicable, orient pio a FA plot should be						
BAM	Attribute m² plot)		ım values		te (20 x 50 m p	lot) St		ses and Hollows	Record	
	Trees		1	80 + cm					non-euc	salypt (Non Euc)
	Shrubs		4		Int.	-		1	Data ne	eded is presence
Count of Native	Grasses etc		6	50 – 79 cm	" 4				tree' for	k) unless a large that veg class.
Richness	Forbs		4	30 – 49 cm	''' '4			Hollows 20cm+	Eucalyp	tus, Çorymbia,
4	Ferns		0		111 7		_			
	Other		0	20 – 29 cm	3			0		
	Trees	- 0	20	10 – 19 cm	U.		tick		count of	ng hollows, not the hollows in that
Sum of Cover	Shrubs		2.2	5 – 9 cm			tlak		per tree	where tree is multi-
of native vascular	Grasses etc.	5	1.4	< 5 cm	V		holi	This size class records tree		
plants by	Forbs		2.3	1				regeneration		
growth -	Former	-		Length of lo	gs (m)					Confidence: H M L Confidence: H M L Confidence: H M L Confidence: H M L cord fiving escalypt* so*) and fiving native n-eucalypt (Non Euc) was separately ta needed is presence y (lick) unless a 'large of for that veg class. coludes all species of calyptus, Corymbia, coludes all species of calyptus, Corymbia, or hollows count only the sence of a stem daining notions, not the unit of hollows, to the unit of hollows, to the modified stem may be a dead m. total total total the Vegetation Class, ee, only the largest living that vegetation class. reatened specks. Rock cover (%)
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400 m ²	plot: Sh	eet _ of _	Su	rvey Name	Plot Idea	ntifier		110	Record	lers			
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ID BAM Code	GF Code	Full species	nama mandalo	ry, or a unique mean be used to assign gro	s of identifying sep	parate taxa wit	hin a	N. E or	Cover	Abund	stratu m	vouc her	Heig
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1 TO		Acaci		lanoxylor				N	1	2	ч	_	20
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4 66	_	Rutido		a 50.	COLVE	400		N	0.1	10	a	-	0.3
5 66		Lomar	1	liformis				N	0	2000	a	-	0.1
8 FG	F	Oxali		ennan>				N	Z	1000	G	-	0-1
7 .	+ '	Crass						E	20	5000	a	-	0.1
8 .	-	Hypoch	naeris	radicala	FI	ature	ed	E	1	1000	a	-	0-1
9 ac	ì	Diome		oluta				N	0.1	50	a	-	0.2
10 -	_			molle				E	0.2	100	4	-	0.1
11 -	+	Sonch	us =1	3.		thistle		E	0.1	10	6	-	0.2
12 -	1	Vicia	Sp.	1 / 4	Vel	ch		E	0-1	10	4	_	0.3
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24 _	1	Acetos	sela vu	1190113	5	NOOPS	orrel	E	0.1		4	-	0.1
25 GG	1	Avisho		nosa				N	0.5	50	a	-	0.3
26 GG	9	Austr		scalora				N	1	1000			0 1
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Appendix D: Credit reports

BAM Chapter 5 assessment reports.



BAM Credit Summary Report

Proposal Details		
Assessment Id	Proposal Name	BAM data last updated *
00022074/BAAS19066/20/00022075	Barton Avenue Wallerawang	14/10/2022
Assessor Name	Report Created	BAM Data version *
Addy Watson	02/12/2022	55
Assessor Number	BAM Case Status	Date Finalised
BAAS19066	Finalised	02/12/2022
Assessment Revision	Assessment Type	BOS entry trigger
0	Part 4 Developments (General)	BOS Threshold: Area clearing threshold

^{*} Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone Brittle	n zone name	TEC name	Current Vegetatio n integrity score permint - Red	Change in Vegetatio n integrity (loss / gain)	a (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class e north-wester	BC Act Listing status n part (Yass to C	EPBC Act listing status Drange) of the S	Biodiversit y risk weighting	al SAII	m credits
	351_Zone 1_Poor	Not a TEC	1.7	1.7	17.2	PCT Cleared - 60%	High Sensitivity to			1.75		

Assessment Id Proposal Name Page 1 of 2



BAM Credit Summary Report

2 351_Zone 2_Mod	Not a TEC	54.9	54.9	0.02	PCT Cleared - 60%	High Sensitivity to Gain	1.75		
								Subtot al	1
								Total	

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no.	loss	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAII	Species credits
			individuals)						

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Proposal Details

Assessment Id Proposal Name BAM data last updated * 00022074/BAAS19066/20/00022075 Barton Avenue Wallerawang 14/10/2022

Assessor Name Assessor Number BAM Data version * BAAS19066

Addy Watson

Proponent Names Report Created **BAM Case Status**

> 02/12/2022 Finalised Date Finalised Assessment Type

Assessment Revision 02/12/2022 Part 4 Developments (General)

BOS entry trigger * Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet. BOS Threshold: Area clearing threshold

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID	
Nil			
Species			
Nil			

Additional Information for Approval

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PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT

No Changes

Predicted Threatened Species Not On Site

Name

Grantiella picta / Painted Honeyeater

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
351-Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion	Not a TEC	17.2	1	0	1

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351-Brittle Gum - Broadleaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion

Like-for-like credit reti	ement options				
Class	Trading group	Zone	НВТ	Credits	IBRA region
Southern Tableland Dry Sclerophyll Forests This includes PCT's: 299, 344, 349, 351, 352, 653, 701, 727, 728, 730, 888, 957, 1093, 1177	Southern Tableland Dry Sclerophyll Forests >=50% and <70%	351_Zone1_Po or	No	0	Capertee Uplands, Capertee Valley, Hill End, Inland Slopes and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Southern Tableland Dry Sclerophyll Forests This includes PCT's: 299, 344, 349, 351, 352, 653, 701, 727, 728, 730, 888, 957, 1093, 1177	Southern Tableland Dry Sclerophyll Forests >=50% and <70%	351_Zone2_Mo d	Yes	1	Capertee Uplands, Capertee Valley, Hill End, Inland Slopes and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like credit retirement options

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BAM Predicted Species Report

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threshold

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be

completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Barking Owl	Ninox connivens	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Diamond Firetail	Stagonopleura guttata	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Dusky Woodswallow	Artamus cyanopterus cyanopterus	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Flame Robin	Petroica phoenicea	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Gang-gang Cockatoo	Callocephalon fimbriatum	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Grey-headed Flying- fox	Pteropus poliocephalus	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion

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BAM Predicted Species Report

Large Bent-winged Bat	Miniopterus orianae oceanensis	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Little Eagle	Hieraaetus morphnoides	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Masked Owl	Tyto novaehollandiae	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybard open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Powerful Owl	Ninox strenua	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybard open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Scarlet Robin	Petroica boodang	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybard open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Speckled Warbler	Chthonicola sagittata	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybard open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Spotted-tailed Quoll	Dasyurus maculatus	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybard open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Turquoise Parrot	Neophema pulchella	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybard open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Varied Sittella	Daphoenositta chrysoptera	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybarl open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
White-throated Needletail	Hirundapus caudacutus	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybard open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybar open forest in the north-western part (Yass to Orange) of the South Eastern Highlands Bioregion

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

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BAM Predicted Species Report

Common Name	Scientific Name	Plant Community Type(s)
Painted Honeyeater	Grantiella picta	351-Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest in the north-western part (Yass to Orange) of the
		South Eastern Highlands Bioregion

Threatened species assessed as not within the vegetation zone(s) for the PCT(s) Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C
Painted Honeyeater	Grantiella picta	Habitat constraints

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BAM Candidate Species Report

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List of Species Requiring Survey

Name	Presence	Survey Months
Acacia meiantha Acacia meiantha	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus aggregata Black Gum	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus pulverulenta Silver-leafed Gum	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

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^{*} Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.



BAM Candidate Species Report

200 200 200 200 200		
Grevillea divaricata Grevillea divaricata	No (surveyed) *Survey months are	□ Jan □ Feb □ Mar □ Apr
	outside of the months specified in Bionet.	☐ May ☐ Jun ☐ Jul ☐ Aug
	specified in Bionet.	☑ Sep ☐ Oct ☐ Nov ☐ Dec
		✓ Survey month outside the specified months?
Leucochrysum albicans var. tricolor	No (surveyed)	□ Jan □ Feb □ Mar □ Apr
Hoary Sunray		☐ May ☐ Jun ☐ Jul ☐ Aug
		☑ Sep ☐ Oct ☐ Nov ☐ Dec
		☐ Survey month outside the specified months?
Litoria aurea Green and Golden Bell Frog	No (surveyed)	□ Jan □ Feb □ Mar □ Apr
dicerrana dolacii beli 110g		□ May □ Jun □ Jul □ Aug
		☐ Sep ☐ Oct ☑ Nov ☐ Dec
		☐ Survey month outside the specified months?
Petaurus norfolcensis Squirrel Glider	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr
Squirrei Gildei		☐ May ☐ Jun ☐ Jul ☐ Aug
		☐ Sep ☐ Oct ☑ Nov ☑ Dec
		☐ Survey month outside the specified months?
Phascogale tapoatafa	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr
Brush-tailed Phascogale	*Survey months are outside of the months	□ May □ Jun □ Jul □ Aug
	specified in Bionet.	☐ Sep ☐ Oct ☑ Nov ☑ Dec
		✓ Survey month outside the specified months?
Phascolarctos cinereus Koala	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr
NUdid		☐ May ☐ Jun ☐ Jul ☐ Aug
		☑ Sep ☐ Oct ☐ Nov ☐ Dec
		☐ Survey month outside the
		specified months?

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BAM Candidate Species Report

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Barking Owl	Ninox connivens	Habitat constraints
Booroolong Frog	Litoria booroolongensis	Habitat degraded
Brush-tailed Rock-wallaby	Petrogale penicillata	Habitat constraints
Gang-gang Cockatoo	Callocephalon fimbriatum	Habitat constraints
Grey-headed Flying-fox	Pteropus poliocephalus	Habitat constraints
Large Bent-winged Bat	Miniopterus orianae oceanensis	Habitat constraints
Large-eared Pied Bat	Chalinolobus dwyeri	Habitat constraints
Little Eagle	Hieraaetus morphnoides	Habitat constraints
Masked Owl	Tyto novaehollandiae	Habitat constraints
Powerful Owl	Ninox strenua	Habitat constraints
Purple Copper Butterfly, Bathurst Copper Butterfly	Paralucia spinifera	Refer to BAR

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