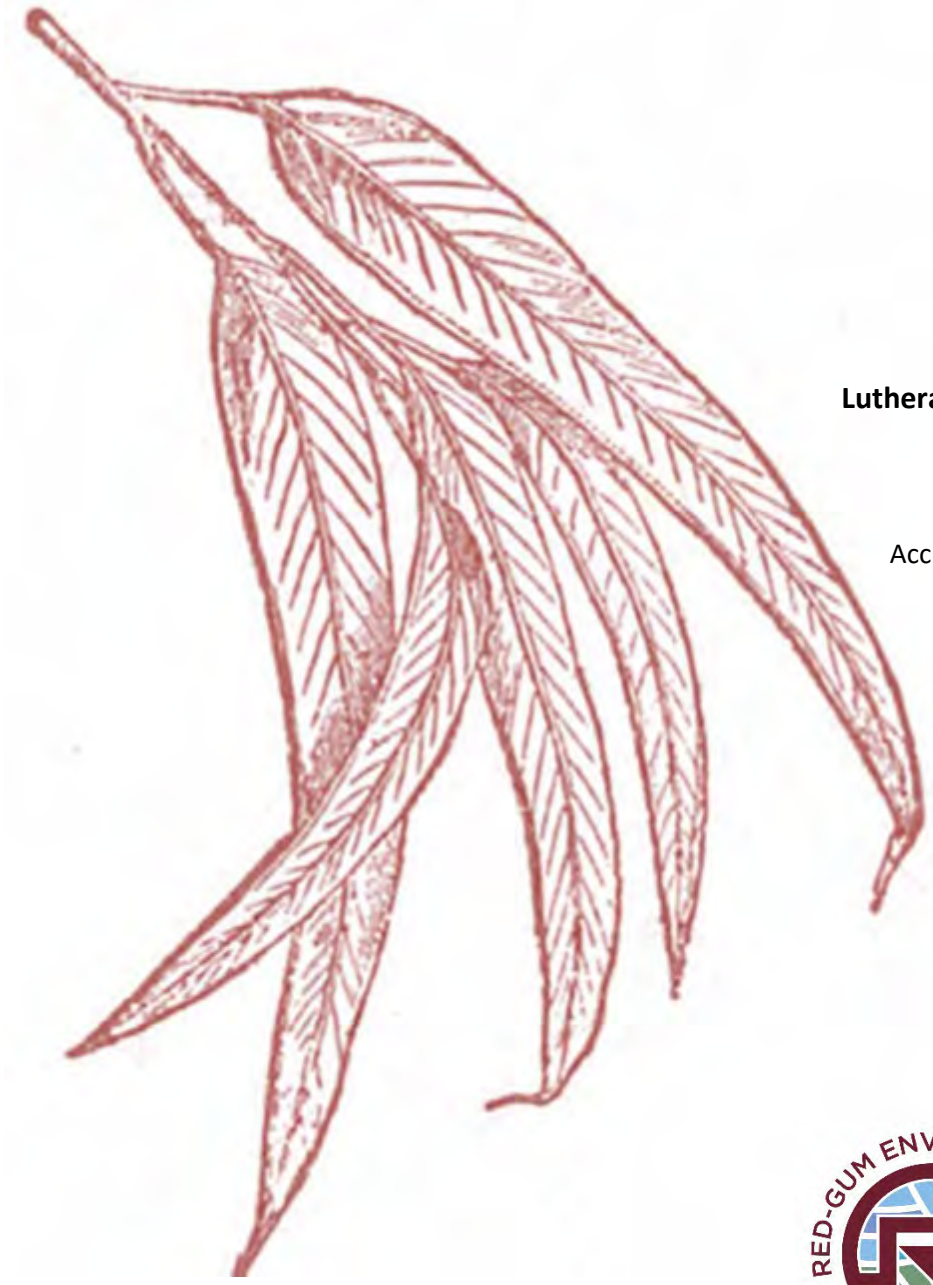
Biodiversity Development Assessment Report

Proposed Residential Subdivision – Lot 66 DP1195450,

Jindera Street and Pioneer Drive,

Jindera, NSW 2642

Version 3



Prepared for

Lutheran Church of Australia NSW District Property Trust

Accredited Assessor: Damian Wall

(Assessor No. BAAS18081)

Date: 15/2/24

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PROJECT NAME	Biodiversity Development Assessment Report (BDAR) – Proposed Residential Subdivision - Lot 66 DP1195450, Jindera Street and Pioneer Drive, Jindera, NSW 2642
PREPARED FOR	Lutheran Church of Australia NSW District Property Trust
AUTHOR/S	Damian Wall & Breanna Fisher
REVIEW	Stuart Mendham – Red-Gum Environmental Consulting PL
	Kate Hill – Red-Gum Environmental Consulting PL
	David Schmidt – Glenora Engineering

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	1	22/11/2022	D.Wall & B.Fisher	Final Copy
	2	15/2/24	D.Wall, B.Fisher & S.Mendham	Updated with comments from BCD and council, and with assessments based on updated flora and fauna surveys.

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Summary

This Biodiversity Development Assessment Report (BDAR) relates to the proposed subdivision of Lot 66 DP1195450, on the corner of Jindera Street and Pioneer Drive, Jindera, NSW 2642. The BDAR has been undertaken to accompany a Development Application (DA) under Part 4 of the *Environmental Planning and Assessment Act 1979*, to be submitted to the Greater Hume Shire Council (Council).

The development site is zoned RU5 Village zone under the Greater Hume Local Environmental Plan 2012 (LEP), and native vegetation to be removed as a part of the proposed residential development means the State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 applies. Furthermore, based on the minimum subdivision lot size of the RU5 Village Zone which is less than 1 hectare (600 m²) and the area of proposed clearing of native vegetation being greater than 0.25 ha (2.82 ha), the development exceeds the Biodiversity Offsets Scheme (BOS) threshold and therefore a Biodiversity Development Assessment Report (BDAR) is required.

The proposed development will involve the subdivision of the 4.14 hectare subject land into twenty (20) residential lots, ranging in size from 819 to 1,386 square metres and one (1) reserve that is approximately 0.15 hectares in size. The works will also include the installation of an access road, a drainage channel along the western boundary of the site, associated utilities, and significant in-fill works within the site.

For the purpose of this BDAR, the entire 4.14 hectare site has been assessed, as the majority of the site will be cleared of vegetation. The site contains 1.07 hectares of exotic vegetation dominated by annual grasses, exotic herbs and woody weeds and 2.97 hectares of native vegetation, 0.15 hectares of which is the proposed reserve and will not be cleared. The remaining 2.82 hectares of native vegetation will all be offset and all of the ground cover will be cleared. However, five trees within Lots 1, 9, 13 and 14, and within the drainage channel along Jindera Street, will be retained despite them being considered lost for offset purposes.

All of the 2.82 hectares of native vegetation to be cleared on site is classified as *Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (PCT 277)*. Three Vegetation Zones were identified and assessed with a vegetation integrity score of 56.9, 24.9 and 38.1. A total of fifty-five ecosystem credits are required to offset the development. PCT 277 is representative of the NSW Threatened Ecological Community (TEC) *White Box Yellow Box Blakely's Red Gum Woodland and Derived Native Grassland,* which is listed as *Critically Endangered Ecological Community* (CEEC) under the *Biodiversity Conservation Act 2016* (BC Act). While this TEC is associated with the same federally listed CEEC under Section 178 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the poor quality of the native understorey across the majority of the site meant the subject area does not qualify as being representative of the community and therefore does **NOT** require assessment in accordance with the *Significant Impact Guidelines Commonwealth Department of the Environment (DoE) (2013)* nor considered a *Matter of National Environmental Significance (MNES)*.

Seven (7) fauna species were confirmed by the Biodiversity Assessment Method Calculator (BAM-C) as candidate species for the assessment. In addition to these, eight (8) species were identified as having a 'potential' or higher likelihood of occurring within the subject land. Targeted surveys were conducted for all fifteen (15) species with none (zero) of the species being recorded on site or in the immediate vicinity of the subject land.

Table E1: Impacts that require an offset – Ecosystem Credits

Zone	Vegetation Zone Name	PCT	TEC/EC	Impact area (ha)	Number of ecosystem credits required
1	277_High	277	White Box - Yellow Box-Blakely's Red Gum Grass Woodland and Derived Native Grassland	0.42	11
2	277_Moderate	277	White Box - Yellow Box-Blakely's Red Gum Grass Woodland and Derived Native Grassland	2.1	33
3	277_Moderate-wetland	277	White Box - Yellow Box-Blakely's Red Gum Grass Woodland and Derived Native Grassland	0.28	7

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Shortened Forms

ACRONYM	DESCRIPTION
Assessment Area	The subject land plus a 1500 metre radius area
BAM	Biodiversity Assessment Methodology
BAM-C	Biodiversity Assessment Method Calculator
BC Act	*NSW Biodiversity Conservation Act 2017* (NSW)
BC Reg	*NSW Biodiversity Conservation Regulation 2017* (NSW)
BDAR	Biodiversity Development Assessment Report
BOAMS	Biodiversity Offsets and Agreement Management System
BOS	Biodiversity Offsets Scheme
BCT	Biodiversity Conservation Trust
CEEC	Critically endangered ecological community
DA	Development Application
DBH	Diameter at breast height over bark
DoEE	Commonwealth Department of the Environment and Energy
DPE	NSW Department of Planning and Environment
EC	Ecological community listed under the EPBC Act
EEC	Endangered Ecological Community
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
ha	Hectare(s)
HTW	High threat weed
IBRA	Interim Biogeographic Regionalisation of Australia
km	Kilometre
LLS Act	*Local Land Services Act 2013* (NSW)
LGA	Local Government Area
MNES	Matters of national environmental significance
NPW Act	*National Parks and Wildlife Act 1974 (NSW)*
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
PCT	Plant Community Type
SAII	Serious and irreversible impact
SEARs	Secretary's Environmental Assessment Requirements
Subject land	Lot 66 DP1195450, Jindera Street and Pioneer Drive, Jindera, NSW 2642
TBDC	Threatened biodiversity data collection
TEC	Threatened ecological community
VEC	Vulnerable ecological community
Vegetation SEPP	*State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017* (NSW)

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 *Biodiversity Conservation Act 2016* (BC Act).

Signature: 

Date: 15/2/24

BAM Assessor Accreditation no: BAAS18081

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

ii. Details and experience of author/s and contributors

Authors & Contributors

Name	BAM Assessor Accreditation no. (if relevant)	Position/Role	Tasks performed	Relevant qualifications
Damian Wall	BAAS18081	Managing Director at *Red-Gum Environmental Consulting Pty Ltd*	- BAM-C data entry and analysis. - BAM plot surveys. - Targeted threatened fauna and flora surveys. - Document review.	Bachelor of Applied Science (Parks, Recreation & Heritage), Master Environmental Management & Restoration.
Kate Hill	NA	Senior Environmental Consultant at *Red-Gum Environmental Consulting Pty Ltd*	- Assisted with BAM plot surveys. - Assisted with Floristic survey of site. - Assisted with report preparation.	Bachelor Environmental Science (Conservation Ecology), First-class Honours (Ecology, Environment & Evolution).
Stuart Mendham	NA	Senior Environmental Consultant at *Red-Gum Environmental Consulting Pty Ltd*	- Floristic survey of site. - Assisted with PCT determination. - Assisted with report preparation.	Bachelor of Applied Science (Parks, Recreation and Heritage), Honours in Applied Science (Parks, Recreation and Heritage).

Name	BAM Assessor Accreditation no. (if relevant)	Position/Role	Tasks performed	Relevant qualifications
Breanna Fisher	NA	Environmental Officer at *Red-Gum Environmental Consulting Pty Ltd*	- Report preparation. - Figure preparation. - Background research. - Desktop assessments. - Assisted with BAM plot surveys. - Assisted with BAM-C data entry and analysis. - Targeted threatened fauna and flora surveys.	Bachelor of Environmental Science and Management (Ecology and Conservation)
Olivia Hynam	NA	Environmental Officer at *Red-Gum Environmental Consulting Pty Ltd*	- Targeted threatened fauna and flora surveys.	Bachelor of Environmental Science & Management (Applied Earth Science)
Patrick Newman	NA	Environmental Officer at *Red-Gum Environmental Consulting Pty Ltd*	- Targeted threatened fauna surveys.	Bachelor of Environmental Science & Business Management
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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. Full disclosure has also been provided to the client.

Signature: 

Date: 15/2/24

BAM Assessor Accreditation no: BAAS18081

Stage 1: Biodiversity Assessment

1 Introduction

1.1 Proposed Development

1.1.1 Development Overview

This Biodiversity Development Assessment Report (BDAR) relates to the proposed subdivision of 4.14 hectares of Lot 66 DP1195450, on the corner of Jindera Street and Pioneer Drive, Jindera, NSW 2642 (**Figure 1**). The BDAR has been undertaken to accompany a Development Application (DA) under Part 4 of the *Environmental Planning and Assessment Act 1979*, to be submitted to the Greater Hume Shire Council (Council).

The development site is zoned RU5 Village under the Greater Hume Local Environmental Plan 2012 (LEP) and native vegetation is to be removed as a part of the proposed residential development, meaning the State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 applies. Furthermore, given the minimum subdivision lot size of the RU5 Village Zone is less than 1 hectare (600 square metres) and the area of proposed clearing of native vegetation is greater than 0.25 hectares (total clearing is approximately 2.82 hectares), the Biodiversity Offsets Scheme (BOS) threshold is being exceeded, and therefore a BDAR is required (**Figure 4**).

1.1.2 Location

The proposed subdivision is located within the eastern section of Lot 66 DP1195450, on the corner of Jindera Street and Pioneer Drive, on the western outskirts of the township of Jindera, NSW 2642. See **Figure 1** and **2**.

Figure 1: Site map. Scale 1:2,500.

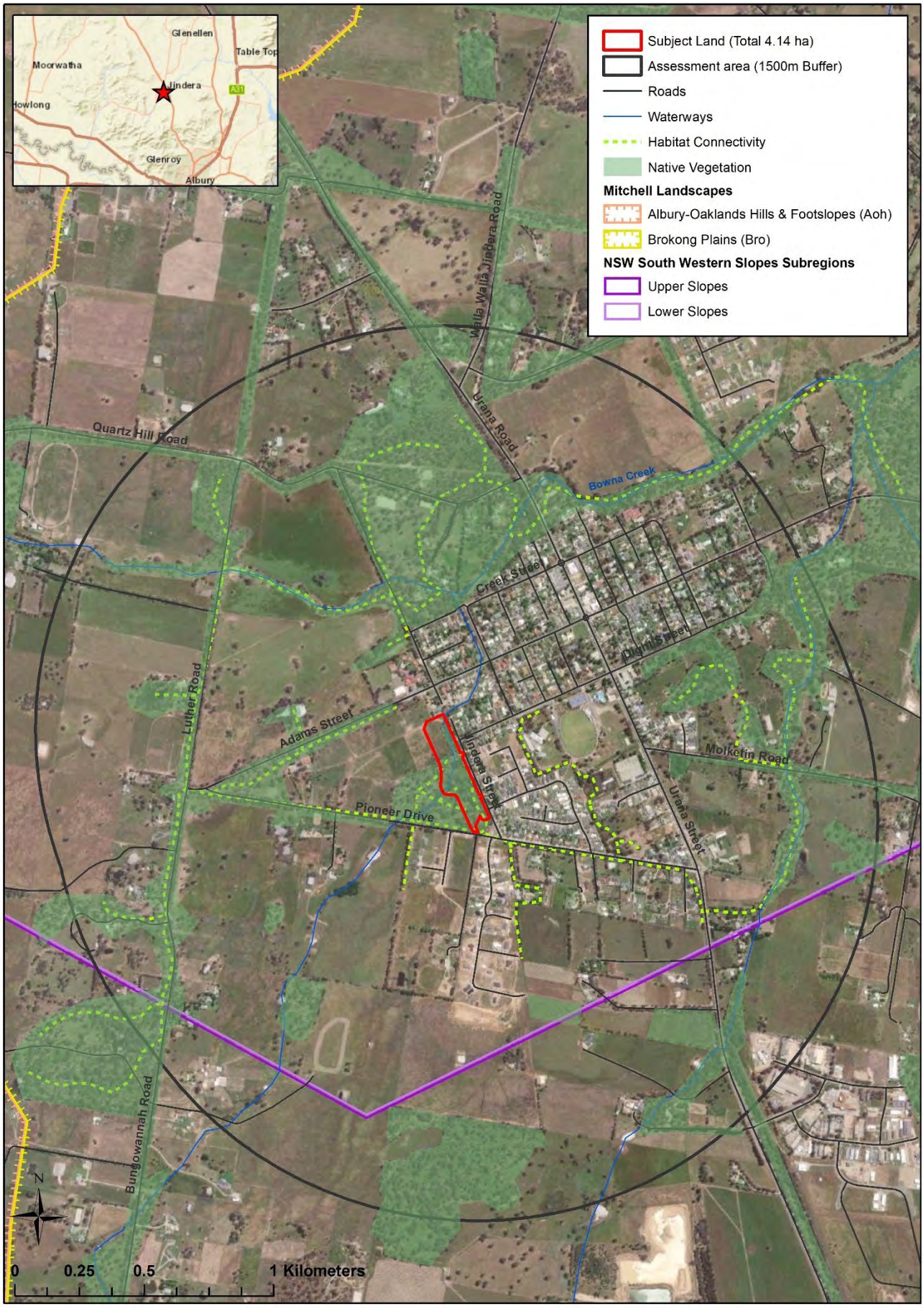

Figure 2: Location map. Scale 1:17,000.

1.1.3 Proposed Development and Subject Land

The 4.14 hectare subject land area is proposed to be subdivided into twenty (20) residential lots, ranging in size from 819 to 1386 square metres and one (1) reserve (approximately 0.15 hectares in size) (**Figure 3**). The works will also include the development of an access road and a 20-30 metre-wide drainage channel, with an associated reserve, behind the residential lots along the western boundary of the site (**Figure 3**). The proposed works will require large scale vegetation removal over the site, significant earthworks to level the site and fill in the two farm dams within the site, and the installation of underground utilities required for the residential lots. The proposed access road for the lots will run the length of the development, parallel to Jindera Street, with two access points onto Jindera Street (**Figure 3**).

The topsoil displaced from construction may be reused on site during rehabilitation, and all cleared vegetation will be removed from the site in its entirety. It is recommended that Fisheries NSW and Murray Local Land Services are contacted to ascertain if they would like to retain the trees being removed from the site for their waterway habitat restoration programs.

For the Purpose of this BDAR, the entire 4.14 hectare site has been assessed, to ensure the direct and indirect impacts from the development project are adequately considered. The site contains 2.97 hectares of native vegetation, 0.15 hectares of which is the proposed reserve and will not be cleared. The remaining 2.82 hectares of native vegetation will be offset and all the ground cover will be cleared, however some trees within lots 1, 9, 13 and 14, and within the drainage channel will be retained, despite them being considered lost due to Tree Protection Zone (TPZ) impacts. All of the native vegetation to be cleared on site is classified as *Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (PCT 277)* and the remaining 1.07 hectares is exotic vegetation dominated by annual grasses, herbs and woody weeds.

The site is flat with some slight undulations and low-lying drainage areas, with an elevation range of 236 to 238 metres. The northern end of the site is slightly lower than the southern end, with all surrounding parts of Jindera being in the same landform. Two (2) farm dams are in the middle of the site, one fed by a small unnamed creek, which drains into an informal constructed drainage channel that runs along the western side of Jindera Street, on the eastern boundary of the subject land. The other dam is larger, at the northern edge of the woodland patch, and is fed by overland seepage from the south and west. The site is mapped as possessing red-brown earths, which is characterised by a layer of sandy loam to light clay loam overlying a clay subsoil. The soil is well drained at this site with a low erosion hazard.

1.1.4 Other Documentation

Red-Gum Environmental Consulting prepared a BDAR for part of the assessed site in 2018, and a separate Biodiversity Assessment Report (BAR) in 2022, and a Review of Environmental Factors (REF) in 2022 for a proposed flood levee in Jindera, a section of which is where the proposed drainage channel is to be constructed. These reports have assessed the area of the site which was proposed for a drainage channel, as well as further areas to the west and north west of the current development site, which are not included within the current subject land.

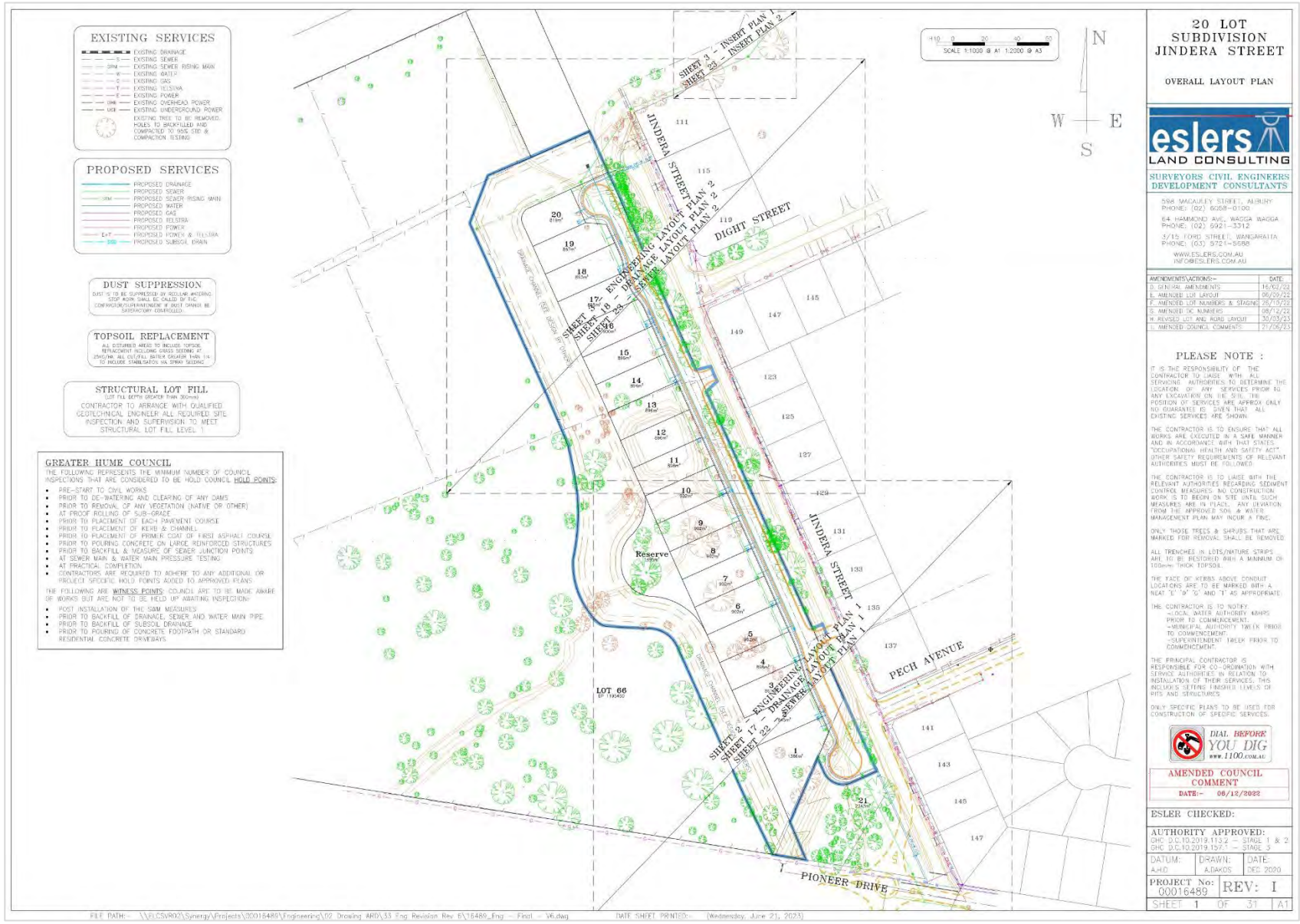

Figure 3: Development layout. Source: Glenora Engineering, 2023.

1.2 Biodiversity Offsets Scheme Entry

Section 7.2 of the BC Act provides that development under the *Environmental Planning and Assessment Act 1979* (EP&A) is likely to significantly affect threatened species if:

(a) it is likely to significantly affect threatened species or ecological communities, or their habitats, or

(b) the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity values, or

(c) it is carried out in a declared area of outstanding biodiversity value.

In this case, because the area being cleared is greater than the trigger for the BOS, the development will enter and must be assessed according to the BOS requirements, including the development of a BDAR.

For this project (activity under Part 4), the site occurs in RU5 Village Zone, which has a minimum lot size of 600 square metres and the area proposed to be cleared of native vegetation is greater than 0.25 hectares (2.82 hectares of proposed clearing), which exceeds the BOS threshold.

1.2.1 Biodiversity Value Map and Threshold (BMAT) Tool

The Biodiversity Offsets Scheme Threshold (BOSET) is a test used to determine when it is necessary to engage an accredited assessor to apply the Biodiversity Assessment Method (the BAM) to assess the impacts of a proposal. It is most commonly used for local developments (development applications submitted to councils) and clearing that does NOT require development consent in urban areas and areas zoned for environmental conservation (under the State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017).

The Biodiversity Conservation Regulation 2017 sets out threshold levels for when the Biodiversity Offsets Scheme will be triggered. The threshold has two (2) elements:

1. Whether the amount of native vegetation being cleared exceeds a threshold area, or
2. Whether the impacts occur on an area mapped on the Biodiversity Values Map published by the Chief Executive of the NSW Office of Environment and Heritage (**Figure 3**).

If clearing and other impacts exceed either trigger, the BOS applies to the proposed development including biodiversity impacts prescribed by clause 6.1 of the Biodiversity Regulation 2017. The area threshold applies to all proposed native vegetation clearing associated with a proposal, regardless of whether this clearing is across multiple lots.

If the land on which the proposed development is located has different minimum lot sizes, the smaller or smallest of those minimum lot sizes is used to determine the area clearing threshold to apply to the project. If the BOS is not triggered, the *Test of Significance* (ToS) must be used to determine whether a local development is likely to significantly affect threatened species.

The area threshold varies depending on the minimum lot size (shown in the lot size maps made under the relevant Local Environmental Plan (LEP)) or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP) according to the table below:

Minimum lot size associated with the property	Threshold for clearing, above which the BAM and offsets scheme apply
Less than 1 ha	0.25 ha or more
1 ha to less than 40 ha	0.5 ha or more
40 ha to less than 1000 ha	1 ha or more
1,000 ha or more	2 ha or more

The proposed subdivision occurs on an allotment with a minimum lot size that is less than one hectare (only 600 square metres in this case), meaning that the maximum threshold for clearing in this case is 0.25 hectares (**Figure 4**).

The native vegetation loss value for the subject land was calculated by mapping around the drip line of the trees that are proposed to be removed. Since the ground cover is made up of majority exotic species in areas without trees, the areas without tree cover were not included in the total vegetation cover figure. In total 2.82 hectares of native vegetation will be removed/impacted from the proposed development (**Figure 4**). The reserve involves 0.15 hectares of vegetation being protected from development impacts, and there are five trees that, although deemed lost for offset purposes, are being retained on site.

*In its current form, the proposal does **NOT** impact on an area mapped on the NSW Biodiversity Values map (**Figure 4**). However, the proposal will require the removal of an amount of native vegetation which exceeds the threshold identified in the Biodiversity Conservation Regulation 2017, therefore entry into the BOS is required.*

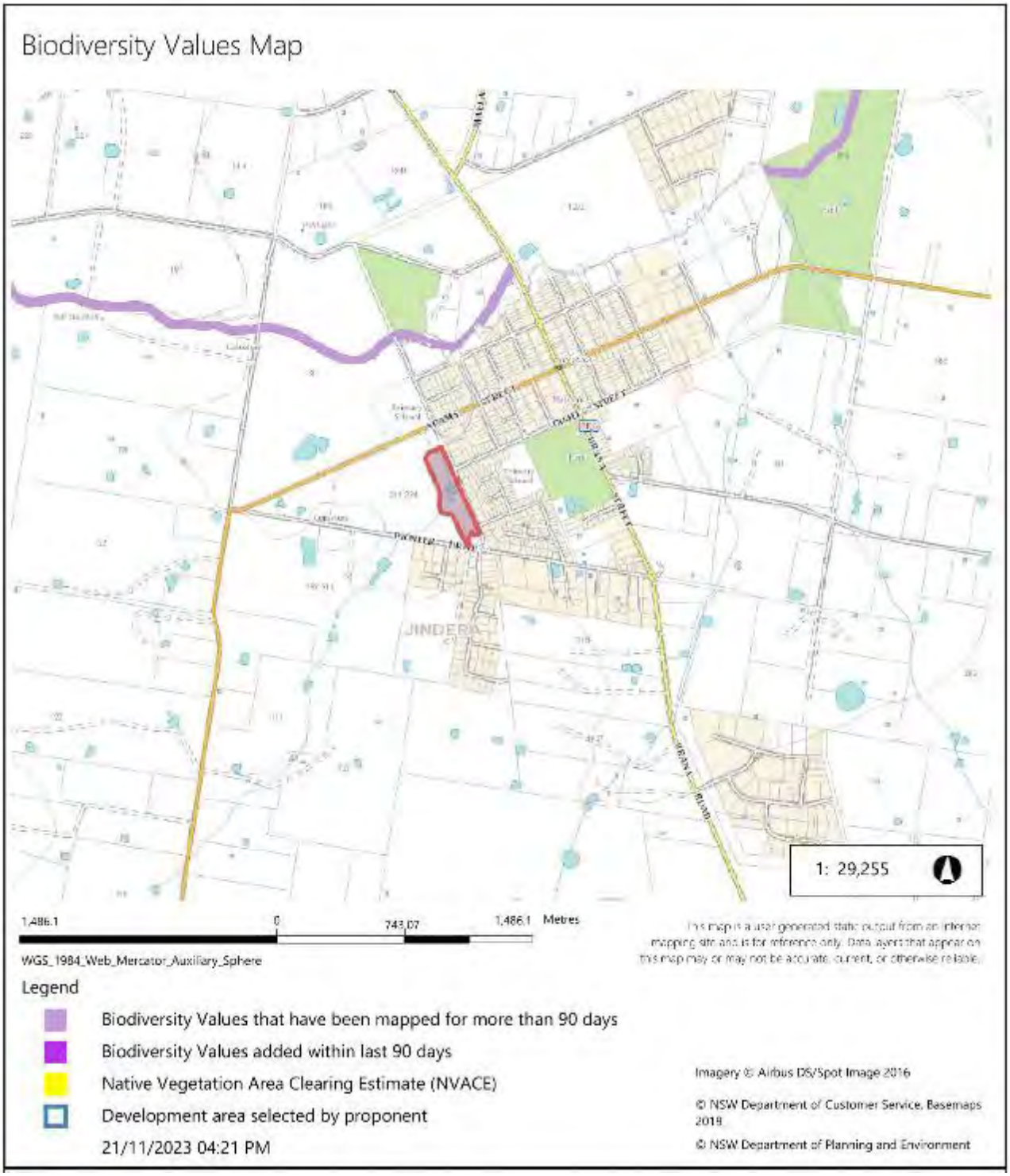

Figure 4: Biodiversity values map. Source: BMAT, 2023

1.3 Excluded Impacts

There are no excluded impacts for the proposed site. There is no 'Category 1-exempt land' under the *Local Land Services Act 2013* (LLS Act), in which native vegetation would be allowed to be cleared without the approval from Murray Local Land Services. The site occurs along the interface of agricultural land with a built-up urban area, which falls under the State Environmental Planning Policy (Vegetation in Non-rural Areas) and therefore the LLS Act does not apply.

1.4 Matters of National Environmental Significance

There are no Matters of National Environmental Significance (MNES) occurring within the subject land. The potential White Box Yellow Box Blakely's Red Gum Woodland on the site is a *Critically Endangered Ecological Community* (CEEC) under the BC Act, and is also listed under Section 178 of the EPBC Act as *Critically Endangered*. However, the woodland did not meet the listing criteria to be considered representative of this TEC (see **Section 2.3.2** for the assessment against the criteria). The vegetation on site consists of a native overstorey with a combination of exotic and native understorey which is degraded from a long history of clearing and set-stock grazing. Despite not being considered a MNES, it is still likely to constitute part of a viable Box Gum Woodland community, therefore the works are being conducted in a fashion that will only remove small areas of viable habitat, minimally impacting the remaining woodland area as much as possible.

In summary, the woodland on site does not qualify as being an EPBC Act listed TEC or MNES.

1.5 Information Sources

Sources of information for this report included:

- NSW Planning Portal (NSW Dept. of Planning and Environment 2018);
- BioNet Atlas of NSW Wildlife (NSW Office of Environment and Heritage 2018a);
- Murray vegetation extant (VIS_ID 2907). The dataset shows extant vegetation of the NSW South Western Slopes (NSS) IBRA bioregion within the Murray CMA;
- NSW (Mitchell) Landscapes data - version 3.1;
- NSw Government Web Services SIX Maps;
- Biodiversity Assessment Method (BAM) 2020
- *Biodiversity Conservation Act 2016*
- *Local Land Services Act 2013*

2 Methods

2.1 Site Context Methods

2.1.1 Landscape features

Desktop assessments of the site and field assessments done of the site during field surveys determined that the site is flat with some low-lying areas and slight undulations. Elevation ranges between 236 and 238 metres with the northern end of the site being slightly lower than the southern end.

The surrounding landscape is relatively similar in topography. Two (2) farm dams are in the middle of the site, one fed by a small unnamed creek which drains into an informal constructed drainage channel that runs along the western side of Jindera Street. The site is mapped as possessing red-brown earths which is characterised by a layer of sandy loam to light clay loam overlying a clay subsoil (ref here). The soil is well drained at this site with a low erosion hazard.

2.1.2 Native vegetation cover

Desktop assessments show that the site contains native vegetation mapped as PCT 277 - Blakely's Redgum - Yellow Box grassy tall woodland of the NSW South Western Slopes. Field reconnaissance confirmed that the site contains areas of PCT 277, but that the area of PCT 277 present on site was slightly larger than the desktop assessment suggested. The native vegetation condition across the site is varied with high (native vegetation dominant), moderate (native canopy over mostly exotic understorey) and moderate - wetland (native canopy over mostly exotic understorey with some native rushes/sedges) vegetation zones present.

There is a relatively connected native overstorey extending over the site which is dominated by Blakely's Red Gum (*Eucalyptus blakelyi*), Yellow Box (*E. melliodora*) and White Box (*E. albens*), with some Apple Box (*E. bridgesiana*) generally confined to the creek that runs parallel with Jindera Street. However, the quality of the middle stratum and groundcover varies greatly across the site, hence the differing vegetation zones that have been applied. In total, 2.97 hectares of the 4.14 hectare site is native (i.e. contains greater than 15% cover of native species), however only 2.82 hectares will be cleared and offset, with the other 0.15 hectares being retained and turned into a reserve within the development area.

Within the assessment area, which includes the subject land and a 1,500 metre buffer, through use of aerial imagery during the desktop assessment, native vegetation was determined to cover 185 hectares of the 872 hectare assessment area, therefore making up 21% of the assessment area.

2.2 Native Vegetation, Threatened Ecological Communities and Vegetation Integrity Methods

2.2.1 Existing Information

Review of previous vegetation mapping (Riverina modelled vegetation extant - VIS_ID 4469) identified one native vegetation community as previously mapped within the subject land, that being PCT 277 - Blakely's Red gum - Yellow Box grassy tall woodland of the NSW South Western Slopes bioregion. Review of previous vegetation mapping (Murray vegetation extant – VIS_ID 2907) identified one Threatened Ecological Community (TEC) as previously mapped within the subject land, that being the EPBC Act listed White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

2.2.2 Mapping Native Vegetation Extent

Assessment and mapping of Plant Community Types (PCTs) was undertaken on the 9th of January 2023 and 2nd of November 2023. The subject land was traversed to identify the vegetation structure and dominant species within the patch of native vegetation. The extent of the vegetation on the site was traversed to sample any spatial variation, identify boundaries between vegetation communities and to identify and map vegetation zones in accordance with the BAM (variation in the broad condition state of vegetation polygons). Based upon traverses of the entire subject land, a single vegetation community was identified (PCT 277 - Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion) and its boundary was mapped (**Figure 5**).

The identification of a PCT was in accordance with the NSW PCT classification as described in the BioNet Vegetation Classification (OEH 2018). Determination of the most appropriate PCT for vegetation communities within the subject land used the BioNet Vegetation Classification database to identify PCT types which matched the geographic distribution (based upon IBRA subregions), vegetation formation and floristics of vegetation within the subject land.

The data for the potential PCT including vegetation formation, descriptive attributes and distribution information were then reviewed to determine the most appropriate PCT for the vegetation community sampled within the subject land. Observations of vegetation structure and composition made during traverses of the subject land, as well as immediately adjacent areas, also informed the determination of most appropriate PCT for the vegetation community within the subject land.

It is noted that identification of vegetation communities and PCTs was complicated by the fact that field observations were of disturbed, fragmented and previously cleared stands of vegetation. Consequently, the identification of vegetation communities was based on the above inputs, as well as the expert opinion of an experienced observer of the Murray Catchment vegetation types.

2.2.3 Plot-based Vegetation Survey

The floristics of the vegetation community was sampled within five 20 x 20 metre plot-based floristic vegetation surveys, consistent with Section 5.2.1.9 of the BAM. The plots were also the location of vegetation integrity plots in accordance with Section 5.3 of the BAM (**Figure 6**).

The location of the floristic vegetation plots was based upon a randomly sampled area of the vegetation community, whilst ensuring that the plot-based survey included representative areas of the community and the various vegetation zones, and avoided, where possible, edge effects (i.e. areas located close to edges of vegetation zones) or ecotones with adjacent vegetation zones.

2.2.4 Vegetation Integrity Surveys

Vegetation integrity survey plots of 50 x 20 metres were completed within the site and were applied to meet the requirements of the BAM. Five (5) plots were completed, one in the moderate quality wetland vegetation zone, three in the moderate quality vegetation zone and one in the high-quality vegetation zone (**Figure 6**). The number of plots surveyed within each vegetation zone is consistent with the requirements outlined within the BAM.

2.3 Threatened Flora Survey Methods

2.3.1 Review of Existing Vegetation Community and Flora Information

To identify threatened flora that have previously been recorded within 10 kilometres of the subject land and that may occur within the site or around the site, searches were undertaken using the EPBC Protected Matters Online Search Tool and NSW BioNet, to identify *flora* species within that spatial scale. The EPBC Protected Matters Online Search Tool returned four (4) Vulnerable and Four (4) Endangered *flora* species whose habitat may occur within the 10 kilometre radius of the site. NSW BioNet, the website for the Atlas of NSW Wildlife for *flora* records, returned Two (2) vulnerable and two (2) endangered species within the 10-kilometre buffer.

For each of these species listed under the EPBC Act and NSW BC Act, that occur within the 10-kilometre search radius, their likelihood of occurring on the site has been assessed and is presented in **Appendix E** and **Appendix F**.

The categories for likelihood assessments (likelihood of a species or community being present in or in close proximity to the subject land) are based on recorded sightings listed in credible databases, the presence or absence of suitable habitat, other features of the site, results of the field survey and professional judgement. The five categories are:

'Recorded' The species/community was or has been observed on the site.
'Likely' A medium to High probability that a species uses the site.
'Potential' A suitable habitat for a species occurs on the site, but there is insufficient information to categorise the species as 'likely' or 'unlikely' to occur.
'Unlikely' A Very Low to Low probability that a species uses the site.
'No' Habitat on the site and in the vicinity in unsuitable for the species.

Where a threatened community or species has a likelihood ranking of 'possible', 'likely' or 'recorded', they have been considered in more detail below.

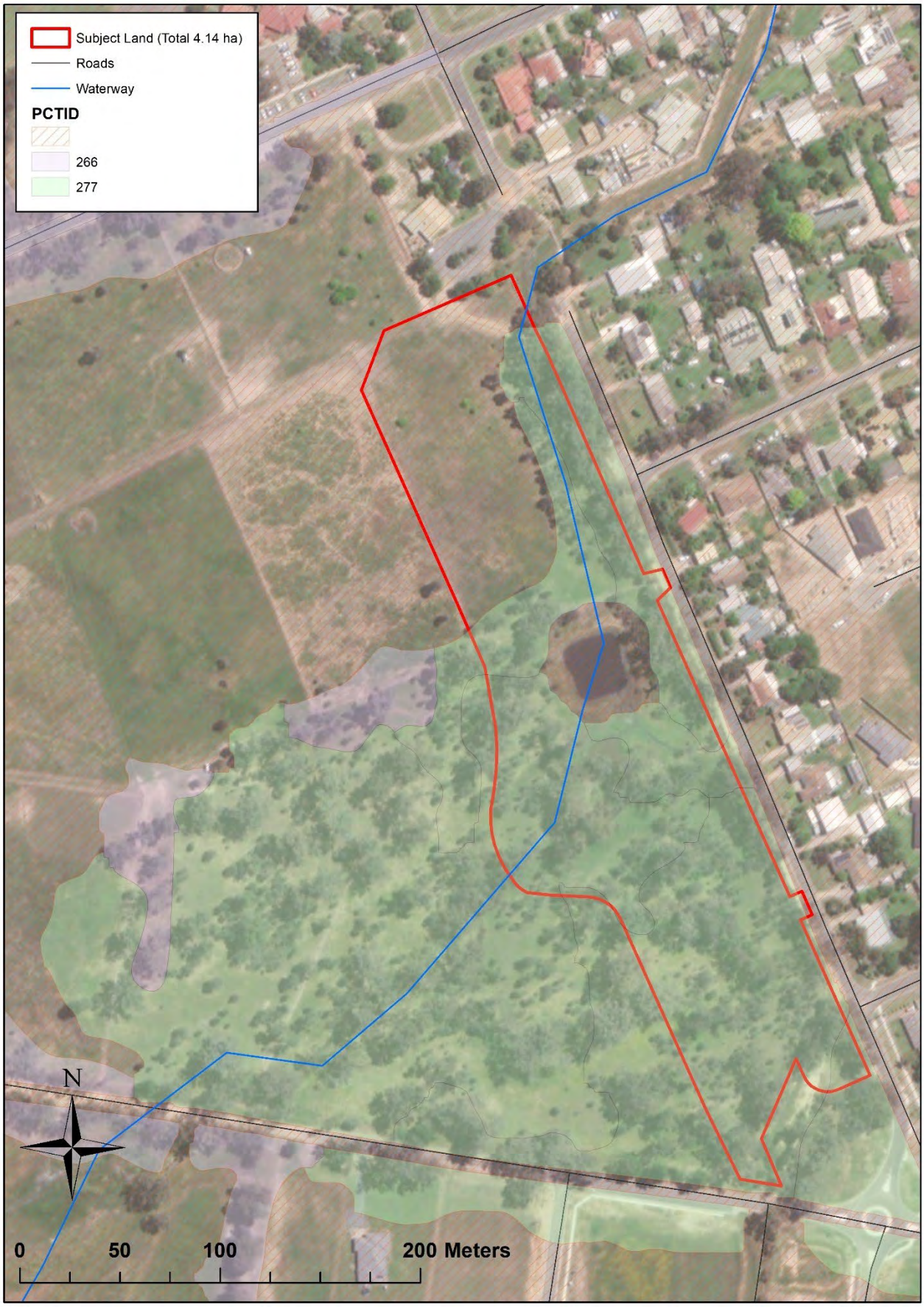

Figure 5: Plant Community Types (PCTs) within the subject land. Scale: 1:3,000

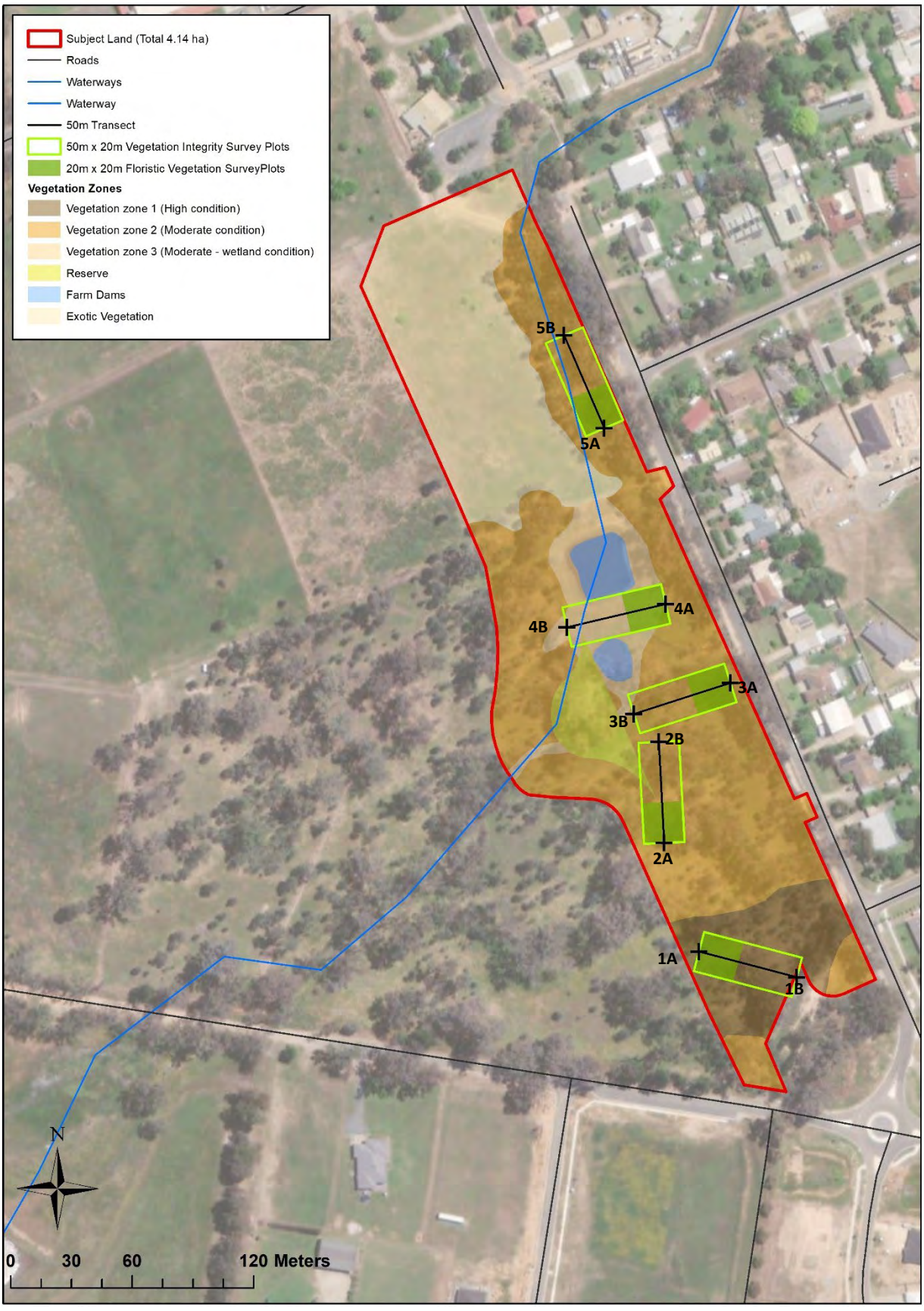

Figure 6: Vegetation plot locations. Scale 1:2,200.

2.3.2 EPBC Act Threatened Communities and Flora Species for Further Assessment

The EPBC Act listed White Box Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC, which is classified as Critically Endangered, was considered a possibility of persisting on site. However, after detailed assessment during field surveys and putting the site through the listing criteria for the TEC, the determination is as follows:

1. Is or was previously, at least one of the most common overstorey species White Box, Yellow Box or Blakely's Red-gum? – **YES**
2. Does the patch have a predominantly native understorey – **NO** (only a small area in south part of subject land has an understorey with more than 50% native species)
   – **Patch eliminated at the above point.**
3. Is the patch 0.1 hectares or greater in size? **YES** (the overall patch is large, and the high-quality zone with good understorey is 0.4 hectares)
4. There are 12 or more native understorey species present (excluding grasses) – **NO**
   – **0.4 hectare 'high quality' vegetation zone eliminated at the above point.**
5. Is the patch greater than 2 hectares in size – **NA** (the overall patch is 10 hectares)
6. Does the patch have an average of 20 or more mature trees per hectare – **NA**; or is there natural regeneration of the dominant overstorey eucalypts? **NA**.

The majority of the >10-hectare patch has an understorey that is dominated by exotic woody weeds and pasture grasses, aside from the 0.4 hectare high quality patch in the southern part of the subject land. On this basis, the patch is eliminated at point two. Within that higher quality patch, there were fewer than 12 native understorey species (excluding grasses) so the small patch is excluded from the TEC classification at point four. As a result of the above assessment against the EPBC Act listing criteria, the site does qualify as being representative of the TEC.

There are no (zero) EPBC Act listed flora species that require further assessment.

2.3.3 BC Act Threatened Communities and Flora Species for Further Assessment

There are no listed flora or threatened communities within 10 kilometres that are considered likely to be persisting in or within close proximity to the subject land.

2.3.4 Summary of Vegetation Community and Flora Species Review

The results of these desktop assessments, assessments of the site and previous knowledge accumulated over 25 years of working in the Albury-Wodonga region, zero flora species were considered as candidate species.

2.3.5 Habitat Constraints

Field surveys and assessments were undertaken during preparation for this BDAR. During these assessments, the proposed site was walked and assessed for habitat constraints and microhabitats that may be on site. Some microhabitats, such as fallen branches, native grasslands, farm dams and pooled water, were present on site. In terms of habitat constraints that may affect the presence of threatened flora species, other than a small area in the south with a predominantly native understorey, the remaining understorey vegetation in the site is dominated by invasive and dominant exotic grasses

(including Phalaris and Paspalum), exotic herbs and woody weeds, which generally outcompete the native grasses, herbs and forbs. In addition, there is considerable rabbit and livestock browsing pressure, and it is therefore unlikely that threatened species would persist in the subject land.

2.3.6 Flora Field Surveys

No targeted flora field surveys were conducted due to no candidate flora species being identified as occurring on the site. However, thorough searches were undertaken over a number of site visits at different times of year. During vegetation surveys and habitat assessments undertaken on the 9th January 2023 and 2nd November 2023, no threatened species were identified.

2.4 Threatened Fauna Survey Methods

2.4.1 Review of Existing Fauna Information

To identify threatened fauna that have previously been recorded within 10 kilometres of the site, searches of the EPBC Protected Matters Online Search Tool and NSW BioNet were conducted. The EPBC Protected Matters Online Search Tool returned nine (9) Migratory, Ten (10) Vulnerable, eight (8) Endangered and six (6) Critically Endangered *fauna* species whose habitat may occur within the 10 kilometre search radius. NSW BioNet, the website for the Atlas of NSW Wildlife returned 28 *fauna* species records within the specified geographic range, including twenty-two (22) vulnerable, five (5) endangered and one (1) critically endangered species.

For each of these species listed under the EPBC Act and NSW BC Act that occur within the 10-kilometre search radius, their likelihood of occurring on the site has been assessed (using the same categories as in **Section 2.3**) and results are presented in **Appendix E** and **Appendix F**. Species that had a likelihood assessment of 'potential', 'likely', or 'recorded', have been considered further below.

2.4.2 EPBC Act Threatened Fauna Species (in Addition to BAM-C Candidate Species), for Further Consideration

Swift Parrot

Swift Parrot is listed as Critically Endangered under the EPBC Act. Blakely's Red-Gum and Apple Box are the dominant species in the subject land, with some White Box and Yellow Box also persisting but in lower numbers. Blakey's Red-gum are late spring to summer flowering. Swift Parrots over-winter on mainland Australia, and these trees will not be flowering during the times the Swift Parrot is in the local landscape. Apple Box (flowering January to May), White Box (January to September) and White Box (year-round) will tend to be flowering at the times Swift Parrot will be frequenting the mainland over the cooler months. Targeted surveys are required for this species to ensure they are not using the habitat within the subject land.

Sloane's Froglet

Sloane's Froglet is listed as Endangered under the EPBC Act. Although there are no local records for Jindera, with the closest being approximately 10 kilometres east near Table Top, there is some suitable habitat along the creeks, drainage lines and dams within the subject land. Targeted surveys are required for this species to ensure they are not using the habitat within the subject land.

Painted Honeyeater

Painted Honeyeater is listed as Vulnerable under the EPBC Act. Despite there being no local records for this species in or around Jindera, there are mature gums and abundant mistletoe within the subject land, and as such there is sufficient habitat for this species in the local area. Targeted surveys are required for this species to ensure they are not using the habitat within the subject land.

Southern Bell Frog

Southern Bell Frog is listed as Vulnerable under the EPBC Act. Despite there being no local records for this species in or around Jindera, and although not their ideal habitat due to disturbance and historical grazing, there is habitat for this species in the creek and the two dams within the subject land. Targeted surveys are required for this species to ensure they are not using the habitat within the subject land.

Rainbow Bee-eater

Rainbow Bee-eater is listed as Migratory under the EPBC Act. This species is relatively common in the area during the warmer months and the subject land contains some clay bank lined creeks which may be suitable breeding habitat for this species. Targeted surveys are required for this species to ensure they are not using the habitat within the subject land.

2.4.3 BC Act Threatened Fauna Species (in Addition to BAM-C candidate species), for Further Assessment

Sloanes Froglet

See above **Section 2.4.2**.

Southern Bell Frog

See above **Section 2.4.2**.

Dusky Woodswallow

Dusky Woodswallow is listed as vulnerable under the BC Act. There are a number of large trees and some stags which provide suitable habitat for this species. There are also two records for this species in the township of Jindera, in very close proximity to the site. Targeted surveys are required for this species to ensure they are not using the habitat within the subject land.

Scarlet Robin

Scarlet Robin is listed as vulnerable under the BC Act. Although there are no local records from Jindera, there are many records just further afield, particularly just south and east. There is suitable habitat within the subject land for this species and therefore targeted surveys are required for this species, to ensure they are not using the habitat within the subject land.

Diamond Firetail

Diamond Firetail is listed as vulnerable under the BC Act. This species is known to persist in and around Jindera and there is suitable habitat within the subject land for this species. Targeted surveys are required for this species to ensure they are not using the habitat within the subject land.

Flame Robin

Flame Robin is listed as Vulnerable under the BC Act. There are a number of large trees and some stags and open clearings which provide suitable habitat for this species. There are also two records for this species in the township of Jindera, in very close proximity to the site. Targeted surveys are required for this species to ensure they are not using the habitat within the subject land.

Swift Parrot

See above **Section 2.4.2**.

Little Eagle

Little Eagle is listed as Vulnerable under the BC Act. There are a number of large trees and some stags which provide suitable nesting habitat for this species. There is also a recent record for this species in the township of Jindera, in very close proximity to the site. Targeted surveys are required for this species to ensure they are not using the habitat within the subject land.

2.4.4 Summary of Fauna Review

The results of these desktop assessments, assessments of the site and previous knowledge accumulated over 25 years of working in the Albury-Wodonga region, determined that targeted surveys are required for ten (10) threatened species that were considered as having a likelihood rating of 'potential' or higher. In addition to these surveys, targeted surveys were also considered required for BAM-C generated *candidate species* and those include the Barking Owl (*Ninox connivens*), Squirrel Glider (*Petaurus norfolcensis*), Koala (*Phascolarctos cinereus*), Superb Parrot (*Polytelis swainsonii*) and Masked Owl (*Tyto novaehollandiae*), as well as the following BAM-C raised species which were also identified in the likelihood assessment as requiring surveys, Little Eagle (*Hieraaetus morphnoides*) and Swift Parrot (*Lathamus discolor*).

2.4.5 Habitat Constraints Assessment

Field surveys and assessments were undertaken during preparation for this BDAR. During these assessments, the proposed site was walked and assessed for faunal habitat constraints and microhabitats that may be on site. Some microhabitats, such as fallen branches, native grasslands, creeks, farm dams, pooled water, hollow bearing trees and stags were present on site.

In terms of habitat constraints that may affect the presence of threatened fauna species, the site is part of a small patch of vegetation, connected to other vegetated areas only through roadside vegetation corridors. The site is surrounded by agricultural land to the west, the town of Jindera and new development areas to the north, east and south, and the subject land has been subjected to many forms of anthropogenic disturbance which has impacted the faunal habitats present, and meant some faunal habitats are no longer present.

2.4.6 Field Surveys

Targeted surveys for candidate species and other threatened fauna species were conducted following modelled results from the BAM Calculator (BAM-C) (**Table 1**) as well as species that were considered likely to be using habitat within the subject land (those which ranked 'potential' or higher in **Appendix E** and **Appendix F**). A summary of methodologies employed on site over six (6) days, the 20th and 21st September 2022, 20th October 2022, 2nd and 9th August 2023 and the 3rd November 2023[1] is presented in **Table 2**.

All surveys were conducted by Damian Wall, Breanna Fisher, Olivia Hynam, Charley Schultz and Patrick Newman (Red-Gum Environmental Consulting). Please note that while no amphibian species were listed on the BAM-C lists of species for the site, targeted surveys for the Sloane's Froglet (*Crinia sloanei*) and the Growling Grass Frog (*Litoria raniformis*) were also conducted on site, given there was suitable habitat present. *No (zero) threatened fauna species were recorded on site during any of the surveys, and no candidate fauna species were determined to be still present on site, as a result of not being recorded during the significant survey effort.*

Table 1: Survey periods for candidate threatened fauna species (BAM-C)

Name	Presence	Survey Months
Hieraaetus morphnoides **Little Eagle**	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec
Lathamus discolor **Swift Parrot**	No (surveyed) **	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec
Ninox connivens **Barking Owl**	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec
Petaurus norfolcensis **Squirrel Glider**	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec
Phascolarctos cinereus **Koala**	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec
Polytelis swainsonii **Superb Parrot**	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec
Tyto novaehollandiae **Masked Owl**	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec

**Survey months are outside of months specified in BioNet, however no months were specified within the BAM-C. Survey months were guided by Guidelines for Australia's Threatened Birds (2010).

[1] Survey effort was guided by the 2018 OEH publication 'Field survey methods for environmental consultants and surveyors when assessing proposed developments or other activities on sites containing threatened species'.

Table 2: Survey methodology

Intended Target	Methodology	Survey Period Notes
Diurnal Birds *(Swift Parrot, Superb Parrot, Little Eagle)*	**Area search**: Observers walked around and throughout the site twice in its entirety.	Conditions on the 20th September 2022, 10.2°C at 9am, light wind, full cloud cover. Conditions on the 21st September 2022, 13.3°C at 9am, full cloud cover, light wind and light showers. Conditions on the 20th October 2022, 18.9°C at 9am, clear with light wind. Conditions on the 2nd August 2023, 17.1°C at 3pm, clear with a light wind. Conditions on the 9th August, 17.2°C at 3pm, clear and calm. Conditions on the 3rd November 2023, 17.3°C at 9am. Area searches started between 7am and 8am each morning and 5pm and 6pm in the evening (2nd and 9th August). Minimal observation count. Many peri-urban species including Noisy Miner co-existing with Magpies, Magpie Larks, Red-Wattle Bird and Galahs.
	Point Count Method: Observations were made from eight points for 15 minutes each, on two separate days.	Eight (8) point count sites (**Figure 7**) were visited between 7am to 9:30am and 5pm to 6pm, for approximately 15 minutes per point count site. All sites were visited four times, once on each of the mornings of the 20th September 2022, 21st September 2022, 20th October 2022 and 3rd November 2023 and once in the evenings of 2nd and 9th August 2023.
Nocturnal Birds *(Masked Owl, Barking Owl)*	**Broadcast surveys**: Calls of both owl species were played through a speaker at six locations across the site.	Surveys were conducted on the nights of the 20th September 2022, 2nd August 2023, and 9th August 2023. Calls were played at different times and locations over a 2.5 hour period from 8pm to 10:30pm (**Figure 7**).
Marsupials *(Squirrel Glider, Koala)*	**Spotlighting**: Transects walked for 2.5 hours on one night (**Figure 7**).	Entire site was transversed over a 2.5 hour period on the night of the 20th September 2022, 2nd August 2023, and 9th August 2023. The spotlighting was done with handheld spotlights. Periodic stops were taken, to focus on larger hollow-bearing and habitat trees.
Amphibians *(Sloane's Froglet, Growling Grass Frog)*	**Call Playback:** Frog calls played at various locations throughout the site where suitable habitat is located.	Surveys were completed on the nights of the 20th September 2022, over a 2.5 hour period, 2nd August 2023 over a 1.5 hour period and the 9th August 2023 over a 1 hour period.

Figure 7: Fauna survey effort. Scale 1:2,000.

2.5 Weather Conditions

The weather leading up to the September 2022, October 2022, and August 2023 survey period was typical of winter in the region, with no significant spikes or dips in ambient air temperatures, and no frosts or heavy rain periods. The weather leading up to the January 2023 and the November 2023 survey period was also typical summer and spring weather for the region.

Table 3: Weather conditions during surveys (Albury Airport weather station (station no. 072160))

Date	Temperature (°C)		Rain (mm)
	Min	Max	
14/09/2022	1.7	18.2	0
20/09/2022	2.7	19.6	0.2
21/09/2022	12.2	27.1	0
20/10/2022	11.8	26.3	0
09/01/2023	15.3	35.9	0
02/08/2023	1.8	17.6	0
09/08/2023	0.5	17.9	0.2
02/11/2023	7.7	25.6	0
03/11/2023	11.1	27.0	0

2.6 Limitations

When assessing the vegetation on site and conducting flora surveys, the thick growth of exotic pasture grasses in some areas, especially around the water ways and farm dams, and thick woody weeds (i.e. Broad-leaf Privet) under some remnant trees, made assessing some areas of the site difficult. The fauna surveys were designed to attempt to observe as many targets as possible in a simultaneous survey effort, because of the similar habitats frequented by the species and the homogenous nature of the habitats present. No licences were required to undertake the survey.

3 Site context

3.1 Assessment Area

To assist in identifying the context of the site, a 1,500 metre buffer was created around the site, known as the assessment area. The total area of the assessment area is 872.73 hectares and includes a section of Bowna Creek, with its respective vegetation corridor, and it also includes most of the township of Jindera. The assessment area is used in the following sections to show the context of the site.

3.2 Landscape Features

In accordance with the BAM, a number of features are assessed within the assessment area which includes the subject site and the area within the 1,500m buffer. Provided below are details related to IBRA region and subregion and NSW landscape regions (Mitchell Landscapes). Other features, such as rivers, streams, estuaries and wetlands, habitat connectivity, karst areas or areas of outstanding biodiversity value are also considered, where appropriate.

3.2.1 IBRA Bioregions and IBRA Subregions

Interim Biogeographic Regionalisation of Australia (IBRA) regions represent a landscape-based approach to classifying the land surface, including attributes of climate, geomorphology, landform, lithology, and characteristic flora and fauna species present. The subject land is located entirely within the Lower Slopes subregion (version 7) and within the NSW South Western Slopes IBRA region (version 7).

3.2.2 Rivers, Streams, Estuaries and Wetlands

One informal creek and many drainage lines, that are fed from the larger of the two farm dams in the site, are present within the site, and Bowna Creek is mapped within the 1,500 metre assessment area (**Figure 2**). A desktop analysis using LPI data (SIXmaps) identified no major watercourses within the subject land, with the informal drainage line occurring within the site flowing from the farm dam, into the drainage line that occurs along the western side of Jindera Street, which then flows north into Bowna Creek. This drainage line receives all the stormwater flow from the site and from the areas to the south-west, and is also fed by overflow from the two farm dams.

3.2.3 Habitat Connectivity

The site has some habitat connectivity, but outside of the broader 10.7 hectare patch that the site is part of, that habitat connectivity at the local level is relatively weak and is made up of mostly roadside vegetation corridors and creek line vegetation corridors, which then connect up with some larger patches of vegetation, refer to **Figure 2**.

3.2.4 Karst, Caves, Crevices, Cliffs, Rocks or Other Geological Features of Significance

No areas containing karst, caves, crevices, cliffs, rocks or other geological features of significance were identified within the assessment area.

3.2.5 Areas of Outstanding Biodiversity Value

The proposal will NOT impact on any areas mapped as Areas of Outstanding Biodiversity Value (AOBV) under the *Biodiversity Conservation Act 2016*.

3.2.6 NSW Landscape Regions (Mitchell Landscapes)

The subject land contains only one NSW Mitchell Landscape, that being the 'Brokong Plains' landscape (Mitchell Landscapes V3) (**Figure 3**). The Brokong Plains Mitchell Landscape was entered into the BAM-C due to it being the only Mitchell Landscape within the subject land.

3.2.7 Additional Landscape Features Identified in SEARS

This section does not apply as there are no Secretary's Environmental Assessment Requirements (SEARs) for the development.

3.2.8 Soil Hazard Features

Based on a search of the NSW EPA website, no contaminated land is present within or near the subject land. A search of the NSW eSpade database revealed there were no soil hazard features such as acid sulphate or erosion risk soil landscapes that occur within the site or within the assessment area.

3.3 Native Vegetation Cover

The extent of native vegetation in the assessment area (1,500 metre buffer around the site) was determined through a desktop assessment that mapped the native vegetation using the Murray vegetation extant (VIS_ID 2907), with edits made to the layer where obvious changes in vegetation extent occurred. However, using this technique, it means that the native vegetation mapped is just woody vegetation, and not areas of non-woody vegetation (e.g. native grasses) as from aerial imagery, the changes in and location of woody vegetation is easier to distinguish, due to variations in colour. Native grasses and other smaller native plants are difficult to distinguish from exotic vegetation using aerial imagery, and are often under-estimated as a result.

Large areas of woody vegetation occur along Bowna Creek and some of the major roads around Jindera, and in some areas just north and east of the township of Jindera. **Table 4** summarises the extent of estimated native vegetation cover within the assessment area. **Figure 2** also shows native vegetation cover within the assessment area.

Table 4: Native vegetation cover in the assessment area 1500m buffer

Assessment area (ha)	872.73 ha
Total area of native vegetation cover (ha)	185.94 ha
Percentage of native vegetation cover (%)	21.3%
Class (0-10, >10-30, >30-70 or >70%)	>10-30%

4 Native Vegetation, Threatened Ecological Communities & Vegetation Integrity

4.1 Native Vegetation Extent

The site has been identified as occurring in a 10.7 hectare patch of native vegetation on the outskirts of Jindera, with the subject land situated along a long section of Jindera Street and small section of Pioneer Drive. Refer to **Figure 8** to see native vegetation extent within the subject land.

Figure 8: Native vegetation extent. Scale: 1:2,500

4.1.1 Changes to the Mapped Native Vegetation Extent

Analysis of aerial imagery shows that the site appears to be located in a zone of relatively well-connected native vegetation. Site overstorey is all native, with a shrub layer and ground layer that is a mixture of both native and exotic species. Different areas of the site have different levels of exotic and native understory and shrub layer, which guided the breaking up of the site into various vegetation zones. The data for the potential PCT including vegetation formation, descriptive attributes and distribution information were reviewed to determine the most appropriate PCT within the subject land. Observations of vegetation structure and composition that were made during traverses of the subject land, as well as adjacent areas, also informed the determination of most appropriate PCT for the vegetation community within the subject land.

It is noted that identification of vegetation communities and PCT's was slightly hindered by the fact that the site has been subject to previous disturbance and fragmentation, with some previously cleared stands of vegetation. Consequently, the identification of vegetation communities was based on the above inputs, as well as expert opinion of an experienced observer of the Murray Catchment vegetation types.

Due to the modified state of the vegetation onsite, which in some instances was predominantly canopy trees over exotic pasture with sparse occurrences of native forbs and grasses, a quantitative analysis comparing PCTs at the floristic level, was not undertaken or considered likely to change the determination of the dominant PCT on site (i.e. PCT 277).

4.1.2 Areas That are Not Native Vegetation

Exotic grassland was identified within the subject land and was not assigned its own management area, zone, vegetation community or an equivalent PCT. This grassland occurs in the northwest corner of the site, and does not have any overstorey or shrub layer. It is just made up of exotic grasses and herbaceous weeds including Phalaris (*Phalaris aquatic)*, Annual Rye Grass (*Lolium perenne* (Annual Ryegrass) and Soursob (*Oxalis pes-caprae)* (**Photo 1** and **2**). For the purposes of the BAM, a clear delineation between native and exotic was determined based on the guideline that anything with less than 15% cover of native vegetation is considered exotic vegetation.

4.2 Plant Community Types

4.2.1 Overview

Vegetation within the subject land has been assessed as aligning with the BioNet Vegetation Classification PCTs identified within **Table 5** and their extent is shown in **Figure 5**. Detailed descriptions of each PCT are provided in the following subsections.

Table 5: PCTs identified within the subject land

PCT ID	PCT name	Subject land area (ha)
277	Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	2.97
NA	Exotic pasture	1.06
NA	Water	0.11
	Total area	4.14

4.2.2 Blakely's Red Gum - Yellow Box Grassy Tall Woodland of the NSW South Western Slopes Bioregion (PCT 277)

Tall woodland dominated by Blakely's Red Gum (*Eucalyptus blakelyi*) dominates the overstorey. Shrubs are present within the site, including Silver Wattle (*Acacia dealbata*) and Hedge Wattle (*A. paradoxa*), but these are restricted to the high-quality zone, with most of the site generally dominated by exotic species, particularly Broad Leaf Privet. In most areas of the site, the groundcover is dominated by exotic species like Phalaris, Paspalum, Annual Ryegrass and Soursob, however, in the high-quality section of the site, native grasses and forbs, such as Rough Spear Grass (*Austrostipa scabra*) and Wallaby Grasses (*Rytidosperma spp.)* dominate the understorey.

The identified vegetation community changed throughout the site, with the PCT being classified into moderate condition (canopy with mostly exotic understorey), moderate-wetland (canopy with mostly exotic understorey and sedges/rushes) and high condition (dominated by native species) vegetation zones in the site. The moderate-wetland condition area occurs around the farm dam and within some of the natural drainage lines and informal creeks. It is made up of approximately half native rushes, sedges and grasses, and half exotic species, with few native trees present. The moderate condition areas have a native overstorey with a majority exotic understorey, with some disturbance-tolerant natives present, and the high condition zone has a native overstorey with an understorey dominated by natives.

Identification of the corresponding PCT was based on a review of vegetation mapping, local knowledge and review of the BioNet Vegetation Classification and specifically PCTs which occur within the Inland Slopes subregion within the NSW South Western Slopes IBRA region (version 7) and included Blakely's Red-gum as a dominant species. Based upon this search, PCT 277 was identified as the most appropriate PCT based upon the floristic description.

Table 6: Details of PCTs within the subject land including area of vegetation zones & candidate SAII

PCT ID	277
PCT name	Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Vegetation Formation	Grassy Woodland
Vegetation Class	Western Slopes Grassy Woodlands
Extent within Subject land (ha)	2.97 ha
PCT % cleared	94%
Threatened Ecological Communities (TECs)	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
SAII candidate entity	None

4.2.3 Condition States

Terrestrial habitat assessment was undertaken to develop an understanding of the extent and condition of habitats within each of the three vegetation zones and across the general assessment area. The results of which assisted in our analysis of the likelihood of occurrence of threatened and migratory species as well as documenting habitat condition. This will include the identification of important habitat features such as movement corridors and important microhabitat features in riparian forest such as the presence of mistletoe and shrubby vegetation.

Terrestrial habitat assessment enables fauna habitat condition mapping where the subject land was assigned ranking relative to one another (High, Moderate and Low) and their approximate extent was mapped. Habitat condition was determined through the habitat assessment using factors such as the availability of microhabitat including fallen timber and mistletoe, amount of exotic vegetation, presence of tree hollows and any threatened species records collected during the survey. Also taken into consideration are the known habitat requirements of the threatened species recorded in the assessment area, and the experience of the assessor. The following rankings were assigned relative to each other (not an overall stand-alone general condition) with consideration (but not necessarily all) of the following attributes:

High Quality Habitat Zone

- Patch size large (>5 hectares).
- Abundant trees hollows present.
- Habitat is well connected to other areas of habitat.
- Shrub density is high.
- Virtually no weed species present.
- Good quantities of fallen timber, mistletoe, leaf litter and other microhabitat.
- Contains levels of habitat that are likely to be supporting breeding and/or roosting opportunities for threatened species that are known to, or are likely to occur in the subject land.
- Threatened species are known to occur there from this survey, previous records or according to assessor's knowledge.

Moderate Quality Habitat Zone

- Patch size moderately sized (2-5 hectares) and/or tree density remains sparse.
- Some tree hollows present.
- Moderate shrub density.
- Some weeds present.
- Some fallen timber, mistletoe, leaf litter and other microhabitat.
- Habitat has some connectivity to surrounding habitat.
- Contains levels of habitat that may support breeding and/or roosting opportunities for threatened species that are known to or are likely to occur in the subject land.
- Threatened species may occur within this habitat.

Low Quality Habitat Zone

- Patch size small and/or tree density within patch sparse.
- Virtually no tree hollows present.
- Virtually no shrubs present.
- Virtually no fallen timber, mistletoe, leaf litter and other microhabitat.
- Habitat has little connectivity to surrounding areas.
- Weed invasion high.
- Contains virtually no habitat that would support breeding and/or roosting opportunities for threatened species that are known to or are likely to occur in the subject land.
- Unlikely to support threatened species on a permanent basis.

*The site consists of three (3) vegetation zones; 'Vegetation Zone 1' a high condition PCT 277 Vegetation Zone, 'Vegetation Zone 2' a Moderate condition PCT 277 Vegetation Zone, made up of four polygons, and 'Vegetation Zone 3', made up of moderate-wetland condition PCT 277 (**Figure 10).***

4.2.4 Justification of PCT Selection

Review of previous vegetation mapping (Riverina modelled vegetation extant -VIS_ID 4469) identified one native vegetation community as previously mapped within the subject land (**Figure 9**):

- *Blakely's Red gum - Yellow Box grassy tall woodland of the NSW South Western Slopes – PCTID 277 (Riverina Modelled Vegetation Data set - VIS_ID 4469).*

Identification of vegetation communities within the subject land and community nomenclature followed the vegetation classification of NPWS (2002). Based on the floristic composition of the vegetation in the subject land, one native vegetation community was identified (**Figure 9**):

- *Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (PCT 277);*

The area that the PCT covers is also slightly different than what was originally displayed on the '*Riverina Modelled Vegetation Data set - VIS_ID 4469*' data layer. The PCT was expanded to include the areas around the dam and lessened around the roadside areas (**Figure 9**).

4.2.5 Alignment with Threatened Ecological Communities (TECs)

Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (PCT 277) can be aligned with the locally present *White Box Yellow Box Blakely's Red Gum Woodland* which is a Critically Endangered Ecological Community (CEEC) under the BC Act and is listed under Section 178 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as Critically Endangered. The vegetation on site consists of a native overstorey with a combination of exotic and native understorey, but a review of the approved Conservation Advice (TSSC 2015) concluded that the Box – Gum Grassy Woodland and Derived Grassland on the subject area does not meet the condition to be categorised as the EPBC Act listed TEC or as a MNES.

Despite the woodland not qualifying as the EPBC Act listed TEC, the woodland IS considered representative of the NSW TEC White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions (to be referred to as Box Gum Woodland). Although degraded from clearing, weed invasion and set-stock grazing, the woodland is still likely to form part of a viable Box Gum Woodland community and in recognising this, efforts have been made to reduce the footprint of the development and to retain as many trees as possible, to limit impacts for the Box Gum Woodland at the local scale.

*The woodland within the subject land does **NOT** meet the criteria for the EPBC Act listed TEC and therefore does not require assessment in accordance with the Significant Impact Guidelines Commonwealth Department of the Environment (DoE) (2013).*

*The woodland **DOES** qualify for the Box Gum Woodland TEC listed under the NSW BC Act, and efforts have been made to reduce the impacts to this woodland in reflection of the importance of this vegetation community at the local and regional scale.*

4.3 Threatened Ecological Communities

There is one TEC identified within the subject land, that being the NSW BC Act listed White Box Yellow Box Blakely's Red Gum Woodland and Derived Native Grassland, which as of 2020 is listed as a critically endangered ecological community. This community closely resembles the EPBC Act listed TEC of the same name, however the woodland in the subject land did not meet the criteria to be considered part of the Federally listed TEC. The NSW TEC (Box Gum Woodland) within the subject land is listed in **Table 7** and the extent of the NSW TEC is shown in **Figure 9**.

Table 7: TECs within the subject land

TEC name	BC Act status	EPBC Act status	Associated vegetation zones within the subject land	Area within subject land (ha)
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	Critically Endangered	Not listed	PCT 277 (Zones 1 & 2)	2.97 ha
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Not listed	Critically Endangered	PCT 277	Nil (does not qualify)

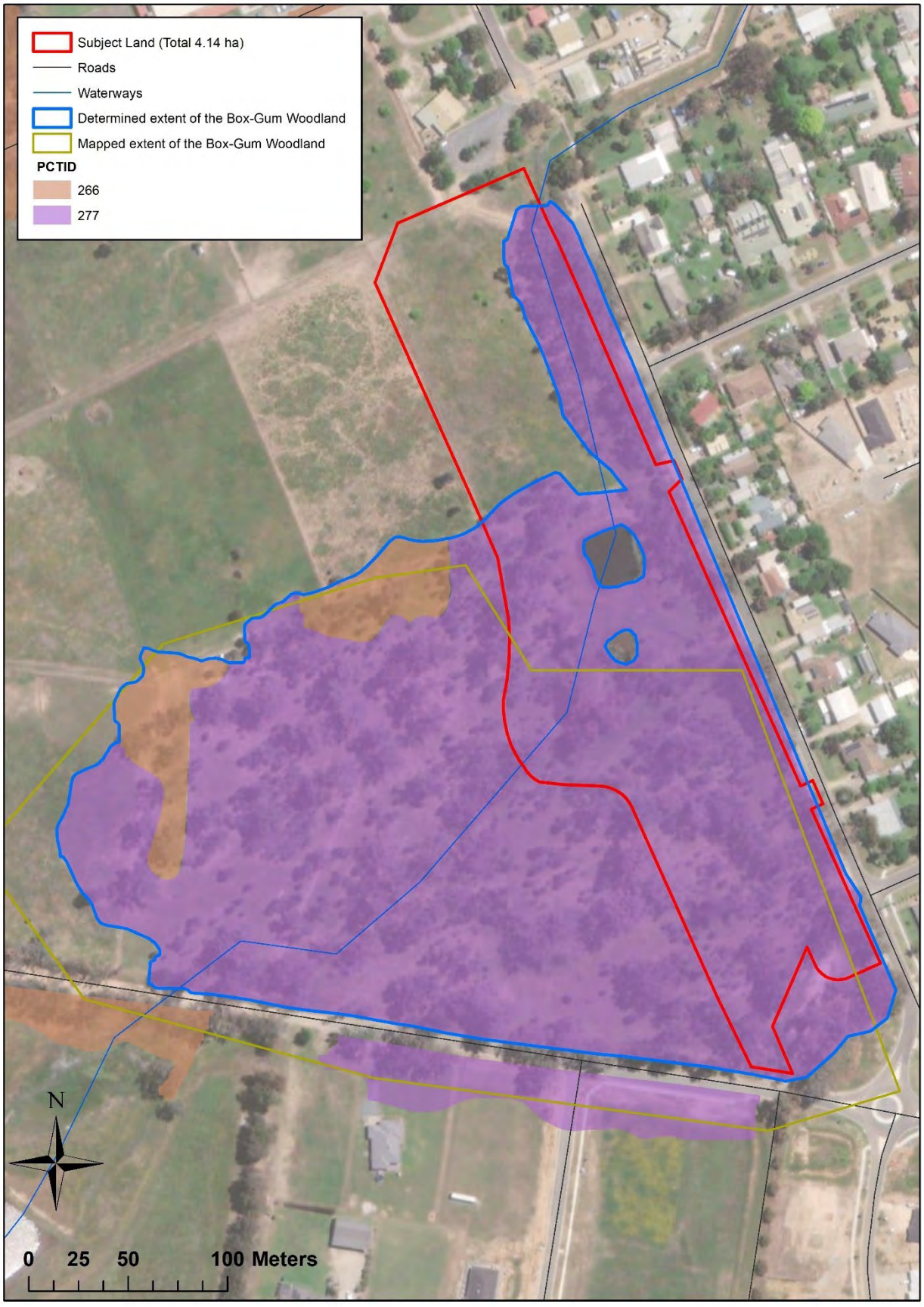

Figure 9: Threatened ecological communities. Scale; 1:2,200.

4.4 Vegetation Zones

A vegetation zone is an area of the same PCT with the same broad condition state. The site contains three vegetation zones, described by three broad condition states, termed 'Moderate-wetland', 'Moderate' and 'High', with only the 'Moderate' vegetation zone being discontinuous (**Figure 10**). Patch size as defined by the BAM as 'an area of native vegetation that:

a) occurs on the development site or biodiversity stewardship site, and

b) includes native vegetation that has a gap of less than 100 metres from the next area of moderate to good condition native vegetation (or ≤30 metres for non-woody ecosystems).

Patch size may extend onto adjoining land that is not part of the development site or biodiversity stewardship site.' In assessing patch size, stands of native vegetation within 100 metres (where in a moderate to good condition) but which are separated by hard barriers including permanent artificial structures, wide roads or other barriers, have been treated as separate patches. These highly modified breaks in vegetation connectivity would significantly alter ecological function of these areas of native vegetation, such that these areas warrant recognition as separate patches.

Patch size was calculated for the vegetation on the development site using the field validated map of vegetation types identified and the updated native vegetation extent data layer prepared for the 1,500 metre buffer. Patch size is required to be assessed as one of four classes per vegetation zone mapped, those being <5 hectares, 5-24 hectares, 25-100 hectares or >100 hectares, as per the BAM method.

One (1) patch of vegetation was identified within the subject land, and is in the 5-24 hectare class (**Table 8**). Native vegetation within the subject land is connecting with native vegetation within the wider lot and along Pioneer Drive. This vegetation also connects to the local vegetation persisting on the better roadsides and riparian areas.

Based upon vegetation mapping and air photo interpretation within and beyond the subject land, the total area of this patch of native vegetation was calculated as 5-24 hectares, and consists of areas in low, moderate and high condition.

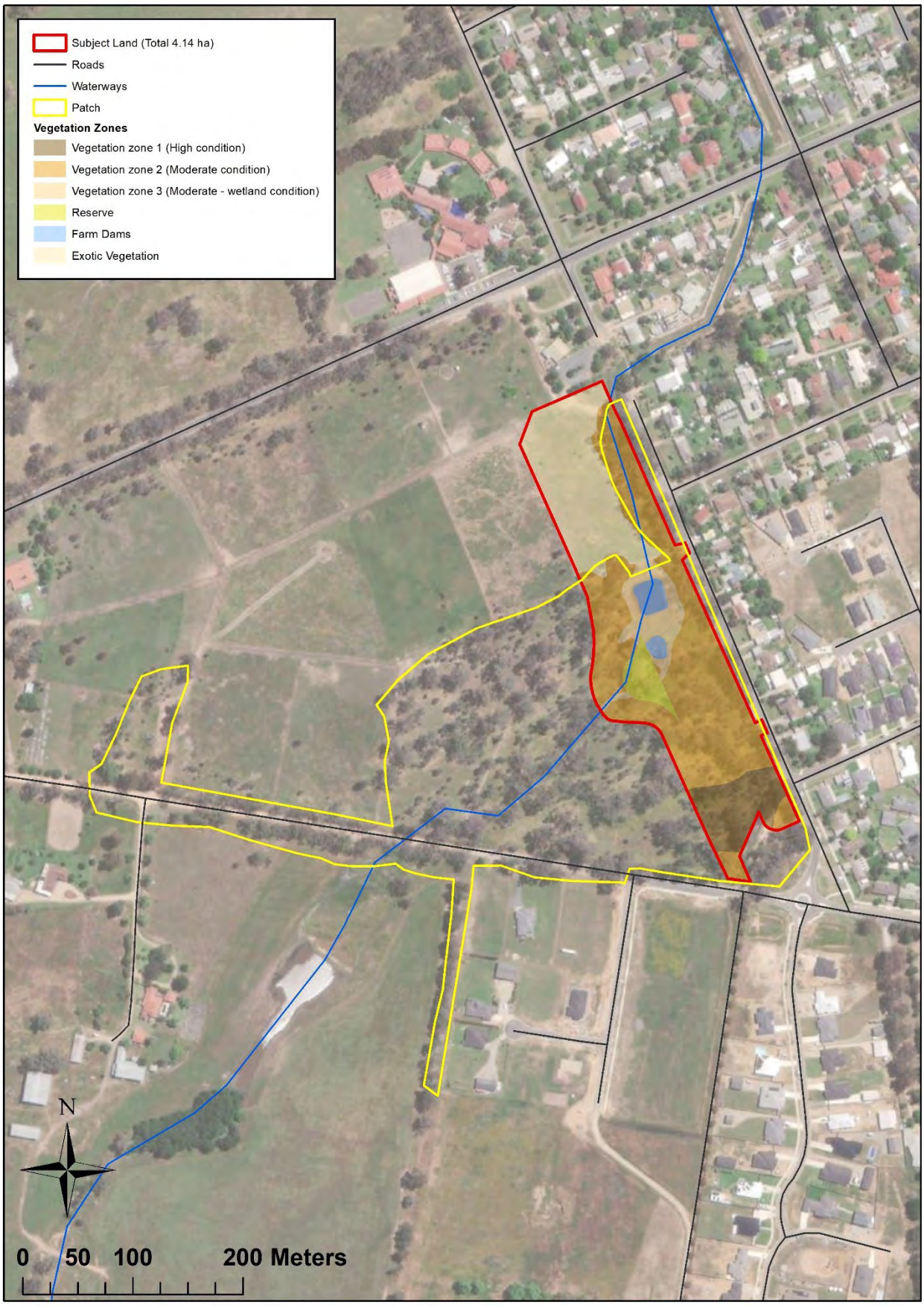

Figure 10: Mapped Vegetation zones and native vegetation patch. Scale: 1:4,000.

Table 8: Vegetation zones and patch sizes

Vegetation zone ID	PCT ID number and name	Condition/other defining feature	Total area of works (ha)	Vegetation zone area (ha)	Patch size class	No. vegetation integrity plots required	No. vegetation integrity plots completed	No. vegetation integrity plots used in assessment	Plot IDs of vegetation integrity plots
1	PCT 277: Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	High	4.14 ha	0.42 ha	☐<5 ha ☒5–24 ha ☐25–100 ha ☐>100 ha	1	1	5	1
2	PCT 277: Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	Moderate	4.14 ha	2.12 ha	☐<5 ha ☒5–24 ha ☐25–100 ha ☐>100 ha	2	3	5	2, 3 & 5
3	PCT 277: Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	Moderate-wetland	4.14 ha	0.28 ha	☐<5 ha ☒5–24 ha ☐25–100 ha ☐>100 ha	1	1	5	4

Photo 1: High quality vegetation in Zone 1. West orientation. Photo: B. Fisher, 2023.

Photo 2: High value vegetation in Zone 1. South orientation Photo: B. Fisher, 2023.

Photo 3: Medium quality vegetation in Zone 2. South east orientation. Photo: B. Fisher, 2023.

Photo 4: Medium quality vegetation in Zone 2. West orientation. Photo: B. Fisher, 2023.

Photo 5: Medium-wetland quality vegetation in zone 3. West orientation. Photo: B. Fisher, 2023.

Photo 6: Medium-wetland quality vegetation in zone 3. South orientation. Photo: B. Fisher, 2023.

4.5 Vegetation Integrity (Vegetation Condition)

4.5.1 Vegetation Integrity Survey Plots

Five vegetation integrity survey plots were completed within the site, with all being used to meet the requirements of the BAM (**Appendix H**). One (1) BAM plot was completed for 'vegetation zone 1', three (3) plots for 'vegetation zone 2' and one (1) plot for 'vegetation zone 3' (**Figure 6**). The number of plots surveyed within each vegetation zone is consistent with the requirements outlined within the BAM.

4.5.2 Scores

Vegetation integrity cores were calculated based on the vegetation integrity survey plots collected for the single vegetation zone assigned to a native PCT. The vegetation integrity scores for each vegetation zone are provided in **Table 9**. The vegetation integrity score is based off the composition condition score, the structure condition score, the function condition score and the presence of hollow-bearing trees, all of which is calculated from the vegetation integrity survey plots.

Table 9: Vegetation integrity scores.

Veg zone number and name	Composition condition score	Structure condition score	Function condition score	Veg integrity score – before development	Hollow bearing trees present?
1 277_High	49	87.9	42.8	56.9	Yes
2 277_Moderate	10.3	33.1	45.2	24.9	Yes
3 277_Moderate-wetland	33.9	53.6	30.3	38.1	Yes

4.5.3 Benchmark Data

The benchmark data used to assess the vegetation integrity attributes in all the vegetation zones and to assess the PCT, was the BioNet Vegetation Classification benchmark values for PCT 277. See **Appendix H**.

5 Habitat Suitability for Threatened Species

5.1 Identification of Threatened Species for Assessment

Under the BAM, threatened species are separated into two classes, 'ecosystem' and 'species' credit species. Those threatened species where the likelihood of occurrence of a species or elements of the species' habitat can be predicted by vegetation surrogates and landscape features, or for which a targeted survey has a low probability of detection, are identified as 'ecosystem' credit species. Targeted surveys are not required for ecosystem species and potential impacts to these species are assessed in conjunction with impacts to PCTs.

Threatened species, where the likelihood of occurrence of a species or elements of suitable habitat for the species cannot be confidently predicted by vegetation surrogates and landscape features, and can be reliably detected by survey, are identified as 'species' credit species. A targeted survey or an expert report is required to confirm the presence or absence of these species on the subject land.

For some threatened species, they are identified as both ecosystem and species credit species, with different aspects of the habitat and life cycle representing different credit types. Commonly, threatened fauna species may have foraging habitat as an ecosystem credit, while their breeding habitat represents a species credit. Threatened species that require assessment are initially identified based upon the following criteria:

- The distribution of the species includes the IBRA subregion in which the subject land (Inland slopes IBRA subregion);
- The subject land is within any geographic constraints of the distribution of the species within the IBRA subregion;
- The species is associated with any of the PCTs identified within the subject land;
- The native vegetation cover within an assessment area including a 1,500 metre buffer around the subject land is *equal to or greater than* the minimum required for the species;
- The patch size that each vegetation zone is part of is equal to or greater than the minimum required for that species; and
- The species is identified as an ecosystem or species credit species in the NSW Threatened Biodiversity Data Collection.

The process for identifying threatened species which meet the above criteria is completed through the BAM-C. The PCTs identified within the subject land, patch sizes and native vegetation cover, were entered into the BAM-Cand a preliminary list of threatened species were identified. Searches of EPBC Act and BC Act threatened species and communities databases were also undertaken with searches completed within a 10 kilometre radius

5.1.1 Ecosystem Credit Species

The ecosystem credit species predicted on site by the BAM-C are provided in **Table 10**. Over half of the ecosystem credit species were retained for further assessment. Additionally, areas of exotic grassland were not considered as habitat for any ecosystem credit species. Justification for the exclusion of potential threatened species is provided in **Table 11**.

5.1.2 Species Credit Species

As outlined in **Section 5.1**, species credit species are predicted in the BAM-C following assessment of geographic and habitat features in the credit calculator, such as site location (IBRA subregion), PCTs and condition, patch size and the area of surrounding vegetation within the 1,500 metre buffer of the subject land. Some species require further assessment of habitat constraints and/or geographic limitations before being confirmed as candidate species for assessment. **Table 12** outlines the questions asked for these species, and whether the species is confirmed as a candidate species. **Table 13** outlines the justification behind excluding species from the candidates species list.

Table 10: Ecosystem credit species predicted within the subject land.

Species	Listing Status*		Dual credit species	Sources	Species retained for further assessment	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
	BC Act	EPBC Act						
Anthochaera phrygia – Regent Honeyeater (Foraging)	ce	CE	Yes	BAM-C	No	Habitat Constraints	-	High
***Artamus cyanopterus cyanopterus* – Dusky Woodswallow**	**v**	**-**	**NA**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**	**Moderate**
Callocephalon fimbriatum – Gang-gang Cockatoo (Foraging)	v	E	Yes	BAM-C	No	Habitat Constraints	-	Moderate
Chthonicola sagittate – Speckled Warbler	v	-	NA	BAM-C	No	Habitat Constraints	-	High
Circus assimilis – Spotted Harrier	v	-	NA	BAM-C	No	Habitat Constraints	-	Moderate
***Climacteris picumnus Victoriae* – Brown Treecreeper (eastern subspecies)**	**v**	**-**	**NA**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**	**High**
***Daphoenositta chyroptera* – Varied Sittella**	**v**	**-**	**NA**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate**	**Moderate**
Dasyurus maculatus – Spotted-tailed Quoll	v	E	No	BAM-C	No	Habitat Constraints	-	High
Falco subniger – Black Falcon	v	-	No	BAM-C	No	Habitat Constraints	-	Moderate
***Glossopsitta pusilla* – Little Lorikeet**	**v**	**-**	**NA**	**BAM-C**	**Yes**	**-**	**Only high and moderate-**	**High**
***Grantiella picta* – Painted Honeyeater**	**v**	**V**	**NA**	**BAM-C**	**Yes**	**Habitat Constraints**	**-**	**Moderate**
Haliaeetus leucogaster – White bellied Sea-eagle (Foraging)	v	-	Yes	BAM-C	No	Habitat Constraints	-	High
***Hieraaetus morphnoides* – Little Eagle (Foraging)**	**v**	**-**	**Yes**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**	**Moderate**

Species	Listing Status*		Dual credit species	Sources	Species retained for further assessment	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
	BC Act	EPBC Act						
Hirundapus caudactus – White-throated Needletail	-	V	No	BAM-C	No	Habitat Constraints	-	High
***Lathamus discolor* – Swift Parrot (Foraging)**	**e**	**CE**	**Yes**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**	**Moderate**
Lophoictina isura – Square-tailed Kite (Foraging)	v	-	Yes	BAM-C	No	Habitat Constraints	-	Moderate
***Melanodryas cucullata cucullate* – Hooded Robin (south-eastern form)**	**v**	**-**	**NA**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**	**Moderate**
***Melithreptus gularis gularis* – Black-chinned Honeyeater (eastern subspecies)**	**v**	**-**	**NA**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**	**Moderate**
***Neophema pulchella* – Turquoise Parrot**	**v**	**-**	**NA**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**	**High**
***Ninox connivens* – Barking Owl (Foraging)**	**v**	**-**	**Yes**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**	**High**
***Petroica boodang* – Scarlet Robin**	**v**	**-**	**NA**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**	**Moderate**

Species	Listing Status*		Dual credit species	Sources	Species retained for further assessment	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
	BC Act	EPBC Act						
***Petroica phoenicea* – Flame Robin**	**v**	**-**	**NA**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**	**Moderate**
***Polytelis swainsonii* – Superb Parrot (Foraging)**	**v**	**V**	**Yes**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**	**Moderate**
Pomatostomus temporalis temporalis – Grey-crowned Babbler (eastern subspecies)	v	-	NA	BAM-C	No	Habitat Constraints	-	Moderate
Pteropus poliocephalus – Grey-headed Flying-fox	v	V	NA	BAM-C	No	Habitat Constraints	-	High
***Saccolaimus flaviventris* – Yellow-bellied Sheathtail-bat**	**v**	**-**	**NA**	**BAM-C**	**Yes**	**-**	**-277_High, 277_Moderate, 277_Moderate-wetland**	**High**
***Stagonopleura guttata* – Diamond Firetail**	**v**	**-**	**NA**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**	**Moderate**
***Tyto novaehollandiae* – Masked Owl (Foraging)**	**v**	**-**	**Yes**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**	**High**

* CE – Critically Endangered; E – Endangered; V – Vulnerable

Table 11: Ecosystem credit species justification for exclusion from further assessment.

Species	Reason for exclusion from further assessment	Justification**
Anthochaera phrygia – Regent Honeyeater (Foraging)	Habitat Constraints	Main habitat includes box-Ironbark woodland and riparian forests of River Sheoak. The site does have some box species but does not contain Ironbark or River Sheoak, both important in the Regent Honeyeater's habitat.
Callocephalon fimbriatum – Gang-gang Cockatoo (Foraging)	Habitat Constraints	Generally found in tall mountain forests and woodlands. Are affected by the outcompeting of forest and woodland habitat by Noisy Miners, of which there were many at this site.
Chthonicola sagittate – Speckled Warbler	Habitat Constraints	The vegetation on site would potentially support the Speckled Warbler, but they require large areas of relatively undisturbed remnant vegetation to persist. The site is not part of a big enough remnant patch and is quite disturbed and surrounded by the township of Jindera on three sides.
Circus assimilis – Spotted Harrier	Habitat Constraints	Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub land. The site does not have the required habitat for the species to persist.
Dasyurus maculatus – Spotted-tailed Quoll	Habitat Constraints	Occupy a range of habitats, however, they require den sites, which can be in hollow-bearing trees, fallen logs, other animal burrows, small caves and rock-outcrops. The site does have some of these but does not have required rock areas/caves and rock outcrops. Also the site is fragmented from core areas, and disturbed with feral predators such as cats and foxes present on site, which compete with and prey on the species.
Falco subniger – Black Falcon	Habitat Constraints	Found along tree-lined watercourses and in isolated woodlands, mainly in arid and semi-arid areas. Nest along creeks and rivers. Breeding habitat not found on site and habitat not suitable for the species.
Haliaeetus leucogaster – White bellied Sea-eagle (Foraging)	Habitat Constraints	Habitats are characterised by the presence of large areas of open water, including larger rivers, swamps, lakes and the sea. The site does have some farm dams, but these contain no fish and are not suitable for the species.
Hirundapus caudactus – White-throated Needletail	Habitat Constraints	Almost exclusively aerial. The species may be present on the rare occasion in the airspace above the site, but the site does not provide important terrestrial habitat for this species.
Lophoictina isura – Square-tailed Kite (Foraging)	Habitat Constraints	Prefer timbered watercourses, which the site does not contain.
Pomatostomus temporalis temporalis – Grey-crowned Babbler (eastern subspecies)	Habitat Constraints	Inhabits open box-gum woodlands on the slopes, and box-Cypress-pine and open box woodlands on alluvial plains. The site does not fit any of these descriptions. Also the infestation of exotic perennial grasses affects their ability to forage.
Pteropus poliocephalus – Grey-headed Flying-fox	Habitat Constraints	Roosting camps are often found in gullies, close to water, and in vegetation with a dense canopy. No roosting habitat is located within the site and there is limited foraging habitat within the site (cultivated gardens and fruit crops).

** Unless otherwise stated, habitat information is sourced from OEH (2018b)

Table 12: Flora and fauna species credit species

Species	Listing Status*		Sources	Species retained for further assessment	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
	BC Act	EPBC Act				
Acacia ausfeldii – Ausfeld's Wattle	v	-	BAM-C	No	Habitat Constraints	-
Cullen parvum – Small Scurf-pea	e	-	BAM-C	No	Habitat Constraints	-
Swainsona recta – Small Purple-pea	e	E	BAM-C	No	Habitat Constraints	-
Swainsona sericea – Silky Swainson-pea	v	-	BAM-C	No	Habitat Constraints	-
Anthochaera Phrygia – Regent Honeyeater (Breeding)	ce	CE	BAM-C	No	Habitat Constraints	-
Aprasia parapulchella – Pink-tailed Legless Lizard	v	V	BAM-C	No	Habitat Constraints	-
Burhinus grallarius – Bush Stone-curlew	e	-	BAM-C	No	Habitat Constraints	-
Callocephalon fimbriatum – Gang-gang Cockatoo (Breeding)	v	E	BAM-C	No	Habitat Constraints	-
Cercartetus nanus – Eastern Pygmy Possum	v	-	BAM-C	No	Habitat Constraints	-
Chalinolobus dwyeri – Large-eared Pied Bat	v	V	BAM-C	No	Habitat Constraints	-
Haliaeetus leucogaster – White-bellied Sea-eagle (Breeding)	v	-	BAM-C	No	Habitat Constraints	-
***Hieraaetus morphnoides* – Little Eagle (Breeding)**	**v**	**-**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**
***Lathamus discolor* – Swift Parrot (Breeding)**	**e**	**CE**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**
Lophoictinia isura – Square-tailed Kite (Breeding)	v	-	BAM-C	No	Habitat Constraints	-
***Ninox connivens* – Barking Owl (Breeding)**	**v**	**-**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**
***Petaurus norfolcensis* – Squirrel Glider**	**v**	**-**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**
Petaurus norfolcensis – Endangered population – Squirrel Glider in the Wagga Wagga Local Government Area	ep	-	BAM-C	No	Geographic Limitations	-

Species	Listing Status*		Sources	Species retained for further assessment	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
	BC Act	EPBC Act				
***Phascolarctos cinereus* – Koala**	**e**	**E**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**
***Polytelis swainsonii* – Superb Parrot (Breeding)**	**v**	**V**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**
Pteropus poliocephalus – Grey-headed Flying-fox (Breeding)	v	V	BAM-C	No	Habitat Constraints	-
***Tyto novaehollandiae* – Masked Owl (Breeding)**	**v**	**-**	**BAM-C**	**Yes**	**-**	**277_High, 277_Moderate, 277_Moderate-wetland**

* CE – Critically Endangered; E – Endangered; EP – Endangered Population; V – Vulnerable

Table 13: Species credit species justification for exclusion from further assessment

Species	Reason for exclusion from further assessment	Justification**
Acacia ausfeldii – Ausfeld's Wattle	Habitat Constraints	Associated species include *Eucalyptus albens, E. blakelyi* and *Callitris* spp., with an understorey dominated by *Cassinia* spp. and grasses. The overstorey on site is aligned with the habitat of this species, however the understorey in most sections is dominated by weeds, which outcompete the native species.
Cullen parvum – Small Scurf-pea	Habitat Constraints	Plants are found in grassland, River Red Gum woodland or box-gum woodland. The understorey on site, in most sections is dominated by weeds, which outcompete the native species.
Swainsona recta – Small Purple-pea	Habitat Constraints	Grows in association with understorey dominants that include Kangaroo Grass (*Themeda australis*), Poa tussocks (*Poa* spp.) and spear-grasses (*Austrostipa* spp.). Some of these species are present on site, however the site is highly disturbed with the understory dominated by weeds in the majority of areas.
Swainsona sericea – Silky Swainson-pea	Habitat Constraints	Found in natural temperate grassland and Snow Gum (Eucalyptus pauciflora) woodland on the Monaro and in box-gum woodland in the Southern Tablelands and South West Slopes. The site is highly disturbed with the understory dominated by weeds in most areas, which outcompete the native species.
Anthochaera phrygia – Regent Honeyeater (Foraging)	Habitat Constraints	Main habitat includes box-Ironbark woodland and riparian forests of River Sheoak. The site does have some box species but does not contain Ironbark or River Sheoak, both important in the Regent Honeyeater's habitat.
Aprasia parapulchella – Pink-tailed Legless Lizard	Habitat Constraints	Well-drained sites with rocky outcrops or scattered, partially buried rocks. Found in open woodland areas with a native-dominated grass layer, with Kangaroo Grass present. There are no slope areas with rocky outcrops within the site, and very little Kangaroo Grass. The understorey is dominated by exotic pasture grasses.
Burhinus grallarius – Bush Stone-curlew	Habitat Constraints	Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber. The groundlayer within the site is dominated by exotic pasture grasses, which form a think non-trafficable cover in some areas. Cats and foxes have also been seen on site during night surveys, which prey on this species.
Callocephalon fimbriatum – Gang-gang Cockatoo (Foraging)	Habitat Constraints	Generally found in tall mountain forests and woodlands in spring and summer and move to lower altitudes to drier more open eucalypt forests and woodlands in autumn and spring. Are affected by the outcompeting of forest and woodland habitat by Noisy Miners, of which there were many at this site.
Cercartetus nanus – Eastern Pygmy Possum	Habitat Constraints	Prefer areas with a rich shrub understorey, however can occur in grassy woodlands and the presence of Eucalypts alone is sufficient to support populations in low densities. The site does not have a rich shrub layer, which is used for feeding and cats and foxes have also been seen on site during night surveys, which prey on this species

Species	Reason for exclusion from further assessment	Justification**
Chalinolobus dwyeri – Large-eared Pied Bat	Habitat Constraints	Roosts in caves, cliff crevices, old mine workings and in disused fairy martin nests. Not suitable roosting habitat on site.
Haliaeetus leucogaster – White bellied Sea-eagle (Foraging)	Habitat Constraints	Habitats are characterised by the presence of large areas of open water, including larger rivers, swamps, lakes and the sea. The site does have some farm dams on site, but these are not suitable for the species.
Lophoictina isura – Square-tailed Kite (Foraging)	Habitat Constraints	Prefer timbered watercourses, which the site does not have.
Petaurus norfolcensis – Endangered population – Squirrel Glider in the Wagga Wagga Local Government Area	Geographic Limitations	Not the right LGA.
Pteropus poliocephalus – Grey-headed Flying-fox	Habitat Constraints	Roosting camps are often found in gullies, close to water, and in vegetation with a dense canopy. No roosting habitat within the site and not foraging habitat within the site (cultivated gardens and fruit crops)

5.2 Presence of Candidate Species Credit Species

From **Table 14,** the species which were retained for further assessment are then categorised as candidate species credit species. The assessor must then determine whether each remaining candidate species credit species is present on the site. This can be done a few different ways:

- Assume the species is present;
- Conduct targeted field threatened species surveys;
- Obtain an expert report that shows whether a species is present or not present within the site; or
- for candidate species including dual credit species, where the TBDC indicates that an important habitat map identifies the species credit component, the assessor must confirm whether the subject land is within an area identified on the important habitat map.

Table 14: Determining the presence of candidate fauna species credit species within the site

Species	Listing status*		Method used to determine presence	Present?	Further assessment required?
	BC Act	EPBC			
Hieraaetus morphnoides, **Little Eagle**	v	-	Targeted survey	No	No
Lathamus discolor, **Swift Parrot**	e	CE	Targeted survey	No	No
Ninox connivens, **Barking Owl**	v	-	Targeted survey	No	No
Petaurus norfolcensis, **Squirrel Glider**	v	-	Targeted survey	No	No
Phascolarctos cinereus, **Koala**	e	E	Targeted survey	No	No
Polytelis swainsonii, **Superb Parrot**	v	V	Targeted survey	No	No
Tyto novaehollandiae, **Masked Owl**	v	-	Targeted survey	No	No

* CE – Critically Endangered; E – Endangered; V – Vulnerable

** Unless otherwise stated, habitat information is sourced from OEH (2018)

5.3 Threatened Species Surveys

5.3.1 Flora

No candidate flora species were identified by the assessors or the BAM-C. Additionally, vegetation surveys and habitat assessments undertaken on the 9th January 2023 and 2nd November 2023, found no suitable habitat for the species credit species, further justifying their absence from the candidate species list. No threatened flora species were recorded on the subject land despite considerable survey time allotted to searching for threatened flora.

5.3.2 Fauna

Targeted surveys for candidate threatened fauna species were conducted following modelled results from the BAM-C. All fauna surveys were conducted by Damian Wall, Breanna Fisher, Olivia Hynam, Patrick Newman and Charley Schultz (All from Red-Gum Environmental Consulting). Survey effort was guided by the NSW Threatened Biodiversity Survey and Assessment Guidelines, and documents such as; Survey Guidelines for Australia's Threatened Birds (2010), Survey Guidelines for Australia's Threatened Mammals (2004), The Department of Sustainability and Environment Approved Survey Standards: Masked Owl *Tyto novaehollandiae* (2011), Koala (*Phascolarctos cinereus*): Biodiversity Assessment Method Survey Guide (2022); and 'Species Credit' Threatened Bats and Their Habitats: NSW Survey Guide for the Biodiversity Assessment Method (2018).

For a more in-depth description of the methods used for the targeted surveys and the locations of where these surveys were undertaken, please refer back to **Section 2.4.3**, **Table 1**, **Table 2** and **Figure 7**. No threatened fauna species were recorded during the survey effort.

Table 15: Threatened species surveys for candidate fauna species on the subject land

Species	Threatened fauna species surveys				Present	Further assessment required
	Survey method	Timing of survey –within recommended period?		Effort (hours & no. people)		
Hieraaetus morphnoides **Little Eagle**	- Area search - Point Count	☒Yes 20/09/2022 21/09/2022 20/10/2022	☐No	2 People 4 Hrs	Breanna Fisher, Damian Wall	No
Lathamus discolor **Swift Parrot**	- Area search - Point Count	☒Yes (No survey period recommended) 20/09/2022 21/09/2022 02/08/2023 09/08/2023	☐No	2 People 4 Hrs	Breanna Fisher, Damian Wall	No
Ninox connivens **Barking Owl**	- Broadcast surveys	☒Yes 20/09/2022 02/08/2023 09/08/2023	☐No	2 People 5 Hrs	Patrick Newman, Damian Wall	No
Petaurus norfolcensis **Squirrel Glider**	- Spotlighting	☒Yes 20/09/2022 02/08/2023 09/08/2023	☐No	2 People 5 Hrs	Charley Schultz, Damian Wall	No
Phascolarctos cinereus **Koala**	- Spotlighting	☒Yes 20/09/2022 02/08/2023 09/08/2023	☐No	2 People 5 Hrs	Olivia Hynam, Damian Wall	No
Polytelis swainsonii **Superb Parrot**	- Area search - Point Count	☒Yes 20/09/2022 21/09/2022 20/10/2022 03/11/2023	☐No	2 People 4 Hrs	Breanna Fisher, Damian Wall	No
Tyto novaehollandiae **Masked Owl**	- Broadcast surveys	☒Yes 20/09/2022	☐No	2 People 5 Hrs	Patrick Newman, Damian Wall	No

5.4 Impact Assessments for Surveyed Threatened Species

5.4.1 EPBC Listed Species

Swift Parrot

Targeted surveys were conducted for Swift Parrot, however despite this, no observations of this species were made on or in proximity to the subject land. It is recommended that works are undertaken either outside of the season when Swift Parrots are on the mainland (Winter), or if Swift Parrots are identified within the subject land during construction, all construction within 200 metres of the birds will be halted until the birds move on from the area. A Significant Impact Criteria (SIC) assessment has been produced for this species and is available in **Appendix G**. Based on this assessment, and provided recommendations are followed, the proposed development will be unlikely to have a significant impact on Swift Parrot at the local, regional or national scale.

Sloane's Froglet

Targeted surveys were conducted for Sloane's Froglet, however despite this, no observations of this species were made on or within proximity to the subject land. A Significant Impact Criteria (SIC) assessment has been produced for this species and is available in **Appendix G**. Based on this assessment, the proposed development will be unlikely to have a significant impact on Sloane's Froglet at the local, regional or national scale.

Painted Honeyeater

Targeted surveys were conducted for Painted Honeyeater, however despite this, no observations of this species were made on or in proximity to the subject land. If Painted Honeyeaters are identified within the subject land during construction, all construction within 200 metres of the birds will be halted until the birds leave the area, or if breeding, until fledgling chicks leave the nest. A Significant Impact Criteria (SIC) assessment has been produced for this species and is available in **Appendix G**. Based on this assessment, the proposed development will be unlikely to have a significant impact on Painted Honeyeater at the local, regional or national scale.

Southern Bell Frog

Targeted surveys were conducted for Southern Bell Frog, and no observations of this species were made on or in proximity to the subject land. If Southern Bell Frog and located on the subject land, construction must cease until the specimens can be captured and relocated to a nearby suitable habitat. A Significant Impact Criteria (SIC) assessment has been produced for this species and is available in **Appendix G**. Based on this assessment, the proposed development will be unlikely to have a significant impact on Southern Bell Frog at the local, regional or national scale.

Rainbow Bee-eater

Targeted surveys were conducted for Rainbow Bee-eater, however despite this, no observations of this species were made on or in proximity to the subject land and there was no evidence of them breeding (burrows/nests) in creek banks. If Rainbow Bee-eaters are identified within the subject land during construction, all construction within 200 metres of the birds will be halted until the birds leave the area, or if breeding, until fledgling chicks leave the nest. A Significant Impact Criteria (SIC) assessment has been produced for this species and is available in **Appendix G**. Based on this assessment, the proposed development will be unlikely to have a significant impact on Rainbow Bee-eater at the local, regional or national scale.

5.4.2 BC Act Listed Species

Sloanes Froglet

See above **Section 5.4.1**.

Southern Bell Frog

See above **Section 5.4.1**.

Dusky Woodswallow

Targeted surveys were conducted for Dusky Woodswallow, and no observations of this species were made on or in proximity to the subject land. In the event that Dusky Woodswallow are identified within the subject land during construction, all construction within 200 metres of the birds will be halted until the birds leave the area, or if breeding, until fledgling chicks leave the nest. A Significant Impact Criteria (SIC) assessment is not required for this species, as it is only listed under the BC Act. However, based on the extent of the proposed development and measures in place to minimise impacts, the proposed development will be unlikely to have a significant impact on Dusky Woodswallow at the local, regional or national scale.

Scarlet Robin

Targeted surveys were conducted for Scarlet Robin, however despite this, no observations of this species were made on or in proximity to the subject land. In the event that Scarlet Robin are identified within the subject land during construction, all construction within 200 metres of the birds will be halted until the birds leave the area, or if breeding, until fledgling chicks leave the nest. A Significant Impact Criteria (SIC) assessment is not required for this species, as it is only listed under the BC Act. However, based on the extent of the proposed development and measures in place to minimise impacts, the proposed development will be unlikely to have a significant impact on Scarlet Robin at the local, regional or national scale.

Diamond Firetail

Targeted surveys were conducted for Diamond Firetail, however despite this, no observations of this species were made on or in proximity to the subject land. In the event that Diamond Firetail are identified within the subject land during construction, all construction within 200 metres of the birds will be halted until the birds leave the area, or if breeding, until fledgling chicks leave the nest. A Significant Impact Criteria (SIC) assessment is not required for this species, as it is only listed under the BC Act. However, based on the extent of the proposed development and measures in place to minimise impacts, the proposed development will be unlikely to have a significant impact on Diamond Firetail at the local, regional or national scale.

Flame Robin

Targeted surveys were conducted for Flame Robin, however despite this, no observations of this species were made on or in proximity to the subject land. In the event that Flame Robin are identified within the subject land during construction, all construction within 200 metres of the birds will be halted until the birds leave the area, or if breeding, until fledgling chicks leave the nest. A Significant Impact Criteria (SIC) assessment is not required for this species, as it is only listed under the BC Act. However, based on the extent of the proposed development and measures in place to minimise impacts, the proposed development will be unlikely to have a significant impact on Flame Robin at the local, regional or national scale.

Swift Parrot

See above **Section 5.4.1**.

Little Eagle

Targeted surveys were conducted for Little Eagle, however no observations of this species were made on or in proximity to the subject land. If the Little Eagle are identified within the subject land during construction, all construction within 200 metres of the birds will be halted until the birds leave the area, or if breeding, until fledgling chicks leave the nest. A Significant Impact Criteria (SIC) assessment is not required for this species, as it is only listed under the BC Act. However, based on the extent of the proposed development and measures in place to minimise impacts, the proposed development will be unlikely to have a significant impact on Little Eagle at the local, regional or national scale.

5.4.3 Summary of Fauna Review

The results of these desktop assessments, assessments of the site and previous knowledge accumulated over 25 years of working in the Albury-Wodonga region, determined that targeted surveys are required for ten (10) threatened species that were considered as having a likelihood rating of 'potential' or higher. In addition to these surveys, targeted surveys were also considered required for BAM-C generated *candidate species* and those include the Barking Owl (*Ninox connivens*), Squirrel Glider (*Petaurus norfolcensis*), Koala (*Phascolarctos cinereus*), Superb Parrot (*Polytelis swainsonii*) and Masked Owl (*Tyto novaehollandiae*), as well as the following species which were also identified in the likelihood assessment as requiring surveys, Little Eagle (*Hieraaetus morphnoides*) and Swift Parrot (*Lathamus discolor*),

5.4.4 Habitat Constraints Assessment

Field surveys and assessments were undertaken during preparation for this BDAR. During these assessments, the proposed site was walked and assessed for faunal habitat constraints and microhabitats that may be on site. Some microhabitats, such as fallen branches, native grasslands, creeks, farm dams, pooled water, hollow bearing trees and stags were present on site.

In terms of habitat constraints that may affect the presence of threatened fauna species, the site is part of a small patch of vegetation, connected to other vegetated areas only through roadside vegetation corridors. The site is surrounded by agricultural land to the west, the town of Jindera and new development areas to the north, east and south, and the subject land has been subjected to many forms of anthropogenic disturbance which has impacted the faunal habitats present, and meant some faunal habitats are no longer present.

5.5 Expert Reports

No expert reports were considered relevant or used in place of threatened species surveys.

5.6 Area or Count - Location of Suitable Habitat for a Species Credit Species

No flora or fauna candidate species credit species were either assumed present or determined to be present.

6 Identifying Prescribed Impacts

Table 16: 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, that are at risk of vehicle strike
Karst, caves, crevices, cliffs, rocks or other geological features of significance	☐Yes / ☒No	NA	NA
Human-made structures	☐Yes / ☒No	NA	NA
Non-native vegetation	☒Yes / ☐No	1.06 ha of exotic pasture is located within the north western corner of the site, and higher amounts of exotic vegetation are located within vegetation zone 2 (moderate condition).	None
Habitat connectivity	☒Yes / ☐No	There is habitat connectivity within the 10.7 ha patch that the site is part of and also habitat connectivity via vegetation corridors along waterways and roads.	None
Waterbodies, water quality and hydrological processes	☒Yes / ☐No	There are two farm dams located within the site and a constructed drainage channel that runs along Jindera Street	None
Wind turbine strikes (wind farm development only)	☐Yes / ☒No	NA	NA
Vehicle strikes	☐Yes / ☒No	NA	NA

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 development has been confined to the east edge of the allotment in an attempt to minimise the impacts to the wider patch of BGW that extends to the west. All efforts to clearly delineate the site before clearing commences will minimise the prescribed impacts. Originally the site development plan included the drain that runs parallel to the western side of Jindera Street, along the eastern part of the subject land, but due to the high density of trees along that drain, the site boundary was moved west to minimise tree impacts (**Figure 11**).

7.1.2 Project Design

The project will see the loss of 2.82 hectares of the 2.97 hectares of native vegetation present on site. However, changes in the original development plan have allowed for the minimisation of some native vegetation losses. These avoid and minimise measures are outlined below:

- The whole site has been moved west, in order to avoid all the trees located along the drain along the western side of Jindera Street (**Figure 11**). This section contains many large hollow-bearing trees, as well as many smaller trees.
- Instead of each block having a driveway off Jindera Street, a street will be developed within the site, providing internal access to each site. This street will run parallel to Jindera Street, and will have two access points to Jindera Street which will occur in natural breaks in the native vegetation.
- Not all vegetation is going to be cleared. A reserve, 0.15 hectares in size will be developed, with the vegetation in that reserve being retained, and also five trees within lots 14, 13, 9 and 1 will also be retained.
- The southern-most section of the original development plan will no longer be developed, greatly reducing the amount of native vegetation to be removed and helping to protect some of the highest value vegetation in the site (**Figure 11**).
- Many trees located within the drainage channel will be retained. The drainage channel section will all be offset, but despite this, efforts have been made to save approximately half of the trees in this area, and they will be retained.

7.2 Avoid and Minimise Prescribed Impacts

7.2.1 Project Location

The location of the clearing site (being part of a larger patch of similar value connected native vegetation), lends itself to having impacts to threatened fauna somewhat buffered by the surrounding landscape. That is, with properly implemented pre-clearing protocols that are initiated outside of breeding or fledgling seasons, the highly mobile affected species may be able to seek refuge in neighbouring habitats immediately adjacent to the development site.

7.2.2 Project Design

See **Section 7.1.2**. The current narrow development design and intended development footprint offers little opportunity to include supplementary corridors or refuge islands within the site to avoid or minimise the identified prescribed impacts. However, with the creation of the reserve, the retention of some of the trees within the proposed lots and the retention of approximately half the vegetation along the western side of Jindera Street, with will help with vegetation and habitat connectivity. Additionally, though the two farm dams will be filled in, the drainage line on the western side of Jindera Street, which was originally proposed to be filled in, is now outside of the development boundary, with only two roads being built over it in existing clear areas, to provide for site access.

7.3 Other Measures Considered

It is recommended that nest boxes be installed along the creek next to Jindera Street and within the reserve, to reduce the habitat losses for hollow-dependant species. Hollows should be of various sizes to suit a range of hollow-dependant birds and mammals.

7.4 Summary Of Measures to Avoid and Minimise Impacts

The following measures will become part of the Construction Environmental Management Plan (CEMP) for the project post approval.

Table 17: Avoidance and minimisation measures for direct, indirect and prescribed impacts

Action	Outcome	Timing	Responsibility
Clearly delineate site	This will avoid the risk of other areas being unnecessarily impacted, such as the remnant vegetation in the reserve, along the drain to the east of the site and the remnant vegetation west of the site.	Before and during development	Contractor
Clearly mark vegetation for retention and removal	This will avoid the confusion about what vegetation is to be cleared and will ensure that only approved losses are affected by the works.	Before development	Contractor
Large hollow-bearing trees to be removed will follow pre-clearance protocols	Any large trees to be removed, need to be shaken before they are removed, so as to encourage any species living there to evacuate. This will ensure that minimal impact on species will occur. A qualified ecologist, wildlife handler or rescuer must be present to ensure displaced or injured wildlife are treated appropriately (released or taken into care).	Before development	Contractor and qualified wildlife handler/rescuer
Ecologist	A suitably qualified ecologist is on site during the clearing stage to ensure species are not impacted, or to help re-locate any species seen on site or within removed trees.	During	Contractor

Figure 11: Subject Land boundary compared to the original footprint.

8 Impact Assessment

8.1 Residual Direct Impacts

Impacts to native vegetation are anticipated through the direct clearing of 2.82 hectares of native vegetation within the subject land (**Figure 12**). The direct clearing and subsequent development of the subject land would represent a *long-term* impact, or permanent loss, of this native vegetation and habitat.

Table 18: Summary of residual direct impacts

Direct impact	BC Act status	EPBC Act status	SAII entity	Project phase	Extent
Clearing of PCT 277	Critically Endangered	N/A Does not qualify	No	Construction	2.82 ha

Figure 12: Extent of native vegetation losses in the site (2.82 hectares)

8.1.1 Change in Vegetation Integrity Score

Table 19: Impacts to vegetation integrity

Vegetation zone	PCT ID	Management zone	Area (ha)	Before development				After development				Change
				Composition	Structure	Function	VI score	Composition	Structure	Function	VI score	Change in VI score
1	PCT 277	277_High	0.42	49	87.9	42.8	**56.9**	0	0	0	**0**	**-56.9**
2	PCT 277	277_Moderate	2.1	10.3	33.1	45.2	**24.9**	0	0	0	**0**	**-24.9**
3	PCT 277	277_Moderate-wetland	0.28	33.9	53.6	30.3	**38.1**	0	0	0	**0**	**-38.1**

8.2 Indirect Impacts

It is difficult to quantify indirect impacts associated with the project, but these may include impacts such as noise and/or erosion and sedimentation associated with the construction phase of the project. The subject land is within a defined residential context (adjacent to existing residential infrastructure) and it is considered unlikely to have inadvertent impacts on adjacent areas of native vegetation and habitat if all construction mitigation measures (pre, during and post construction) are implemented.

Given the modified nature of the subject land and broader locality, and its proximity to urban areas, the project is considered unlikely to reduce the viability of any adjacent native vegetation or habitat due to edge effects, noise, dust, or light spill, or cause significant disturbance to breeding habitats.

Changes to the drainage and hydrology of the subject land may have an impact on downstream habitats. Measures to mitigate and manage indirect impacts are discussed in **Section 8.4.**

Table 20: Summary of indirect impacts

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase	Likelihood & consequences
Changes to hydrology in informal drain	Bowna Creek	Downstream of Jindera	Flood events	Short term	Post	Localised increase in high-intensity creek flows

8.3 Prescribed Biodiversity Impacts

Section 6 identified a single prescribed biodiversity impact that is likely to have an effect on threatened species which may be using the site (Refer to **Table 16)**:

- Habitat connectivity: There is habitat connectivity within the 10.7 hectare patch that the site is part of and also habitat connectivity via vegetation corridors along local waterways and roads.

8.4 Mitigating Impacts

To minimise the impact of the development on the identified threatened fauna, the footprint of the site will be clearly marked to not impact any further vegetation outside of that which has been allowed and factored into offsets. Several measures will be implemented to reduce impacts where possible, such as appropriate pre-clearance protocols, habitat augmentation and a project CEMP. Details are provided below.

8.4.1 Pre-clearance Protocols

Several non-threatened fauna species such as birds, arboreal mammals and amphibians are likely to be present at the development site. Appropriate pre-clearance protocols will be put in place at the time of construction to avoid and mitigate any potential harm or injury to these individuals. These protocols will include, as a minimum, pre-clearance surveys and soft-felling techniques, as well as clearing supervision by an ecologist where habitat trees are being removed. These measures should be included as a component of the CEMP.

8.4.2 Habitat Augmentation and Monitoring – Pre-Clearance Protocols

Larger trees with hollows will be felled in accordance with the following procedures:

- Prior to felling of the identified trees, the trees will be shaken or nudged by tree felling equipment to encourage any fauna to vacate the trees;
- If no animals emerge from the hollows after shaking or nudging, then the tree will be felled and lowered to the ground if possible;
- If an animal emerges from a hollow following shaking or nudging of the tree, then at least 30 minutes will be allowed for the animal to leave the tree. If the animal comes to the ground, or when it is on the lower trunk, attempts will be made to capture the animal using a net. Captured animals will be immediately transferred to a suitably sized cotton bag and checked for obvious injury during the transfer process;
- Captured animals will be placed in individual bags unless they are a family group to which separation would risk the survival of the young (i.e. lactating female with young);
- Once the tree has been felled, a search will be made of the branches around the tree for any fleeing fauna and hollows should be inspected with a torch for the presence of any animals. Attempts will be made to capture any fleeing fauna with a net, and animals inside hollows should be extracted by hand. Captured animals will be immediately transferred to a suitably sized cotton bag and checked for obvious injury during the transfer process;
- Injured, shocked or immature captured animals will be placed in a cotton bag secured at the top. Bags will be wrapped in appropriate insulating material such as blankets and placed in a quiet, warm and preferably dark place until the wildlife carer can collect them. Details on the location of the capture and proposed release areas will be provided to the wildlife carer; and
- Uninjured animals will be released in appropriate habitat as soon as practicable (at night for nocturnal species).

8.4.3 Construction Environmental Management Plan (CEMP)

To avoid potential indirect offsite impact during construction, an appropriate erosion and sedimentation control plan should be in place following best practice protocols such as Landcom (2004). It is recommended that this is included in a site CEMP, prior to any construction works taking place.

The CEMP will be required to span the pre, during and post-construction period, and will include the above pre-clearance and fauna management protocols.

8.4.4 Land Stability

There is likely to be mobilisation of some soil given the nature of the proposal (construction). Mitigation measures are to extend (but not be limited to) the following:

- An Erosion and Sedimentation Control Plan (ESCP) developed and progressively implemented.
- Vehicle movements around the site will be restricted to clear areas and away from any existing trees, and flagging exclusion fencing is to be installed.
- When rain is predicted, an assessment will be made prior to works beginning. If heavy rain is predicted, work will not commence.

- No stockpiles will be established on or under native vegetation in any area on site or in within the subject land.
- Maintenance and checking of the ESCP erosion and sedimentation controls will need to be undertaken on a regular basis. Sediment will be cleared from behind barriers on a regular basis and all controls will be managed in order to keep controls working effectively at all times.

Rehabilitation of any disturbed areas should be completed as soon as possible after completion of works, where practical to do so.

8.4.5 Noxious Weeds

The movement of vehicles, plant, equipment and people on and off the subject site has the potential to introduce noxious weeds to the area. The area is also impacted by numerous exotic weed species. Wherever possible, removal of weeds should be undertaken prior to seed developing, which for most species occurs during the warmer months (i.e. late spring and summer). Additionally, the following strategies are to apply to weed management within the site:

- Minimal impact techniques are to be used, ensuring no native species are damaged during weed control activities.
- Soil disturbance by vehicle and pedestrian access is to be kept to a minimum outside the construction footprint.
- Herbicide application is to be administered by authorised personnel only (e.g. ChemCert Accreditation – AQF 3), in accordance with the directions on the container (application rates, MSDS requirements) and any applicable Workcover requirements.
- All machinery used within the site is to be thoroughly cleaned by removing all plant material, dust or soil, and any accumulation of grease from the machine prior to the commencement of the construction.
- Any weeds removed (particularly those bearing seeds) are to be disposed of appropriately at the nearest waste management facility.
- If required, only topsoil from areas with no noxious or highly invasive weed species should be re-used in rehabilitation (it is generally assumed that if there is no evidence of noxious or invasive weeds in an area, the topsoil in this area is not contaminated with the seeds of such weeds).

8.5 Adaptive Management for Uncertain Impacts

Excluding the need for a CEMP, no additional adaptive management measures are proposed.

9 Serious and Irreversible Impacts

Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (PCT 277) has not been identified as an SAII entity in the *Guidance to assist a decision-maker to determine a serious and irreversible impact* (OEH 2017b) or within the BioNet database as entities at risk of a serious and irreversible impact.

10 Impact Summary

10.1 Determine an Offset Requirement for Impacts

10.1.1 Impacts on Native Vegetation And Tecs (Ecosystems Credits)

The ecosystem credits required to offset the proposal are provided in **Table 21**. A total of fifty-five (55) credits are required to offset the development. Impacts associated with PCT 277 will require offset under the BAM. Impacts are equivalent to impacts on ecosystem credits **Table 21**.

Table 21: 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	Credits required
1	Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (PCT 277)	Box gum woodland	0.42	56.9	0	-56.9	2.50	15
2	Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (PCT 277)	Box gum woodland	2.1	24.9	0	-24.9	2.50	33
3	Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (PCT 277)	Box gum woodland	0.28	38.1	0	-38.1	2.50	7
							Total credits	**55**

The following offset rules apply:

For credit class 277:

- Western Slopes Grassy Woodlands. This includes:
    - PCT's: 201, 266, 276, 277, 282, 283, 337, 426, 441, 483, 847; OR
    - Grassy Woodlands Tier 1 (Variation option)
- Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi; or
- Any IBRA subregion that is within 100 kilometres of the outer edge of the impacted site.

10.1.2 Impacts on Threatened Species and Their Habitat (Species Credits)

No impacts on threatened species (species credits) were identified that require an offset.

10.2 Impacts that Do Not Need Further Assessment

Nil.

Figure 13: Thresholds for assessing and offsetting impacts.

11 Biodiversity Credit Report

11.1 Ecosystem Credits

Table 22: Ecosystem credit class and credit profile

Veg zone	Plant community type	Condition class	Associated TEC	IBRA Subregion	Offset trading group	Area impacted (ha)	Hollow bearing trees present?	Credits rqd
1	Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (PCT 277)	High	Box gum Woodland	Lower Slopes	WB/YB/RG derived grassland*	0.42	Yes	11
2	Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (PCT 277)	Moderate	Box gum Woodland	Lower Slopes	WB/YB/RG derived grassland*	2.1	Yes	33
3	Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (PCT 277)	Moderate-wetland	Box gum Woodland	Lower Slopes	WB/YB/RG derived grassland*	0.28	Yes	7
Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (PCT 277)								55
Total credits required								55

*White Box Yellow Box Blakely's Red Gum Woodland and Derived Native Grassland

12 References

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13 Appendix

Appendix A: Biodiversity Values Map and Threshold Tool Report

NSW GOVERNMENT Department of Planning and Environment

Biodiversity Values Map and Threshold Report

This report is generated using the Biodiversity Values Map and Threshold (BMAT) tool. The BMAT tool is used by proponents to supply evidence to a consent authority to determine whether or not a Biodiversity Development Assessment Report (BDAR) is required under the Biodiversity Conservation Regulation 2017 (Cl. 7.2 & 7.3).

The report provides results for the proposed development footprint area identified by the user and displayed within the blue boundary on the map.

There are two pathways for determining whether or not a BDAR is required for the proposed development:

1. Is there Biodiversity Values Mapping?
2. Is the 'clearing of native vegetation area threshold' exceeded?

Biodiversity Values Map and Threshold Report

Date of Report Generation		21/11/2023 4:21 PM
Biodiversity Values (BV) Map Threshold - Results Summary		
1	**Does the development Footprint intersect with BV mapping?**	no
2	**Was ALL of the BV Mapping within the development footprinted added in the last 90 days?** (dark purple mapping only, no light purple mapping present)	no
3	**Date of expiry of dark purple 90 day mapping***	N/A
4	**Is the Biodiversity Values Map threshold exceeded?**	no
Area Clearing Threshold - Results Summary		
5	**Size of the development or clearing footprint**	41,305.9 sqm
6	**Native Vegetation Area Clearing Estimate (NVACE)**	30,367.7 sqm
7	**Method for determining Minimum Lot Size**	LEP
8	**Minimum Lot Size** (10,000sqm = 1ha)	600 sqm
9	**Area Clearing Threshold** (10,000sqm = 1ha)	2,500 sqm
10	**Is the Area Clearing Threshold exceeded?**	yes
Is the proposed development assessed above the Biodiversity Offsets Schema (BOS) threshold? Exceeding the BOS threshold will require completion of a Biodiversity Development Assessment Report (BDAR). More details provided on page 2.		**yes**

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NSW GOVERNMENT Department of Planning and Environment

What do I do with this report?

- If the result above indicates a BDAR is required, a Biodiversity Development Assessment Report **may be required** with your development application. Go to https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor to access a list of accredited assessors. An accredited assessor can apply the Biodiversity Assessment Method and prepare a **BDAR**.

- If the result above indicates a BDAR is not required, you have not exceeded the BOS threshold. This report can be provided to Council to support your development application. You may still require a permit from your local council. Review the development control plan and consult with council. You may still be required to assess whether the development is "'likely to significantly affect threatened species" as determined under the test in Section 7.3 of the Biodiversity Conservation Act 2016. You may also be required to review the area where no vegetation mapping is available.

- If all Biodiversity Values mapping within your development footprint are less than 90 days old, i.e. mapping is displayed as dark purple on the map, a BDAR may not be required if your Development Application is submitted within that 90 day period. *Any BV mapping less than 90 days old on this report will expire on the date provided in Line item 3 above.

For more detailed advice about actions required, refer to the **Interpreting the evaluation report** section of the Biodiversity Values Map Threshold Tool User Guide.

Review Options:

- If you believe the Biodiversity Values mapping is incorrect please refer to our BV Map Review webpage for further information.

- If you disagree with the NVACE result for Line Item 6 above (i.e. area of Native Vegetation within the Development footprint proposed to be cleared) you can undertake a self-assessment. For more information about this refer to the **Guide for reviewing BMAT Tool area clearing threshold results**.

Acknowledgement

I, as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature:_____ Date:_____

Typing your name in the signature field will be considered as your signature for the purposes of this form

21/11/2023 04:21 PM

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Biodiversity Values Map

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days
- Native Vegetation Area Clearing Estimate (NVACE)
- Development area selected by proponent

21/11/2023 04:21 PM

The results provided in this tool are generated using the best available mapping and knowledge of species habitat requirements.

This map is valid as at the date the report was generated. Checking the Biodiversity Values Map viewer for mapping updates is recommended.

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Appendix B: Flora Observed in BAM Plots

Scientific name	Common name	Native or Exotic	Growth form	% Foliage Cover					High Threat Weed
				BAM1	BAM2	BAM3	BAM4	BAM 5	
Eucalyptus blakelyi	Blakely's Red Gum	Native	Tree	25	30	40	1	35	
Eucalypus melliodora	Yellow Box	Native	Tree	15	2				
Eucalyptus bridgesiana	Apple Box	Native	Tree					1	
Eucalyptus albens	White Box	Native	Tree		1				
Acacia dealbata	Silver Wattle	Native	Shrub					0.5	
Microlaena stipoides	Weeping Grass	Native	Grass	20	5			1	
Lomandra nana	Pale Mat-rush	Native	Grass	0.1					
Lomandra filiformis	Wattle Mat-rush	Native	Grass	0.1					
Carex tereticaulis	Basket Sedge	Native	Grass				5		
Carex breviculmis	Grass Sedge	Native	Grass				1		
Carex appressa.	Tall Sedge	Native	Grass	1					
Juncus subsecundus	Finger Rush	Native	Grass				8		
Eleocharis acuta	Common Spike-rush	Native	Grass				4		
Austrostipa aristiglumis	Plains Spear Grass	Native	Grass	5					
Austrostipa nodosa	Kneed Spear Grass	Native	Grass	3					
Austrostipa sp. 2	A Spear Grass	Native	Grass	3					
Austrostipa sp. 3	A Spear Grass	Native	Grass	3					
Rytidosperma fulvum	Copper-awned Wallaby-grass	Native	Grass	5					
Rytidosperma sp. 1	Wallaby Grass	Native	Grass	5			8		
Rytidosperma sp. 2	Wallaby Grass	Native	Grass				✓		
Aira Sp.	Air Grass	Native	Grass	0.01					
Bothriochloa macra	Red-leg Grass	Native	Grass	1					
Tricoryne elatior	Star Lily/ Yellow Rush-lily	Native	Forb	0.01					
Hypericum gramineum	Native St John's Wort	Native	Forb	0.05					

Scientific name	Common name	Native or Exotic	Growth form	% Foliage Cover					High Threat Weed
				BAM1	BAM2	BAM3	BAM4	BAM 5	
Crassula Sp.	Crassula	Native	Forb	0.01					
Persicaria decipiens	Slender Knotweed	Native	Forb				0.5		
Fraxinus angustifolia	Desert Ash	Exotic				5			Yes
Ligustrum lucidum	Large Leaf Privet	Exotic			0.5	1		25	Yes
Ligustrum sinense	Chinese privet	Exotic		1	0.5				Yes
Fraxinus angustifolia	Desert Ash	Exotic #			3				Yes
Ficus carica	Fig	Exotic						2	Yes
Thuja occidentalis	White Cedar	Exotic						1	Yes
Celtis australis	European Hackberry	Exotic						15	Yes
Prunus sp.	Prunus sp.	Exotic						15	Yes
Olea europaea	Olive Tree	Exotic						0.5	Yes
Rosa rubiginosa	Sweet-Briar Rose	Exotic				✓		0.5	Yes
Hypericum perforatum	St John's Wort	Exotic		0.5			0.5		Yes
Oxalis pes-capre	Sour-sob	Exotic			0.5		0.1	✓	Yes
Cirsium vulgare	Spear Thistle	Exotic		1	1				Yes
Rumex crispus	Curly Dock	Exotic			0.5	✓	✓		Yes
Taraxacum officinale	Common Dandelion	Exotic		10	4	✓	✓		
Trifolium sp.	Clover	Exotic					✓		
Hypochoeris radicata	Cat's Ear	Exotic		1					
Plantago lanceolata	Ribwort	Exotic		0.5	5	✓	✓		
Galium aparine	Cleavers	Exotic			1			✓	
Sonchus sp.	Sow Thistle	Exotic			1	✓	✓	✓	
Solanum nigrum	Black Nightshade	Exotic						✓	
Cyperus eragrostis	Drain Flat-sedge	Exotic					✓		
Cerastium fontanum	Mouse-ear Chickweed	Exotic					✓		
Vinca major	Blue Periwinkle	Exotic						✓	

Appendix C: Incidental Flora List Accumulated for All Site Visits

Scientific Name	Common Name	Status	Conservation Status
Acacia dealbata	Silver Wattle		
Acacia paradoxa	Hedge Wattle		
Acer negundo	Box Elder	*	
Acetosella vulgaris	Sheep Sorrel	*	
Aira sp.	Air Grass	*	
Amphibromus nervosus	Common Swamp Wallaby-grass		
Austrostipa aristiglumis	Plains Spear-grass		
Austrostipa nodosa	Kneed Wallaby Grass		
Austrostipa sp 1	Spear Grass		
Austrostipa sp 2	Spear Grass		
Avena fatua	Wild Oats	*	
Bothriochloa macra	Red-leg Grass		
Brachychiton populneus	Kurrajong		
Brachypodium sylvaticum	False Brome	*	
Briza maxima	Large Quaking Grass	*	
Briza minor	Quaking Grass	*	
Bromus catharticus	Prairie Grass	*	
Bromus diandrus	Great Brome	*	
Bromus hordeaceous	Soft Brome	*	
Calendula arctotheca	Capeweed	*	
Carex appressa	Tall Sedge		
Carex breviculmis	Grass Sedge		
Carex tereticaulis	Basket Sedge		
Celtis australis	Nettle Tree / Hackberry	*	
Cerastium fontanum	Mouse-ear Chcikweed	*	
Cirsium vulgare	Spear Thistle	*	
Crassula sp.	Crassula		
Cynodon dactylon var. dactylon	Couch Grass	*	
Cyperus eragostis	Drain Flat-sedge	*	
Dactylis glomerata	Cocksfoot	*	
Ehrharta erecta	Panic Veldt Grass	*	
Ehrharta longiflora	Annual Veldt Grass	*	
Eleocharis acuta	Spike rush		
Eleocharis sphacelata	Tall Spike Rush		
Eragrostis sp.	Love-grass	*	
Erigeron sumatrensis	Tall Fleabane	*	
Eucalyptus albens	White Box		
Eucalyptus blakelyi	Blakely's Red-gum		
Eucalyptus bridgesiana	Apple Box		
Eucalyptus melliodora	Yellow Box		
Ficus carica	Fig tree	*	
Fraxinus angustifolia	Desert Ash	*	
Fumaria bastardii	Bastard's Fumitory	*	
Gallium aparine	Clearvers	*	
Geranium sp.	Disected Geranium	*	

Scientific Name	Common Name	Status	Conservation Status
Grevillea robusta	Silky Oak	#	
Holcus lanatus	Yorkshire Fog	*	
Hypericum gramineum	Native St Johns		
Hypericum perforatum	St Johns Wort	*	
Hypochaeris glabra	Smooth Cat's Ear	*	
Hypochaeris radicata	Cat's Ear	*	
Juncus bufonus	Toad Rush	#	
Juncus subsecundus	Finger Rush		
Lactuca serriola	Prickly Lettuce	*	
Lepidium africanum	Peppercress	*	
Ligustrum lucidum	Broad-leaf Privet	*	
Ligustrum sinense	Chinese Privet	*	
Lomandra filliformis	Wattle Mat-rush		
Lomandra nana	Pale Mat-rush		
Lolium rigidum	Annual Rye Grass	*	
Medicago polymorpha	Burr Medic	*	
Melia azedarach	White Cedar	#	
Microlaena stipoides	Weeping Grass		
Olea europaea	Olive trees	*	
Oxalis pes-caprae	Sour-sob	*	
Paspalum dilatatum	Paspalum	*	
Paspalum distichum	Water Couch	#	
Pennisetum clandestinum	Kikuyu	*	
Persicaria decipiens	Slender Knotweed		
Persicaria prostrata	Creeping Knotweed		
Phalaris aquatica	Phalaris	*	
Pinus radiala	Radiata Pine	*	
Plantago lanceolata	Ribwort	*	
Poa trivialis	Rough Meadowgrass	*	
Prunus sp.	Plum	*	
Romulea rosea	Onion Grass	*	
Rosa canina	Dog rose	*	
Rosa rubignosa	Sweet Briar	*	
Rumex brownii	Swamp Dock		
Rumex conglomeratus	Clustered Dock	*	
Rumex crispus	Curly Dock	*	
Rytidosperma #4	Wallaby Grass		
Rytidosperma caespitosum	Ringed Wallaby Grass		
Rytidosperma duttonianum	Brown-back Wallaby Grass		
Rytidosperma fulvum	Copper-awned Wallaby Grass		
Rytidosperma setaceum	Smallflower Wallaby Grass		
Salix matsudana 'tortuosa'	Tortured willow	*	
Salvia verbenaca	Wild Sage	*	
Schinus molle	Pepper Tree		
Solanum nigrum	Black Nightshade	*	
Sonchus asper	Prickly Sow Thistle	*	

Scientific Name	Common Name	Status	Conservation Status
Sonchus oleraceous	Common Sow Thistle	*	
Taraxicum officinale	Dandelion	*	
Triadica sebifera	Chinese Tallow	*	
Trichorine elatior	Yellow Rush-lily / Star Lily		
Trifolium arvense	Hare's-foot Clover	*	
Trifolium repens	White Clover	*	
Vicia sativa subsp. sativa	Common Vetch	*	
Vinca major	Blue Periwinkle	*	
Viola sp.	Non native viola species	*	
Vulpia bromoides	Silver Grass	*	
Vulpia myuros	Rat's Tail Fescue	*	

Appendix D: Fauna Observed During Surveys

Common Name	Species Name	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	Stags & spotlighting (Night survey)	Frog surveys (Night survey)
Australian Magpie	*Cracticus tibicen*	Y						Y	Y		
Australian Raven	*Corvus coronoides*			Y							
Australian Wood Duck	*Chenonetta jubata*								Y		
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*			Y				Y			
Common Blackbird*	*Turdus merula*			Y		Y					
Common Starling*	*Sturnus vulgaris*	Y									
Eastern Rosella	*Platycercus eximius*			Y	Y	Y	Y	Y	Y		
Galah	*Eolophus roseicapillus*	Y									
Grey Fantail	*Rhipidura albiscapa*						Y				
Noisy Miner	*Manorina melanocephala*	Y	Y	Y	Y	Y	Y	Y	Y		
Sulphur-crested Cockatoo	*Cacatua galerita*						Y				
Yellow Thornbill	*Acanthiza nana*		Y				Y				
Red Wattlebird	*Anthochaera carunculata*	Y		Y	Y	Y	Y				
Pied Currawong	*Strepera graculina*	Y		Y		Y					
White-winged Chough	*Corcorax melanorhamphos*		Y	Y	Y		Y	Y			
Pied Butcher Bird	*Cracticus nigrogularis*		Y								
Red Rumped parrot	*Psephotus haematonotus*			Y							
Magpie Lark	*Grallina cyanoleuca*				Y	Y		Y			
Spotted Pardalote	*Pardalotus punctatus*						Y				
Laughing Kookaburra	*Dacelo novaeguineae*	Y		Y							
Masked Lapwing	*Vanellus miles*	Y									
White-faced heron	*Egretta novaehollandiae*		Y			Y					
Crested Pigeon	*Ocyphaps lophotes*			Y							
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*						Y				
Black-shouldered Kite	*Elanus axillaris*					Y					
Tawny Frogmouth	*Podargus strigoides*									Y	

Common Name	Species Name	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	Stags & spotlighting (Night survey)	Frog surveys (Night survey)
Dollarbird	*Eurystomus orientalis*							Y	Y		
Grey Butcherbird	*Cracticus torquatus*				Y			Y			
Blue-faced Honeyeater	*Entomyzon cyanotis*										
Little Pied Cormorant	*Phalacrocorax melanoleucos*					Y					
Crested Pigeon	*Ocyphaps lophotes*			Y							
Little Friarbird	*Philemon citreogularis*	Y									
Cat*										Y	
Common Brushtail Possum	*Trichosurus vulpecula*									Y	
Eastern ringtail Possum	*Pseudocheirus peregrinus*									Y	
Fox*										Y	
Spotted Marsh Frog	*Limnodynastes tasmaniensis*										Y
Eastern Sign-bearing Froglet	*Crinia parinsignifera*										Y
Peron's Tree Frog	*Litoria peronii*										Y
* Exotic species	Total count	9	5	12	6	9	9	8	5	5	3

Appendix E: EPBC Act Protected Matters Database Results and Likelihood Assessments

Table 23: EPBC Protected Matters Database results - Flora

MNES	Preferred Habitat	EPBC Act Status	Likelihood[1]
TECs			
White Box-Yellow Box Blakely's Red-Gum Grassy Woodland and Derived Native Grassland		Critically Endangered	No – Mapping suggests it is present in the work site and surrounding areas. However, it was determined after the assessment that the site does not meet EPBC Act criteria for this TEC based on having low diversity of native understorey species (excluding grasses).
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia		Endangered	No. The dominant trees and key indicator species for this TEC are not present.
Weeping Myall Woodlands		Endangered	No. The dominant trees and key indicator species for this TEC are not present.
Threatened Species			
Amphibromus fluitans River Swamp Wallaby-grass	Moderately fertile wetlands with some bare ground.	Vulnerable	Unlikely. The site is heavily disturbed with historical and ongoing set-stock grazing. Although the Common Swamp Wallaby Grass is present, the site's wetlands (creeks and dams) are of low quality and are unlikely to have this species persisting.
Prasophyllum petilum - Tarengo Leek Orchid	Natural Temperate Grassland in Boorowa and Delegate sites.	Endangered	No. No records in the broader local area. Site too disturbed. Nearest records well south-west at Boorhaman, Victoria.
Prasophyllum validum - Sturdy Leek-orchid	Dry woodland habitats, generally with a low sparse understorey.	Vulnerable	No. No records in the broader local area. Site too disturbed. Nearest records are from Chiltern Mt Pilot NP in Victoria.
Swainsona recta - Small Purple-pea	Box Gum Grassy Woodland	Endangered	Unlikely. No local records. Site too disturbed and contains only grazing tolerant species. Nearest record from Splitters Creek, well to the south.
Caladenia concolor - Crimson Spider-orchid	Regrowth woodland on granite ridge country	Vulnerable	No. No local records. Site too disturbed and contains only grazing tolerant species. Nearest record from Nail Can Hill (the Gap) on Urana Road.

Table 24: EPBC Protected Matters Database results - Fauna

Species	Preferred Habitat	EPBC Act Status	Likelihood[1]
Birds			
Anthochaera hrygia - Regent Honeyeater	Dry open forest and woodlands on inland slopes and valleys particularly Box Woodlands.	Critically Endangered	Unlikely. Species may, on the rare occasion, frequent the subject land during migration when gums are flowering.
Grantiella picta - Painted Honeyeater	Prefers Weeping Myall, Brigalow and Box-Gum woodlands and Ironbark forests. Feeds on Mistletoe species (fruits) that grow on Eucalypts and Acacias.	Vulnerable	**Potential** - Species has been recorded in the broader general area. Box-gum woodlands present, as are preferred food source of Mistletoe species.
Hirundapus caudacutus - White-throated Needletail	Feed, drink and rest on the wing in large groups. May rest at night in forested country.	Vulnerable	No. Species is almost exclusively aerial. The subject land is not an important part of this species' terrestrial habitat.
Falco hypoleucos - Grey Falcon	Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions.	Vulnerable	No. The site lacks a sufficiently large watercourse to be considered important habitat for this species.
Lathamus discolor - Swift Parrot	Occurs in a broad range of forest and woodland habitats, and sometimes urban areas with abundant large trees.	Critically Endangered	**Potential**. The species is known from the broader area and its preferred habitat of established vegetation with large trees is present.
Rostratula australis - Australian Painted Snipe	Fringes of swamps, lakes, dams and marsh areas with a good cover of native grasses, Lignum, shrubs or open timber areas.	Endangered	Unlikely - The species would be a very rare visitor to the sites, at best. There are more suitable wetland and rice paddy habitats in the region that would be preferred by this species.
Botaurus poiciloptilus - Australasian Bittern	Found in wetlands with tall, dense vegetation, favours permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes	Endangered	Unlikely - The species would be a rare visitor to the site, at best. There are more suitable wetland habitats in the region that would be preferred by this species.
Calidris ferruginea - Curlew Sandpiper	Occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons and also around non-tidal swamps.	Critically Endangered	Unlikely - The species would be a rare visitor to the site, at best. There are more suitable wetland habitats in the region that would be preferred by this species.

Species	Preferred Habitat	EPBC Act Status	Likelihood[1]
Numenius madagascariensis - Eastern Curlew	Found in Australia in August (Migratory bird) to feed on crabs and molluscs in intertidal mudflats.	Critically Endangered	Unlikely - The species would be a rare visitor to the site, at best. There are more suitable wetland habitats in the region that would be preferred by this species.
Polytelis swainsonii - Superb Parrot	Occurs (nests) in large River Red-gum forests along the Murray River and its nearby major river tributaries, but main foraging habitat is Mallee woodland within 20 km of riverine nesting habitat.	Vulnerable	Unlikely. Species may on the rare occasion frequent the subject land when gums are flowering. Limited suitable breeding habitat and presence on urban fringe is unlikely.
Callocephalon fimbriatum - *Gang-gang Cockatoo*	Found in tall mountain forests and woodlands.	Endangered	Unlikely. Species may visit the subject land on rare occasion during autumn and winter, but more likely to be found in larger, better quality remnant bushland in the region.
Stagonopleura guttata - Diamond Firetail	Found in open grassy woodland, heath and farmland or grassland	vulnerable	**Likely**. This species is commonly found in this area.
Fish			
Galaxias rostratus - Flathead Galaxias	Billabongs, lakes, swamps and rivers, in still or slow flowing waters.	Critically Endangered	No. Species may frequent the waterway during floods, but the waterway is normally dry and lacks the deep pools that remain in dry times that would otherwise provide habitat for the species.
Macquaria australasica - Macquarie Perch	Upper catchment tributaries of the Murray-Darling river system in Victoria and NSW	Endangered	No suitable aquatic habitat.
Frogs			
Litoria raniformius - Southern Bell Frog	Still or slow-flowing water bodies such as lagoons, amongst emergent vegetation.	Vulnerable	**Potential**. The farm dams on site have some emergent vegetation and may provide habitat.
Crinia sloanei Sloane's Froglet	A cryptic species, commonly associated with waterways and periodically inundated areas in grasslands, woodlands and also occurs in moderately disturbed habitats within its known range.	Endangered	**Potential**. The farm dams and creeks within the site have suitable vegetation cover and may provide habitat.
Mammals			
Dasyurus maculatus - Spot-tailed Quoll	Mature wet forest habitat in areas with rainfall 600 mm/year, with a preference for rocky outcrops and areas with dense cover for harbor.	Endangered	No. There is no suitable wet forest habitat or rocky substrates available.

Species	Preferred Habitat	EPBC Act Status	Likelihood[1]
Pteropus poliocephalus - Grey-headed Flying-fox	Requires foraging resources and roosting sites.	Vulnerable	Unlikely. No known camps nearby (nearest on Leany Bend in Albury). Busy roads and urban fringe are likely a deterrent. A rare visitor to the subject land at best.
Phascolarctos cinereus - Koala	Eucalypt forests and woodlands that contain some of their ~70 preferred Eucalyptus species.	Vulnerable	Unlikely. Very few records from the local area and site poorly connected to larger core areas of bushland.
Nyctophilus corbeni - *Corben's Long-eared Bat*	Occurs in a range of habitats including Mallee, Buloke and Box-gum dominated woodlands, but seems to prefer Box-Ironbark and Cypress vegetation types.	Vulnerable	Unlikely - Site lacks preferred Box-ironbark and Cypress vegetation. No local records, with nearest being a single record from 1994 on the NE side of Tabletop Mountain. Tend to be associated with large core patches in more semi-arid to arid country further north andwest.
Insects			
Synemon plana - Golden Sun Moth	Native temperate grasslands dominated by wallaby grass	Critically Endangered	Unlikely. There is only a small area of native understorey in the site and it is unlikely to constitute important habitat due to fragmentation and small size.
Keyacris scurra - *Key's Matchstick*	Native grasslands and grassy woodlands, with a preference for Kangaroo Grass and presence of Asteraceae (daisies) as a food source.	Endangered	Unlikely. No records in the broader area. Nearest record 90km east near Mount Mitta Mitta Regional Park (VIC).
Reptiles			
Aprasia parapulchella - Pink-tailed Worm-lizard	Most commonly found sheltering under small rocks (15–60 cm basal)	Vulnerable	Unlikely. Site does not contain rocky substrate. Site heavily degraded from set-stock grazing.
Delma impar - Striped Legless Lizard	Considered a grassland specialist, tending to be found where suitable grassland vegetation and rocks are present and able to provide protection.	Vulnerable	No. Very little suitable grassland areas. Site is disturbed and does not contain rocky substrates or surface rock.
Migratory Marine Birds			
Apus pacificus - Fork-tailed Swift	Spend most their life airborne. Build their nests on cliffs.	Migratory	No. Airborne species and the site does not provide any important terrestrial habitat.

Species	Preferred Habitat	EPBC Act Status	Likelihood[1]
Migratory Wetland Birds			
Numenius madagascariensis - Eastern Curlew	Found in Australia in August (Migratory bird) to feed on crabs	Critically Endangered	Unlikely - The species would be a rare visitor to the site, at best. There are more suitable wetland habitats in the region that would be preferred by this species.
Calidris ferruginea - Curlew Sandpiper	Occur on intertidal mudflats in sheltered coastal areas	Critically Endangered	Unlikely – as above.
Gallinago hardwickii - Latham's Snipe	Freshwater swamps and marshes as well as salt marshes and mud flats	Migratory	Unlikely – as above.
Tringa nebularia - Common Greenshank	Found in a wide variety of inland wetlands.	Migratory	Unlikely – as above.
Actitis hypoleucos - Common Sandpiper	Found in coastal or inland wetlands, both saline or fresh.	Migratory	Unlikely – as above.
Calidris acuminata - Sharp-tailed Sandpiper	Prefers the grassy edges of shallow inland freshwater wetlands.	Migratory	Unlikely – as above.
Calidris melanotos - Pectoral Sandpiper	Prefers the grassy edges of shallow inland freshwater wetlands.	Migratory	Unlikely – as above.
Hirundapus caudacutus - White-throated Needletail	Feed, drink and rest on the wing in large groups.	Vulnerable	No. Airborne species and the site does not provide any important terrestrial habitat.
Motacilla flava - Yellow Wagtail	Found in short grass, bare ground, swamp margins	Migratory	No. No records and no suitable habitat.
Myiagra cyanoleuca - Satin Flycatcher	Tall wet eucalypt forests of SE Australia.	Migratory	Unlikely. Several local records, although preferred habitat is not present. More likely to be in wet forests to the east. May rarely frequent site during migration.
Rhipidura rufifrons - Rufous Fantail	Rainforests and wet sclerophyll forests	Migratory	Unlikely. No local records, and preferred habitat is not present. More likely to be in wet forests to the south and east. May rarely frequent site during migration.
Listed Marine Birds			
Apus pacificus - Fork-tailed Swift	Spend most their life airborne. Build their nests on cliffs.	Migratory	No. See above.
Ardea ibis - Cattle Egret	Shallow water and open dry grassy habitats	Migratory	No. Site is woodland and where the exotic grassland exists, it is too thick and deep for this species.
Rostratula australis- Australian Painted Snipe	Inhabits shallow terrestrial freshwater wetlands	Endangered	Unlikely. See above.
Tringa nebularia - Common Greenshank	Found in a wide variety of inland wetlands.	Migratory	Unlikely. See above.
Hirundapus caudacutus - White-throated Needletail	Feed, drink and rest on the wing in large groups.	Vulnerable	No. See above.
Motacilla flava - Yellow Wagtail	Found in short grass, bare ground, swamp margins	Migratory	No. See above.

Species	Preferred Habitat	EPBC Act Status	Likelihood[1]
Myiagra cyanoleuca - Satin Flycatcher	Tall wet eucalypt forests of SE Australia.	Migratory	Unlikely. See above.
Rhipidura rufifrons - Rufous Fantail	Rainforests and wet sclerophyll forests	Migratory	Unlikely. See above.
Calidris ferruginea - Curlew Sandpiper	Occur on intertidal mudflats in sheltered coastal areas	Critically Endangered	Unlikely. See above.
Gallinago hardwickii - Latham's Snipe	Freshwater swamps and marshes as well as salt marshes and mud flats	Migratory	Unlikely. See above.
Haliaeetus leucogaster - White-bellied Sea-Eagle	Surface waters along coasts, islands, inlets also along larger inland rivers and lakes.	Migratory	Unlikely. Species tends to inhabit large trees near big watercourses and lakes.
Merops ornatus - Rainbow Bee-eater	Occurs in open woodlands, shrublands, grasslands and forests	Migratory	**Potential**. Numerous records from the local area, potentially suitable habitat including potential nesting habitat in creek walls.
Numenius madagascariensis - Eastern Curlew	Found in Austraila in August (Migratory bird) to feed on crabs and molluscs in intertidal mudflats.	Critically Endangered	Unlikely. See above.
Actitis hypoleucos - Common Sandpiper	Found in coastal or inland wetlands, both saline or fresh.	Migratory	Unlikely. See above.
Calidris acuminata - Sharp-tailed Sandpiper	Prefers the grassy edges of shallow inland freshwater wetlands.	Migratory	Unlikely. See above.
Calidris melanotos - Pectoral Sandpiper	Prefers shallow fresh to saline wetlands.	Migratory	Unlikely. See above.
Chalsites osculans - Black-eared Cuckoo	Found in drier country where species such as mulga and mallee dominate	Migratory	Unlikely. Jindera is at the eastern extent of its range. More likely in arid regions further west and north.
Lathamus discolor - Swift Parrot	Forests and woodlands dominated by winter flowering eucalypts	Critically Endangered	**Potential**. See above.
Neophema chrysostoma - Blue-winged Parrot	Favour grasslands and grassy woodlands over a range of habitats	Migratory	Unlikely. Only a small area of grassland present, with most being thick exotic weed species across site which is not suitable.

Appendix F: BioNet Atlas of NSW Wildlife Results and Likelihood Assessments

Table 25: BioNet Atlas of NSW Wildlife results - Flora

Species	Preferred Habitat	NSW Status	Commonwealth status	Likelihood[1]
Threatened Ecological Communities				
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	NA	Critically endangered	Does not qualify due to low understorey diversity	**Recorded**. This TEC is present within the subject land, albeit in a mostly degraded condition.
Threatened Species				
Amphibromus fluitans - Floating Swamp Wallaby-grass	Moderately fertile wetlands with some bare ground.	Vulnerable	Vulnerable	No. See Table 23.
Caladenia concolor - Crimson Spider-orchid	Regrowth woodland on granite ridge country	Endangered	Vulnerable	No. See Table 23.
Senecio garlandii - *Woolly Ragwort*	Sheltered slopes of rocky outcrops	Vulnerable		No. A very conspicuous species which was not located within the site.
Cullen parvum - *Small Scurf-pea*	Grassland, River Red Gum woodland or box-gum woodland	Endangered		Unlikely. Lone local record 1km west is from 1967. Site too disturbed and only grazing tolerant species persist.

Table 26: BioNet Atlas of NSW Wildlife results - Fauna

Species	Preferred Habitat	NSW Status	Commonwealth status	Likelihood[1]
Amphibians				
Crinia sloanei - Sloane's Froglet	Typically associated with periodically inundated areas in grassland	Vulnerable	Endangered	**Potential**. The farm dams and creeks within the site have suitable vegetation cover and may provide habitat.
Litoria raniformis - Southern Bell Frog	Usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot	Endangered	Vulnerable	**Potential**. The farm dams on site have some emergent vegetation and may provide habitat.
Birds				
Neophema pulchella - Turquoise Parrot	Open grassy woodland, with dead trees and near permanent water	Vulnerable		Unlikely. Only a small area of grassland present, with most being thick exotic weed species across site which is not suitable.

Species	Preferred Habitat	NSW Status	Commonwealth status	Likelihood[1]
Ninox connivens - Barking Owl	Open forest and woodlands, near water courses and foothills.	Vulnerable		Unlikely. Species prefers larger core areas.
Climacteris victoriae - Brown Treecreeper (eastern subspecies)	Inhabits dry eucalypt woodland and adjoining vegetation, though absent from degraded woodlands.	Vulnerable		Unlikely. Species prefers larger core areas with higher quality vegetation.
Chthonicola sagittate - Speckled Warbler	Dry sclerophyll forests and woodlands dominated by eucalypts.	Vulnerable		Unlikely. Species prefers larger core areas with higher quality vegetation.
Anthochaera phrygia - Regent Honeyeater	Dry open forest and woodlands on inland slopes and valleys.	Critically Endangered	Critically Endangered	Unlikely. Lacks preferred habitat. At best would be a very rare visitor during its migration movements.
Melithreptus gularis gularis - Black-chinned Honeyeater (eastern subspecies)	Found in the upper levels of open eucalypt forests and woodlands dominated by box and ironbark. Tends to prefer larger core areas.	Vulnerable		Unlikely. Species may frequent the subject land on rare occasion when mistletoe are flowering, but more likely to reside in larger core areas in region.
Daphoenositta chrysoptera - Varied Sittella	Found in eucalypt woodlands and forests, prefer rough-barked trees like stringybarks and ironbark	Vulnerable		Unlikely. At best a rare visitor to the subject land. Species preferred gum type are not present.
Artamus cyanopterus cyanopterus - Dusky Woodswallow	Open forests and woodlands, and may be seen along roadsides and on golf courses.	Vulnerable		**Potential**. Many local records, including one from the centre of Jindera township.
Petroica boodang - Scarlet Robin	Open forests and woodlands, also open habitats such as urban parks and gardens.	Vulnerable		**Potential**. Many local records and suitable habitat.
Stagonopleura guttata - Diamond Firetail	Found in open grassy woodland, heath and farmland or grassland	Vulnerable		**Likely**. This species is commonly found in this area.
Haliaeetus leucogaster - White-bellied Sea-Eagle	Surface waters along coasts, islands, inlets also along larger inland rivers	Vulnerable		Unlikely. Species tends to inhabit large trees near big watercourses and lakes.
Melanodryas cucullata cucullate - Hooded Robin (south-eastern form)	Requires structurally diverse habitats featuring mature eucalypts, saplings, small shrubs & tall native grasses	Vulnerable		Unlikely. Site is degraded and very little quality understorey present for this species.
Petroica phoenicea - Flame Robin	Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes.	Vulnerable		**Potential**. Many local records including two on northern outskirts of Jindera. Suitable habitat.
Parvipsitta porphyrocephala - Purple-crowned Lorikeet	Found in open forests and woodlands, particularly where there are large flowering eucalypts.	Vulnerable		Unlikely. Species tends to occupy larger core areas. Rare visitor to site at best.

Species	Preferred Habitat	NSW Status	Commonwealth status	Likelihood[1]
Burhinus grallarius - Bush Stone-curlew	Largely confined to grassy woodlands and farmland.	Endangered		No. Site has a long history of disturbance and fox predation pressure. No suitable ground timber.
Callocephalon fimbriatum - Gang-gang Cockatoo	In summer found in tall mountain forests and woodlands, with dense shrubby understorey.	Vulnerable		Unlikely. Species prefers larger core areas of bushland.
Glossopsitta pusilla - Little Lorikeet	Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity.	Vulnerable		Unlikely. Species tends to occupy larger core areas. Rare visitor to site at best.
Lathamus discolor - Swift Parrot	Forests and woodlands dominated by winter flowering eucalypts.	Endangered	Critically Endangered	**Potential**. The species is known from the broader area and its preferred habitat of established vegetation with large trees is present.
Falco hypoleucos - Grey Falcon	Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions	Endangered		Unlikely. No suitable habitat and species more commonly occurs further west and north.
Hieraaetus morphnoides - Little Eagle	Open eucalypt forest, woodland or open woodland.	Vulnerable		**Recorded**. A 2018 record exists in the paddock just 500m north-west of the subject land.
Polytelis swainsonii - Superb Parrot	The Superb Parrot mainly inhabits forests and woodlands dominated by eucalypts.	Vulnerable	Vulnerable	Unlikely. Species may, on the rare occasion, frequent the subject land when gums are flowering. Limited suitable breeding habitat and presence on urban fringe is unlikely.
Mammal				
Petaurus norfolcensis - Squirrel Glider	Inhabits mature or old growth Box, box-Ironbark woodlands	Vulnerable		**Potential.** Hollows present. Connection, albeit weak, exists between site and adjoining roadsides and riparian vegetation.
Pteropus poliocephalus - Grey-headed Flying-fox	Requires foraging resources and roosting sites.	Vulnerable	Vulnerable	Unlikely. No known camps nearby (nearest on Leany Bend in Albury). Busy roads and urban fringe are likely a deterrent. A rare visitor to the subject land at best.
Phascolarctos cinereus - Koala	Inhabit eucalypt woodlands and forests	Vulnerable	Vulnerable	Unlikely. Very few records from the local area and site only weakly connected to larger core areas of bushland.
Dasyurus maculatus - Spot-tailed Quoll	Mature wet forest habitat in areas with rainfall 600 mm/year	Vulnerable	Endangered	No. There is no suitable wet forest habitat or rocky substrates available.
Reptiles				
Aprasia parapulchella - Pink-tailed Worm-lizard	Most commonly found sheltering under small rocks (15–60 cm basal)	Vulnerable	Vulnerable	Unlikely. Site does not contain rocky substrate. Site heavily degraded from set-stock grazing.

Appendix G: EPBC Act Significant Impact Criteria (SIC) Assessments

Swift Parrot (Critically Endangered)		
EPBC Significant Impact Criteria (for Critically Endangered Species)	**Significant impact likely?**	**Justification of decision**
Lead to a long-term decrease in the size of a population.	Highly Unlikely	There will be impacts to trees that form part of potential feeding and roosting habitat for the species. However, the development is a narrow strip adjacent to heavily developed urban areas, and the remainder of the 10 hectare patch of vegetation will be retained for potential habitat for this species. There will be minimal impacts to Swift Parrot habitat or feeding grounds and as such, there is a low likelihood that the housing development will lead to a short or long-term decrease in the size of the species' population.
Reduce the area of occupancy of the species.	Highly unlikely	As above. The habitat being removed is not considered high value habitat for this species. As such, the small loss of low quality habitat is unlikely to reduce the area of occupancy for this species.
Fragment an existing population into two or more populations.	Highly unlikely	The development is impacting very little habitat in the area and what is being impacted is not considered important or high quality habitat. Despite a number of trees being 'considered lost' due to TPZ impacts, there are many of these trees which will remain standing and are likely to survive and persist into the future, meaning actual habitat impacts will be lower than the loss amount suggests. The trees involved are not important habitat/feeding trees for this species.
Adversely affect habitat critical to the survival of a species.	Highly unlikely	As above. The habitat being impacted is not considered high quality or important for the species survival.
Disrupt the breeding cycle of a population.	Unlikely	As above. The species breeds in Tasmania. The construction involved is of a relatively low noise, dust and vibration nature. There will be minimal disruptions to local species during construction, and in the event that Swift Parrots are located, an exclusion zone will be set up to ensure the species moves on from the area before works in that immediate area continue. The development will not disrupt the breeding cycle of this species.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Highly unlikely	The development is impacting very little habitat in the area and that being impacted, is not considered to be important or high quality habitat for this species. Despite a number of trees being 'considered lost' due to TPZ impacts, many of these trees will remain standing and are likely to survive and persist into the future. The impacts to low quality habitat is not to the extent that the species may decline.

Swift Parrot (Critically Endangered)		
EPBC Significant Impact Criteria (for Critically Endangered Species)	**Significant impact likely?**	**Justification of decision**
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.	Highly unlikely	There will be weed hygiene measures put in place (and in the CEMP) to prevent the introduction of invasive species. Impacts of any invasive species that do establish are highly unlikely to be harmful for the species.
Introduce disease that may cause the species to decline.	Highly unlikely	The project will have controls in place via the CEMP to ensure diseases are not taken onto or off the site by machinery, people or equipment.
Interfere with the recovery of the species.	Highly unlikely	The project is a small scale development impacting a thin strip or low quality remnant bushland adjacent to highly disturbed agricultural and predominantly cleared urban areas. The scale of losses and the low quality habitat being removed means this development will not interfere with the recovery of this species.
Summary of Swift Parrot Significant Impact Assessment		
The development will have minimal direct or indirect impacts for the Swift Parrot or its important areas of habitat. The works associated with the trail construction and associated developments will be completed with low impact techniques and will not impact on any significant, high quality areas of habitat. If Swift Parrots are identified within the subject land during construction, all construction within 200 metres of the birds will be halted until the birds move on from the area. There will be a project CEMP put in place to help minimise noise and vibration issues and other measures to minimise environmental disturbance. As a result of the above measures, it is highly unlikely that a significant impact to the Swift Parrot will occur from the development.		

Sloane's Froglet (Endangered)		
EPBC Significant Impact Criteria (for Endangered Species)	**Significant impact likely?**	**Justification of decision**
Lead to a long-term decrease in the size of a population.	Highly unlikely	Although there is some impact to potential habitat for the species in the subject land, the species was not located by targeted searches and is not known to be persisting near the site, with the nearest record being at Table Top, 10km to the east. There is also suitable habitat downstream of the subject land into which the species could move if impacted by the development. Therefore, there is a low likelihood that the development will lead to a short or long-term decrease in the size of the species' population.
Reduce the area of occupancy of the species.	Highly unlikely	As above. The species is not considered likely to be present, thus it is very unlikely that the development will reduce the species' area of occupancy.

Sloane's Froglet (Endangered)		
EPBC Significant Impact Criteria (for Endangered Species)	**Significant impact likely?**	**Justification of decision**
Fragment an existing population into two or more populations.	Highly unlikely	The site is not believed to contain the species, despite it having some suitable creek and wetland (dam) habitat. As a result, there is a very low likelihood that a population of this species will be fragmented.
Adversely affect habitat critical to the survival of a species.	Highly unlikely	As above. The species is not believed to be in the subject land, and as such, it is not considered habitat that is critical for the survival of this species.
Disrupt the breeding cycle of a population.	Unlikely	As above. The species is not believed to be in the subject land, and as such, it is highly unlikely that the breeding cycle of this species will be disrupted.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Highly unlikely	As above. The species is not believed to be in the subject land, and as such, the proposed impacts are highly unlikely to cause habitat impacts to the extent that the species will decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.	Highly unlikely	There will be measures put in place (and within a CEMP) to prevent the introduction of invasive species. As a result, no harmful effects from invasive species are likely to occur for this species.
Introduce disease that may cause the species to decline.	Highly unlikely	The project will have controls in place via the CEMP to ensure diseases are not taken onto or off the site by machinery, people or equipment.
Interfere with the recovery of the species.	Highly unlikely	The project is impacting an area that is not believed to contain Sloane's Froglet. In the event that the species is residing on site, there is available habitat into which the species may move downstream of the subject land. As a result, the development is highly unlikely to interfere with the recovery of this species.
Summary of Sloane's Froglet Significant Impact Assessment		
The targeted surveys did not locate Sloane's Froglet, despite there being suitable habitat. The closest record for the species is 10 km east, at Table Top. Therefore, the species is not believed to be present in the subject land. The works associated with construction and associated developments will be completed with low impact techniques and will not impact on any important populations or significant areas of habitat. There will be a project CEMP put in place to help minimise noise and vibration issues and other measures to minimise environmental disturbance. As a result of the above measures, it is highly unlikely that a significant impact to the Sloanes Froglet will occur from the development.		

Painted Honeyeater (Vulnerable)		
EPBC Significant Impact Criteria (for Vulnerable Species)	**Significant impact likely?**	**Justification of decision**
Lead to a long-term decrease in the size of an important population of a species.	Highly unlikely	The species was not located on site despite considerable survey effort and multiple site visits. The subject land does not contain a population and is therefore not considered an important population of this species. There will be small impacts to the potential Painted Honeyeater habitat or feeding grounds, however there is abundant habitat immediately adjoining the site into which the species may retreat during works. As such, there is very little chance that the development will lead to a short or long-term decrease in the size of the species' population.
Reduce the area of occupancy of an important population.	Highly unlikely	As above.
Fragment an existing important population into two or more populations.	Highly unlikely	The subject land or the adjoining areas does not contain an important population of this species. The development is impacting very little habitat in the area. Despite a number of trees being 'considered lost' due to TPZ impacts, a large number of these trees will remain standing and are likely to survive and persist into the future. No existing populations are being fragmented by this development.
Adversely affect habitat critical to the survival of a species.	Highly unlikely	As above.
Disrupt the breeding cycle of an important population.	Unlikely	As above. The construction involved is a narrow footprint with a relatively low noise, dust and vibration nature. In the event that Painted Honeyeaters are located during construction, an exclusion zone will be set up to ensure the species can complete its breeding cycle, or moves on from the area, before works in that immediate area continue.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	Highly unlikely	The development is impacting a small linear area of low quality habitat. Despite a number of trees being 'considered lost' due to TPZ impacts, many of these trees will remain standing and are likely to survive and persist into the future. The impacts to potential habitat are not to the scale that will cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.	Highly unlikely	There will be measures put in place (and within a CEMP) to prevent the introduction of invasive species.

Painted Honeyeater (Vulnerable)		
EPBC Significant Impact Criteria (for Vulnerable Species)	**Significant impact likely?**	**Justification of decision**
Introduce disease that may cause the species to decline.	Highly unlikely	The project will have controls in place via the CEMP to ensure diseases are not taken onto or off the site by machinery, people or equipment.
Interfere substantially with the recovery of the species.	Highly unlikely	The project is impacting a thin strip of potential low quality habitat, and as such is considered a very low impact development. It is highly unlikely that the development will interfere with the recovery of this species.
Summary of Painted Honeyeater Significant Impact Assessment		
The development will have minimal direct or indirect impacts for the Painted Honeyeater or its habitat. The works associated with the construction and associated developments will be completed with staged low impact techniques and will not impact on any known populations or high quality, significant areas of habitat. In the event that Painted Honeyeater are identified within the subject land during construction, all construction within 200 metres of the birds will be halted until the birds leave the area, or if breeding, until fledgling chicks leave the nest. There will be a project CEMP put in place to help minimise noise and vibration issues and other measures to minimise environmental disturbance. As a result of the above measures, it is highly unlikely that a significant impact to the Painted Honeyeater will occur from the development.		

Southern Bell Frog (Vulnerable)		
EPBC Significant Impact Criteria (for Vulnerable Species)	**Significant impact likely?**	**Justification of decision**
Lead to a long-term decrease in the size of an important population of a species.	Highly unlikely	There are very few recent records for this species in the broader region. However, there is suitable habitat in the creeks and wetlands (dams) in the subject land. The species was not identified despite considerable survey effort, and is considered unlikely to be persisting in the site. The subject land does not contain a population and is therefore not considered an important population of this species. There is suitable habitat near and downstream of the, in the event that the species is present and is disturbed by the development. Considering the above, there is very little chance that the development will lead to a short or long-term decrease in the size of an important population.
Reduce the area of occupancy of an important population.	Highly unlikely	As above.
Fragment an existing important population into two or more populations.	Highly unlikely	The subject land or the adjoining areas does not contain an important population of this species. No existing populations are being fragmented by this development.
Adversely affect habitat critical to the survival of a species.	Highly unlikely	As above. The habitat on site is not considered critical for the survival of the species.

Southern Bell Frog (Vulnerable)		
EPBC Significant Impact Criteria (for Vulnerable Species)	**Significant impact likely?**	**Justification of decision**
Disrupt the breeding cycle of an important population.	Unlikely	As above. The subject land or the adjoining areas does not contain an important population of this species. In the event that Southern Bell Frog are located during construction, an exclusion zone will be set up to ensure the species can complete its breeding cycle or be captured and relocated before works in that immediate area (including areas upstream of the area) continue.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	Highly unlikely	The development is impacting a small linear area of low quality habitat. However, given lack of records and no observations being made during targeted surveys, the species is unlikely to be persisting on site. The impacts to potential habitat are not to the scale that will cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.	Highly unlikely	There will be measures put in place to prevent the introduction of invasive species.
Introduce disease that may cause the species to decline.	Highly unlikely	The project will have controls in place via the CEMP to ensure diseases are not taken onto or off the site by machinery, people or equipment.
Interfere substantially with the recovery of the species.	Highly unlikely	The project is impacting a thin strip of potential low quality habitat, and as such is considered a very low impact development. It is highly unlikely that the development will interfere with the recovery of this species.
Summary of Painted Honeyeater Significant Impact Assessment		
There are no nearby records (the closest being 10km east) and targeted surveys did not locate the species in the subject land. It is considered unlikely that a population of the species is present. Development will have direct or indirect impacts for potential habitat of the Southern Bell Frog, however there is suitable habitat near and downstream the site into which the species may retreat to. The works associated with the construction and associated developments will be completed with staged low impact techniques and will not impact on any known population or significant areas of habitat. In the event that Southern Bell Frog are identified within the subject land during construction, all construction within 50 metres of the frogs and their core habitat (creek/dam) will be halted until the frogs can be captured and relocated. There will be a project CEMP put in place to help minimise noise and vibration issues and other measures to minimise environmental disturbance. As a result of the above measures, it is highly unlikely that a significant impact to the Southern Bell Frog will occur from the development.		

Diamond Firetail (Vulnerable)		
EPBC Significant Impact Criteria (for Vulnerable species)	**Significant impact likely?**	**Justification of decision**
Lead to a long-term decrease in the size of an important population of a species.	Highly unlikely	The species was not located on site despite considerable survey effort and multiple site visits. The subject land does not contain a resident population and is therefore not considered an important population of this species. There will be small impacts to the potential Diamond Firetail habitat or feeding grounds, however there is abundant habitat immediately adjoining the site into which the species may retreat during works. As such, there is very little chance that the development will lead to a short or long-term decrease in the size of the species' population.
Reduce the area of occupancy of an important population.	Unlikely	As above.
Fragment an existing important population into two or more populations.	Unlikely	The subject land or the adjoining areas does not contain an important population of this species. The development is impacting very little habitat in the area. Despite a number of trees being 'considered lost' due to TPZ impacts, a large number of these trees will remain standing and are likely to survive and persist into the future. No existing resident populations are being fragmented by this development.
Adversely affect habitat critical to the survival of a species.	Highly unlikely	As above. There is abundant and higher quality habitat for this species available in nearby reserves, roadsides and paddocks. The habitat being removed is therefore not considered to be critical for the species' survival.
Disrupt the breeding cycle of an important population.	Highly unlikely	As above. The construction involved is a narrow footprint with a staged works program and is relatively low noise, dust and vibration nature. In the event that Diamond Firetail are located during construction, an exclusion zone will be set up to ensure the species can complete its breeding cycle, or moves on from the area, before works in that immediate area continue.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	Highly unlikely	The development is impacting a small linear area of low quality habitat. Despite a number of trees being 'considered lost' due to TPZ impacts, many of these trees will remain standing and are likely to survive and persist into the future. There is suitable nesting and foraging habitat immediately adjacent to the subject land. The impacts to potential habitat are not to the scale that will cause the species to decline.

Diamond Firetail (Vulnerable)		
EPBC Significant Impact Criteria (for Vulnerable species)	**Significant impact likely?**	**Justification of decision**
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable specie's habitat.	Unlikely	There will be measures put in place (and within a CEMP) to prevent the introduction of invasive species.
Introduce disease that may cause the species to decline.	Unlikely	The project will have controls in place via the CEMP to ensure diseases are not taken onto or off the site by machinery, people or equipment.
Interfere substantially with the recovery of the species.	Unlikely	The project is impacting a thin strip of potential low quality habitat, and there is abundant habitat immediately adjacent to the subject land. As such, it is considered a low impact development and it is highly unlikely that the development will interfere with the recovery of this species.
Summary of Diamond Firetail Significant Impact Assessment		
The subject land is impacting a thin strip of relatively low quality and disturbed bushland, located within urban and peri-urban areas and for the most part is disconnected from (or at best very weakly connected) more intact and higher quality areas of native grasslands and bushland (the species preferred habitat). Therefore, the project will have minimal direct or indirect impacts for the Diamond Firetail or its habitat. The project construction will be completed with low impact techniques and will not impact on any significant areas of habitat. If Diamond Firetails are identified within the subject land during construction, all construction within 200 metres of the birds will be halted until the birds move on from the area. There will be a project CEMP put in place to help minimise noise and vibration issues and other measures to minimise environmental disturbance. As a result of the above measures, it is highly unlikely that a significant impact to the Diamond Firetail will occur from the project.		

Rainbow Bee-eater (Migratory)		
EPBC Significant Impact Criteria (for Migratory Species)	**Significant impact likely?**	**Justification of decision**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	Highly unlikely	The subject land contains creek banks which are potential nesting habitat, however the dominance of weeds throughout much of the understorey would be a limiting factor, except in the far south of the site where exposed clay banks could be nested in. Given the small size and the presence of the potential habitat adjacent to an urban area, this site is not considered to be important habitat for this species. As such, the works are not impacting or modifying an area of important habitat for Rainbow Bee-eater.

Rainbow Bee-eater (Migratory)		
EPBC Significant Impact Criteria (for Migratory Species)	**Significant impact likely?**	**Justification of decision**
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	Highly unlikely	There will be measures put in place (and within a CEMP) to prevent the introduction of invasive species.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	Highly unlikely	The subject land does not contain a known population and certainly is not an ecologically significant proportion of the migratory species. In the event that breeding Rainbow Bee-eater are located during construction, an exclusion zone will be set up to ensure the species can complete its breeding cycle or move on from the area before works in that immediate area can continue.
Summary of Rainbow Bee-eater Significant Impact Assessment		
The development will have minimal direct or indirect impacts for the Rainbow Bee-eater or its habitat. The site contains very little breeding habitat and the presence of the site adjacent to an urban area may be a barrier for this species. In the event that Rainbow Bee-eater are identified within the subject land during construction, all construction within 200 metres of the birds will be halted until the birds move on from the area, or until after they complete their breeding cycle. There will be a project CEMP put in place to help minimise noise and vibration issues and other measures to minimise environmental disturbance. As a result of the above measures, it is highly unlikely that a significant impact to the Rainbow Bee-eater will occur from the development.		

Appendix H: Vegetation Survey Data

Vegetation Plots

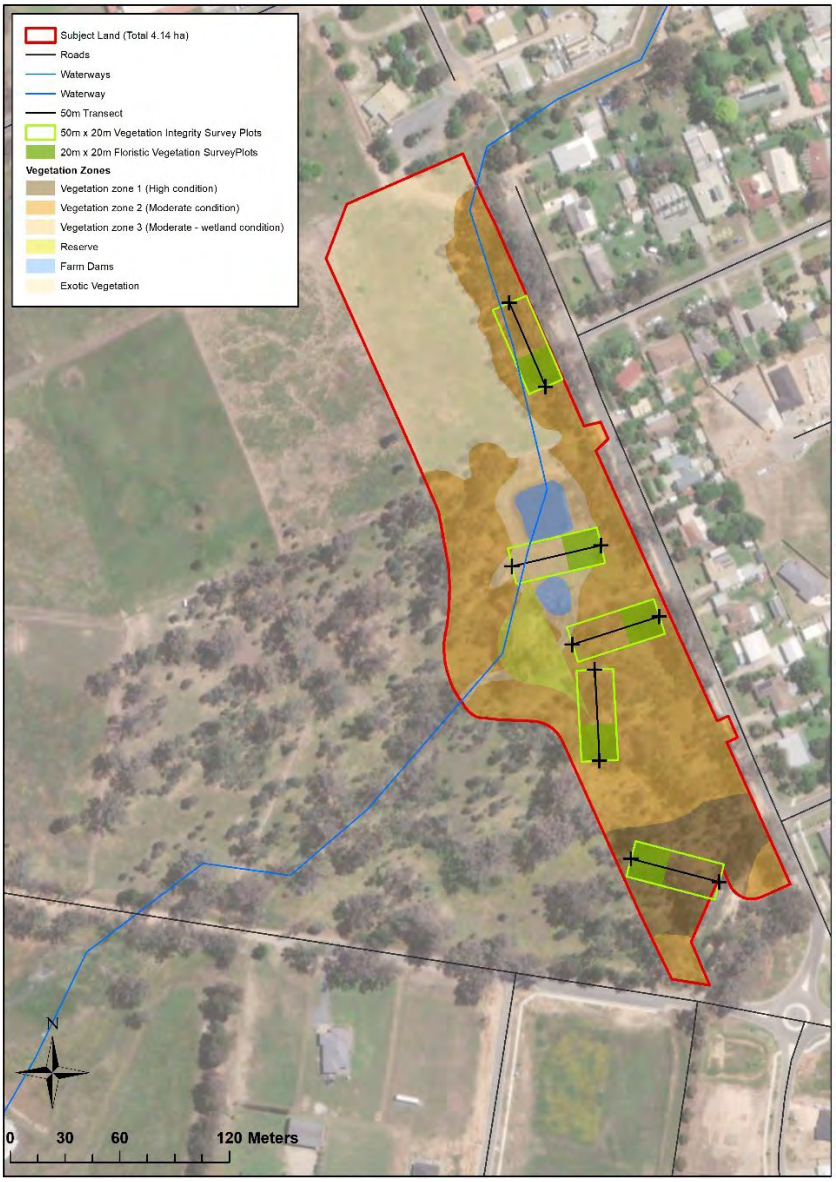


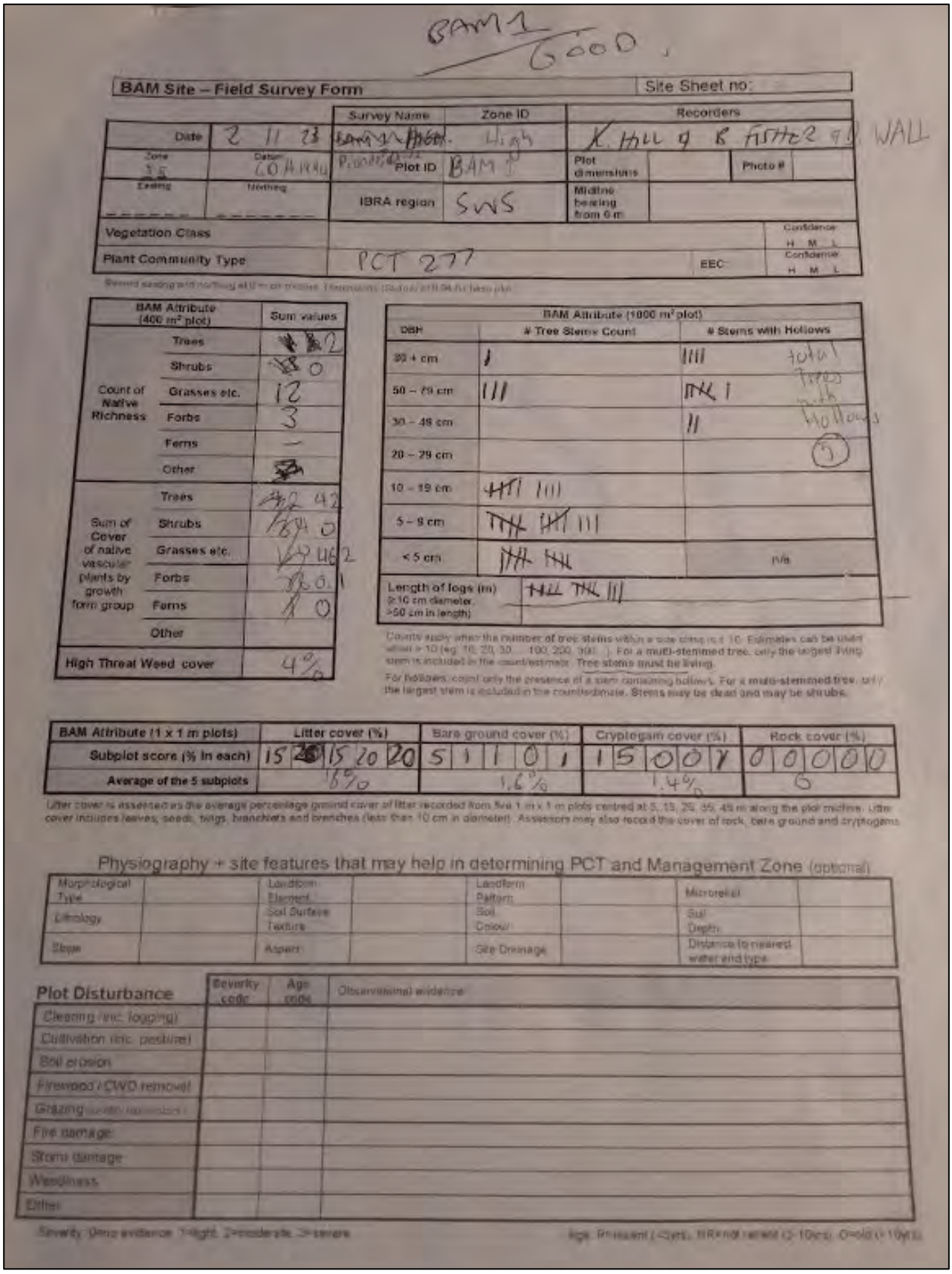
Figure 6: Field survey locations, Vegetation plots. Scale 1:2,500.

Vegetation Integrity Scores

Table 27: Vegetation integrity scores.

Vegetation zone	PCT ID	TEC	Impact area (ha)	Current VI score	Future VI score	Change in VI score
1	PCT 277	Box gum woodland	0.42	56.9	0	-56.9
2	PCT 277	Box gum woodland	2.12	24.6	0	-24.6
3	PCT 277	Box gum woodland	0.28	38.1	0	-38.1

BAM Plot Sheets



BAM 1 Good.

BAM Site – Field Survey Form | Site Sheet no:

Date	2 11 23	Survey Name	Zone ID	Recorders	K. Hill & Fisher & WALL
Zone 55	Datum GDA1994	Plot ID	BAM 1	Plot dimensions	Photo #
Easting	Northing	IBRA region	SWS	Midline bearing from 0 m	
Vegetation Class					Confidence H M L
Plant Community Type	PCT 277			EEC	Confidence H M L

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	2
	Shrubs	0
	Grasses etc.	12
	Forbs	3
	Ferns	–
	Other	
Sum of Cover of native vascular plants by growth form group	Trees	42 42
	Shrubs	0
	Grasses etc.	46 2
	Forbs	0.1
	Ferns	1 0
	Other	
High Threat Weed cover		4%

BAM Attribute (1000 m² plot)		
DBH	# Tree Stems Count	# Stems with Hollows
80 + cm	1	IIII total Trees with Hollows 5
50 – 79 cm	III	IIII I
30 – 49 cm		II
20 – 29 cm		
10 – 19 cm	IIII IIII	
5 – 9 cm	IIII IIII III	
< 5 cm	IIII IIII	n/a
Length of logs (m) (≥ 10 cm diameter, >50 cm in length)	IIII IIII III	

Counts apply when the number of tree stems within a sub-class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30 ... 100, 200, 300 ...). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.

For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)	Bare ground cover (%)	Cryptogam cover (%)	Rock cover (%)
Subplot score (% in each)	15 20 15 20 20	5 1 1 0 1	1 5 0 0 1	0 0 0 0 0
Average of the 5 subplots	18%	1.6%	1.4%	0

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		Landform Element		Landform Pattern		Microrelief	
Lithology		Soil Surface Texture		Soil Colour		Soil Depth	
Slope		Aspect		Site Drainage		Distance to nearest water and type	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging)			
Cultivation (inc. pasture)			
Soil erosion			
Firewood / CWD removal			
Grazing (current / recent)			
Fire damage			
Storm damage			
Weediness			
Other			

Severity: 0=no evidence 1=slight 2=moderate 3=severe

Age: P=recent (<2yrs), IR=not recent (2-10yrs), O=old (>10yrs)

T, S, G, F, Fer, Oth

BAM 1

400 m² plot: Sheet _ of _	Survey Name	Plot Identifier	Recorders
Date 2 11 23			

GF Code	Top 3 native species in each growth form group: Full species name mandatory. All other native and exotic species: Full species name where practicable	N, E or HTE	Cover	Abund	stratum	voucher
G	Microlaena stip	N	20%			
T	Eucalyptus blak	N	25%			
S	Eucalyptus mell	N	15%			
G	A. danthonia sp. 1	N	3			
G	A. stipa sp. 1	N	3			
G	" " 2	N	3			
G	" " 3	N	3			
G	A. danthonia ? fulva	N	5			
G	Carex sp	N	1%			
G	Aira sp	N/E	0.01			
G	Lomandra nana ?	N	0.1			
F	Crassula sp	N	0.01			
F	Yellow Stars – Tricoryne	N	0.01			
F	Native St Johns	N	0.05			
G	Bot. mac	N	1			
G	Lomandra fil.	N	0.1			
G	Plains Spear Grass	N	5			
~~S~~	~~Eu. blak~~		~~15%~~			
F	Dandelion	E	10%			
F	Flat weed	E	1%			
F	Ribwort	E	0.5			
G	Vulpia brom	E	5%			
G	Bromus sp.	E	1%			
G	Soft Brome	E	1%			
S	Privet small leaved	HTE	✓ 1%			
G	Lolium rig.	E	1%			
G	Phalaris mino	HTE	1%			
F	St Johns wort	HTE	✓ 0.5%			
G	Briza minor	E	✓			
F	Spear Thistle	HT	✓ 1%			
G	Phalaris aquatica	HT	0.5			

GF Code: see Growth Form definitions in Appendix 1 N: native, E: exotic, HTE: high threat exotic GF – circle code if 'top 3'

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 ... 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 ...

Abundance: 1, 2, 3 ... 10, 20, 30 ... 100, 200 ... 1000

Numbers [1-8] on this page correlate with the numbers and explanatory notes on page 3

Site sheet #	1 of	Date	2.11.25	Survey name	2 6am MEP	Plot identifier	
Recorders	K Hare 4 B. FISHER / D. Weir	IBRA region	SWS	Veg zone ID	PCT 277		
Datum		Coordinate system	□ Projected □ Geographic	MGA zone	[1]X coordinate	[1]Y coordinate	
Location description	Description notes to locate site without plot reference						
[2]Plot dimensions	For composition & structure (400m²) 20m x 20m; For function (1000m²) 20 m x 50 m		[3]Orientation of midline from 0 m point			Photo #	

Datum: AGD66, WGS84, GDA94, GDA2020 or Other (specify). MGA Zone (for Projected coordinate system only): 56 (Coastal NSW), 55 (Central NSW) or 54 (Western NSW). X/Y coordinate: Long/Lat (for Projected coordinate system), Easting/Northing (for geographic coordinate system)

Vegetation integrity

Composition and structure plot values may be completed after entering data into a suitable table. It is not required during in the field.

Composition (400 m² plot)		Sum values	Structure (400 m² plot)		Sum values (%) (may sum to >100%)	Function (1000 m² plot) [5]Tree stem size class (DBH)	If data are to be used as more appropriate local data i.e. to generate local benchmarks, stems must be counted.
Total count of native plant species (richness) in each growth form group (not individual plants within each growth form)	Trees (TG)	4 3	Sum of [4]foliage cover of native plant species by growth form group	Trees (TG)	34.5	80 + cm	
	Shrubs (SG)	0		Shrubs (SG)	0	50 – 79 cm	II
	Grasses etc. (GG)	1		Grasses etc. (GG)	5.0	30 – 49 cm	
	Forbs (FG)	0		Forbs (FG)	0	20 – 29 cm	I
	Ferns (EG)	0		Ferns (EG)	0	10 – 19 cm	HHT HHT II
	Other (OG)	0		Other (OG)	0	5 – 9 cm	HHT HHT HHT HHT HHT HHT HHT IIII
						[6]Tree regeneration <5 cm	✓
			Total high threat weed cover		4.13 %	[7]Length of fallen logs	IIII
						[8]Hollow bearing trees	1 1 ③

Vegetation integrity - function cont. (five 1 m²) plots)	[1]Litter cover (%)	Bare ground cover (%)	Cryptogam cover (%)	Rock cover (%)
Subplot score (% in each)	35 10 10 5 10	1 1 5 1 1	0 0 0 0 0	0 0 0 0 0
Average of the 5 subplots	14%	1.8%	0	0

These attributes require consideration of site observations and may be completed after field work

Vegetation class	PCT 277 ↓	[2]Large tree benchmark size	20/ 30/ 50/ 80 DBH	Confidence	H/ M/ L
Plant community type (PCT)		EEC	Tick	Confidence	H/ M/ L

Physiography and site features that may help in determining PCT and management zone (optional) or for BioNet systematic flora survey purposes

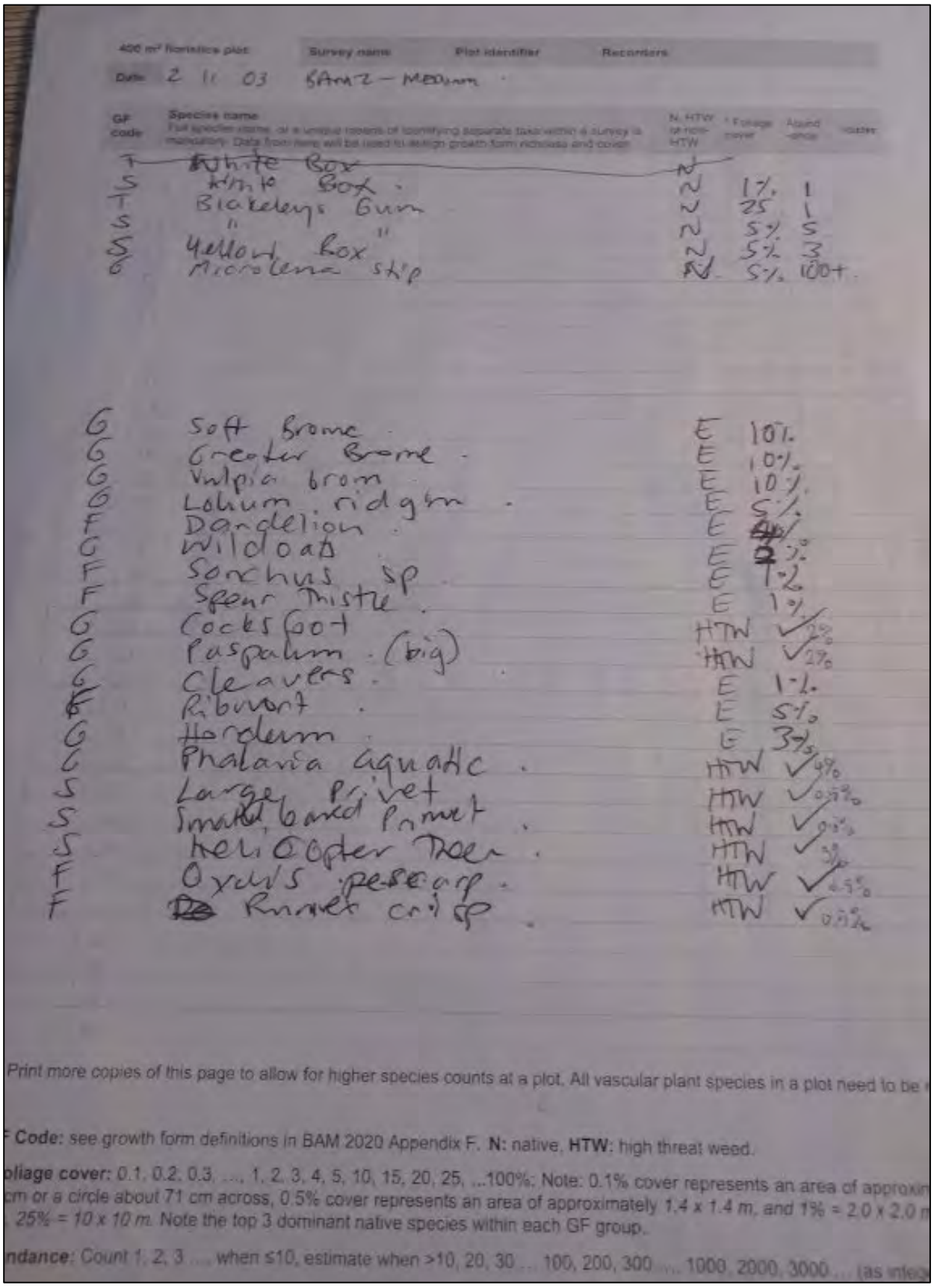
Morphological type		Landform element		Landform pattern		Microrelief	
Lithology		Soil surface texture		Soil colour		Soil depth	
Slope		Aspect		Site drainage		Distance to nearest water and type	

Disturbance	Severity code	Age code
Clearing (inc. logging)		
Cultivation (inc. pasture)		
Soil erosion		
Firewood / CWD removal		
Grazing (id. native/stock)		
Fire damage		
Storm damage		
Weediness		
Other		

Brief site description or other notes

Emergents heights			Upper stratum heights			Middle stratum heights			Lower stratum	
Top	Mid	Bottom	Top	Mid	Bottom	Top	Mid	Bottom	Top	Mid
m	m	m	m	m	m	m	m	m	m	m

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe   Age: R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)



400 m² floristics plot | Survey name | Plot identifier | Recorders

Date: 2 11 03 SAMZ – MEDium

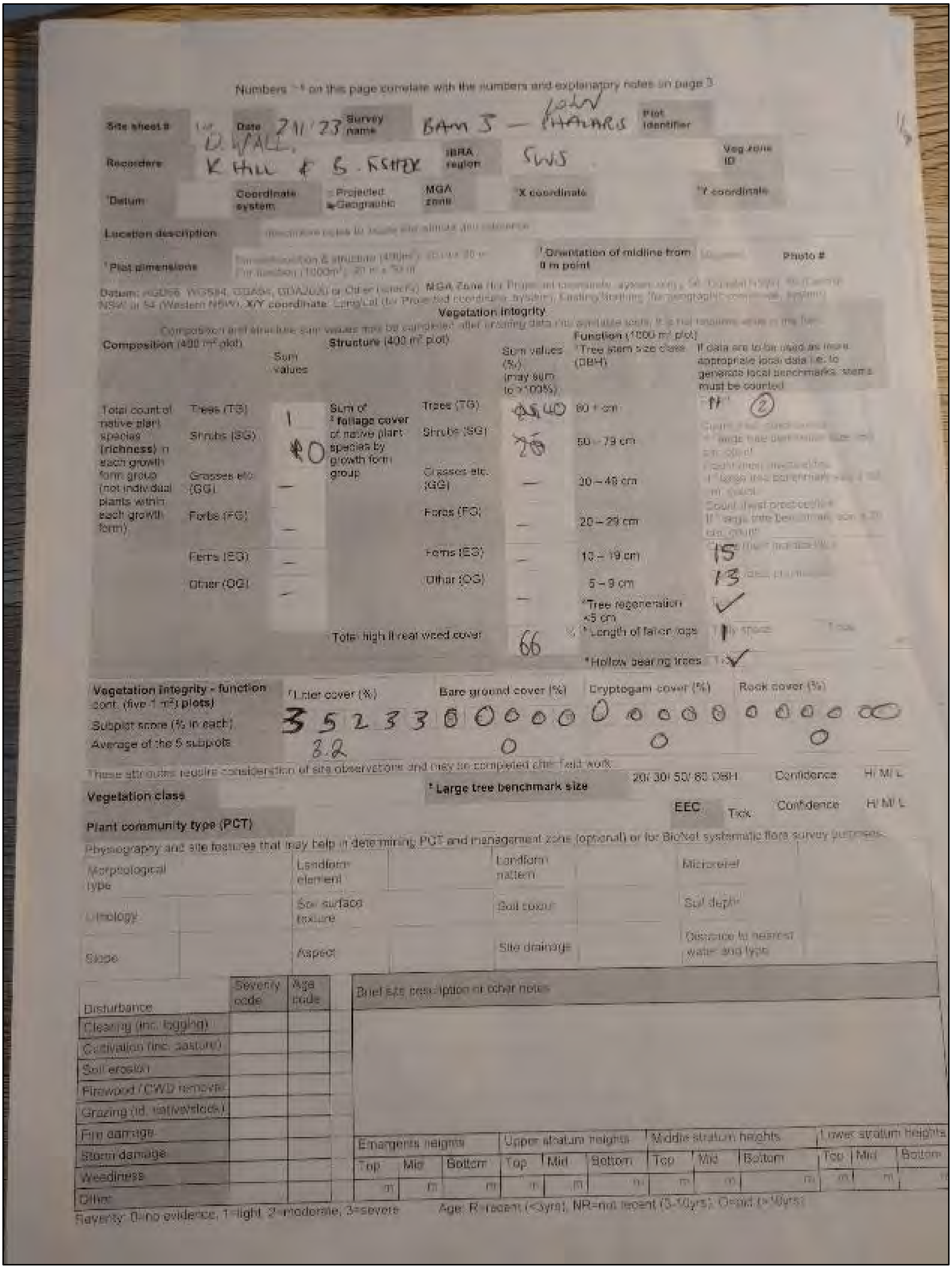
GF code	Species name (Full species name, or a unique name of identifying separate taxa within a survey is mandatory. Data from here will be used to assign growth form richness and cover)	N, HTW or non-HTW	Foliage cover	Abundance	Notes
T	White Box	N			
S	White Box	N	1%	1	
T	Blakelys Gum	N	25	1	
S	" "	N	5%	5	
S	Yellow Box	N	5%	3	
G	Microlena stip	N	5%	100+	
G	Soft Brome	E	10%		
G	Greater Brome	E	10%		
G	Vulpia brom	E	10%		
F	Lotum ridgm	E	5%		
F	Dandelion	E	4%		
F	Wild oat	E	2%		
F	Sonchus sp	E	1-2		
F	Spear Thistle	E	1%		
G	Cocksfoot	HTW	✓2%		
G	Paspalum (big)	HTW	✓2%		
F	Cleavers	E	1-2		
F	Ribwort	E	5%		
G	Hordeum	E	3%		
G	Phalaris aquatic	HTW	✓4%		
S	Large Privet	HTW	✓0.5%		
S	Small leaved Privet	HTW	✓0.5%		
F	Hedge Opter Thorn	HTW	✓3%		
F	Oxalis pes-caprae	HTW	✓0.5%		
F	Rumex crisp	HTW	✓0.5%		

Print more copies of this page to allow for higher species counts at a plot. All vascular plant species in a plot need to be

Code: see growth form definitions in BAM 2020 Appendix F. **N:** native, **HTW:** high threat weed.

oliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approxi
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
25% = 10 x 10 m. Note the top 3 dominant native species within each GF group.

ndance: Count 1, 2, 3 ... when ≤10, estimate when >10, 20, 30 ... 100, 200, 300 ... 1000, 2000, 3000 ... (as infeq



Numbers [1-9] on this page correlate with the numbers and explanatory notes on page 3

Site sheet #		Date 21/1/23	Survey name: BAM 5 – John Chalmers	Plot identifier	
Recorders	D. Wall, K Hill & G. Fisher	IBRA region	SWS	Veg zone ID	
[1] Datum		Coordinate system: Projected / Geographic	MGA zone	[1] X coordinate	[1] Y coordinate
Location description					
[2] Plot dimensions	Composition & structure (400m²): 20 m x 20 m; For function (1000m²): 20 m x 50 m	[3] Orientation of midline from 0 m point		Photo #	

Vegetation integrity

Composition (400 m² plot)		Sum values	Structure (400 m² plot)		Sum values (%) (may sum to >100%)	Function (1000 m² plot) [4] Tree stem size class (DBH)	
Total count of native plant species (richness) in each growth form group	Trees (TG)	1	Sum of [5] foliage cover of native plant species by growth form group	Trees (TG)	25, 40	80 + cm	(2)
	Shrubs (SG)	10		Shrubs (SG)	20	50 – 79 cm	
	Grasses etc. (GG)	–		Grasses etc. (GG)	–	30 – 49 cm	
	Forbs (FG)	–		Forbs (FG)	–	20 – 29 cm	
	Ferns (EG)	–		Ferns (EG)	–	10 – 19 cm	15
	Other (OG)	–		Other (OG)	–	5 – 9 cm	13
						[6] Tree regeneration <5 cm	✓
			Total high threat weed cover		66 %	[7] Length of fallen logs	
						[8] Hollow bearing trees	✓

Vegetation integrity - function cont. (five 1 m² plots)	[9] Litter cover (%)	Bare ground cover (%)	Cryptogam cover (%)	Rock cover (%)
Subplot score (% in each)	3 5 2 3 3	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0
Average of the 5 subplots	3.2	0	0	0

These attributes require consideration of site observations and may be completed after field work.

Vegetation class		[9] Large tree benchmark size	20/ 30/ 50/ 80 DBH	Confidence	H/ M/ L
Plant community type (PCT)		EEC	Tick	Confidence	H/ M/ L

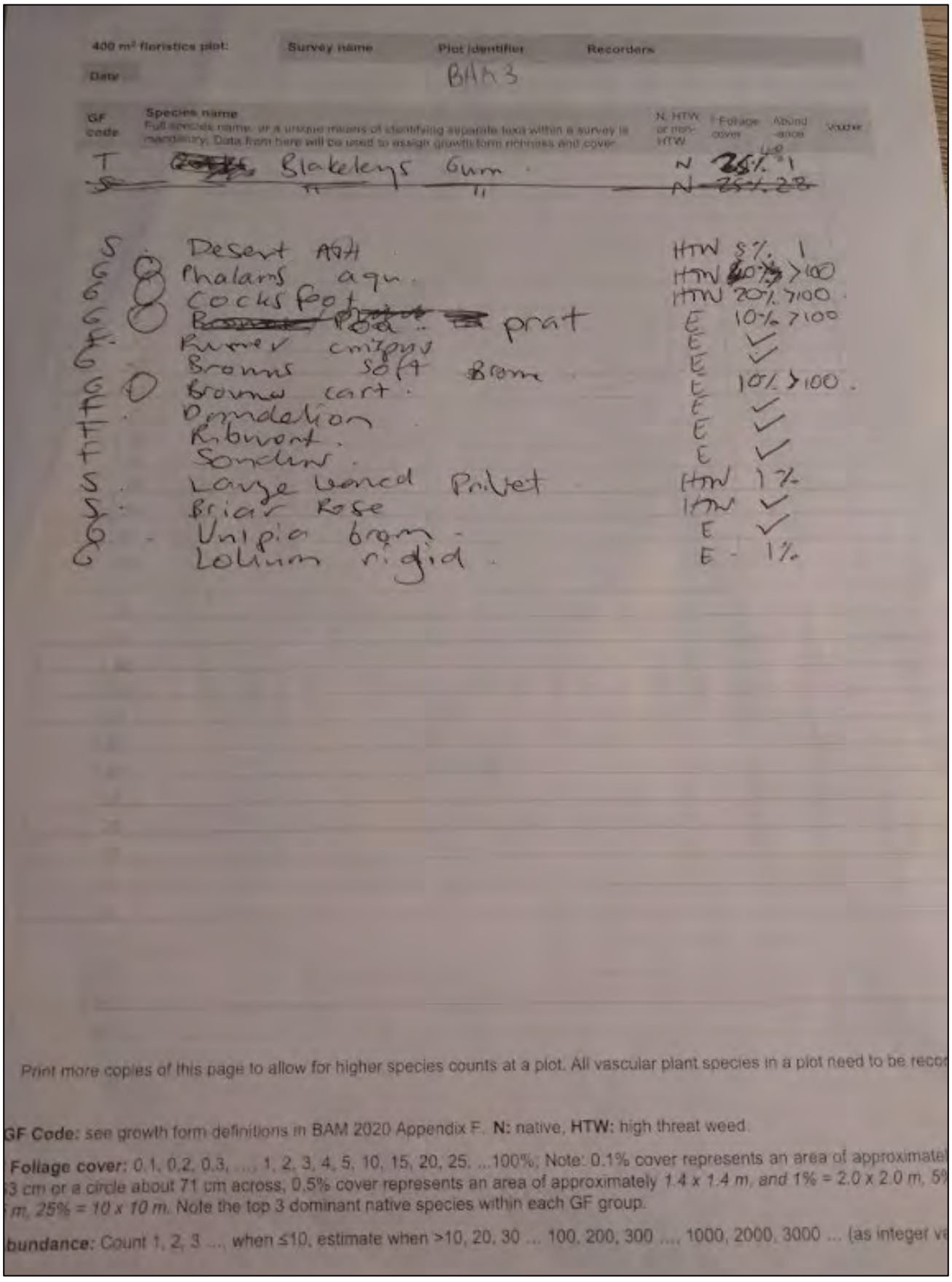
Physiography and site features that may help in determining PCT and management zone (optional) or for BioNet systematic flora survey purposes.

Morphological type		Landform element		Landform pattern	Microrelief
Lithology		Soil surface texture		Soil colour	Soil depth
Slope		Aspect		Site drainage	Distance to nearest water and type

Disturbance	Severity code	Age code	Brief site description or other notes
Clearing (inc. logging)			
Cultivation (inc. pasture)			
Soil erosion			
Firewood / CWD removal			
Grazing (id. native/stock)			
Fire damage			
Storm damage			
Weediness			
Other			

Emergents heights			Upper stratum heights			Middle stratum heights			Lower stratum heights		
Top	Mid	Bottom	Top	Mid	Bottom	Top	Mid	Bottom	Top	Mid	Bottom
m	m	m	m	m	m	m	m	m	m	m	m

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe Age: R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)



400 m² floristics plot: | Survey name | Plot identifier | Recorders

Date

BAM 3

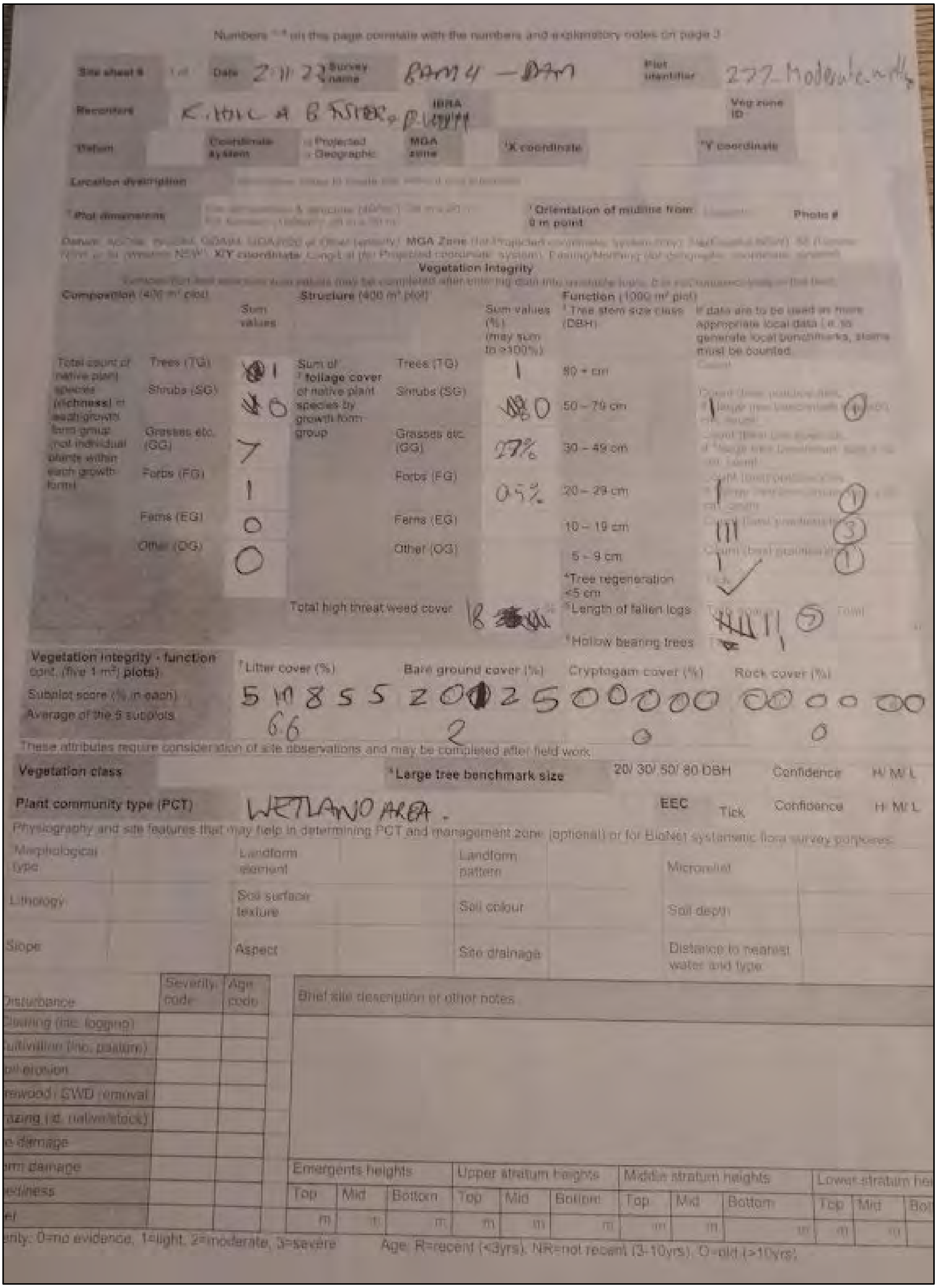
GF code	Species name Full species name, or a unique means of identifying separate taxa within a survey is mandatory. Data from here will be used to assign growth form richness and cover	N, HTW or non-HTW	Foliage cover	Abund-ance	Voucher
T	~~[redacted]~~ Blakelys Gum	N	25%	1	
S	Desert Ash	HTW	5%	1	
G	Phalaris aqu.	HTW	~~40%~~	>100	
G	Cocks foot	HTW	20%	>100	
G	~~[redacted]~~ Poa ~~[redacted]~~ prat	E	10%	>100	
F	Rumex crispus	E	✓		
G	Browns soft Brome	E	✓		
G	Bromus cart.	E	10%	>100	
F	Dandelion	E	✓		
F	Ribwort.	E	✓		
S	Sonchus.	E	✓		
S	Large leaved Privet	HTW	1%		
S	Briar Rose	HTW	✓		
G	Unipia brom.	E	✓		
G	Lolium rigid.	E	1%		

Print more copies of this page to allow for higher species counts at a plot. All vascular plant species in a plot need to be reco

GF Code: see growth form definitions in BAM 2020 Appendix F. **N:** native, **HTW:** high threat weed.

Foliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approximate 3 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% *m, 25% = 10 x 10 m.* Note the top 3 dominant native species within each GF group.

bundance: Count 1, 2, 3 ..., when ≤10, estimate when >10, 20, 30 ... 100, 200, 300 ..., 1000, 2000, 3000 ... (as integer va



Numbers [1–8] on this page correlate with the numbers and explanatory notes on page 3

Site sheet #	of	Date 2/11/22	Survey name	Plot identifier
Recorders			IBRA region	Veg zone ID
Datum	Coordinate system	Projected / Geographic	MGA zone	X coordinate / Y coordinate

Location description

Plot dimensions · Orientation of midline from 0 m point · Photo #

Vegetation integrity

Composition (400 m² plot)		Sum values	Structure (400 m² plot)		Sum values (%) (may sum to >100%)	Function (1000 m² plot) Tree stem size class (DBH)	
Total count of native plant species (richness) in each growth form group	Trees (TG)	1	Sum of foliage cover of native plant species by growth form group	Trees (TG)	1	80 + cm	
	Shrubs (SG)	0		Shrubs (SG)	0	50 – 79 cm	
	Grasses etc. (GG)	7		Grasses etc. (GG)	77%	30 – 49 cm	
	Forbs (FG)	1		Forbs (FG)	0.5%	20 – 29 cm	1
	Ferns (EG)	0		Ferns (EG)		10 – 19 cm	3
	Other (OG)	0		Other (OG)		5 – 9 cm	1
						Tree regeneration <5 cm	✓
			Total high threat weed cover		18	Length of fallen logs	5
						Hollow bearing trees	

Vegetation integrity - function cont. (five 1 m² plots)	Litter cover (%)	Bare ground cover (%)	Cryptogam cover (%)	Rock cover (%)
Subplot score (% in each)	5 10 8 5 5	2 0 0 2 5	0 0 0 0 0	0 0 0 0 0
Average of the 5 subplots	6.6	2	0	0

These attributes require consideration of site observations and may be completed after field work

Vegetation class		Large tree benchmark size	20/ 30/ 50/ 80 DBH	Confidence	H/ M/ L
Plant community type (PCT)	WETLAND AREA.	EEC	Tick	Confidence	H/ M/ L

Physiography and site features that may help in determining PCT and management zone (optional) or for BioNet systematic flora survey purposes

Morphological type		Landform element		Landform pattern		Microrelief	
Lithology		Soil surface texture		Soil colour		Soil depth	
Slope		Aspect		Site drainage		Distance to nearest water and type	

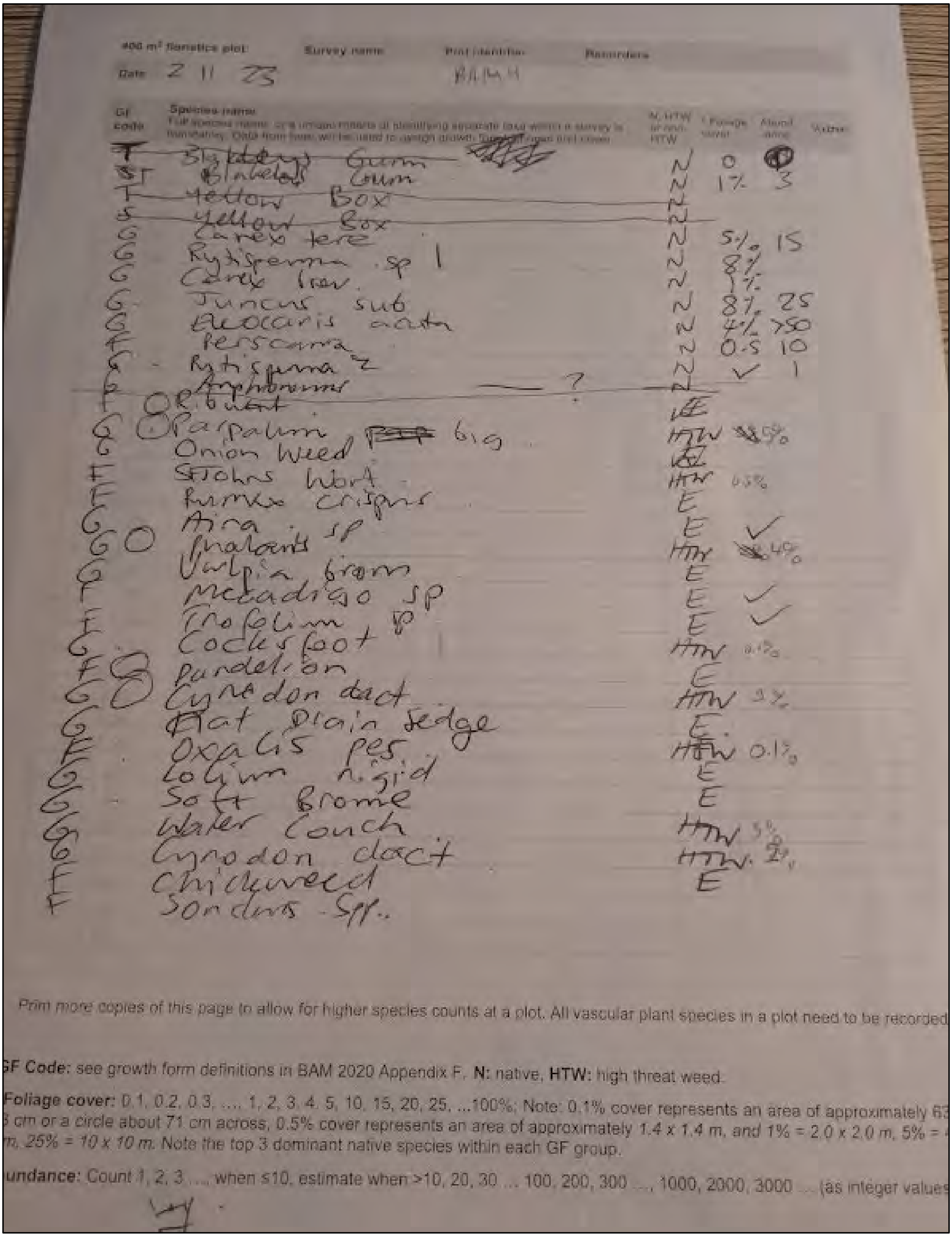
Disturbance	Severity code	Age code
Clearing (inc. logging)		
Cultivation (inc. pasture)		
Soil erosion		
Firewood / CWD removal		
Grazing (id. native/stock)		
Fire damage		
Storm damage		
Weediness		
Other		

Brief site description or other notes

Emergents heights			Upper stratum heights			Middle stratum heights			Lower stratum heights		
Top	Mid	Bottom	Top	Mid	Bottom	Top	Mid	Bottom	Top	Mid	Bottom
m	m	m	m	m	m	m	m	m	m	m	m

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

Age: R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)



400 m² floristics plot | Survey name | Plot identifier | Recorders

Date: 2 11 23 — BAM 4

GF code	Species name	N, HTW or non-HTW	Foliage cover	Abundance	Voucher
T	~~Blakelys Gum~~	N	0		
T	Blakelys Gum	N	1%	3	
T	~~Yellow Box~~	N			
S	~~Yellow Box~~	N			
G	Carex tere	N	5%	15	
G	Rytidosperma sp 1	N	8%		
G	Carex inv.	N	1%		
G	Juncus sub	N	8%	25	
G	Eleocharis acuta	N	4%	750	
F	Persicaria	N	0.5	10	
G	Rytisperma 2	N	✓	1	
F	~~Amphibromus~~ ?	N			
F	OR. bent	E			
G	O Paspalum big	HTW	5%		
G	Onion Weed	E			
F	St Johns Wort	HTW	0.5%		
F	Rumex crispus	E			
G	Aira sp	E	✓		
G O	Phalaris	HTW	4%		
G	Vulpia brom	E			
F	Medicago sp	E	✓		
F	Trifolium sp	E	✓		
G	Cocksfoot	HTW	0.1%		
F	Dandelion	E			
G	Cynodon dact	HTW	3%		
G	Flat plain sedge	E			
F	Oxalis pes	HTW	0.1%		
G	Lolium rigid	E			
G	Soft Brome	E			
G	Water Couch	HTW	5%		
G	Cynodon dact	HTW	2%		
F	Chickweed	E			
F	Sonchus spp.				

Print more copies of this page to allow for higher species counts at a plot. All vascular plant species in a plot need to be recorded

GF Code: see growth form definitions in BAM 2020 Appendix F. N: native, HTW: high threat weed.

Foliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approximately 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% = m, 25% = 10 x 10 m. Note the top 3 dominant native species within each GF group.

Abundance: Count 1, 2, 3 ..., when ≤10, estimate when >10, 20, 30 ... 100, 200, 300 ..., 1000, 2000, 3000 ... (as integer values

277 - Moderate

BAM Site – Field Survey Form Site Sheet no:

Date	2 11 22	Survey Name	Zone ID	Recorders		
		Pioneer Dr	BAM 5	D. Wall	K. Hill	B. Lghr
Zone	Datum	Plot ID		Plot dimensions		Photo #
Easting	Northing	IBRA region	SWS	Midline bearing from 0 m		
Vegetation Class						Confidence: H M L
Plant Community Type	277			EEC:		Confidence: H M L

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	2
	Shrubs	1
	Grasses etc.	1
	Forbs	0
	Ferns	0
	Other	0
Sum of Cover of native vascular plants by growth form group	Trees	36
	Shrubs	0.5
	Grasses etc.	1
	Forbs	0
	Ferns	0
	Other	0
High Threat Weed cover		54%

BAM Attribute (1000 m² plot)		
DBH	# Tree Stems Count	# Stems with Hollows
80 + cm	ll	l ✓
50 – 79 cm	ll	
30 – 49 cm	llll	
20 – 29 cm	𝍸	
10 – 19 cm	𝍸𝍸𝍸𝍸 ll	
5 – 9 cm	𝍸 𝍸 𝍸 lll	
< 5 cm	✓	n/a
Length of logs (m) (≥10 cm diameter, >50 cm in length)	𝍸 lll	

Counts apply when the number of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30, … 100, 200, 300, …). For a multi-stemmed tree, only the largest living stem is included in the count/estimate. Tree stems must be living.

For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

10 8 5 10 1 2 4 3 1 2

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each)	2	4	3	1	2	10	8	5	10	1	0	0	0	0	0	0	0	0	0	0
Average of the 5 subplots	2.4					6.8					0					0				

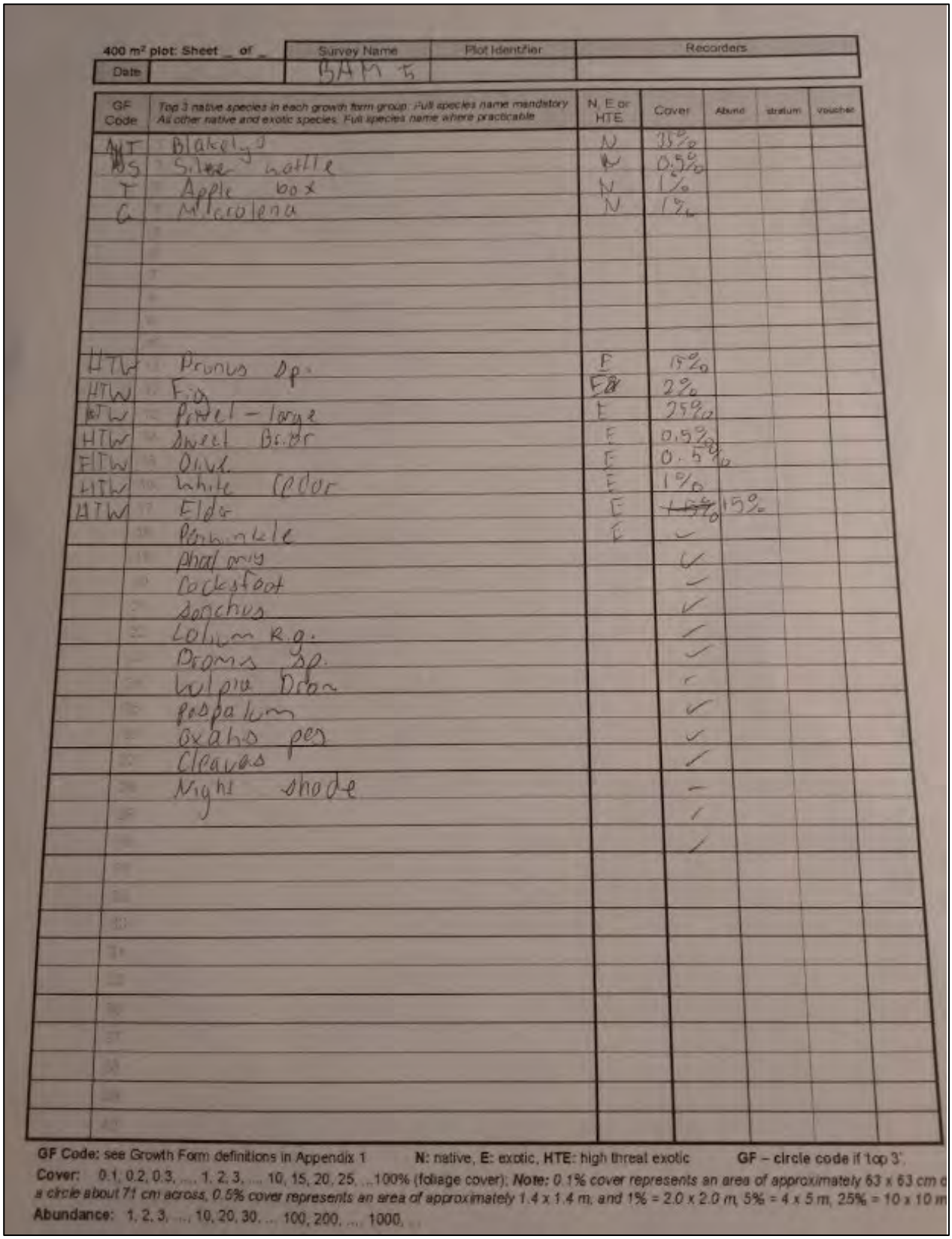
Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		Landform Element		Landform Pattern		Microrelief	
Lithology		Soil Surface Texture		Soil Colour		Soil Depth	
Slope		Aspect		Site Drainage		Distance to nearest water and type	

Plot Disturbance	Severity code	Age code	Observational evidence:
Clearing (inc. logging)			
Cultivation (inc. pasture)			
Soil erosion			
Firewood / CWD removal			
Grazing (identify native/stock)			
Fire damage			
Storm damage			
Weediness			
Other			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe. Age: R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)



400 m² plot: Sheet _ of _ | Survey Name: BAM 5 | Plot Identifier | Recorders | Date

GF Code	Top 3 native species in each growth form group. Full species name mandatory. All other native and exotic species. Full species name where practicable	N, E or HTE	Cover	Abund	stratum	voucher
MT	Blakely's	N	35%			
MS	Silver wattle	N	0.5%			
T	Apple box	N	1%			
G	Microlena	N	1%			
HTW	Prunus Sp.	E	15%			
HTW	Fig	E	2%			
HTW	Privet - large	E	25%			
HTW	Sweet Briar	E	0.5%			
HTW	Olive	E	0.5%			
HTW	White Cedar	E	1%			
HTW	Elder	E	~~15%~~	15%		
	Periwinkle	E	✓			
	Phalaris		✓			
	Cocksfoot		✓			
	Sonchus		✓			
	Lolium R.g.		✓			
	Bromus Sp.		✓			
	Vulpia Broa		✓			
	Paspalum		✓			
	Oxalis pes		✓			
	Cleavers		✓			
	Night shade		–			
			✓			
			✓			

GF Code: see Growth Form definitions in Appendix 1 N: native, E: exotic, HTE: high threat exotic GF – circle code if 'top 3'.

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 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, ...

Appendix I: Decision-maker Authorisation to Use More Appropriate Local Data

Not applicable.

Appendix J: BioNet Vegetation Classification - PCT 227, Benchmark Data

BioNet Vegetation Classification - Community Profile Report

Plant Community Type ID (PCT ID): 277

PCT Name: Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

Classification Confidence Level: 2-High

Vegetation Description: Tall woodland to about 20 m high dominated by Blakely's Red Gum (Eucalyptus blakelyi) and Yellow Box (Eucalyptus melliodora). Blakely's Red Gum or Yellow Box vfary in their dominance and either can be absent in some places grading into areas with more Apple Box (Eucalyptus bridgesiana), Long-leaved Box (Eucalyptus goniocalyx) and rarely Eucalyptus microcarpa. Shrubs are sparse or absent and may include Acacia dealbata. The ground cover may be dense to sparse depending on rainfall and is dominated by grass species including Poa sieberiana, Bothriochloa macra, Aristida ramosa, Themeda australis, Austrodanthonia spp and Austrostipa spp. Forbs include Vittadinia cuneata, Chrysocephalum apiculatum and Sida corrugata. A very widespread community on fertile deep, loam or clay soils derived from a range of substrates including fine-grained sedimentary and metamorphic rocks but also volcanics and fine-grained granite. Occurs on flats, footslopes and hillslopes mainly in the upper slopes sub-region of the NSW South-western Slopes Bioregion mainly east of Wagga Wagga. Grades into White Box (Eucalyptus albens) grassy woodland (ID266) on hillslopes and into either ID76 (Western Grey Box woodland) or ID276 (Yellow Box woodland) on parna or alluvial flats. Mainly cleared and subjected to nutrification from fertilizers and associated weed invasion.

Variation and Natural Disturbance: Ground cover alters composition across its wide distribution with altitude and latitude, but there are many species that are common to most sites across its range.

Vegetation Formation: Grassy Woodlands;

Vegetation Class: Western Slopes Grassy Woodlands;

IBRA Bioregion(s): NSW South Western Slopes; South Eastern Highlands;

IBRA Sub-region(s): Bondo; Murrumbateman; Inland Slopes; Lower Slopes; Crookwell; Orange; Hill End;

LGA: UPPER LACHLAN; JUNEE; GUNDAGAI; BOOROWA; GREATER HUME; HARDEN; YASS VALLEY; WAGGA WAGGA; COOTAMUNDRA; MID-WESTERN REGIONAL; YOUNG; COWRA; TUMUT; ALBURY; COOLAMON; CABONNE; TUMBARUMBA; WEDDIN; WELLINGTON; PARKES;

Lithology: Shale , Limestone , Colluvial sediments , Microgranite , Mudstone , Slate , Phyllite , Granite

Landform Pattern: Hills

Landform Element: Footslope , Hillslope , Plain , Valley flat

Emergent species: None

Upper Stratum Species: Eucalyptus blakelyi; Eucalyptus melliodora; Eucalyptus bridgesiana; Eucalyptus albens; Eucalyptus microcarpa; Eucalyptus conica; Callitris glaucophylla; Eucalyptus goniocalyx; Eucalyptus polyanthemos subsp. polyanthemos;

Mid Stratum Species: Acacia dealbata; Hibbertia obtusifolia;

Ground Stratum Species: Themeda australis; Poa sieberiana; Bothriochloa macra; Aristida ramosa; Panicum effusum; Austrostipa verticillata; Austrostipa scabra subsp. scabra; Austrostipa bigeniculata; Austrodanthonia auriculata; Austrodanthonia setacea; Cymbopogon refractus; Elymus scaber var. scaber; Juncus usitatus; Lomandra filiformis subsp. coriacea; Alternanthera nana; Geranium solanderi var. solanderi; Chrysocephalum apiculatum; Sida corrugata; Carex inversa; Wahlenbergia luteola; Chloris truncata; Cheilanthes sieberi subsp. sieberi; Vittadinia cuneata; Lomandra filiformis subsp. coriacea; Enteropogon acicularis; Convolvulus graminetinus; Bulbine bulbosa; Dianella revoluta var. revoluta; Calotis scabiosifolia var. scabiosifolia;

Diagnostic Species: Not Assessed

Fire Regime: Fire may be important as a means to reduce Nitrogen levels that favour the dominance of exotic annual species.

TEC Assessed: Has associated TEC

TEC List: Listed BC Act,CE: White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions (Part); Listed EPBC Act,CE: White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions (Part);

Associated TEC Comments:

PCT Percent Cleared: 94.00

PCT Definition Status: Approved

Appendix K: Credit Reports

NSW GOVERNMENT

BAM Vegetation Zones Report

Proposal Details

Assessment Id	Assessment name	BAM data last updated *
00044450/BAAS18081/23/00044466	Pioneer Drive Subdivision 2023	22/06/2023
Assessor Name	**Report Created**	**BAM Data version ***
Damian James Wall	13/02/2024	61
Assessor Number	**Assessment Type**	**BAM Case Status**
BAAS18081	Part 4 Developments (General)	Finalised
Assessment Revision	**Date Finalised**	**BOS entry trigger**
1	13/02/2024	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.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones

NSW GOVERNMENT

BAM Vegetation Zones Report

1	277_High	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	High	0.42	1	
2	277_Moderate	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	Moderate	2.12	2	
3	277_Moderate-wetland	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	Moderate-wetland	0.28	1	

NSW GOVERNMENT

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id 00044450/BAAS18081/23/00044466	Proposal Name Pioneer Drive Subdivision 2023	BAM data last updated * 22/06/2023
Assessor Name Damian James Wall	Assessor Number BAAS18081	BAM Data version * 61
Proponent Names	Report Created 13/02/2024	BAM Case Status Finalised
Assessment Revision 1	Assessment Type Part 4 Developments (General)	Date Finalised 13/02/2024
BOS entry trigger 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.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	Critically Endangered Ecological Community	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

Species

NSW GOVERNMENT

BAM Biodiversity Credit Report (Like for like)

Nil

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

NSW GOVERNMENT

BAM Biodiversity Credit Report (Like for like)

Name
Dasyurus maculatus / Spotted-tailed Quoll
Lophoictinia isura / Square-tailed Kite
Pomatostomus temporalis temporalis / Grey-crowned Babbler (eastern subspecies)
Pteropus poliocephalus / Grey-headed Flying-fox
Chthonicola sagittata / Speckled Warbler
Anthochaera phrygia / Regent Honeyeater
Callocephalon fimbriatum / Gang-gang Cockatoo
Falco subniger / Black Falcon
Circus assimilis / Spotted Harrier
Haliaeetus leucogaster / White-bellied Sea-Eagle
Hirundapus caudacutus / White-throated Needletail

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
277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	2.8	55	0	55

NSW GOVERNMENT

BAM Biodiversity Credit Report (Like for like)

277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654,	-	277_High	Yes	15	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

NSW GOVERNMENT

BAM Biodiversity Credit Report (Like for like)

	702, 703, 704, 705, 710, 711, 796, 797, 799, 847, 851, 921, 1099, 1303, 1304, 1307, 1324, 1329, 1330, 1332, 1383, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396, 3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150					
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298,	-	277_Moderate	Yes	33	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

NSW GOVERNMENT

BAM Biodiversity Credit Report (Like for like)

	302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 847, 851, 921, 1099, 1303, 1304, 1307, 1324, 1329, 1330, 1332, 1383, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396, 3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150					
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New	-	277_Moderate-wetland	Yes	7	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the

NSW GOVERNMENT

BAM Biodiversity Credit Report (Like for like)

	England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 847, 851, 921, 1099, 1303, 1304, 1307, 1324, 1329, 1330, 1332, 1383, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396,				impacted site.

NSW GOVERNMENT

BAM Biodiversity Credit Report (Like for like)

	3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150					

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like credit retirement options

NSW GOVERNMENT

BAM Biodiversity Credit Report (Variations)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00044450/BAAS18081/23/00044466	Pioneer Drive Subdivision 2023	22/06/2023
Assessor Name	Assessor Number	BAM Data version *
Damian James Wall	BAAS18081	61
Proponent Name(s)	Report Created	BAM Case Status
	13/02/2024	Finalised
Assessment Revision	Assessment Type	Date Finalised
1	Part 4 Developments (General)	13/02/2024
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
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	Critically Endangered Ecological Community	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

Species

Nil

Additional Information for Approval

PCT Outside lbra Added

NSW GOVERNMENT

BAM Biodiversity Credit Report (Variations)

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
Dasyurus maculatus / Spotted-tailed Quoll
Lophoictinia isura / Square-tailed Kite
Pomatostomus temporalis temporalis / Grey-crowned Babbler (eastern subspecies)
Pteropus poliocephalus / Grey-headed Flying-fox
Chthonicola sagittata / Speckled Warbler
Anthochaera phrygia / Regent Honeyeater
Callocephalon fimbriatum / Gang-gang Cockatoo
Falco subniger / Black Falcon
Circus assimilis / Spotted Harrier
Haliaeetus leucogaster / White-bellied Sea-Eagle
Hirundapus caudacutus / White-throated Needletail

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

NSW GOVERNMENT

BAM Biodiversity Credit Report (Variations)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	White Box – Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	2.8	55	0	55.00

277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567,	-	277_High	Yes	15	Lower Slopes,Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

NSW GOVERNMENT

BAM Biodiversity Credit Report (Variations)

	571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 847, 851, 921, 1099, 1303, 1304, 1307, 1324, 1329, 1330, 1332, 1383, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396, 3397, 3398, 3399, 5406, 3415, 3533, 4147, 4149, 4150				
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421,	-	277	Moder ate	Yes	33	Lower Slopes,Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

NSW GOVERNMENT

BAM Biodiversity Credit Report (Variations)

	433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 847, 851, 921, 1099, 1303, 1304, 1307, 1324, 1329, 1330, 1332, 1383, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396, 3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150					
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281,	-	277_Moderate-wetland	Yes	7	Lower Slopes,Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

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BAM Biodiversity Credit Report (Variations)

282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 847, 851, 921, 1099, 1303, 1304, 1307, 1324, 1329, 1330, 1332, 1383, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396, 3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like options

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BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00044450/BAAS18081/23/00044466	Pioneer Drive Subdivision 2023	22/06/2023
Assessor Name	Report Created	BAM Data version *
Damian James Wall	13/02/2024	61
Assessor Number	BAM Case Status	Date Finalised
BAAS18081	Finalised	13/02/2024
Assessment Revision	Assessment Type	BOS entry trigger
1	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	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Ecosystem credits

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BAM Credit Summary Report

Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

1	277_High	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	56.9	56.9	0.42	Population size	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	15

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BAM Credit Summary Report

2	277_Moderate	White Box – Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	24.9	24.9	2.1	Population size	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	33

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BAM Credit Summary Report

3	277_Moderate-wetland	White Box – Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	38.1	38.1	0.28	Population size	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	7
											Subtotal	**55**
											Total	**55**

Species credits for threatened species

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

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BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00044450/BAAS18081/23/00044466	Pioneer Drive Subdivision 2023	22/06/2023
Assessor Name	**Report Created**	**BAM Data version ***
Damian James Wall	13/02/2024	61
Assessor Number	**Assessment Type**	**BAM Case Status**
BAAS18081	Part 4 Developments (General)	Finalised
Assessment Revision	**BOS entry trigger**	**Date Finalised**
1	BOS Threshold: Area clearing threshold	13/02/2024

* 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	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Diamond Firetail	Stagonopleura guttata	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Dusky Woodswallow	Artamus cyanopterus cyanopterus	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Flame Robin	Petroica phoenicea	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Hooded Robin (south-eastern form)	Melanodryas cucullata cucullata	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Little Eagle	Hieraaetus morphnoides	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Little Lorikeet	Glossopsitta pusilla	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

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BAM Predicted Species Report

Masked Owl	Tyto novaehollandiae	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Painted Honeyeater	Grantiella picta	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Scarlet Robin	Petroica boodang	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Superb Parrot	Polytelis swainsonii	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Swift Parrot	Lathamus discolor	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Turquoise Parrot	Neophema pulchella	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Varied Sittella	Daphoenositta chrysoptera	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

Threatened species Manually Added

None added

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

Common Name	Scientific Name	Plant Community Type(s)
Black Falcon	Falco subniger	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Gang-gang Cockatoo	Callocephalon fimbriatum	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Grey-headed Flying-fox	Pteropus poliocephalus	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Regent Honeyeater	Anthochaera phrygia	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Speckled Warbler	Chthonicola sagittata	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Spotted Harrier	Circus assimilis	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Spotted-tailed Quoll	Dasyurus maculatus	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

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BAM Predicted Species Report

Square-tailed Kite	Lophoictinia isura	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
White-bellied Sea Eagle	Haliaeetus leucogaster	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
White-throated Needletail	Hirundapus caudacutus	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes 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
Black Falcon	Falco subniger	Refer to BAR
Gang-gang Cockatoo	Callocephalon fimbriatum	Refer to BAR
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	Refer to BAR
Grey-headed Flying-fox	Pteropus poliocephalus	Refer to BAR
Regent Honeyeater	Anthochaera phrygia	Refer to BAR
Speckled Warbler	Chthonicola sagittata	Refer to BAR
Spotted Harrier	Circus assimilis	Refer to BAR
Spotted-tailed Quoll	Dasyurus maculatus	Refer to BAR
Square-tailed Kite	Lophoictinia isura	Refer to BAR
White-bellied Sea-Eagle	Haliaeetus leucogaster	Refer to BAR
White-throated Needletail	Hirundapus caudacutus	Refer to BAR

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BAM Candidate Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00044450/BAAS18081/23/00044466	Pioneer Drive Subdivision 2023	22/06/2023
Assessor Name	Report Created	BAM Data version *
Damian James Wall	13/02/2024	61
Assessor Number	Assessment Type	BAM Case Status
BAAS18081	Part 4 Developments (General)	Finalised
Assessment Revision	Date Finalised	BOS entry trigger
1	13/02/2024	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

List of Species Requiring Survey

Name	Presence	Survey Months
Hieraaetus morphnoides Little Eagle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lathamus discolor Swift Parrot	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Ninox connivens Barking Owl	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

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BAM Candidate Species Report

Petaurus norfolcensis Squirrel Glider	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Phascolarctos cinereus Koala	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Polytelis swainsonii Superb Parrot	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Tyto novaehollandiae Masked Owl	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

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
Ausfeld's Wattle	Acacia ausfeldii	Habitat degraded Habitat constraints
Bush Stone-curlew	Burhinus grallarius	Habitat constraints
Eastern Pygmy-possum	Cercartetus nanus	Habitat degraded
Gang-gang Cockatoo	Callocephalon fimbriatum	Habitat degraded

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Grey-headed Flying-fox	Pteropus poliocephalus	Habitat constraints
Large-eared Pied Bat	Chalinolobus dwyeri	Habitat constraints
Pink-tailed Legless Lizard	Aprasia parapulchella	Habitat constraints
Regent Honeyeater	Anthochaera phrygia	Habitat constraints
Silky Swainson-pea	Swainsona sericea	Habitat degraded
Small Purple-pea	Swainsona recta	Habitat degraded
Small Scurf-pea	Cullen parvum	Habitat degraded
Square-tailed Kite	Lophoictinia isura	Habitat degraded
Squirrel Glider in the Wagga Wagga Local Government Area	Petaurus norfolcensis - endangered population	Refer to BAR
White-bellied Sea-Eagle	Haliaeetus leucogaster	Habitat constraints

Appendix L: BDAR Requirements Compliance

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Introduction	Chapters 2 & 3	**Information**	
		Introduction to the biodiversity assessment including:	–
1.1.1		☐ brief description of the proposal	13
1.1.2		☐ location	13
1.1.2		☐ identification of subject land boundary, including:	13
1.1.2		☐ operational footprint	
1.1.2		☐ construction footprint indicating clearing associated with temporary/ancillary construction facilities and infrastructure	
1.1.3		☐ general description of the subject land	16
1.5		☐ sources of information used in the assessment, including reports and spatial data	21
1.2		☐ identification and justification for entering the BOS	18
		Maps and tables	
Figure 1; Figure 3		☐ 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	14, 17
Landscape	Sections 3.1, and 3.2, Appendix E	**Information**	
		Identification of site context components and landscape features, including:	–
1.1.3		☐ general description of subject land topographic and hydrological setting, geology and soils	34
3.3		☐ per cent native vegetation cover in the assessment area (as described in BAM Section 3.2)	36
3.2.1		☐ IBRA bioregions and subregions (as described in BAM Subsection 3.1.3(2.))	35
3.2.2		☐ rivers and streams classified according to stream order (as described in BAM Subsection 3.1.3(3.) and Appendix E)	35
3.2.2		☐ wetlands within, adjacent to and downstream of the site (as described in BAM Subsection 3.1.3(3.))	35
3.2.3		☐ connectivity of different areas of habitat (as described in BAM Subsection 3.1.3(5–6.))	35

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
3.2.4		☐ 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.))	35
3.2.5		☐ areas of outstanding biodiversity value occurring on the subject land and assessment area (as described in BAM Subsection 3.1.3(8–9.))	35
3.2.7		☐ any additional landscape features identified in any SEARs for the proposal	35
3.2.6		☐ NSW (Mitchell) landscape on which the subject land occurs	35
2		☐ 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)	22
		Maps and tables	
Figure 1; 1.1.2		☐ Site Map ☐ Property boundary ☐ Boundary of subject land ☐ Cadastre of subject land (including labelling of Lot and DP or section plan if relevant) ☐ Landscape features identified in BAM Subsection 3.1.3	13, 14
Figure 2; 1.1.2		☐ 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	13 15
Figure 2; 1.1.2		Landscape features identified in BAM Subsection 3.1.3 and to be shown on the Site Map and/or Location Map include:	15, 34
		☐ IBRA bioregions and subregions ☐ rivers, streams and estuaries ☐ wetlands and important wetlands ☐ connectivity of different areas of habitat	

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ 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	
		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	–
Native vegetation	Chapter 4, Appendix A and Appendix H	**Information**	
Figure 8; 4.1 & 4.1.1		☐ 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)	37, 38
4.1.2		☐ Provide justification for all parts of the subject land that do not contain native vegetation (as described in BAM Subsection 4.1.2)	38
2.2.1; 2.2.2		☐ 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)	23, 23
2.2.3, 2.2.4		☐ Describe the systematic field-based floristic vegetation survey undertaken in accordance with BAM Section 4.2	24
NA		☐ 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	NA

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		the decision-maker that they support the use of more appropriate local data (as described in BAM Subsection 1.4.2 and Appendix A)	
		For each PCT within the subject land, describe:	–
Figure 5; 4.2.1; Table 5; 4.2.2; Table 6		☐ PCT name and ID	25, 38, 39 , 39, 40
Table 6; 4.2.2		☐ vegetation class	40, 39
4.2.1		☐ extent (ha) within subject land	39
4.2.4		☐ evidence used to identify a PCT including any analyses undertaken, references/sources, existing vegetation maps (BAM Section 4.2(1–3.))	41
Appendix B; Appendix H		☐ plant species relied upon for identification of the PCT and relative abundance of each species	86, 111
4.2.5 & 4.3		☐ if relevant, TEC status including evidence used to determine vegetation is the TEC (BAM Subsection 4.2.2(1–2.))	42, 43
Table 6; 4.2.2		☐ estimate of per cent cleared value of PCT (BAM Subsection 4.2.1(5.))	39, 40
		Describe the vegetation integrity assessment of the subject land, including:	–
Figure 10; 4.4		☐ identification and mapping of vegetation zones (as described in BAM Subsection 4.3.1)	45, 46
Figure 10; Table 8; 4.4		☐ description of vegetation zones within the subject land (as described in Operational Manual Stage 1 Table 2 and Subsection 3.3.2)	46, 47
Table 8; 4.4		☐ area (ha) of each vegetation zone	45, 47
Table 8; 4.4		☐ assessment of patch size (as described in BAM Subsection 4.3.2)	45, 47
4.5.1, Appendix H		☐ survey effort (i.e. number of vegetation integrity survey plots) as described in BAM Subsection 4.3.4(1–2.)	51, 111
4.5.3		☐ use of relevant benchmark data from BioNet Vegetation Classification (as described in BAM Subsection 4.3.3(5.))	51
		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):	–
NA		☐ identify the PCT or vegetation class for which local benchmark data will be applied ☐ 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	NA

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		benchmark data)	
NA		☐ provide justification for use of local data rather than BioNet Vegetation Classification benchmark values	NA
NA		☐ provide written confirmation from the decision-maker that they support the use of local benchmark data	NA
		Maps and tables	
Figure 8		☐ 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)	37
Figure 5		☐ Map of PCTs within the subject land (as described in BAM Section 4.2(1.))	23
Figure 10		☐ Map of vegetation zones within the subject land (as described in BAM Subsection 4.3.1)	46
Figure 6		☐ Map the location of floristic vegetation survey plots and vegetation integrity survey plots relative to PCT boundaries	26
Figure 9		☐ Map of TEC distribution on the subject land and table of TEC listing, status and area (ha)	44
Figure 10		☐ Map of patch size locations for each native vegetation zone and table of patch size areas (as described in BAM Subsection 4.3.2)	46
		Table of current vegetation integrity scores for each vegetation zone within the site and including:	
Table 9		☐ composition condition score ☐ structure condition score ☐ function condition score ☐ presence of hollow bearing trees	51
		Data	
		☐ All report maps as separate jpeg files	–
		☐ Plot field data (MS Excel format)	
		☐ Plot field datasheets	
		Digital shape files of:	–

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ PCT boundaries 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:	–
Table 10; 5.1.1		☐ list of ecosystem credit species derived from the BAM-C (as described in BAM Subsection 5.1.1 and Section 5.2(1.))	52, 53
5.1.1		☐ 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)	52
5.1.1		☐ justification for addition of any ecosystem credit species to the list	52
		Identify species credit species likely to occur on the subject land, including:	–
Table 12; 5.1.2		☐ list of species credit species derived from the BAM-C (as described in BAM Subsection 5.1.1)	52, 57
Table 11, Table 13, 5.1.2		☐ 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)	52, 56, 59
Table 11, Table 13, 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)	52, 56, 59
5.1.2		☐ justification for addition of any species credit species to the list	52
		From the list of candidate species credit species, identify:	–
5.2, Table 14		☐ species assumed present within the subject land (if relevant) (as described in BAM Subsection 5.2.4(2.a.)) ☐ 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.))	60, 60 31, 60
		Present the outcomes of species credit species assessments from:	

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Section 5.3, Table 15		☐ threatened species survey (as described in BAM Section 5.2.4)	61, 62
NA		☐ 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)	NA
		Where survey has been undertaken include detailed information on:	–
2.3; 2.4		☐ survey method and effort (as described in BAM Section 5.3)	24, 28
2.3; 2.4		☐ 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	24, 28
2.4.6, Table 1		☐ 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	31
declaration ii		☐ survey personnel and relevant experience	x
2.6		☐ describe any limitations to surveys and how these were addressed/overcome	34
NA		Where an expert report has been used in place of survey (as described in BAM Section 5.3, Box 3), include:	–
NA		☐ 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	-
NA		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	-
NA		☐ provide written confirmation from the decision-maker that they support the use of local data	NA
NA		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:	NA
		☐ the unit of measure for each species is documented	

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		for species assessed by area:	
NA		☐ the polygon includes the extent of suitable habitat for the target species within the subject land (as described in BAM Subsection 5.2.5)	NA
NA		☐ 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	NA
		for species assessed by counts of individuals:	
NA		☐ the number of individual plants present on the subject land (as described in BAM Subsection 5.2.5(3.))	NA
NA		☐ the method used to derive this number (i.e. threatened species survey or expert report) and evidence-based justification for the approach taken	NA
NA		☐ 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 land	NA
NA		☐ Identify the biodiversity risk weighting for each species credit species identified as present within the subject land (as described in BAM Section 5.4)	NA
		Maps and tables	
Table 10; 5.1.1		Table showing ecosystem credit species in accordance with BAM Subsection 5.1.1, and identifying:	52, 53
Table 11		☐ the ecosystem credit species removed from the list	56
Table 10		☐ the sensitivity to gain class of each species	53
5.1.2; Table 10; 11; 12; 13		☐ Table detailing species credit species in accordance with BAM Section 5.2 and identifying:	52, 56, 57, 59
Table 11; Table 13		☐ 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	56, 59
Table 14		☐ the candidate species credit species not recorded on the subject land as determined by targeted survey, expert report or important habitat map	60
NA		☐ 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)	NA

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
NA		☐ 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)	NA
		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	–
		☐ 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.	
Prescribed impacts	Chapter 6	**Information**	
		Identify potential prescribed biodiversity impacts on threatened entities, including:	–
Table 16		☐ 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)	66
NA		☐ 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)	NA

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
NA		☐ 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)	NA
Appendix E; Appendix F		☐ Identify a list of threatened entities that may be dependent upon or may use habitat features associated with any of the prescribed impacts	93, 99
Appendix E; Appendix F		☐ 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)	93, 99
		Where the proposed development is for a wind farm:	NA
NA		☐ 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)	NA
NA		☐ provide details of targeted survey for candidate species of wind farm developments undertaken in accordance with BAM Subsection 6.1.5(2–3.)	NA
NA		☐ 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.))	NA
		Where the proposal may result in vehicle strike:	–
NA		☐ 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	NA
		Maps and tables	
NA		☐ Map showing location of any prescribed impact features (i.e. karst, caves, crevices, cliffs, rocks, human-made structures, etc.)	NA
NA		☐ Map showing location of potential vehicle strike locations	NA
NA		☐ 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)	NA
		Data	
		☐ Digital shape files of prescribed impact feature locations	–

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ 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:	–
7.1; 7.2; 7.3; 7.4		☐ modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology	68, 68, 69, 69
7.1; 7.2; 7.3; 7.4		☐ routes that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed route	68, 68, 69, 69
7.1; 7.2; 7.3; 7.4		☐ alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location	68, 68, 69, 69
7.1; 7.2; 7.3; 7.4		☐ 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	68, 68, 69, 69
7.1; 7.2; 7.3; 7.4		☐ 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)	68, 68, 69, 69
7.1; 7.2; 7.3; 7.4		☐ 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.))	68, 68, 69, 69
7.1		☐ Detail measures or options considered but not implemented because they are not feasible and/or practical (e.g. due to site constraints)	68
		Maps and tables	
Table 17		☐ Table of measures to be implemented to avoid and minimise the impacts of the proposal, including action, outcome, timing and responsibility	69
Figure 11		☐ Map of alternative footprints considered to avoid or minimise impacts on biodiversity values; and of the final proposal footprint, including construction and operation	70
Figure 12		☐ Maps demonstrating indirect impact zones where applicable	72
		Data	
		Digital shape files of:	–
		☐ alternative and final proposal footprint	–
		☐ direct and indirect impact zones	–
		☐ Maps in jpeg format	–

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Assessment of impacts	Chapter 8, Sections 8.1 and 8.2	**Information**	
8, 8.1		☐ 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)	70, 71
8.2		Assessment of indirect impacts on vegetation and threatened species and their habitat including (as described in BAM Section 8.2):	74
8.2; Table 20		☐ description of the nature, extent, frequency, duration and timing of indirect impacts of the proposal	74, 74
8; 10		☐ documenting the consequences to vegetation and threatened species and their habitat including evidence-based justifications	70, 77
2.6		☐ reporting any limitations or assumptions, etc. made during the assessment	34
Appendix E; Appendix F		☐ identification of the threatened entities and their habitat likely to be affected	93, 99
NA		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:	–
Table 16		☐ karst, caves, crevices, cliffs, rocks and other features of geological significance	66
Table 16		☐ human-made structures	66
Table 16		☐ non-native vegetation	66
Table 16		☐ connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range	66
Table 16		☐ movement of threatened species that maintains their life cycle	66
Table 16		☐ water quality, waterbodies and hydrological processes that sustain threatened species and threatened ecological communities	66
NA		☐ assessment of the impacts of wind turbine strikes on protected animals	NA
NA		☐ assessment of the impacts of vehicle strikes on threatened species of animals or on animals that are part of a TEC	NA

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
8		☐ evaluate the consequences of prescribed impacts	70
8.5		☐ describe impacts that are uncertain	73
2.6		☐ document limitations to data, assumptions and predictions	34
		Maps and tables	
Table 19		☐ Table showing change in vegetation integrity score for each vegetation zone as a result of identified impacts	73
		Data	
		N/A	–
Mitigation and management of impacts	Chapter 8, Sections 8.4 and 8.5	**Information**	
8.4		Identification of measures to mitigate or manage impacts in accordance with the recommendations in BAM Sections 8.4 and 8.5 including:	71
		☐ techniques, timing, frequency and responsibility ☐ identify measures for which there is risk of failure ☐ evaluate the risk and consequence of any residual impacts	
		☐ document any adaptive management strategy proposed	
8.4		Identification of measures for mitigating impacts related to:	71
		☐ displacement of resident fauna (as described in BAM Subsection 8.4.1(2.)) ☐ 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)	
8.5		☐ Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (BAM Section 8.5)	73
		Maps and tables	
8.4		☐ 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	71
		Data	
		N/A	–
Impact summary	Chapter 9	**Information**	

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Section 9		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:	77
		☐ addressing all criteria in Subsection 9.1.1 for each TEC listed as at risk of an SAII present on the subject land	NA
		☐ for each TEC, report the extent of the TEC in NSW	NA
		☐ addressing all criteria in Subsection 9.1.2 for each threatened species at risk of an SAII present on the subject land	NA
		☐ for each threatened species, report the population size in NSW	NA
		☐ 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	NA
10, 10.1, Table 21		☐ Identification of impacts requiring offset in accordance with BAM Section 9.2	77, 77, 77
8		☐ Identification of impacts not requiring offset in accordance with BAM Subsection 9.2.1(3.)	70
10.2		☐ Identification of areas not requiring assessment in accordance with BAM Section 9.3	78
		Maps and tables	
NA		☐ Map showing the extent of TECs at risk of an SAII within the subject land	NA
NA		☐ Map showing location of threatened species at risk of an SAII within the subject land	NA
		Map showing location of:	–
Figure 12		☐ impacts requiring offset	72
Figure 13		☐ impacts not requiring offset	72
Figure 13		☐ areas not requiring assessment	72
		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	–
		☐ boundary of impacts not requiring offset	–

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ 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)	73
Table 19			77
Table 21		☐ 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	
NA		☐ number of required species credits for each candidate threatened species that is directly impacted on by the proposal (BAM Subsection 10.1.3)	NA
		Maps and tables	
Table 21; Table 22		☐ Table of PCTs requiring offset and the number of ecosystem credits required	77, 80
NA		☐ Table of threatened species requiring offset and the number of species credits required	NA
		Data	
		☐ Submitted proposal in the BAM Calculator	–
Biodiversity credit report	Chapter 10	**Information**	
10.1; Table 22		☐ 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)	77; 80
Appendix K		☐ BAM credit report in pdf format	124
		Maps and tables	
Table 22		☐ Table of credit class and matching credit profile	80
		Data	
Appendix K		☐ BAM credit report in pdf format	124