BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT (BDAR)

PREPARED FOR

Proposed New Solar Farm
33 Blain Road, Carleon
Mid-Western Regional Council

PREPARED BY Access Environmental Planning

July 2021

ACCESS ENVIRONMENTAL PLANNING

Local Government PROCUREMENT APPROVED CONTRACTOR

QCSE QCSE QCSE

ACCESS ENVIRONMENTAL PLANNING

Proponent	*Mid-Western Regional Council*		
Client	*Mid-Western Regional Council*		
Purchase Order No			
Document Description	*Biodiversity Assessment: Proposed new solar farm*		
	Name	*Signed*	*Date*
Clients Reviewing Officer	*Simon Jones*		
Clients' representative managing this document		*Person(s) managing this document*	
		Author Christopher Botfield, Renae Hill *Reviewed by Christopher Botfield* *Approved by Christopher Botfield*	
Location		*33 Blain Road, Carleon*	
Document Status Draft		*31/07/2021*	
Draft V1.0 Author to Editor Access EP 1st Internal edit		*19/10/2021*	
Draft V1.0 Author to Editor Access EP 2nd internal edit		*19/10/2021*	
Draft V2.0 Report Draft for release for comment to client (Client edit and return)		*05/11/2021*	
FINAL once latest version of draft approved by client		*05/11/2021*	
Prepared for: Mid-Western Regional Council Name: Simon Jones Ph.: (02) 6378 2850		*Prepared by:* *Renae Hill* *Christopher Botfield* *Access EP* *Ph: 0429 944 430* *Email: chris@accessep.com.au*	

	Renae Hill	*PO Box 686* *Mudgee NSW 2850*	*BAgr UNE Armidale 2006* *BSc(Hons) UoN Newcastle 1994*
	Christopher Botfield	*PO Box 686* *Mudgee NSW 2850*	*B Env Management CSU 1999*

Access Environmental Planning Copyright and Legal Disclaimers

Disclaimer

While every effort has been made to ensure the accuracy of material which appears in this document, Access EP makes no representation in any form as to the completeness or correctness of the information contained herein and cannot accept any legal responsibility for errors, omissions or consequences of any action taken by users of this information. This document is intended to be used as a guide only. Access EP accepts no responsibility or liability whatsoever for any decision, action, loss, damage or otherwise arising from the supply of this information or for the use of or reliance on this information.

Access EP may at any time amend, modify or retract any, or all, of this document including any opinions, conclusions or recommendations. All information contained herein including costings should not be relied upon for construction or any other purpose other than intended.

Copyright

Executive Summary

Access Environmental Planning Pty Ltd (AEP) was commissioned by Mid-Western Regional Council (MWRC) to prepare a Biodiversity Development Assessment Report (BDAR) for the proposed development of a grid-connected solar farm, near Mudgee. Inclusions for the assessment and reporting are as prescribed by the NSW Biodiversity Conservation (BC) Act 2016 and the corresponding Biodiversity Assessment Method (BAM).

The proposal

This proposal involves construction of a new five megawatt (MW) solar farm and associated infrastructure for connection to the existing power grid.

Proponent	*Mid-Western Regional Council (MWRC)*
Proposal	*New solar farm*
Property Location	*33 Blain Road, Carleon, NSW 2850*
Cadastre	*Lot 289/DP 756894 Solar Panels*
	Lot 90/DP 756897 Power line connection (in easement, already disturbed)
Land use zoning	*RU1 Primary Production*
Latitude and longitude	*Start: Lat -32.5785 Long 149.5444*
Accredited Assessor	*Christopher Botfield (BAAS No. 18023)*

Biodiversity Offset Scheme

The size of the development area typically exceeds the Biodiversity Offset Scheme (BOS) area threshold and small areas of the property have high biodiversity value and are included on the state Biodiversity Values Map (BVM). As the thresholds for these criteria are exceeded the BOS is triggered and a Biodiversity Assessment Development Report (BDAR) is necessary. The BOS scheme allows compensatory measures to be assessed and calculated in an effort to mitigate potential loss of ecological value.

The environment

Vegetation at the site is grassland, with occasional isolated trees. The development site has undergone past routine agricultural management activities that has modified groundcover diversity. The Plant Community Type (PCT) found at the proposed development site was PCT 796, a derived grassland community. There are no threatened ecological communities associated with this plant community.

Biodiversity Offsets Scheme summary

The subject land was determined as category 1 – exempt land due to it being cleared before 1 January 1990, its continued use as grazing land, history of fertiliser application, pasture species modification and poor vegetation diversity and condition. Vegetation on site was classified as *PCT 796, derived grassland of the NSW southwestern slopes* but previous land use has changed vegetation composition enough to reduce its' conservation value. Site conditions, habitat suitability factors and efforts to minimise impacts from the development activities mean threatened species are unlikely to rely on site resources and any that potentially use the site will not suffer significant ill effects. For category 1 – exempt land the BAM does not assess the biodiversity values for native vegetation and habitat loss other than additional biodiversity impacts. The assessed condition means no ecosystem or species credits are required to offset the biodiversity impacts of the proposal. Effects from prescribed impacts will be reduced by the implementation of safeguards. No species are likely to be exposed to serious and irreversible impacts.

Glossary of Terms and Abbreviations

Term	Meaning
BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method Calculator (online)
BDAR	Biodiversity Development Assessment Report
BC Act	Biodiversity Conservation Act 2016
BOS	Biodiversity Offset Scheme
BVM	Biodiversity Values Map
DAWE	Department Agriculture, Water and the Environment
DPIE	Department of Planning, Industry and Environment
EEC	Endangered Ecological Community
EMP	Environmental Management Plan
EP&A Act	Environmental Planning and Assessment Act 1979
EP&A Reg	Environmental Planning and Assessment Regulation 2000
EPA	Environment Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EPI	Environmental Planning Instrument
FM Act	Fisheries Management Act 1994
GIS	Geographic Information System
IBRA	Interim Biogeographic Regionalisation of Australia
ISEPP	State Environmental Planning Policy Infrastructure 2007
KTP	Key Threatening Processes
LEP	Local Environmental Plan
LGA	Local Government Area
MNES	Matters of National Environmental Significance
MWRC	Mid-Western Regional Council
NP&W Reg	National Parks and Wildlife Regulation 2009
NP&W Act	National Parks and Wildlife Act 1974
PCT	Plant Community Type
PMST	Protected Matters Search Tool
POEO	Protection of the Environment Operations Act 1997
REP	Regional Environmental Plan
RF Act	Rural Fires Act 1997
SAII	Serious and Irreversible Impacts
SCA	State Conservation Area
SEED	Sharing and Enabling Environmental Data
SEPP	State Environmental Planning Policy
TEC	Threatened Ecological Community
WARR Act	Waste Avoidance and Resource Recovery Act 2001
Note: DPIE	Superseded Office of Environment and Heritage (OEH), July 2019

Any reference to OEH in the document relates to published documents or existing databases.

Contents

Figures

Tables

1. INTRODUCTION

Scope

Access Environmental Planning (AEP) was engaged on behalf of Mid-Western Regional Council (MWRC) to undertake a Biodiversity Development Assessment Report (BDAR) as specified under the NSW Biodiversity Conservation (BC) Act 2016 using the Biodiversity Assessment Method (BAM) (DPIE 2020). This assessment has been undertaken to support a Development Application for a proposed 5 Megawatt (MW) solar farm (the Proposal) at 33 Blain Road, Carleon NSW, within Lot 289 DP 756894 and Lot 90 DP 756897.

Where used throughout this report –

- 'Development Site' is the subject land and describes the area to be directly impacted by the proposed development Lot 289/-/DP 756894 (**Figures 1 - 3**),
- 'the Property' describes the entire land parcel at 33 Blain Road and
- 'the Assessment Area' includes the Development Site and a 1500 metre (m) buffer from the outside edge of the Development Site's boundary.

Project Background

The Proposal is located over a large proportion of Lot 289 / DP 756894 and part of Lot 90 / DP 756897 at 33 Blain Road, Carleon. As the minor development component proposed for Lot 90 / DP 756897 is installation of overhead cabling to connect with electricity transmission infrastructure, in an existing power easement and disturbed area, it was not considered as additional development. The land is owned by MWRC and in an area zoned as primary production (RU1) in the Mid-Western Regional Council (MWRC) Local Environmental Plan (LEP) 2012.

Property Details

Address:	33 BLAIN ROAD CAERLEON 2850		
Lot/Section /Plan No:	289/-/DP756894	86/-/DP756897	87/-/DP756897
	90/-/DP756897	91/-/DP756897	92/-/DP756897
Council:	MID-WESTERN REGIONAL COUNCIL		

MWRC is interested in solar electricity generation to supplement the power used in council activities and help make council operations more sustainable.

Lot 289 is 17.32 hectares (ha) (**Figure 2**) of which approximately half is the Development Site, planned to include an enclosed area of 86 330 square metres (m^2) (8.6 ha) containing pile driven, single axis tracked solar arrays, inverter technology, possible locations for future battery installation, access road, container storage, equipment and lay down area. Currently, the Property is agricultural, grazed by introduced herbivores and native animals with anecdotal history of fertiliser application. Vegetation is grassland and has consistent quality and diversity across the Development Site. The nominal existing formed infrastructure consists only of farm dams, contours and rural fencing.

Local Context

The Development Site occurs within the MWRC Local Government Area (LGA) and is located approximately 4 kilometres (km) west of Mudgee. The 'Carleon' residential subdivision is 1 km to the east of the proposed solar array location. There is a zone of predominantly continuous woody vegetation to the west which also continues further south and incorporates the Avisford Nature Reserve and Mudgee Common.

Proposed development

The proposed development consists of a new solar farm with components including photovoltaic solar arrays, fixed battery banks, an access road and electrical connection infrastructure. Site access will be via the existing sewer plant access road with an additional 400 m length. Water use for construction and operation will be supplied by water carting trucks supplied by an off-site raw water source. The site plans prepared by Engie Electrical and Communications, dated October 2021, are shown in **Figure 3**.

The Biodiversity Offsets Scheme (BOS) would normally apply to the development because the size of the development exceeds the area threshold for entry into the BOS but this area clause does not apply to category 1 – exempt land. Small areas of the Property are currently identified on the Biodiversity Values Map (BVM) (**Figure 4**) which does trigger assessment under the BOS. These same areas are listed as important areas for the regent honeyeater.

The Proposal has a capital investment value of approximately $6 million, with construction planned to commence early 2022 and be completed by end 2022.

Key construction activities for the Proposal include:

- Installation of compound fencing,
- Installation of pile driven, single axis tracking, solar arrays,
- Electrical cabling, connection and provision of 22 kilovolt (kV) powerline.

Site details / selection

The Property contains existing lots within Mid-Western Regional Local Government Area (LGA) and is identified on the NSW Planning Portal as follows:

- Address: 33 BLAIN ROAD CARLEON NSW 2850
- Development Site –Lot/Section/Plan number: 289/-/756894
- Council: MID-WESTERN REGIONAL (MWRC)
- Land Zoning: RU1 Primary Production
- Bushfire Prone Land – Vegetation Category 2
- Minimum lot size: 100 hectares (ha)
- Actual lot size Lot 289/-/756894: 17.3 ha; Lot 90/-/756897: 8.3 ha

The Development Site was selected as it best satisfies criteria for the solar development, with associated infrastructure necessities, whilst minimising the potential for environmental and social impacts.

In planning the solar project, at the site, consideration was given to:

- Offsetting Council energy use.
- Available land with suitable topographic characteristics.
- Proximity to existing electrical infrastructure.

- Proximity to other Council plant and infrastructure.
- Proximity to residential development and the Mudgee township.
- Potential for reduced visual amenity impacts.
- Availability of skilled construction staff and tradespeople.

Information sources

Documentation and information sources for this assessment include the following.

- Design plans by Engie Electrical and Communications, dated October 2021 (**Figure 3**),
- Mid-Western Regional Council Local Environmental Plan 2012 (pub. 10/08/2012),
- NSW Planning Portal (https://www.planningportal.nsw.gov.au/),
- NSW Government aerial imagery and other spatial data layers including contours, cadastre, etc. (www.maps.six.nsw.gov.au),
- BioNet databases (www.bionet.nsw.gov.au), including BioNet Atlas, threatened species profiles, species records, vegetation classification and the NSW DPIE Threatened Biodiversity Data Collection (TBDC) (DPIE 2020),
- The Department of Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (PMST) for Matters of National Environmental Significance (MNES),
- Flora NSW Online (www.plantnet.rbgsyd.nsw.gov.au) and *Flora of New South Wales* (Vol 1-4, Harden 1991-2002).

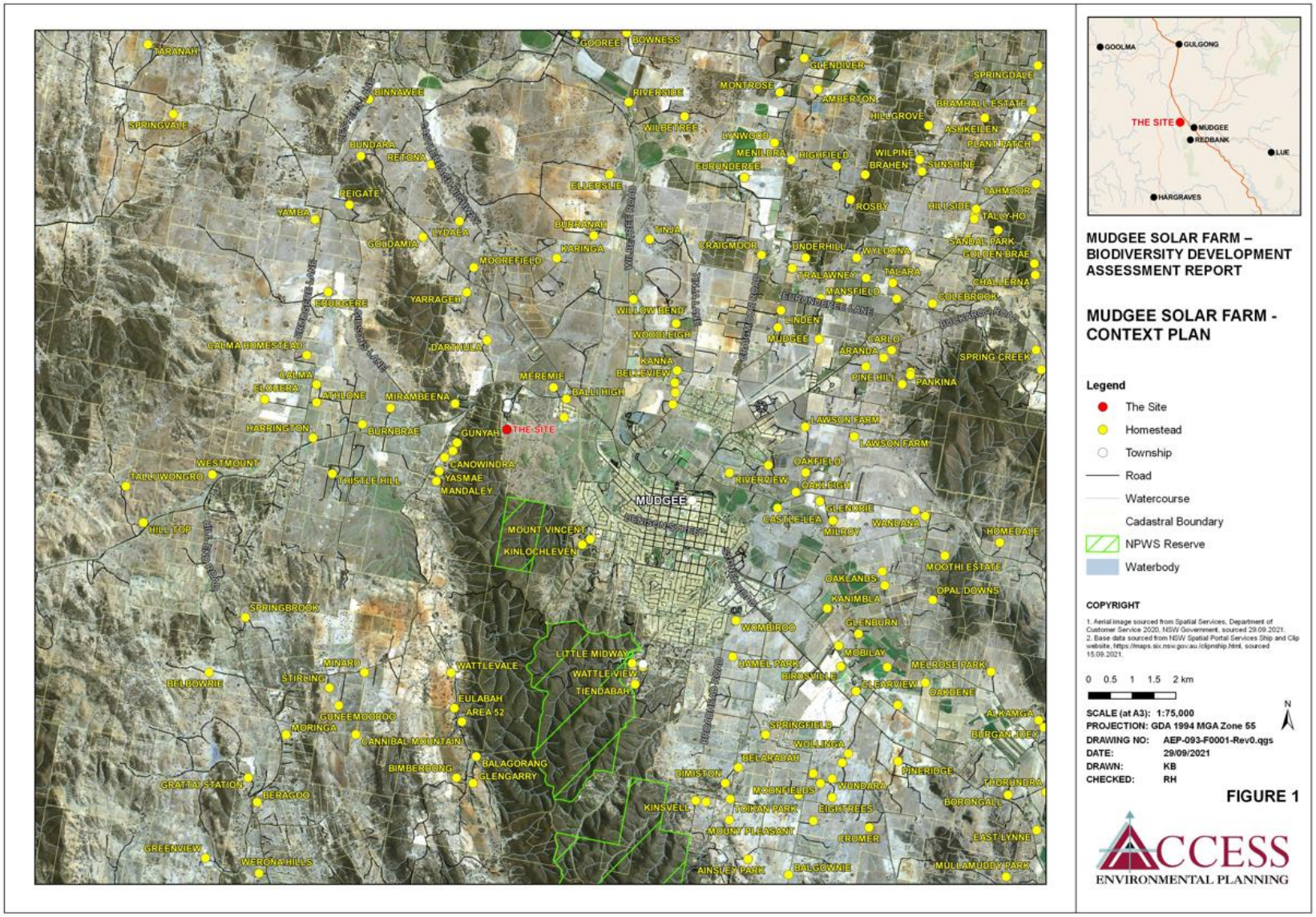


Figure 1: Site context, Solar Farm near Carleon, NSW.

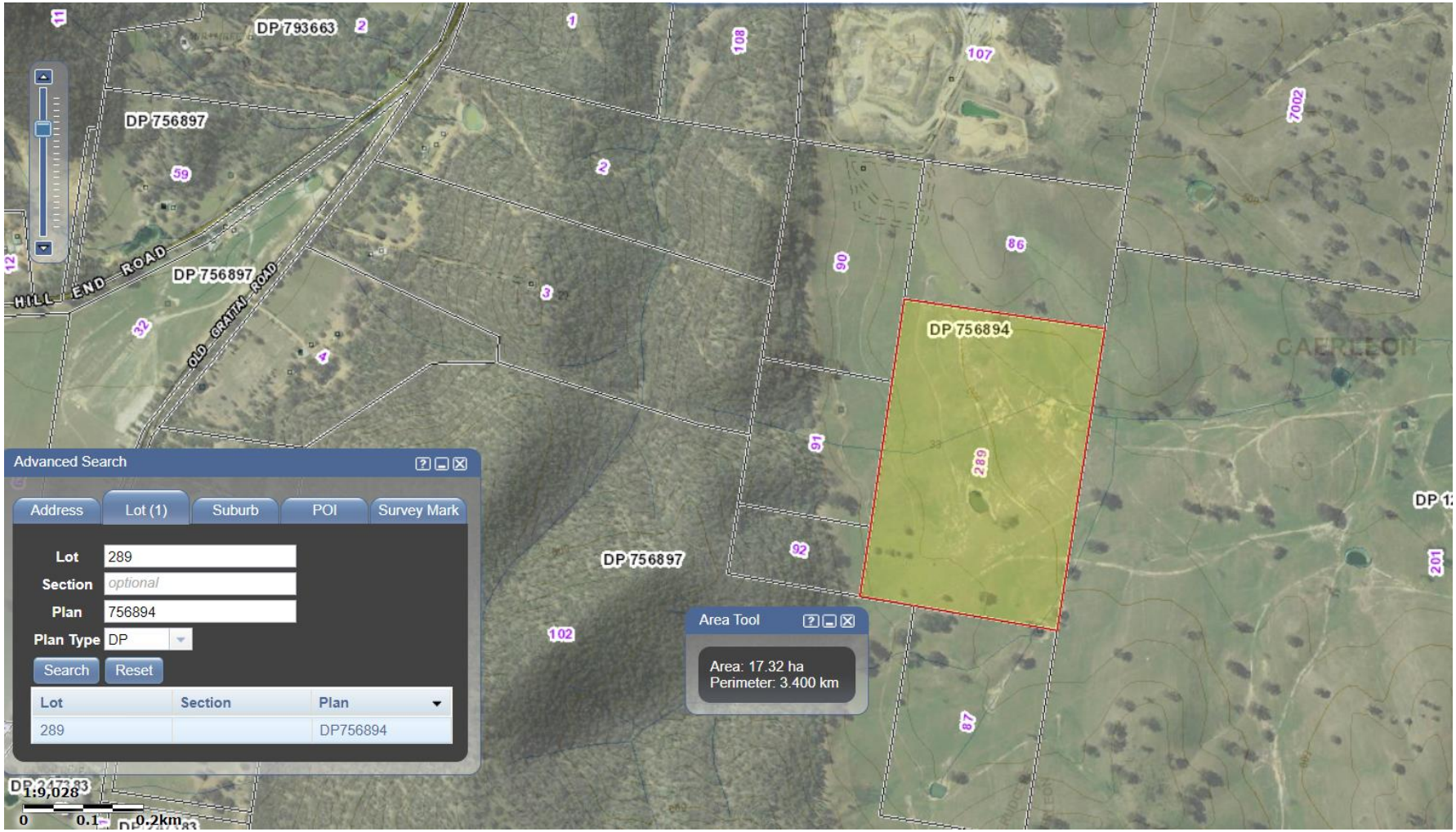


Figure 2: Cadastre and lot size SiX Maps (spatial imagery).

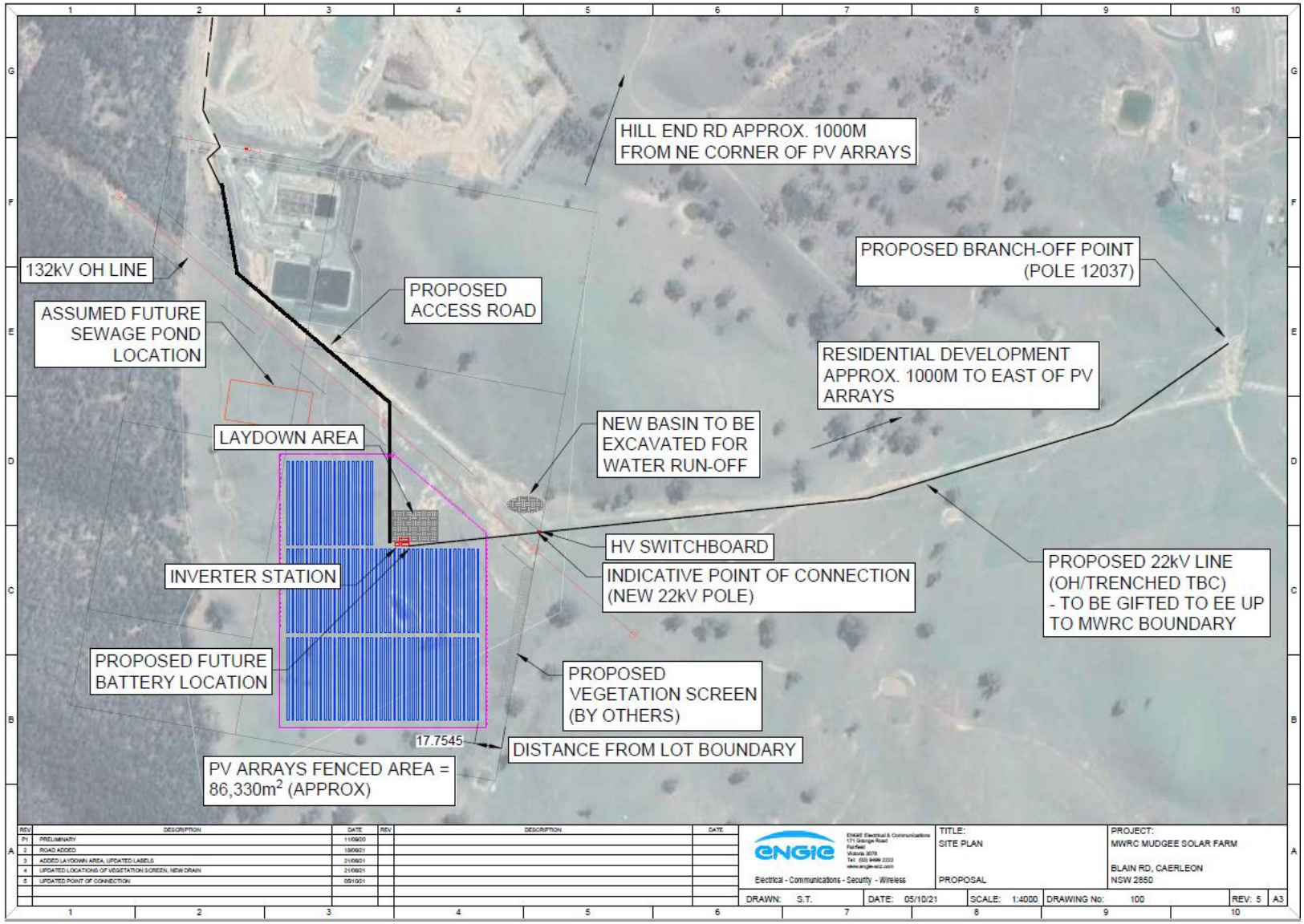


Figure 3: Site overview plan.

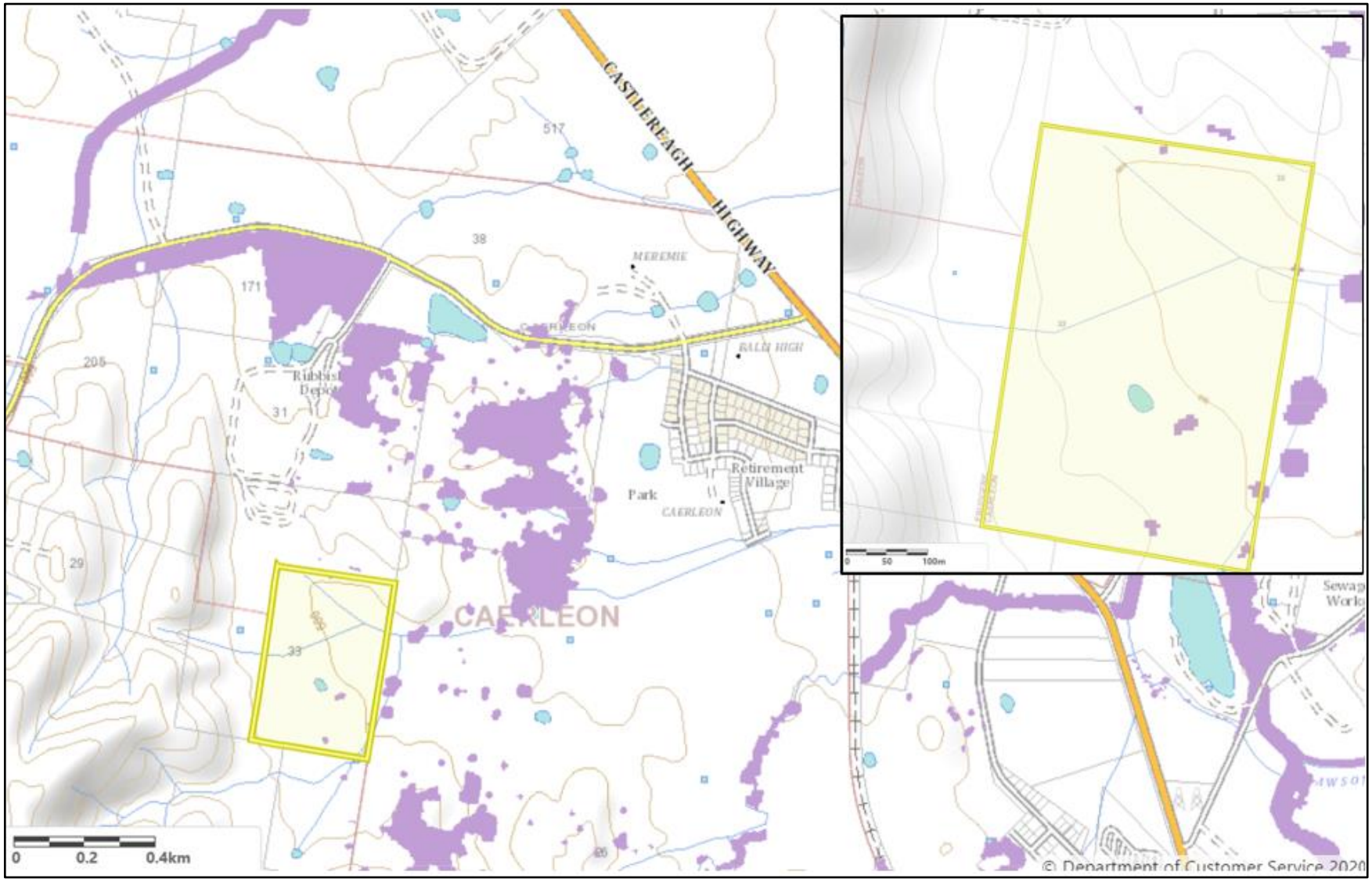


Figure 4: Biodiversity Values Map with relation to the Development Site.

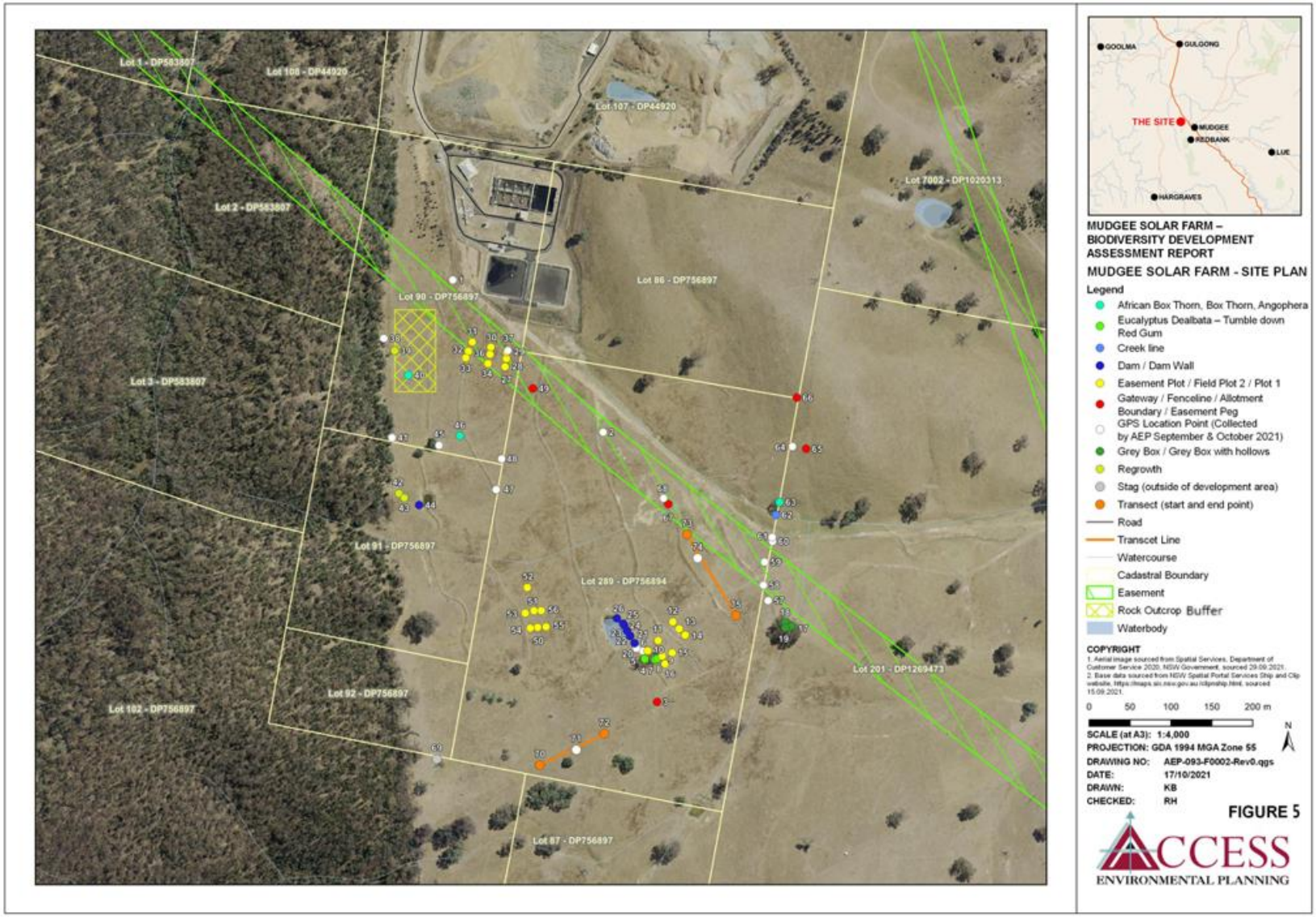


Figure 5: Location points, plots and habitat features.

Consultation

The following consultation has been undertaken for this BDAR:

- Email correspondence, phone discussions and in person contact with Simon Jones (MWRC contact) Ashley Bland and Seb Thalanany (Constructive Energy Pty Ltd), regarding project details.

Overview of methods

A desktop review of available information including vegetation maps and BioNet Atlas data was undertaken to identify the native vegetation types and potential threatened species and ecological communities relevant to the site. Predicted species that could be present, including those with suitable habitat at the site, were further assessed under the BAM process.

Site inspections were undertaken on 30/07/2021, 30/08/2021, 31/08/2021, 6/10/2021 and 3/11/21 by Chris Botfield (Accredited BOS Assessor No. 18023), Renae Hill and on two occasions Michaela Burns to assess the condition of native vegetation and habitat characteristics found at areas that will be impacted by the development. The following tasks were completed during the site assessment:

- Collation of a flora species list.
- Identification of vegetation communities present at the Development Site.
- Search for predicted threatened flora species and potential habitat for predicted threatened fauna, such as rock outcrops, caves and hollow bearing trees.

Limitations and assumptions

The following limitations and assumptions of this study are acknowledged.
Not all flora species will have been detected at the site and additional species other than those listed in this report will be present. Some ephemeral or cryptic flora species may have been dormant and not detected at the time of the survey. Surveying over time, especially entering into the Spring season, helps to expand the potential for species to be observed and improve survey efficacy.

The site had been continuously grazed by domestic cattle, reducing the vegetative matter available for species identification.

Legislative context

Assessment of the Proposal was undertaken in accordance with and in consideration of the following Acts and Policies:

- Commonwealth:
    - Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).
    - Biosecurity Act 2015;
- State:
    - Biodiversity Conservation Act 2016 (NSW) (BC Act);
    - Biodiversity Conservation Regulation 2017 (NSW) (BC Regulation);
    - Environmental Planning and Assessment Act 1979 (EP&A Act);
    - Local Land Services Act 2013 (LLS Act);
    - SEPP 2021 – Koala Habitat Protection;
    - Biodiversity Assessment Method (BAM) (DPIE, 2020).
- Local:
    - Mid-Western Regional Council Local Environmental Plan 2012 (MWRC LEP 2012),
    - Mid-Western Regional Council Development Control Plan 2013 (MWRC DCP 2013)

EPBC Act 1999

Under the EPBC Act assessment, approval is required for actions that are likely to have a significant impact on matters of national environmental significance (MNES). An action includes a project, development, undertaking, activity, or series of activities. The Act identifies nine MNES:

1. World Heritage properties,
2. National heritage places,
3. Wetlands of international importance (Ramsar Convention),
4. Listed threatened species and communities,
5. Migratory species listed under international agreements,
6. Great Barrier Reef Marine Park,
7. Commonwealth marine areas,
8. Nuclear actions and
9. Water resources in respect to Coal Seam Gas and large coal mines.

While this BDAR is not required to address MNES, the proponent is required to address the EPBC Act as part of their development application. Items 4 and 5 are potentially relevant to this proposal.

EP&A Act 1979

The Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act), the Environmental Planning and Assessment Regulation 2000 (NSW) and associated environmental planning instruments (including State Environmental Planning Policies (SEPPs) and Local Environmental Plans (LEPs)) provide the framework for the assessment of the environmental impact of development proposals in NSW.

BC Act 2016

The BC Act sets out to conserve biodiversity at all levels consistent with the principles of ecologically sustainable development. It seeks to ensure a consistent, scientifically sound methodology for the assessment of biodiversity and to offset the impact of development through a Biodiversity Offset Scheme (BOS). The BC Act lists threatened species and communities, and determining authorities have a statutory obligation under the EP&A Act to consider whether a proposed activity is likely to significantly affect threatened species, populations or ecological communities or their habitats. A BDAR is required for developments if biodiversity values may be impacted.

Biodiversity Assessment Method 2020

The Proposal has been assessed under the BAM (DPIE 2020). The Biodiversity Accredited Assessor System (BAAS) Case number for the project is 00028476, with associated BAM Calculator number of 00028476/BAAS18023/21/00028477.

LLS Act 2013

Legislation with provision for treatment of native vegetation on rural land and is relevant to this Proposal for the classification of rural land.

Koala Habitat Protection SEPP 2021

Provisions are made in this SEPP, based on the council area and tree species present, to assess development sites for potential impact to core koala habitat (**Appendix 6**).

Biosecurity Act 2015

Under the Biosecurity Act 2015 all plants are regulated with a general biosecurity duty “to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant and knows of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.”

2. LANDSCAPE CONTEXT

The Property is located in the suburb of Carleon and is rural land which is being encroached upon by MWRC Operational Land (north) and residential subdivision (east). There is extensive areas of remnant bushland adjacent to the Property, to the west and southwest. The Property is accessed using Hill End Road, Blain Road and then via an unsealed Council accessway and is located approximately 4 km west of the Mudgee township (**Figure 1**).

The Property is predominantly grassland with isolated trees of both native and exotic origin (**Figure 5 and Figure 13**). The western extent of the Property has remnant native woodland. The proposal is to be located on undulating land that has been modified by previous farming activities including pasture improvement, fertiliser application and grazing. The fall of the land is generally to the east towards Hone Creek which travels to the Cudgegong River.

The Development Site is within the Inland Slopes subregion of the NSW South-Western Slopes Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. Subregion landscapes consist of undulating and hilly ranges and isolated peaks amongst wide valleys (DPIE 2020a). Broadly, the vegetation of the subregion consists of woodlands and open woodlands of white box (*Eucalyptus albens*), as well as vegetation communities dominated by grey box (*E. microcarpa*) and white cypress pine (*Callitris glaucophylla*). Other common tree species include red stringybark (*E. macrorhyncha*) on higher slopes, with black cypress pine (*Callitris endlicheri*), kurrajong (*Brachychiton populneus*), yellow box (E. *melliodora*) and Blakely's red gum (*E. blakelyi*) often occupying the lower slopes.

Landscape features

Table 1: Landscape features of the Development Site and Assessment Area

Landscape Features	Development Site
General description	Topography –slightly undulating, slope to east. Hydrology – the eastern portion (approximate 50% of the Development Site) is in a vulnerable groundwater zone (MWRC LEP 2012) (**Figure 9**). Geology – Silurian sedimentary rocks producing sandstone and siltstone that have metamorphosed to slate and quartzite (Sharing and Enabling Environmental Data (SEED) portal (DPIE 2021b)). Soils tend to be non-calcic brown soils, red chromosols (non-sodic texture contrast soils) in the lower landscape position with shallow poorly developed, loams and sands (lithic rudosols) in the upper portion of the Development Site (Dubbo Soil Landscapes sheet 1:250 000 (Data NSW 2020)).
Native vegetation cover	29% woody native vegetation cover in Assessment Area (**Figure 10**). Minimal non-woody native vegetation exists in the Assessment Area as adjacent lands are a combination of agricultural land (category 1 – exempt land), residential or industrial development and existing MWRC Operational land.
IBRA bioregion	NSW South-Western Slopes (Development Site) (**Figure 6**) A small section of the Assessment Area in the south is in the South-Eastern Highlands IBRA bioregion.
IBRA subregion	Inland Slopes (Development Site) A small zone of the Assessment Area, to the south, is in the Hill End IBRA subregion.
LGA	Mid-Western Regional
Rivers and streams	Only minor drainages line stream order 1 or 2 – within the Development Site (**Figure 7**).

	Hone Creek and Sallarges Creek stream order 3 – within 1500 m buffer area.
Wetlands	No wetlands occur within the Development Site, buffer zone or adjacent lands.
Habitat connectivity	The Development Site lies within grasslands modified for agriculture and adjacent to large areas of continuous woody vegetation including Avisford Nature Reserve and Mudgee Common. The remnant woody vegetation serves as the main connectivity component in the landscape – the riparian vegetation of the Cudgegong River is a connectivity corridor but is outside the Assessment Area and is over 1.8 km distant from the nearest connecting woody vegetation (**Figure 8**). Overall connectivity across the landscape is limited due to past clearing for agriculture and urban expansion.
Significant geological features	There are no other significant geological features like karst, caves, crevices or cliffs in the Assessment Area. There is a small rock outcrop in the western section of the Property and a zone of erosion in the east.
Areas of outstanding biodiversity value	There are no areas of outstanding biodiversity value mapped within or adjacent to the Assessment Area.
NSW (Mitchell) landscapes	NSS Upper Slopes – Gulgong Ranges (Development Site) For the Assessment Area – NSS Upper slopes – Gulgong Ranges BBS Pilliga – Goonoo Slopes (< 50 %) NSS Upper Slopes – Cudgegong Channels and Floodplains (minor)
Any additional features	No

Site Context

Details of the landscape assessment for the Development Site, according to the BAM (DPIE 2020) using site-based assessment methodology and Geographic Information System (GIS) capabilities, are reported below.

Native vegetation cover

The Assessment Area (1500 m site buffer) has an area of approximately 990 ha which has native woody vegetation cover of 295 ha. Much of the surrounding land is modified farming land or residential lots so this woody vegetation represents the remaining native vegetation in the landscape. Native vegetation cover estimated to remain in the landscape is 29 %.

Geology and soils

The Study Area is mapped occurring on Soil Landscapes of the Dubbo 1:250 000 sheet (Data NSW, 2020). Soils are characterised as non-calcic brown soils and lithic rudosols. The landscape consists of undulating low hills with sediments derived from sandstone and siltstone, also producing yellow podzolic or solodic soils on some lower slopes and drainage lines. These soils tend to have low to very low natural fertility and can tend to have seasonal waterlogging on the lower slopes, yet low water holding capacity and rock outcrops in the upper slope areas. The subject land would have moderate to high erosion hazard if extensively disturbed or cultivated.

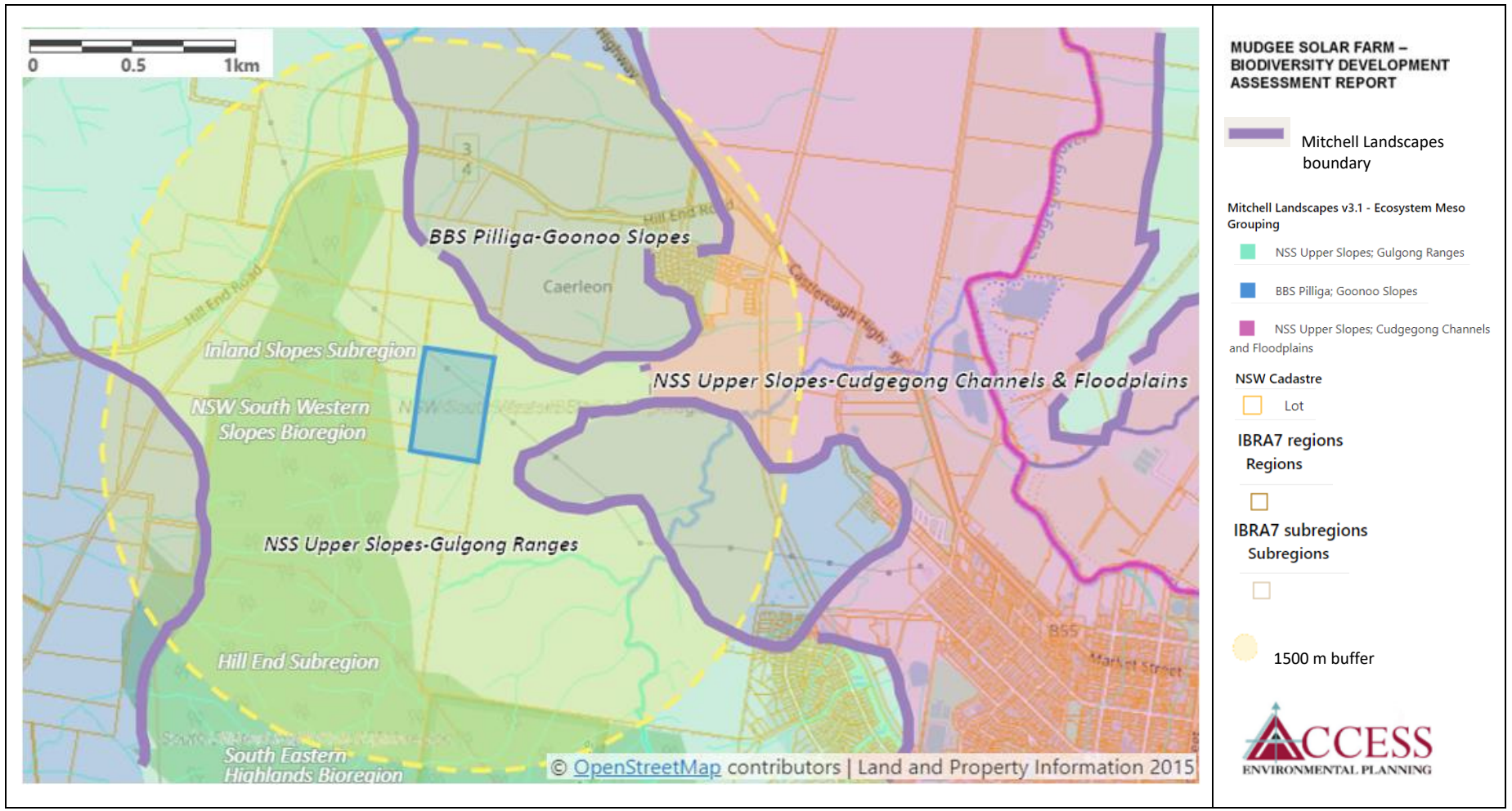


Figure 6: Overview of site landscape context.

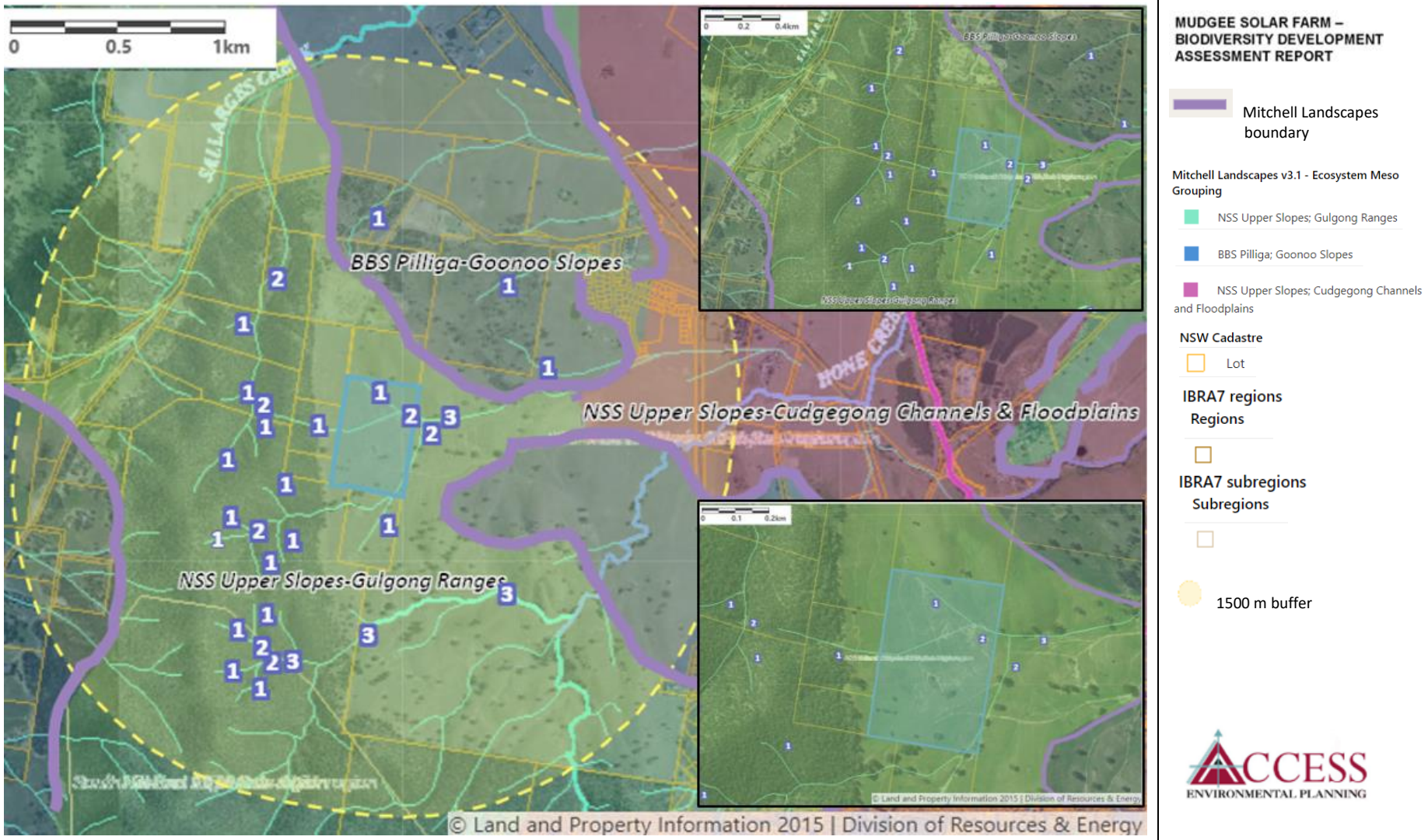


Figure 7: Strahler stream order watercourses.

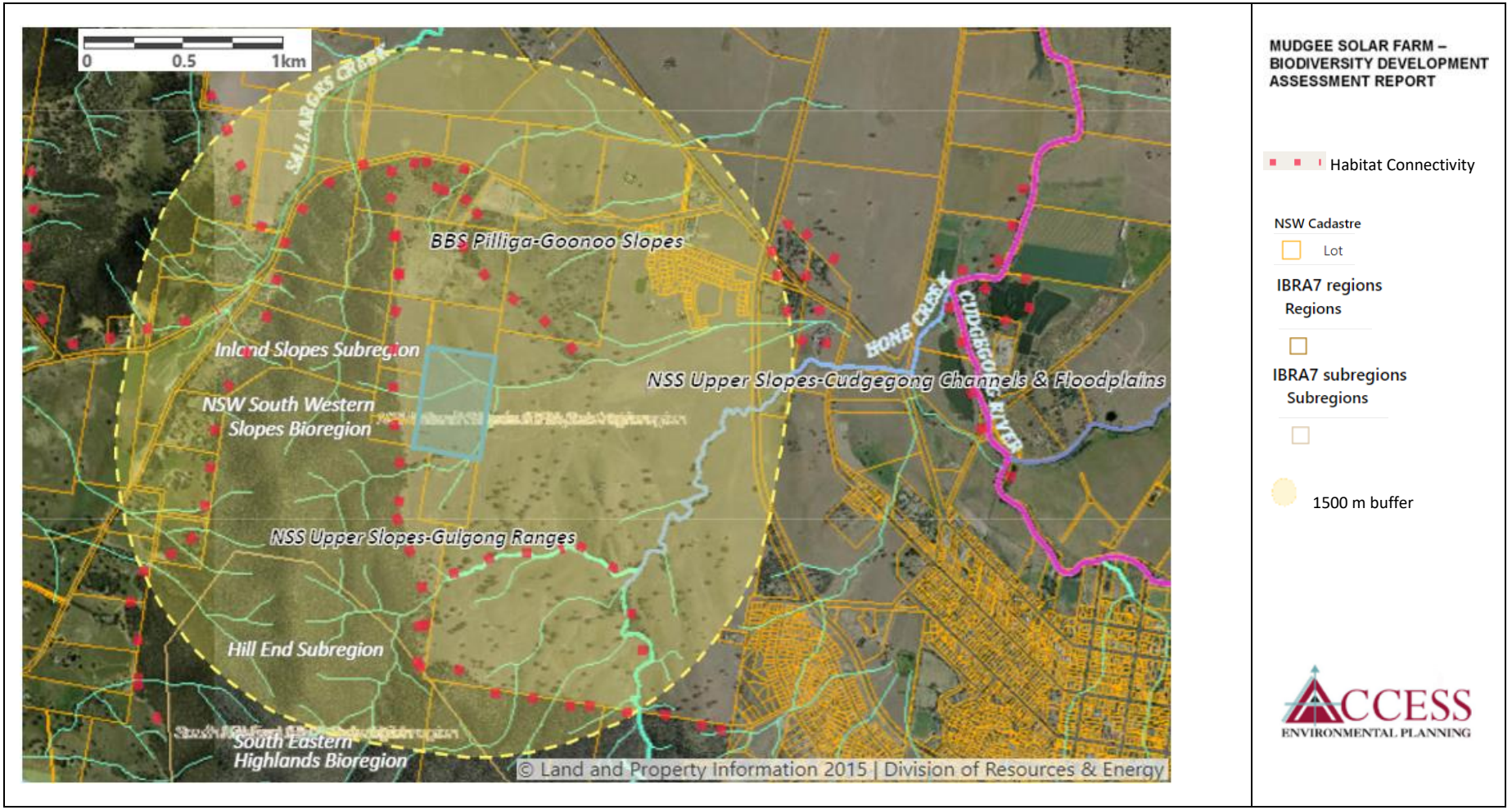


Figure 8: Landscape habitat connectivity.

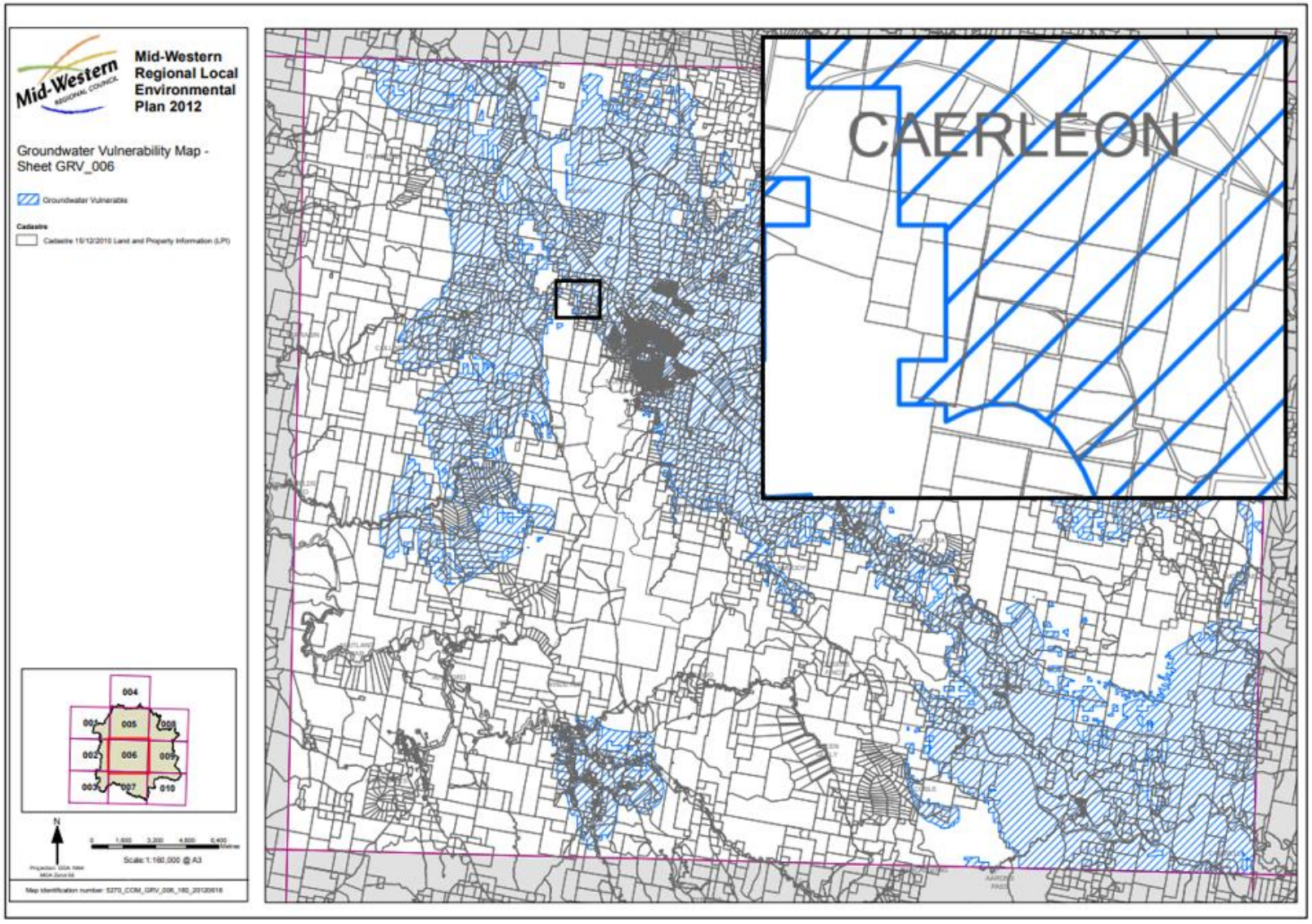


Figure 9: Groundwater vulnerability (MWRC–LEP)

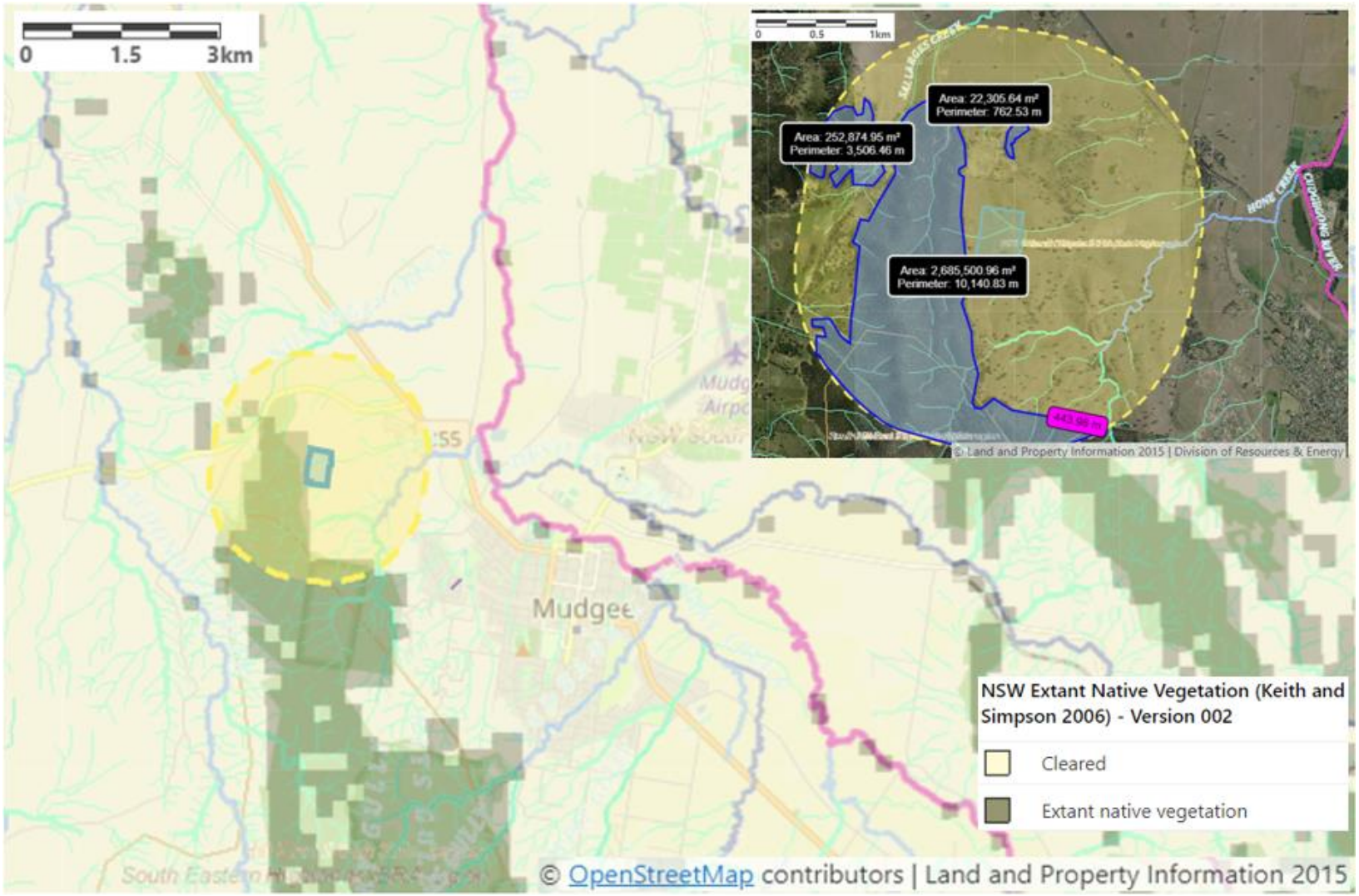


Figure 10: Native vegetation in Assessment Area.

Figure 11: Native Vegetation Regulatory (NVR) Map.

Category 1 Land

The transitional Native Vegetation Regulatory (NVR) Map (**Figure 11**) displays some of the land categories established under the LLS Act that apply to land regulated by Part 5A of the LLS Act (excluded land, category 2 - vulnerable land and category 2 - sensitive land) but mapping has not yet included category 1 – exempt land or category 2 – regulated land. A BDAR does not need to assess the impacts of any clearing of native vegetation and loss of habitat on land classified as category 1 – exempt land under the LLS Act 2013, other than prescribed impacts. The BOS area threshold cannot be exceeded on category 1 – exempt land, though a test of significance is still required.

A reasonable assessment must determine land classification and whether the subject land is category 1 - exempt land, from criteria such as whether the land:

- was cleared of native vegetation before 1 January 1990, or lawfully cleared after that date,
- contains grassland or other non-woody vegetation that have been significantly disturbed or modified and is therefore taken to be cleared,
- contains low conservation value grasslands or groundcover,
- contains native vegetation that is regrowth in a Property Vegetation Plan,
- is Biodiversity certified land as per the BC Act.

The NVR map shows neighbouring land is excluded land (generally zoned for residential, environmental or other purposes), with some areas towards the western boundary of the Property shown as vulnerable regulated land.

From the LLS Act and regulation, category 2 - regulated land is land that was not cleared of native vegetation prior to 1 January 1990, was unlawfully cleared of native vegetation after 1 January 1990, contains native vegetation grown or preserved with input from public funds or areas of native ground cover (that are not low conservation value grasslands or groundcover). Vegetation assessment at the Development Site has shown low levels of both woody and non-woody native vegetation and grassland that is of low conservation value. Historical images show the land was cleared well before 1990 so the Development Site was determined not to be category 2 – regulated land.

The Development Site has been reasonably assessed as category 1 – exempt land because:

- The existing areas are mapped as ‘grazing - modified pastures’ under Land Use 2017 mapping accessible via the SEED portal (DPIE 2021b) (**Figure 12**).
- Aerial imagery dating back to the 1960s/70s (**Figure 13 and Figure 14**) shows the land as cleared farming land with evidence of contouring.
- Anecdotal evidence regarding fertiliser application (D. Husband, personal communication, July 15, 2021) and evidence of pasture improvement with species such as sub-clover, kikuyu and rye grass in the pasture sward.
- The current condition of the grassland has vegetation integrity assessed as below the threshold required to offset ecosystem disturbance and is therefore of low conservation value.

Only prescribed impacts must be assessed on category 1 – exempt land (BAM 1.5.1 (d)).

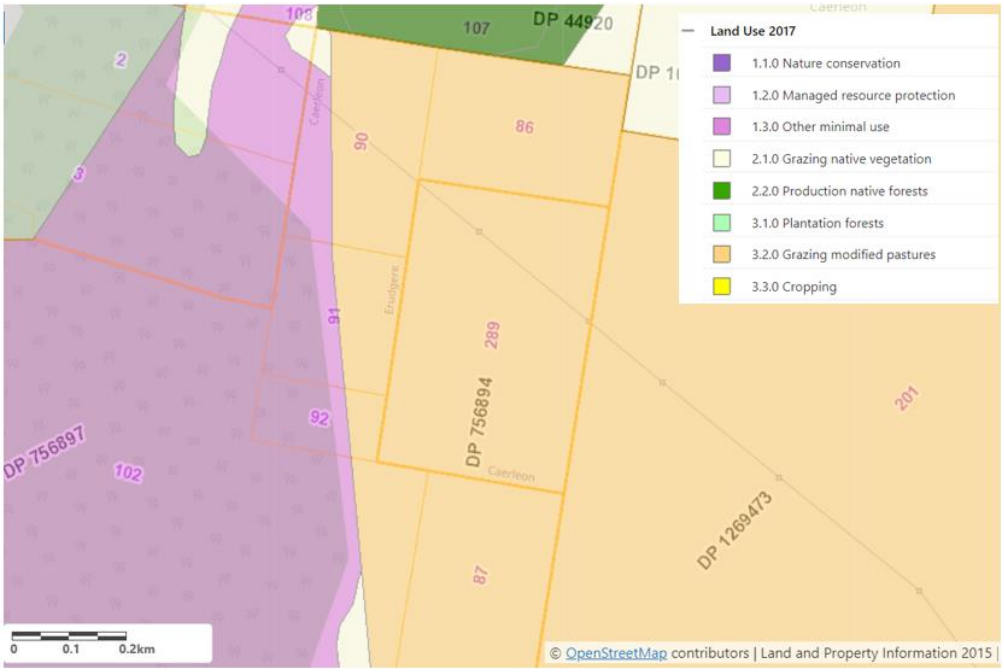


Figure 12: Land use 2017 map, NSW.

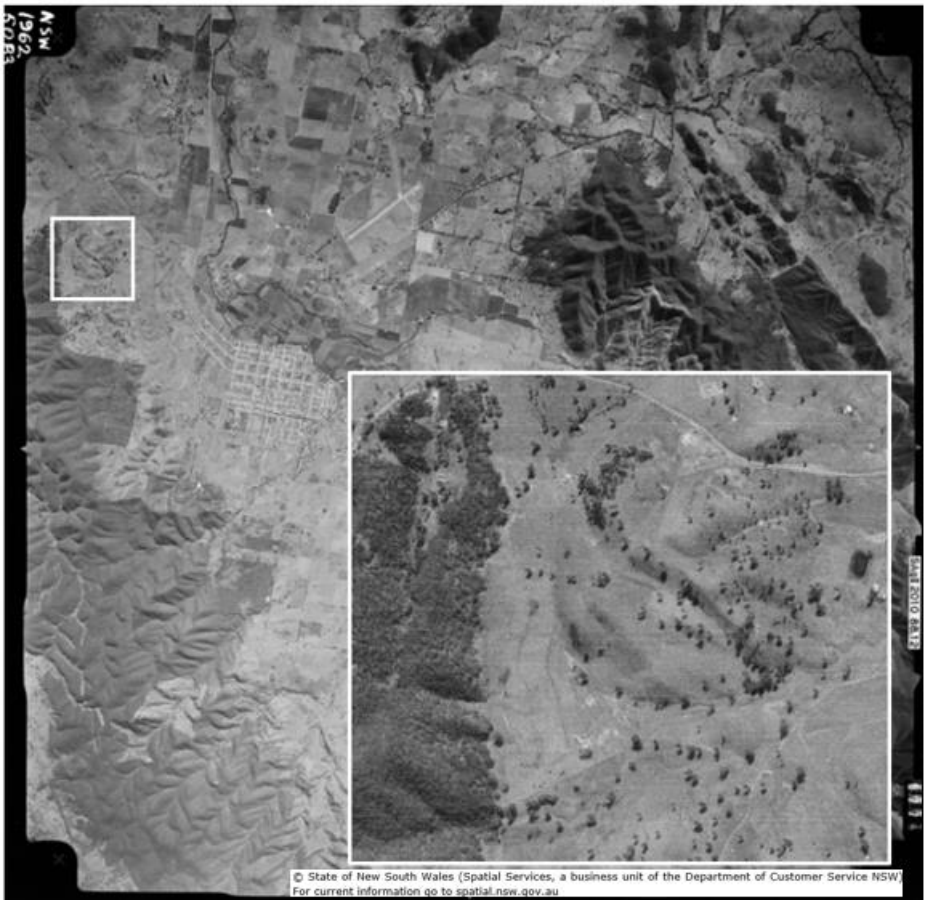


Figure 13: Historical image – frame 5083, film 1962 (State of NSW, 1962).

2002 2012

Figure 14: Aerial images – site changes over time (Google Earth).

3. NATIVE VEGETATION

Methodology

Native vegetation at the Development Site was assessed in accordance with Section 4 of the BAM (DPIE 2020).

Data Review

Vegetation mapping completed as part of the State Vegetation mapping process, available online through the SEED portal was reviewed to assist with the determination of Plant Community Types (PCTs) within the Property. Vegetation at the Development Site was listed as PCT 796 – Derived grassland of the NSW southwestern slopes.

Vegetation Mapping Surveys

Detailed vegetation surveys were conducted across the Development Site between late July and November 2021, with the ambient weather conditions outlined in **Table 2**.

Table 2: Weather observations at Mudgee Airport (station 062101) (BoM 2021)

Date	Rainfall (mm)	Temperature Min (°C)	Temperature Max (°C)	Relative Humidity 9am (%)	Relative Humidity 3pm (%)	Site conditions
30/07/21	0	-5	16	98	29	Very wet
30/08/21	0	-1	16	90	43	Wet
31/08/21	0	-1	21	82	30	Wet
06/10/21	0	0	21	70	32	Dry
03/11/21	0	10	27	66	41	Dry

Plant Community Type Determination

The vegetation community identified within the Development Site was assigned to the closest equivalent PCT from those listed in the BioNet Vegetation Classification database (DPIE 2020). It was determined through a comparison of the floristic descriptions of PCTs in the database with the plot data collected from the site. In addition to floristic and structural similarity, the location, landscape position, soil type and other diagnostic features of the vegetation communities on the site were compared to the descriptions in the database to determine the most suitable PCT. Threatened ecological communities (TECs) as defined in NSW and Commonwealth legislation were also identified if present.

Vegetation Zones

A vegetation zone is defined in the BAM (DPIE 2020, Section 4) as a relatively homogenous area that is the same vegetation type and broad condition. One vegetation zone was identified across the Development Site.

Assessing Vegetation Integrity (Site Condition)

Vegetation plots were undertaken at the Development Site to collect site condition data for the composition, structure and function attributes listed in **Table 3** in accordance with Section 4.3 of the BAM (DPIE, 2020). Note however function attributes are not required where the vegetation formation is a grassland. The locations of the plots were randomly selected to provide representative samples across the site and vegetation characteristics were noted 20 x 20 m plots and 20 x 50 m plots.

Table 3: Composition, structure and function components of vegetation integrity.

Growth form groups used to assess composition (species richness) and structure (% foliage cover)	Function attributes
Tree (TG) Shrub (SG) Grass and grass-like (GG) Forb (FG) Fern (EG) Other (OG)	Number of large trees Tree regeneration (presence/absence) Tree stem size class (presence/absence) Total length of fallen logs Litter cover High threat exotic vegetation cover (HTE) Hollow-bearing trees (HBT)

The plot number undertaken at the site meets the minimum number required for each vegetation zone as detailed in Section 4.3.4, Table 3 of the BAM (DPIE 2020). The locations of the plot undertaken on the Development Site is shown on **Figure 5**.

Assessment Results

Vegetation within the development site

Trees were very sparse and those observed were a combination of native and exotic species. The few native trees noted on the Development Site were *Eucalyptus dealbata* (tumble down red gums), with a small group of *E. microcarpa* (grey box) to the south and outside the Development Site. Exotic trees across the Development Site included *Schinus molle* (peppercorn trees), *Ficus carica* (figs) *and Pyrus ussuriensis* (Manchurian pears). There were no shrubs across the Development Site but notably there were approximately 60 plants identified as *Acacia ausfeldii*, listed as vulnerable under NSW BC Act 2016, at the western edge of the Property. Groundcover was consistent, with evidence of pasture improvement with *Trifolium spp*. (clovers, sub clovers) and introduced grasses.

The existing native species, structure of the vegetation, soil type and landscape position were used to identify the vegetation types according to the NSW standard Plan Community Type (PCT) classification. The best-fit PCT identified at the Development Site was determined as:

- PCT 796, *Derived grasslands of the NSW south western slopes*.

This community is a grassland community resulting from the clearing of various grassy woodland and forest communities, is widespread and can occupy foot-slopes, mid-slopes, upper slopes and crests.

Other aspects of the site are a rock outcrop in the western portion of the Property (**Figure 5,** WP 39) and an area with evidence of erosion in the eastern section of the Development Site (**Figure 5**, WP 68). The rock outcrop serves as potential habitat, particularly for reptiles, is not near proposed works and will be protected by a 50 m buffer zone. The area of erosion will be remediated as part of site works as it is in the vicinity of water retention basin that will effectively produce shallow wetland type conditions.

Figure 15: Typical vegetation at Development Site.

Figure 16: Rock outcrop towards the western boundary of the Property.

Figure 17: Downslope areas of existing erosion.

Native vegetation types

The species list for the site is provided in **Appendix 1**.

Weeds

No significant woody weeds were observed to be present at the Development Site. High threat exotic plants included *Pennisetum clandestinum* (kikuyu), *Romulea rosea* (onion grass), *Carthamus lanatus* (saffron thistle) and *Ranunculus repens* (creeping buttercup).

Threatened ecological communities

The vegetation community identified at the Development Site PCT 796, *Derived grasslands of the NSW south-western slopes*, is not associated with any threatened ecological communities listed under the *Biodiversity Conservation Act 2016*.

Aquatic habitat

Threatened aquatic species and ecological communities are listed under the *Fisheries Management Act 1995* if they face a very high risk of extinction in the near future as determined by the Fisheries Scientific Committee. The nearest named watercourse is Hone Creek, approximately 525 m to the southeast of the Development Site. The site inspection confirmed two minor, intermittent drainage lines and the absence of any significant watercourses or riparian habitat. No key fish habitat is mapped near the Development Site and there are no expected impacts to aquatic habitat or threatened aquatic species or ecosystems.

4. THREATENED SPECIES

Assessing Habitat Suitability

The BAM does not assess biodiversity value for native vegetation and loss of habitat on category 1 – exempt land except for prescribed or additional biodiversity impacts. However, an assessment of suitable habitat for threatened species and populations within the Development Site was conducted to help assess the significance of proposed works. Preliminary information came from database searches of the NSW Department of Planning, Industry and Environment (DPIE) BioNet Atlas and the Department of Agriculture Water and Environment (DAWE) Protected Matters Search Tool (PMST). Results are summarised in **Appendix 2** with the actual search results presented in **Appendix 3 and 4** .

Threatened flora

The BioNet Wildlife Atlas database contains records for six threatened plant species, *Leucochrysum albicans var. tricolor* (hoary sunray), *Swainsona recta* (small purple-pea), *Swainsona sericea* (silky Swainson-pea), *Acacia ausfeldii* (Ausfeld's wattle), *Eucalyptus cannonii* (Capertee stringybark) and *Dichanthium setosum* (bluegrass) previously observed within a 10 km^2 range, centred around the Development Site (**Appendix 3**). As previously acknowledged, specimens of *Acacia ausfeldii* were located to the west of the Development Site but there was no incidence of the remaining species found at the Development Site. A short discussion for each species is provided below.

***Swainsona sericea* (silky Swainson-pea):** it occurs in box-gum woodlands sometimes in association with *Callitris spp*. The location of the Development Site is on the periphery of the known or predicted range.

***Acacia ausfeldii* (Ausfeld's wattle)**: grows in the Mudgee, Ulan, Tallawang area in eucalypt woodland with sandy soil. Typically associated species include *Eucalyptus albens* (white box), *E. blakelyi* (Blakely's red gum) and *Callitris spp*.

***Leucochrysum albicans var. tricolor* (hoary sunray):** a perennial everlasting daisy that can occur in grassland, woodland, forest and sometimes along roadsides. More commonly found on the Southern Tablelands adjacent areas like Albury, Bega and Goulburn, it is known to require bare ground for germination.

***Swainsona recta* (small purple-pea):** typically found in the grassy understory of box-gum woodlands and open forests with usual understorey companions being *Themeda triandra* (Kangaroo grass) *Poa spp.* (poa tussocks) and spear grasses. It is known to occur in nature reserves of the Mudgee area.

***Eucalyptus cannonii* (Capertee stringybark):** predominantly found in the central tablelands and slopes of NSW, growing at altitudes from 450 m to 1050 m, where it tolerates most situations except valley floor positions.

***Dichanthium setosum* (bluegrass):** summer flowering erect perennial grass to about 1 m tall, mostly associated with heavy basaltic black soils and red-brown loams with clay sub soil. It is often found in moderately disturbed zones including cleared woodlands, grassy roadsides and highly disturbed pasture more often in the New England Tablelands and northern parts of the state.

The only Bionet Atlas records for *Dichanthium setosum* in the MWRC Local Government Area (LGA) date back to 1911 (**Figure 18**) and therefore do not provide substantial supporting evidence of its probable local occurrence. The soils on the Development Site are not those that are typically associated with its' growth and specific survey during the preferred survey time , 3-4 weeks after warm season rainfall events (November to March) did not record *Dichanthium setosum*.

Based on the survey at the Development Site and assessment of species' habitat requirements, it was concluded that none of the potential threatened flora species, listed under the BC Act, are present at the Development Site or will be impacted by the Proposal.

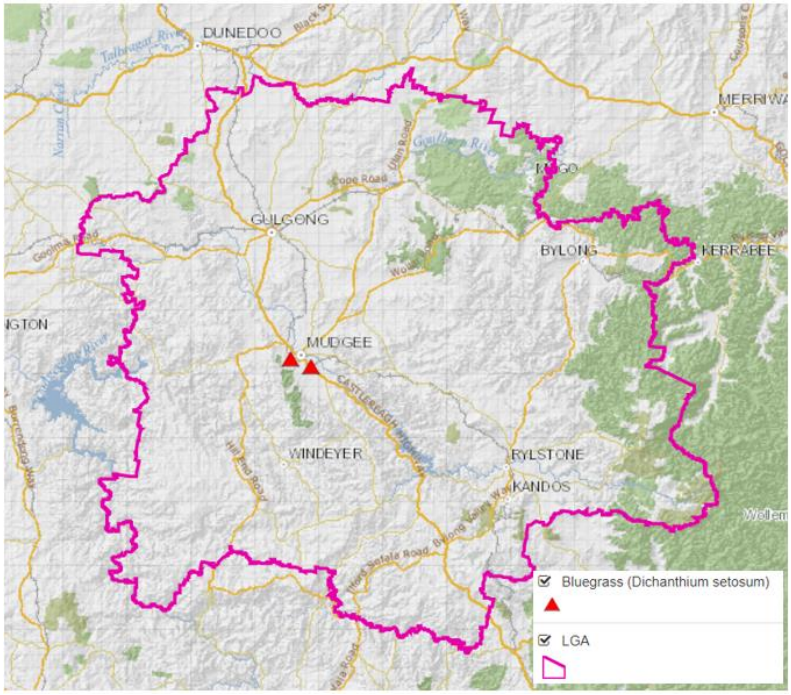


Figure 18: Bluegrass recorded sighting in MWRC LGA.

Threatened fauna

The proposed Development Site contains low to moderate value fauna habitat (highly altered with few hollow-bearing trees). It does not contain many of the habitat features required for native fauna species to breed such as abundant and varied food resources, diverse shrub/ground cover layer, leaf litter, logs and rocks. Trees present within the Development Site are *Eucalyptus dealbata* and other isolated exotics with limited potential to provide foraging habitat for a range of bird and possibly bat species. While three trees at the Development Site have hollows it is unlikely that these small isolated habitat features would be utilised as breeding habitat for any threatened fauna species.

Figure 19: Hollow bearing trees.

A BioNet Atlas search has identified 20 threatened fauna species that have previously been recorded within 10 km^2 of the site (**Appendix 3**). Threatened species previously seen in the area are *Apus pacificus* (fork-tailed swift), *Hirundapus caudacutus* (white-throated needletail), *Circus assimilis* (spotted harrier), *Hieraaetus morphnoides* (little eagle), *Grus rubicunda* (brolga), *Calyptorhynchus lathami* (glossy black cockatoo), *Lophochroa leadbeateri* (Major Mitchell's cockatoo), *Glossopsitta pusilla* (little lorikeet), *Polytelis swainsonii* (superb parrot), *Ninox connivens* (barking owl), *Ninox strenua* (powerful owl), *Climacteris picumnus victoriae* (brown treecreeper (eastern subspecies)), *Anthochaera phrygia* (regent honeyeater), *Pomatostomus temporalis temporalis* (grey-crowned babbler (eastern subspecies)), *Daphoensitta chrysoptera* (varied sittella), *Artamus cyanopterus cyanopterus* (dusky woodswallow), *Petroica boodang* (scarlet robin), *Phascolarctos cinereus* (koala), *Petrogale penicillata* (brush-tailed rock-wallaby) and *Pteropus poliocephalus* (grey-headed flying-fox). The bulk of these sightings have come from wooded areas around Mudgee including Avisford Nature Reserve, Mudgee Common and Flirtation Hill. The Development Site is modified grassland and much less likely to sustain many of these threatened species.

The likely presence of these species was considered in relation to whether suitable habitat is present, in the modified grassland, as described (**Appendix 2**). Species that depend on swamps, large water bodies, riparian vegetation, rock outcrops or caves do not have suitable habitat at the Development Site. Three hollow-bearing native trees (DBH 90 – 110 cm) were identified. Hollow-bearing trees provide shelter or nesting sites for hollow-dependant threatened fauna. Two of these trees had one small diameter hollow each and the largest of the three trees had multiple (at least five) ground observed hollows. It is impractical to retain these trees at their current location because the solar panels cannot be moved enough to avoid the tree shadows. To reduce biodiversity impacts the trees will be cut down in stages (lessening risk to any animals that may be using the trees) and re-stood near the water retention basin to make some provision for continued habitat opportunity.

Ecosystem credit species

Normally assessment of habitat suitability for ecosystem credit species would be conducted in accordance with Section 5.2 of the BAM. Ecosystem credits help represent threatened species that can be predicted to be present by the type and condition of vegetation at the Development Site. As the Development Site is on category 1 – exempt land a habitat assessment has been completed only for thoroughness in assessing potentially significant impacts.

A list of predicted ecosystem credit species for the Development Site was reviewed in the BAM calculator (BAM-C). The potential for the identified ecosystem credit species to occur on the Development Site was assessed according to species specific habitat requirements, as detailed in **Table 4**. Where habitat features were not present due to the altered condition of the site vegetation, ecosystem credit species were excluded from further consideration.

Table 4: Assessment of ecosystem credit species within the Development Site.

Scientific name	Common name	Confirmed predicted species	Justification
Artamus cyanopterus cyanopterus	Dusky woodswallow	No	Development Site does not have open forest or woodland structure, no shrub understory and no woody debris
Circus assimilis	Spotted harrier	Yes	Could utilise the grassland even as agricultural land, for foraging
Daphoenositta chrysoptera	Varied sittella	No	No rough barked trees available for use

Epthianura albifrons	White-fronted chat	No	Usually near wetland areas on bare or grassy ground
Falco subniger	Black falcon	No	Typically use tree lined watercourses to swoop down and grasp prey
Haliaeetus leucogaster	White-bellied sea-eagle	No	No access to rivers or large dams within 1 km of Development Site and foraging habitat is over water
Hieraaetus morphnoides	Little eagle (foraging)	Yes	Preys on birds, reptiles, mammals, sometimes insects
Hirundapus caudacutus	White-throated needletail	No	More likely above wooded areas rather than open grassland areas
Lophochroa leadbeateri	Major Mitchell's cockatoo (foraging)	No	Minimal food resources at the Development Site
Petroica boodang	Scarlet robin	No	Minimal fallen timber available
Petroica phoenicea	Flame robin	Yes	Forests, woodlands - moving in winter to utilise pastures and native grasslands
Polytelis swainsonii	Superb parrot (foraging)	No	Insufficient tree cover for typical foraging habitat
Saccolaimus flaviventris	Yellow-bellied Sheathtail bat	No	Minimal tree hollows and no buildings or mammal burrows
Stagonopleura guttata	Diamond firetail	Yes	No breeding habitat but may use grasses and forbs as food

Spotted harrier: Habitats include grassy open woodland, inland riparian woodland, grassland and agricultural land, where it forages over open areas.

Little eagle (foraging): Open eucalypt forest, woodland, Sheoak or Acacia woodlands and riparian woodlands; builds large stick nests in tall living trees and preys on birds, reptiles and mammals.

Flame robin: Breeds in tall, moist eucalypt forest and woodlands and in winter moves to drier more open habitats like the western slopes and plains, where it can also live in pastures and native grasslands, with or without scattered trees.

Diamond firetail: Found in diverse habitats including open forest, mallee and natural temperate grasslands, feeding exclusively on the ground on grasses, herbs and insects.

Vegetation impacts at the site are limited and if these species utilise the site they would continue to be able to do so.

A summary of ecosystem credits, from the BAM-C online tool is shown below:

App last updated: 22/10/2020 11:00 (Version: 1.3.0.00)
BAM data last updated *: 10/06/2021 (Version: 45) * Disclaimer

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

Zone	Vegetation zone name	Vegetation integrity loss	Area	Species sensitivity to gain class (for BRW)	Biodiversity risk weighting	Potential SAII	Ecosystem credits
Derived grassland of the NSW South Western Slopes							
1	796_Uniform	16.6	8.6 hectares	High Sensitivity to Potential Gain	1.5		0
						Subtotal: 0	

Total: 0

Species credit species

Identify threatened species for assessment

A list of predicted species credit species for the Development Site was reviewed in the BAM-C. Species credits pertain to threatened species that cannot be predicted by the vegetation present and relates primarily to species for which breeding habitat is available.

Habitat constraints and vagrant species

The potential for identified species credit species to occur on the Development Site was assessed according to species particular habitat requirements, as detailed in **Table 5**. Where habitat features were not present due to the condition of the site vegetation, species credit species were found not to be candidate species and no further assessment was required.

Table 5: Assessment of species credit species within the Development Site.

Scientific Name	Common Name	Confirmed candidate species (Yes/No?)	Justification
Aprasia parapulchella	Pink-tailed legless lizard	No	No rocky outcrops on the Development Site
Austrostipa wakoolica	A spear grass	No	Alluvial plains and plains with a geographic constraint for the site being west of Cowra
Dichanthium setosum	Bluegrass	No	Old recorded sightings, site conditions not suitable and not found in targeted survey
Haliaeetus leucogaster	White-bellied sea-eagle	No	There are no rivers, lakes or large dams within 1 km of the Development Site
Hieraaetus morphnoides	Little eagle	No	Isolated trees separated from other vegetation
Lophochroa leadbeateri	Major Mitchell's cockatoo	No	No ground observed hollows greater than 10 cm in diameter
Polytellis swainsonii	Superb parrot	No	Preferred tree species were not on site
Prasophyllum sp. Wybong		No	Not found in targeted survey
Swainsona sericea	Silky Swainson-pea	No	Unlikely to persist under grazing scenarios Not found in targeted survey

Due to the site vegetation being altered by previous agricultural activities there were no candidate species that required further assessment.

Threatened Species Surveys

Candidate Threatened Flora

The minimum suggested survey effort for targeted flora survey is two 20 m x 20 m quadrats for every 2 – 50 ha stratification unit. Two 20 x 20 m plots were used in a targeted survey for *Dichanthium setosum, Swainsona sericea, Prasophyllum sp. Wybong*. No incidence of these species was observed.

Additional targeted survey for threatened plant species were also performed as 2 x 100 m transects. For land area of 2 – 50 ha, 2 x 100 m transects is suggested as the minimum effort required in the Threatened Biodiversity Guidelines (DEC 2004, p. 5-69). No threatened species were observed.

Candidate Threatened Fauna

Targeted sampling was not conducted for the pink tailed legless lizard as the only potential habitat was not on the Development Site. Rock outcrop was found in the west of the Property, no rock was found at the Development Site. A 50 m buffer will protect this rock outcrop from any potential disturbance.

For diurnal birds multiple timed area searches were conducted, 3 x 30 minute search of a 2 ha area in the Development Site or the same habitat type and 1 x 30 minute search in the wooded area to the west. This was in conjunction with opportunistic observations, including birds that were flying over the site and in or over adjacent areas. Birds were identified by sight and bird call vocalisations. Observations and surveys were conducted mid-morning and afternoon, the weather on observation days was mild and sunny with moderate ambient wind conditions.

White-bellied sea-eagle: Breeding habitat is live large old trees within 1 km of a rivers, lakes, large dams or creeks, wetlands and coastlines AND the presence of a large stick nest within tree canopy; or an adult with nest material; or adults observed duetting within breeding period. There are no large bodies of water with 1 km of the large trees at the Development Site and no large stick nests in these trees or adult birds seen in the area within the breeding period.

Little eagle: Breeding habitat is live (occasionally dead) large old trees within suitable vegetation AND the presence of a male and female; or female with nesting material; or an individual on a large stick nest in the top half of the tree canopy. The trees on the Development Site are within grassland, not woodland habitat, there was no evidence of stick nests and no little eagles present.

Major Mitchell's cockatoo: Utilise hollow bearing trees with hollows greater than 10 cm diameter. Signs of breeding habitat are individuals of the species identified during the breeding season (August to November) or an occupied nest. No Major Mitchell's cockatoos were identified in site surveys.

Superb parrot: Require hollow bearing trees particularly living or dead *Eucalyptus blakelyi*, *E. melliodora*, *E. albens*, *E. camaldulensis*, *E. microcarpa*, *E. polyanthemos*, *E. mannifera* and *E. intertexta*. Hollows must be greater than 5 cm diameter, at least 4 m above ground level in trees with a diameter at breast height (DBH) of greater than 30 cm. Breeding habitat is identified as containing these habitat features and a nest or two or more birds seen on site. No nest or superb parrots were seen using the hollows or trees at the Development Site.

The **regent honeyeater** is not listed as a candidate species credit species in the BAM-C because vegetation is grassland however the native trees on site are listed as important habitat for regent honeyeaters. These trees are isolated and not recognised species that typically provide food resources for the regent honey eater. Due to the small number of affected trees and their isolated position in the landscape, site activities will not affect habitat that is important to the regent honeyeater.

Identified Threatened Species

No threatened species or their habitat requirements were identified on site.

5. AVOID AND MINIMISE IMPACTS ON BIODIVERSITY VALUES

Avoiding and minimising impacts during project planning

Project location

The solar farm is proposed on land previously used for agricultural activities, determined as category 1 – exempt land, which already has reduced biodiversity values. The solar arrays will be wholly contained in one Lot meaning any impacts will be localised.

The existing farm dam will be filled however a water retention basin is proposed down slope to manage on site water, which would incorporate wetland features and habitat. Measures to stabilise existing erosion will be combined with these plans for a water retention basin.

It is proposed that the three trees with hollows that need removal will be preserved and re-stood in the wetland area down slope of solar panel installation. This effort may allow for continued use of hollows by hollow dependent fauna.

Solar panel arrays will be mounted on pile driven mounts, minimising the level of ground disturbance, also not requiring the use of concrete for foundational support.

Planned vegetation screening will be designed to incorporate locally indigenous shrubs like the vulnerable *Acacia ausfeldii*, potentially G*revillea* and C*allistemons* that may be utilised by honey eaters, including the critically endangered regent honeyeater.

Avoid and Minimise Impacts on prescribed biodiversity impacts

The following are prescribed impacts which need to be considered as per section 6 of the BAM and are the prime consideration for the biodiversity assessment of category 1 – exempt land.

Impact of the development on the habitat of threatened species or ecological communities associated with significant geological features, human made structure or non-native vegetation:

No significant geological features, human made structures or abandoned buildings occur within the Property. There was a rocky outcrop identified near the western boundary of the Property which is outside the scope of works and has been identified with a 50 m protective buffer (**Figure 5**). Within the Development Site there are six exotic trees that may need removal. No threatened species were identified on site or using these trees and additional trees of the same type will remain at the site undisturbed. Installation of solar panels and associated infrastructure would not cause significant impacts on species that may utilise existing habitat. Activities that may cause noise, dust, vibration and potentially sediment runoff effects would be small in extent and short term in nature.

Impacts of the development on the connectivity of different habitat which facilitates movement of threatened species:

The Development Site is part of a mostly continuous and large area of grassy exotic and native ground cover. Due to the nature of the previously cleared grazing land, habitat connectivity is limited with only isolated paddock trees. There is a large area of continuous woody vegetation to the west of the Development Site but linkage from this vegetation to the Cudgegong River, in the east, is already restricted. The width of the development will be less than 340 m (the Lot width) which is currently open grassland. Up to 10 trees will be removed, 4 natives and 6 exotics and much of the existing ground cover will continue to exist underneath the solar arrays.

It is not expected the Proposal will further exacerbate fragmentation of habitat for threatened fauna species potentially occurring in surrounding vegetation as the development infrastructure will be located in already cleared areas.

Impacts of the development on water bodies, quality and hydrological processes that sustain threatened species or ecological communities:

There are no natural water bodies that will be affected by planned development. There is an unnamed first order drainage line running west to east which has proximity to proposed works. Ideally first order water courses should have a 10 m buffer to prevent erosion and other adverse effects. This site is already highly modified from previous land use activities and contour banks run in a north - south direction. Support poles will have 6 m spacing but the level of ground disturbance is minor, not significantly more than would be generated from permissible farming activities.
Potential indirect impacts of construction activities include leaks and spills from vehicles, plant and equipment, corrosion of plant or equipment, particulates from internal combustion engines, and dust from plant and vehicle movements. Standard management measures include:

- Spill prevention measures
- Maintaining equipment
- Dust suppression if required
- Erosion control

to help mitigate risks associated with routine construction activities.
There are areas of erosion that will be mitigated by site works with plans for better management of water movement across the Development site including a shallow wetland area and water retention basin. This should help improve water quality, reduce erosion issues and provide a habitat resource for native fauna.

Impact of wind turbine strikes on protected animals:

Not applicable to this development application.

Impacts of vehicle strikes on threatened species or on animals that are part of a TEC:

During construction and installation, traffic at the Development Site will be increased because there is currently only incidental vehicle movement. Vehicle access will be via the MWRC sewerage facility and will be generally low speed, due to terrain, short traversing distances and load restraints. However, no threatened species or animals that are part of a TEC are thought to frequent the site and once construction is completed traffic will again be minimal. In the long term there will be no significant change to existing traffic movement patterns or frequency and therefore no additional impacts on threatened species or animals.

Assessment of Impacts

Impacts on native vegetation and Habitat

Direct Impacts
Solar arrays and associated equipment will cover approximately 3 ha but vegetation can persist on an estimated 95 % of the area, under the panels, so the actual area of ground disturbance is much less. Installation utilising a pile driven mounting system markedly reduces ground disturbance. There will be an additional 0.2 ha of ground surface disruption for the provision of a site access road.

As the Proposal is to be carried out on category 1 – exempt land there are no direct impacts to the vegetation integrity that have to be assessed.

There are four mature *Eucalyptus dealbata* trees, three with hollows, that will be removed. No threatened species were identified as using these hollows. As part of planning to minimise biodiversity impacts it is proposed that these trees will be relocated and fixed as habitat features near the water retention basin to maintain the presence of the hollows.

No entities are at risk of serious and irreversible impacts (SAII).

Indirect Impacts

No TECs will be impacted and the *derived grassland, PCT 796,* will still be present on the Development Site as well as in adjacent areas. The Development Site already has a low vegetation integrity score, below 17, and is buffered all around by similar grassland vegetation, so the consequences of indirect impacts on biodiversity values is low.

The Proposal has the potential for edge effects on the adjoining vegetation near the Development Site. Potential indirect impacts include:

- Increased weed invasion due to disturbed ground surfaces and potential spread or introduction of pathogens from the site to adjacent vegetation. These processes could occur anytime during construction but would not be an ongoing issue in the operational phase, where ground surfaces and vegetation would have stabilised and vehicular traffic will be reduced.
- Erosion, sedimentation and contaminated run-off risks, would be small in extent due to pile driving foundation poles, the small size of other disturbed areas (inverter, laydown and storage) and the existing level of groundcover. The hazard is highest in the early stages of construction whenever there are storms and bare, disturbed ground surfaces. The threat of these processes will not continue into the operational phase unless there is ground disturbance for unforeseen maintenance issues.
- Accidental incursions into adjacent vegetation during site deliveries and ground works, due to personnel error or loss of vehicle control. The extent, frequency and duration of any such incidents would be small and only during construction.
- Reduced viability of adjoining habitats due to increased noise, dust or light spill/glare. Increased noise and dust impacts would occur potentially daily, during construction activities and effects would be magnified during windy conditions. The consequences of additional noise and dust would not be ongoing through the operational phase but glare could be an issue during operation. It is unlikely to affect the upslope woody habitat but may affect birds passing over the solar installation.
- There is increased risk of fire during construction work from welding, machinery sparks, vehicle ignition or electrical fault. Fire risk potential would be reduced from that present during construction but this risk would be ongoing through the operational phase. The operational stage would have fire risk similar to the existing pastoral land use which can have fires start through lightning strike or vehicle ignition (driving through or slashing paddocks with long grass).
- Increase in rubbish dumping in adjoining habitats may occur from illegal and irresponsible treatment of construction waste or domestic rubbish. It could occur throughout both construction and operation, potentially daily or as personnel attend site.

There is an existing minimum 50 m grassland buffer between the Development Site and the better quality native, woody vegetation up slope, to the west, which will reduce the influence of site activities on this habitat. The potential indirect impacts - edge effects, noise, dust, weed and pathogen incursions, are unlikely to affect the viability of these higher biodiversity value woodlands and there will be no significant long term change in the fire regimes or fire threat to this zone.

There will be no disturbance or removal of rocks or bush rock as the small rocky outcrop on the western edge of the Property is outside the Development Site and will have a 50 m protection buffer.

Provided appropriate mitigation measures are implemented, the Proposal is unlikely to have a significant long-term effect on threatened species, ecological communities and their habitats.

Prescribed impacts

There will be no change to factors that may influence prescribed impacts.

Mitigating and Managing impacts on Biodiversity values

Construction works will be managed, implementing measures outlined in **Table 6**.

Table 6: Summary of direct, indirect and prescribed impacts of the Proposal

Impact	Action and Outcome	Responsibility	Timing
Direct			
Clearing of native vegetation / habitat	Mark out boundary of development compound to prevent unnecessary ground disturbance	Site Manager	Prior to ground disturbance
	Ensure vehicle and equipment parking areas and unloading zones are designated and positioned to limit any new disturbance	Site Manager	Prior to construction
	Identify and communicate the location of environmentally sensitive areas and exclusion zones at the initial site visit for site personnel and contractors, to protect important habitat features		
	If it is necessary to move any fallen limbs or timber, relocate it to another area of the Development site, to reduce the impact from removing dead wood, which can be a fauna resource	Site Manager	Prior to and during construction
	Avoid and minimise clearing impacts to ground cover where possible to reduce overall vegetation impacts		
Removal of hollow-bearing trees, habitat trees	Tree removal will only be in the direct development footprint to avoid unnecessary loss of biodiversity value	Site Manager	Prior to construction
	Observe trees and follow procedures to check no animals are currently using the hollows. Staged clearing and hollow bearing tree felling guidelines (**Appendix 7**) will help prevent animals being injured in the tree removal process		
	Trees with hollows, to be removed, will be reinstated adjacent to the development area to reduce the loss of biodiversity values	Site Manager	During construction
Indirect			
Transfer of weeds and pathogens to and from the site	Inspect vehicles to be used on site for soil and plant material residue as a biosecurity measure	Site Manager	Prior to first use on site

	Clean vehicles by brushing or blowing off any plant material prior to site entry to avoid transferring weed propagules or pathogens	Site Contractors	During construction
	Inspect the site and control any new infestations of recognised priority weeds to remediate impact of weed incursion	Site Manager	After construction
Erosion, sedimentation and contaminated runoff	Erosion and sedimentation controls as per Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book).	Site Manager	Prior to and during construction
	Install a water retention basin to control water release from the site, improve water quality and reduce pollution risks		
	Spill kit kept on site to control accidental fuel spills		
Noise, vibration, lighting, waste and air pollution impacts to adjacent habitat	Restrict human traffic to the development zone, to avoid disturbance in adjacent habitat areas	Site Manager	During construction and operation
	Noise and vibration impacts minimised by using appropriate and well maintained equipment and coordinating disruptive activities where possible		
	No night works requiring lighting and any permanent lighting restricted to the immediate development zone to minimise light spill and possible changes to animal behaviour		
	Any waste materials produced from on-site activities to be recycled or removed to appropriately licenced waste facility		
	To reduce dust generation any loads of bulk material will be covered in transit and work will cease in high wind conditions if required		
Prescribed			
Impacts to surface and groundwater quality	Standard erosion control measures like sediment fences, maintaining vegetation and mulching, where appropriate	Site Manager	During construction
	A spill management procedure to be developed in case of accidental spill or fuel leak		Prior to construction
Vehicle collision with fauna	Low on site vehicle speed to accommodate uneven ground and to reduce accident potential	Site Owner	During construction

6. IMPACT SUMMARY

The following is an assessment of the impacts requiring offsetting in accordance with Section 9 of the BAM (DPIE 2020) and includes impacts:

- on biodiversity values at risk of serious and irreversible impact
- for which offset requirements need to be determined
- for which offset requirements do not need to be determined
- that do not require further assessment

Serious and irreversible impacts

No Serious and Irreversible Impacts (SAII) will occur at the Development Site.

Identification of impacts requiring offsets

Impacts on Native vegetation

The PCT identified at the development site is not representative of any critically endangered or endangered ecological community but is potentially associated with threatened species, notably the regent honeyeater. As the Development Site was assessed as category 1 – exempt land and had a vegetation integrity score of less than 17 no ecosystem credits require offsetting.
Closest fit vegetation type is PCT 796 – Derived grassland of the NSW south-western slopes.

No species credits require offsetting and for completeness the 'like – for like' Credit Report is provided in **Appendix 5**.

Impacts on Species credit species

No species credit species were identified.

Impacts not requiring offsets

Impacts on species identified outside the Development Site do not require offsets to be determined. No impacts on threatened species outside the Development Site were identified.

Impacts that do not need further assessment

There was minimal established non-native vegetation that could be potentially used as habitat for threatened species. It is only when threatened species may be using non-native vegetation that further assessment may be warranted. No threatened species were identified using the exotic trees at the Development Site.

7. ASSESSMENT OF OTHER BIODIVERSITY LEGISLATION

EPBC Act

Proposal was not considered likely to have significant impact on MNES:

Table 7: Matters of national environmental significance checklist.

Factor	Impact
a. Any impact on a World Heritage property?	*Nil*
b. Any impact on a National Heritage place?	*Nil*
c. Any impact on a wetland of international importance?	*Nil*
d. Any impact on a listed threatened species or communities?	*Unlikely*
e. Any impacts on listed migratory species?	*Nil*
f. Any impact on a Commonwealth marine area?	*Nil*
g. Does the proposal involve a nuclear action (including uranium mining)?	*Nil*
Additionally, any impact (direct or indirect) on Commonwealth land?	*Nil*

Koala Habitat Protection SEPP

Habitat features at the site were assessed (**Appendix 6**) and the site does not contain '*core koala habitat*'.

Biosecurity Act

No weeds of significance were identified at the Development Site.

8. CONCLUSION AND RECOMMENDATIONS

A total of 21 native plant species were recorded during the site assessment, with many exotic (weed) species (**Appendix A**).

The assessment has confirmed there are no threatened flora species or threatened ecological communities (TECs) at the development site.

The assessment finds that, of the threatened fauna species that have been recorded locally, some have suitable foraging habitat at the Property and may occur there from time to time, overall there are expected to be no significant impacts to any of these threatened fauna species or their habitat. There are no specialised habitat features such as rock outcrops, cliffs or caves in the Development Site.

The following recommendations are made to minimise impacts to the habitat at the Property, whilst still facilitating the development.

1 Where trees with hollows /fissures cannot be retained the guidelines for felling hollow-bearing trees should be followed (**Appendix 7**).

2 Hollow bearing tree remnants should be fixed vertically near the water retention basin to compensate for habitat disturbance.

Declaration

I declare that this BDAR has been prepared in accordance with the requirements of the BAM and relevant legislation. It contains all available information that is relevant to the environmental assessment of the development to which the statement relates. The site of the proposal has been inspected by Access EP staff to gather the site-specific physical data presented in this report.

To the best of my knowledge, the information contained in this BDAR is neither false nor misleading.

Christopher Botfield

9. References

Agriculture Victoria, Soil Resources Glossary
http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/gloss_HR Data NSW, (2020), Soil

Bureau of Meteorology (BoM) 2021, Daily Climate Statistcis Mudgee NSW, http://www.bom.gov.au/climate/dwo/202107/html/IDCJDW2088.202107.shtml

Landscape Map of the Dubbo region https://data.nsw.gov.au/data/dataset/soil-landscapes-of-the-dubbo-1-250000-sheet6bb19/resource/bc83c865-49ef-422b-835b-abd278b2116a?inner_span=True https://datasets.seed.nsw.gov.au/dataset/b6f6ab04-9f4d-4505-aa3a-99653d30072f/resource/bb6992f0-6a22-4d16-921a-d5f8bdb6d628/download/dubbosi554ed1slmapl

Department of Agriculture, Water and the Environment (DAWE), (2020), Protected Matters Search Tool http://www.environment.gov.au/epbc/pmst/index.html

Department of Environment and Conservation (DEC) NSW, (2004), Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities, https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/draft-threatened-biodiversity-survey-guide.pdf

NSW Department of Planning Industry and Environment (DPIE) (2020), Biodiversity Assessment Method (BAM) https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/biodiversity-assessment-method-2020-200438.pdf

NSW Department of Planning, Industry and Environment, (2021a) BioNet: The website for the Atlas of NSW Wildlife: A whole-of-government system for flora and fauna sightings information. http://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx

NSW Department of Planning, Industry and Environment (DPIE), (2016) Bioregions https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Bioregions/bioregions-south-western-slopes.pdf

NSW Department of Planning, Industry and Environment (DPIE), (2020a), Land and Soil Information https://www.environment.nsw.gov.au/topics/land-and-soil/information/espade

NSW Department of Planning, Industry and Environment (2020b), Threatened Species found in Inland Slopes IBRA sub-region, Threatened species search tool. https://www.environment.nsw.gov.au/threatenedspeciesapp/AreaHabitatSearch.aspx https://www.environment.nsw.gov.au/threatenedspeciesapp/cmaSearchResults.aspx?SubCmaId=344 Accessed: 05/11/2021

NSW Department of Planning, Industry and Environment (DPIE), (2021b), The Central Resource for Sharing and Enabling Environmental Data (SEED) in NSW, https://www.seed.nsw.gov.au/

NSW Department of Primary Industries - NSW Weedwise, Priority Weeds for the Central West, https://weeds.dpi.nsw.gov.au/WeedBiosecurities?AreaId=59

Spatial Information Exchange, Cadastral and Imagery Data, NSW Government Department of Finance and Services, https://maps.six.nsw.gov.au/

State of NSW (1962), Historical Imagery [Photograph] – frame 5083 20/07/1971 Sheet No. 8832 film 1962 https://www.spatial.nsw.gov.au/products_and_services/aerial_and_historical_imagery

Appendix 1: Flora and Fauna Species Lists

Flora species list for the Development Site

30/07/2021	Field plot 1			
Scientific name	Common name	BAM Growth form	Cover (%)	Type
Eucalyptus dealbata	Tumble down red gum	TG	5	N
Pennisetum clandestinum	Kikuyu		40	HTE
Stellaria media	chickweed		0.1	E
Lolium spp.	Rye grass		4	E
Vittadinia cuneata	Fuzzweed	FG	0.1	N
Trifolium subterraneum	Sub clover		3	E
Juncus usitatus	Common rush	GG	0.2	N
Sporobolus elongatus	Slender rat's tail grass	GG	3	N
Romulea rosea	Onion grass		<0.1	HTE
Galium spp.	Bedstraw	FG	<0.1	N
Urtica urens	Dwarf nettle		<0.1	E
Sisymbrium officinale	Hedge mustard		<0.1	E
Acetosella vulgaris	Sheep sorrel		<0.1	HTE
Cerastium glomeratum	Mouse ear chickweed		<0.1	E
Polygonum aviculare	Wireweed		<0.1	E
Trifolum resupinatum	Persian clover		<0.1	E
Erodium crinitum	Blue storksbill	FG	<0.1	N
Conyza spp.	Fleabane (seedling)		<0.1	E

30/08/2021	Easement plot			
Scientific name	Common name	Growth form	Cover (%)	Type
Sporobolus elongatus	Slender rat's tail grass	GG	25	N
Juncus usitatus	Common rush	GG	3	N
Trifolium subterraneum	Sub clover		8	E
Carthamus lanatus	Saffron thistle		10	HTE
Echium plantagineum	Paterson's curse		<0.1	E
Lolium spp.	Rye grass		10	E
Bromus cartharticus	Prairie grass		5	E
Vulpia bromiodes	Vulpia		<0.1	E
Stellaria media	chickweed		0.1	E
Cerastium glomeratum	Mouse ear chickweed		<0.1	E
Hydrocotyle laxiflora	Stinking pennywort	FG	<0.1	N
Dactylis glomerata	Cocksfoot		5	E
Poa annua	Winter grass		<0.1	E
Acetosella vulgaris	Sheep sorrel		<0.1	HTE
Polygonum plebium	Small knotweed	FG	<0.1	N
Cyperus rotundus	Nut grass		<0.1	E
Urtica urens	Dwarf nettle		<0.1	E

Arctotheca calendula	Capeweed		0.1	E
Oxalis corniculata	Oxalis		0.1	E
Nassella trichotoma	Serrated tussock		<0.1	HTE
Capsella bursa-pastoris	Shepherd's purse		<0.1	E
Pseudognaphalium luteoalbum	Jersey cudweed	FG	<0.1	N
Rumex brownii	Swamp dock	FG	<0.1	N
Veronica persica	Creeping speedwell		<0.1	N
Verbena bonariensis	Purple top		0.1	E
Hypericum japonicum	Matted St John's wort	FG	<0.1	N
Ranunculus repens	Creeping buttercup		<0.1	HTE
Lythrum hyssopifolia	Hyssop loosestrife	FG	<0.1	N
Festuca elatior	Meadow fescue		0.1	E
Pennisetum clandestinum	Kikuyu		5	HTE

31/08/2021	Field plot 2			
Scientific name	Common name	Growth form	Cover (%)	Type
Sporobolus elongatus	Slender rat's tail grass	GG	15	N
Juncus usitatus	Common rush	GG	2	N
Carthamus lanatus	Saffron thistle		1	HTE
Trifolium subterraneum	Sub clover		30	E
Lolium spp.	Rye grass		20	E
Bromus cartharticus	Prairie grass		5	E
Conyza spp.	Fleabane (seedling)		0.1	E
Oxalis corniculata	Oxalis		<0.1	E
Veronica persica	Creeping speedwell		<0.1	N
Lamium amplexicaule	Deadnettle		<0.1	E
Capsella bursa-pastoris	Shepherd's purse		<0.1	E
Pennisetum clandestinum	Kikuyu		2	HTE
Cynodon dactylon	Couch	GG	5	N
Vittadinia cuneata	Fuzzweed	FG	0.2	N
Pseudognaphalium luteoalbum	Jersey cudweed	FG	<0.1	N
Calotis cuneifolia	Purple burrweed	FG	<0.1	N
Malva parviflora	Marshmallow		<0.1	E
Romulea rosea	Onion grass		<0.1	HTE
Stellaria media	chickweed		0.2	E
Cerastium glomeratum	Mouse ear chickweed		0.3	E
Erodium crinitum	Blue storksbill	FG	0.1	N
Cotula australis	Carrot weed	FG	0.1	N
Ranunculus repens	Creeping buttercup		0.1	HTE
Veronica calycina	Hairy speedwell	FG	0.1	N
Aphanes arvensis	Parsley piert		0.1	E

Polygonum plebium	Small knotweed	FG	0.1	N
Geranium spp.			0.1	E
Anthemis cotula	Stinking mayweed		0.1	E
Vulpia bromiodes	Vulpia		0.1	E

Other observed flora:

Scientific Name	Common Name
Native	
Acacia ausfeldii	Ausfeld's wattle
Acacia implexa	Hickory wattle
Angophora spp.	Angophora
Callitris glaucophylla	White cypress pine
Eucalyptus microcarpa	Grey box
Swainsona galegifolia	Smooth Darling pea
Exotic	
Ficus carica	Fig
Fraxinus spp.	Deciduous ash
Pyrus ussuriensis	Manchurian pear
Schinus molle	Peppercorn tree
Linaria pelisserana	Pelisser's toadflax

Fauna Species List:

Scientific Name	Common Name	Location
Anas superciliosa	Black duck	On site
Aquila audax	Wedgetail eagle	Adjacent to site
Chroicocephalus novaehollandiae	Silver gull	Adjacent to site
Corvus coronoides	Australian raven	On site
Cracticus nigrogularis	Pied butcher bird	On site
Grallina cyanoleuca	Magpie lark	On site
Hirundo neoxena	Welcome swallow	On site
Lichenostomus chrysops	Yellow faced honeyeater	Adjacent to site
Manorina melanocephala	Noisy miner	On site
Platycercus eximius	Eastern rosella	On site
Rhipidura leucophrys	Willy wag tail	On site
Tachybaptus novaehollandiae	Australasian grebe	On site
Crinia signifera	Common eastern froglet	On site
Macropus giganteus	Eastern grey kangaroo	On site
Wallabia bicolor	Swamp wallaby	On site

Appendix 2: Threatened Species Database Search

A list of threatened species, populations and ecological communities that have been reported or modelled to occur from within a specific radius of the Study Area was obtained from the following databases:

NSW Department of Planning, Industry and Environment (DPIE) Bionet Atlas (10 km^2 search area); and

Department Agriculture, Water and the Environment (DAWE) Protected Matters search tool (PMST) (1 km radius)

Assessments were then made of the likelihood of the threatened species, populations and ecological communities reported or modelled to have occurred in the locality or using habitat within the Study Area as an essential part of a foraging range.

The following table summarises the likelihood of these threatened species and EPBC Act listed migratory species occurring within the Study Area based on the habitat requirements of each species. The likelihood of occurrence was designated according to specified criteria:

Known – species identified within the site during surveys

High – species previously recorded in the area or suitable habitat (such as roosting or foraging resources) present at the site

Moderate – species may be known from the area, potential habitat resources are available within the site

Low – species not known from the area and / or only marginal habitat is available at the site

Nil – habitat requirements not met within the site

P – Protected, V – Vulnerable, E – Endangered, CE – Critically Endangered

No.	Species		BC Act	EPBC Act	No. of records	Source	Habitat requirements	Likelihood of occurrence	Assessment required (EPBC)?
	Flora								
1	*Dichanthium setosum*	Bluegrass	V	V	1	PMST BioNet	Associated with heavy basaltic soils and red-brown loams. **Soil conditions not suitable and field survey did not detect the species.**	Moderate	No
2	*Eucalyptus cannonii*	Capertee stringybark	V		3	BioNet	Predominantly restricted to the central tablelands and slopes of NSW, loosely bounded by Bathurst, Lithgow and Mudgee. Can tolerate most situations except valley floors. **Grassland and not seen on site inspection.**	Moderate	No
3	*Euphrasia arguta*		-	CE	-	PMST	Only known in the Nundle area and likely to decline in routinely disturbed environments. **Unlikely to occur at the Development Site, not known in the locality.**	Nil	No
4	*Leucochrysum albicans var. tricolor*	Hoary sunray		E	19	BioNet	Can occur in grassland, woodland and forest on generally heavy soils. Highly dependent on bare ground for germination and disturbance may be required for successful establishment. **Not recorded on site inspection.**	Moderate	No
5	*Ozothamnus tesselatus*			V	-	PMST	Grows in eucalypt woodland. **Site is grassland.**	Low	No
6	*Prasophyllum petilum*	Tarengo leek orchid	-	E	-	PMST	Known from selected sites growing in open areas, unlikely to persist with routine grazing/disturbance. **Management regime at the site would most likely prohibit continued existence of the species - not seen on site inspection.**	Low	No
7	*Prasophyllum sp Wybong*	A leek orchid	-	CE	-	PMST	Considered a synonym to *Prasophyllum petilum.* **As above**	Low	No
8	*Swainsona recta*	Small purple-pea	E	E	544	PMST BioNet	Often in association with box-gum woodland, with understorey dominants including kangaroo grass (*Themeda australis*), poa tussocks (*Poa spp*.) and spear-grasses (*Austrostipa spp.*). **Site continuously grazed and targeted field survey did not detect the species**.	Moderate	No

No.	Species		BC Act	EPBC Act	No. of records	Source	Habitat requirements	Likelihood of occurrence	Assessment required (EPBC)?
9	*Swainsona sericea*	Silky Swainson-pea	V	-	149	BioNet	Found in Natural Temperate grassland, snow gum (*Eucalyptus pauciflora*) woodland, box-gum woodland and sometimes with *Callitris spp.* **Site continuously grazed and targeted field survey did not detect the species.**	Moderate	No
10	*Acacia ausfeldii*	Ausfeld's Wattle	V	-	677	BioNet	It is found in the Mudgee-Ulan-Gulgong area and targeted survey effort did not find any specimens in the proposed disturbance area. **Not in Development Site but recorded to the west, on site inspection. Development will not impact specimens that are located near woody vegetation behind an existing perimeter fence.**	High	No
	Endangered Ecological Communities								
11	Grey box (Eucalyptus microcarpa) grassy woodlands and derived native grasslands			E	-	PMST	Tree canopy is dominated by grey box (Eucalyptus microcarpa), with other associated species including Allocasuarina luehmannii, Brachychiton populneus, Callitris glaucophylla, Eucalyptus albens, E. camaldulensis, E. conica, E. largiflorens, E. melliodora and E. populnea. **As none of these characteristic species were noted at the site inspection this EEC is not present.**	Nil	No
12	Natural temperate grasslands of the south eastern highlands			CE	-	PMST	It occurs on a variety of soil types with altitude ranging from 1200 m down to 250 m, with sparse tree cover and mainly native tussock grasses. **Content of native grasses inadequate, EEC not represented.**	Moderate	No
13	*White box-yellow box-Blakely's red gum grassy woodland and derived native grassland*			CE	-	PMST	Characterised by the presence or prior occurrence of white box, yellow box or Blakely's red gum on soils that are moderately to highly fertile. The community is mainly grassy and shrubs are typically sparse. **Grassland plant community and soils have characteristically low fertility, EEC is not present.**	Low	No

No.	Species		BC Act	EPBC Act	No. of records	Source	Habitat requirements	Likelihood of occurrence	Assessment required (EPBC)?
	Birds								
14	*Anthochaera phrygia*	Regent honeyeater	CE	CE	6	BioNet PMST	Temperate woodlands, open forests feeds on eucalypt nectar (Mugga ironbark, yellow box, white box). **Potential habitat degraded.**	Low	No
15	*Apus pacificus*	Fork-tailed swift	P	-	1	BioNet	Occur over inland plains, foothills or in coastal areas, usually from October-March. They eat insects and can fly as low as 1 m above open areas or water. **Unlikely to rely on site resources.**	Moderate	No
16	*Artamus cyanopterus cyanopterus*	Dusky woodswallow	V, P		1	BioNet	Found in dry, open eucalypt forests and woodlands, with an open or sparse understorey of shrubs, groundcover and woody debris. **Site features inadequate for habitat.**	Nil	No
17	*Botaurus poiciloptilus*	Australasian bittern	-	E	-	PMST	Preferred habitat is permanent freshwater wetlands with tall, dense vegetation. Feeds mainly at night on frogs, fish, yabbies and insects. **Site does not have water features.**	Nil	No
18	*Calidris ferruginea*	Curlew sandpiper	-	CE	-	PMST	Occupies littoral and estuarine habitats, foraging in shallow water and roosting on shingle, shell or sand beaches. **Site does not have adequate water features.**	Nil	No
19	*^Calyptorhynchus lathami*	Glossy Black-Cockatoo	V	-	5	BioNet	Open inland woodlands where Casuarinas and Allocasuarinas are common. **No preferred tree species.**	Nil	No
20	*Circus assimilis*	Spotted Harrier	V, P	-	2	BioNet	Found in open woodland (including riparian woodland), grassland and shrub steppe; most commonly native grassland but also agricultural land. Preys on mammals, birds, reptiles and sometimes insects. **Potential foraging habitat.**	High	No
21	*Climacteris picumnus victoriae*	Brown treecreeper (eastern subspecies)	V, P	-	5	BioNet	Inhabits eucalypt woodland and dry open forest, mainly with rough barked tree species like stringybarks or ironbarks, often with an grassy open understorey. **Unsuitable habitat features on site.**	Moderate	No

No.	Species		BC Act	EPBC Act	No. of records	Source	Habitat requirements	Likelihood of occurrence	Assessment required (EPBC)?
22	*Daphoenositta chrysoptera*	Varied Sittella	V, P	-	1	BioNet	Eucalypt woodlands & forests, rough barked trees, feeds on insects. **Unsuitable habitat features on site.**	Nil	No
23	*Falco hypoleucos*	Grey falcon	-	V	-	PMST	Shrubland, grassland and wooded watercourses in arid and semi-arid regions and wetlands. Feeds on birds, reptiles and mammals. **Potential foraging habitat.**	Moderate	Yes
24	*Glossopsitta pursilla*	Little lorikeet	V, P	-	2	BioNet	Forages in the canopy of open eucalyptus forest and woodland, often in riparian areas. Feeds mainly on nectar and pollen, sometimes native fruits and mistletoe. Nests are typically hollows in limbs or trunk of smooth barked eucalypts with a small entry hole (3 cm), high above the ground (2 - 15 m). **Site is grassland and does not contain food resources.**	Moderate	No
25	*Grantiella picta*	Painted Honeyeater	-	V	-	PMST	Inhabits Boree/Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum woodland and Box-Ironbark forests. Feeds on fruits of mistletoes, eucalypts and acacias. **Unsuitable habitat features on site.**	Moderate	No
26	*Grus rubicunda*	Brolga	V, P	-	1	BioNet	Often feed in dry grassland or ploughed paddocks but are dependent on wetlands, especially shallow swamps. **No wetlands or swamps nearby.**	Low	No
27	*Hieraaetus morphnoides*	Little eagle	V, P	-	1	BioNet	Eucalypt forest, woodland or open woodland. Nests in tall living trees, where pairs build large stick nests in winter. Preys on birds, reptiles, mammals and sometimes insects. **Potential foraging habitat.**	High	No
28	*Hirundapus caudacutus*	White-throated needletail	P	V	2	PMST BioNet	Largely aerial and more often seen near the coast, they are more likely to be seen above wooded areas, including open forest and rainforest. **Unsuitable habitat features on site.**	Low	No
29	*Lathamus discolor*	Swift Parrot	-	CE	-	PMST	Dry sclerophyll forest & woodland, flowering Eucalypts or lerp infested trees. **Site is grassland and does not contain food resources.**	Moderate	No

No.	Species		BC Act	EPBC Act	No. of records	Source	Habitat requirements	Likelihood of occurrence	Assessment required (EPBC)?
30	*Leipoa ocellata*	Malleefowl	-	V	-	PMST	Predominantly in mallee communities with spinifex understorey; prefers light sandy soils and diverse shrub/herb vegetation with a with a dense but discontinuous canopy. **Inadequate site features.**	Nil	No
31	*Lophochroa leadbeateri*	Major Mitchell's cockatoo	V, P	-	1	BioNet	Inland habitats with or without trees, only a small distance from water. Feeds mostly on the ground on seeds of melons, saltbush, wattles and cypress pines. **Inadequate site features.**	Moderate	No
32	*Ninnox connivens*	Barking owl	V, P	-	1	BioNet	Inhabits woodland and open forest, including remnants and partly cleared farmland. Hunts small arboreal mammals, also birds and terrestrial mammals like rodents and rabbits. Require large hunting territories and hollows in large, old trees for nest sites, with laying characteristically in August. **Site is grassland and does not contain required resources.**	Moderate	No
33	*Ninnox strenua*	Powerful owl	V, P	-	2	BioNet	Breeds and hunts in woodland, open sclerophyll forest to tall open wet forest and rainforest but can occasionally hunt in open environments. They feed on medium-sized arboreal marsupials and nest in large tree hollows (at least 0.5 m deep), in large eucalypts (80-240 cm diameter at breast height). **Site is grassland and does not contain required resources.**	Moderate	No
34	*Numenius madagascariensis*	Eastern curlew	-	CE	-	PMST	Coastal distribution. **The site is not near the coast.**	Nil	No
35	*Petroica boodang*	Scarlet robin	V, P	-	3	BioNet	Dry eucalypt forests and woodlands with an open grassy understorey, usually with abundant logs and fallen timber. In autumn and winter they may live in open grassy woodlands and grasslands or grazed paddocks with scattered trees. **Inadequate site resources.**	Moderate	No

No.	Species		BC Act	EPBC Act	No. of records	Source	Habitat requirements	Likelihood of occurrence	Assessment required (EPBC)?
36	*Polytellis swainsonii*	Superb parrot	V, P	V	1	PMST BioNet	Found in box-gum, box-cypress pine, boree woodlands and river red gum forest; nest in hollows of large trees mainly in tall riparian forest or woodland; feeds on grass seeds, herbaceous plants, fruits, nectar, insects and grain. May forage up to 10 km from nesting sites primarily in grassy box woodland. **Site is grassland and does not contain food resources.**	Moderate	No
37	*Pomatostomus temporalis temporalis*	Grey-crowned babbler (eastern subspecies)	V, P	-	1	BioNet	Box-gum woodlands on slopes and box-cypress pine and open box woodland on alluvial plains. Hop to the top of trees and glide to the next one. They build dome shaped stick nests in shrubs or eucalypt saplings. **Site is grassland.**	Moderate	No
38	*Rostratula australis*	Australian painted snipe	-	E	-	PMST	Prefers swamp edge, dams, marshes where there is grass cover and low scrub or open timber; forages in shallow water. **No wetlands or swamps nearby.**	Nil	No
	Fish								
39	*Galaxis rostratus*	Flathead galaxias	-	CE	-	PMST	Found in still or slow moving water bodies like wetlands and lowland streams	Nil	No
40	*Macquaria australasica*	Macquarie perch	-	E	-	PMST	Found in waters with lots of cover from aquatic vegetation, snags and overhanging branches	Nil	No
	Mammals								
41	*Chalinolobus dwyeri*	Large-eared pied bat	-	V	-	PMST	Roosts in caves and cliff crevices and frequenting dry open forest and woodland near these features. **Unsuitable habitat features on site.**	Nil	No
42	*Dasyurus maculatus maculatus*	Spot-tailed quoll	-	E	-	PMST	Prefers mature wet forests and need den sites such as hollows, rock outcrops or caves. **No habitat available.**	Nil	No
43	*Nyctophilus corbeni*	Corben's long-eared bat	-	V	-	PMST	Box/ironbark/cypress pine vegetation, roosts in tree hollows, crevices & under loose bark, hunts in understorey & on ground. **Unsuitable habitat features on site.**	Low	No

No.	Species		BC Act	EPBC Act	No. of records	Source	Habitat requirements	Likelihood of occurrence	Assessment required (EPBC)?
44	*Petauroides volans*	Greater glider	-	V	-	PMST	Restricted to eucalypt forest and woodland, feeds on eucalypt leaves. **Unsuitable habitat features on site.**	Low	No
45	*Petrogale penicillata*	Brush-tailed rock wallaby	E1, P	V	1	PMST BioNet	Inhabit rocky escarpments, outcrops and cliffs with a preference for structures likes caves and ledges facing north. Utilise grasses, forbs, shrubs and trees close to rocky areas. **Unsuitable habitat features.**	Moderate	No
46	*Phascolarctos cinereus*	Koala	V, P	V	4	PMST BioNet	Koala use trees may be present but site is grassland, species sighting records are old. **Not recorded on site inspection.**	Moderate	No
47	*Pteropus poliocephalus*	Grey-headed flying-fox	V, P	V	15	PMST BioNet	Generally within 200 km of the east coast; in rainforests, tall sclerophyll forests and woodlands with roosting camps located near gullies, close to water in vegetation with a dense canopy. **No habitat available**.	Moderate	No
	Reptiles								
48	*Aprasia parapulchella*	Pink-tailed worm-lizard	-	V	-	PMST	Sloping open woodland with native grassy ground layers and rocky outcrops or partially buried rocks. **No rocks at Development Site.**	Low	No
49	*Delma impar*	Striped legless lizard	-	V	-	PMST	Potential habitat includes areas which have native grasslands or grassy woodlands with tussock structure; mostly on cracking clay soils with some surface rock. **Low native grass content and non-clay surface soils.**	Low	No
	Migratory species								
50	*Apus pacificus*	Fork-tailed swift				PMST	Occur over inland plains, foothills or in coastal areas, usually from October-March. They eat insects and can fly as low as 1 m above open areas or water.	Low	No
51	*Hirundapus caudacutus*	White-throated needletail		V		PMST	Largely aerial and more often seen near the coast, they are more likely to be seen above wooded areas, including open forest and rainforest	Moderate	No
52	*Motacilla flava*	Yellow wagtail				PMST	Mainly coastal distribution	Nil	No

No.	Species		BC Act	EPBC Act	No. of records	Source	Habitat requirements	Likelihood of occurrence	Assessment required (EPBC)?
53	*Myiagra cyanoleuca*	Satin flycatcher				PMST	Tall forests, wetter habitats, coastal distribution	Nil	No
54	*Rhipidura rufifrons*	Rufous fantail				PMST	Wet sclerophyll forests, coastal distribution	Nil	No
55	*Actitis hypoleucos*	Common sandpiper	-		-	PMST	Utilise inland floodplain areas in wet years and the grassy edges of wetlands, foraging in shallow water	Nil	No
56	*Calidris acuminata*	Sharp-tailed sandpiper	-		-	PMST	Occupies littoral and estuarine habitats, foraging in shallow water and roosting on shingle, shell or sand beaches.	Nil	No
57	*Calidris ferruginea*	Curlew sandpiper	-	CE	-	PMST	Inhabits muddy marshes and wet grassy zones	Nil	No
58	*Calidris melanotos*	Pectoral sandpiper	-		-	PMST	Can be in freshwater wetlands on or near the coast, generally among dense vegetation cover including sedges, grasses, lignum, reeds and rushes	Nil	No
59	*Gallinago hardwickii*	Latham's snipe	-		-	PMST	Coastal distribution	Nil	No
60	*Numenius madagascariensis*	Eastern curlew	-	CE		PMST	Coastal distribution	Nil	No

Appendix 3: BioNet Atlas of NSW Wildlife search results

Threatened species sightings:

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Public Report of all Valid Records of Threatened (listed on BC Act 2016) ,Commonwealth listed ,CAMBA listed ,JAMBA listed or ROKAMBA listed Entities in selected area [North: -32.53 West: 149.50 East: 149.60 South: -32.63] returned a total of 1,449 records of 26 species

Report generated on 25/07/2021 11:54 PM

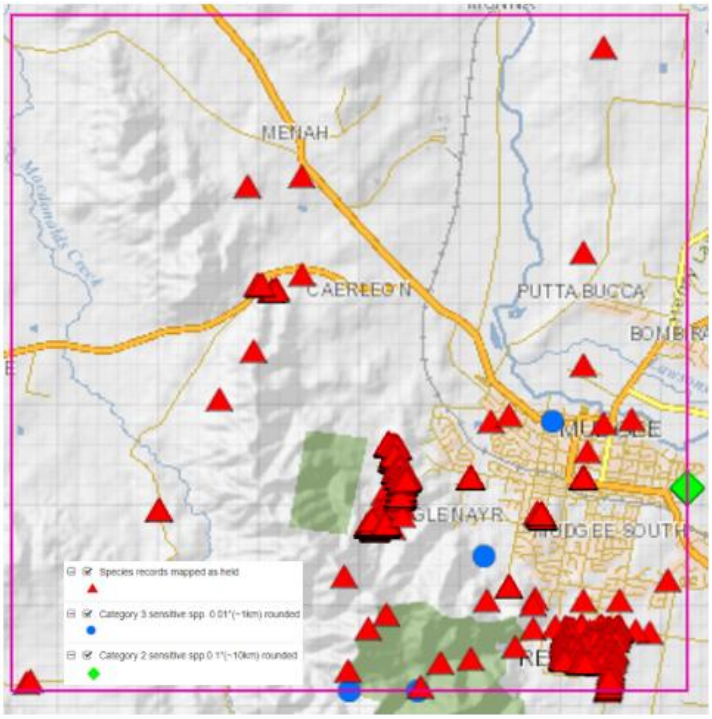
Family	Species Code	Scientific Name	Common Name	NSW status	Comm. status	Records
Apodidae	0335	*Apus pacificus*	Fork-tailed Swift	P	C,J,K	1
Apodidae	0334	*Hirundapus caudacutus*	White-throated Needletail	P	V,C,J,K	2
Accipitridae	0218	*Circus assimilis*	Spotted Harrier	V,P		2
Accipitridae	0225	*Hieraaetus morphnoides*	Little Eagle	V,P		1
Gruidae	0177	*Grus rubicunda*	Brolga	V,P		1
Cacatuidae	0265	*^Calyptorhynchus lathami*	Glossy Black-Cockatoo	V,P,2		5
Cacatuidae	0270	*^Lophochroa leadbeateri*	Major Mitchell's Cockatoo	V,P,2		1
Psittacidae	0260	*Glossopsitta pusilla*	Little Lorikeet	V,P		2
Psittacidae	0277	*^^Polytelis swainsonii*	Superb Parrot	V,P,3	V	1
Strigidae	0246	*^^Ninox connivens*	Barking Owl	V,P,3		1
Strigidae	0248	*^^Ninox strenua*	Powerful Owl	V,P,3		2
Climacteridae	8127	*Climacteris picumnus victoriae*	Brown Treecreeper (eastern subspecies)	V,P		5
Meliphagidae	0603	*Anthochaera phrygia*	Regent Honeyeater	E4A,P	CE	6
Pomatostomidae	8388	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler (eastern subspecies)	V,P		1
Neosittidae	0549	*Daphoenositta chrysoptera*	Varied Sittella	V,P		1
Artamidae	8519	*Artamus cyanopterus cyanopterus*	Dusky Woodswallow	V,P		1
Petroicidae	0380	*Petroica boodang*	Scarlet Robin	V,P		3
Phascolarctidae	1162	*Phascolarctos cinereus*	Koala	V,P	V	4
Macropodidae	1215	*Petrogale penicillata*	Brush-tailed Rock-wallaby	E1,P	V	1
Pteropodidae	1280	*Pteropus poliocephalus*	Grey-headed Flying-fox	V,P	V	15
Asteraceae	9071	*Leucochrysum albicans var. tricolor*	Hoary Sunray		E	19
Fabaceae (Faboideae)	3056	*Swainsona recta*	Small Purple-pea	E1	E	544
Fabaceae (Faboideae)	8538	*Swainsona sericea*	Silky Swainson-pea	V		149
Fabaceae (Mimosoideae)	3708	*Acacia ausfeldii*	Ausfeld's Wattle	V		677
Myrtaceae	8326	*Eucalyptus cannonii*	Capertee Stringybark	V		3
Poaceae	4895	*Dichanthium setosum*	Bluegrass	V	V	1

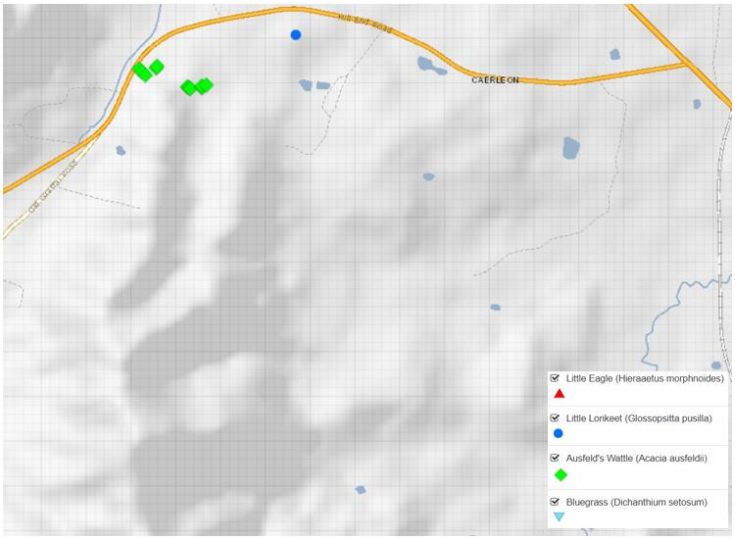
NSW status

1	Sensitivity Class 1 (Sensitive Species Data Policy)
2	Sensitivity Class 2 (Sensitive Species Data Policy)
3	Sensitivity Class 3 (Sensitive Species Data Policy)
CH	Critical Habitat (Threatened Species Conservation Act 1995)
E1	Endangered (Threatened Species Conservation Act 1995)
E2	Endangered Population (Threatened Species Conservation Act 1995)
E3	Endangered Ecological Community (Threatened Species Conservation Act 1995)
E4	Presumed Extinct (Threatened Species Conservation Act 1995)
E4A	Critically Endangered (Threatened Species Conservation Act 1995)
E4B	Critically Endangered Ecological Community (Threatened Species Conservation Act 1995)
FCE	Critically Endangered Fish (Fisheries Management Act 1994)
FE	Endangered Fish (Fisheries Management Act 1994)
FEC	Endangered Ecological Community of Fish (Fisheries Management Act 1994)
FEP	Endangered Population of Fish (Fisheries Management Act 1994)
FKTP	Key Threatening Process of Fish (Fisheries Management Act 1994)
FP	Protected Fish (Fisheries Management Act 1994)
FV	Vulnerable Fish (Fisheries Management Act 1994)
FX	Extinct Fish (Fisheries Management Act 1994)
KTP	Key Threatening Process (Threatened Species Conservation Act 1995)
P	Protected (National Parks & Wildlife Act 1974)
V	Vulnerable (Threatened Species Conservation Act 1995)
V2	Vulnerable Ecological Community (Threatened Species Conservation Act 1995)

Commonwealth status

C	Listed on China Australia Migratory Bird Agreement
CD	Conservation Dependent (Commonwealth EPBC Act 1999)
CE	Critically Endangered (Commonwealth EPBC Act 1999)
E	Endangered (Commonwealth EPBC Act 1999)
J	Listed on Japan Australia Migratory Bird Agreement
K	Listed on Republic of Korea Australia Migratory Bird Agreement
KTP	Key Threatening Process (Commonwealth EPBC Act 1999)
V	Vulnerable (Commonwealth EPBC Act 1999)
X	Extinct (Commonwealth EPBC Act 1999)
XW	Extinct in the Wild (Commonwealth EPBC Act 1999)





Appendix 4: Protected Matters Report Summary

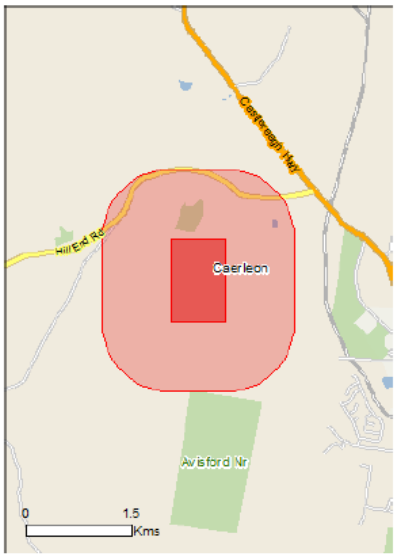
EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

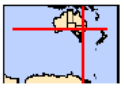
Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 28/06/21 16:37:03



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

Coordinates
Buffer: 1.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	9
Listed Threatened Species:	28
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	17
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	26
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Banrock station wetland complex	800 - 900km upstream
Riverland	800 - 900km upstream
The coorong, and lakes alexandrina and albert wetland	900 - 1000km upstream
The macquarie marshes	200 - 300km upstream

Listed Threatened Ecological Communities [Resource Information]

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

Name	Status	Type of Presence
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community may occur within area
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community may occur within area
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
Galaxias rostratus Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat may occur within area
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat may occur within area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Plants		
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Ozothamnus tesselatus [56203]	Vulnerable	Species or species habitat likely to occur within area
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area
Prasophyllum sp. Wybong (C.Phelps ORG 5269) a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area
Swainsona recta Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat likely to occur within area
Reptiles		
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

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

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

Other Matters Protected by the EPBC Act

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Avisford	NSW

Invasive Species	[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area

Mammals	
Bos taurus Domestic Cattle [16]	Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]	Species or species habitat likely to occur within area
Capra hircus Goat [2]	Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]	Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]	Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]	Species or species habitat likely to occur within area
Mus musculus House Mouse [120]	Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]	Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]	Species or species habitat likely to occur within area
Sus scrofa Pig [6]	Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]	Species or species habitat likely to occur within area

Plants	
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]	Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]	Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]	Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]	Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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

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

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

Coordinates

-32.57492 149.54114,-32.57492 149.54797,-32.58378 149.54797,-32.58378 149.54114,-32.57492 149.54114

Appendix 5: Biodiversity Credit Reports

NSW GOVERNMENT

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00028476/BAAS18023/21/00028477	MWRC Solar	10/06/2021
Assessor Name	Report Created	BAM Data version *
Christopher J Botfield	05/11/2021	45
Assessor Number	BAM Case Status	Date Finalised
BAAS18023	Open	To be finalised
Assessment Revision	Assessment Type	BOS entry trigger
0	Part 4 Developments (General)	BOS Threshold: Biodiversity Values Map

* 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)	BC Act Listing status	EPBC Act listing status	Species sensitivity to gain class (for BRW)	Biodiversity risk weighting	Potential SAII	Ecosystem credits
Derived grassland of the NSW South Western Slopes											
1	796_Uniform	Not a TEC	16.6	16.6	8.6			High Sensitivity to Potential Gain	1.50		0
										Subtotal	**0**
										Total	**0**

NSW GOVERNMENT

BAM Credit Summary Report

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Species credits

NSW GOVERNMENT

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00028476/BAAS18023/21/00028477

Proposal Name
MWRC Solar

BAM data last updated *
10/06/2021

Assessor Name
Christopher J Botfield

Assessor Number
BAAS18023

BAM Data version *
45

Proponent Names

Report Created
05/11/2021

BAM Case Status
Open

Assessment Revision
0

Assessment Type
Part 4 Developments (General)

Date Finalised
To be finalised

BOS entry trigger
BOS Threshold: Biodiversity Values Map

* 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
Nil		

Species
Nil

Additional Information for Approval

NSW GOVERNMENT

BAM Biodiversity Credit Report (Like for like)

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
Haliaeetus leucogaster / White-bellied Sea-Eagle

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
796-Derived grassland of the NSW South Western Slopes	Not a TEC	8.6	0	0	0

NSW GOVERNMENT

BAM Biodiversity Credit Report (Like for like)

796-Derived grassland of the NSW South Western Slopes

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Western Slopes Grasslands This includes PCT's: 102, 250, 320, 460, 484, 619, 633, 710, 796, 799, 1076, 1179, 1324, 1698	Western Slopes Grasslands <50%	796_Uniform	No	0	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 kilometers of the outer edge of the impacted site.

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like credit retirement options

Appendix 6: Koala SEPP

Mid-Western Regional Council (MWRC) area is listed in Schedule 1 of the policy as land to which this policy applies. Development can be considered on sites if land designated for the development is not classed as core koala habitat.

Core koala habitat is defined in the SEPP as land assessed by suitably qualified and experienced person as suitable koala habitat and where koalas are recorded as being present at the time of the site assessment or where koalas have been recorded as being present in the previous 18 years.

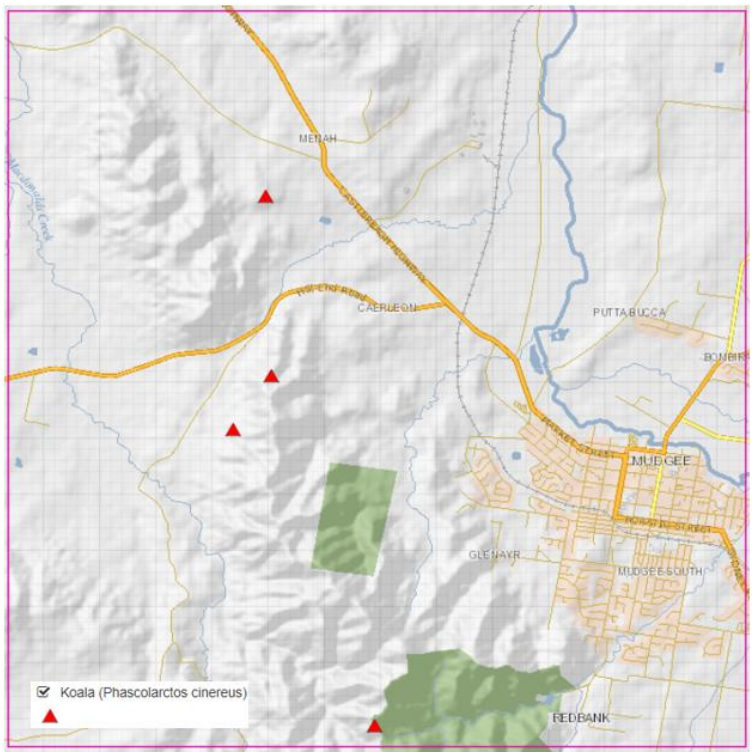
The MWRC does not have a koala management plan that applies to the LGA. The Council must be satisfied that the development will have no or low impact on koalas or koala habitat. The Council may grant development consent if they are satisfied that the Development Site does not contain core koala habitat.

The vegetation formation of the subject land is grasslands and the few native tree species observed were *Eucalyptus dealbata* (tumble down red gums), listed as koala use tree species.

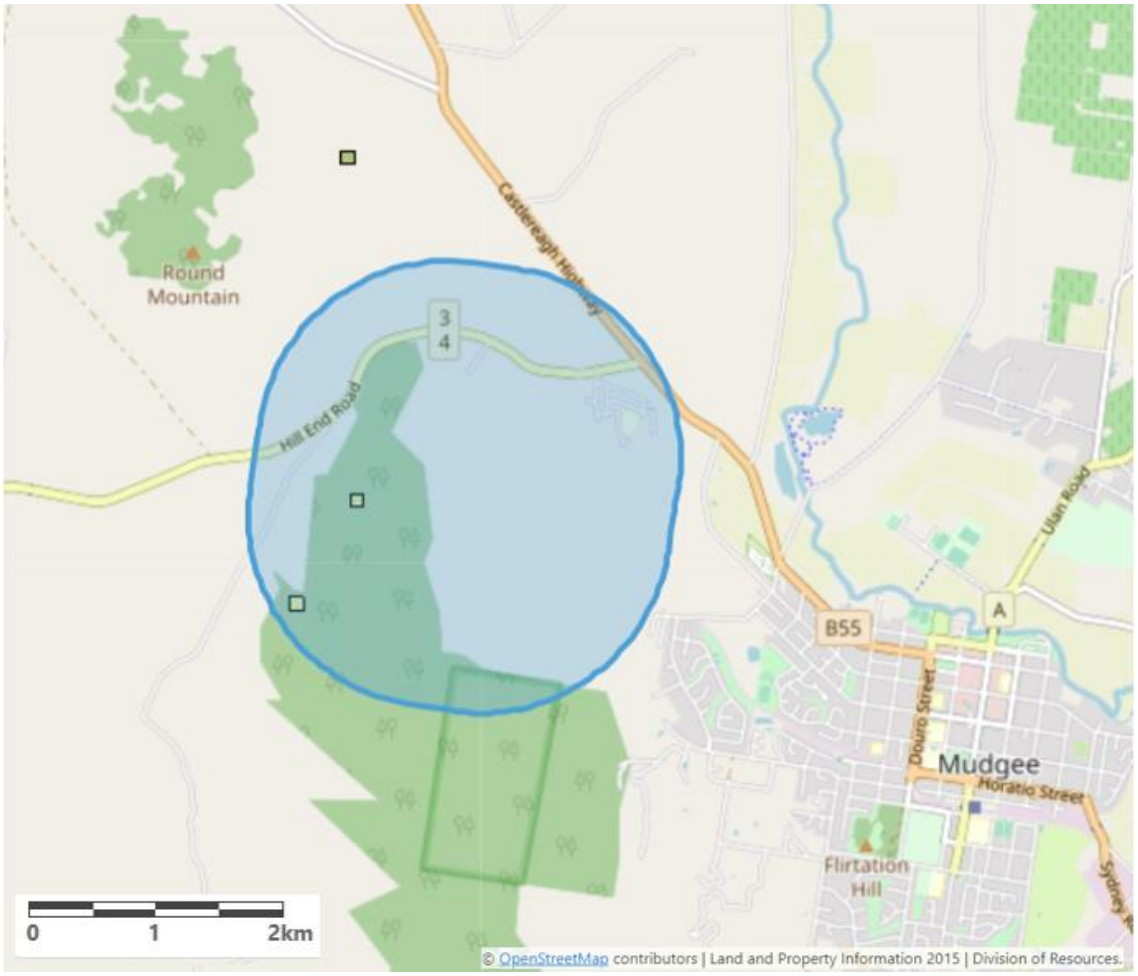
No koalas were observed on site visits – five inspections over the course of July to November 2021 and it is unlikely that these animals would utilise isolated trees in a grassland environment.

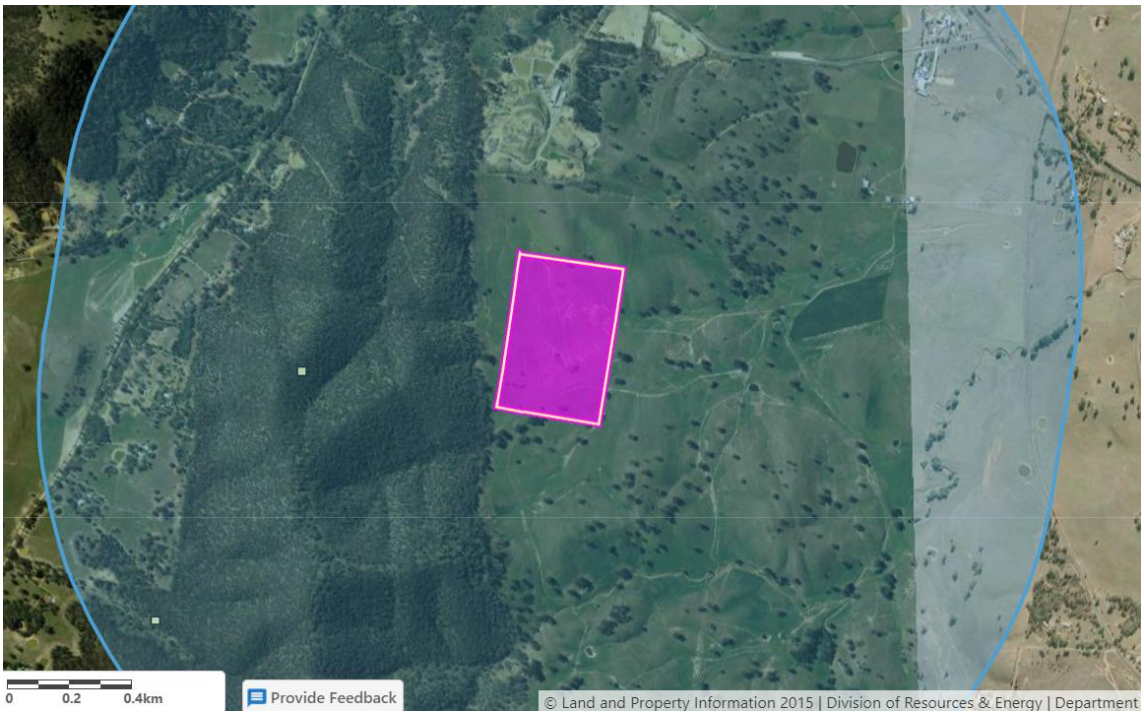
No previous recordings of koalas are known in the Development Site or the Property. The adjacent lands within the 1500 m buffer had two recorded sightings of individuals dating from 1991 and 1995. Within the 10 km^2 BioNet Atlas search radius there were two additional records a scat recorded in 2002 and bone fragment in 2004. The records are too old and too far removed from the Development Site to indicate likely presence of koalas.

The site therefore does not constitute 'core koala habitat' and development can be considered.



BioNet Atlas records





Koala sightings in relation to Assessment Area (SEED)

Appendix 7: Hollow bearing tree removal

These guidelines are taken from Appendix 12 of the *Pilliga State Conservation Area Review of Environmental Factors for the Reintroduction of Locally Extinct Mammals* (EnviroKey 2017) (accessed at https://www.environment.nsw.gov.au/research-and-publications/publications-search/pilliga-state-conservation-area-review-environmental-factors-reintroduction-locally-extinct-mammals)

The following guidelines can be implemented in full or part, when any hollow-bearing tree (HBT) is to be removed.

As a priority, preference is given to removal of non-hollow bearing vegetation before the decision is made to remove any HBT.

1. Ensure that a suitably qualified and licensed ecologist (who is vaccinated for Australian bat lyssavirus) supervises the removal of HBT. Any bats found must only be handled by a person vaccinated for lyssavirus.

2. Clearly mark the HBT to be removed and/or retained by differentiating with coloured flagging tape.

3. Check for fauna in the zone of disturbance before clearing and scare or remove them before beginning operations.

4. After clearing, re-check to ensure no fauna have become trapped or injured during clearing operations. Any fauna found should be safely located to nearby habitat.

5. Leave HBT standing for at least one night after other clearing to allow any fauna the opportunity to remove themselves after site disturbance.

6. Before felling HBT, tap along trunk using an excavator or loader to scare fauna from the hollows. Repeat several times. The aim of this procedure is to 'substantially' shake the tree. The majority of fauna will exit the tree during this process.

7. Re-check after felling HBT to ensure no fauna have become trapped or injured during clearing operations. Any fauna found should be safely located to nearby habitat.

8. If taking the HBT tree down in stages, the non-hollow-bearing branches should be removed before the hollow-bearing branches are removed.

9. Fell trees into the zone of disturbance to avoid damaging adjacent vegetation

10. Take care when moving equipment near vegetation to be retained.

11. Rather than mulching or burning cleared vegetation, logs from the felled trees should be distributed into areas of vegetation to be retained where it would not be considered a fire hazard. This would provide additional potential habitat for ground dwelling fauna such as reptiles and small mammals.

Appendix 8: Significance test for possible threatened species

(a) In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

None were observed on the site inspection but 26 threatened species have been previously recorded in a 10 km^2 area around the site (BioNet Atlas search, **Appendix 3**) - 20 animals and 6 plants. Additional species that could potentially use the site but have not been considered elsewhere in this report are listed below (from threatened species search by IBRA region and sub region (DPIE 2020b)):

Scientific Name	Common Name	Comments
Cercartetus nanus	Eastern Pygmy-possum	Woodland habitat
Certhionyx variegatus	Pied Honeyeater	Wattle shrub and eucalypt woodland when flowering
Chalinolobus picatus	Little Pied Bat	Woodland , forest and caves
Chthonicola sagittata	Speckled Warbler	Eucalypt communities with tussock grasses - undisturbed remnants
Dasyurus maculatus	Spotted-tailed Quoll	Forests including inland riparian forest
Falco hypoleucos	Grey Falcon	Shrubland, grassland and wooded watercourses of more arid regions, near wetlands
Falco subniger	Black Falcon	Tree lined watercourses and isolated woodlands
Glossopsitta porphyrocephala	Purple-crowned Lorikeet	Forests and woodlands with large flowering trees
Hamirostra melanosternon	Black-breasted Buzzard	Timbered watercourses but can hunt over grasslands
Lophoictinia isura	Square-tailed Kite	Timbered habitats, can hunt over grassy areas with a large hunting range, more than 100km^2
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	Lightly timbered acacia and eucalypt woodland
Neophema pulchella	Turquoise Parrot	Edges of eucalypt woodland, clearings, ridges and creeks in farmland
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Roosts in tree hollows and buildings and can use mammal burrows
Synemon plana	Golden Sun Moth	Uses natural temperate grassland dominated by wallaby grasses
Tyto novaehollandiae	Masked Owl	Forests and woodlands but may hunt along vegetation edges including roadsides and has large home range, up to 1000 ha

Most of these species require woodland habitat, resources available from trees and shrubs and therefore would not rely on the Development Site or be impacted by site activities. The owl and raptors like the grey falcon and square tailed kite tend to have large hunting ranges and would not be subject to significant effects from possible changes to food resources at the site. Those that may

forage over the prevailing vegetation may have access restricted during the short term construction but will continue to be able hunt and use any food resources in the long term operational phase.

Many of the habitat features that are at or near the site, intermittent water in drains, farm dams and the modified grassy vegetation will still exist. The isolated native trees in the proposed development footprint will be removed but to limit potential habitat loss they will be re-stood, preserving some access to hollows. The current grassland species will continue to grow underneath the solar panel arrays which will also lessen impacts to any local or transient population of fauna. Site activities are unlikely to affect the life cycles of such threatened species and will not endanger any local population with the risk of extinction.

(b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

- **a. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**
- **b. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,**

There are potentially three EPBC Act listed endangered ecological communities (EECs) in the study area (Protected Matters Report, Appendix 4):

- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands
- Natural Temperate Grassland of the South East Highlands
- White Box – Yellow Box – Blakely's Red Gum Grassy Woodland

Additional potential EECs listed under BC Act are:

- Coolac-Tumut Serpentinite Shrubby Woodland in the NSW South Western Slopes and South Eastern Highlands Bioregions
- Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions

The Development Site is grassland so all the woodland or grassy woodland EECs containing trees as integral components of the community do not exist in the area of interest. The grassland has been highly modified by agricultural practices and does not contain sufficient native species to exist as the natural temperate grassland EEC. As the potential EECs do not occur at the site there will be no impact to any of these entities.

(c) in relation to the habitat of a threatened species or ecological community:

- **i. the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and**
- **ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and**
- **iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,**

The extent of works is small with less than 9 ha as a fenced compound and solar arrays covering approximately 3 ha. Fencing is low impact, could be conducted with the existing land use and will not significantly modify plant community composition or quantity. Groundcover species and grasses can exist under solar arrays, with ground and vegetation disturbance limited to that around the pile driven support poles, meaning much less than the total array area will be affected. As grassland with only isolated trees the area already has a degree of separation from other well vegetated and diverse zones. The level of change to current site habitat conditions is not likely to further aggravate

fragmentation of features on which threatened species depend. The site is farmland which has highly altered vegetation with a low vegetation integrity score (<17 in the BAM calculator (BAM-C)). The agricultural land use, with modified pastures, reduces the ecological importance of the habitat that will be modified.

(d) Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).

"Areas of outstanding biodiversity value" refers to specific locations as declared under Part 3 of the BC Act, mapped and gazetted by the Environment Agency Head. The proposed development is not located in or near a listed area of outstanding biodiversity value. The proposal would have no direct or indirect impact on any such area.

(e) Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process (KTP).

The primary key threatening process relevant to the proposed development involves the impact of:

- human induced climate change,
- clearing of native vegetation,
- invasion of native plant communities by exotic perennial grasses,
- loss of hollow bearing trees and
- removal of dead wood and dead trees.

The proposal would involve use of diesel-powered machinery and equipment, contributing further emissions to accumulating greenhouse gases. The intermittent use of such equipment and the scale of the proposed development is so small that these impacts would be negligible. The works involve the installation of renewable energy technologies which help to mitigate the effects of climate change over the long term.

Impacts to the groundcover vegetation will not have a large impact on native vegetation because of the minor content of native groundcover species. Four native trees will be removed which will exacerbate this KTP but some native vegetation will be used for screening plantings.

The proposed works will not induce any increase in the invasion of perennial grasses or other weeds to native plant communities, over and above what has occurred through agricultural land use. Biosecurity measures will be used for vehicles transiting the site to limit the potential for new weed incursions.

Remnant dead wood, logs and dead trees will be left on site where possible and where there will be no increased or unacceptable fire hazard created by the placement.

Appendix 9: Staff Contributions

The following staff were involved in the compilation of this report:

Name	Qualifications	Title/Experience	Contribution
Christopher Botfield	*B Env Management CSU 1999*	Principal Ecologist	Flora surveys Fauna surveys BAM Calculator Report review
Renae Hill	*BAgr UNE Armidale 2006* *BSc(Hons) UoN Newcastle 1994*	Project Manager	Flora surveys PCT allocation Report writing
Kim Bennett	*B Env Sc (Hons)* *B A Computer Sc Legal Studies*	GIS Specialist	GIS data management
Tony Moody	*B App Sci, CSU, 1996*	Project Officer	Report review