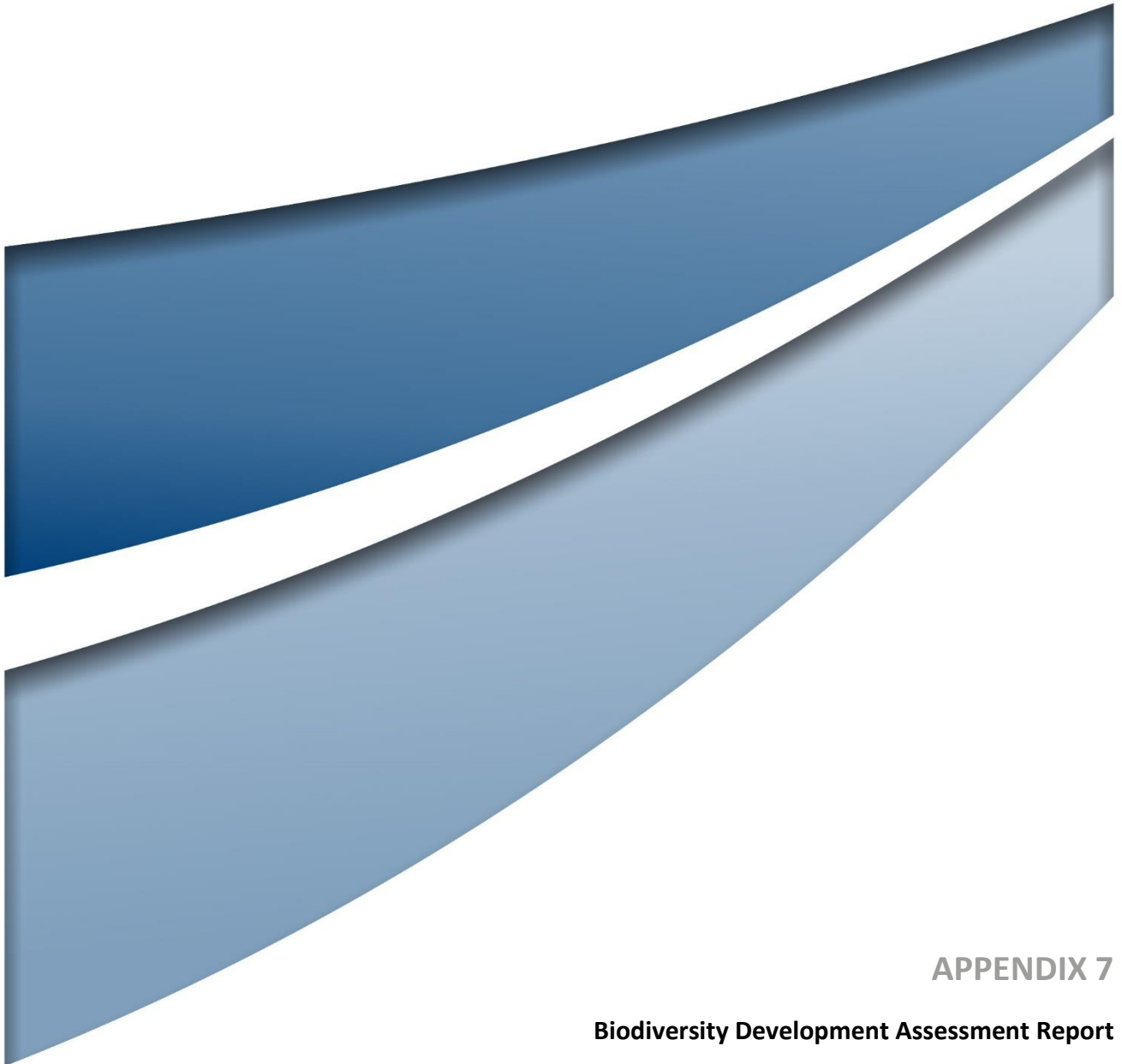




APPENDIX 7

Biodiversity Development Assessment Report

GUNDARY SOLAR FARM

Biodiversity Development Assessment Report

FINAL

October 2024



GUNDARY SOLAR FARM

Biodiversity Development Assessment Report

FINAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Lightsource bp

Project Director: Malinda Facey
Project Manager: Marion O'Neil
Technical Director: Shaun Corry
Technical Manager: Sarah Hart
Report No. 22223/R09
Date: October 2024



This report was prepared using
Umwelt's ISO 9001 certified
Quality Management System.

Acknowledgement of Country

Umwelt would like to acknowledge the traditional custodians of the country on which we work and pay respect to their cultural heritage, beliefs, and continuing relationship with the land. We pay our respect to the Elders – past, present, and future.

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Document Status

Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date
Final	Shaun Corry	6 June 2024	Malinda Facey	8 June 2024

Executive Summary

Lightsource Development Services Australia Pty Ltd (Lightsource bp) proposes to develop the Gundry Solar Farm (the Project) in the Southern Tablelands of New South Wales (NSW) and has engaged Umwelt (Australia) Pty Ltd (Umwelt) to prepare a Biodiversity Development Assessment Report (BDAR) for the Project.

The Project is a State Significant Development and would include the construction, operation, maintenance and decommissioning of a 400-Megawatt peak (MWp) solar farm with a Battery Energy Storage System (BESS) of up to 555 MWp and 1,570 Megawatt hour (MWh) capacity and associated infrastructure to connect the Project to the national electricity grid.

This Report has been prepared in accordance with the requirements of the Biodiversity Assessment Method (BAM) (DPIE 2020a) and Section 6.12 of the *Biodiversity Conservation Act 2016*. This Report generally follows the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) template for a BDAR. It describes the biodiversity values of the Development Footprint and assesses the biodiversity impacts of the Project, outlining avoidance and mitigation measures as well as any offset requirements.

The NSW Biodiversity Assessment Method (BAM) is the legislative framework used in New South Wales to assess the impact of development projects on biodiversity, ensuring any direct, indirect or prescribed impacts on threatened plants, animals, and their habitats are appropriately considered and assessed. The BAM is a scientifically robust and legislated method, established by the NSW Government, that uses a calculator-based tool to quantify development impacts on biodiversity. The data used in the assessment, the system metrics and the calculations are all prescribed by the BAM and this is the standard for all NSW State Significant Development Applications. This BDAR documents the findings of the biodiversity surveys and assessment completed for the project in accordance with the BAM.

Appropriate biodiversity assessment, in accordance with the BAM, protect species and habitats, balances development needs with environmental conservation, and ensure legal compliance in a structured and standardised manner.

The Project Area for the Gundry Solar Farm extends over approximately 702 hectares, with a proposed Development Footprint covering approximately 512 ha. In accordance with the BAM, formal biodiversity assessment is restricted to the Development Footprint, which is hereafter referred to as 'the Subject land'. These terms are considered interchangeable and the Subject land, used in the BDAR, is referred to as the Development Footprint in the Project Environmental Impact Statement (EIS).

The Subject land (512 hectares) is situated within the South East Highlands IBRA Bioregion and dominantly (approximately 90%) within the Bungonia IBRA subregion. Umwelt staff from the Southern Tablelands' region (approximately seven staff, ranging from principal ecologists to ecologists) completed comprehensive biodiversity surveys across the Subject land from March 2022 to May 2023, comprising a total of 21 days (approximately 210 hours) of onsite detailed survey work.

The range of biodiversity surveys completed include, but are not limited to:

- detailed vegetation mapping
- plot-based vegetation surveys according to the BAM
- targeted threatened flora transects
- targeted transects for key's matchstick grasshopper
- passive ultrasonic recording on one device for 16 nights within the avoided Bullamalito Creek tributaries for Southern Myotis
- koala SAT plots at each scattered tree in the Subject land
- four nights of spotlighting along 200 m transects targeting areas within potentially suitable habitat in scattered trees for koala
- weekly checks (13 in total between September – December 2022) of a total of 10 tile arrays with 50 tiles each for stiped legless lizards (*Delma impar*), using the Commonwealth *Survey Guidelines for Threatened Reptiles*
- opportunistic observations.

The vegetation within the Subject land that was identified during these surveys aligned to the following Plant Community Types (PCTs), which will be assessed for impacts by the Project:

- Category 1 – Exempt Land (498.01 ha).
- PCT 888 Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion (0.29 ha).
- PCT 1191 Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, PCT South Eastern Highlands Bioregion (0.36 ha).
- PCT 1289 Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion (4.49 ha).
- PCT 1330 Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion (5.84 ha, including 4.67 ha as native pasture and 1.17 ha as paddock trees).
- Planted native trees (3.02 ha).

Two PCTs identified within the Subject land, although highly degraded, conform to three Threatened Ecological Communities (TECs) listed under the BC Act. These are:

- PCT 1191 aligns to both BC Act listed TECs:
 - the Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions
 - the Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion Threatened Ecological Communities.

- PCT1330 aligns only to the BC Act critically endangered White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions.

No vegetation identified within the Subject land meet the EPBC listing criteria or condition thresholds for TECs listed under the EPBC Act. This is due to the highly degraded condition of the vegetation and fragmented nature of its occurrence.

One highly mobile threatened bird species was observed within the Subject land, there were no other threatened species observed or considered likely to occur in the Subject land, and surveys and assessment in accordance with the BAM identified that there is no suitable habitat for any threatened entities listed under either the *Biodiversity Conservation Act 2016* and/or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) within the Subject land.

Matters of national environmental significance (MNES) with potential to occur within the Subject land were assessed in accordance with the EPBC Act Significant Impact Guidelines. No MNES are considered likely to be significantly impacted by the Project. The EPBC Act referral decision issued on 13 September 2023 concluded that the Project was not a controlled action and therefore assessment under the EPBC Act was not required.

Lightsource bp has strategically designed the Project layout to avoid impacts to biodiversity in the Subject Land through an iterative design process over months through the incorporation of biodiversity field survey work results into engineering and design changes (Refer to **Figure E.1**).

Specific examples of biodiversity avoidance include the design changes made to avoid impacts to 20 *Eucalyptus macarthurii* (camden woollybutt) trees planted across the Project Area. These trees were originally identified as part of the Subject land and avoided during project layout refinements. Additionally, there is an area of moderate quality White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions CEEC (BC Act) in in the Project Area in which one individual Key's matchstick grasshopper (*Keyacris scurra*) was identified. This area has also, subsequently, been avoided.

This emphasis on avoidance and minimisation, as highlighted above, means that all areas of high value biodiversity value habitats have been excluded from the Subject Land and impacts to these areas have been avoided. Residual biodiversity impacts are therefore limited to the highly degraded grasslands within the Project Area which, albeit, still contain some native plant diversity are largely agricultural remnants and are in such a degraded state that they fail to meet the BAM defined value thresholds that generate biodiversity credits.

FIGURE E.1

Summary of Avoidance

Legend

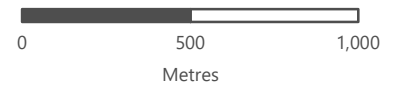
- Road
- Watercourse
- Project Area
- Subject Land
- Security Fence
- Existing Transmission Line
- Proposed Access
- Centralised AC BESS
- Substation and O&M Facility Area
- Decentralised DC BESS
- Construction Compound Area
- 20m Watercourse Buffer

Avoided Threatened Species

- *Eucalyptus macarthurii*
- Keys Matchstick Grasshopper

Box Gum Woodland CEEC

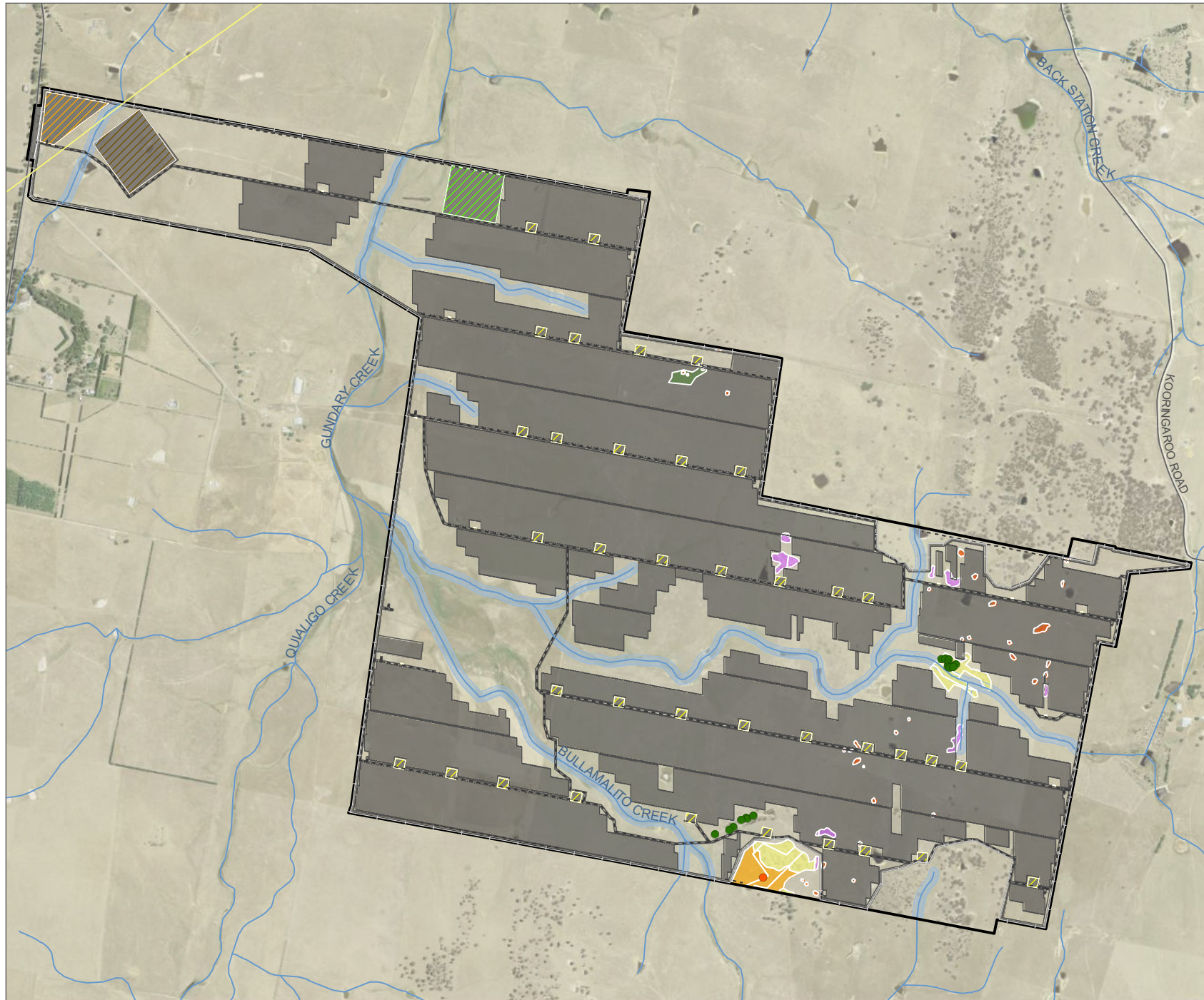
- Low
- Moderate
- Derived Native Grassland
- Paddock Trees
- Native Pasture



Scale: 1:0 at A4
GDA2020 MGA Zone 55

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Notwithstanding, any residual impacts will still be further minimised and mitigated through a detailed biodiversity management plan, which would be prepared following Project determination. Impacts which cannot be avoided or minimised will be managed in the following ways:

- Workforce education and training.
- Implementation of vegetation protection zones for areas to be retained.
- Ecologist pre-clearance surveys and supervision of works.
- Erosion and sedimentation control.
- Weed management.
- Fencing, Access Control and Fauna exclusion.
- Preparation and Implement of Construction Environmental Management Plan.

In summary, through a commitment to biodiversity avoidance and impact minimisation as a priority, the proposed Gundry Solar Farm has been able to avoid and minimise the project impacts on biodiversity, in accordance with the BAM, to degree at which biodiversity credits have not been generated by the impacts and therefore biodiversity offsets are not required for the project. The outcome of this assessment aligns with the EPBC Act Referral decisions which identified that the Project was unlikely to significantly impact biodiversity related Matters of National Environmental Significance (MNES) and subsequent Not Controlled Action decision.

Declarations

Certification under clause 6.15 Biodiversity Conservation Act 2016

I certify that this report has been prepared based on the requirements of, and information provided under, the Biodiversity Assessment Method and clause 6.15 of the *Biodiversity Conservation Act 2016* (BC Act).

Name: Sarah Hart

Signature: 

Date: 24 October 2024

BAM Assessor Accreditation number: BAAS21026

Glossary

Acronym	Definition
AEP	Annual Exceedance Probability
ALUMS	Australian Land Use and Management; a classification system
AOBV	Areas of outstanding biodiversity value
APZ	Asset Protection Zone
BAM	Biodiversity Assessment Method
BCD	Biodiversity Conservation Division
BC Act	NSW <i>Biodiversity Conservation Act 2016</i>
BCS	NSW Biodiversity Conservation and Science
BDAR	Biodiversity Development Assessment Report
BESS	Battery Energy Storage System
BOS	Biodiversity Offset Scheme
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
Commonwealth DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DAWE	Commonwealth Department of Agriculture, Water and Environment (superseded)
DEC	NSW Department of Environment and Conservation (superseded)
DEE	Commonwealth Department of the Environment and Energy (superseded)
DEH	Commonwealth Department of the Environment and Heritage (superseded)
Development Footprint	The maximum extent of ground disturbance associated with construction and operation of the Project, referred to throughout this report as the Subject land in accordance with the BAM
DNG	Derived Native Grasslands
DPE	NSW Department of Planning and Environment (superseded)
DPHI	NSW Department of Planning, Housing and Infrastructure (current)
DPIE	NSW Department of Planning, Industry and Environment (superseded)
DSEWPC	Department of Sustainability, Environment, Water, Population and Communities (superseded)
Ecosystem credit	A measurement of the value of EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur within PCT. Ecosystem credits measure the loss in biodiversity values at a development site and the gain in biodiversity values at an offset site.
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP	Endangered Population
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
ESCP	Erosion Sediment Control Plan
FTE	Full time equivalent
GIS	Geographical Information System
IBRA	Interim Biogeographic Regionalisation for Australia (Version 7)

Acronym	Definition
LGA	Local Government Area
LLS Act	NSW <i>Local Land Services Act 2013</i>
MGA	Map Grid of Australia
MWp	Megawatt peak
NSW	New South Wales
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
OEH	NSW Office of Environment and Heritage (superseded)
PCT	Plant Community Type
PMST	Protected Matters Search Tool
Project	The specific design details and proposed works for the development
Project Area	The total area of the parcels of land on which the Project would be developed, and was assessed for biodiversity values
SAII	Serious And Irreversible Impacts
SAT plot	The Spot Assessment Technique (SAT) of Phillips and Callaghan (2011) for koala surveys
SEARs	DPE Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
Species credit	The class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates.
SSD	State Significant Development
Strahler Stream Order	Classification system that gives a waterway an 'order' according to the number of tributaries associated with it.
Subject land	The total area of impact within the Project Area
SVTM	State Vegetation Type Mapping
TBDC	Threatened Biodiversity Data Collection
TEC	Threatened Ecological Community
VI	Vegetation Integrity
VIS	Vegetation Information System
VZ	Vegetation Zone

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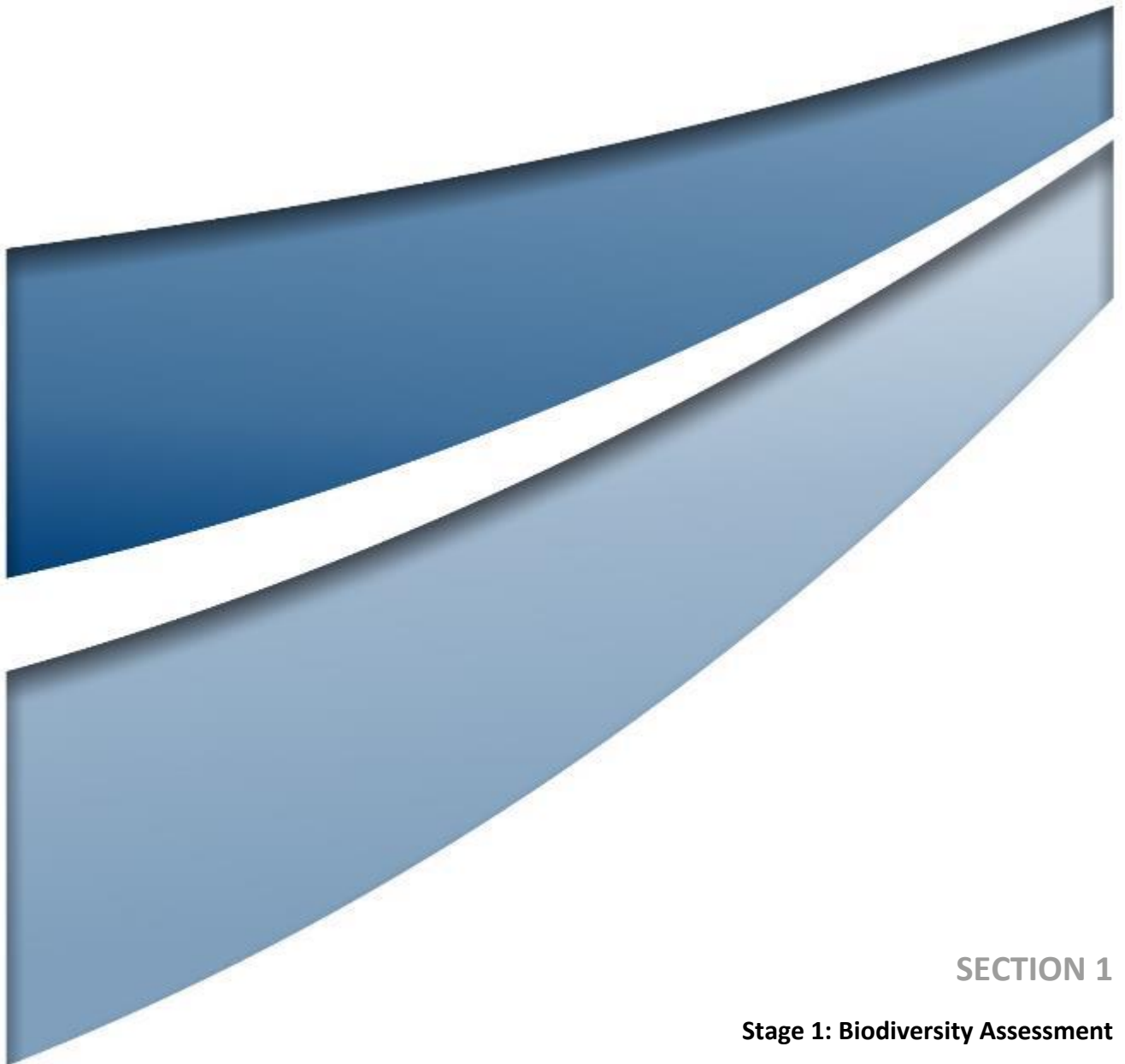
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SECTION 1

Stage 1: Biodiversity Assessment

1.0 Introduction

Lightsource Development Services Australia Pty Ltd (Lightsource bp) proposes to develop the Gundry Solar Farm (the Project) in the Southern Tablelands of New South Wales (NSW), approximately 10 km southeast of Goulburn within the Goulburn Mulwaree Local Government Area (LGA). The location of the Project and its regional context is presented in **Figure 1.1**.

1.1 The Proposed Project

1.1.1 Project Overview

Lightsource bp has engaged Umwelt to prepare a Biodiversity Development Assessment Report (BDAR) for the Project (**Figure 1.2**).

The Project would be located on land zoned RU1 – Primary Production. The area surrounding the Project is characterised predominantly by agricultural lands associated with rural residential properties, small settlements, conservation areas and rural tourism. Land within and adjacent to the Project has been subject to extensive cultivation associated with historic and more recent agricultural land uses.

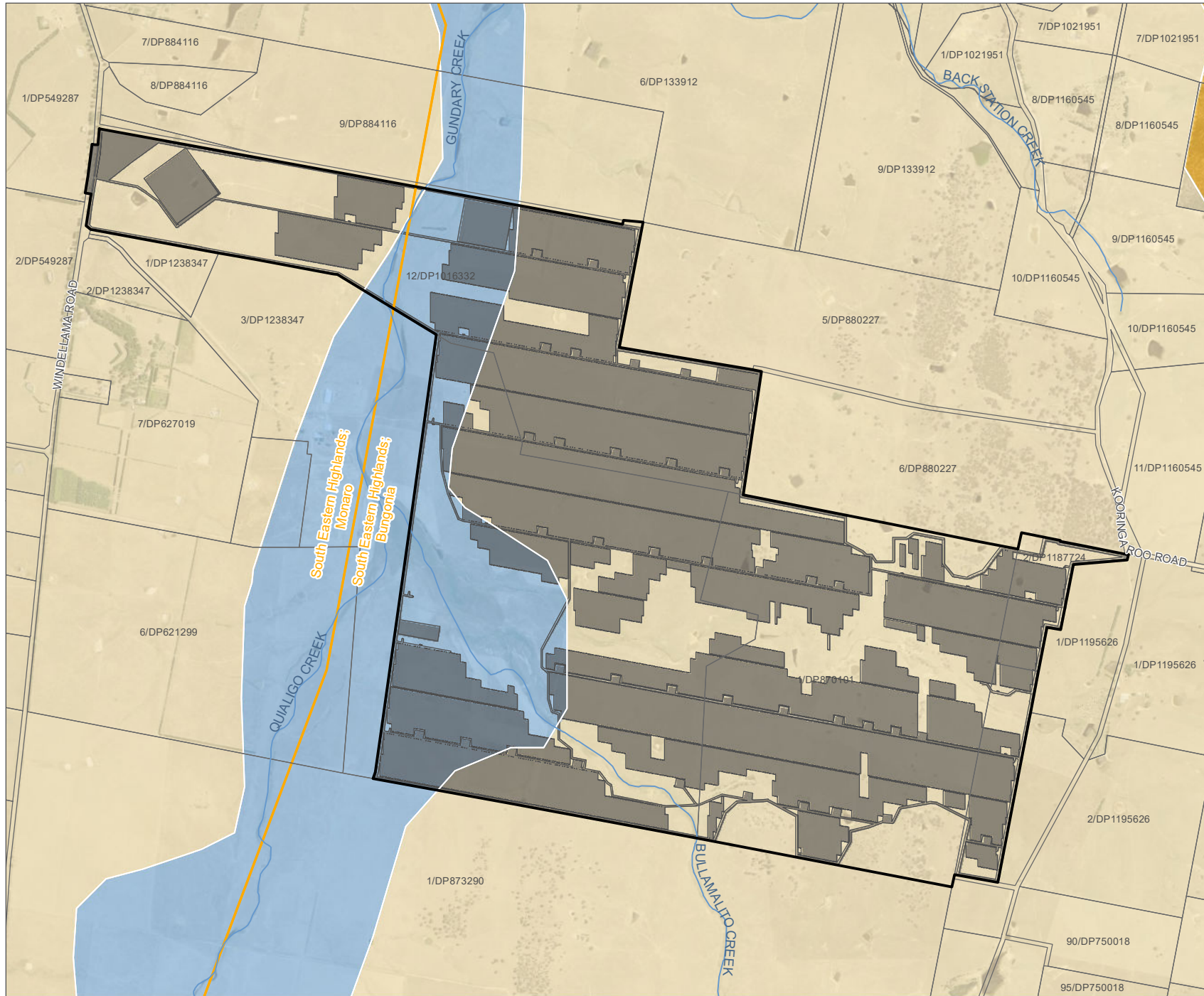
The Project will be wholly or partly developed across five freehold lots (Part of Lot3//DP12383479, Lot12//DP1016332, Lot1//DP870101, Lot2//DP1187724 and Lot80//DP750018) and a small section of Windellama Road (including the road reserve), covering an area of approximately 702 ha (hereafter referred to as ‘the Project Area’). The freehold properties are primarily used for grazing (cattle and sheep) activities. The Project’s development footprint will cover approximately 512 ha and encompasses the area that will be developed for the purposes of the solar farm as well as the proposed road works to upgrade the Project access (hereafter referred to as ‘the Subject land’).

The Project would include the construction, operation, maintenance and decommissioning of a 400-Megawatt peak (MWp) solar farm with a Battery Energy Storage System (BESS) of up to 555 MWp and 1,570 Megawatt hour (MWh) capacity and associated infrastructure to connect the Project to the national electricity grid. Intersection works on Windellama Road are proposed as part of the Project to upgrade the Project access to accommodate heavy vehicles. The Project’s conceptual layout is included in **Figure 1.3**. Associated infrastructure would include internal access tracks, operational and maintenance facilities, civil works including creek crossings, and onsite electrical infrastructure (33/330 kV substation/switching station) required to connect to the existing 330 kV transmission line owned and operated by TransGrid.

The Project will be accessed from Windellama Road off the Hume Highway, at 961 Windellama Road. Approximately 20 km of internal all weather access tracks would be constructed within the Project Area to provide access for construction as well as on-going operations and maintenance. The layout of the proposed internal access tracks is shown in **Figure 1.3**. The perimeter of the Project would be enclosed by security fencing of approximately 2.3 m high, with a 10 m asset protection zone (APZ) proposed along the inner boundary of the security fence line.

The Project construction and commissioning will take approximately 18-24 months and is anticipated to generate up to 400 full time equivalent (FTE) employment opportunities and between two to four permanent FTE opportunities during operation. Further detail regarding the Project design is provided in the Environmental Impact Statement (EIS) (Umwelt, 2024).

Legend



- Watercourse
- Lot Boundary
- ▣ Project Area
- Subject Land
- ▨ IBRA Sub-regions

Mitchell Landscapes

- Breadalbane Swamps and Lagoons
- Gundary Plains
- Towrang Ranges



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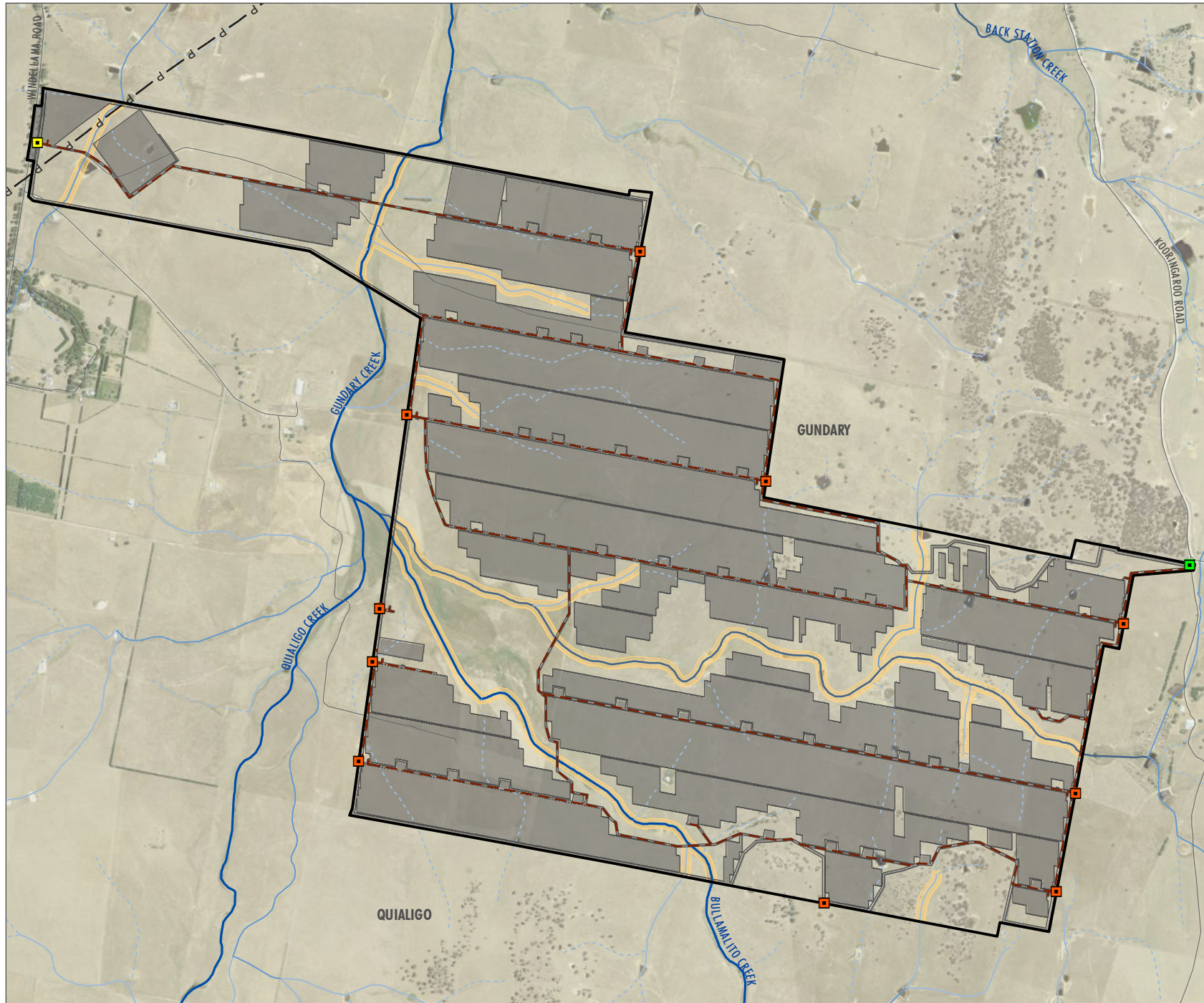
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Location Map



Legend

-
- A map of the Goulburn region in Victoria, Australia. The map shows several towns: DALTON, GOULBURN, PENROSE, TALLONG, GUNDAROO, and LAKE BATHURST. The Project Site is marked with an orange icon and labeled 'Project Site' in orange text, located between Goulburn and Tallong.



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The Project is a State Significant Development (SSD) under the *State Environmental Planning Policy (Planning Systems) 2021* as the capital value of the project is over \$30 million. A development application (DA) for the Project is required to be submitted under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). A request for SEARs must be made for all SSD projects and was requested as part of the scoping stage of this Project (see **Section 1.5**).

The aim of this BDAR is to identify and assess the potential biodiversity impacts of the Project and outline avoidance and mitigation measures as well as any offset requirements for all vegetation clearing regardless of whether significant impacts on threatened biodiversity are likely to occur. Project approval may require offsetting as per the requirements of the BAM. As further discussed in **Section 7.0**, Lightsource bp have endeavoured to avoid all areas of high biodiversity value to reduce the impacts to remnant vegetation and any species or communities listed under either Commonwealth or the State legislation.

1.1.2 Location

The location of the Project and other relevant landscape features that pertain to this assessment are shown on **Figure 1.2** and **Figure 1.3**. Refer to **Table 1.1** for a summary of the location in the landscape.

Table 1.1 Project Location in the Landscape

Project Location in the Landscape	
IBRA Bioregion	South East Highlands (SEH)
IBRA Subregion	Monaro (10.66%) and Bungonia (89.34%). As per the requirements of the BAM for site-based assessments, this BDAR and the associated calculator assessment will use the IBRA subregion that covers the majority of the Subject land, Bungonia.
Mitchell Landscape	Breadalbane Swamps and Lagoons and Gundry Plains
LGA	Goulburn Mulwaree
Assessment Type	Major Project; Site-based
Project area	702 hectares
Subject land size	512 hectares

1.1.3 The Subject Land

The Project is located in the South East Highlands IBRA Bioregion, and dominantly within the Bungonia IBRA subregion. Lightsource bp (the Proponent) has taken consideration of the environment and designed the Project to avoid patches of intact remnant woodland, primary grassland vegetation and major drainage lines.

The Subject land is predominantly composed of open paddocks which have historically been agricultural land and currently remain heavily grazed (cattle and sheep). The topography of the Subject land is characterised by the rolling hills and open grassland plains landscape and mapped as Breadalbane Swamps and Lagoons and Gundry Plains Mitchell landscape (DPE 2023a).

1.1.4 Consultation

1.1.4.1 Consultation with NSW Biodiversity Conservation and Science Division

Biodiversity Conservation and Science (BCS), a division of NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW), has been consulted during the preparation of this BDAR.

This included a site visit which was conducted on 5 August 2022 with representatives from Lightsource bp, BCS and Umwelt. On this site visit, land mapped as Category 1 – Exempt land, paddock trees, remnant woodland, derived native grassland and potential striped legless lizard suitable habitat were inspected and the biodiversity assessment process for the Project was discussed.

The areas visited were degraded and heavily grazed and the Category 1 land areas that Umwelt has mapped and excluded from assessment under the BAM was acknowledged by BCS representatives. Refer to **Figure 1.5** for the Category 1 land mapping. Due to the primary grasslands (PCT 1289 Wallaby Grass – Red-grass – Tall Speargrass – Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion) within the Project, it was agreed that the scattered tree streamlined assessment would be less appropriate, and that a more efficient assessment would be to include the scattered trees in each PCT as a vegetation zone.

The BCS agreed during the site visit that targeted surveys as per the reptile guidelines at the time (DSEWPC 2011a) should be completed in areas of potential striped legless lizard suitable habitat. The BCS threatened species officer for the region, Rob Armstrong was consulted via emails (10 August 2022; 9 November 2022) on a suitable survey method. It was agreed that tiles would be established with a two-week settling period and weekly checks (seven to five days between checks) (see also **Section 2.6.2.1**).

An online meeting was conducted on 25 July 2023 with representatives from Lightsource bp, BCS and Umwelt to consult prior to finalising the BDAR. The discussion focused on incidental records of the ecosystem credit species, listed as Vulnerable under the BC Act, White-fronted Chat (*Epthianura albifrons*). The potential nesting habitat within the Project Area was explained by BCS to be any small spiky shrubs (mainly thistles) in the Category-1 exempt land and within the non-native vegetation. Known areas across the Subject land will be taken into consideration in the Biodiversity Management Plan (BMP) to be prepared by Lightsource bp, in a post-approval package of works. The known locations of thistles will change from season to season with the current grazing regime within the Project Area, although other potentially suitable shrubs such as Sweet Rose (*Rosa rubiginosa*) and African Boxthorn (*Lycium ferocissimum*) are known within the Subject land and the management of these moving forward will be incorporated into the BMP.

1.1.4.2 Consultation with the Commonwealth Department of Climate Change, Energy, the Environment and Water

Consultation with the Commonwealth Department of Climate Change, Energy, the Environment and Water (Commonwealth DCCEEW) has been conducted through the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) referral process (EPBC Referral). This involved the following:

- A pre-referral meeting held on 21 July 2022 to introduce the Project team and the Project, as well as brief the Commonwealth DCCEEW assessment team on anticipated impacts to biodiversity Matters of National Ecological Significance (MNES) (i.e., striped legless lizard (*Delma impar*)). Advice from Commonwealth DCCEEW at the time was to delay the lodgement of the EPBC Referral until the targeted surveys have been completed and data is available to confirm impacts to biodiversity MNES.

- A follow up meeting held on 21 March 2023 to provide Commonwealth DCCEEW with an update on the Project, discuss layout changes and present and discuss the findings of the targeted surveys, specifically the striped legless lizard survey results, where no threatened reptiles were observed. The Project layout and design has been amended to avoid all MNES present at the Project Area, including key's matchstick grasshopper (*Keyacris scurra*) and planted individuals of camden woollybutt (*Eucalyptus macarthurii*). It was recommended that the Project be considered not to be a controlled action. The EPBC Referral was submitted to the Commonwealth DCCEEW on 20 March 2023.
- A site visit was conducted on 28 March 2023 with representatives from Lightsource bp, Commonwealth DCCEEW and Umwelt. The areas of the Subject land, remnant vegetation and the two known commonwealth listed threatened species (key's matchstick grasshopper and camden woollybutt) which were found outside of the Subject land, within the Project Area, were inspected.
- The EPBC Referral decision was issued on 13 September 2023 and concluded that the Project was not a controlled action (EPBC number 2023/09492) and therefore assessment under the EPBC Act was not required.

1.2 Biodiversity Offsets Scheme Trigger

The Subject land is assessed as SSD and therefore, triggers the biodiversity offset scheme (BOS). The Project Area includes mapped Biodiversity Value areas on the Biodiversity Values Map (DPE 2023a). Areas mapped in the Biodiversity Values Map are located along Gundry Creek and Bullamalito Creek and have been avoided by the Project layout (refer to **Figure 1.4**).

1.3 Excluded Impacts

Clause 6.8(3) of the BC Act specifies that the BAM is to exclude the assessment of the impacts of any clearing of native vegetation and loss of habitat on Category 1- Exempt land (as defined in Part 5A of the *Local Land Services Act 2013* (LLS Act)), other than prescribed impacts (as defined in clause 6.1 of the *NSW Biodiversity Conservation Regulation 2017* (BC Regulation)).

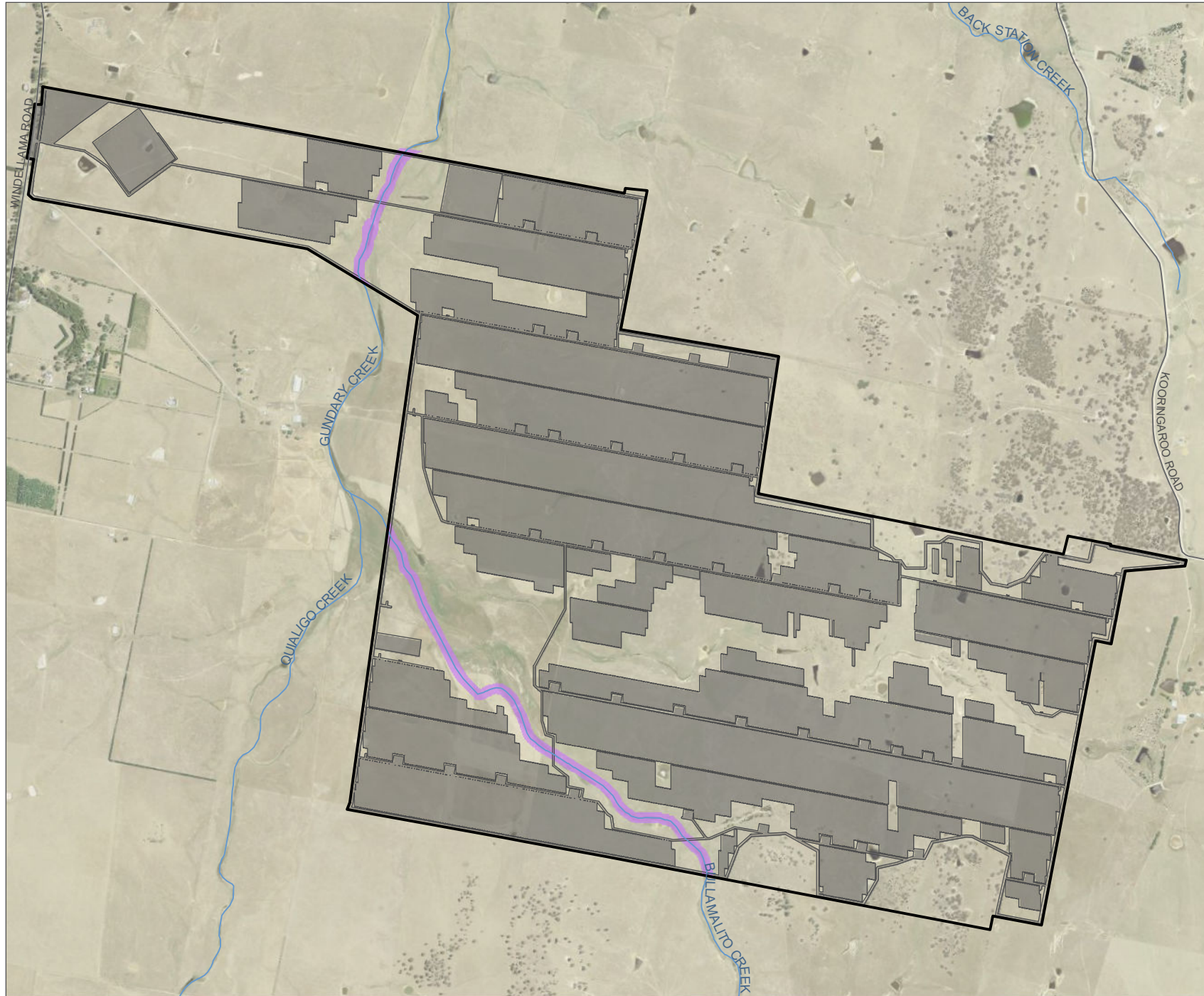
The Subject land contains extensive areas that meet the definitions of Category 1 – Exempt land within the meaning of the LLS Act. This section provides an explanation of the assessment contained within **Figure 1.5** with land categorisations documented in **Table 1.2**. Definitions and explanations of each categorisation are presented below.

Table 1.2 Land Categorisations and Area in Hectares (ha) across the Project Area and Subject Land

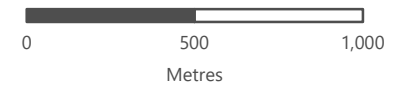
Land Category	Status	Project Area (ha)	Subject Land (ha)
Category 1	Exempt land, does not require assessment under the BAM	633.38	498.01
Category 2	Requires assessment under the BAM	68.46	14.02
Total		701.86	512.05

To assist with the assessment of land categorisation nine vegetation floristic plots were completed to represent the condition of the Category 1 land (**Appendix B**).

FIGURE 1.4
Biodiversity Values



- Road
- Watercourse
- Project
- Subject Land
- Biodiversity Values



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FIGURE 1.5

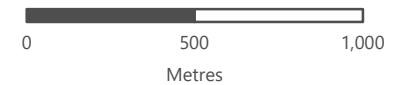
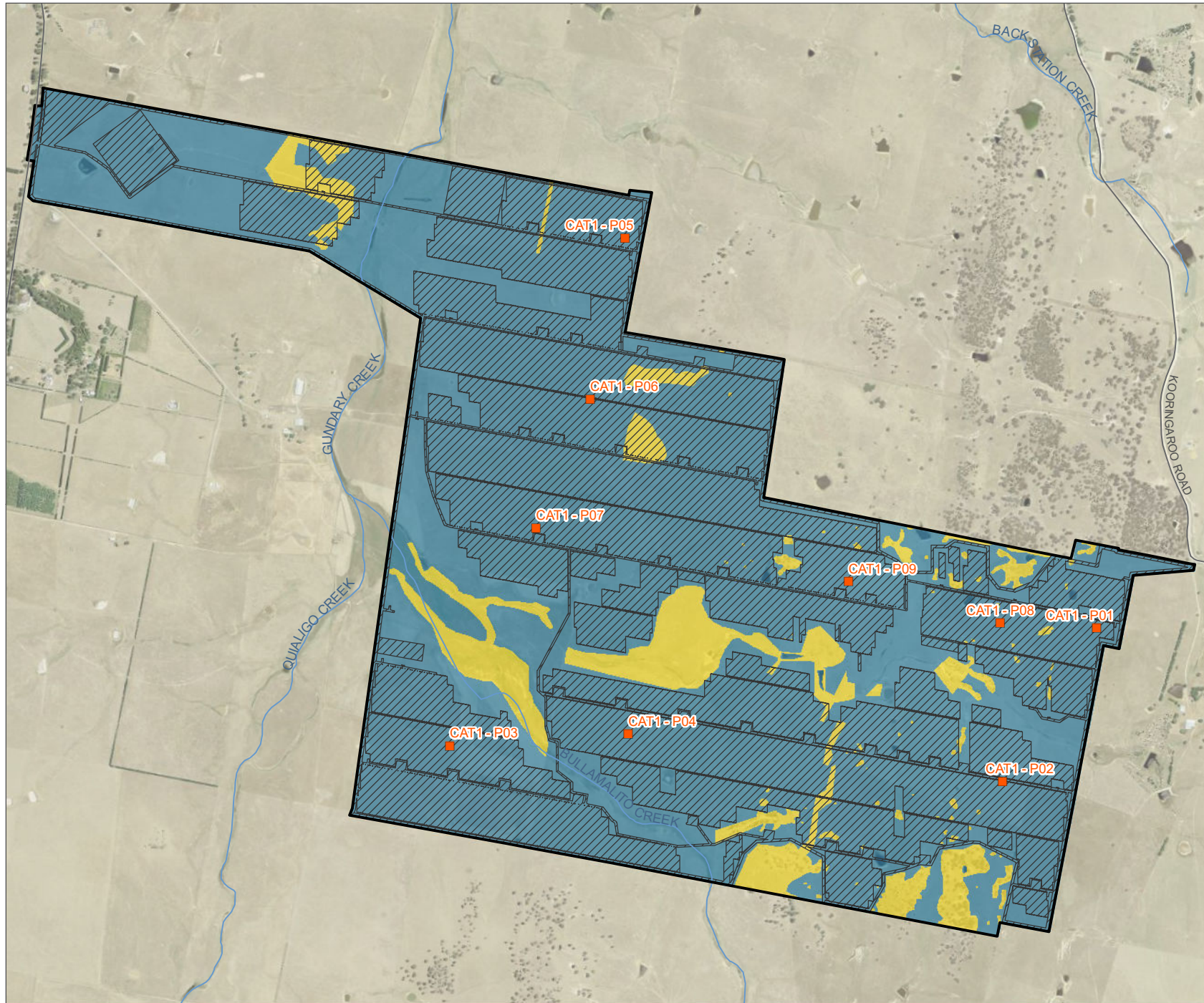
Excluded Impacts

Legend

- Road
- Watercourse
- ▭ Project Area
- ▨ Subject Land
- BAM Plot

Category Land Mapping

- Category 1
- Category 2



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1.3.1 Category 1 Land

Category 1 land is excluded from the BOS. No targeted biodiversity surveys or detailed floristic surveys are required under the BAM, unless potential prescribed impacts are identified.

Areas identified as likely to be Category 1 land have been mapped in accordance with the draft *Native vegetation regulatory map: method statement* (NSW Government 2017) on the basis of review of Native Vegetation Extent 2017, Land Use (ALUMS) Mapping 2017, supported by observations made during the field surveys. These are areas that have a history of legal land clearance and cultivation, based on the above data sources. After field surveys modifications were made to the area of Category 1 land, which was conservatively adding areas that support CEEC to Category 2 land and completed surveys under the BAM.

Due to the extensive cultivation history apparent on the Subject land and based on this assessment, approximately 498.01 ha has been identified as likely Category 1 areas within the Subject land (refer to **Figure 1.5**). Field surveys conducted within the Subject land in accordance with the BAM also included assessment of potential prescribed impacts in Category 1 areas, such as clearing of surface rocks or clearing of threatened species habitat in non-native vegetation.

While EPBC Act listed CEECs are not identified in the land categorisation assessment, it is assumed that an assessment of any areas supporting only a Commonwealth listed CEEC will also require a detailed assessment and have been assigned to Category 2 land on a precautionary basis for the purposes of this impact assessment. In the Project Area this includes one CEECs that does not support a BC Act listed CEEC, areas of Natural Temperate Grassland of the South Eastern Highlands.

1.3.2 Category 2 Land

Category 2 land comprises areas to which the BOS applies and impacts on native vegetation within this land may require offsetting (subject to exceeding the condition thresholds). Prescribed impacts would also need to be assessed and quantified, as per Category 1 land.

Areas mapped as Category 2 land have been identified based on field surveys and desktop reviews in accordance with the *Native vegetation regulatory map: method statement* (NSW Government 2017a) on the basis of review of Native Vegetation Extent 2017, Land Use (ALUMS) Mapping 2017, supported by observations made during the field surveys.

There was approximately 14.02 ha of Category 2 land identified in the Subject land (refer to **Figure 1.5**). Areas are identified on this map due to the presence of:

- Woody native vegetation (Native Vegetation Extent 2017).
- Specific ALUMS criteria consistent with the *Native vegetation regulatory map: method statement* (NSW Government 2017a), using the 2017 Land Use Mapping.
- Existing Native Vegetation Regulatory Map layers.
- Areas identified as meeting diagnostic criteria for any CEEC (BC Act listed or EPBC Act listed).

Areas that are likely to conform to an EPBC Act listed CEEC, but not to a BC Act listed TEC (i.e., areas of Natural Temperate Grasslands of the South Eastern Highlands) do not strictly fall into Category 2 lands.

However, as these areas require assessment for the purposes of assessing impacts to MNES, these areas have been considered Category 2 land for the purposes of this assessment.

1.4 Matters of National Environmental Significance

Under the EPBC Act, an action will require approval from the Minister if the action has, will have, or is likely to have, a significant impact on a MNES.

The Project Area contains areas of ecological communities and species habitat that have all been avoided by the Project design and are not being directly impacted in the Subject land. This includes:

- 8.27 ha of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box Gum Woodland), listed as Critically Endangered
- 12.75 ha of Natural Temperate Grassland of the South Eastern Highlands (Natural Temperate Grassland), listed as Critically Endangered
- 20 individuals of camden woollybutt (*Eucalyptus macarthurii*), listed as Endangered
- 1 individual found and 8.27 ha habitat of key's matchstick grasshopper (*Keyacris scurra*), listed as Endangered.

All entities are additionally addressed for any indirect impacts under the BOS and will be adequately addressed throughout this Report.

On 13 September 2023, the DCCEEW issued the EPBC Referral decision (EPBC number 2023/09492) that the Project is not a controlled action and therefore does not require assessment.

1.5 SEARs Requirements

A scoping report was prepared for the Project and Secretary's Environmental Assessment Requirements (SEARs) were received in November 2022. **Table 1.3** details the SEARS (November 2022) provided by NSW DCCEEW relevant to this biodiversity assessment.

Table 1.3 SEARs (November 2022) Provided by NSW DCCEEW Relevant to This Biodiversity Assessment

SEARS Requirement	Relevant Report Section
Biodiversity	
an assessment of the biodiversity values and the likely biodiversity impacts of the project in accordance with Section 7.9 of the <i>Biodiversity Conservation Act 2016</i> (NSW) (BC Act), the Biodiversity Assessment Method (BAM) 2020 and documented in a Biodiversity Development Assessment Report (BDAR), including a detailed description of the proposed regime for avoiding, minimising, managing and reporting on the biodiversity impacts of the development over time, and a strategy to offset any residual impacts of the development in accordance with the BC Act	See Section 7.0 and Section 8.0
an assessment of the likely impacts on listed aquatic threatened species, populations or ecological communities, scheduled under the <i>Fisheries Management Act 1994</i>, and a description of the measures to minimise and rehabilitate impacts, including impacts to Gundry Creek, and Bullamalito Creek; and	See Section 7.0 and Section 8.0
if an offset is required, details of the measures proposed to address the offset obligations.	See Section 10.0 and Appendix D

Furthermore, agency advice into the SEARs were also considered during the preparation of this BDAR and have been addressed in this Report as outlined in **Table 1.4**.

Table 1.4 Additional Comments from Agencies After Scoping Report

Agency	Comment	Relevant Report Section
BCS	- Biodiversity impacts related to the proposed Gundry Solar Farm are to be assessed in accordance with the Biodiversity Assessment Method and documented in a Biodiversity Development Assessment Report (BDAR). The BDAR must include information in the form detailed in the <i>Biodiversity Conservation Act 2016</i> (s6.12), <i>Biodiversity Conservation Regulation 2017</i> (s6.8) and Biodiversity Assessment Method. The BDAR must document the application of the avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the Biodiversity Assessment Method. - The BDAR must include details of the measures proposed to address the offset obligation as follows: - The total number and classes of biodiversity credits required to be retired for the development/project. - The number and classes of like-for-like biodiversity credits proposed to be retired. - The number and classes of biodiversity credits proposed to be retired in accordance with the variation rules. - Any proposal to fund a biodiversity conservation action.	See Section 8.0 See Section 7.0 See Section 10.0 and Appendix D

Agency	Comment	Relevant Report Section
	- Any proposal to conduct ecological rehabilitation (if a mining project). - Any proposal to make a payment to the Biodiversity Conservation Fund. If seeking approval to use the variation rules, the BDAR must contain details of the reasonable steps that have been taken to obtain requisite like-for-like biodiversity credits. - The BDAR must be prepared by a person accredited in accordance with the Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017 under s6.10 of the <i>Biodiversity Conservation Act 2016</i>.	See Declaration on page 5
Department of Primary Industries – Agriculture	Undertake a biosecurity risk management plan that will include details to monitor, prevent, eliminate or minimise the introduction, presence, spread or increase of weeds.	Section 8.4.5
Department of Primary Industries – Fisheries	- Protection and revegetation of riparian buffer zones and where/if possible, the management/ rehabilitation of any eroded gullies on site. DPI Fisheries policy advocates the use of terrestrial riparian buffer zone widths as defined in section 6.1.4 of DPI Policy. - Description of aquatic and riparian vegetation and instream aquatic vegetation in the vicinity of the development, particularly the extent and condition of riparian vegetation and instream aquatic vegetation, water depth, permanence of water flow and snags (large woody debris) within the footprint of the proposal area. - Identification and classification of key fish habitat in the area, according to section 3.2 of DPI Policy. - An assessment of all potential impacts to key fish habitat and riparian zones. The extent of aquatic habitat removal and riparian vegetation removal, modification or improvement that may result from the development is to be clearly defined. Potential impacts to water quality and fish passage must be clearly defined. - An assessment of significance for any threatened species matters listed under the FM Act. - A clear description of all proposed safeguards to mitigate impacts on aquatic habitats, water quality and riparian buffer zones. This can include, but not be limited to: - a clear map showing the riparian buffer zone width.	Section 5.6 Section 7.0 Section 8.4
Goulburn Mulwaree Council	A BDAR is required to ensure avoidance and mitigation measures are included. Ensure migratory species and key fish habitat are assessed. BioNet Atlas and other online records such as eBird and ALA do not seem to have been used to search for records of threatened species in the local area.	Section 7.0 Section 5.6 Section 1.6

Agency	Comment	Relevant Report Section
	The proposed mitigation measures seem to be lacking any attempts to restore, enhance or create any habitat.	Not addressed in this report – refer to Landscape and Visual Impact Assessment (EIS Appendix 11)
	It would be beneficial to see the proponents use the opportunity to undertake some active planning for provision of revegetation of the site to create new habitat and provide landscape connectivity.	Not addressed in this report – refer to Landscape and Visual Impact Assessment (EIS Appendix 11)
	Council is concerned is that planting of vegetation screening could simply involve planting belts of exotic species such as Radiata Pines or similar.	Not addressed in this report – refer to Landscape and Visual Impact Assessment (EIS Appendix 11)
	Ensure that the following species have been considered in the biodiversity assessment: • Australasian Bittern <i>Botaurus poiciloptilus</i> • Curlew Sandpiper <i>Calidris ferruginea</i> • Australian Painted Snipe <i>Rostratula australis</i> • Button Wrinklewort <i>Rutidosia leptorhynchoides</i> • Delicate Pomaderris <i>Pomaderris delicata</i> • Key's Matchstick Grasshopper <i>Keyacris scurra</i> • Spotted Tail Quoll <i>Dasyurus maculatus</i> • Pink Robin <i>Petroica rodinogaster</i> • Flame Robin <i>Petroica phoenicea</i> • Scarlet Robin <i>Petroica boodang</i> • Yellow-bellied Glider <i>Petaurus australis</i>.	Section 5.1 Appendix A

1.6 Information Sources

The following key resources, policies and documents were used during the preparation of this BDAR:

- Biodiversity Assessment Method 2020 (DPIE 2020a).
- Biodiversity Assessment Method Operational Manual (Stage 1) (DPIE 2020b).
- BioNet Atlas of NSW Wildlife database and mapping tool (NSW DCCEEW 2024).
- Threatened Biodiversity Data Collection (TBDC) (NSW DCCEEW 2024).
- Surveying Threatened Plants and Their Habitats (DPIE 2020c).
- Department of Climate Change, Energy, the Environment and Water, Protected Matters Search Tool (Commonwealth DCCEEW 2024).

Other information sources relied upon are referenced in the text and are listed in **Section 12.0** of this Report.

2.0 Methods

2.1 Site Context Methods

2.1.1 Landscape Features

As detailed in Section 3 of the BAM (DPIE, 2020a), a landscape assessment for the Project is required, which was initially conducted as a desktop assessment and confirmed during the field surveys. Landscape features such as Interim Biogeographic Regionalisation for Australia (IBRA) bioregions, IBRA subregions, and native vegetation extent, cleared areas, rivers, streams, wetlands, and connectivity features were identified, where present within the 1500 m buffer area, (Assessment Area) in accordance with Section 3 of the BAM (DPIE, 2020a) and were sourced and/or derived from spatial information. Determination of the 'Site Context' of the Project was calculated by assessing the native vegetation cover and patch size within the Subject land in accordance with Section 3.2 and Subsection 4.3.2 of the BAM, respectively (DPIE, 2020a).

2.2 Native Vegetation, Threatened Ecological Communities and Vegetation Integrity Methods

2.2.1 Existing Information

The following existing information was reviewed to inform the identification of Plant Community Types (PCTs) (**Section 4.2**) and Threatened Ecological Communities (TECs) (**Section 4.4**):

- NSW Vegetation Information System – Vegetation classification data.
- The approved Conservation Advice (including listing advice) for Natural Temperate Grassland of the South Eastern Highlands (DAWE, 2016) was reviewed before and after field surveys to assist in determining the status of the grassland within the Subject land.

2.2.2 Mapping Native Vegetation Extent

The final native vegetation extent (**Section 4.1**) within the Subject land was determined during field survey's undertaken during 2022/23 and through GIS Mapping and interpretation of aerial imagery.

Native vegetation and PCT mapping were undertaken using best-practice techniques to delineate vegetation communities across the Subject land. Vegetation mapping involved the following key steps:

- review of aerial imagery to assess vegetation distribution patterns as dictated by change in canopy texture, tone, and colour, as well as topography
- review of the modelled distribution of vegetation communities within broader scale regional based vegetation mapping
- preparation of a draft plant community type map based on interpretation of digital aerial imagery
- field-based ground-truthing of the draft plant community type mapping
- confirmation of vegetation community floristic delineations based on plot data

- vegetation communities were delineated through the identification of repeating patterns of plant species assemblages in each of the identified strata. Slight variations in species composition are typical across the extent of a community and are often associated with microhabitats or ecotones with other communities.

2.2.3 Plot-based Vegetation Survey

A stratified plot-based floristic vegetation integrity survey of the Subject land was undertaken in accordance with *Table 3* and *Section 4.2.1*, *Sections 4.3.3* and *4.3.4* of the BAM (DPIE, 2020a) to assess the expected environmental variation and address any gaps and verify the results of previous mapping and site information.

A total of eight floristic plots were sampled within the Subject land by Umwelt ecologists on 3, 4 November, 13 December 2022 and 23 May 2023 using a 20 x 20 m floristic plot nested within each 20 x 50 m vegetation integrity plot assessed. The locations of the plots sampled are displayed as BAM Plots in **Figure 2.1**. An additional 10 floristic plots were sampled within the wider Project Area to assist with providing validation and evidence of avoidance and higher quality vegetation within the Project Area but not in the Subject land and, to assist with the Category 1 - Exempt land assessment.

All vascular plants recorded within floristic plots were identified using keys and nomenclature in PlantNet NSW Flora Online Identification Keys (RBG Sydney, 2022).

The floristic survey data collected included the survey data requirements identified in *Table 1* of the BAM (DPIE, 2020a). A 20 x 20 m floristic plot was sampled within each 20 x 50 m BAM plot sampled to ensure compliance with the stratification requirements of *Table 3* of the BAM (DPIE, 2020a). The native vegetation composition, structure and function attributes identified in *Section 4.3.4* of the BAM were assessed. As far as practicable, plots were not established within 50 m of ecotones, vehicle tracks (and edges), or other easily distinguished disturbed areas. Plots were sampled in locations to ensure that they captured attributes relevant to each vegetation zone. The location of each plot was recorded using ESRI Collector system with an accuracy of ± 5 m. The Map Grid of Australia (MGA) coordinate system was used, applying the 'GDA94' datum.

2.3 Threatened Flora Survey Methods

2.3.1 Review of Existing Information

The following existing information was reviewed to inform the identification of threatened flora across the Subject land:

- BAM Calculator (version 1.4.0.00; BAM last updated 14/03/2024 (Version 67)).
- Threatened flora records held on the NSW BioNet Atlas of NSW Wildlife within 10 km of the Subject land (NSW DCCEEW, 2024).
- Vegetation associations reports for the Bungonia IBRA Sub-region for each PCT present to determine threatened flora species PCT associations.
- Habitat constraints listed in the TBDC.

The review informed survey design and was used to prepare a list of threatened flora species and reference habitats and assess the likely presence for threatened flora species within the Subject land.

FIGURE 2.1

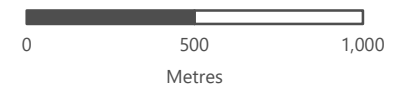
Vegetation Integrity Survey Plots

Legend

- Road
- Watercourse
- Subject Land
- ▭ Project Area
- BAM Plot

Plant Community Types and Zones

- PCT1330 - Low
- PCT1330 - Moderate
- PCT1330 - Native pasture
- PCT1330 - Paddock tree
- PCT1289 - Low
- PCT1289 - Moderate
- PCT1191 - Low
- PCT1191 - Paddock tree
- PCT888 - Paddock tree
- Planted native trees
- Waterbody
- Cultivated
- Exotic plantings
- Riparian



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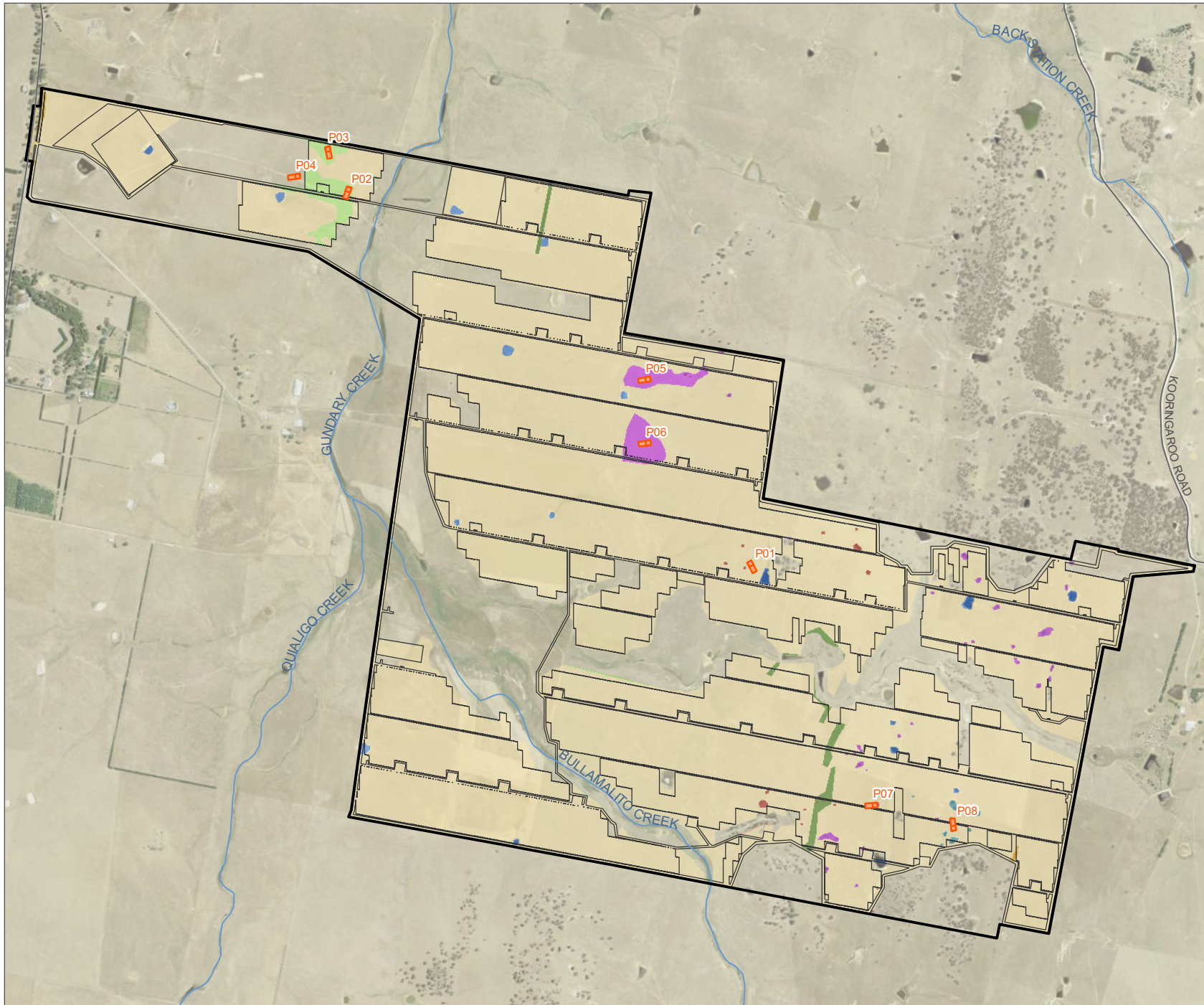
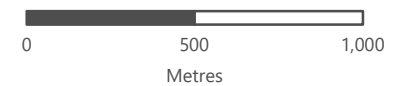
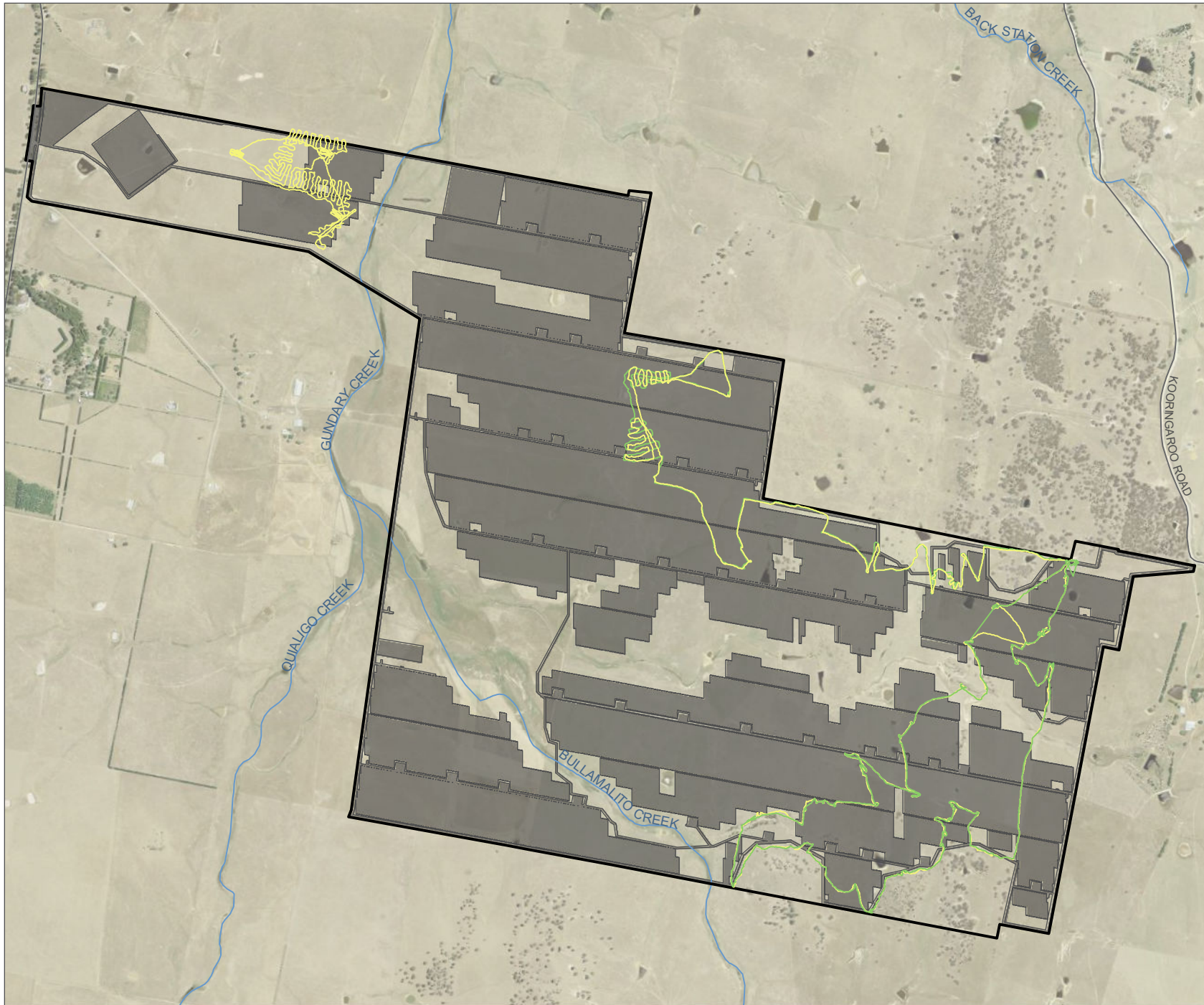


FIGURE 2.2

Targeted Threatened Flora Survey Effort

Legend

- Road
- Watercourse
- ▬ Project Area
- Subject Land
- Trees and Shrubs
- Herbs and Forbs



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2.3.2 Habitat Constraints Assessment

The following existing information was reviewed to inform the threatened species surveys and assessment of habitat constraints and microhabitats:

- For each candidate species, review of PCTs associated with each species (as per the TBDC) and presence of those PCTs within each sub-region for which the species was identified as a candidate species.
- Presence of habitat constraints (as identified in the TBDC) within the impact area.
- Quality/suitability of micro-habitats present, as determined during the field survey.

Where species presence could not be ruled out based on lack of associated PCTs or quality of habitat, a conservative approach was taken, and targeted surveys conducted.

2.3.3 Field Surveys

Field surveys were completed for threatened flora species by Umwelt on 31 October and 3, 4 and 11 November 2022 in the locations identified during the habitat constraints assessment (shown in **Figure 2.2**). Flora surveys included parallel field traverse searches with an approximately 10 m separation width, in accordance with the methods outlined by NSW DPIE (DPIE, 2020b).

2.4 Threatened Fauna Survey Methods

2.4.1 Review of Existing Information

The following key information was reviewed to inform surveys and assessments of habitat constraints and microhabitats for threatened fauna species:

- BAM Calculator (version 1.4.0.00); BAM last updated 14/03/2024 (Version 67).
- Threatened fauna records held on the NSW BioNet Atlas of NSW Wildlife within 10 km of the Subject land (DPE, 2022).
- Vegetation associations reports for the South-Eastern Highlands IBRA region, within the Bungonia subregion for each PCT present to determine threatened fauna species PCT associations.
- Habitat constraints listed in the Threatened Biodiversity Data Collection (TBDC).

The review informed survey design and was used to prepare a list of threatened fauna species, important habitats for both threatened species and migratory species, and assess their likelihood of occurrence in the Subject land.

The following guidelines were reviewed as part of the habitat assessments and targeted surveys for candidate threatened fauna species:

- Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (DEC 2004).

- NSW Survey Guide for Threatened Frogs – A guide for the survey and assessment of threatened frogs and their habitats for the Biodiversity Assessment Method (DPIE, 2020d).
- Survey guidelines for Australia's threatened reptiles: Guidelines for detecting reptiles listed as threatened under the EPBC Act, Department of Sustainability, Environment, Water, Population and Communities (DSEWPC, 2011a).
- NSW Threatened reptiles Biodiversity Assessment Method survey guide, Department of Planning and Environment, released November 2022 (DPE 2022).
- Environment Protection and Biodiversity Conservation Act 1999 referral guidelines for the vulnerable Striped Legless Lizard, *Delma impar* (DSEWPC, 2011b).

2.4.2 Habitat Constraints Assessment

Field surveys across the Subject land included habitat assessment for threatened fauna. Key habitat features evaluated to determine the likely presence of threatened species, included:

- Roosting/breeding/sheltering resources such as hollow-bearing trees, rock ledges/rocky outcrops/shelters/caves and logs.
- Permanent and ephemeral aquatic habitat suitable for amphibians.

2.4.3 Field Surveys

Targeted threatened fauna surveys were completed for those species identified as having a moderate to high likelihood of occurrence (based on presence of suitable habitat/required habitat constraints) or for species identified as candidate species by the BAM Calculator once the BAM vegetation plot data was entered and habitat values considered. Field surveys were completed for threatened fauna species in the locations shown in **Figure 2.3**. The fauna surveys completed consisted of the following:

- Targeted reptile tile surveys under the Commonwealth survey guidelines for Australia's threatened reptiles: Guidelines for detecting reptiles listed as threatened under the EPBC Act, Department of Sustainability, Environment, Water, Population and Communities (DSEWPC 2011). This included 13 weekly checks, by two to three ecologists, of 10 tiles arrays, each tile array containing 50 tiles, for an overall survey effort of 500 tiles.
- Targeted koala surveys (Nocturnal spotlight survey transects and SAT plots under all scattered trees across Subject land) under the Koala (*Phascolarctos cinereus*): Biodiversity Assessment Method survey guide (DPE 2022)
 - Koala scat assessment survey using the SPOT Assessment technique with search locations at every individual scattered tree that was within the Subject land.
 - Nocturnal spotlighting across four separate nights in summer at four, 200 m, transects within the scattered trees in the Subject land.



- Targeted surveys for Key's matchstick grasshopper (*Keyacris scurra*), using a parallel transect similar to the standardised flora surveys which included parallel field traverse searches with an approximately 10 m separation width, in accordance with the methods outlined by NSW DPIE (DPIE, 2020b).
- Acoustic recording using one Chorus unit equipped with an omnidirectional ultrasonic microphone within riparian zone in middle of Project Area for threatened microbat species under the 'Species credit' threatened bats and their habitats NSW guide for the Biodiversity Assessment Method (DPIE 2021).
- Opportunistic observations (diurnal).

2.5 Weather Conditions

Multiple surveys were undertaken on the Subject land between one day in March 2022, September 2022 to December 2022 and one day in May 2023, with weather conditions varying throughout the survey periods. Weather conditions recorded at the closest reliable weather station 'Goulburn Airport AWS' (Station# 070330). Each fauna targeted survey completed in the Subject land are provided in **Table 2.1** and for the entire year to date in **Appendix E**. All of these surveys were completed within the framework of the relevant guidelines. Additionally, the weather on the days of flora and vegetation surveys was also collected and present in **Table 2.2**.

Table 2.1 Environmental Conditions During Targeted Threatened Fauna Species Surveys

Survey undertaken (e.g., method / targeted species)	Date	Time	Temperature (min. & max.)	Wind	Cloud cover	Latest rainfall (mm)
Striped Legless Lizard tile array survey	12/09/2022	08:00–10:36	7.4–11.6	<30 km/hr	0–70 %	0.8 mm on 11 Sept
Striped Legless Lizard tile array survey	19/09/2022	10:05–12:12	12–13	>30 km/hr	<30 %	5.8 mm on 18 Sept
Striped Legless Lizard tile array survey	26/09/2022	09:09–11:49	8–15.7	<15 km/hr	0–70 %	5.0 mm on 25 Sept
Striped Legless Lizard tile array survey	03/10/2022	09:12–11:25	12–15	None	30–70 %	0.6 mm on 2 Oct
Striped Legless Lizard tile array survey	10/10/2022	09:27–11:42	9.1–13	<15 km/hr	60–70 %	34.0 mm on 9 Oct
Striped Legless Lizard tile array survey	17/10/2022	09:02–11:16	9–12	<15 km/hr	100 %	1.8 mm on 15 Oct
Striped Legless Lizard tile array survey	27/10/2022	08:46–10:57	15.1–17.5	15– >30 km/hr	30–100 %	0.2 mm on 27 Oct
Key's Matchstick Grasshopper transects	03/11/2022	12:58–16:07	14–17	<15 km/hr	30–80 %	7.8 mm on 2 Nov

Survey undertaken (e.g., method / targeted species)	Date	Time	Temperature (min. & max.)	Wind	Cloud cover	Latest rainfall (mm)
Striped Legless Lizard tile array survey	04/11/2022	8:54–10:57	11.4–16.1	None	<30 %	7.8 mm on 2 Nov
Key's Matchstick Grasshopper transects	04/11/2022	14:07–15:17	17	<15 km/hr	75%	7.8 mm on 2 Nov
Striped Legless Lizard tile array survey	14/11/2022	08:43–11:19	14–16	<30 km/hr	30–70 %	32.0 mm on 14 Nov
Striped Legless Lizard tile array survey	22/11/2022	09:15–12:16	8.3–12.5	15– >30 km/hr	30–100 %	1.0 mm on 22 Nov
Koala spotlight survey	23/11/2022	08:51–00:08	7.0–19.2	15– >30 km/hr	<30%	1.0 mm on 22 Nov
Striped Legless Lizard tile array survey	28/11/2022	09:16–11:47	16–19.6	<30 km/hr	30–70 %	0.4 mm on 28 Nov
Striped Legless Lizard tile array survey	13/12/2022	09:03–11:25	13–16.2	15– >30 km/hr	<30 %	8.6 mm on 13 Dec

Table 2.2 Environmental Conditions During Vegetation and Flora Surveys

Survey undertaken (e.g., method / targeted species)	Date	Temperature (min. & max.)	Wind	Cloud cover	Latest rainfall (mm)
Vegetation mapping and plots	31/03/2022	9.1–19.1	>30 km/hr	50–70%	5.0 mm on 30 March
Vegetation mapping and plots	03/11/2022	4.2–18	15– >30 km/hr	30–80 %	7.8 mm on 2 Nov
Targeted Flora surveys	03/11/2022	4.2–18	15– >30 km/hr	30–80 %	7.8 mm on 2 Nov
Vegetation mapping and plots	04/11/2022	16.1–19.6	<30 km/hr	<30 %	7.8 mm on 2 Nov
Targeted Flora surveys	04/11/2022	16.1–19.6	<30 km/hr	<30 %	7.8 mm on 2 Nov
Vegetation mapping and plots	22/11/2022	12.5–14.8	15– >30 km/hr	30–100 %	1.0 mm on 22 Nov
Vegetation mapping and plots	13/12/2022	16.2–19.4	15– >30 km/hr	<30 %	8.6 mm on 13 Dec
Vegetation mapping and plots	23/05/2023	-2.5–16.2	15– >30 km/hr	<30%	0.2 mm on 23 May

2.6 Licensing and Survey Limitations

2.6.1 Survey Licensing Details

The flora and fauna surveys were undertaken under Scientific Licence No. SL100198 issued by the NSW Government Department of Planning, Industry and Environment, granted under Part 2 of the BC Act. The works were also undertaken in accordance with Umwelt's Animal Research Authority issued for Fauna Surveys as an Ecological Consultant throughout NSW, by the Secretary of the Department of Regional NSW, for which Mr Travis Peake is listed as the Principal Investigator.

2.6.2 Survey Limitations

A period of several seasons or years is often needed to identify all the species present in an area. Some species are only apparent at certain times of the year (e.g. orchids or migratory birds) and require specific weather conditions for optimum detection (e.g. breeding) and flowering periods. The conclusions of this BDAR are therefore based upon available data and are indicative of the environmental condition of the Subject land at the time of the survey. All efforts were made to survey the relevant species in the appropriate times, with guidance provided by the BAM.

Site conditions, including the presence of threatened species, can change with time. To address this limitation, the assessment has aimed to identify the presence and suitability of the habitat for each threatened species. This included vegetation mapping and required habitat assessments within two growing seasons of the year. The first surveys were completed during the autumn months as the annual species have died back and have not yet started to regrow. Surveys at this time allowed the grasses and autumn flowering species within the grassland and grassy woodland communities to display their fruiting bodies and inflorescences and, allow for more accurate determination of species within the Subject land. The second round of surveys were completed in the Spring months to compare results and ensure the threatened species habitat was not changing substantially between seasons, to allow redesign and avoidance of any high ecological constraint areas.

2.6.2.1 Striped Legless Lizard Targeted Survey

The striped legless lizard tile array surveys were undertaken in compliance with EPBC survey requirements (DSEWPC, 2011b), particularly relating to survey effort (i.e., tiles to be checked on at least 12 occasions across Spring, all surveys completed when ambient temperatures did not exceed 28 °C).

The EPBC survey requirements (DSEWPC, 2011b) require that tile arrays be checked no more than once a week. As two tile array surveys were completed within one week (7 days) of each other on Friday 4 November 2022 and, again the following week, Monday 7 November 2022, the tile array survey on 7 November 2022 was therefore potentially invalid as it was only three days between tile checks. Consequently, an additional 13th tile array survey was completed on 13 December 2022 to make up for the timing of the above two tile checks in November. For consistency all 13 surveys have been included in the results for this assessment.

In November 2022, DPE released the Threatened Reptiles Biodiversity Assessment Method Survey Guide (DPE 2022) within the last month of the scheduled surveys. This assessment was consistent with the standard at the time, which was the EPBC survey requirements. Consultation with BCD and Commonwealth DCCEEW at the beginning of the survey confirmed this approach (**Section 1.1.4**).

2.6.2.2 Key's Matchstick Grasshopper Targeted Survey

No survey guidelines currently exist for key's matchstick grasshopper or threatened Australian grasshoppers. Due to the small size and cryptic nature of the species, surveys were undertaken following a similar method to that used for targeted cryptic orchid surveys (DPIE 2020c), with 10 m parallel transects completed in areas of PCT 1330, which involves flushing grasshoppers by slowly walking through the pre-determined survey area and stopping often to search grass tussocks. Targeted surveys were completed in all areas of PCT 1330.

2.6.2.3 Targeted Threatened Flora Survey

Areas of natural temperate grassland adjacent to the creeks within the central portion of the Subject land were not included as part of threatened flora surveys. The decision to exclude this section from targeted threatened flora surveys was due to these areas of natural temperate grassland being avoided and excluded from the proposed development and the Subject land.

3.0 Site Context

3.1 Assessment Area

As per the requirements of the BAM, a 1,500 m buffer was applied to the Subject land (the Assessment Area) resulting in an overall buffer of 3,517.77 ha. The existing regional mapping (State Vegetation Type Mapping (DPE 2022)) that covered the Assessment Area, has been updated and areas of native vegetation (including native grasslands) have been mapped manually using the latest aerial imagery and existing vegetation mapping, shown in **Figure 1.2**.

3.2 Landscape Features

Landscape features identified within the Subject land and Assessment Area are shown on the locality and landscape features map in **Figure 1.1** and **Figure 1.2**, respectively. A discussion of relevant landscape features is provided below in **Table 3.1**.

Table 3.1 Landscape Features Within the Subject Land

Landscape features	Description
IBRA bioregion/subregion	The Project is located within the Monaro (10.66%) and Bungonia (89.34%), IBRA subregion which is within the South-Eastern Highlands Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (refer to Figure 1.2). This BDAR will be assessed under the majority of the IBRA subregion Bungonia.
Rivers, streams and estuaries and Strahler stream order	Gundary Creek flows south through the western part of the Project, this Creek feeds into both Quialigo Creek and Bullamalito Creek. The smaller tributaries of these perennial creeks flow west within the Project. Any creek mapped 2nd order or higher are avoided by the Project design. Some watercourse crossings (via culverts and bed level crossings) are also required to facilitate vehicular access across the Subject land.
Wetlands within and adjacent to Subject land	There are no mapped wetlands in or adjacent to the Subject land. The closest wetland is approximately 20 km to the east of the Subject land, namely Wollogorang Lagoon.
Connectivity features	Vegetation within the Subject land occurs within a rural agricultural environment with heavily grazed paddocks by sheep and cattle. Connectivity between the Subject land and any adjoining native vegetation is through Gundary Creek which would not be directly obstructed by the Project. The construction of the security fence will have minor impacts on the connectivity for fauna near the creek crossings at the boundaries.
Geological significance and soils	There are no karst, caves, crevices, cliffs, or other areas of geological significance within the Subject land. There are no known high hazard soil areas.
Areas of outstanding biodiversity value (AOBV)	There are no areas of outstanding biodiversity value mapped within the Subject land.
NSW (Mitchell) Landscapes	Breadalbane Swamps and Lagoons and Gundary Plains.

3.3 Native Vegetation Cover

The native vegetation cover assessed within this Report was determined through a 1500 m buffer to the Subject land boundary, using SVTM regional mapping, confirming areas within the Subject land via field surveys and current aerial imagery. The extent of native vegetation cover is summarised in **Table 3.2** below and **Figure 4.1**. Areas excluded as native vegetation were areas with no biodiversity or otherwise incapable of supporting vegetation such as built roads (excluding informal vehicle tracks) and structures such as buildings.

Table 3.2 Native Vegetation Cover in the Assessment Area

Native Vegetation Cover	Area/Thresholds
Assessment Area extent	3517.77 ha
Total area of native vegetation cover	338.57 ha
Percentage of native vegetation cover	9.62%
Class (0–10, >10–30, >30–70 or >70%)	0-10

4.0 Native Vegetation, Threatened Ecological Communities and Vegetation Integrity

4.1 Native Vegetation Extent

The Subject land contains 14.02 ha of native vegetation made up of four PCTs with three conditions: native pasture, low condition primary grassland and paddock trees. The PCTs are further discussed in **Section 4.2**. The parts of the Subject land assessed as native vegetation for the purposes of the vegetation integrity surveys are shown in **Figure 4.1**.

4.1.1 Changes to the Mapped Native Vegetation Extent

There was one change to the mapped native vegetation extent visible on the aerial imagery during the surveys which included the area of primarily native grassland along one of the smaller tributaries of Gundry Creek and an area of low-quality native pasture to the west near Windellama Road. These changes were due to limited cultivation as the exposed rock restricts agricultural practices.

4.1.2 Areas That are Not Native Vegetation

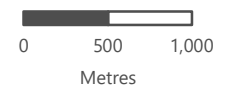
There are areas of planted exotic trees along the entrance to Windellama Road, this includes several Tasmanian Blue Gums (*Eucalyptus globulus*) and Radiata pines (*Pinus radiata*) that are established within the Subject land and within the adjacent road reserve. There are also 20 small farm dams that have been totally cleared of vegetation and are listed as non-native vegetation. These areas are illustrated on **Figure 4.2**.

FIGURE 4.1

Native Vegetation Extent

Legend

- Road
- Watercourse
- ▭ Project Area
- Subject Land
- Native Vegetation Extent



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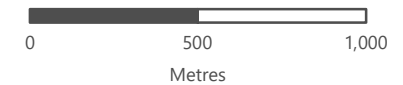
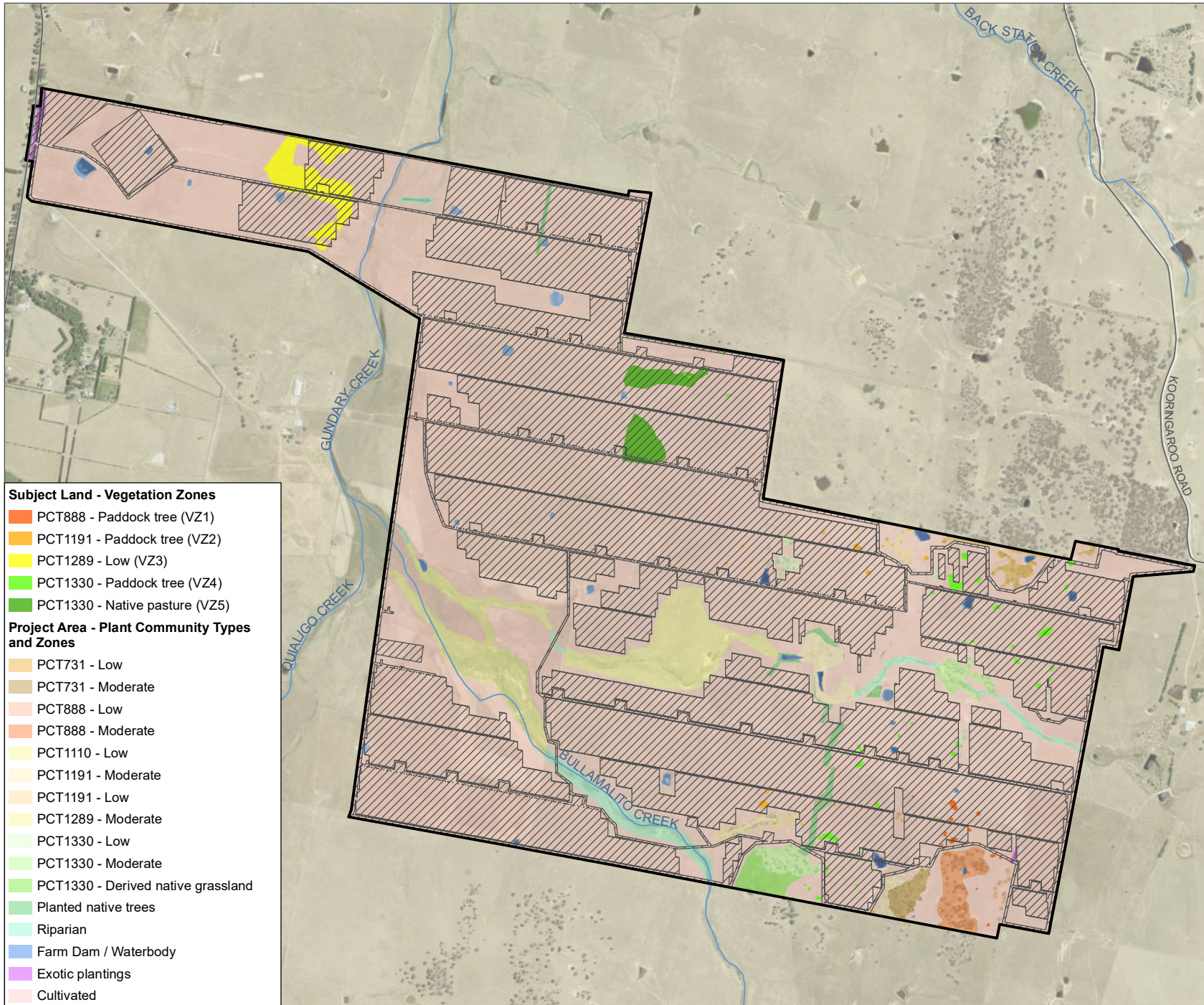
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FIGURE 4.2

Plant Community Types and Vegetation Zones

Legend

- Road
- Watercourse
- ▭ Project Area
- ▨ Subject Land



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4.2 Plant Community Types

4.2.1 Overview

Vegetation within the Subject land has been assessed as aligning with the BioNet Vegetation Classification PCTs identified within **Table 4.1** and their extent is shown in **Figure 4.1**. Detailed descriptions of each PCT are provided in the following subsections.

Table 4.1 PCTs Identified Within the Subject Land

PCT ID	PCT Name	Subject Land Area (ha)
888	Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion	0.29
1191	Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	0.36
1289	Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion	4.49
1330	Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	5.84
N/A	Planted native trees	3.02
Total Area		14.02

4.2.2 PCT 888 Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion

4.2.2.1 PCT Overview

PCT 888 Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion has been mapped within the Subject land. A summary is provided in **Table 4.2** below. Areas of PCT 888 occur as larger remnants and scattered trees in the south-east corner of the Project Area and have been avoided by the design of the Project.

Table 4.2 PCT 888 Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion

PCT ID	888
PCT name	Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion
Vegetation formation	KF_CH5B Dry Sclerophyll Forests (Shrubby sub-formation)
Vegetation class	Southern Tableland Dry Sclerophyll Forests
Percent cleared (%)	60
Extent within Subject land (ha)	0.29 hectares VZ 1 Paddock Tree: 0.29 ha including approximately seven paddock trees ¹
Threatened Ecological Community	There are no TECs associated with PCT 888

¹ Based on aerial photographic interpretation.

4.2.2.2 Vegetation Zones

One vegetation zone was identified across the Subject land: Vegetation zone 1 Paddock Tree (0.29 ha).

Vegetation Zone 1 PCT 888 Paddock Tree

This vegetation zone (VZ1) consists of exotic pasture improved grassland with remnant trees as shown in **Photo 4.1**. Areas of this PCT are located in the south-eastern portion of the Subject land where steeper hills and slopes favour inland scribbly gum and brittle gum. With the exception of native canopy species, few native species are present in this vegetation zone with the ground-storey stratum dominated by exotic pasture grasses such as *Phalaris aquatica*, *Dactylis glomerata* and *Lolium perenne*. Approximately seven paddock trees occur in this zone.

4.2.2.3 Photos of Vegetation Zones



Photo 4.1 PCT 888 Vegetation Zone 1 Paddock Tree

4.2.2.4 Justification of PCT Selection

The allocation of this PCT is based on the landscape position on sandy loams and occurrence within the associated IBRA Bioregion and Subregion. Allocation is supported by the occurrence of the diagnostic tree species *Eucalyptus mannifera*, *Eucalyptus macrorhyncha*, and the ground stratum species *Lomandra multiflora* which remain consistent for areas of this PCT within the Subject land.

4.2.2.5 Alignment with BC Act Listed TECs

There are currently no BC Act listed TECs associated with this PCT.

4.2.2.6 Alignment with EPBC Act Listed TECs

There are currently no EPBC Act listed TECs associated with this PCT.

4.2.3 PCT 1191 Snow Gum – Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion

4.2.3.1 PCT Overview

PCT 1191 Snow Gum – Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion has been mapped within the Subject land. A summary is provided in **Table 4.3** below. Areas of PCT 1191 occur as fragmented paddock trees and large remnant woodland patches in the east of the Project. Where possible, large patches of this PCT have been avoided and excluded from the Subject land.

Table 4.3 PCT 1191 Snow Gum – Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion

PCT ID	1191
PCT name	Snow Gum – Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
Vegetation formation	KF_CH3 Grassy Woodlands
Vegetation class	Subalpine Woodlands
Percent cleared (%)	95
Extent within Subject land (ha)	0.36 hectares VZ 2 Paddock Tree: 0.36 ha including approximately 19 paddock trees ²
Threatened Ecological Community	One vegetation zones; VZ2 aligns with both the Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions and the Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion Threatened Ecological Communities. These TECs are detailed in Section 4.2.3.5 .

4.2.3.2 Vegetation Zones

There was one vegetation zone identified within the Subject land: Vegetation Zone 2 Paddock Tree (0.36 ha).

Vegetation Zone 2 PCT 1191 Paddock Tree

This vegetation zone (VZ2) consists of scattered paddock trees with a mid-storey and understorey consisting of exotic shrub and pasture improved grasses as shown in **Photo 4.2**. This vegetation occurs as small, fragmented patches of scattered paddock trees containing snow gum (*Eucalyptus pauciflora*). The mid-storey contains scattered occurrences of exotic shrub african boxthorn (*Lycium ferocissimum*). The understorey is almost entirely exotic and is dominated by the exotic pasture grasses *Festuca pratensis*, *Lolium perenne* and *Bromus hordeaceus*. Approximately 19 paddock trees occur across this zone.

² Based on aerial photographic interpretation.

4.2.3.3 Photos of Vegetation Zones



Photo 4.2 PCT 1191 Vegetation Zone 2 Paddock Tree

4.2.3.4 Justification of PCT Selection

The allocation of this PCT is based on the occurrence of this PCT on frost hollows and foot slopes within the Assessment Area. The State Vegetation Mapping (DPE 2022) did not cover the entire Assessment Area and this PCT was chosen based on the landscape position and the presence of the diagnostic species; *Eucalyptus pauciflora* (snow gum).

4.2.3.5 Alignment With BC Act Listed TECs

This PCT has associated BC Act listed TECs, Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion (Equivalent) and Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions (Equivalent). VZ2 aligns to the TEC requirements in that it is an occurrence of the ecological community within the bioregions covered by the Determinations independent of their condition (DPE 2019a, DPE 2019b).

4.2.3.6 Alignment with EPBC Act Listed TECs

There are currently no EPBC Act listed TECs associated with this PCT.

4.2.4 PCT 1289 Wallaby Grass – Red-grass – Tall Speargrass – Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion

4.2.4.1 PCT Overview

PCT 1289 Wallaby Grass – Red-grass – Tall Speargrass – Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion has been mapped as a single vegetation zone in low condition within the Subject land. A summary is provided in **Table 4.4** below. Areas of PCT 1289 occur as large patches of naturally treeless grassland in the north-west and centre of the Project Area. The large patch of PCT 1289 moderate condition in the centre of the Project Area has been avoided within the Subject land, avoiding impacts to the PCT and associated TEC.

Table 4.4 PCT 1289 Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion

PCT ID	1289
PCT name	Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion
Vegetation formation	KF_CH4 Grasslands
Vegetation class	Temperate Montane Grasslands
Percent cleared (%)	57
Extent within Subject land (ha)	4.49 hectares VZ 3 Low: 4.49 ha
Threatened Ecological Community	One vegetation zone; VZ3 is highly degraded and does not align with the Commonwealth Natural Temperate Grassland of the South Eastern Highlands Critically Endangered Ecological Community.

4.2.4.2 Vegetation Zones

There was one vegetation zone identified within the Subject land: Vegetation zone 3 Low (4.49 ha).

Vegetation Zone 3 PCT 1289 Low

This vegetation zone (VZ3) consists of low-quality native grassland dominated by native and exotic pasture grasses and exotic forbs (**Photo 4.3**). This vegetation occurs as larger patches of native pasture in the north and north-west of the Subject land. This vegetation zone is dominated by annual exotic forb and grass species such as *Trifolium subterraneum* and *Vulpia spp*, however contains a moderate component of perennial species which are dominated by the native speargrass *Austrostipa bigeniculata*.

4.2.4.3 Photos of Vegetation Zones



Photo 4.3 PCT 1289 Vegetation Zone 3 Low

4.2.4.4 Justification of PCT Selection

The allocation of this PCT is based on the landscape position on well-drained foot slopes and mid-slopes in naturally treeless areas. The State Vegetation Mapping (DPE 2022) did not cover the entire Assessment Area and this PCT was chosen based on the landscape position and the mix of diagnostic native grass and forb species in the Project Area adjacent to the Subject land including *Austrostipa bigeniculata* (yanganbil), *Themeda triandra* (kangaroo grass), *Rytidosperma spp.* (wallaby grasses), *Calocephalus citreus* (lemon beauty-heads), *Chrysocephalum apiculatum* (common everlasting) and *Eryngium ovinum* (blue devil).

4.2.4.5 Alignment With BC Act Listed TECs

There are currently no BC Act listed TECs associated with this PCT.

4.2.4.6 Alignment with EPBC Act Listed TECs

PCT 1289 is, in parts, associated with the Critically Endangered EPBC Act listed TEC Natural Temperate Grassland of the South Eastern Highlands (Natural Temperate Grassland). No vegetation zones within the Subject land aligned to this TEC.

VZ3 does not meet minimum condition thresholds for natural temperate grassland under either method 'A' or method 'B' of the Commonwealth listing criteria (DEE 2016) and it is not considered further as a threatened ecological community (see **Section 4.4.2.2** for detail).

4.2.5 PCT 1330 Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion

4.2.5.1 PCT Overview

PCT 1330 Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion has been mapped as two vegetation zones with varying condition in the Subject land. A summary is provided in **Table 4.5** below. Areas of PCT 1330 occur as scattered paddock trees and derived native grassland west of Gundary Creek. The large patches of PCT 1330 in the south-east and north-east of the Project have been avoided to avoid impacts to the PCT and associated TECs.

Table 4.5 PCT 1330 Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion

PCT ID	1330
PCT name	Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
Vegetation formation	KF_CH3 Grassy Woodlands
Vegetation class	Southern Tableland Grassy Woodlands
Percent cleared (%)	94
Extent within Subject land (ha)	5.84 hectares VZ 4 Paddock Tree: 1.17 ha including approximately 46 paddock trees ³ VZ 5 Native Pasture: 4.67 ha
Threatened Ecological Community	One vegetation zone; VZ4 aligns with the BC Act listed White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions, which is detailed in Section 4.2.5.5 . Two vegetation zones; VZ4 and VZ5 are highly degraded and do not align with the Commonwealth White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland Critically Endangered Ecological Community.

4.2.5.2 Vegetation Zones

There were two vegetation zones identified across the Subject land: Vegetation zone 4 Paddock Tree (1.17 ha) and Vegetation zone 5 Native Pasture (4.67 ha).

Vegetation Zone 4 PCT 1330 Paddock Tree

This vegetation zone (VZ4) consists of scattered paddock trees with a midstorey and understorey consisting of pasture improved grasses as shown in **Photo 4.4**. This vegetation occurs as small, fragmented patches of scattered paddock trees containing cabbage gum (*Eucalyptus amplifolia*) and Blakely's red gum (*Eucalyptus blakelyi*). The understorey is almost entirely dominated by the exotic pasture grasses *Lolium perenne*, *Bromus hordeaceus* and exotic forbs such as *Trifolium subterraneum* and *Acetosella vulgaris*.

³ Based on aerial photographic interpretation.

Vegetation Zone 5 PCT 1330 Native Pasture

This vegetation zone (VZ5) consists of pasture consisting of pasture improved grasses as shown in **Photo 4.5**. Areas of VZ5 occur in cleared pasture in the north of the Subject land. Vegetation is almost entirely exotic dominated by the exotic pasture grasses *Lolium perenne*, *Bromus hordeaceus* and exotic forbs such as *Trifolium subterraneum*, *Trifolium repens* and *Acetosella vulgaris*. While not reflected in the plot data, this vegetation zone contains a small component of *Austrostipa bigeniculata* and *Austrostipa scabra* which were detectable during vegetation zone mapping in March and April 2022.

4.2.5.3 Photos of Vegetation Zones



Photo 4.4 PCT 1330 Vegetation Zone 4 Paddock Tree



Photo 4.5 PCT 1330 Vegetation Zone 5 Native Pasture

4.2.5.4 Justification of PCT Selection

The allocation of this PCT is based on the landscape position on loamy soils on undulating terrain between 500 and 900 m above sea level on the tablelands. The State Vegetation Mapping (2022) did not cover the entire Assessment Area and this PCT was chosen based on the landscape position and the presence of remnant *Eucalyptus blakelyi* and *Eucalyptus melliodora* trees across the Project and in the surrounding landscape.

While the only canopy species included in the plot data was *Eucalyptus amplifolia*, not associated with PCT 1330, the surrounding landscape contained characteristic tree species including *Eucalyptus blakelyi* and *Eucalyptus melliodora*.

4.2.5.5 Alignment With BC Act Listed TECs

Both vegetation zones, aligned with the BC Act Listed White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions (Box Gum Woodland) Critically Endangered Ecological Community.

4.2.5.6 Alignment with EPBC Act Listed TECs

PCT 1330 is, in parts, associated with the Critically Endangered EPBC Act listed White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland. No vegetation zones within the Subject land aligned to this TEC.

VZ4 and VZ5 do not meet minimum condition thresholds for White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland as they are too degraded and to meet the minimum requirements of the Commonwealth listing criteria (DEH 2006) and are not considered further as a threatened ecological community (see **Section 4.4.2.1** for more detail).

4.3 Planted Native Vegetation

There are 3.02 ha of planted native vegetation within the Subject land, as shown on **Figure 4.2**.

This vegetation zone does not align to any PCT although in one fenced off area with planted *Pinus radiata* there is also a threatened flora species planted, *Eucalyptus macarthurii*. The design of the Subject land is avoiding this specific section as to not impact the threatened flora species. All of the areas have been fenced off from any grazing pressures of sheep and cattle. The understory of this planted corridor contains mainly exotic agricultural grasses and exotic forbs such as *Phalaris aquatica*, *Dactylis glomerata*, and *Cirsium arvensis*.

4.3.1 Justification in Accordance with Appendix D of the BAM

The planted native patches within the Subject land and surrounding Project Area were not planted as part of any mandatory obligations or restoration projects, rather it has been assumed they were planted as a functional windbreak by the previous landowner in the agricultural landscape and, therefore this vegetation zone will be assessed further in **Section 5.0** as per Chapter 4 and 5 of the BAM (**Table 4.6**).

Table 4.6 Justification in Accordance with Appendix D of the BAM

Decision-making Key for Planted Native Vegetation		
1	Does the planted native vegetation occur within an area that contains a mosaic of planted and remnant native vegetation and which can be reasonably assigned to a PCT known to occur in the same IBRA subregion as the proposal?	No, the saplings have been assigned to Eucalypt spp. as an unidentified species.
2	Is the planted native vegetation: a. planted for the purpose of environmental rehabilitation or restoration under an existing conservation obligation listed in BAM Section 11.9(2.), and b. the primary objective was to replace or regenerate a plant community type or a threatened plant species population or its habitat?	The planted native vegetation was not planted as part of a conservation obligation or to regenerate to a specific PCT.
3	Is the planted/translocated native vegetation individuals of a threatened species or other native species planted/translocated for the purpose of providing threatened species habitat under one of the following: a. a species recovery project b. Saving our Species project c. other types of government funded restoration project d. condition of consent for a development approval that required those species to be planted or translocated for the purpose of providing threatened species habitat, e. legal obligation as part of a condition or ruling of court. This includes regulatory directed or ordered remedial plantings (e.g., Remediation Order for clearing without consent issued under the BC Act or the Native Vegetation Act), f. ecological rehabilitation to re-establish a PCT or TEC that was, or is carried out under a mine operations plan, or g. approved vegetation management plan (e.g., as required as part of a Controlled Activity Approval for works on waterfront land under the NSW <i>Water Management Act 2000</i>)?	The plantings were not planted as part of any specific or legislated project.
4	Was the planted native vegetation (including individuals of a threatened flora species) undertaken voluntarily for revegetation, environmental rehabilitation, or restoration without a legal obligation to secure or provide for management of the native vegetation?	No, the planting was not undertaken for revegetation, rehabilitation, or restoration of a landscape.

Decision-making Key for Planted Native Vegetation		
5	Is the native vegetation (including individuals of a threatened flora species) planted for functional, aesthetic, horticultural or plantation forestry purposes? This includes examples such as: windbreaks in agricultural landscapes, roadside plantings (including street trees, median strips, roadside batters), landscaping in parks, gardens and sport fields/complexes, macadamia plantations or tea tree farms?	Yes, it has been assumed that the planting was for a functional windbreak in the agricultural landscape and has been fenced off from any grazing pressures. This vegetation zone will be assessed for threatened species habitat as per Chapter 4 and 5 of the BAM.
6	Is the planted native vegetation a species listed as a widely cultivated native species on a list approved by the Secretary of the Department (or an officer authorised by the Secretary)?	No, the species planted are not on the list of widely cultivated native species.

4.4 Threatened Ecological Communities

The details of the threatened ecological communities (TECs) identified in the Subject land are listed in **Table 4.7** and the extent of each TEC is mapped in **Figure 4.3**.

FIGURE 4.3

Threatened Ecological Communities

Legend

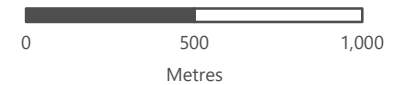
- Road
- Watercourse
- ▭ Project Area
- Subject Land

Threatened Ecological Community - NSW

- ▨ Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions (1191)
- ▨ White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland (1330)

Threatened Ecological Community - Commonwealth

- Natural Temperate Grassland of the South Eastern Highlands (1289)
- White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland (1330)



Scale: 1:0 at A4
GDA2020 MGA Zone 55

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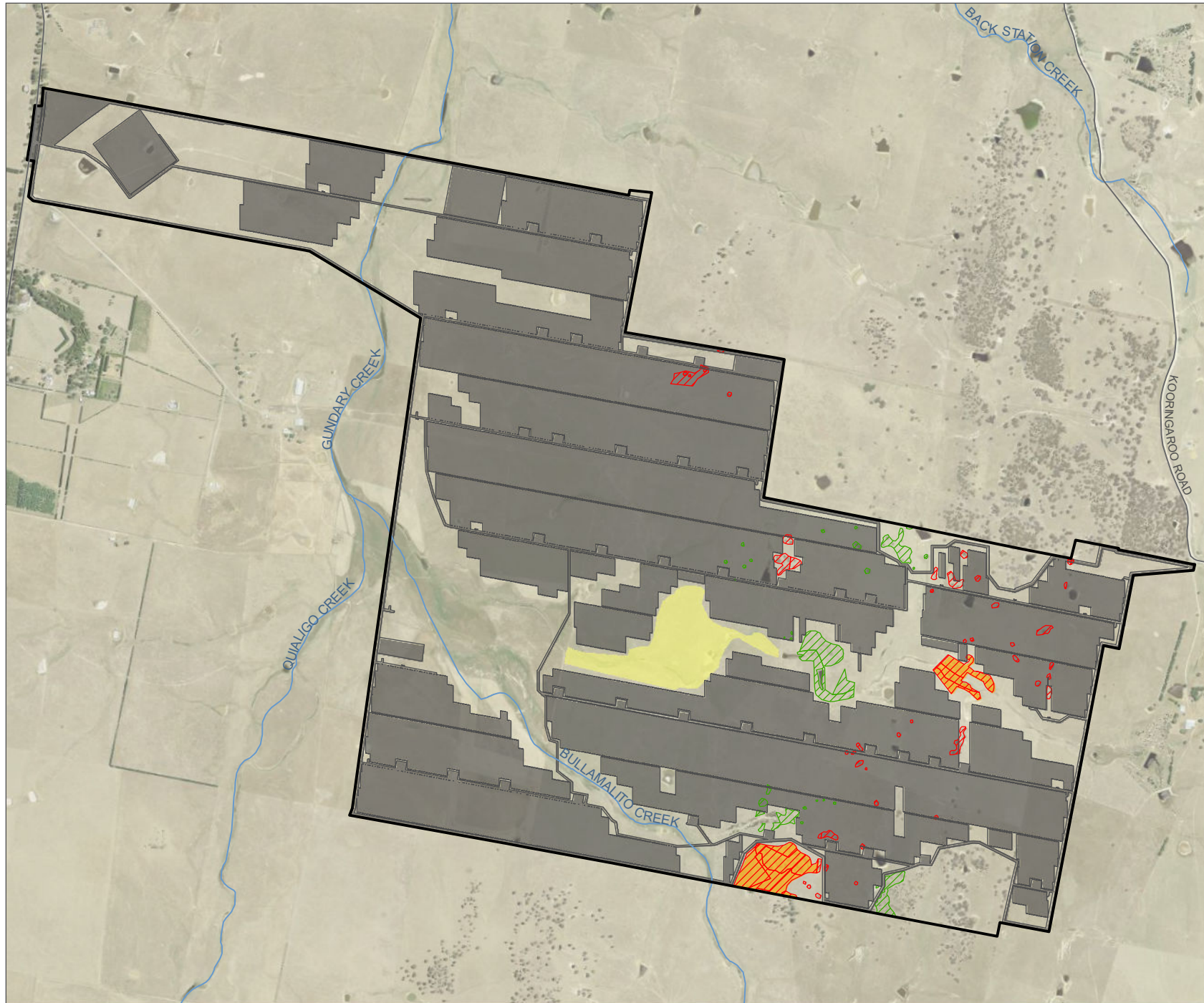


Table 4.7 TECs within the Subject Land

TEC name	Profile ID (from TBDC)	BC Act Status	EPBC Act status	Associated vegetation zones within the Subject land	Area within Subject land (ha)
Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion	20346	CEEC	Not listed	VZ2	0.36
Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	20347	CEEC	Not listed	VZ2	0.36
Natural Temperate Grassland of the South Eastern Highlands	N/A	Not listed	CEEC	VZ3 – none of the vegetation within the Subject land align to the listing threshold	0
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	10837	CEEC	Not listed	VZ4 VZ5 does not align to the TEC	5.84
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	N/A	Not listed	CEEC	VZ4 & VZ5 - none of the vegetation within the Subject land align to the listing threshold under the Commonwealth	0

4.4.1 BC Act Threatened Ecological Communities

There were three BC Act listed ecological communities identified within the desktop assessment as having potential to occur within the Subject land:

- Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion critically endangered ecological community.
- Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions critically endangered ecological community.
- White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions critically endangered ecological community.

An assessment against the minimum listing criteria for vegetation zones of associated PCTs is provided in **Section 4.4.1.1**, **Section 4.4.1.2** and **Section 4.4.1.3** below. The vegetation within the Subject land does meet the criteria for each of the BC Act listed communities and each will be assessed further in this assessment.

4.4.1.1 Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion critically endangered ecological community

Assessment of vegetation zones against condition thresholds for the BC Act listed Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion critically endangered ecological community are provided in **Table 4.8**.

Table 4.8 Assessment against BC Act Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion community classification criteria (DPE 2019a)

Condition Threshold	VZ2 – Paddock Tree
Is, or was previously, the assemblage of species characterised by those listed in the Final Determination?	Yes
Is the site situated within the South Eastern Highlands Bioregion of NSW?	Yes
Is the site situated on broad valley floors and the slopes and low rises of the moderately undulating tablelands?	Yes
Does the site receive 600 – 800 mm annual rainfall?	Yes
Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion	Yes

4.4.1.2 Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions critically endangered ecological community

Assessment of vegetation zones against condition thresholds for the BC Act listed Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions critically endangered ecological community are provided in **Table 4.9**.

Table 4.9 Assessment against BC Act Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions community classification criteria (DPE 2019b)

Condition Threshold	VZ2 – Paddock Tree
Is, or was previously, the assemblage of species characterised by those listed in the Final Determination?	Yes
Is the site situated within the South Eastern Highlands or South East Corner Bioregions of NSW?	Yes
Is the site situated on broad valley floors and gentle slopes and low rises of the moderately undulating Southern Tablelands of NSW?	Yes
Does the site receive 600 – 800 mm annual rainfall?	Yes
Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	Yes

4.4.1.3 White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions critically endangered ecological community.

Assessment of vegetation zones against condition thresholds for the BC Act listed White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions critically endangered ecological community are provided in **Table 4.10**.

Table 4.10 Assessment against BC Act White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions community classification criteria (DPE 2020)

Condition Threshold	VZ4 – Paddock Tree	VZ5 – Native Pasture
Is the site on the tablelands or western slopes of NSW?	Yes	Yes
Does the site contain, or would the site have recently been likely to contain, White Box, Yellow Box or Blakely's Red Gum?	Yes	Yes
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	Yes	Yes

4.4.2 EPBC Act Threatened Ecological Communities

Two EPBC Act listed threatened ecological communities were identified as having the potential to occur within the Subject land:

- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland critically endangered ecological community.
- Natural Temperate Grassland of the South Eastern Highlands critically endangered ecological community.

An assessment against the minimum listing criteria for vegetation zones of associated PCTs is provided in **Section 4.4.2.1** and **Section 4.4.2.2** below. The assessments conclude that neither White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland critically endangered ecological community nor Natural Temperate Grassland of the South Eastern Highlands critically endangered ecological community occur within the Subject land.

4.4.2.1 EPBC Act listed White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland critically endangered ecological community.

Assessment of vegetation zones against condition thresholds for the EPBC Act listed White Box – Yellow Box – Blakely’s Red Gum Grassy Woodlands and Derived Native Grasslands critically endangered ecological community are provided in **Table 4.11**. The vegetation has been determined to not be dominated by native understory (>50% native perennial vegetation cover) in either VZ4 – paddock tree or VZ5 native pasture.

Table 4.11 Assessment against EPBC Act White Box – Yellow Box – Blakely’s Red Gum Grassy Woodlands and Derived Native Grasslands community classification criteria (DCCEEW, 2006)

Condition Threshold		VZ4 -Paddock tree	VZ5 – Native pasture
Is, or was previously, at least one of the most common overstorey species white box, yellow box, or Blakely’s red gum?		Yes	Yes
Does the patch have a predominantly native understory?		No	No
Is there at least one important species?	Are there 12 or more native non-grass understory species present?	No, there were no native non-grass understory species recorded	No, one species recorded, <i>Oxalis</i> spp., which is not listed as an important species under the assessment criteria (DEH 2006).
AND			
Is there at least one important species?	Is there at least one important species?	No, there were no native non-grass understory species recorded	No, <i>Oxalis</i> spp. are not listed as important species under the assessment criteria list provided (DEH 2006)
OR			
If the patch is 2 ha or greater in size:	Does the patch have an average of 20 or more mature trees per ha, or is there regeneration of the dominant overstorey eucalypts?	No, the patch has scattered trees (<20 mature trees per hectare) and no regeneration. Between scattered trees there is a dominant exotic understory and agricultural land.	No, the patch does not contain any trees
Does the patch meet criteria for EPBC listed Box Gum Woodland?		No	No

4.4.2.2 EPBC Act listed Natural Temperate Grassland of the South Eastern Highlands critically endangered ecological community.

Assessment of vegetation zones against condition thresholds for the EPBC Act listed Natural Temperate Grassland of the South Eastern Highlands critically endangered ecological community are provided in **Table 4.12**.

Table 4.12 Assessment against EPBC Act Natural Temperate Grasslands of the South Eastern Highlands community classification criteria (DEE 2016)

Condition Threshold	VZ3 – Low
Method A	
Is the patch at least 0.1 ha in size?	Yes
Is the patch characterised by at least 50% foliage cover of the ground of: If no, then proceed to assessment under the 'Minimum Condition Threshold – Method B'.	
Kangaroo grass;	No
River tussock; or	No
<i>Carex bichenoviana</i> ?	No
Method B	
Is the patch at least 0.1 ha in size?	Yes
Is the cover of native plants greater than the cover of perennial exotic plants?	No
In sampling plots of 0.04 ha in size (i.e., 20 m X 20 m) surveyed during non-favourable sampling times:	
at least 4 native non-grass species recorded; or	No
at least 1 indicator species; or	No
a floristic value score of at least 3.	No
In sampling plots of 0.04 ha in size (i.e., 20 m X 20 m) surveyed during favourable sampling times:	
at least 8 native non-grass species recorded; or	No
at least 2 indicator species; or	No
a floristic value score of at least 5.	No
EPBC Act Natural Temperate Grassland of the South Eastern Highlands	No

4.5 Vegetation Zones

A description of each vegetation zone within the Subject land is provided in **Section 4.2** of this Report. A map of the vegetation zones is provided in **Figure 4.2** and the details of each vegetation zone including area, patch size class and the BAM survey plots required and completed are provided in **Table 4.13**.

Table 4.13 Vegetation Zones and Patch Sizes

Vegetation Zone ID	PCT ID Number and Name	Condition	Area (ha)	Patch size class (select multiple if areas of native vegetation are discontinuous)	No. vegetation integrity plots required	No. vegetation integrity plots completed	No. vegetation integrity plots used in assessment	Plot IDs of vegetation integrity plots used in assessment
VZ1	PCT 888 Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion	Paddock Trees	0.29	☒ <5 ha ☐ 5–24 ha ☐ 25–100 ha ☐ >100 ha	1	1	1	P8
VZ2	PCT 1191 Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	Paddock Trees	0.36	☒ <5 ha ☐ 5–24 ha ☐ 25–100 ha ☐ >100 ha	1	1	1	P1
VZ3	PCT 1289 Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion	Low	4.49	☒ <5 ha ☐ 5–24 ha ☐ 25–100 ha ☐ >100 ha	3	3	3	P2, P3, P4
VZ4	PCT 1330 Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	Paddock Trees	1.17	☒ <5 ha ☐ 5–24 ha ☐ 25–100 ha ☐ >100 ha	1	1	1	P7

Vegetation Zone ID	PCT ID Number and Name	Condition	Area (ha)	Patch size class (select multiple if areas of native vegetation are discontinuous)	No. vegetation integrity plots required	No. vegetation integrity plots completed	No. vegetation integrity plots used in assessment	Plot IDs of vegetation integrity plots used in assessment
VZ5	PCT 1330 Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	Native Pasture	4.67	☒ <5 ha ☐ 5–24 ha ☐ 25–100 ha ☐ >100 ha	1	1	1	P5, P6

4.6 Vegetation Integrity (Vegetation Condition)

4.6.1 Vegetation Integrity Survey Plots

Details on the number of BAM plots (floristic and vegetation integrity survey plots) required and completed for each vegetation condition zone, in accordance with Table 3 of the BAM (DPIE, 2020a), are provided in **Table 4.13**. The vegetation integrity plot survey locations are shown in **Figure 2.1** and the vegetation integrity plot survey data is provided in **Appendix C**.

4.6.2 Scores

The vegetation integrity condition scores for the BAM Plots completed are provided in **Table 4.14**. This table represents the combined scores from all plots completed for each vegetation condition zone, including the vegetation integrity score and the presence of hollow bearing trees.

Table 4.14 Vegetation Integrity Scores

Vegetation zone ID	Composition condition score	Structure condition score	Function condition score	Vegetation integrity score	Hollow bearing trees present?
1	4.8	24	0	1.1	No
2	2.1	2.1	13.6	3.9	Yes
3	9.7	0.7	N/A	2.7	No
4	9	8.1	0.3	2.8	Yes
5	1.8	0	0.1	0.1	No

In accordance with Section 9.2.1 of the BAM (DPIE, 2020a) impacts with a vegetation integrity score of less than 15 where the PCT is representative of an EEC or CEEC does not require an offset, this includes all vegetation zones outlined in **Table 4.14**.

4.6.3 Use of Benchmark Data

This assessment has used the standard NSW DCCEE benchmark data provided in the BAM-C for all vegetation integrity attributes and there were no changes to this data.

5.0 Habitat Suitability for Threatened Species

5.1 Identification of Threatened Species for Assessment

5.1.1 Ecosystem-credit Species

The ecosystem credit species predicted to occur on or use the Subject land are identified in **Table 5.1**. There was one ecosystem species credit species found incidentally during biodiversity work in the Subject land. There were three individual white-fronted chats seen perched on a fence and moving throughout the landscape. This has been included in the assessment below and will be retained as part of the impact assessment in vegetation zone3 (VZ3), PCT 1289 Wallaby Grass – Red-grass – Tall Speargrass – Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion in low condition.

Table 5.1 Predicted Ecosystem Credit Species

Scientific Name	Common Name	Listing Status		Habitat Constraints/ Geographic limitations	Species Retained for Further Assessment?	Reason for Exclusion from Further Assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
<i>Anthochaera phrygia</i>	Regent Honeyeater	CE	CE		Yes		2 – 1191 Paddock Tree, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Artamus cyanopterus</i>	Dusky Woodswallow	V	Not listed		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 3 – 1289 Low, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V	E		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo (Foraging)	V	Not Listed	Presence of <i>Allocasuarina</i> and <i>Casuarina</i> species	No	No <i>Allocasuarina</i> and/ or <i>Casuarina</i> within associated PCT (1191, 1330, 888)	1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Chthonicola sagittata</i>	Speckled Warbler	V	Not listed		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 3 – 1289 Low, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Climacteris picumnus</i>	Brown Treecreeper (eastern subspecies)	V	Not listed		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture

Scientific Name	Common Name	Listing Status		Habitat Constraints/ Geographic limitations	Species Retained for Further Assessment?	Reason for Exclusion from Further Assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	Not listed		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 3 – 1289 Low, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V	E		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 3 – 1289 Low, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Epthianura albifrons</i>	White-fronted Chat	V	Not listed		Yes		3 – 1289 Low
<i>Falco subniger</i>	Black Falcon	V	Not listed		Yes		1 – 888 Paddock Tree, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V	Not listed		Yes		2 – 1191 Paddock Tree, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Glossopsitta pusilla</i>	Little Lorikeet	V	Not listed		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Grantiella picta</i>	Painted Honeyeater	V	V	Mistletoes present at a density of greater than five mistletoes per hectares	No	No mistletoes within associated PCT (888, 1330)	1 – 888 Paddock Tree 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture

Scientific Name	Common Name	Listing Status		Habitat Constraints/ Geographic limitations	Species Retained for Further Assessment?	Reason for Exclusion from Further Assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V	Not Listed	Waterbodies, within 1 km of rivers, lakes, large dams or creeks, wetlands, and coastlines	Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Hieraaetus morphnoides</i>	Little Eagle (Foraging)	V	Not Listed		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 3 – 1289 Low, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Hirundapus caudacutus</i>	White-throated Needletail	Not listed	V		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 3 – 1289 Low, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Lathamus discolor</i>	Swift Parrot (Foraging)	E	CE		Yes		1 – 888 Paddock Tree 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Melanodryas cucullata</i>	Hooded Robin (south-eastern form)	V	Not listed		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 3 – 1289 Low, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	V	Not listed		Yes		4 – 1330 Paddock Tree, 5 – 1330 Native Pasture

Scientific Name	Common Name	Listing Status		Habitat Constraints/ Geographic limitations	Species Retained for Further Assessment?	Reason for Exclusion from Further Assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
<i>Miniopterus australis</i>	Little Bent-winged Bat (Foraging)	V	Not Listed		Yes		3 – 1289 Low,
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat (Foraging)	V	Not Listed		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 3 – 1289 Low, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Neophema pulchella</i>	Turquoise Parrot	V	Not listed		Yes		2 – 1191 Paddock Tree, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Ninox connivens</i>	Barking Owl (Foraging)	V	Not Listed		Yes		2 – 1191 Paddock Tree, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Ninox strenua</i>	Powerful Owl (Foraging)	V	Not Listed		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Petroica boodang</i>	Scarlet Robin	V	Not listed		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 3 – 1289 Low, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Petroica phoenicea</i>	Flame Robin	V	Not listed		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 3 – 1289 Low, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture

Scientific Name	Common Name	Listing Status		Habitat Constraints/ Geographic limitations	Species Retained for Further Assessment?	Reason for Exclusion from Further Assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V		Yes		1 – 888 Paddock Tree 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V	Not listed		Yes		4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Scoteanax rueppelii</i>	Greater Broad-nosed Bat	V	Not listed		Yes		2 – 1191 Paddock Tree, 3 – 1289 Low, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Stagonopleura guttata</i>	Diamond Firetail	V	Not listed		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 3 – 1289 Low, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Suta flagellum</i>	Little Whip Snake	V	Not listed		Yes		2 – 1191 Paddock Tree, 3 – 1289 Low, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Tyto novaehollandiae</i>	Masked Owl (Foraging)	V	Not Listed		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture
<i>Varanus rosenbergi</i>	Rosenberg's Goanna	V	Not listed		Yes		2 – 1191 Paddock Tree, 4 – 1330 Paddock Tree, 5 – 1330 Native Pasture

Listing status: V= Vulnerable, E= Endangered, CE= Critically Endangered.

5.1.2 Species-credit Species

The BAM-C has generated a list of candidate species credit species for this assessment. This includes 18 threatened flora species and 26 threatened fauna species. There were no additional species added to the BAM-C for assessment due to previous records or research.

5.1.2.1 Threatened Flora Candidate Species

Table 5.2 presents the list of 18 species generated from the BAM-C, four of which could be excluded based on geographic limitations, habitat constraints, vagrant species and/or microhabitats and the remaining 11 were required to be surveyed in this assessment.

Some of these species have a very low likelihood of occurrence due to the restricted nature and knowledge of each species. Targeted surveys were conducted as a conservative approach as there were no specific constraints to remove them from survey. A justification has been provided in **Table 5.2** for each species as to the low likely presence in the Subject land.

5.1.2.2 Threatened Fauna Candidate Species

Table 5.3 presents the list of 26 species generated from the BAM-C, of which 21 of these species could be excluded based on geographic limitations, habitat constraints, vagrant species and/or microhabitats. The five remaining species were required to be surveyed in this assessment.

Table 5.2 Predicted Flora Species Credit Species

Scientific name	Common name	Listing Status		Habitat constraints/ Geographic limitations	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
1 <i>Acacia flocktoniae</i>	Flockton Wattle	V	V		Yes	Most vegetation likely too degraded to support the species. Survey completed in associated PCT within and adjacent to Subject land on a precautionary basis.	4 – 1330 Paddock Tree 5 – 1330 Native Pasture
2 <i>Bossiaea oligosperma</i>	Few-seeded Bossiaea	V	V		No	Associated PCT is highly restricted. Some habitats likely too degraded to support the species.	None
3 <i>Caladenia tessellata</i>	Thick Lip Spider Orchid	E	V		Yes	Most vegetation is likely to degraded to support the species. Survey completed in associated PCTs within and adjacent to Subject land on a precautionary basis.	1 – 888 Paddock Tree 2 – 1191 Paddock Tree 4 – 1330 Paddock Tree 5 – 1330 Native Pasture
4 <i>Callitris oblonga</i>	Pygmy Cypress Pine	V	V	Corang River catchment and between Charleyong and Nerriga	No	The Subject land is not between Charleyong and Nerriga.	None
5 <i>Commersonia prostrata</i>	Dwarf Kerrawang	E	E		Yes	Most vegetation is likely to degraded to support the species. Survey completed in associated PCTs within and adjacent to Subject land on a precautionary basis.	2 – 1191 Paddock Tree 3 – 1289 Low
6 <i>Dillwynia glauca</i>	Michelago Parrot-pea	E	Not Listed		Yes	Known record in landscape similar to Project, adjacent to Goulburn Airport, potential habitat in the former extent of natural temperate grasslands and in box – gum woodland.	3 – 1289 Low 5 – 1330 Native Pasture

Scientific name		Common name	Listing Status		Habitat constraints/ Geographic limitations	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
			BC Act	EPBC Act				
7	<i>Diuris aequalis</i>	Buttercup Doubletail	E	V		Yes	Associated PCT is highly restricted. Some habitats likely too degraded to support the species. Survey completed in associated PCTs within and adjacent to Subject land on a precautionary basis.	1 – 888 Paddock Tree 2 – 1191 Paddock Tree 3 – 1289 Low
8	<i>Eucalyptus aggregata</i>	Black Gum	V	V		Yes	Most vegetation is likely to degraded to support the species. Associated PCT is restricted. Survey completed in associated PCTs within and adjacent to Subject land on a precautionary basis.	2 – 1191 Paddock Tree 3 – 1289 Low
9	<i>Eucalyptus macarthurii</i>	Paddys River Box, Camden Woollybutt	E	E		Yes	Survey completed in areas of associated PCT within Subject land. Planted individuals recorded outside of Subject land.	2 – 1191 Paddock Tree 3 – 1289 Low 4 – 1330 Paddock Tree 5 – 1330 Native Pasture
10	<i>Eucalyptus recurva</i>	Mongarlowe Mallee	CE	CE	East of Shoalhaven River	No	The Subject land is outside of the geographic constraints.	None
11	<i>Genoplesium superbum</i>	Superb Midge Orchid	E	Not listed		No	The Subject land has habitat that is degraded and does not contain the species assemblage to support this species.	None
12	<i>Grevillea renwickiana</i>	Nerriga Grevillea	E	Not Listed	East of Shoalhaven River	No	The Subject land is outside of the geographic constraints.	None

Scientific name	Common name	Listing Status		Habitat constraints/ Geographic limitations	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
13 <i>Leucochrysum albicans</i> var. <i>tricolor</i>	Hoary Sunray	Not Listed	E		Yes	Important habitat absent. Survey completed in associated PCTs within Project adjacent to Subject land on a precautionary basis.	1 – 888 Paddock Tree
14 <i>Persoonia mollis</i> subsp. <i>revoluta</i>	<i>Persoonia mollis</i> subsp. <i>revoluta</i>	V	Not listed		No	Most vegetation is likely to degraded (i.e., cleared) to support the species.	None
15 <i>Pultenaea pedunculata</i>	Matted Bush-pea	E	Not Listed	Between Boro and Marulan	Yes	Most vegetation is likely to degraded to support the species. Survey completed in associated PCTs within and adjacent to Subject land on a precautionary basis.	1 – 888 Paddock Tree
16 <i>Solanum celatum</i>	<i>Solanum celatum</i>	V	Not listed	North of Oallen	No	Most vegetation is likely to degraded (i.e., cleared) to support the species.	None
17 <i>Swainsona sericea</i>	Silky Swainson-pea	V	Not Listed		Yes	Most vegetation is likely to degraded (i.e., cleared) to support the species. Survey completed in associated PCTs within and adjacent to Subject land on a precautionary basis.	2 – 1191 Paddock Tree 3 – 1289 Low 4 – 1330 Paddock Tree 5 – 1330 Native Pasture
18 <i>Thesium australe</i>	Austral Toadflax	V	V		Yes	Most vegetation is likely to degraded (i.e., cleared) to support the species. Survey completed in associated PCTs within and adjacent to Subject land on a precautionary basis.	2 – 1191 Paddock Tree 3 – 1289 Low 4 – 1330 Paddock Tree 5 – 1330 Native Pasture

Listing status: CE= Critically Endangered, E= Endangered, V= Vulnerable.

Table 5.3 Predicted Fauna Species Credit Species

Scientific name	Common name	Listing Status		Habitat constraints/ Geographic limitations	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
1 <i>Anthochaera phrygia</i>	Regent Honeyeater	CE	CE	As per Important Habitat Map	No	The Subject land is not within the Important Habitat Map.	None
2 <i>Aprasia parapulchella</i>	Pink-tailed Legless Lizard	V	V	Rocky areas	Yes		2 – 1191 Paddock Tree 3 – 1289 Low 4 – 1330 Paddock Tree 5 – 1330 Native Pasture
3 <i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo (Breeding)	V	E	Hollow bearing trees, eucalypt tree species with hollows at least 3 m above the ground and with hollow diameter of 7 cm or larger	No	Breeding habitat is absent from grassland areas and Gang-gang Cockatoos unlikely to utilise hollows in scattered trees due to habitat being degraded.	None
4 <i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo (Breeding)	V	Not Listed	Hollow bearing trees; Living or dead tree with hollows greater than 15 cm diameter and greater than 8 m above ground	No	Only one isolated scattered tree with a potential suitable hollow, although likely too degraded to support Glossy-Black Cockatoo breeding habitat.	None
5 <i>Cercartetus nanus</i>	Eastern Pygmy-possum	V	Not Listed		No	Isolated scattered trees are likely too degraded to support the species. Additionally, there is a lack of a corridor to support movement through the Subject land.	None
6 <i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	V	Cliffs; within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within 2 km of old mines or tunnels.	No	The Subject land does not have the necessary habitat constraints.	None

Scientific name		Common name	Listing Status		Habitat constraints/ Geographic limitations	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
			BC Act	EPBC Act				
7	<i>Delma impar</i>	Striped Legless Lizard	V	V		Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree 3 – 1289 Low 4 – 1330 Paddock Tree 5 – 1330 Native Pasture
8	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle (Breeding)	V	Not Listed	Living or dead mature trees within suitable vegetation within 1 km of a rivers, lakes, large dams or creeks, wetlands, and coastlines.	No	Native pasture and primary grassland have been excluded as they do not contain any trees. The Subject land lacks large water bodies, and the isolated paddock trees lack the suitable vegetation for nesting.	None
9	<i>Heleioporus australiacus</i>	Giant Burrowing Frog	V	V		No	The Subject land does not contain suitable habitat for the Giant Burrowing Frog such as; heath, woodland, and open dry sclerophyll forest particularly with sandy soil.	None
10	<i>Hieraetus morphnoides</i>	Little Eagle (Breeding)	V	Not Listed	Nest trees – live (occasionally dead) large old trees within vegetation	No	The isolated paddock trees within the Subject land are not suitable for the Little Eagle to nest in.	None
11	<i>Keyacris scurra</i>	Key’s Matchstick Grasshopper	E	V		Yes		3 – 1289 Low 5 – 1330 Native Pasture
12	<i>Lathamus discolor</i>	Swift Parrot	E	CE	As per Important Habitat Map	No	The Subject land does not contain important habitat mapping.	None

Scientific name		Common name	Listing Status		Habitat constraints/ Geographic limitations	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
			BC Act	EPBC Act				
13	<i>Litoria booroolongensis</i>	Booroolong Frog	E	E		No	The Subject land does not support suitable habitat or connectivity of habitat to support the Booroolong Frog.	None
14	<i>Miniopterus australis</i>	Little Bent-winged Bat (Breeding)	V	Not Listed	Cave, tunnel, mine, culvert, or other structure known or suspected to be used for breeding including species records in BioNet with microhabitat code 'IC – in cave'; observation type code 'E nest-roost'; with numbers of individuals >500; or from the scientific literature.	No	The Subject land does not have the necessary habitat constraints.	None
15	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat (Breeding)	V	Not Listed	Cave, tunnel, mine, culvert, or other structure known or suspected to be used for breeding including species records with microhabitat code "IC - in cave;" observation type code "E nest-roost;" with numbers of individuals >500.	No	The Subject land does not have the necessary habitat constraints.	None
16	<i>Myotis macropus</i>	Southern Myotis	V	Not listed	Waterbodies with permanent pools/stretches 3 m or wider, including rivers, large creeks, billabongs, lagoons, estuaries, dams and other waterbodies, on or within 200 m of the site.	Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree 3 – 1289 Low 4 – 1330 Paddock Tree 5 – 1330 Native Pasture

Scientific name		Common name	Listing Status		Habitat constraints/ Geographic limitations	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
			BC Act	EPBC Act				
17	<i>Ninox connivens</i>	Barking Owl (Breeding)	V	Not Listed	Hollow bearing trees Living or dead trees with hollows greater than 20 cm diameter and greater than 4 m above the ground	No	The Subject land contains isolated paddock trees separated by more cleared habitat. There are also no hollow-bearing trees of suitable size within the Subject land.	None
18	<i>Ninox strenua</i>	Powerful Owl (Breeding)	V	Not Listed	Hollow bearing trees Living or dead trees with hollow greater than 20 cm diameter	No	The Subject land contains isolated paddock trees separated by more cleared habitat. There are also no hollow-bearing trees of suitable size within the Subject land.	None
19	<i>Petauroides volans</i>	Greater Glider	E	E	Hollow bearing trees.	No	Most vegetation is likely too degraded (i.e., cleared) to support the species. Areas of tall forest are absent from the Subject land.	None
20	<i>Petaurus norfolcensis</i>	Squirrel Glider	V	Not Listed	Hollow bearing trees	No	The Subject land contains isolated paddock trees separated by more cleared habitat, too degraded (i.e., cleared) to support the species.	None
21	<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	E	V	Land within 1 km of rocky escarpments, gorges, steep slopes, boulder piles, rock outcrops or clifflines.	No	The Subject land is not within 1 km of rocky escarpments or suitable habitat for the Brush-tailed Rock-wallaby	None
22	<i>Petroica rodinogaster</i>	Pink Robin	V	Not Listed	None	No	The Subject land does not include rainforest or densely vegetated gullies.	None
23	<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	V	Not listed	None	No	The Subject land contains isolated paddock trees separated by more cleared habitat, too degraded (i.e., cleared) to support the species.	None

Scientific name	Common name	Listing Status		Habitat constraints/ Geographic limitations	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
24 <i>Phascolarctos cinereus</i>	Koala (Breeding)	E	E	Presence of koala use trees - refer to Survey Comments field in TBDC	Yes		1 – 888 Paddock Tree 2 – 1191 Paddock Tree 4 – 1330 Paddock Tree
25 <i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V	Breeding camps	No	Habitat constraints absent from the Subject land.	None
26 <i>Tyto novaehollandiae</i>	Masked Owl (Breeding)	V	Not Listed	Hollow bearing trees Living or dead trees with hollows greater than 20cm diameter	No	The Subject land contains isolated paddock trees separated by more cleared habitat. There are also no hollow-bearing trees of suitable size within the Subject land.	None

5.2 Presence of Candidate Species Credit Species

A summary of the methods used and determination of presence for candidate threatened flora species credit species is provided in **Table 5.4** and candidate threatened fauna species credit species is provided in **Table 5.5**.

Table 5.4 Determining the Presence of Candidate Flora Species Credit Species on the Subject Land

Scientific name	Common name	Listing Status		Method used to determine presence	Present?	Further assessment required? (BAM Subsections 5.2.5 and 5.2.6)
		BC Act	EPBC Act			
<i>Acacia flocktoniae</i>	flockton wattle	V	V	Targeted threatened species survey	No	No
<i>Caladenia tessellata</i>	thick lip spider orchid	E	V	Targeted threatened species survey	No	No
<i>Commersonia prostrata</i>	dwarf kerrawang	E	E	Targeted threatened species survey	No	No
<i>Dillwynia glaucula</i>	micelago parrot-pea	E	Not Listed	Targeted threatened species survey	No	No
<i>Diuris aequalis</i>	buttercup doubletail	E	V	Targeted threatened species survey	No	No
<i>Eucalyptus aggregata</i>	black gum	V	V	Targeted threatened species survey	No	No
<i>Eucalyptus macarthurii</i>	paddys river box, camden woollybutt	E	E	Targeted threatened species survey	Yes – Within the Project Area	No – the 20 individuals identified during the survey have since been avoided by Project and are not within the Subject land.
<i>Leucochrysum albicans</i> var. <i>tricolor</i>	hoary sunray	Not Listed	E	Targeted threatened species survey	No	No
<i>Pultenaea pedunculata</i>	matted bush-pea	E	Not Listed	Targeted threatened species survey	No	No
<i>Swainsona sericea</i>	silky swainson-pea	V	Not Listed	Targeted threatened species survey	No	No
<i>Thesium australe</i>	austral toadflax	V	V	Targeted threatened species survey	No	No

Table 5.5 Determining the Presence of Candidate Fauna Species Credit Species on the Subject Land

Scientific name	Common name	Listing Status		Method used to determine presence	Present?	Further assessment required? (BAM Subsections 5.2.5 and 5.2.6)
		BC Act	EPBC Act			
<i>Aprasia parapulchella</i>	pink-tailed legless lizard	V	V	Targeted threatened species survey	No	No
<i>Delma impar</i>	striped legless lizard	V	V	Targeted threatened species survey	No	No
<i>Keyacris scurra</i>	key's matchstick grasshopper	E	E	Targeted threatened species survey	1 individual found within the Project Area	No – the habitat of high quality derived native grassland has been avoided by the Project and are not within the Subject land.
<i>Myotis macropus</i>	southern myotis	V	Not listed	Targeted threatened species survey	No	No
<i>Phascolarctos cinereus</i>	koala	E	E	Targeted threatened species survey	No	No

5.3 Threatened Species Surveys

There were 11 species of threatened flora surveyed in accordance with relevant guidelines (**Section 2.3**) and have been addressed in **Table 5.6**.

Table 5.6 Threatened Species Surveys for Candidate Flora Species Credit Species on the Subject Land

Scientific name	Common name	Threatened flora species surveys			Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
		Survey method (transects or grids)	Timing of survey – within recommended period? (BAM-C / TBDC)	Effort (hours & no. people)		
<i>Acacia flocktoniae</i>	flockton wattle	10 m parallel transects	No (July-Sept survey period) 31 October 2022 3 November 2022	5 hrs x 1 person	No	No
<i>Caladenia tessellata</i>	thick lip spider orchid	10 m parallel transects	Yes 31 October 2022 3 November 2022 4 November 2022	5.25 hrs x 1 person	No	No
<i>Commersonia prostrata</i>	dwarf kerrawang	10 m parallel transects	Yes 31 October 2022 3 November 2022 4 November 2022	5.25 hrs x 1 person	No	No
<i>Dillwynia glaucula</i>	michelago parrot-pea	10 m parallel transects	Yes 31 October 2022 3 November 2022 4 November 2022	5.25 hrs x 1 person	No	No
<i>Diuris aequalis</i>	buttercup doubletail	10 m parallel transects	Yes 31 October 2022 3 November 2022	5 hrs x 1 person	No	No

Scientific name	Common name	Threatened flora species surveys			Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
		Survey method (transects or grids)	Timing of survey – within recommended period? (BAM-C / TBDC)	Effort (hours & no. people)		
<i>Eucalyptus aggregata</i>	black gum	10 m parallel transects	Yes 31 October 2022 3 November 2022	5 hrs x 1 person	No	No
<i>Eucalyptus macarthurii</i>	paddys river box, camden woollybutt	10 m parallel transects	Yes 31 October 2022 3 November 2022 4 November 2022	5.25 hrs x 1 person	Yes 20 individuals – outside of the Subject land within the Project Area	No
<i>Leucochrysum albicans</i> var. <i>tricolor</i>	hoary sunray	10 m parallel transects	Yes 31 October 2022 3 November 2022 4 November 2022	5.25 hrs x 1 person	No	No
<i>Pultenaea pedunculata</i>	matted bush-pea	10 m parallel transects	Yes 31 October 2022 3 November 2022 4 November 2022	5.25 hrs x 1 person	No	No
<i>Swainsona sericea</i>	silky swainson-pea	10 m parallel transects	Yes 31 October 2022 3 November 2022 4 November 2022	5.25 hrs x 1 person	No	No
<i>Thesium australe</i>	austral toadflax	10 m parallel transects	Yes 31 October 2022 3 November 2022 4 November 2022	5.25 hrs x 1 person	No	No

There were four species of threatened fauna surveyed in accordance with the guidelines and as per the TBDC standardised methodologies (**Section 2.4**) and have been addressed in **Table 5.7**.

Table 5.7 Threatened Species Surveys for Candidate Fauna Species Credit Species on the Subject Land

Scientific Name	Common Name	Threatened Fauna Species Surveys			Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
		Survey method (transects or grids)	Timing of survey – within recommended period? (BAM-C / TBDC)	Effort (hours & no. people)		
<i>Keyacris scurra</i>	key's matchstick grasshopper	10 m parallel transects	Yes 3 November 2022 4 November 2022 No – incidental sighting 16 March 2023	4.75 hrs x two people over 16.24 km	Yes one individual – outside of the Subject land within the Project Area	No
<i>Myotis macropus</i>	southern myotis	Acoustic recording	Yes 4–23 November 2022	19 survey nights	No	No
<i>Phascolarctos cinereus</i>	koala	Nocturnal spotlight survey transects and SAT plots under all scattered trees across Subject land.	Yes 23 November 2022 12 January 2023 19 January 2023 31 January 2023	4 nights x two people over 7.1 km spotlighting 8 hrs x 2 people SAT plots.	No	No
<i>Delma impar</i>	striped legless lizard	Tile surveys	Yes 12 September– 13 December 2022	29 hrs x two people 10 arrays of 50 tiles distributed across the Project – most within the Subject land.	No	No
<i>Epthianura albifrons</i>	white-fronted chat	Opportunistic	N/A	N/A	Yes – 1 individual	No

5.4 Expert Reports

There is no expert report included in this assessment.

5.5 Area or Count, and Location of Suitable Habitat for a Species Credit Species (a Species Polygon)

5.5.1 Results for BC Act Listed Species Credit Entities

There are two threatened species (keys matchstick grasshopper and camden woollybutt) that were recorded in the Project Area and not within the Subject land, and the Project will not impact these species. The location of these species is shown in **Figure 5.1** and they have not been assessed further.

5.5.2 Results for BC Act Listed Ecosystem Credit Species

One ecosystem credit species was identified within the Project area during field surveys, White-fronted Chat. It was observed incidentally sitting on a fence (**Figure 5.2**).

5.5.3 Results for EPBC Act Listed Species

There were two threatened species that were identified in the Project area and have since been avoided by the Project and are not within the Subject land. This includes all individuals of Paddys River Box, Camden Woollybutt (*Eucalyptus macarthurii*), and all suitable habitat for Key's Matchstick Grasshopper (*Keyacris scurra*).

5.6 Aquatic Habitats

Gundry Creek and Bullamalito Creek are mapped as Key Fish Habitat, with the fish status for Gundry Creek being mapped as 'poor' on the Fisheries NSW Spatial Data portal (DPI, 2024). While the Project layout avoids these watercourses and their associated floodplains, a number of watercourse crossings will be required to facilitate access across the Project Area. Watercourse crossings will be designed to minimise impacts on stream stability and fish passage and will be designed with reference to the following documents in addition to DPEs Guidelines for Controlled Activities on Waterfront Land:

- Why Do Fish Cross the Road? Fish Passage Requirements for Waterway Crossings (NSW Department of Primary Industries (DPI) Fisheries, 2003).
- Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management (NSW DPI, 2013).

Aquatic habitats within the Subject land are limited to farm dams that have an association with unnamed ephemeral tributaries of Gundry Creek and Bullamalito Creek. These drainage lines within the Subject land are degraded as a result of the historical and current agricultural practices.

Under the fish habitat classes and types in accordance with the *Policy and guidelines for fish habitat conservation and management* (DPI 2013), the habitat has been assessed as Type 3, Class 3 (minimal key fish habitat) as the creeks are ephemeral tributaries with intermittent flow and sporadic refuge for aquatic fauna.

In light of the above, it is expected that the Project would not impact the passage of fish over the long term nor obstruct the movement of fish or other aquatic species.

Furthermore, the Project layout incorporates riparian buffers ranging from approximately 20 to 40 m around all 2nd order and higher creek lines to avoid and minimise impacts to the habitat associated with the riparian zone (refer to **Figure 1.3**). The potential impacts on water quality are also anticipated to be limited due to the Project Layout and design avoiding tributaries of Gundary Creek and Bullamalito Creek. Water quality impacts have been assessed in detail in the Water Resources Impact Assessment (WRIA) report prepared by Umwelt (Umwelt, 2024a).

Standard environmental management measures will be implemented and are expected to sufficiently manage any impacts. This includes water and erosion management controls to be employed to minimise any erosion and discharge or sediment (or other pollutants) during construction (see **Section 7.0** for more detail).

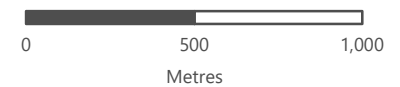
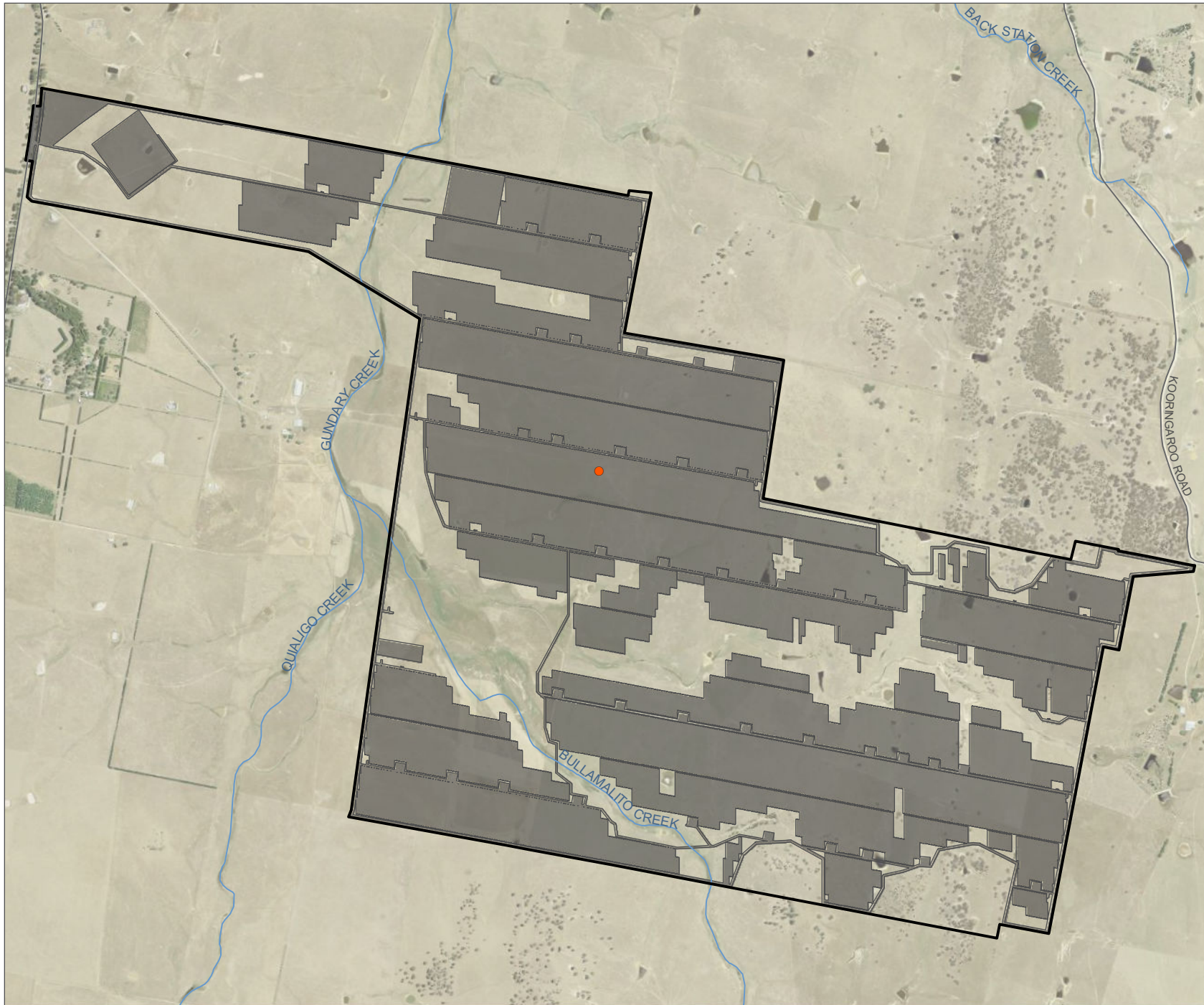


FIGURE 5.2

Ecosystem Credit Species Observation Locations

Legend

- Road
- Watercourse
- ▭ Project Area
- Subject Land
- White-fronted Chat (*Epthianura albifrons*) x3



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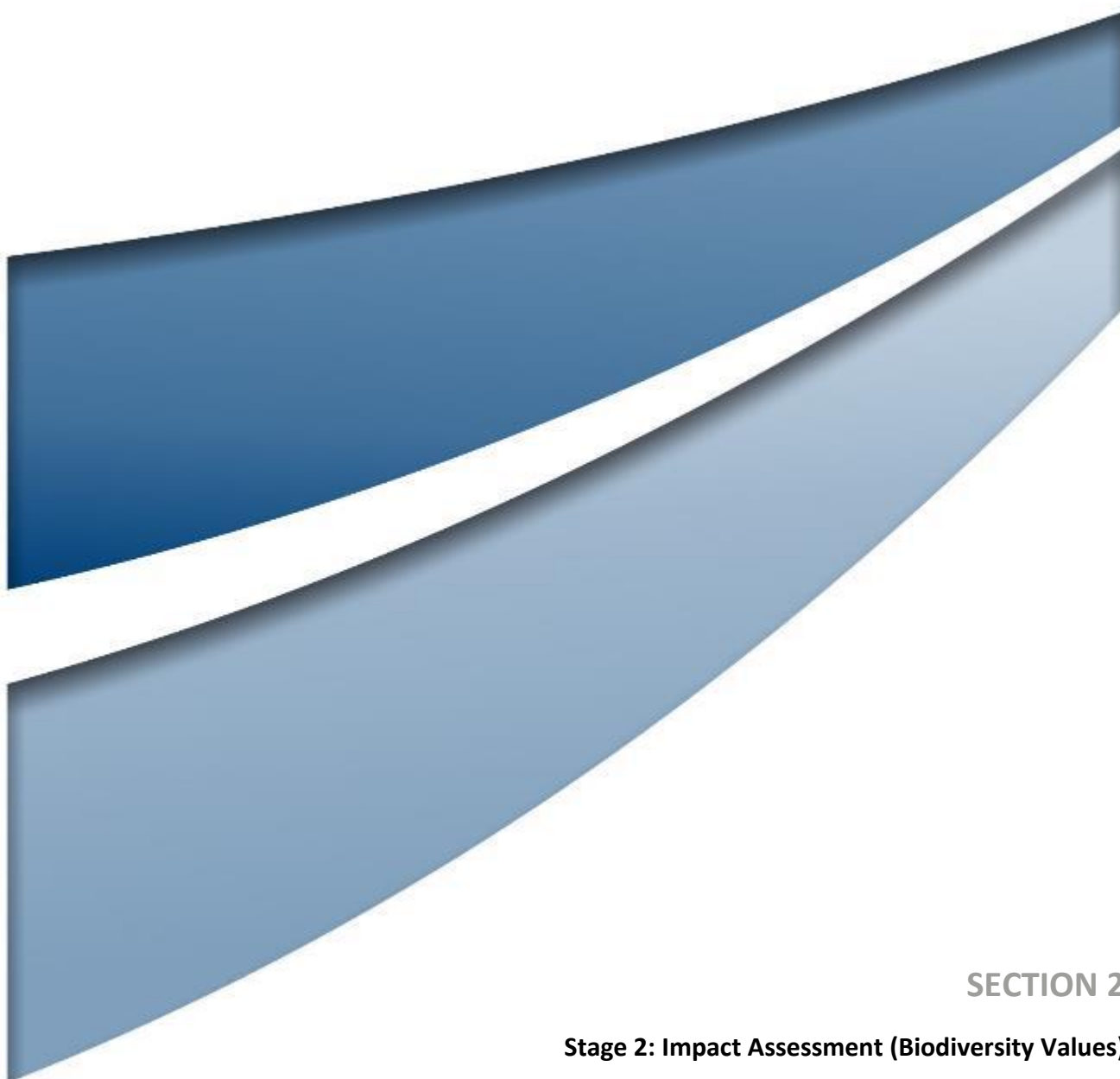
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6.0 Identifying Prescribed Impacts

Prescribed impacts which are predicted to occur as a result of the proposed development are documented in **Table 6.1**.

Table 6.1 Prescribed Impacts Identified

Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature.
Karst, caves, crevices, cliffs, rocks, or other geological features of significance	☐ Yes / ☒ No	There are no karsts, caves, crevices, cliffs, rocks, or other geological features of significance within the Subject land.	Not applicable.
Human-made structures	☐ Yes / ☒ No	There are no human-made structures existing within the Subject land.	Not applicable.
Non-native vegetation	☒ Yes / ☐ No	There is 498.01 hectares of non-native pasture consisting of land used primarily for agriculture cropping or exotic species common to grazing paddocks. This has been assigned as Category 1 land.	The White-fronted Chat has been observed within the Category-1 land. Proposed development may contribute to disturbance of foraging habitat and high threat weed, exotic species such as: Spear thistles, Briar Rose, that the White-fronted Chat may utilise as nesting material or locations (further addressed in Section 8.3.3).
Habitat connectivity	☒ Yes / ☐ No	There will be clearing of native vegetation including canopy trees, these are mainly isolated and scattered trees, areas of derived native grassland and highly disturbed agricultural land assessed as Category 1 Land.	One of the threatened entities observed during surveys is a highly mobile species (White-fronted Chat), capable of flying over the areas proposed for development. It is likely that these species will also utilise the areas of connectivity outside of the Project (further addressed in Section 8.3.5). The other threatened entity (Key's matchstick grasshopper) is restricted to high quality grasslands of kangaroo grass (<i>Themeda australis</i>) and could move within the Project Area being retained, outside of the security perimeter fencing and, outside the Project Area on adjacent land to the south.
Waterbodies, water quality and hydrological processes	☒ Yes / ☐ No	Dewatering of some farm dams. Watercourse crossings (including culverts and bed level crossings) are required to allow for vehicular access across the Project Area.	No threatened entities were observed using or are likely to use any of the existing farm dams or watercourse crossings that will be removed or modified by the Project.
Wind turbine strikes (wind farm development only)	☐ Yes / ☒ No	This Project is not a wind farm development.	Not applicable.
Vehicle strikes	☒ Yes / ☐ No	The Project will include all weather access tracks across the Subject land.	No threatened entities are likely to be affected by vehicle strikes as vehicle movements will be at low speed.



SECTION 2

Stage 2: Impact Assessment (Biodiversity Values)

7.0 Avoidance and Minimisations of Impacts

7.1 Avoid and Minimise Direct and Indirect Impacts

7.1.1 Project Location

Throughout the site selection and design process, Lightsource bp has considered alternative site locations based on proximity to the NSW electricity grid (existing and proposed) and the solar generation potential of the region. Lightsource bp selection process was grid-led involving the identification of existing electricity infrastructure with sufficient transmission capacity to accommodate a solar farm in areas with good solar resource. Once the region was determined, site selection was then based on planning and environmental constraints. There were several reasons this project location was selected:

- close to a grid connection point to the existing 330 kV transmission network that transports electricity to nearby major population centres including Sydney, NSW, and Canberra, ACT
- the land is relatively flat minimising the need or extent of land clearing and earthworks through construction
- existing agricultural land use within and surrounding the Project Area, which is compatible with large scale solar energy generation, and potential to implement agrisolar
- preliminary environmental assessment indicated much of the area has been intensively cultivated for agricultural purposes, any remaining areas of significance can be avoided or mitigated
- good access from Windellama Road via the Hume Highway
- Goulburn has been identified as having renewable resources.

7.1.2 Project Design

Lightsource bp undertook a constraints assessment during the early design phase, to strategically design the Project layout to avoid impacts to Gundry Creek, Bullamalito Creek as well as to mapped TECs, including biodiversity areas mapped as ‘high sensitivity’ and the majority of the biodiversity areas mapped as ‘moderate sensitivity’, as shown in **Figure 7.1**. Furthermore, the Project layout was designed to maintain appropriate setbacks in accordance with the *Guidelines for riparian corridors on waterfront land* (DPI, 2012a) around watercourses within the Project Area where there are biodiversity constraints. Preliminary flood modelling was considered in the Project design and layout, as illustrated in **Figure 7.2**.

Following the submission of the Scoping Report in late 2022, the Project layout was redesigned based on targeted survey findings and further biodiversity assessment (as illustrated on **Figure 7.2**) to avoid additional habitat areas for threatened species that were detected within the Project Area.

In summary, the Project layout includes the following to avoid and minimise impacts to biodiversity:

- Strategically locating the solar array and other infrastructure on Category 1 land to avoid impacts to TECs, Paddys River Box, Camden Woollybutt (*Eucalyptus macarthurii*), and all suitable habitat for Key’s Matchstick Grasshopper (*Keyacris scurra*).

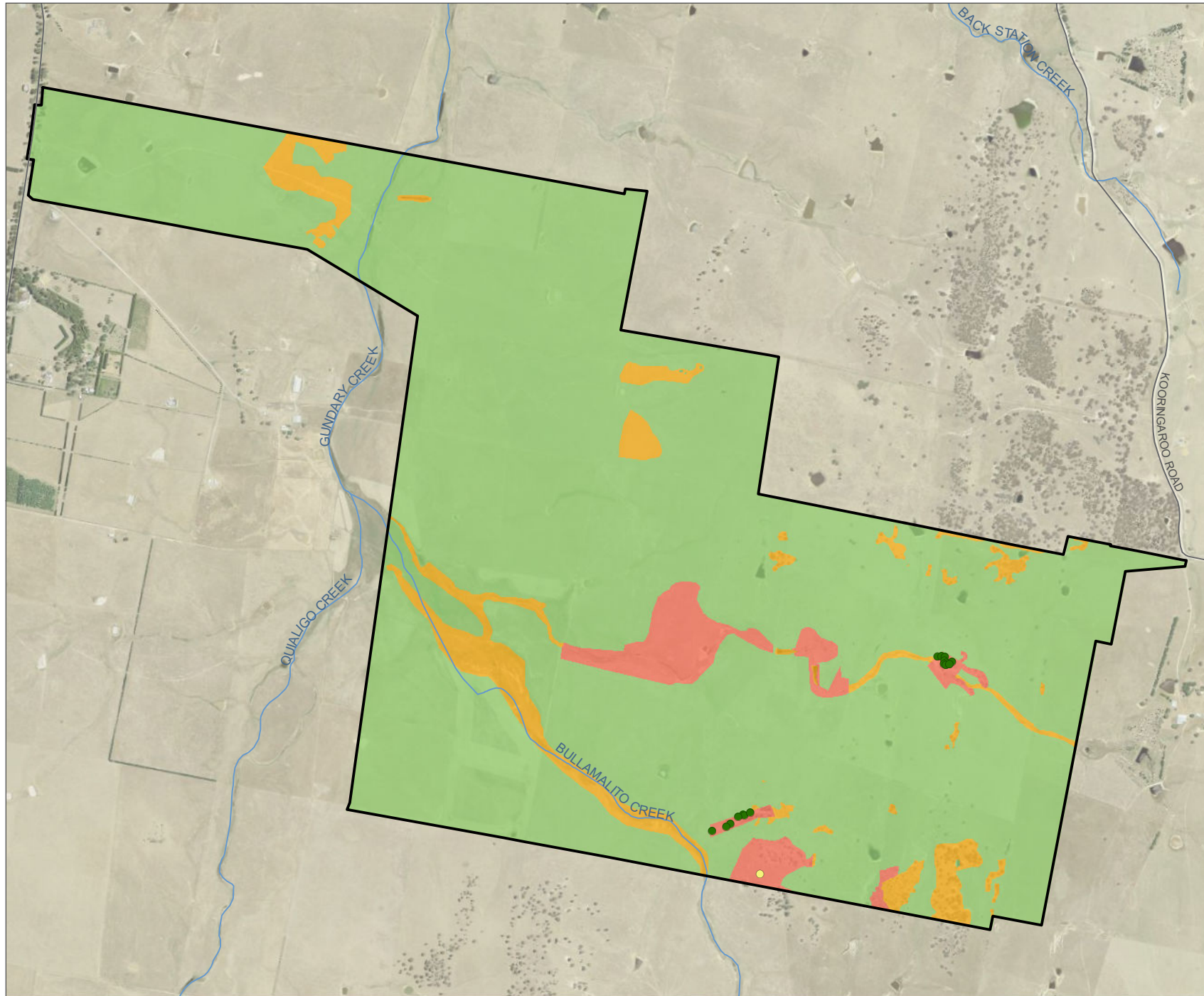
- Avoidance of high value biodiversity habitats through altering the solar array layout in the central and southern parts to avoid habitat for threatened species identified during targeted surveys.
- Avoidance of high value biodiversity vegetation, specifically avoiding 27.89 ha of NSW listed threatened ecological communities and 37.96 ha of Commonwealth listed ecological communities by altering the solar array layout in the central and southern parts to additionally avoid habitat for threatened species identified during targeted surveys, found within the TECs.
- Avoidance of Gundary Creek and Bullamalito Creek, including areas prone to flooding.
- Altering the solar array layout to maintain approximately 20 m to 40 m setbacks around 2nd order and higher streams in accordance with the *Guidelines for riparian corridors on waterfront land* (DPI, 2012a).

7.2 Avoid and Minimise Prescribed Impacts

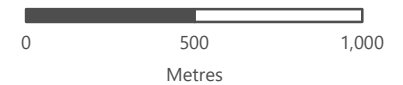
Prescribed impacts are additional impacts which require assessment; however, they are not impacts which require consideration when calculating the number and classes of biodiversity credit required. Clause 6.1 of the Biodiversity Conservation Regulation defines *Prescribed impacts* as:

- the impacts of development on the following habitat of threatened species or ecological communities:
 - karst, caves, crevices, cliffs and other geological features of significance
 - rocks
 - human made structures
 - non-native vegetation
 - the impacts of development on the connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range
 - the impacts of development on movement of threatened species that maintains their lifecycle
 - the impacts of development on water quality, water bodies and hydrological processes that sustain threatened species and threatened ecological communities (including from subsidence or upsidence resulting from underground mining or other development)
 - the impacts of wind turbine strikes on protected animals
 - the impacts of vehicle strikes on threatened species of animals or on animals that are part of a threatened ecological community.

FIGURE 7.1
Constraints Mapping



- Legend**
- Road
 - Watercourse
 - ▭ Project Area
- Avoided Threatened Species**
- *Eucalyptus macarthurii*
 - Keys Matchstick Grasshopper
- Constraints**
- High
 - Moderate
 - Low



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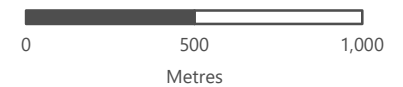
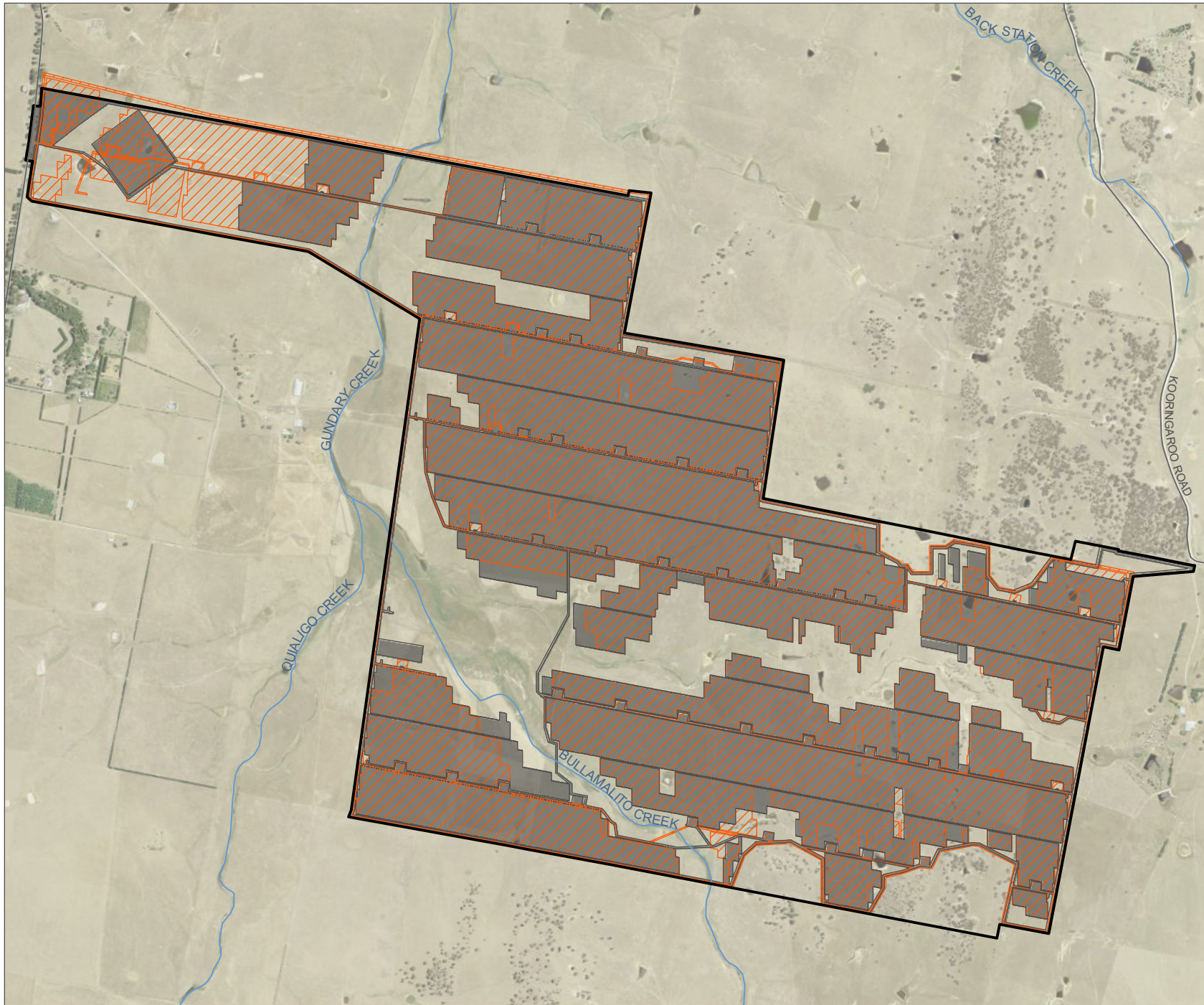
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FIGURE 7.2
Alternative Footprints
Considered

Legend

- Road
- Watercourse
- ▭ Project Area
- Subject Land (2024)
- ▨ Subject Land (2022)



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7.2.1 Project Location

Potential prescribed impacts of relevance to the Project are identified in **Section 6.0** and comprise disturbances to non-native vegetation and, waterbodies such as dams and watercourses. Areas of non-native vegetation and excluded areas (Category 1 Land) are not likely to provide habitat of importance to threatened entities which have been avoided through modification to the Project location.

7.2.2 Project Design

Potential prescribed impacts of relevance to the Project are identified in **Section 6.0** and comprise disturbances to non-native vegetation, habitat connectivity, waterbodies, water quality and hydrological processes and vehicle strikes. Areas of non-native vegetation excluded areas, habitat connectivity, waterbodies, water quality and hydrological processes and vehicle strikes have been avoided by Project designs and the areas remaining in the Subject land are not likely to provide habitat of importance to threatened entities which should be avoided through modification to the project design.

7.3 Other Measures Considered

Other measures required as part of the Project design to avoid and minimise biodiversity impacts include:

- Implementing setback distances, namely:
 - 10 m APZ around the perimeter of the Project.
 - Approximately 20 m to 40 m setbacks around 2nd order and higher streams.
- Implementing exclusion zones, including:
 - Areas prone to flooding (1% Annual Exceedance Probability (AEP)).
 - Areas with TECs and habitat for threatened species.

7.4 Summary of Measures to Avoid and Minimise Impacts

A summary of the management including the timing, action, outcome, and responsibility of these measures is within **Table 7.1**.

Table 7.1 Summary of Measures to Avoid and Minimise Impacts

Action	Outcome	Timing	Responsibility
Preliminary biodiversity constraints analysis	Preliminary assessment of biodiversity constraints to inform project design and minimise impacts to areas with high biodiversity values.	Project inception and ongoing Project design (pre-approval)	Project Ecologist, Planning Team and Proponent
Location and design of works in existing disturbed areas where possible	Focus impacts on areas of low biodiversity value. The proposed works have been aligned to existing disturbed areas where possible.	Ongoing Project design (pre-approval)	Project Ecologist, Planning Team and Proponent
Reduction of Subject Land boundary/ impact footprint	Avoidance and minimisation of impacts to areas of intact woodland associated with the White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland critically endangered ecological community, and areas of threatened flora (<i>Eucalyptus macarthurii</i>).	Project design (pre-approval)	Proponent
Workforce education and training	Environmental awareness for workforce.	Pre-construction and during construction	Site Manager
Implement Construction Environmental Management Plan	Management and minimisation of potential environmental impacts.	Prior to clearance and during clearance activities	Site Manager
Implementation of vegetation protection zones for areas to be retained	Protect retained habitats.	Prior to clearance and during clearance activities	Site Manager
Ecologist pre-clearance surveys and supervision of works	Minimisation of impacts to local fauna and their habitats through identification of fauna present and management to minimise harm.	Prior to clearance and during clearance activities	Project ecologist and site manager
Fencing and access control	Avoidance of unplanned human and livestock interference and disturbance to retained areas.	Prior to clearance and during clearance activities	Project ecologist and site manager
Erosion and sedimentation control	Minimise erosion and sedimentation within the site and downstream habitats through installation and maintenance of erosion and sediment controls.	Construction and operation	Site Manager
Weed management	Prevent weed incursions and spread.	Construction and operation	Site Manager
Fauna exclusion	Prevent entrapment of fauna within site infrastructure.	Construction and operation	Site Manager

8.0 Assessment of Impacts

8.1 Direct Impacts

8.1.1 Residual Impacts

The parts of the Subject land which are subject to impacts associated with the Project are mapped in **Figure 8.1**. **Table 8.1** summarises the extent of proposed residual direct impacts to threatened entities observed or assumed to be present on the Subject land.

Table 8.1 Summary of Residual Direct Impacts

Direct impact (Describe the impact on PCT/TEC/EC or threatened species and their habitat)	BC Act Status	EPBC Act Status	Potential SAIL Entity	Project Phase/ Timing of Impact	Extent
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands	Critically Endangered Ecological Community	Critically Endangered Ecological Community	Yes	Construction phase	Impacts within Subject land did not meet EPBC thresholds NSW TEC impacts to TEC: Native pasture = 4.67 ha Paddock Trees = 1.17 ha Total extent = 5.84 ha

8.1.2 Change in Vegetation Integrity Score

The change in vegetation integrity is based on the Project impacting to zero during construction (**Table 8.2**). No vegetation integrity scores have been assessed as above zero after the Project and there would be no management actions required to maintain any remaining vegetation as it has been assumed that impact will occur to all vegetation within the vegetation zones. While this assessment is based on impacting vegetation integrity scores to zero, it is expected that the actual vegetation integrity score will not decrease to zero due to the retention of grassland areas under the solar panels and within the edges of the Subject land. In accordance with Section 9.2.1 of the BAM (DPIE, 2020a) impacts with a vegetation integrity score of less than 15 where the PCT is representative of an EEC or CEEC does not require an offset, this includes all vegetation zones outlined in **Table 8.2**.

Table 8.2 Impacts to Vegetation Integrity

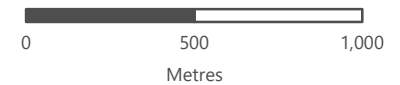
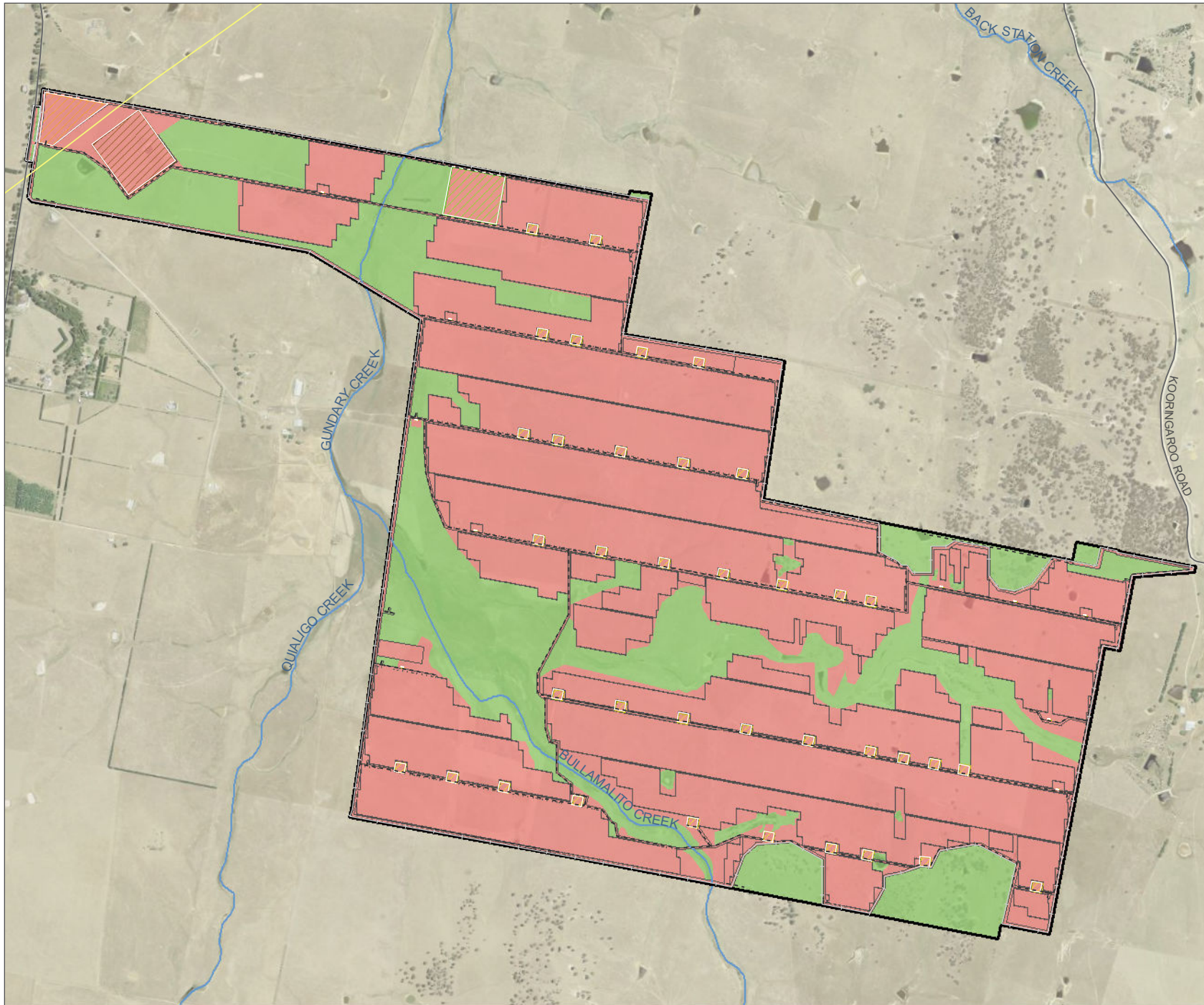
PCT and Vegetation Condition Zone	Area (ha)	Before Development				After Development				Change in VI Score
		Composition	Structure	Function	VI score	Composition	Structure	Function	VI score	
PCT888 VZ1 – Paddock Tree	0.29	4.8	24	0	1.1	0	0	0	0	-1.1
PCT1191 VZ2 – Paddock Trees	0.36	2.1	2.1	13.6	3.9	0	0	0	0	-3.9
PCT1289 VZ3 – Low	4.49	9.7	0.7	N/A	2.7	0	0	N/A	0	-2.7
PCT1330 VZ4 – Paddock Trees	1.17	9	8.1	0.3	2.8	0	0	0	0	-2.8
PCT1330 VZ5 – Native pasture	4.67	1.8	0	0.1	0.1	0	0	0	0	-0.1

FIGURE 8.1

Final Impacts Likely To Occur on Subject Land

Legend

- Road
- Watercourse
- Subject Land
- ▭ Project Area
- - - Proposed Access Tracks
- Security Fence
- Existing Transmission Line
- ▨ Centralised AC BESS
- ▨ Decentralised DC BESS
- ▨ Construction Compound Area
- ▨ Substation and O&M Facility Area
- Direct Impact
- Indirect Impact



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8.2 Indirect Impacts

The extent of the proposed residual indirect impacts (including but not limited to the list from Subsection 8.2 (2) of the BAM) to plant community types and threatened entities observed or assumed to be present on the Subject land is summarised in **Table 8.3**. Ecosystem credit species retained for assessment are identified in **Table 5.1** and there are no species credit threatened fauna species recorded within the Subject land.

Table 8.3 Summary of Residual Indirect Impacts

Indirect impact	Project Impact Intensity	Frequency / Duration	Project phase/ timing of impact	Likelihood and consequences
Connectivity and corridors, inadvertent impacts on adjacent habitat or vegetation	Low	Frequent / Ongoing	Operation	A reduction in wildlife connectivity will occur due to the security fencing, however some connectivity will be retained through planned corridor areas of avoided remnant vegetation, the species observed within the Subject land are highly mobile and are unlikely to be significantly impacted. Existing internal stock fencing will be removed within the Project Area.
Reduced viability of adjacent habitat due to light spill impacts	Low	Frequent/ Ongoing	Operation	Limited impacts may occur, consequences likely to include minor alteration to fauna behaviours including avoidance of light and opportunistic utilisation of light spill areas. There would be no lights on the Project during operation except for emergency lighting at the operations and management facility and substation.
Reduced viability of adjacent habitat due to noise impacts	Low	Frequent / short term	Construction	Construction noise will occur, consequences may include short term reduction in suitability of retained and adjoining habitats during construction works for sensitive fauna species.
Reduced viability of adjacent habitat due to dust and air quality impacts	Low	Infrequent / short term	Construction	Low potential to occur if appropriate dust suppression is undertaken. Consequences include physical injury to airways of fauna species and short term reduced photosynthetic capacity for impacted flora.
Transport of weeds and pathogens from the Project to adjacent vegetation	Low	Frequent / long term	Construction and operation	High potential to occur, although existing use has resulted in widespread weed invasion. Consequences include introductions of new weeds and reduced grazing and suppression of existing weeds.

Indirect impact	Project Impact Intensity	Frequency / Duration	Project phase/ timing of impact	Likelihood and consequences
Increased risk of starvation or exposure, and loss of shade or shelter	Low	Infrequent/ short term	Construction and operation	Low potential of risk to biodiversity starvation, exposure, and loss of shade. After construction the solar panels will provide shade to livestock and wildlife.
Trampling of threatened flora species	Low	Infrequent/ short term	Construction	Unlikely. The existing threatened flora will be demarcated and avoided by construction and the Project.
Increase in pest animal species	Low	Frequent / long term	Construction and operation	Likely already occurring due to historical habitat modification. Low potential for increased impacts, potential consequences include reduced habitat suitability and predation of threatened fauna species.
Security fencing	Moderate	Frequent / Long term	Construction and operation	Likely to occur. Consequences include reduction in habitat connectivity, although remnant vegetation has been fenced out of the Project. The security fence is the boundary of the Subject land, remaining isolated paddock trees will not be separately fenced and any wildlife is free to move withing the Subject land as usual.

8.3 Prescribed Impacts

Prescribed impacts associated with the Project are identified in **Section 6.0** of this report and are further documented below.

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

8.3.1.1 Nature and Extent

The Project will have negligible impact on caves, crevices, cliffs or geological features of significance.

Impacts are likely to occur to minor areas of rock outcropping which do not contain habitat structure for threatened species, shallow exposed bedrock and areas of piled rock which has been removed from paddocks. Relocation of rock piles will occur to minimise potential impacts; however they will be long-term and permanent.

8.3.1.2 Duration

This is likely to be one-off, permanent impact for the life of the Project which will occur during construction.

8.3.1.3 Consequences

No threatened species have been recorded utilising these habitats and no significant consequences are predicted to occur.

8.3.2 Human Made Structures

8.3.2.1 Nature and Extent

There are no human made structures within the Project.

8.3.2.2 Duration

There will be no impact to human made structures within this Project.

8.3.2.3 Consequences

There will be no impact to human made structures within this Project.

8.3.3 Non-Native Vegetation

8.3.3.1 Nature and Extent

Extensive areas of non-native vegetation are present within the areas assessed as Category 1 Exempt Land.

8.3.3.2 Duration

This will be a one-off, permanent impact for the life of the Project that will occur during construction and site clearing. Regrowth may occur throughout the life of the project depending on the management regime however for the purposes of this assessment it has been considered as a permanent removal.

8.3.3.3 Consequences

No threatened species have been observed utilising these habitats and no significant consequences are predicted to occur.

8.3.4 Excluded Areas – Category 1 Exempt Land

8.3.4.1 Nature and Extent

The majority of the Subject land and Project Area comprises highly degraded Category 1 land. This land has an extensive history of high intensity grazing by cattle and sheep and in its current form is dominated by mostly non-native plant species and categorised as exotic grassland as identified in **Figure 1.5**. There are large areas of cultivated grasses and exotic forbs (e.g., perennial ryegrass (*Lolium* spp.), white clover (*Trifolium repens*), soft brome (*Bromus hordeaceus*), subterranean clover (*Trifolium subterraneum*), high coverage but low individual density of other exotic weeds (e.g., scotch thistle (*Onopordum acanthium*), spear thistle (*Cirsium vulgare*), bathurst burr (*Xanthium spinosum*), goose grass (*Eleusine indica*), harding grass (*Phalaris aquatica*), common peppergrass (*Lepidium africanum*), wireweed (*Polygonum erectum*), cocksfoot (*Dactylis glomerata*), powell's amaranth (*Amaranthus powellii*), black-berry nightshade (*Solanum nigrum*), and low coverage of some native species (e.g., Yangabil (*Austrostipa bigeniculata*), small crumbweed (*Dysphania pumilio*), wood sorrel (*Oxalis perennans*), wallaby grass (*Rytidosperma* spp.), swamp dock (*Rumex brownii*)).

Three white-fronted chat (*Epthianura albifrons*) individuals were incidentally observed on a fence line in Category 1 land while undertaking biodiversity surveys on 16th March 2023. It is known that the white-fronted chat can sometimes line their nests with thistle down (Major 1991) and are known to utilise several prickly non-native species as breeding habitat. The Project is likely to change the structure and composition of Category 1-Exempt land, although it is likely that grass-dominated areas in a similar condition state will persist in these areas under the proposed solar panels and whilst exotic species will be managed appropriately, it is not considered thistles are a limited resource throughout the wider landscape.

8.3.4.2 Duration

This will be a one-off, permanent impact for the life of the Project that will occur during construction and site clearing.

8.3.4.3 Consequences

This Project would reduce the extent of available habitat to the white-fronted chat and other potential mobile threatened species which are capable of utilising highly disturbed terrestrial agricultural environments. If thistles and other prickly non-native shrubs (common hawthorn (*Crataegus monogyna*), african boxthorn (*Lycium ferocissimum*)) within the Subject land are being utilised by the white-fronted chats, it may be possible to slowly remove thistles during construction, in non-breeding season (outside of September), while replacing them with native vegetation (e.g., *Poa* spp. tussocks) near the water along Gundry Creek or Bullamalito Creek. This would encourage the white-fronted chats to move out of the Subject land, though this should only be done in the off-season to minimise any impacts to breeding.

The Subject land is substantially degraded by clearing, tree thinning and agricultural management, such that species utilising these areas for foraging and breeding are already highly mobile and disturbance tolerant. Due to the nature and layout of the Project, which is surrounded by undeveloped agricultural land, there will be no overall changes to landscape connectivity for wildlife movement.

8.3.5 Habitat Connectivity

8.3.5.1 Nature and Extent

The Project has potential to affect habitat connectivity for flora and fauna species. The areas of clearing primarily consist of native vegetation composed of scattered canopy trees and areas of low-quality native pasture composed of highly disturbed agricultural land. The Project Area includes remnant excluded from the Subject land areas and which will not be fenced, to enable the persistence of habitat connectivity outside of the Subject land.

8.3.5.2 Duration

This will be a one-off, permanent impact for the life of the Project that will occur during construction and site operation.

8.3.5.3 Consequences

The consequences include reduced wildlife connectivity, however all areas likely to be important for habitat connectivity for woodland species have been maintained. The Project is unlikely to have any substantive impacts to connectivity as the Subject land is already substantially degraded by clearing, tree thinning and agricultural management, such that species utilising these areas for connectivity are already highly mobile and disturbance tolerant. Due to the nature and layout of the Project, which is surrounded by undeveloped land, there will be no overall changes to landscape connectivity for wildlife movement.

8.3.6 Waterbodies, Water Quality and Hydrological Processes

8.3.6.1 Nature and Extent

The ephemeral 1st and 2nd order watercourses present within the Subject land will be impacted by the Project. Several small farm dams will also be filled to facilitate the Project. Gundry Creek, Quialigo Creek and Bullamalito Creek will be avoided, with only required watercourse crossings and/or bed level crossings to be constructed to facilitate access across the Project Area. Furthermore, the Project has been designed to incorporate appropriate buffers (approximately 20 m to 40 m) along 2nd order and higher mapped streams (refer to **Figure 1.3**).

8.3.6.2 Duration

This will be a one-off, permanent impact for the life of the Project that will occur during construction and site operation.

8.3.6.3 Consequences

The impacts associated with waterbodies and watercourses include reduced availability of habitat for aquatic species, altered hydrology and increased erosion and sedimentation within the Subject land. Suitable environmental controls will be implemented to prevent impacts to downstream environments within the Gundry plains region. Water quality impacts are further discussed and assessed in the Water Resources Impact Assessment (Umwelt, 2024).

8.3.7 Vehicle Strikes

8.3.7.1 Nature and Extent

The Project includes the construction of several access roads through the Subject land which will be utilised in the day-to-day operation of the Solar Farm. Vehicles driven through the Subject land will adhere to appropriate speed limits to minimise impacts associated with vehicle strikes.

8.3.7.2 Duration

There will be an ongoing potential, however low probability of this impact occurring for the life of the Project.

8.3.7.3 Consequences

There is no reasonable probability that threatened entities, identified outside of the Subject land, will be impacted by vehicle strikes as vehicle movements will be at low speed, with a speed limit implemented on the Project at all times.

8.4 Mitigating Residual Impacts – Management Measures and Implementation

The following management measures are proposed to mitigate the residual impacts (direct, indirect and prescribed) associated with the Project. The impact mitigation measures proposed for residual impacts are also further summarised in **Table 8.4**, with implementation details provided in **Table 8.5**.

8.4.1 Workforce Education and Training

The development of education packages and training can help to mitigate anthropogenic impacts on biodiversity resulting from the construction and operation of the Project. The ability of non-ecological personnel to identify key threatened species or key ecological threats can help to mitigate impacts on threatened species. The following mitigation actions will be implemented for the Project to develop a greater understanding and awareness of biodiversity issues in non-ecological trained personnel:

- Inductions for the workforce will be undertaken to make them aware of the key ecological issues present in the Subject land to aid in their understanding of their role and responsibilities in the protection and/or minimisation of impacts to all native biodiversity.
- Inductions will identify the location of sensitive flora and fauna, including any defined no-go zones, and the policies being implemented to protect the biodiversity values of such areas.
- Responsibilities with respect to weed management and biosecurity.

8.4.2 Implementation of Vegetation Protection Zones for Areas to be Retained

During construction, temporary exclusion fencing or other form of suitable marking measure, will be used to demarcate vegetation in locations where necessary to avoid accidental damage to areas of vegetation outside of the Subject land (no go zone). Access control is an important feature in protecting and demarcating areas outside the Subject land from vehicle access, human access, and accidental disturbance. Proposed measures include:

- Installation of appropriate temporary fencing (or other form of suitable marking measures) and signposting of areas to prevent the uncontrolled entry of people, accidental disturbance and to minimise vehicular and human traffic, prior to the commencement of construction.
- Clear and visible signage is to be appropriately located to inform the workforce and others of the restricted access or otherwise of areas outside the Subject land.
- Worker education and awareness of no-go zones, including as delivered through site induction information.
- The use of GPS enabled machinery (where available) to help prevent accidental disturbance of exclusion areas.

8.4.3 Ecologist Pre-Clearance Surveys and Supervision of Works

Pre-clearance surveys and tree felling supervision will be undertaken by an appropriately qualified and experienced ecologist to minimise potential impacts to fauna species, particularly hollow-dependent fauna. A detailed tree-felling supervision protocol is to be developed and documented as part of the Construction Environmental Management Plan (CEMP) for the Project. If the need to remove piles of loose rock within the Subject land, these should also be retained and relocated to a no-go zones during pre-clearance surveys to avoid burial.

8.4.4 Erosion and Sedimentation Control

A Stormwater Management Plan including an Erosion Sediment Control Plan (ESCP) will be prepared to appropriately limit post development flows and manage downstream water quality as part of the Subject land establishment and clearing works. Measures to be implemented include:

- Minimising the area of disturbance (as far as practicable).
- Diverting run-off water around disturbed areas.
- Installation and ongoing maintenance of temporary erosion and sediment controls (e.g., sediment fencing) throughout the duration of the construction of the Project.
- Design, implementation, and ongoing maintenance of permanent operational phase controls (e.g. catch drains) during the operational phase of the Project.
- Stabilisation (i.e., landscaping and revegetation) of all disturbed areas not required for the operation of the Project, to reduce the potential for future erosion.
- The ESCP will be drafted with regard to the Managing Urban Stormwater: Soils and Construction (Volume 1) standard or to the standard of any equivalent replacement to this standard available at the commencement of construction.

8.4.5 Weed Management

Weed species could be inadvertently brought into the Subject land or surrounding habitats with imported materials, on vehicles and mobile plant, or could invade naturally through removal of native vegetation and the creation of a suitable growth medium. The presence of weed species has the potential to decrease the value of vegetation for native species, particularly threatened species.

Weed management controls will include:

- The survey and treatment of invasive weed species prior to the disturbance of topsoil within the Subject land to prevent an outbreak and / or the spread of species to previously unaffected areas within the Subject land.
- Ongoing environmental inspections and treatment of outbreaks of invasive weed species as required within the Subject land during the construction and operation of the Project.
- All machinery and equipment will be cleaned thoroughly prior to entering the Subject land. Cleaning must include the removal of all mud and plant matter (inside and out), followed by washing with high pressure water.

With regards to the potential for white-fronted chat (*Epthianura albifrons*) utilising any exotic prickly shrubs and high threat weeds across the Subject land, the removal of these would be controlled and it may be possible to slowly remove thistles during construction, in non-breeding season (outside of September).

8.4.6 Fencing, Access Control and Fauna Exclusion

To avoid native fauna (non-avian) becoming trapped within the solar farm, a security fence will be constructed to deter fauna from occupying and becoming entrapped within the Project. This fencing will occur across the boundary perimeter of the Subject land.

8.4.7 Preparation and Implement of Construction Environmental Management Plan

A CEMP will be prepared to document the environmental impact mitigation, performance targets and monitoring requirements for the construction and operational phases of the Project.

Table 8.4 Summary of Proposed Mitigation and Management Measures for Residual Impacts (Direct, Indirect, and Prescribed)

Mitigation Measure	Method/Technique	Timing	Frequency	Responsibility	Likely Efficacy
Workforce education and training	Environmental awareness for construction and operational site workers.	Construction and operation.	For all new contractors and employees as part of the general site induction.	Site Manager	Measure is likely to achieve intended outcome
Implementation of vegetation protection zones for areas to be retained	Temporary delineation of the Subject Land impact footprint until permanent fencing is installed.	Prior to construction / site clearing.	Prior to and during site clearing and construction. Permanent fencing to remain for the life of the development.	Site Manager	Measure is likely to achieve intended outcome
Ecologist pre-clearance surveys and supervision of works	- Minimisation of impacts to local fauna and their habitats through identification of fauna present and management to minimise harm. - Relocation of rock piles. - Dam de-watering.	Prior to construction / site clearing.	Prior to and during site clearing.	Site Manager and Contractor Ecologist	Measure is likely to achieve intended outcome
Erosion and sedimentation control	Installation and maintenance of appropriate erosion and sediment controls and work practices.	Prior to and during civil works until permanent controls such as sediment basins are installed and established.	Temporary erosion and sediment controls would be installed prior to commencement of construction and permanent measures such as stormwater detention basins would be maintained for the life of the development.	Site Manager	Measure is likely to achieve intended outcome
Weed management	Targeted spraying and/or grazing to suppress weed invasion.	All stages of the development.	As needed.	Site Manager / Contractor Ecologist	Measure is likely to achieve intended outcome
Fencing, Access Control and Fauna exclusion	Installation of a permanent security fence.	To be installed during construction.	For the life of the development.	Site Manager	Measure is likely to achieve intended outcome

Mitigation Measure	Method/Technique	Timing	Frequency	Responsibility	Likely Efficacy
Preparation and Implement of Construction Environmental Management Plan	Develop plan to adequately manage environmental impacts during construction including dam dewatering controls, fencing and access control, weed management and erosion and sediment control.	To prepared prior to the commencement of works and implemented for all construction works and for the life of the development as necessary.	For the life of the development.	Proponent / Site Manager	Measure is likely to achieve intended outcome

Table 8.5 Implementation Details for Proposed Impact Mitigation and Management Measures

Measure/Action	Monitoring and Evaluation Strategy	Performance Criteria	Adaptive Management Threshold	Adaptive Management Response
Workforce education and training	Completion and maintenance of a site induction register.	Induction of all construction workers.	Failure of Contractor to induct workers.	Breaches to be reported in accordance with notification procedures (7 days). Suspension of the relevant works until construction workers are inducted.
Implementation of vegetation protection zones for areas to be retained	Monitoring to be undertaken by the Project Ecologist prior to commencement and monthly during construction works.	Protection of retained vegetation and habitats.	Breach of vegetation protection zones / damaged to retained habitats.	Breaches to be reported in accordance with notification procedures (7 days). Suspension of the relevant works until appropriate protection measures are implemented and appropriate remedial actions to remedy any adverse impacts are completed.
Ecologist pre-clearance surveys and supervision of works	Reporting on preclearance surveys and works supervision to be undertaken by Project Ecologist.	Completion of proposed works.	Completion of clearing works without Project ecologist supervision.	Breaches to be reported in accordance with notification procedures (7 days). Ecologist must be present on-site during pre-clearance surveys and works requiring ecological supervision.

Measure/Action	Monitoring and Evaluation Strategy	Performance Criteria	Adaptive Management Threshold	Adaptive Management Response
Erosion and sedimentation control	Monitoring to be undertaken in accordance with requirements of CEMP.	Temporary erosion and sediment controls to be installed prior to works. Permanent controls to be maintained for the life of the development.	Monitoring detects lack or failure of required temporary or permanent erosion and sediment controls.	Breaches to be reported in accordance with notification procedures (7 days). Erosion and sediment controls to be installed and/or improved.
Weed management	Monitoring to be undertaken in accordance with requirements of CEMP.	Weed growth to be monitored and managed as required within the Subject land.	Monitoring detects increasing weed infestations which are not being suppressed.	Alternative methods or herbicides to be used to achieve success.
Fencing, Access Control and Fauna exclusion	Monitoring to be undertaken in accordance with requirements of CEMP.	Exclusion of all target fauna species.	Repair or upgrade to fencing.	Fencing design to be improved to achieve effectiveness.
Preparation and Implementation of CEMP	Implementation to be supervised by Project Ecologist or suitable environmental consultant with regular reporting to DPE during construction.	Completion of all proposed environmental protection works and monitoring inspections.	Monitoring detects breach or failure to implement CEMP.	Breaches to be reported in accordance with notification procedures (7 days).

8.5 Adaptive Management Strategy for Uncertain Impacts (Where Relevant)

It is considered that the direct impacts associated with the proposal are predictable and known. Adaptive strategies for impact mitigation measures are provided in **Table 8.5**. Further adaptive management strategies will be provided in the CEMP for the Project.

9.0 Serious and Irreversible Impacts

9.1 Assessment for Serious and Irreversible Impacts on Biodiversity Values

The determination of a SAIL on biodiversity values is to be made by the decision maker in accordance with the principles set out in the BC Regulation 2017. Under Clause 6.7 (2) of the BC Regulation 2017, an impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct because of one of the following four principles:

- Principle 1: The impact will cause a further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline, or
- Principle 2: The impact it will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size, or
- Principle 3: It is an impact on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution, or
- Principle 4: The impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable.

SAIL on biodiversity values of proposed development or activity means SAIL on biodiversity values as determined under section 6.5 of the BC Act, that would remain after the measures proposed to be taken to avoid or minimise the impact on biodiversity values of the proposed development.

If the Minister for Planning and Public Spaces is of the opinion that proposed SSD is likely to have SAIL on biodiversity values, the Minister is required to:

- take those impacts into consideration, and
- determine whether there are any additional and appropriate measures that will minimise those impacts if consent or approval is to be granted.

There is one entity within the Subject land of relevance to this assessment which is listed as at risk of a SAIL which is the critically endangered ecological community (CEEC) White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions, which falls under Principle 1 and Principle 2. In **Section 9.1.1** the SAIL additional impact assessment provisions (AIAPs) from the 2020 version of the BAM are addressed.

9.1.1 Additional Impact Assessment Provisions for TECs at Risk of an SAI

9.1.1.1 White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions

The additional impact assessment provisions for TEC at risk of an SAI have been addressed for the White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC (Box Gum Woodland) in **Table 9.1**. The location of the Box Gum Woodland within the Subject land is shown in **Figure 9.1** and **Figure 9.2**. This ecological community is listed as critically endangered under the BC Act. The NSW Extent of this CEEC based on the NSW State Vegetation Type Mapping is shown in **Figure 9.2**.

Table 9.1 SAI Impact Assessment – Box White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC

BAM Section 9.1.1 Criteria		Response to criteria
1	The action and measures taken to avoid the direct and indirect impact on the TEC at risk of an SAI (or reference to where these have been addressed in the relevant section of the BDAR).	The actions and measures proposed to avoid direct and indirect impacts are documented in Section 7.0. Lightsource bp has considered alternative site locations and undertook a constraints assessment during the early design phase, to strategically design the Project layout to avoid all direct and indirect impacts to the TEC at risk of SAI.
2	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including:	The current extent of the Box Gum Woodland and the estimated reduction in the geographic extent since 1970 is not available in the TBDC.
2a	Evidence of reduction in geographic distribution (Principle 1, clause 6.7(2)(a) BC Regulation) as the current total geographic extent of the TEC in NSW and the estimated reduction in geographic extent of the TEC since 1970 (not including impacts of the proposal)	Threatened Species Scientific Committee An assessment completed by Threatened Species Scientific Committee (TSSC) (2006) and reproduced by Tozer and Simpson (2020) estimate that the pre-1750 area of the White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC was 3,717,366 ha, which has been reduced to a current extent in 2020 of just 250,729 ha. This represents a 93% reduction since 1750. State Vegetation Type Map Umwelt has utilised the current available State Vegetation Type Mapping (SVTM) which identifies an estimate of the per 1750 and current extent of White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland using the best currently available mapping. The SVTM pre-1750 area of White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC is between 1,895,058 ha and 2,403,693 ha and the current SVTM extent of

BAM Section 9.1.1 Criteria	Response to criteria
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland is between 1,267,603 ha and 1,639,571 ha. The variance in the SVTM upper estimate is due to some mapped PCTs being identified as only partly being associated with the White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC. Based on the SVTM there has been a 33.1–31.75% reduction in White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland since 1750. Annual Loss and Reduction in Extent Since 1970 Tozer and Simpson (2020) have identified that the loss of the woodland component of White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC between 2009 and 2019 was 6653 ha or 665.3 ha per annum distributed disproportionately between years. Using an annual loss rate of 665.3 ha, an estimate of the loss over the 1970 to 2020 period of 33,265 ha of the woodland component of the CEEC has been obtained. However, it is considered the rate of loss prior to 2009 is likely to have been much greater than 665.3 ha per annum due to a non-linear rate of clearing attributed to less legislative restrictions protecting White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland prior to its listing.
2b The extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes (Principle 2, clause 6.7(2)(b) BC Regulation) indicated by: • Change in community structure • Change in species composition • Disruption of ecological processes • Invasion and establishment of exotic species • Degradation of habitat • Fragmentation of habitat.	The following information has been obtained from the Conservation Assessment of the White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC prepared by Tozer and Simpson (2020). Changes in community structure In relation to community structure there are essentially no remaining areas that are fully intact and most of the remaining extent has lost its understory, been invaded by exotic species, lost entire suites of species or lost its structure in terms of the loss of tree, shrub and/or ground layers. Changes in species composition Species composition has been adversely affected by degradation and fragmentation which has caused the loss of suites of species such as understorey components or faunal components such as reptiles, mammals and/or woodland birds. The species lost are sometimes replaced by more common species such as aggressive noisy miners, exotic flora or monocultures of native grasses. Disruption of ecological processes The ecological community has undergone or is likely to undergo within a time frame appropriate to the life cycle of the habitat characteristics of its component species a very large disruption of biotic processes or interactions. The changes have been such that reestablishment of the ecological processes, species composition and community structure of the original ecological community is not likely to be possible, even with immediate positive human intervention.

BAM Section 9.1.1 Criteria	Response to criteria
	Invasion and establishment of exotic species Weeds have invaded most of the remaining areas of the original pre-1750 extent of this ecological community and result in continuing detrimental change. Extensive areas have experienced elevated soil nitrogen as a result of the application of chemical fertilisers, which is associated with the invasion of weeds and eventual conversion of native to exotic pasture. Degradation of habitat The ecological community continues to be degraded at both the patch and landscape scale. This ongoing modification, while not necessarily leading to the destruction of all elements of the ecological community, threatens it with extinction. Cumulatively, the disruption of biotic processes and interactions caused by the implementation of management for agricultural production is very severe and less than 10% of the original distribution of White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland is likely to have avoided the long-term impacts of pastoralism. Fragmentation of habitat The community has been extensively cleared throughout its range and remnants are typically small, isolated, highly fragmented and occur in predominantly cleared landscapes and exhibit highly modified understoreys.
2c Evidence of restricted geographic distribution (Principle 3, clause 6.7(2)(c) BC Regulation), based on the TEC’s geographic range in NSW according to the: • extent of occurrence • area of occupancy • number of threat defined locations.	The extent of occurrence of White Box - Yellow Box - Blakely’s Red Gum Grassy Woodland and Derived Native Grassland throughout its entire range in Australia is identified by Tozer and Simpson (2020) as 702,800 km². The extent of occurrence within NSW is not identified in the TBDC or separately assessed by Tozer and Simpson (2020). The current geographic extent of this CEEC across its range is estimated by Tozer and Simpson (2020) (reproduced from TSSC 2006) as 576,654 ha, which includes an area of occupancy of 250,729 ha within NSW. This estimate does not include the derived native grassland component of the ecological community. It is also considered that the current extent of White Box - Yellow Box - Blakely’s Red Gum Grassy Woodland and Derived Native Grassland provided by Tozer and Simpson (2020) is an underestimate based on the current SVTM mapping which maps between 1,267,603 ha and 1,639,571 ha within NSW. The variance in the SVTM estimate is due to the upper limit including some PCTs which are described as only partly being associated with the White Box - Yellow Box - Blakely’s Red Gum Grassy Woodland and Derived Native Grassland CEEC. No threat defined locations are specifically identified in the TBDC profile. It is not likely that a single threatening event in a geographically or ecologically distinct area would rapidly affect all occurrences of this CEEC.
2d Evidence that the TEC is unlikely to respond to management (Principle 4, clause 6.7(2)(d) BC Regulation).	This principle (principle 4) is not applicable to the White Box - Yellow Box - Blakely’s Red Gum Grassy Woodland and Derived Native Grassland CEEC.

BAM Section 9.1.1 Criteria	Response to criteria
3 Where the TBDC indicates that data is 'unknown' or 'data deficient' for a TEC for a criterion listed in Section 9.1.1(2), the assessor must record this in the BDAR.	The NSW White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC is not identified as 'unknown' or 'data deficient' in the TBDC.
4a The following questions are addressed in relation to the impacts from the proposal of the TEC. The impact on the geographic extent of the TEC (Principles 1 and 3) by estimating the total area of the TEC to be impacted by the proposal: i. in hectares ii. as a percentage of the current geographical extent of the TEC in NSW.	The Project will impact approximately 5.84 ha of this CEEC including approximately 1.17 ha of vegetation which is described as scattered trees and 4.67 ha which is described as a native pasture, all of which is too disturbed and in a low quality to require biodiversity offsetting under the BAM. The patches do not meet the condition thresholds established under the EPBC Act for the Commonwealth box gum woodland community. The best available information on the current geographic extent of this CEEC across its range is estimated from the SVTM as between 1,267,603 ha and 1,639,571 ha within NSW, as mapped in Figure 9.2. It is considered that this is likely to be an underestimate given there are many areas of derived native grasslands corresponding to this CEEC which are not mapped as part of the SVTM. The Project will impact between 0.0004% and 0.0003% of the geographic extent of this CEEC mapped in the SVTM. It is considered that the actual proportional impact is likely to be much lower due to the presence of large areas of highly degraded derived native grassland vegetation which are not captured in the SVTM.
4b The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes (Principle 2) of the TEC by: i. estimating the size of any remaining, but now isolated, areas of the TEC; including areas of the TEC within 500 m of the Subject land or equivalent area for other types of proposals ii. describing the impacts on connectivity and fragmentation of the remaining areas of TEC measured by: distance between isolated areas of the TEC, presented as the average	The Project will not isolate any areas of the White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC, as any higher quality and remnant vegetation has been retained around the outside of the Subject land. The Project will not fragment areas of the White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC as the Subject land has existing separated by highly disturbed agricultural use areas. The fragmentation will occur through the removal of areas of highly degraded native pasture vegetation and scattered trees. The retained areas will remain connected through other vegetation communities both within the Project and the adjoining landscape. The main dispersal mechanisms for flora species associated with the White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC are inferred to be by one or a combination of dispersal mechanisms, including animals, wind, water runoff, and gravity. Eucalypts within the White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC are likely to rely on animal assisted dispersal by highly mobile vertebrate pollinators (birds and bats) which disperse pollen over large areas when foraging (Southerton <i>et al.</i> 2004).

BAM Section 9.1.1 Criteria	Response to criteria
- distance if the remnant is retained AND the average distance if the remnant is removed as proposed, and - estimated maximum dispersal distance for native flora species characteristic of the TEC, and - other information relevant to describing the impact on connectivity and fragmentation, such as the area to perimeter ratio for remaining areas of the TEC as a result of the development. iii. Describing the condition of the TEC according to the vegetation integrity score for the relevant vegetation zone (s) (Section 4.3). The assessor must also include the relevant composition, structure and function condition scores for each vegetation zone.	The maximum dispersal distance for native flora species characteristic of the White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland ecological community is estimated to be at least 1,000 m and potentially much further. Within the Subject land, areas of the White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC correspond to PCT 1330 Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion. All of these areas have been degraded over a relatively long time period by agricultural management, which has included clearing of trees and understorey vegetation, grazing and pasture improvement. Impacts to areas of intact White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC within the Project Area have been avoided, approximately 8.27 ha. The Vegetation Condition Zones within the Subject land and being impacted by the Project for this PCT are: - PCT 1330 Vegetation Zone 4 – Paddock trees = 1.17 ha (VI score 2.8) - PCT 1330 Vegetation Zone 5 – Native pasture = 4.67 ha (VI score 0.1).

FIGURE 9.1

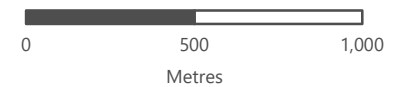
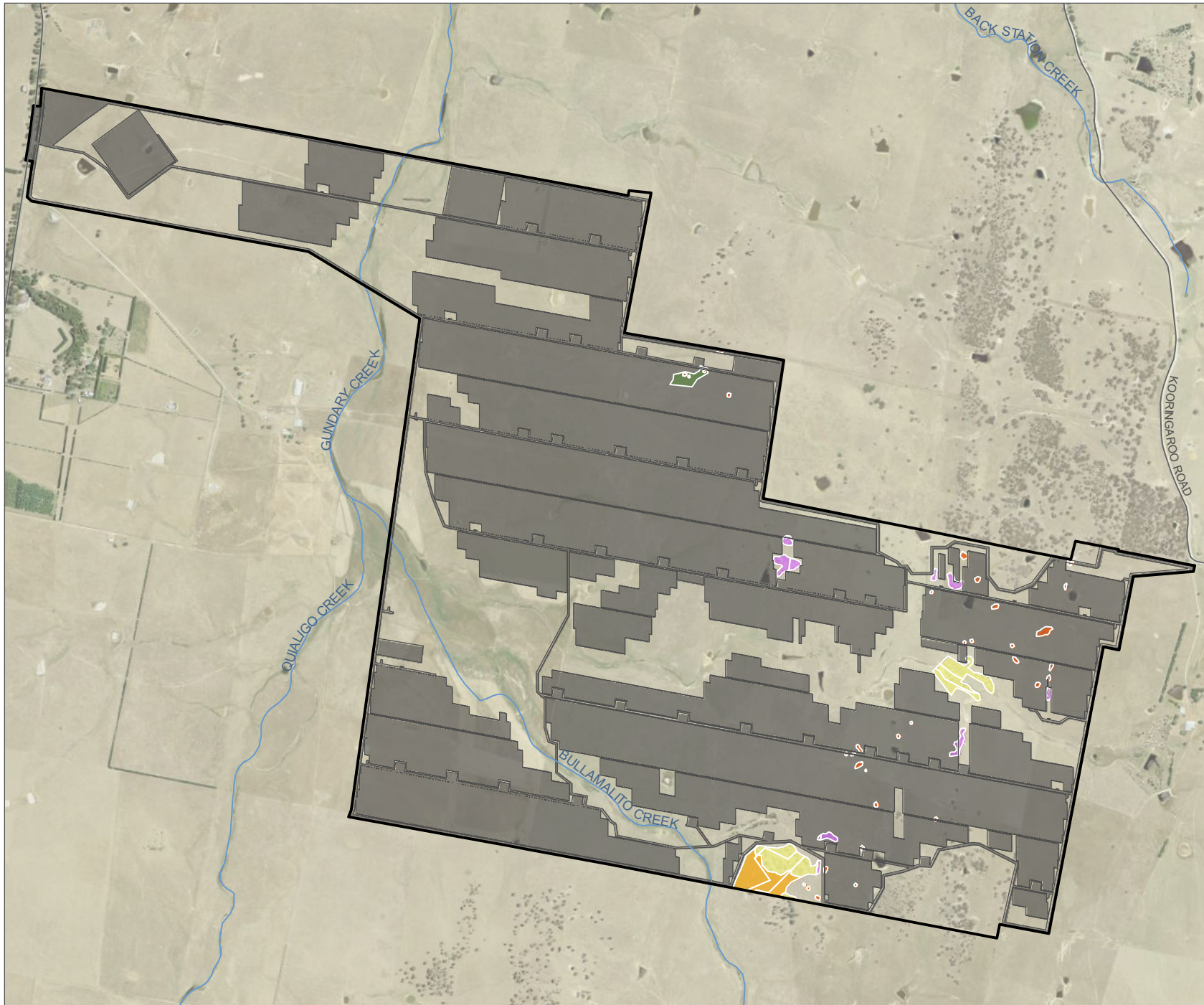
Box Gum Woodland CEEC Impact Avoidance

Legend

- Road
- Watercourse
- ▭ Project Area
- Subject Land

Box Gum Woodland CEEC

- Low
- Moderate
- Derived Native Grassland
- Paddock Trees
- Native Pasture

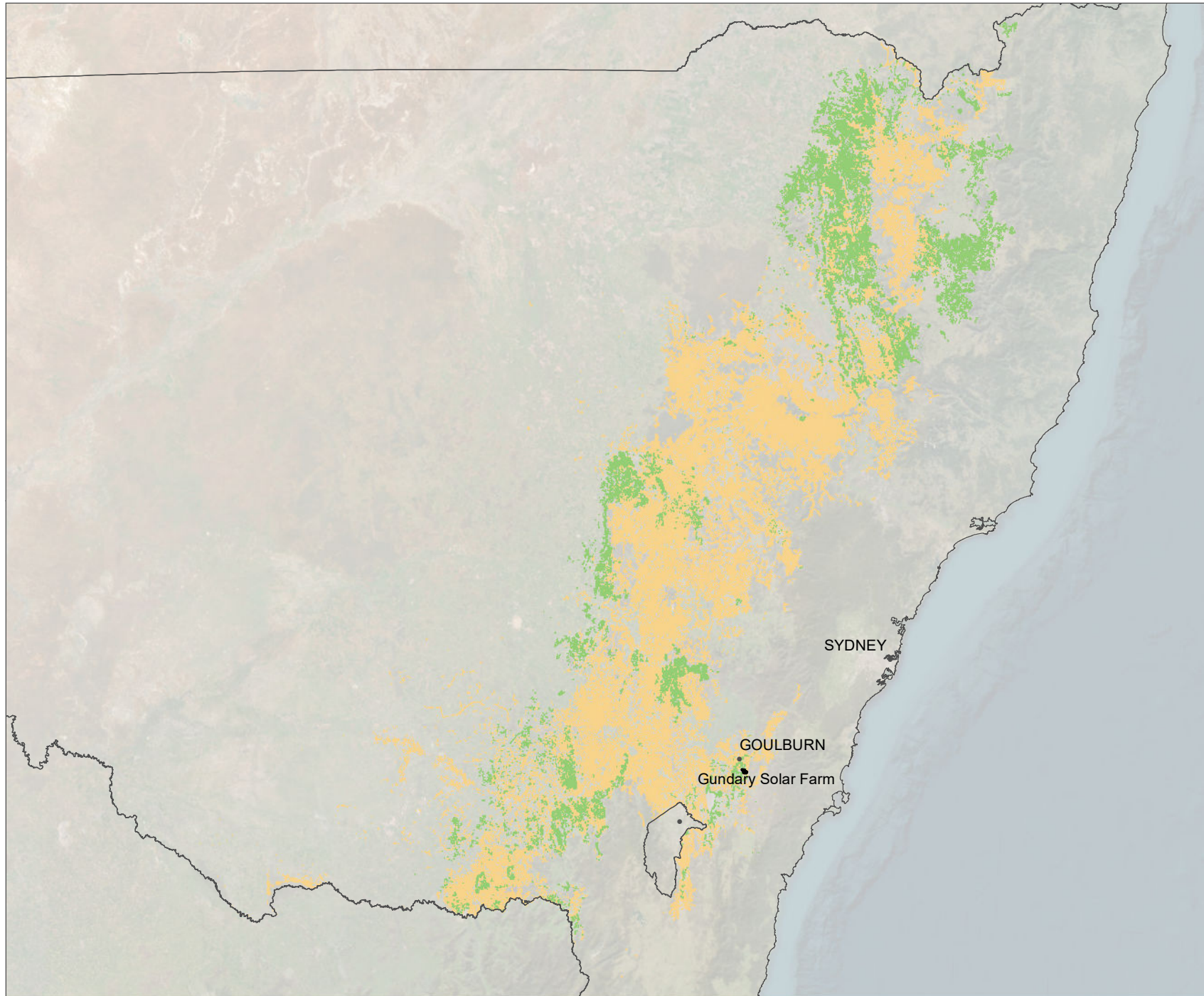


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GDA2020 MGA Zone 55

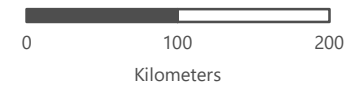
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White Box - Yellow Box -
Blakely's Red Gum Grassy
Woodland and Derived Native
Grassland CEEC NSW Extent



Full Association



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GDA2020 MGA Zone 55

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10.0 Biodiversity Credit Impact Summary

10.1 Determining an Offset Requirements for Impacts

10.1.1 Impacts on Native Vegetation and TECs (Ecosystem Credits)

The PCTs and associated condition zones which do not require an offset (as per BAM Subsection 9.2.1(3)) are listed in **Table 10.1**. There are no impacts that require an offset for ecosystem credits.

Table 10.1 Impacts That Do Not Require Offset – Ecosystem Credits

Vegetation Zone ID	PCT Name	TEC	Impact area	TEC Association	Entity at risk of SAIL	Current VI score
VZ1 Paddock Trees	PCT 888 Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion	No	0.29	No	No	1.1
VZ2 Paddock Trees	PCT 1191 Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	No	0.36	No	No	3.9
VZ3 Low	PCT 1289 Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion	No	4.49	No	No	2.7
VZ4 Paddock Trees	PCT 1330 Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	Yes/ CEEC	1.17	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Yes	2.8
VZ5 Native pasture	PCT 1330 Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	Yes/ CEEC	4.67	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Yes	0.1

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

There are no threatened species and their habitat within the Subject land that require offsets.

10.1.3 Indirect and Prescribed Impacts

There are no offsets required or proposed for indirect and prescribed impacts.

10.2 Impacts Not Requiring Assessment

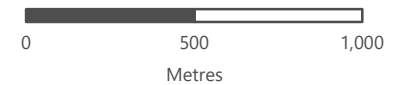
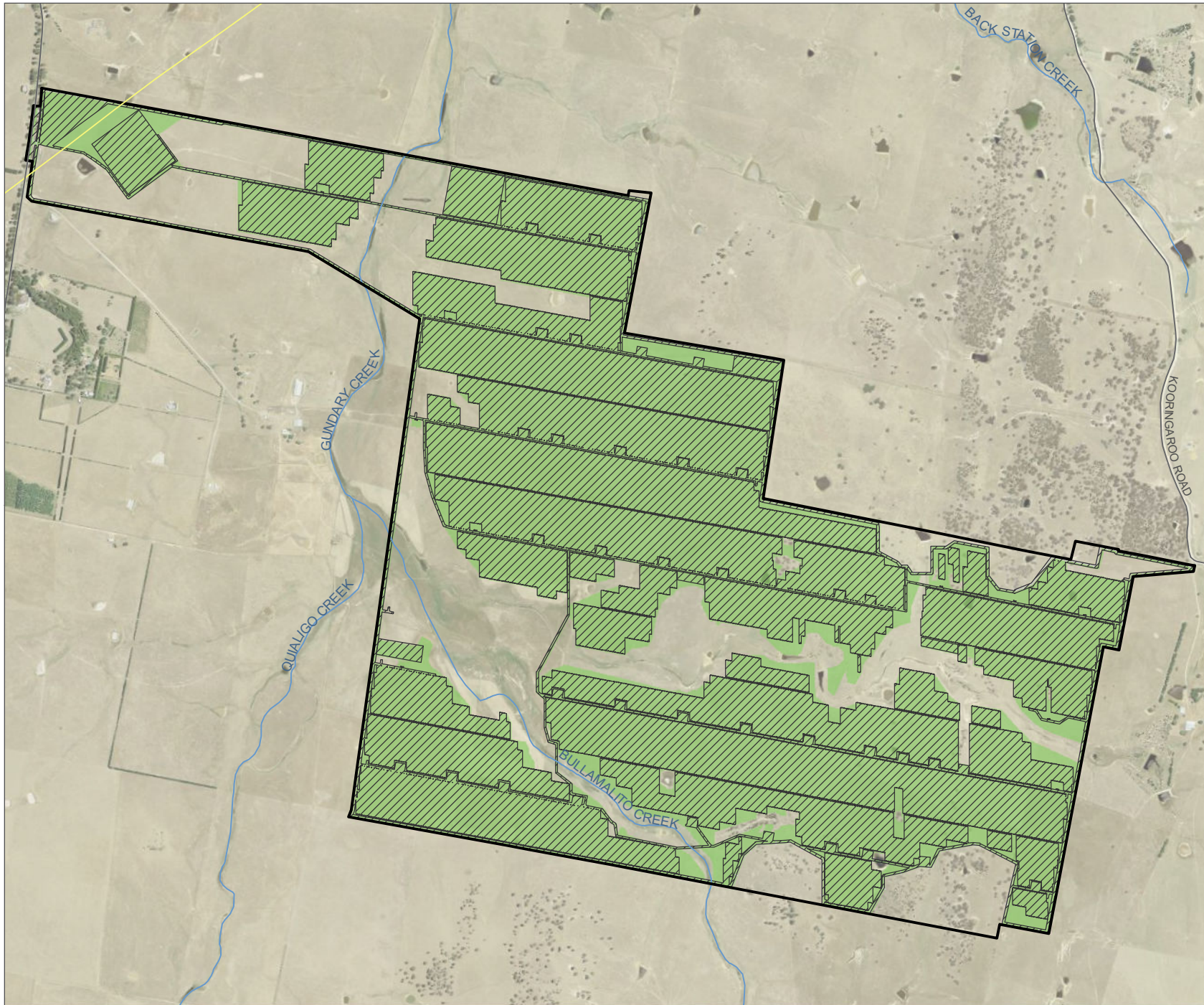
Under Section 10.1 of the BAM, impacts to areas of land without native vegetation do not require further assessment under the BAM and additionally, do not require offsetting. **Figure 10.1** shows the disturbed areas within the Subject land that do not require assessment in accordance with Section 10.1 of the BAM. There are approximately 20 farm dams (containing mostly water and exotic vegetation) identified outside of the areas assessed as Category 1 Exempt Land.

FIGURE 10.1

Thresholds for Assessing Offsetting Impacts

Legend

- Road
- Watercourse
- ▭ Project Area
- ▨ Subject Land
- Security Fence
- Existing Transmission Line
- Impacts not Requiring Offset



Scale: 1:0 at A4
GDA2020 MGA Zone 55

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APPROVED FOR AND ON BEHALF OF Umwelt

11.0 Biodiversity Credit Report

The output from the BAM Calculator is provided in **Appendix D** and does not include any credits for this Project.

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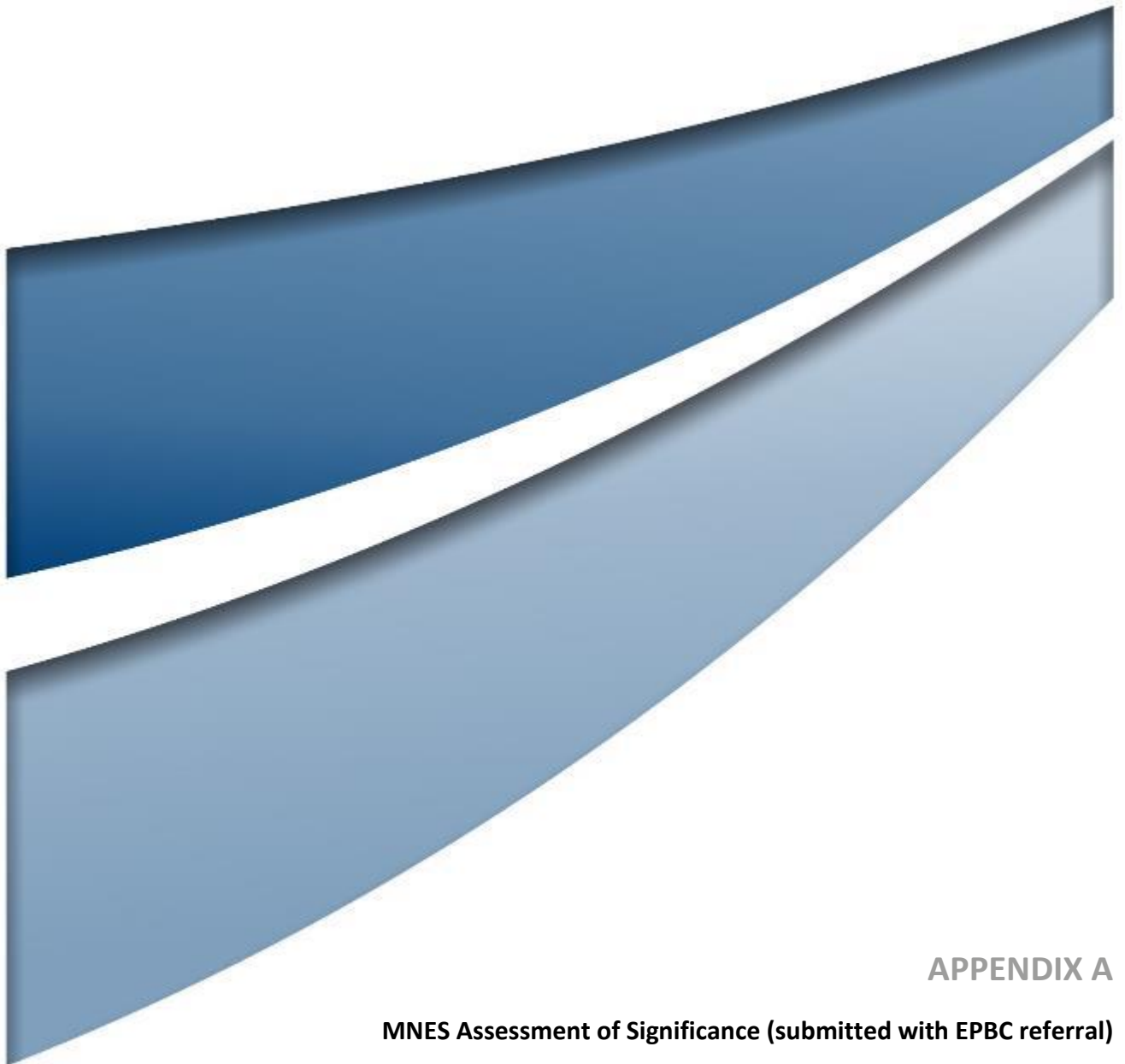
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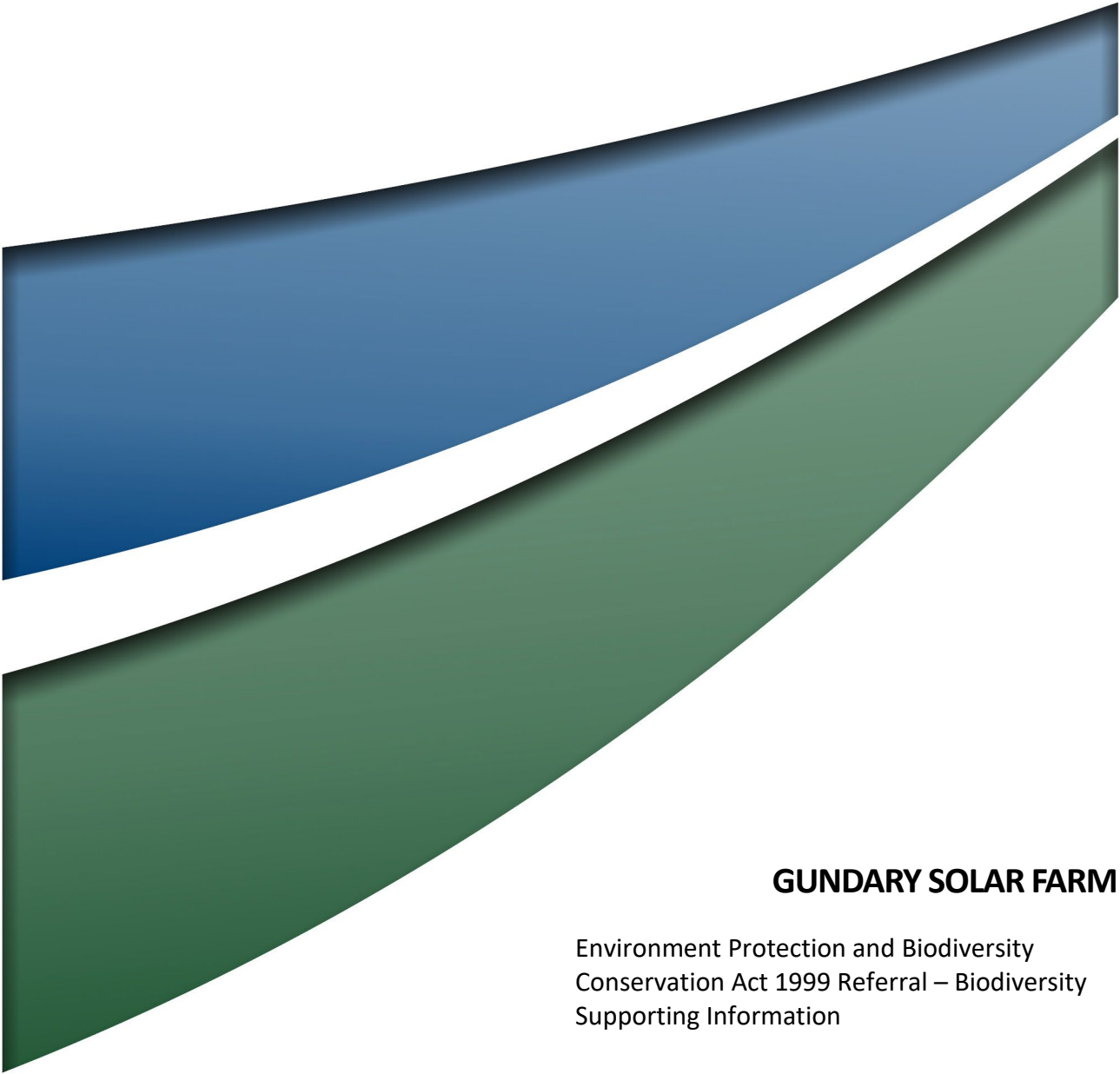
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APPENDIX A

MNES Assessment of Significance (submitted with EPBC referral)



GUNDARY SOLAR FARM

Environment Protection and Biodiversity
Conservation Act 1999 Referral – Biodiversity
Supporting Information

FINAL

March 2023

GUNDARY SOLAR FARM

Environment Protection and Biodiversity
Conservation Act 1999 Referral – Biodiversity
Supporting Information

FINAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
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Date: March 2023



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This report was prepared using
Umwelt's ISO 9001 certified
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Acknowledgement of Country

Umwelt would like to acknowledge the traditional custodians of the country on which we work and pay respect to their cultural heritage, beliefs, and continuing relationship with the land. We pay our respect to the Elders – past, present, and future.

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Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date
Final	Marion O’Neil	1 March 2023	Malinda Facey	13 March 2023

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Appendix A	Protected Matters Search
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1.0 Introduction

The Proposed Action is the construction, operation, civil works, maintenance and decommissioning of a large-scale solar farm and a Battery Energy Storage System (BESS) by Lightsource Development Services Australia Pty Ltd (Lightsource bp) (the Proponent), located in the Goulburn Mulwaree Local Government Area (LGA) of New South Wales (NSW) southeast of Goulburn. The proposed Gundry Solar Farm includes approximately 400 megawatt-peak (MWp) of solar electricity generation and a BESS with a capacity of approximately 200 – 400 MW megawatt (MW) (the Proposed Action). The Proposed Action will be accessed from Windellama Road off the Hume Highway.

Preliminary biodiversity surveys of the Project Area identified the potential for impacts of biodiversity related Matters of National Environmental Significance (MNES). This report outlines the results of subsequent additional biodiversity surveys and includes an assessment of significance for MNES potentially impacted by the Proposed Action with a summary of the key findings provided below.

Two *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) Listed Threatened Ecological Communities (TECs) occur within the Project Area, namely Natural Temperate Grassland and White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland. Furthermore, one threatened species of nineteen individuals of Paddy's River Box, Camden Woollybutt (*Eucalyptus macarthurii*) has been identified during further surveys to occur within the Project Area. The Proposed Action will avoid impacts to both TECs and all individuals of *Eucalyptus macarthurii* through Project redesign.

No EPBC listed threatened or migratory fauna species were detected despite substantial and targeted surveys. Preliminary constraints assessments suggested that the Project Area contained potential for the Striped Legless Lizard (*Delma impar*) based on nearby records and potentially suitable, albeit highly disturbed, habitat. However subsequent detailed investigations within the Project Area, including targeted surveys in accordance with relevant guidelines, determined that there was no individuals or population. On this basis and considering the disturbed nature and poor quality of the habitat within the Project Area it is unlikely that the Proposed Action will have a significant impact on the Striped Legless Lizard in the Project Area.

Considering the above, it is therefore recommended that the Proposed Action not be considered a controlled action.

1.1 Project Area

The Project Area is located in a rural setting, approximately 10 km southeast of Goulburn in the Southern Tablelands of NSW. The Project Area is primarily used for grazing activities.

The Proposed Action will be developed across one freehold property comprising five cadastre lots, covering an area of approximately 708 hectares (ha) (the Project Area).

Extensive areas within and surrounding the Project Area have been cultivated for agricultural purposes, with areas of remnant vegetation and few stands of trees scattered across the Project Area and its surrounds. The closest national park, state park or nature reserve is the Pomaderris Nature Reserve which

is approximately 3.5 km northeast of the Project Area. Pomaderris Nature Reserve is also a Commonwealth State and Territory Reserve under the EPBC Act.

1.2 Development footprint

Within the Project Area, the current design and layout of the Proposed Action encompasses the array of solar panels, the access tracks, substation and the BESS (the development footprint).

The development footprint for the Proposed Action will cover approximately 498 ha within the wider Project Area. The Project layout, development footprint and site access requirements may be subject to further review and refinement following further detailed assessments, and continued community and stakeholder consultation.

1.3 Bilateral Agreement

The Amending Agreement No 1 Bilateral Agreement made under Section 45 of the EPBC Act between the NSW and Commonwealth governments covers Major Projects; and streamlines assessment processes for all NSW proponents that use the NSW Biodiversity Offsets Scheme (BOS) and need approval under the EPBC Act, under the EPBC Act Condition-setting Policy. This means any NSW proponent who needs an EPBC Act approval can use the NSW BOS to assess and meet their biodiversity offset requirements.

Biodiversity assessments for the Proposed Action have been designed and executed in accordance with the NSW Biodiversity Assessment Method (BAM) established under the *Biodiversity Conservation Act 2016* (BC Act). The biodiversity assessment will survey and map all vegetation communities in the Project Area and will assign them to the relevant Plant Community Type (PCT) and, where relevant determine whether the communities conform to any NSW and Commonwealth Threatened Ecological Community (TEC) final determinations. Any impacts to MNES associated with the Proposed Action will be offset in accordance with the NSW BOS.

As noted in **Section 1.0**, it is recommended that the Proposed Action not be considered a controlled action. On this basis, it is not anticipated that the bilateral agreement would be utilised.

2.0 Biodiversity Matters of National Environmental Significance

2.1 Ecological Surveys and Ecological Value

The information in this section relates to Section 3.1 of the online referral form and provides an outline of the ecological investigations and surveys undertaken for the Proposed Action to date.

2.1.1 Literature and Database Review

A review of previous documents and reports relevant to the Proposed Action was undertaken. This included regional and sub-regional vegetation mapping reports, monitoring surveys, previous ecological surveys and relevant ecological database searches. The information obtained was used to assist in the assessment of potential MNES as listed under the EPBC Act, particularly Threatened Ecological Communities (TECs), threatened and migratory species.

Database searches were completed for the locality, defined as the Project Area and a 10-kilometre buffer area. Searches included:

- Commonwealth Protected Matters Search Tool (DCCEEW 2023), last accessed January 2023
- BioNet Atlas of NSW Wildlife database and mapping tool (DPIE 2022), last accessed January 2023
- Threatened Biodiversity Data Collection (TBDC) (DPIE 2020b).

2.1.2 Ecological Surveys Completed for the Project

Preliminary ecological surveys have been undertaken within the Project Area and development footprint. Surveys included the following methodologies:

- Nine Vegetation Integrity floristic plots within the development footprint in accordance with the NSW BAM (refer to Figure 1.7 in Attachment A for Plant Community Types in the Project Area).
- Threatened Ecological Community Delineation within the Project Area.
- Threatened flora species survey transects with consideration of the *NSW Guide to Surveying Threatened Plants and their habitats* (DPIE 2020a) and *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (DEC 2004) within the development footprint.
- Meandering transects walking throughout the development footprint.
- Targeted threatened flora and fauna surveys in September 2022 throughout the development footprint targeting potentially occurring EPBC Act listed species (refer to **Section 2.2.4**).
- Targeted threatened flora and fauna surveys in November 2022 throughout the development footprint targeting potentially occurring EPBC Act listed species (refer to **Section 2.2.4**).

- Striped Legless Lizard (*Delma impar*) surveys throughout the development footprint. These surveys were completed using the *Commonwealth Survey Guidelines for Threatened Reptiles* as a guide and included the establishment of 10 tile arrays, each of 50 tiles. A total of 13 checks over 14 weeks were completed between September to December 2022. Figure 1.8 in Attachment A shows the tile array for surveys completed.
- Targeted Koala surveys during December 2022 and January 2023, including spotlighting, call playback and scat searches.

The Biodiversity Development Assessment Report (BDAR) which will be prepared will detail the PCT and threatened species survey techniques, in accordance with the requirements of the BAM (DPIE 2020).

2.1.3 Ecological Value

The Project Area largely comprises areas that have previously been disturbed and cultivated for agricultural purposes. Vegetation surveys conducted by Umwelt have confirmed the presence of six different plant community types (PCTs) including two EPBC Listed threatened Ecological Communities within the Project Area. The PCTs mapped within the Project Area are:

- PCT731 Broad-leaved Peppermint – Red Stringybark grassy open forest on undulating hills, South Eastern Highlands Bioregion,
- PCT888 Inland Scribbly Gum – Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion,
- PCT1110 River Tussock – Tall Sedge – Kangaroo Grass moist grasslands of the South Eastern Highlands Bioregion,
- PCT1191 Snow Gum – Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion,
- PCT1289 Wallaby Grass – Red-grass – Tall Speargrass – Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion,
- PCT1330 Yellow Box – Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion.

There are 19 individuals of *Eucalyptus macarthurii* found across the Project Area. These are in two distinctive locations, including one in a fenced off erosion gully with *Pinus radiata* and the other in a semi-fenced off area along the main creek in the middle of the Project Area (refer to Figure 1.9 in Attachment A for the location of these trees). The trees appear to have been planted as a wind break or a form of erosion control. The individuals are within a mix of other native eucalypt species (*Eucalyptus cinera*, *E. pauciflora*, *E. mannifera* and *E. macrorhyncha*) which naturally occur in the landscape and have been mapped as PCT1330.

No EPBC listed threatened or migratory fauna species were detected despite substantial and targeted surveys. Preliminary constraints assessments suggested that the Project Area contained potential for the Striped Legless Lizard (*Delma impar*) based on nearby records and potentially suitable, albeit highly disturbed, habitat. However subsequent detailed investigations within the development footprint, including targeted surveys in accordance with relevant guidelines, failed to identify this species. Habitat

within the Project Area is highly degraded and although that alone does not preclude the presence of this species, it does, in combination with the results of the targeted surveys, show that this species is unlikely to occur in the development footprint or the wider Project Area.

2.2 Assessment of Significance

This section provides additional information related to Section 4.1 of the Referral.

2.2.1 MNES Predicted to Occur

In addition to the ecological surveys completed to date, MNES that have been previously recorded, or likely to occur, within the locality (within 10 km) have been identified through a desktop review of available literature and databases (see **Appendix A** for PMST report).

2.2.2 Wetlands of International Importance

The PMST report identified that there are no Wetlands of International Importance within the catchment of the Project Area.

2.2.3 Threatened Communities, Threatened and Migratory Species

The PMST report identified 56 threatened and/or migratory entities that have been recorded in the locality and/or are predicted to occur within the locality as shown in **Table 2.1**. Three of the 25 birds are listed as threatened and migratory (Eastern Curlew, Common Sandpiper and White-throated Needletail).

Table 2.1 Summary of MNES Identified from the Desktop Review

MNES	Number of TECs or species identified in the locality		
	EPBC Act Threatened	EPBC Act Migratory	Total
Ecological communities	2	-	2
Birds	13	12	25
Fish	1	-	1
Mammals	7	-	7
Reptiles	2	-	2
Flora	16	-	16
Amphibian	1	-	1
Insect	2	-	2
Total	4	12	56

3 of the birds is listed as threatened and migratory (Eastern Curlew, Common Sandpiper and White-throated Needletail).

2.2.4 MNES Likelihood of Occurrence

Threatened species and migratory birds listed under the EPBC Act that have the potential to occur in the Project Area have been identified based on the results of the database searches described in **Section 2.1**. An assessment of the likelihood of occurrence has been undertaken, using the definitions provided in **Table 2.2** and the acronyms defined in **Table 2.3**. MNES considered in the assessment are outlined in **Table 2.4**. Species or communities with a reasonable potential to be impacted by the Proposed Action are subject to Assessments of Significance under the EPBC Act.

The assessment provided in **Table 2.4** has considered the collective results from the desktop assessment and the surveys conducted by Umwelt within the development footprint. One additional species (*Eucalyptus macarthurii*) has been added to the list as it was found in the Project Area during the ecological surveys. There were no threatened flora or fauna records of MNES previously recorded within the Project Area.

Table 2.2 Definitions of Likelihood of Occurrence (DoE 2013)

Likelihood of Occurrence	Definition
Known	Recent and reliable records of this matter exist within the Project Area.
High	Probable that the matter occurs in the Project Area, despite lack of records.
Moderate	Suitable habitat is present for this matter however records of the matter are not known to occur in the immediate locality of the Project Area.
Low	There are no records for this matter, the matter is conspicuous all year and not recorded during targeted searches, habitat requirements are not met, or the normal distribution range of the matter does not coincide with the Project Area locality. Despite this, the matter may be present in rare circumstances.
None	There is no potential for the matter to occur within the locality of the Proposed Action.

Table 2.3 Abbreviations used in the following tables

Abbreviation	Explanation
Bonn	The Convention on the Conservation of Migratory Species of Wild Animals, also known as the Convention on Migratory Species (CMS) or the Bonn Convention.
CAMBA	The China–Australia Migratory Bird Agreement
CE	Critically Endangered
CEEC	Critically Endangered Ecological Community
E	Endangered
EEC	Endangered Ecological Community
JAMBA	The Japan Australia Migratory Bird Agreement
ROKAMBA	Republic of Korea–Australia Migratory Bird Agreement
V	Vulnerable

Table 2.4 MNES Identified by the EPBC Act Protected Matters Report

MNES Name		Status EPBC Act	Recorded in locality: PMST	Recorded in locality: BioNet Records	Likelihood to Occur within Project Area	Likelihood of Significant Impact	EPBC Act Assessment Required?
Ecological Communities							
1	Natural Temperate Grassland of the South Eastern Highlands	CE	Likely	Known	The development footprint has been redesigned to avoid any patch of vegetation that meets the relevant condition thresholds of this ecological community with regards to the Proposed Action.	None	Yes – See Section 2.2.5.3
2	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	CE	Likely	Known	The development footprint has been redesigned to avoid any patch of vegetation that meets the relevant condition thresholds of this ecological community with regards to the Proposed Action.	None	Yes – See Section 2.2.5.4
Birds							
3	Common Sandpiper (<i>Actitis hypoleucos</i>)	Bonn, CAMBA, JAMBA, ROKAMBA	May	0	Low – The development footprint does not have suitable habitat to support the species.	None	No
4	Regent Honeyeater (<i>Anthochaera phrygia</i>)	CE,	Known	1	Low – one record 8km north of the Project Area from 2000. There is no suitable habitat within the development footprint.	None	No
5	Fork-tailed Swift (<i>Apus pacificus</i>)	CAMBA, JAMBA, ROKAMBA	Likely	1	Low – one record 500m east of the Project Area from 2020 in the house paddock of a neighbouring property, this species is migratory and does not rely on specific habitat restricted to the Project Area. The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
6	Australasian Bittern (<i>Botaurus poiciloptilus</i>)	E,	May	0	Low – The Project Area does not have suitable habitat to support the species.	None	No

MNES Name		Status EPBC Act	Recorded in locality: PMST	Recorded in locality: BioNet Records	Likelihood to Occur within Project Area	Likelihood of Significant Impact	EPBC Act Assessment Required?
7	Sharp-tailed Sandpiper (<i>Calidris acuminata</i>)	Bonn, CAMBA, JAMBA, ROKAMBA	May	1	Low – The Project Area does not have suitable habitat to support the species. One record from 2011 within 10km is in the large dam at a Golf Course which adjoins to the Mulwaree River.	None	No
8	Curlew Sandpiper (<i>Calidris ferruginea</i>)	CE, Bonn, CAMBA, JAMBA, ROKAMBA	May	0	Low – The Project Area does not have suitable habitat to support the species.	None	No
9	Pectoral Sandpiper (<i>Calidris melanotos</i>)	Bonn, JAMBA, ROKAMBA	May	0	Low – The Project Area does not have suitable habitat to support the species.	None	No
10	Gang-gang Cockatoo (<i>Callocephalon fimbriatum</i>)	E,	Known	3	Low – Breeding and foraging habitat absent from grassland areas. Unlikely to use hollows in scattered paddock trees due to the lack of connectivity to suitable foraging habitat nearby. The development footprint avoids all intact native woodland areas.	None	No
11	South-eastern Glossy Black-Cockatoo (<i>Calyptrorhynchus lathami lathami</i>)	V,	Known	9	Low - Breeding and foraging habitat absent from grassland areas. Foraging habitat absent from Project Area. Unlikely to use hollows in scattered paddock trees due to the lack of connectivity to suitable foraging habitat nearby. The development footprint avoids all intact native woodland areas.	None	No
12	Grey Falcon (<i>Falco hypoleucos</i>)	V,	Likely	0	Low - The Project Area does not have suitable habitat to support the species.	None	No
13	Latham's Snipe, Japanese Snipe (<i>Gallinago hardwickii</i>)	Bonn, JAMBA, ROKAMBA	Likely	2	Low - The Project Area does not have suitable habitat to support the species. Two records from 2022 within 10km one is in the large dam at a Golf Course which adjoins to the Mulwaree River and the other further downstream.	None	No

MNES Name		Status EPBC Act	Recorded in locality: PMST	Recorded in locality: BioNet Records	Likelihood to Occur within Project Area	Likelihood of Significant Impact	EPBC Act Assessment Required?
14	Painted Honeyeater (<i>Grantiella picta</i>)	V,	Likely	0	Low - The Project Area does not have suitable habitat to support the species.	None	No
15	White-throated Needletail (<i>Hirundapus caudacutus</i>)	V, CAMBA, JAMBA, ROKAMBA	Known	2	Low - The Project Area does not have suitable habitat to support the species. Two records from 2000 and 2001 within 10km towards the intact woodland of the Pomaderris Nature Reserve.	None	No
16	Swift Parrot (<i>Lathamus discolor</i>)	CE	Known	0	Low - The Project Area does not have suitable habitat to support the species.	None	No
17	Black-faced Monarch (<i>Monarcha melanopsis</i>)	Bonn	May	0	Low - The Project Area does not have suitable habitat to support the species.	None	No
18	Yellow Wagtail (<i>Motacilla flava</i>)	CAMBA, JAMBA, ROKAMBA	May	0	Low - The Project Area does not have suitable habitat to support the species.	None	No
19	Satin Flycatcher (<i>Myiagra cyanoleuca</i>)	Bonn	Likely	0	Low - The Project Area does not have suitable habitat to support the species.	None	No
20	Eastern Curlew, Far Eastern Curlew (<i>Numenius madagascariensis</i>)	CE, Bonn, CAMBA, JAMBA, ROKAMBA	May	0	Low - The Project Area does not have suitable habitat to support the species.	None	No
21	Superb Parrot (<i>Polytelis swainsonii</i>)	V	Likely	0	Low - The Project Area does not have suitable habitat to support the species.	None	No
22	Pilotbird (<i>Pycnoptilus floccosus</i>)	V	May	0	Low - The Project Area does not have suitable habitat to support the species.	None	No
23	Rufous Fantail (<i>Rhipidura rufifrons</i>)	Bonn	Likely	0	Low - The Project Area does not have suitable habitat to support the species.	None	No

MNES Name		Status EPBC Act	Recorded in locality: PMST	Recorded in locality: BioNet Records	Likelihood to Occur within Project Area	Likelihood of Significant Impact	EPBC Act Assessment Required?
24	Australian Painted Snipe (<i>Rostratula australis</i>)	Bonn, CAMBA, JAMBA, ROKAMBA	Likely	0	Low - The Project Area does not have suitable habitat to support the species.	None	No
	Fish						
25	Macquarie Perch (<i>Macquaria australasica</i>)	E	Known	0	Low - The Project Area does not have suitable habitat to support the species.	None	No
	Amphibians						
26	Green and Golden Bell Frog (<i>Litoria aurea</i>)	V	May	1	Low - The Project Area does not have suitable habitat to support the species. One record from 1975 within 10km which is near a golf course which adjoins to the Mulwaree River.	None	No
	Insects						
27	Key's Matchstick Grasshopper (<i>Keyacris scurra</i>)	E	Known	3	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species. Species was also not detected during Spring surveys.	None	No
28	Golden Sun Moth (<i>Synemon plana</i>)	V	Likely	0	Low - The Project Area does not have suitable habitat to support the species.	None	No
	Mammal						
29	Large-eared Pied Bat, Large Pied Bat (<i>Chalinolobus dwyeri</i>)	V	Known	0	Low - No known suitable escarpments or rocky areas likely to be roosting habitat within two kilometres of sites, therefore the Project Area does not have suitable habitat to support the species.	None	No

MNES Name		Status EPBC Act	Recorded in locality: PMST	Recorded in locality: BioNet Records	Likelihood to Occur within Project Area	Likelihood of Significant Impact	EPBC Act Assessment Required?
30	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (south-eastern mainland population) (<i>Dasyurus maculatus maculatus</i>)	E	Known	1	Low - The Project Area does not have suitable habitat to support the species. One record from 1992 on the corner of Kooringaroo Road and Mountain Ash Road.	None	No
31	Greater Glider (southern and central) (<i>Petauroides volans</i>)	E	May	0	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
32	Yellow-bellied Glider (south-eastern) (<i>Petaurus australis australis</i>)	V	Likely	0	Low - The Project Area does not have suitable habitat to support the species.	None	No
33	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (<i>Phascolarctos cinereus</i>)	E	Known	2	Low - The Project Area avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
34	New Holland Mouse, Pookila (<i>Pseudomys novaehollandiae</i>)	V	May	0	Low - The Project Area does not have suitable habitat to support the species.	None	No
35	Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>)	V	May	6	Low - The Project Area is too degraded to support breeding camps and the development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
Reptiles							
36	Pink-tailed Worm-lizard, Pink-tailed Legless Lizard (<i>Aprasia parapulchella</i>)	V	Likely	0	Low – the species was assessed during Spring targeted surveys and did not detect any individuals; the patches of suitable habitat were disjointed and rarely connected.	None	No

MNES Name		Status EPBC Act	Recorded in locality: PMST	Recorded in locality: BioNet Records	Likelihood to Occur within Project Area	Likelihood of Significant Impact	EPBC Act Assessment Required?
37	Striped Legless Lizard (<i>Delma impar</i>)	V	Likely	1	Moderate - One record near the Goulburn Airport 4 km north-west of the Project Area from 1997. Targeted Spring surveys were completed in 2022 according to the guidelines and no individuals were detected across the Project Area. The area of potential suitable habitat was highly degraded and included heavy stocking regimes.	None	Yes – See Section 2.2.5.1
	Flora						
38	Bynoe's Wattle, Tiny Wattle (<i>Acacia bynoeana</i>)	V	May	0	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
39	Mauve Burr-daisy (<i>Calotis glandulosa</i>)	V	May	0	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
40	Dwarf Kerrawang (<i>Commersonia prostrata</i>)	E	Likely	0	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
41	Buttercup Doubletail (<i>Diuris aequalis</i>)	E	Known	1	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
42	Trailing Hop-bush (<i>Dodonaea procumbens</i>)	V	Likely	0	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No

MNES Name		Status EPBC Act	Recorded in locality: PMST	Recorded in locality: BioNet Records	Likelihood to Occur within Project Area	Likelihood of Significant Impact	EPBC Act Assessment Required?
43	Black Gum (<i>Eucalyptus aggregata</i>)	V	Likely	0	Low - The development footprint avoids all intact native woodland areas and was not detected during preliminary or targeted Spring surveys.	None	No
44	Spiny Pepper-cress (<i>Lepidium aschersonii</i>)	V	May	0	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
45	Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed (<i>Lepidium hyssopifolium</i>)	E	Likely	0	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
46	Hoary Sunray, Grassland Paper-daisy (<i>Leucochrysum albicans</i> subsp. <i>tricolor</i>)	E	Known	26	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species. It was not detected during targeted Spring surveys.	None	No
47	Cotoneaster Pomaderris (<i>Pomaderris cotoneaster</i>)	E	May	0	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
48	<i>Pomaderris delicata</i>	CE	Known	37	Low – Nearby records are all restricted to the Pomaderris Nature Reserve or connected vegetation. The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No

MNES Name		Status EPBC Act	Recorded in locality: PMST	Recorded in locality: BioNet Records	Likelihood to Occur within Project Area	Likelihood of Significant Impact	EPBC Act Assessment Required?
49	Pale Pomaderris (<i>Pomaderris pallida</i>)	V	Likely	0	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
50	Tarengo Leek Orchid (<i>Prasophyllum petilum</i>)	E	May	0	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
51	Eastern Underground Orchid (<i>Rhizanthella slateri</i>)	E	May	0	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
52	Button Wrinklewort (<i>Rutidosia leptorhynchoides</i>)	E	Known	18	Low – Nearby records are from 1997-2016, approximately 500m north across Windellama Road from the Goulburn Airport, approximately 4km north of the Project Area. The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
53	Large-fruit Fireweed, Large-fruit Groundsel (<i>Senecio macrocarpus</i>)	V	May	0	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
54	Small Purple-pea, Mountain Swainson-pea, Small Purple Pea (<i>Swainsona recta</i>)	E	May	0	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No

MNES Name		Status EPBC Act	Recorded in locality: PMST	Recorded in locality: BioNet Records	Likelihood to Occur within Project Area	Likelihood of Significant Impact	EPBC Act Assessment Required?
55	Austral Toadflax, Toadflax (<i>Thesium australe</i>)	V	Likely	0	Low - The development footprint avoids all intact native woodland areas and does not have suitable habitat in the scattered paddock trees or grassland to support the species.	None	No
56	Paddy's River Box, Camden Woollybutt (<i>Eucalyptus macarthurii</i>)	E	Known	19	Moderate –19 individual trees have been found within the Project Area; this includes one in a fenced off erosion gully with <i>Pinus radiata</i> an area in a semi-fenced off area along the main creek in the middle of the Project Area (refer to Figure 1.9 in Attachment A for the location of these trees). The trees appear to have been planted as a wind break or a form of erosion control. The individuals are within a mix of other native eucalypt species (<i>Eucalyptus cinera</i> , <i>E. pauciflora</i> , <i>E. mannifera</i> and <i>E. macrorhyncha</i>) which naturally occur in the landscape. The development footprint has been resigned to avoid all individuals in the Project Area with regards to the Proposed Action.	None	Yes – See Section 2.2.5.2

2.2.5 Assessment of Significance Results

Following the completion of ecological surveys and guided by the likelihood of occurrence documented above, assessments of significance have been completed, in accordance with the Significance Impact Guidelines 1.1 (DoE 2013), for the following species and communities:

- Striped legless lizard (*Delma impar*)
- Paddy's River Box, Camden Woollybutt (*Eucalyptus macarthurii*)
- Natural Temperate Grassland of the South Eastern Highlands
- White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

Considering the low likelihood of a significant impact identified within the larger Project Area, it is considered that the Proposed Action is unlikely to result in a significant impact to MNES listed threatened or migratory species or TECs.

Based on the above, it is recommended that the Proposed Action not be considered a controlled action.

2.2.5.1 Striped Legless Lizard

Striped Legless Lizard (*Delma impar*)- Vulnerable (EPBC Act)

Distribution

The Striped Legless Lizard occurs in the Southern Tablelands, the South West Slopes, the Upper Hunter and possibly on the Riverina. Populations are known in the Goulburn, Yass, Queanbeyan, Cooma, Muswellbrook, and Tumut areas. Also occurs in the ACT, Victoria, and south-eastern South Australia. Based on the referral guidelines (Commonwealth of Australia, 2011), the action is within the modelled distribution of the striped legless lizard, with part of the site located within the former extent of Natural Temperate Grassland, the primary habitat for the species. The site is approximately 4 km south of a known record of the species, which is located in a similar landscape position.

Habitat requirements

Found mainly in Natural Temperate Grassland, which is a critically endangered ecological community (CEEC) listed under the EPBC Act, the Striped Legless Lizard has also been captured in native grasslands that have a high exotic component. Also found in secondary grassland within two kilometres of the former extent of Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass *Themeda australis*, spear-grasses *Austrostipa* spp. and *Poa* tussocks *Poa* spp., and occasionally wallaby grasses *Austrodanthonia* spp. Sometimes present in modified grasslands with a significant component of exotic grasses. Sometimes found in grasslands with significant amounts of surface rocks, which are used for shelter. Sometimes utilises dried cowpats for shelter (DPE 2022). Multiple areas that have been historically subjected to pasture improvement that are not adjacent to undisturbed habitat are unlikely to support the species; additionally, areas subject to recent or regular cultivation can be discounted.

The Project Area contains approximately 200.75 ha of degraded but potentially suitable grassland habitats including an area of 26.58 ha of low-quality native grassland (containing small patches of perennial native grasses (*Themeda triandra* and *Austrostipa bigeniculata*) and 171.00 ha of exotic pasture that has not been recently cultivated. All other areas of exotic pasture have been assessed as unlikely to support the species as there is evidence of ongoing and recent cultivation.

Summary of impacts and context of Striped Legless Lizard for the Project

The Proposed Action occurs completely within the development footprint which avoids 69.49 ha of the potential habitat within the Project Area. As such, the area of potentially suitable habitat for the Striped Legless Lizard within the development footprint is 131.26 ha. Whilst all primary habitat in the Natural Temperate Grassland is to be retained, the area of potentially suitable habitat in the development footprint includes an area of low-quality native grassland 9.55 ha and 121.71 ha of the adjoining exotic pasture that has not been recently cultivated.

Targeted surveys for this species commenced in September 2022 and consisted of one weekly check of tiles over a 14-week period until December 2022 (a total of 13 checks were completed). The surveys were completed using the *Commonwealth Survey Guidelines for Threatened Reptiles* as a guide and included 10 tile arrays each containing 50 tiles, setup in a grid formation in accordance with the guideline (DCCEEW 2011). Refer to Figure 1.8 in Attachment A for the tile array illustration.

No Striped Legless Lizards were detected during the survey.

Assessment of significance	Address of Criteria	Likelihood
An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:		
lead to a long-term decrease in the size of an important population of a species	The recovery plan identifies that all extant populations are potentially important for the survival of Striped Legless Lizard. If present, a population at this location would likely be considered important, in accordance with the significant impact guidelines and the referral guidelines, as it would be located at the eastern extent of the species' range and is of an appropriate size and condition of habitat within the Project Area. Measures have been undertaken to avoid any impacts on primary habitat for Striped Legless Lizard (i.e. Natural Temperate Grassland). However, an	Unlikely – targeted surveyed or discount species presence, therefore

Striped Legless Lizard (<i>Delma impar</i>)- Vulnerable (EPBC Act)		
	area of potential habitat in the form of low-quality native grasslands and exotic pastures that do not appear recently cultivated would be subject to adverse impacts through construction of access tracks, panel installation or shading. Targeted surveys in accordance with the survey guidelines (DCCEE 2011) were undertaken to confirm or discount species presence. Spring targeted surveys have been included as part of the EIS Stage 2 BAM assessment to confirm presence or absence of the population. The targeted surveys determined that there was no individuals or population within the Project Area. There is no known important population within the Project Area and therefore the Proposed Action would not result in the long-term decrease in the size of an important population of the species.	no important population in Project Area
reduce the area of occupancy of the species	The Proposed Action is not likely to reduce the local extent of habitat of the species and would not result in a reduction of the area of occupancy of the species if measured at a 2 km grid size in accordance with IUCN guidelines, as no individuals or population was found during the Spring targeted surveys.	Unlikely
fragment an existing population into two or more populations	There is no population in the Project Area as confirmed after the Spring targeted surveys, therefore the Proposed Action would not fragment any populations.	Unlikely
adversely affect habitat critical to the survival of a species	Habitat critical for the survival of Striped Legless Lizard is not clarified in the recovery plan. Based on review of the conservation advice, there is potential for areas of habitat to meet the definition of habitat critical to the survival of the species although there are no populations or individuals confirmed within the Project Area. The Project Area is not currently protected from agricultural development and does not currently provide long term protection. While parts of identified habitat in the Project Area include areas that meet condition thresholds for the Natural Temperate Grassland CEEC, these areas have been avoided during detailed planning. Habitat that has the potential to be critical to the survival of the species would exclude areas of cultivated exotic vegetation and would comprise areas of native grassland and natural temperate grassland in the Project Area. As impacts to Natural Temperate Grassland have been avoided and there was no Striped Legless Lizards found during the targeted surveys it is unlikely that the Proposed Action would adversely affect habitat critical to the survival of a species.	Unlikely
disrupt the breeding cycle of an important population	Impacts would result in direct loss or degradation of habitat rather than impacting the breeding cycle. Targeted surveys determined that there was no individuals or population within the Project Area and therefore the Proposed Action does not constitute any specific action that would disrupt the breeding cycle or life cycle of the species.	Unlikely
modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline	The Proposed Action has the potential to modify habitat in the following ways: clearing for access tracks and infrastructure footprint, shading by solar panels and other infrastructure, and ground disturbance due to vehicle and equipment movement and trenching works. Associated impacts such as increased potential for weed invasion or erosion and sedimentation during construction would be managed in accordance with construction and post construction best practice (management plans). There was no Striped Legless Lizards found during the targeted surveys and the Proposed Action is	Unlikely

Striped Legless Lizard (<i>Delma impar</i>)- Vulnerable (EPBC Act)		
	not likely to modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline.	
result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	This Proposed Action involves construction of a solar farm, removing native vegetation from the development footprint within the Project Area. At this stage, other than the presence of exotic tussock grasses introduced for agricultural purposes large stands of existing weed infestations across the Project Area have not been identified. As part of the Project, during construction and operations best practice controls would be implemented to control the spread of any potential new invasive flora species into the Project Area or adjacent blocks. This would be conditioned in the Development Application conditions and the Operational Management Plan. Feral animals such as foxes and feral cats are likely to be present on site, and the Proposed Action would not increase the availability of habitat for these species., A perimeter security fence is planned as part of construction which will also keep any new feral animals from entering and reduce any potential predation. With implementation of appropriate controls, the Proposed Action is not anticipated to result in an increase or change in invasive species becoming established across the Project Area.	Unlikely
introduce disease that may cause the species to decline	Whilst there is some potential for plant and machinery to transport and disperse pathogens throughout the project area, this risk would be managed through the use of vehicle quarantining procedures. There are no known diseases recognized to be a threat to Striped Legless Lizard. It is considered unlikely that the Proposed Action would introduce disease that may cause the Striped Legless Lizard population to decline.	Unlikely
interfere substantially with the recovery of the species.	The Proposed Action does not interfere with any specific recovery actions under the draft national recovery plan. Due to the limited knowledge of the status of the species in the Goulburn region, with one confirmed record within 4 kilometres of the Project Area, the potential for a population at this location to be important for the recovery of the species cannot be discounted. There was no Striped Legless Lizards found during the targeted surveys and the Proposed Action would not interfere substantially with the recovery of the species, if present.	Unlikely
Conclusion: No Striped Legless Lizards were found during the targeted surveys. On this basis and considering the disturbed nature and poor quality of the habitat within the Project Area it is unlikely that the Proposed Action will have a significant impact on the Striped Legless Lizard in the Project Area. Based on the above, it is recommended that the Proposed Action not be considered a controlled action.		

2.2.5.2 Paddy's River Box, Camden Woollybutt (*Eucalyptus macarthurii*)

Paddy's River Box, Camden Woollybutt (<i>Eucalyptus macarthurii</i>) Endangered (EPBC Act)		
Distribution <i>Eucalyptus macarthurii</i> occurs in the South Eastern Highlands and the Sydney Basin of NSW. The species has two main populations which occur on the Wingecarribee Plateau to Marulan and the Boyd Plateau in the Blue Mountains (Threatened Species Scientific Committee 2016b). Generally, <i>Eucalyptus macarthurii</i> occurs along roadsides and on private land, however some individuals occur within the Cecil Hoskins Nature Reserve (OEH 2022). The Project Area is approximately 21.5 km south-west of a known record of the species, which is located in a similar landscape position. Habitat requirements The species is mainly found in grassy woodland on relatively fertile soils. More specifically, <i>Eucalyptus macarthurii</i> naturally grows in cold, wet locations alongside swamps and streams (NSW Scientific Committee 2014). The species occurs at moderately high altitudes where it has been recorded between 700 m asl and 1200 asl. Populations of <i>Eucalyptus macarthurii</i> in the Southern Highlands typically occur as scattered paddock trees. <i>Eucalyptus macarthurii</i> has also been planted as windbreaks in the Southern Highlands. Summary of impacts and context of <i>Eucalyptus macarthurii</i> for the Project The area of potentially suitable habitat for <i>Eucalyptus macarthurii</i> within the Project Area is areas of scattered trees (refer to Figure 1.9 in Attachment A for the <i>Eucalyptus macarthurii</i> habitat mapping). This includes areas of associated Plant Community Type (PCT) 731 Broad-leaved Peppermint - Red Stringybark grassy open forest, PCT 1191 Snow Gum – Candle Bark Woodland, and PCT 1330 Yellow Box – Blakely's Red Gum Grassy Woodland. All areas of planted and known <i>Eucalyptus macarthurii</i> have been avoided by Project redesign. It is highly unlikely that any additional individuals are within the Project Area. Targeted surveys for the species were completed in October 2022 in mapped areas of PCT 731, PCT 1191 and PCT 1330, and planted individuals were identified in native and exotic windbreak plantings.		
Assessment of significance	Address of Criteria	Likelihood
An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:		
lead to a long-term decrease in the size of a population of a species	The conservation advice does not identify which populations are important for the survival of <i>Eucalyptus macarthurii</i>, however notes that introduced populations can only be included in the assessment (as per the International Union for Conservation of Nature (IUCN) Red List Guidelines 2014) if the intent of the introduction was to reduce the extinction risk of the species. The population at this location is unlikely to be considered important, in accordance with the conservation advice, as suitable habitat is highly fragmented and degraded, and no naturally occurring individuals occur within the Project Area. Measures have been undertaken to avoid any impacts on individuals of <i>Eucalyptus macarthurii</i>. <i>Eucalyptus macarthurii</i> was recorded in the Project Area during targeted Spring surveys in October 2022. All recorded individuals were recorded as plantings. As the nearest recorded individuals to those identified in the Project Area occurs over 20 kilometres from the Project Area, the planted population in this landscape is highly fragmented, and is unlikely to be continuous with an extant population. As all individuals are to be avoided, the Proposed Action is unlikely to lead to a long-term decrease in the size of a population of <i>Eucalyptus macarthurii</i>.	Unlikely
reduce the area of occupancy of the species	The Proposed Action is not likely to reduce the local extent of potentially suitable habitat of the species on site and is highly unlikely to result in a local population going extinct as all recorded individuals have been planted. All individuals have been avoided, and therefore would not result in a	Unlikely

Paddy's River Box, Camden Woollybutt (<i>Eucalyptus macarthurii</i>) Endangered (EPBC Act)		
	reduction of the area of occupancy of the species if measured at a 2 km grid size in accordance with IUCN guidelines.	
fragment an existing population into two or more populations	As the only population within the Project Area consists of planted individuals, and those individuals are to be avoided, the Proposed Action is unlikely to fragment two or more populations of <i>Eucalyptus macarthurii</i> .	Unlikely
adversely affect habitat critical to the survival of a species	Habitat critical for the survival of <i>Eucalyptus macarthurii</i> is not clarified in the conservation advice. Based on review of the conservation advice, there is no potential for areas of habitat to meet the definition of habitat critical to the survival of the species within the Project Area, it is unlikely the Proposed Action will adversely affect habitat critical to the survival of the species.	Unlikely
disrupt the breeding cycle of a population	All known individuals within the Project Area have been avoided. The Proposed Action does not constitute any specific action that would disrupt the breeding cycle or life cycle of the species.	Unlikely
modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline	The Approved Conservation Advice documents the estimated area of occupancy for <i>Eucalyptus macarthurii</i> to be 14,400 ha (Threatened Species Scientific Committee 2016b). Areas of potentially suitable habitat present within the Project Area amount to less than 0.04% of the total extent of occupied habitat. As all areas of known planted individuals are being avoided, the Proposed Action is unlikely to result in a decrease in suitable habitat for the species to the extent that the species is likely to decline. The Proposed Action has the potential to modify habitat through increased potential for weed invasion or erosion and sedimentation associated with clearing for access tracks and infrastructure footprint and ground disturbance due to vehicle and equipment movement. These impacts would be managed in accordance with construction and post construction best practice (management plans).	Unlikely
result in invasive species that are harmful to an endangered species becoming established in the endangered species' habitat	This Proposed Action involves construction of a solar farm which would involve the removal of some native vegetation from within the Project Area. At this stage, other than the presence of exotic tussock grasses introduced for agricultural purposes large stands of existing weed infestations across the Project Area have not been identified. As part of the Project, during construction and operations, best practice controls would be implemented to control the spread of any potential new invasive flora species into the Project Area or adjacent blocks. This would be conditioned in the Development Application conditions and Operational Management Plan. With implementation of appropriate controls, the Proposed Action is not anticipated to result in an increase or change in invasive species becoming established in <i>Eucalyptus macarthurii</i> habitat.	Unlikely
introduce disease that may cause the species to decline	Whilst there is some potential for plant and machinery to transport and disperse pathogens throughout the project area, this risk would be managed through the use of vehicle quarantining procedures. <i>Eucalyptus macarthurii</i> is susceptible to <i>Phytophthora nicotianae</i> which may be transported on vehicles and worker footwear. It is considered unlikely that the Proposed Action would introduce disease that may cause the <i>Eucalyptus macarthurii</i> population to decline.	Unlikely
interfere with the recovery of the species.	The Proposed Action does not interfere with any specific recovery actions listed within the conservation advice. The primary conservation actions include: 1. Prevent land clearing and resulting habitat destruction at all indigenous localities.	Unlikely

Paddy's River Box, Camden Woollybutt (<i>Eucalyptus macarthurii</i>) Endangered (EPBC Act)		
	2. Maintain and enhance existing and potential habitat. 3. Prevent grazing by cattle and other introduced herbivores. 4. Manage weeds at all indigenous localities. The Proposed Action will not result in land clearing resulting in habitat destruction at an indigenous locality of the species, as all identified individuals of the species are planted and have been avoided. Cattle and sheep are already present within the Project Area, and the Proposed Action will not result in the introduction of additional introduced herbivores. No indigenous population of <i>Eucalyptus macarthurii</i> is present within the Project Area, and best practice construction controls would be implemented to control the spread of any potential new weeds into the Project Area.	
Conclusion: <i>Eucalyptus macarthurii</i> has been recorded as present within the Project Area as planted individuals. In its assessment of the species, the conservation advice does not include planted populations of the species outside of its natural range unless they have been planted with the intent to reduce the risk of extinction which is not the case. Notwithstanding, the Proposed Action will avoid impacts on all <i>Eucalyptus macarthurii</i> and, as such, the Proposed Action is unlikely to have a significant impact on <i>Eucalyptus macarthurii</i>. Based on the above, it is recommended that the Proposed Action not be considered a controlled action.		

2.2.5.3 Natural Temperate Grassland of the South Eastern Highlands

Natural Temperate Grassland of the South Eastern Highlands (Critically Endangered)		
Description Natural Temperate Grassland is a natural grassland community dominated by a range of perennial grass species and, in highly intact sites, containing a large range of herbaceous species in many plant families, including daisies, peas, lilies, orchids and plants in many other families, all collectively known as forbs, or "wildflowers" in the case of the showier species. A number of distinct associations have been described in Armstrong et al. (2013) (DPE 2022), identified by combinations of the co-occurring grasses and forbs, and each found in particular regions and/or landscape positions. The community is often treeless, though trees of a range of species may occur in low densities, either as isolated individuals or in clumps. Seasonally wet areas within a site may also contain a range of wetland flora species, including rushes, sedges and a variety of wetland specialist forbs. A limited range of shrub species may occur at some sites, but these too occur in low densities (DPE 2022a).		
Distribution Natural Temperate Grassland is confined to the Southern Tablelands, a region bounded by the ACT, Yass, Boorowa, the Abercrombie River, Goulburn, the Great Eastern Escarpment, the Victorian border and the eastern boundary of Kosciusko National Park. The community occurs in a number of distinct plant associations. According to the association present, the community is found in various topographical positions and on a variety of substrates. The altitudinal range of the community is between 500 m and 1200 m asl, with Goulburn approximately 650m above sea level. The community is found on broad sweeping plains with poor drainage and cold air inversions that promote frosts which inhibit tree growth; on all topographical locations, including upper-slopes, crests and plateaux on basalt landscapes; and in frost hollows in areas otherwise dominated by woodlands or forests. The community may also occur in a landscape mosaic with several woodland communities (DPE 2022a).		
Summary of impacts and context of Natural Temperate Grassland for the Project A total of zero ha of Natural Temperate Grassland would be impacted as part of the Proposed Action according to the condition classes below. All the clearing of Natural Temperate Grassland has been avoided due to Project redesign. The Natural Temperate Grassland patch considered within this assessment constitutes two primary areas close to the waterway, i.e. Bullamalito Creek (refer to Figure 1.7 in Attachment A for the mapping of TECs within the Project Area). This may be due to the terrain being slightly less favourable for agriculture and has therefore not been as cultivated as surrounding paddocks. Alternatively, due to increased presence surface rock it is possible that historical cultivation was not effective, and that Natural Temperate Grassland has recovered following past disturbance. The patch is disjointed and isolated from any large stands of native grasslands and was in a moderate condition at the time of rapid surveys (Autumn). During Spring surveys, it was observed that the area contained many important indicator species and was moderate to high quality Natural Temperate Grassland. The patch currently meets the thresholds (TSSC 2016) due to some key diagnostic characteristics such as the Project Area confined to the South East Highlands IBRA being in the LGA of Goulburn NSW, is approximately 650m elevation, between the typical elevation Natural Temperate Grassland is found (350-1200m above sea level), dominated by native grasses such as: <i>Themeda triandra</i> and <i>Austrostipa bigeniculata</i>, and there are a range of native forb species present including indicator species such as: <i>Chrysocephalum apiculatum</i>, <i>Calocephalus citreus</i>, <i>Oxalis perannans</i>, <i>Plantago varia</i> and <i>Wahlenbergia spp.</i> The patch condition was determined by the preliminary assessment and is in a Moderate to High condition due to the timing of the survey, the threshold includes at least four non-grass native species and at least one indicator species. The Project Area contained at least two indicator species: <i>Chrysocephalum apiculatum</i> and <i>Plantago varia</i>.		
Assessment of significance	Response	Likelihood
An action is likely to have a significant impact on an endangered or critically endangered community if there is a real chance or possibility that it will:		
reduce the extent of an ecological community	The development footprint currently avoids all areas of vegetation that meets the criteria of Natural Temperate Grassland. The Project Area contains	Unlikely No reduction in overall

Natural Temperate Grassland of the South Eastern Highlands (Critically Endangered)		
	5.01 ha of native pasture that does not meet Natural Temperate Grassland criteria and 21.87 of Natural Temperate Grassland that meets the listed threshold due to the presence of indicator species and landform. The Proposed Action would involve the removal of zero ha within the Project Area. The current extent in Australia is estimated to be less than 50,000 ha with a geographic distribution that is highly fragmented (TSSC 2016) and as the Proposed Action does not propose to impact any area of Natural Temperate Grassland the extent would not be reduced at all.	extent of occurrence.
fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines	The Proposed Action would not result in any increase in the level of fragmentation for the existing remnant Natural Temperate Grassland patch. There are two main patches of Natural Temperate Grassland within the Project Area, mainly along Bullamalito Creek and its tributaries. There would be no clearing of Natural Temperate Grassland as part of this Project.	Unlikely – no removal of Natural Temperate Grassland for this Project.
adversely affect habitat critical to the survival of an ecological community	The area considered critical to the survival of the ecological community includes all patches that meet the key diagnostic characteristics and at least the minimum condition thresholds (Moderate or High Condition classes) (TSSC 2016). Therefore, the Proposed Action would adversely affect habitat critical to the survival of Natural Temperate Grassland if it was to be removed. The development footprint has therefore been designed to avoid all areas of Natural Temperate Grassland as part of this Project.	Unlikely – no removal of Natural Temperate Grassland for this Project.
modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns	The Proposed Action would remove native vegetation and some surface rocks across the development footprint, however, this does not include any areas of Natural Temperate Grassland. All areas of Natural Temperate Grassland and major waterways have been avoided as part of this Project.	Unlikely – no removal of Natural Temperate Grassland for this Project
cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	The Proposed Action would not alter the species composition of the CEEC or include any burning or harvesting of flora or fauna. Any changes in plant composition are likely to be limited and localised outside of the Natural Temperate Grassland area. The fauna assemblage is unlikely to change substantially given the location and size of the development footprint in the context of the native patch. There are no known risks of chemical or pollutant mobilisation from the Project.	Unlikely – no removal of Natural Temperate Grassland for this Project
cause a substantial reduction in the quality or integrity of an occurrence of an	Given the current low concentrations of weeds within Natural Temperate Grassland areas and none of these areas are to be impacted either directly or	Unlikely

Natural Temperate Grassland of the South Eastern Highlands (Critically Endangered)		
ecological community, including, but not limited to: – assisting invasive species, that are harmful to the listed ecological community, to become established, or – causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community, or	indirectly, with commitments to control weeds during the life of the Project, no new weeds are likely to become established. There are no known risks of chemical or pollutant mobilisation from the Project.	
interfere with the recovery of an ecological community.	All areas that meet the key diagnostic characteristics are considered critical to the survival of the community and the Proposed Action will not impact upon areas of Natural Temperate Grassland that are part of targeted recovery efforts as no areas of Natural Temperate Grassland are proposed to be removed.	Unlikely – no removal of Natural Temperate Grassland for this Project
Conclusion: The EPBC Act assessment requires that the Natural Temperate Grassland habitat within the Project Area is classed as habitat critical to the survival of Natural Temperate Grassland. There will be no decrease in the extent of Natural Temperate Grassland from the Project. Therefore, based on EPBC Act guidelines, the Project is not likely to have a significant impact on Natural Temperate Grassland. Based on the above, it is recommended that the Proposed Action not be considered a controlled action.		

2.2.5.4 White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland

White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Critically Endangered)		
Description White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box – Gum Woodland) is an open woodland community (sometimes occurring as a forest formation), in which the most obvious species are one or more of the following: White Box <i>Eucalyptus albens</i>, Yellow Box <i>E. melliodora</i> and Blakely’s Red Gum <i>E. blakelyi</i>. Intact sites contain a high diversity of plant species, including the main tree species, additional tree species, some shrub species, several climbing plant species, many grasses and a very high diversity of herbs. Modified sites include the following: Areas where the main tree species are present ranging from an open woodland formation to a forest structure, and the ground layer is predominantly composed of exotic species; and sites where the trees have been removed and only the grassy ground layer and some herbs remain. The listing of White Box,-Yellow Box,-Blakely’s Red Gum, Grassy Woodland and Derived Native Grassland must have either: An intact tree layer and predominately native ground layer; or an intact native ground layer with a high diversity of native plant species but no remaining tree layer (DPE 2022b). Distribution Box – Gum Woodland occurs in areas where rainfall is between 400 and 1200 mm per annum, on moderate to highly fertile soils at altitudes of 170 metres to 1200 metres. In Goulburn the average annual rainfall is approximately 650mm and the altitude 650m above sea level. The Box – Gum Woodland occurs in an arc along the western slopes and tablelands of the Great Dividing Range from Southern Queensland through NSW to central Victoria. It occurs in the Brigalow Belt South, Nandewar, New England Tableland, South Eastern Queensland, Sydney Basin, NSW North Coast, South Eastern Highlands, South East Corner, NSW South Western Slopes, Victorian Midlands and Riverina Bioregions (TSSC 2006). Summary of impacts and context of Natural Temperate Grassland for the Project A total of zero ha of Box – Gum Woodland would be impacted as part of the Project according to the condition classes below. All the clearing of Box – Gum Woodland has been avoided via project redesign. The Box – Gum Woodland patch considered within this assessment constitutes two primary areas; one being close to the waterway, Bullamalito Creek, this may be due to the terrain being slightly less favourable for agriculture and has therefore not as cultivated as surrounding paddocks and the other towards the south east of the Project Area higher in the landscape. The patch is disjointed and isolated from any large stands of woodland and was in a low to moderate condition at the time of rapid surveys (Autumn,2022). The patch meets the thresholds (TSSC 2016) due to the presence of <i>Eucalyptus melliodora</i> (Yellow box) and <i>Eucalyptus amplifolia</i> (Cabbage Gum) with a predominantly native understory and a patch greater than 0.1 ha and at least one important species; <i>Themeda triandra</i>.		
Assessment of significance	Response	Likelihood
An action is likely to have a significant impact on an endangered or critically endangered community if there is a real chance or possibility that it will:		
reduce the extent of an ecological community	The development footprint currently avoids all areas of vegetation the meets the criteria of Box-Gum Woodland. The Project Area contains 6.74ha of native pasture and scattered paddock trees that does not meet of Box – Gum Woodland threshold and 6.94 ha of Box-Gum Woodland that meets the listed thresholds due to the presence of <i>Eucalyptus melliodora</i> (Yellow box) and <i>Eucalyptus amplifolia</i> (Cabbage Gum) with a predominantly native understory and a patch greater than 0.1 ha and at least one important species; <i>Themeda triandra</i> .	Unlikely No reduction in overall extent of occurrence.

White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Critically Endangered)		
	The Proposed Action would involve the removal of zero ha within the Project Area due to avoidance. The current national extent is estimated to be approximately 416,325 ha with a geographic distribution that is highly fragmented, and this area also includes poor condition (TSSC 2006) and as the Proposed Action would not impact any area of Box – Gum Woodland the extent would not be reduced at all.	
fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines	The Proposed Action would not result in any increase in the level of fragmentation for the existing remnant Box – Gum Woodland patch. There are two main patches of Box – Gum Woodland within the Project Area, one along Bullamalito Creek tributary and another to the southeast of the Project Area higher in the landscape. There would be no clearing of Box – Gum Woodland as part of this Project.	Unlikely – no removal of Box – Gum Woodland for this Project.
adversely affect habitat critical to the survival of an ecological community	The area considered critical to the survival of the ecological community includes all patches that meet the condition thresholds (TSSC 2006). Therefore, the Proposed Action would adversely affect habitat critical to the survival of Box – Gum Woodland if it was to be removed. The development footprint has therefore been designed to avoid all areas of Box – Gum Woodland as part of this Project.	Unlikely – no removal of Box – Gum Woodland for this Project.
modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns	The Proposed Action would remove native vegetation and some surface rocks across the Project Area. This does not include any areas of Box – Gum Woodland, all areas of Box – Gum Woodland and major waterways have been avoided as part of this Project.	Unlikely – no removal of Box – Gum Woodland for this Project.
cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	The Proposed Action would not alter the species composition of the CEEC or include any burning or harvesting of flora or fauna. Any changes in plant composition are likely to be limited and localised outside of the Box – Gum Woodland area. The fauna assemblage is unlikely to change substantially given the location and size of the development footprint in the context of the native patch. There are no known risks of chemical or pollutant mobilisation from the Project.	Unlikely – no removal of Box – Gum Woodland for this Project.
cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: – assisting invasive species, that are harmful to the listed ecological community, to become established, or	Given the current low concentrations of weeds within Box – Gum Woodland areas and none of these areas are to be impacted either directly or indirectly, with commitments to control weeds during the life of the Project, no new weeds are likely to become established. There	Unlikely

White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Critically Endangered)		
– causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community, or	are no known risks of chemical or pollutant mobilisation from the Project.	
interfere with the recovery of an ecological community.	All areas that meet the key diagnostic characteristics are considered critical to the survival of the community and the Proposed Action will not impact upon areas of Box – Gum Woodland that are part of targeted recovery efforts as no areas of Box – Gum Woodland are proposed to be removed.	Unlikely – no removal of Box – Gum Woodland for this Project
Conclusion: The EPBC Act assessment requires that the Box – Gum Woodland habitat within the Project Area is classed as habitat critical to the survival of Box – Gum Woodland. There will be no decrease in the extent of Box – Gum Woodland from the Project. Therefore, based on EPBC Act guidelines, the Project is not likely to have a significant impact on Box – Gum Woodland. Based on the above, it is recommended that the Proposed Action not be considered a controlled action.		

3.0 References

Department of Climate Change, Energy and the Environment (DCCEEW) Protected Matters Search Tool (DCCEEW 2023), last accessed January 2023

Department of Planning and Environment (DPE) (2023) BioNet Atlas of NSW Wildlife database and mapping tool (DPE 2023), last accessed January 2023

Department of Planning and Environment (DPE) (2023) Threatened Biodiversity Data Collection (TBDC) (DPE 2023) . Available from: https://www.environment.nsw.gov.au/AtlasApp/UI_Modules/TSM_/Default.aspx

Department of Planning and Environment (DPE) (2023a) Natural Temperate Grassland of the South Eastern Highlands profile NSW. Available from: <https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=20260>

Department of Planning and Environment (DPE) (2023b) White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – profile NSW. Available from: <https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10837>

Department of Climate Change, Energy and the Environment (DCCEEW) (2023) Protected Matters Search Tool. Available from: <https://pmst.awe.gov.au/#/map?lng=131.52832031250003&lat=-28.671310915880834&zoom=5&baseLayers=Imagery>

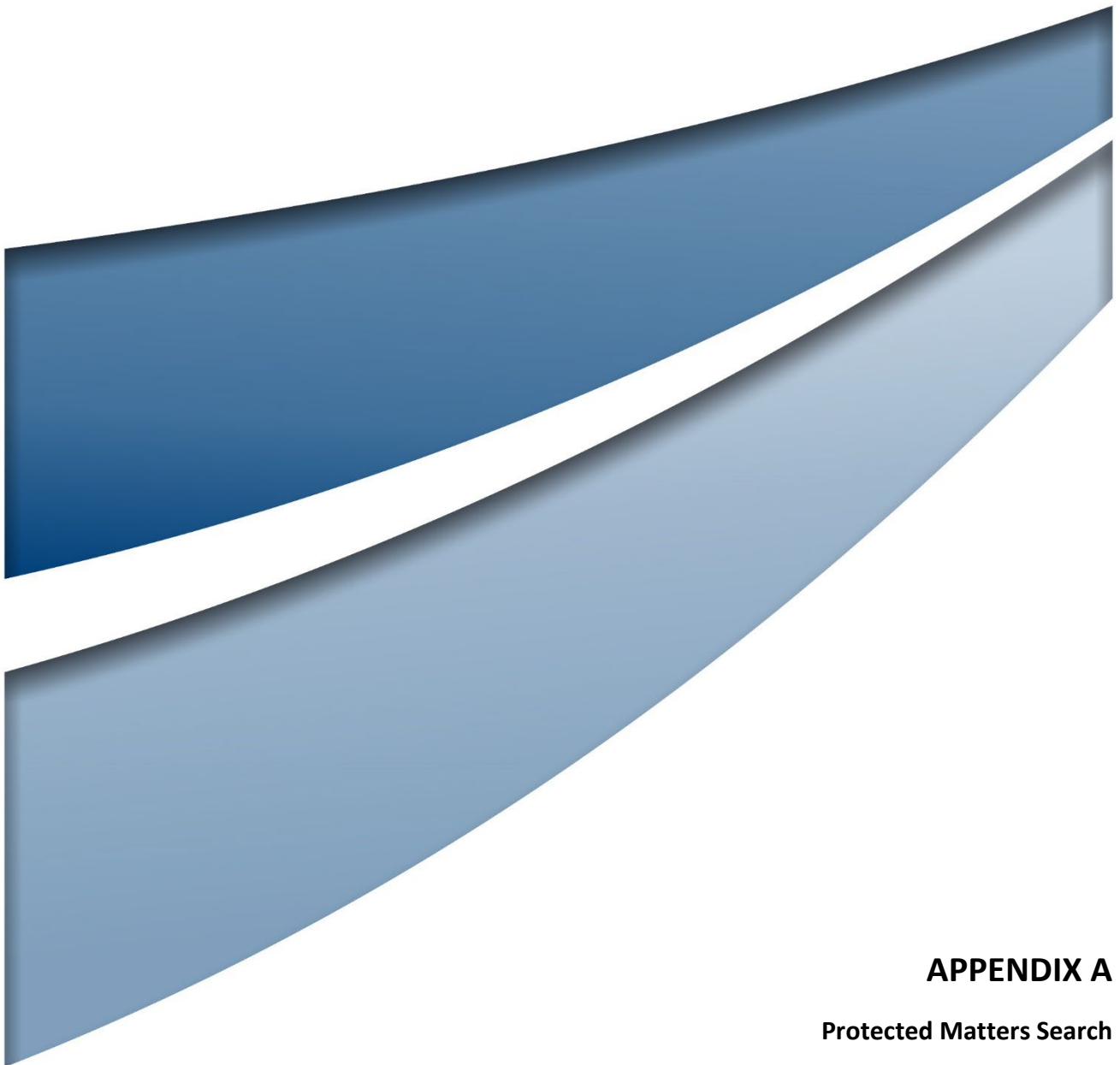
Department of Environment, Climate Change and Water NSW (2010). National Recovery Plan for White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland. Department of Environment, Climate Change and Water NSW, Sydney. Available from: <http://www.environment.gov.au/biodiversity/threatened/recovery-plans/white-box-yellow-box-blakelys-red-gum-grassy-woodland-and-derived-native-grassland-national>. In effect under the EPBC Act from 22-Mar-2013.

Threatened Species Scientific Committee (2016). Conservation Advice Delma impar striped legless lizard. Canberra: Department of the Environment and Energy. Available from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/1649-conservation-advice-16122016.pdf>. In effect under the EPBC Act from 16-Dec-2016.

Threatened Species Scientific Committee (2016). Approved Conservation Advice (including listing advice) for Natural Temperate Grassland of the South Eastern Highlands (EC 152). Canberra: Department of the Environment. Available from: <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/152-conservation-advice.pdf>. In effect under the EPBC Act from 06-Apr-2016.

Threatened Species Scientific Committee (2006). Commonwealth Listing Advice on White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland. Available from: <http://www.environment.gov.au/biodiversity/threatened/communities/box-gum.html>. In effect under the EPBC Act from 18-May-2006.

Department of the Environment, Water, Heritage and the Arts (DEWHA) (2013) *Significant Impact Guidelines 1.1 - Matters of National Environmental Significance*. Department of the Environment, Water, Heritage and the Arts



APPENDIX A

Protected Matters Search



Australian Government

Department of Climate Change, Energy,
the Environment and Water

EPBC Act Protected Matters Report

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

Report created: 23-Jan-2023

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	42
Listed Migratory Species:	12

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the 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 <https://www.dcceew.gov.au/parks-heritage/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 Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	19
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities

[Resource Information]

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

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

Community Name	Threatened Category	Presence Text	Buffer Status
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community likely to occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species

[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
FISH			
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
FROG			
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat may occur within area	In feature area
INSECT			
Keyacris scurra Key's Matchstick Grasshopper [89739]	Endangered	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Synemon plana Golden Sun Moth [25234]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat may occur within area	In feature area
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature 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]	Endangered	Species or species habitat known to occur within area	In feature area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In feature area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			
Calotis glandulosa Mauve Burr-daisy [7842]	Vulnerable	Species or species habitat may occur within area	In feature area
Commersonia prostrata Dwarf Kerrawang [87152]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diuris aequalis Buttercup Doubletail [21588]	Endangered	Species or species habitat likely to occur within area	In feature area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eucalyptus aggregata Black Gum [20890]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Lepidium aschersonii Spiny Pepper-cress [10976]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat likely to occur within area	In feature area
Leucochrysum albicans subsp. tricolor Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat known to occur within area	In feature area
Pomaderris delicata [67208]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pomaderris pallida Pale Pomaderris [13684]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area	In feature area
Rhizanthella slateri Eastern Underground Orchid [11768]	Endangered	Species or species habitat may occur within area	In buffer area only
Rutidosis leptorhynchoides Button Wrinklewort [67251]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In feature area
Swainsona recta Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area	In buffer area only
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area

REPTILE

Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species [[Resource Information](#)]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area

Migratory Terrestrial Species

Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands

[\[Resource Information \]](#)

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

Commonwealth Land Name	State	Buffer Status
Transport and Regional Services - Airservices Australia		
Commonwealth Land - Airservices Australia [12495]	NSW	In buffer area only

Listed Marine Species	[Resource Information]		
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Pomaderris	Nature Reserve	NSW	In buffer area only

EPBC Act Referrals			[Resource Information]	
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Southern Distribution Business Park	2006/2960	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact us](#) page.

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**EPBC REFERRAL – SUPPLEMENTARY
PROJECT INFORMATION**

Gundry Solar Farm

FINAL

April 2023

EPBC REFERRAL – SUPPLEMENTARY PROJECT INFORMATION

Gundry Solar Farm

FINAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Lightsource bp

Project Director: Malinda Facey
Project Manager: Marion O'Neil
Report No. 22223/R03
Date: April 2023



This report was prepared using
Umwelt's ISO 9001 certified
Quality Management System.

Acknowledgement of Country

Umwelt would like to acknowledge the traditional custodians of the country on which we work and pay respect to their cultural heritage, beliefs, and continuing relationship with the land. We pay our respect to the Elders – past, present, and future.

Disclaimer

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	Name	Date	Name	Date
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1.0 Introduction

1.1 Background

Lightsource Development Services Australia Pty Ltd (Lightsource bp) proposes to develop the Gundry Solar Farm approximately 10 kilometres (km) southeast of Goulburn, in the Goulburn Mulwaree Local Government Area (LGA) of New South Wales (NSW).

The Gundry Solar Farm would involve approximately 400 megawatt-peak (MWp) of solar electricity generation and a BESS with a capacity of approximately 200–400 MW megawatt (MW) (the Proposed Action). The Proposed Action would be accessed from Windellama Road off the Hume Highway.

On 13 March 2023, a Referral was lodged with the Department of Climate Change, Energy, the Environment and Water (DCCEEW) under Part 7 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to confirm whether the Proposed Action requires assessment and approval under the EPBC Act.

A search of the Commonwealth Protected Matters Search Tool (PMST) in January 2023, including preliminary biodiversity surveys of the Project Area, identified the potential for impacts to biodiversity related Matters of National Environmental Significance (MNES). The PMST further identified that the Project Area is not within a world heritage property or national heritage place, is not in proximity to wetlands of international importance, is not within either a Commonwealth marine area or the Great Barrier Reef Marine Park, and does not relate to a nuclear action, coal seam gas or coal mining development.

As further detailed in the Supplementary Biodiversity Report (refer to Attachment C) included in the Referral, two EPBC Listed Threatened Ecological Communities (TECs) occur within the Project Area, namely Natural Temperate Grassland and White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland. Furthermore, one threatened species of nineteen individuals of Paddy's River Box, Camden Woollybutt (*Eucalyptus macarthurii*) has been identified during further surveys to occur within the Project Area. The Proposed Action will avoid impacts to both TECs and all individuals of *Eucalyptus macarthurii* through Project redesign.

In March 2023, following the submission of the EPBC Referral, one individual Key's Matchstick Grasshopper (*Keyacris scurra*) (listed as endangered under the EPBC act) was identified within the high-quality derived native grassland of the Project Area. The location in which it was found and the habitat in which it was identified is not within the development footprint and will be avoided by the Proposed Action. Although this species was considered as part of the referral an assessment of significance was not completed. This is because the species had not been recorded and all habitat was being avoided by the Proposed Action. However, as it has now been recorded in proximity to the development footprint, an assessment of significance has now been prepared and provided in **Section 3.0** of this report.

No other EPBC listed threatened or migratory fauna species were detected despite substantial and targeted surveys. Preliminary constraints assessments suggested that the Project Area contained potential for the Striped Legless Lizard (*Delma impar*) based on nearby records and potentially suitable, albeit highly disturbed, habitat. However subsequent detailed investigations within the Project Area, including targeted surveys in accordance with relevant guidelines, determined that there was no individuals or population.

On this basis and considering the disturbed nature and poor quality of the habitat within the Project Area it is unlikely that the Proposed Action will have a significant impact on the Striped Legless Lizard in the Project Area.

On this basis, it is recommended that the Proposed Action should not be considered a controlled action.

1.2 Purpose and Structure of this Report

This report provides supplementary information to the EPBC Referral lodged with the DCCEEW in March 2023, and as requested during a meeting with DCCEEW on 21 March 2023. This report should be read in conjunction with the EPBC Referral online form, including Attachments A and C.

This report is structured as follows:

- **Section 2** – provides an overview of the impact avoidance measures considered in the Project design and layout.
- **Section 3** – provides further information in relation to biodiversity related Matters of National Environmental Significance (MNES), i.e., the Assessment of Significance for the Keys Matchstick Grasshopper, and additional survey data for the Striped Legless Lizard.
- **Section 4** – provides an overview of the proposed construction activities.
- **Section 5** – provides an overview of the rehabilitation and restoration measures proposed post construction, relating to groundcover restoration, vegetation management and pest and weed management.
- **Section 6** – provides a brief overview of the general maintenance activities that will be implemented once the Project is operational.
- **Section 7** – provides a brief overview of the decommissioning phase.
- **Section 8** – outlines the Environmental Management System (EMS) that will be developed and implemented for the Project should it be approved.
- Appendices:
 - A copy of the Scoping Report lodged with DPE in October 2022 (**Appendix A**).

2.0 Impact Avoidance Measures

The Project will have an onsite grid connection via the existing transmission line which traverses the Project Area. This avoids the need to construct additional connection infrastructure offsite, such as high voltage (HV) transmission lines and substations. The Project's ability to have an onsite grid connection would result in the avoidance of further environmental, social and cultural impacts to a number of neighbouring landholders.

The Project's conceptual layout has been strategically designed to maximise solar efficiency whilst avoiding impacts on areas of high ecological value (Threatened Ecological Communities (TECs) and Threatened species), majority of moderate ecological value as well as impacts to Gundry Creek and Bullamalito Creek, as shown in Figure 1.4, Attachment A of the EPBC Referral. The Project layout has further been designed to maintain appropriate setbacks in accordance with the *Guidelines for riparian corridors on waterfront land* (DPI, 2012a) around watercourses associated with biodiversity constraints to further avoid hydrology impacts as well as to minimise visual, cultural and social impacts.

The Project layout will be subject to further review and refinement based on the outcome of additional environmental investigations during the EIS and further community and stakeholder engagement. Onsite civil works including drainage line crossings, levelling and potential groundcover disturbance, if and where required, will be determined during further design development. Vegetation screening to mitigate visual impacts may be required and will be considered following consultation with neighbouring landholders.

In addition, Lightsource bp has a track record of minimising impacts on agricultural land by continuing to graze sheep on most of its sites globally, creating a dual land use with the co-existence of agriculture and solar power generation. This approach will be considered for the Project, in consultation with the landholder.

Where impacts are unavoidable, the Project will mitigate and manage those impacts throughout construction, operation and decommissioning.

3.0 Biodiversity Matters of National Environmental Significance

3.1 Assessment of Significance

This section provides additional information related to Section 4.1 of the Referral.

3.1.1 Assessment of Significance Results

One additional species, Key's Matchstick Grasshopper (*Keyacris scurra*), has been detected within the Project Area and although the species and its habitat will be avoided by the Proposed Action, an assessment of significance has been completed, in accordance with the Significance Impact Guidelines 1.1 (DoE 2013).

3.1.1.1 Keys Matchstick Grasshopper

Key's Matchstick Grasshopper (<i>Keyacris scurra</i>) – Endangered (EPBC Act)
Distribution The Key's Matchstick Grasshopper occurs from Orange, NSW, to Omeo, VIC. It has a core distribution from Goulburn to the south of the ACT, however additional NSW records are from the Central West Slopes and South West Slopes (ALA 2023). Generally, populations of Key's Matchstick Grasshopper occur in areas subject to infrequent disturbance including travelling stock reserves, nature reserves, cemeteries and railway easements (Threatened Species Scientific Committee 2022). The Project Area is approximately 4.2 km south of the nearest record of the species, which is located within a travelling stock reserve. The species has also been recorded within a travelling stock reserve adjacent to Goulburn Airport. Habitat Requirements Key's Matchstick Grasshopper inhabits areas of native and secondary native grasslands. The species is generally found in grassland containing a high component of the native grass <i>Themeda triandra</i>, and food plants, primarily daisies (Threatened Species Scientific Committee 2022). The species is susceptible to heavy disturbance regimes, such as pasture improvement, and is generally absent from areas that do not contain <i>Themeda triandra</i>. Areas that have been historically subjected to pasture improvement and clearing are unlikely to support the species; additionally, areas subject to recent or regular cultivation can also be discounted. The wider Project Area contains approximately 1.31 ha of suitable derived native grassland habitat containing a large component of perennial native grasses (<i>Themeda triandra</i>) and daisy food species (<i>Calocephalus citreus</i>). This habitat has all been avoided by the project design and occurs outside of the development footprint. All other areas of the Project Area have been assessed as unlikely to support the species as there is evidence of ongoing and recent cultivation, and native grass species (<i>Themeda triandra</i>) and food species are absent.

Key's Matchstick Grasshopper (<i>Keyacris scurra</i>) – Endangered (EPBC Act)		
Summary of Impacts and Context of Key's Matchstick Grasshopper for the Project The Proposed Action occurs completely outside of the development footprint which avoids all 1.31 ha of the confirmed habitat within the Project Area. It is likely Key's Matchstick Grasshopper has persisted in this area as it has been subject to minimal grazing pressure. The Threatened Species Scientific Committee (2022) lists over-grazing as a principal threat to the species. Whilst all Key's Matchstick Grasshopper may have formerly occurred elsewhere in the Project Area, all other areas of potential habitat are subject to heavy grazing pressure by stock and the species is unlikely to be present. Targeted surveys for this species commenced in November 2022 and consisted of walked 10 m parallel transects in areas of potential habitat. As no survey guidelines currently exist, surveys were completed using the NSW guide for <i>Surveying threatened plants and their habitats</i> (DPIE 2020) as a guide using the same methodology as for cryptic orchids, which included 10 m parallel transects. No Key's Matchstick Grasshoppers were detected during targeted surveys. However, in March 2023, one individual was detected opportunistically during floristic plot assessment. Subsequent searches of the immediate area failed to identify any further individuals and, considering the area is to be avoided by the Project, no further investigations were completed.		
Assessment of significance	Address of Criteria	Likelihood
An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:		
lead to a long-term decrease in the size of a population of a species	Measures have been undertaken to avoid any impacts on primary habitat for Key's Matchstick Grasshopper (i.e. moderate-high condition derived native grassland), and all areas of suitable habitat (1.31 ha) have been avoided by the Proposed Action. No survey guidelines currently exist for Key's Matchstick Grasshopper, however targeted surveys using a method based on the NSW guide for <i>Surveying threatened plants and their habitats</i> (DPIE 2020) were undertaken to confirm or discount species presence. Spring targeted surveys have been included as part of the EIS Stage 2 BAM assessment to confirm presence or absence of the population. The targeted surveys did not detect individuals or a population within the Project Area, however the species was subsequently recorded opportunistically in March 2023. There is no known population within the development footprint and therefore the Proposed Action would not result in the long-term decrease in the size of any population of the species.	Unlikely – no important populations in development footprint
reduce the area of occupancy of the species	The Proposed Action is not likely to reduce the local extent of potentially suitable habitat of the species on site and is highly unlikely to result in a local population going extinct as all recorded individuals and suitable habitat occur outside the development footprint. All individuals and habitat have been avoided, and therefore would not result in a reduction of the area of occupancy of the species if measured at a 2 km grid size in accordance with IUCN guidelines.	Unlikely

Key's Matchstick Grasshopper (<i>Keyacris scurra</i>) – Endangered (EPBC Act)		
fragment an existing population into two or more populations	Habitat within the development footprint was found to be too degraded for the species, and the species is unlikely to occur within the development footprint. As the only population within the Project Area occurs in high-quality habitat that has been subject to minimal grazing pressure and not subjected to heavy grazing pressure, and that habitat is to be avoided, the Proposed Action is unlikely to fragment two or more populations of Key's Matchstick Grasshopper.	Unlikely
adversely affect habitat critical to the survival of a species	Habitat critical for the survival of Key's Matchstick Grasshopper is not defined in the conservation advice (Threatened Species Scientific Committee 2022). Based on a review of the conservation advice, 1.31 ha of confirmed habitat within the Project Area has the potential to meet the definition of habitat critical to the survival of the. As impacts to Key's Matchstick Grasshopper habitat have been avoided, it is unlikely the Proposed Action will adversely affect habitat critical to the survival of the species.	Unlikely
disrupt the breeding cycle of a population	All known individuals and Key's Matchstick Grasshopper habitat within the Project Area have been avoided. As such, the Proposed Action does not constitute any specific action that would disrupt the breeding cycle or life cycle of the species.	Unlikely
modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline	The Proposed Action has the potential to modify habitat in the following ways: clearing for access tracks and infrastructure footprint, shading by solar panels and other infrastructure, and ground disturbance due to vehicle and equipment movement and trenching works. Associated impacts such as increased potential for weed invasion or erosion and sedimentation during construction would be managed in accordance with construction and post construction best practice (management plans). As the species has limited ability to migrate between islands of suitable habitat (Threatened Species Scientific Committee 2022) and the Proposed Action will avoid all areas of suitable habitat, the Proposed Action is not likely to modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline.	Unlikely
result in invasive species that are harmful to an endangered species becoming established in the endangered species' habitat	This Proposed Action involves construction of a solar farm, removing native vegetation from the development footprint within the Project Area. At this stage, other than the presence of exotic tussock grasses introduced for agricultural purposes large stands of existing weed infestations across the Project Area have not been identified. As part of the Project, during construction and operations best practice controls would be implemented to control the spread of any potential new invasive flora species into the Project Area or adjacent blocks. This would be conditioned in the Development Application conditions and the Operational Management Plan. Feral animals such as foxes and feral cats are likely to be present on site, and the Proposed Action would not increase the availability of habitat for these species. A perimeter security fence is planned as part of construction which will also keep any new feral animals from entering and reduce any potential predation. With implementation of appropriate controls, the Proposed Action is not anticipated to result in an increase or change in invasive species becoming established across the Project Area.	Unlikely

Key's Matchstick Grasshopper (<i>Keyacris scurra</i>) – Endangered (EPBC Act)		
introduce disease that may cause the species to decline	Whilst there is some potential for plant and machinery to transport and disperse pathogens throughout the Project Area, this risk would be managed through the use of vehicle quarantining procedures. There are no known diseases recognized to be a threat Key's Matchstick Grasshopper. It is considered unlikely that the Proposed Action would introduce disease that may cause the Key's Matchstick Grasshopper population to decline.	Unlikely
interfere substantially with the recovery of the species.	No recovery plan exists for Key's Matchstick Grasshopper as the recovery actions needed are not well understood. Recovery actions could include: 1. Prevent land clearing and resulting habitat destruction at all indigenous localities. 2. Maintain and enhance existing and potential habitat. 3. Prevent over-grazing by cattle and other introduced herbivores. The Proposed Action will not result in land clearing resulting in habitat destruction at an indigenous locality of the species, as all identified individuals of the species and suitable habitat have been avoided. Cattle and sheep are already present within the Project Area, and the Proposed Action will not result in the introduction of additional introduced herbivores.	Unlikely
Conclusion: Key's Matchstick Grasshopper has been recorded as present within the Project Area. The Proposed Action will avoid impacts on all Key's Matchstick Grasshopper habitat and, as such, the Proposed Action is unlikely to have a significant impact on Key's Matchstick Grasshopper.		

3.1.1.2 Conclusion

Considering the low likelihood of a significant impact identified within the larger Project Area, it is considered that the Proposed Action is unlikely to result in a significant impact to Key's Matchstick Grasshopper.

Considering the outcomes of the assessment above and noting the findings from the assessments completed with the original Referral, there is no change to our overall assessment of the Project, and it is recommended that the Proposed Action not be considered a controlled action.

3.2 Additional Data for Striped Legless Lizard Survey Effort

Date	Tile array	Recorded TS (Y/N; Species)	Time	Temp	Rain	Wind level	Cloud cover	Notes	Tile found
22/08/2022	1	N/A	N/A	N/A	N/A	N/A	N/A	Tiles setup	N/A
22/08/2022	4	N/A	N/A	N/A	N/A	N/A	N/A	Tiles setup	N/A
22/08/2022	5	N/A	N/A	N/A	N/A	N/A	N/A	Tiles setup	N/A
23/08/2022	6	N/A	N/A	N/A	N/A	N/A	N/A	Tiles setup	N/A
23/08/2022	7	N/A	N/A	N/A	N/A	N/A	N/A	Tiles setup	N/A
23/08/2022	8	N/A	N/A	N/A	N/A	N/A	N/A	Tiles setup	N/A
23/08/2022	2	N/A	N/A	N/A	N/A	N/A	N/A	Tiles setup	N/A
23/08/2022	3	N/A	N/A	N/A	N/A	N/A	N/A	Tiles setup	N/A
25/08/2022	9	N/A	N/A	N/A	N/A	N/A	N/A	Tiles setup	N/A
25/08/2022	10	N/A	N/A	N/A	N/A	N/A	N/A	Tiles setup	N/A
Week 1								Add common species found	Tile
12/09/2022	1	N	9:02	9.5	0	Moderate	Low	-	-
12/09/2022	2	N	9:13	9.5	0	Moderate	Low	-	-
12/09/2022	3	N	8:00	7.4	0	Low	Low	-	-
12/09/2022	4	N	8:50	9.4	0	Moderate	Low	-	-
12/09/2022	5	N	8:11	7.4	0	Moderate	Low	-	-
12/09/2022	6	N	8:26	8.5	0	Low	Low	-	-
12/09/2022	7	N	8:35	8.5	0	Moderate	Low	-	-
12/09/2022	8	N	10:21	11.6	0	Moderate	Low	-	-
12/09/2022	9	N	10:36	11.5	0	Moderate	Moderate	-	-
12/09/2022	10	N	10:27	11.5	0	Moderate	Moderate	-	-
Week 2								Add common species found	Tile
19/09/2022	1	N	10:49	12.1	0	High	Low	-	-

Date	Tile array	Recorded TS (Y/N; Species)	Time	Temp	Rain	Wind level	Cloud cover	Notes	Tile found
19/09/2022	2	N	10:57	12.3	0	High	Low	-	-
19/09/2022	3	N	10:05	12	0	High	Low	-	-
19/09/2022	4	N	10:38	12.1	0	High	Low	-	-
19/09/2022	5	N	11:06	12.5	0	High	Low	<i>Uperoleia laevigata</i>	D4
19/09/2022	6	N	10:18	12	0	High	Low	-	-
19/09/2022	7	N	10:25	12	0	High	Low	-	-
19/09/2022	8	N	11:56	12.7	0	High	Low	-	-
19/09/2022	9	N	12:12	13	0	High	Low	-	-
19/09/2022	10	N	12:05	13	0	High	Low	-	-
Week 3								Add common species found	Tile
26/09/2022	1	N	10:14	10.5	0	None	Moderate	<i>Limnodynastes tasmaniensis</i>	C7
26/09/2022	2	N	10:23	11.2	0	None	Moderate	-	-
26/09/2022	3	N	9:09	8	0	None	Low	-	-
26/09/2022	4	N	10:01	10	0	None	Low	-	-
26/09/2022	5	N	10:36	12.3	0	None	Moderate	-	-
26/09/2022	6	N	9:25	8.7	0	None	Low	-	-
26/09/2022	7	N	9:37	9.1	0	None	Low	-	-
26/09/2022	8	N	11:28	15.1	0	Low	Low	-	-
26/09/2022	9	N	11:49	15.7	0	Low	Moderate	-	-
26/09/2022	10	N	11:41	15	0	Low	Low	-	-
Week 4								Add common species found	Tile
3/10/2022	1	N	9:54	13	0	None	Moderate	<i>Limnodynastes tasmaniensis</i>	A5
3/10/2022	2	N	10:06	12	0	None	Moderate	-	-
3/10/2022	3	N	9:12	12	0	None	Moderate	-	-
3/10/2022	4	N	9:40	12	0	None	Moderate	-	-

Date	Tile array	Recorded TS (Y/N; Species)	Time	Temp	Rain	Wind level	Cloud cover	Notes	Tile found
3/10/2022	5	N	10:16	13	0	None	Moderate	-	-
3/10/2022	6	N	9:26	12	0	None	Moderate	-	-
3/10/2022	7	N	9:33	12	0	None	Moderate	-	-
3/10/2022	8	N	11:06	15	0	None	Moderate	-	-
3/10/2022	9	N	11:25	15	0	None	Moderate	-	-
3/10/2022	10	N	11:10	15	0	None	Moderate	Unidentified skink	E5
Week 5								Add common species found	Tile
10/10/2022	1	N	10:12	11	0	Low	High	<i>Limnodynastes tasmaniensis</i>	C7
10/10/2022	2	N	10:24	11	0	Low	High	-	-
10/10/2022	3	N	9:27	9.1	0	Low	Moderate	-	-
10/10/2022	4	N	10:00	10	0	Low	Moderate	-	-
10/10/2022	5	N	10:30	11	0	Low	Moderate	-	-
10/10/2022	6	N	9:43	10	0	Low	Moderate	-	-
10/10/2022	7	N	9:50	10	0	Low	Moderate	-	-
10/10/2022	8	N	11:26	13	0	Low	Moderate	-	-
10/10/2022	9	N	11:42	13	0	Low	Moderate	-	-
10/10/2022	10	N	11:42	13	0	Low	Moderate	-	-
Week 6								Add common species found	Tile
17/10/2022	1	N	9:49	10	0	Low	High	2x <i>Limnodynastes tasmaniensis</i>	C7, A5
17/10/2022	2	N	9:59	10	0	Low	High	-	-
17/10/2022	3	N	9:02	9	0	Low	High	3x <i>Limnodynastes tasmaniensis</i>	B9
17/10/2022	4	N	9:25	10	0	Low	High	-	-
17/10/2022	5	N	10:07	10	0	Low	High	<i>Limnodynastes tasmaniensis</i>	C1
17/10/2022	6	N	9:17	9	0	Low	High	-	-
17/10/2022	7	N	9:25	10	0	Low	High	-	-

Date	Tile array	Recorded TS (Y/N; Species)	Time	Temp	Rain	Wind level	Cloud cover	Notes	Tile found
17/10/2022	8	N	10:59	12	0	Low	High	-	-
17/10/2022	9	N	11:16	12	0	Low	High	-	-
17/10/2022	10	N	11:08	12	0	Low	High	-	-
Week 7								Add common species found	Tile
27/10/2022	1	N	9:37	17	0	Moderate	Moderate	<i>Limnodynastes tasmaniensis</i>	A5
27/10/2022	2	N	9:46	16.9	0	High	Moderate	-	-
27/10/2022	3	N	8:46	15.1	0	Moderate	Moderate	<i>Limnodynastes tasmaniensis</i>	B9
27/10/2022	4	N	9:25	16.3	0	Moderate	Moderate	-	-
27/10/2022	5	N	9:57	17	0	High	Moderate	-	-
27/10/2022	6	N	9:01	15.8	0	Moderate	Moderate	-	-
27/10/2022	7	N	9:10	15.8	0	Moderate	Moderate	-	-
27/10/2022	8	N	10:49	17.3	0	High	Moderate	-	-
27/10/2022	9	N	11:05	17.5	0	High	Moderate	-	-
27/10/2022	10	N	10:57	17.5	0	Moderate	High	<i>Lampropholis delicata</i>	D1
Week 8								Add common species found	Tile
4/11/2022	1	N	10:00	13.3	0	None	Low	3x <i>Limnodynastes tasmaniensis</i>	1x D3, 1x B4, 1x B10
4/11/2022	2	N	10:11	14.1	0	None	Low	1x <i>Tiliqua scincoides</i>	Incidental- within array but not under a tile
4/11/2022	3	N	9:22	12.7	0	None	Low	1x <i>Limnodynastes tasmaniensis</i> , 3x <i>Limnodynastes tasmaniensis</i>	1x A5, 3x B9
4/11/2022	4	N	9:45	14	0	None	Low	-	-
4/11/2022	5	N	10:31	14	0	None	Low	-	-
4/11/2022	6	N	10:48	15.5	0	None	Low	-	-
4/11/2022	7	N	10:57	16.1	0	None	None	-	-
4/11/2022	8	N	9:24	12.7	0	None	Low	-	-

Date	Tile array	Recorded TS (Y/N; Species)	Time	Temp	Rain	Wind level	Cloud cover	Notes	Tile found
4/11/2022	9	N	8:54	11.4	0	None	Low	-	-
4/11/2022	10	N	9:10	11.9	0	None	Low	-	-
Week 9								Add common species found	Tile
7/11/2022	1	N	9:50	18	0	Low	Moderate	1x <i>Limnodynastes tasmaniensis</i>	1x D2, 1x D8
7/11/2022	2	N	10:01	18	0	Low	Moderate	-	-
7/11/2022	3	N	9:05	14	0	Low	Moderate	2x <i>Limnodynastes tasmaniensis</i>	B9
7/11/2022	4	N	9:38	17	0	Low	Moderate	-	-
7/11/2022	5	N	10:19	17	0	Low	Moderate	1x <i>Limnodynastes tasmaniensis</i>	B3
7/11/2022	6	N	9:17	16	0	Low	Moderate	-	-
7/11/2022	7	N	9:24	16	0	Low	Moderate	-	-
7/11/2022	8	N	11:07	19	0	Low	Moderate	-	-
7/11/2022	9	N	11:25	19	0	Low	Moderate	-	-
7/11/2022	10	N	11:19	19	0	None	Moderate	-	-
Week 10								Add common species found	Tile
14/11/2022	1	N	10:24	16	0	Moderate	Moderate	3x <i>Limnodynastes tasmaniensis</i>	A2, C7, D2
14/11/2022	2	N	10:15	16	0	Moderate	Moderate	-	-
14/11/2022	3	N	11:19	16	0	Moderate-High	Moderate	3x <i>Limnodynastes tasmaniensis</i>	A4,A5,B5
14/11/2022	4	N	10:37	16	0	Moderate	Moderate	-	-
14/11/2022	5	N	10:01	16	0	Moderate	Moderate	1x <i>Limnodynastes tasmaniensis</i>	C1
14/11/2022	6	N	11:04	16	0	Moderate	Moderate	-	-
14/11/2022	7	N	10:56	16	0	Moderate	Moderate	-	-
14/11/2022	8	N	8:43	14	0	Moderate	Moderate	-	-
14/11/2022	9	N	8:59	14	0	Low	Moderate	-	-
14/11/2022	10	N	8:51	14	0	Moderate	Moderate	-	-

Date	Tile array	Recorded TS (Y/N; Species)	Time	Temp	Rain	Wind level	Cloud cover	Notes	Tile found
Week 11								Add common species found	Tile
22/11/2022	1	N	11:12	11	0	Moderate-High	Moderate	3x <i>Limnodynastes tasmaniensis</i>	A5, B4, C9
22/11/2022	2	N	11:23	12.1	0	Moderate	Moderate	-	-
22/11/2022	3	N	12:16	12.1	0	High	Moderate	-	-
22/11/2022	4	N	10:57	11	0	Moderate	Moderate	-	-
22/11/2022	5	N	11:34	12.1	0	High	Moderate	-	-
22/11/2022	6	N	11:59	12	0	High	Moderate	-	-
22/11/2022	7	N	11:50	12.5	0	High	Moderate	-	-
22/11/2022	8	N	9:15	9	0	Moderate-High	High	-	-
22/11/2022	9	N	9:27	8.3	0	Moderate-High	High	-	-
22/11/2022	10	N	9:38	9.2	0	High	High	-	-
Week 12								Add common species found	
28/11/2022	1	N	10:56	19.3	0	Moderate	Moderate	1x <i>Pseudonaja textilis</i> (B9), 1x <i>Limnodynastes tasmaniensis</i> (E7)	B9, E7
28/11/2022	2	N	11:09	19.7	0	Moderate	Moderate	-	-
28/11/2022	3	N	12:03	18.8	0	Moderate	Moderate	1x <i>Limnodynastes tasmaniensis</i>	A5
28/11/2022	4	N	10:42	18.7	0	Low	Moderate	-	-
28/11/2022	5	N	11:22	19.3	0	Moderate	Moderate	-	-
28/11/2022	6	N	11:47	19.6	0	Moderate	Moderate	-	-
28/11/2022	7	N	11:39	18.5	0	Moderate	Moderate	-	-
28/11/2022	8	N	9:38	17.2	0	Low	Moderate	1x <i>Limnodynastes peronii</i>	C9
28/11/2022	9	N	9:16	16	0	Low	Moderate	1x <i>Limnodynastes tasmaniensis</i>	D6
28/11/2022	10	N	9:26	17.1	0	Low	Moderate	-	-
Week 13								Add common species found	
13/12/2022	1	N	10:56	16	0	High	Low	-	-

Date	Tile array	Recorded TS (Y/N; Species)	Time	Temp	Rain	Wind level	Cloud cover	Notes	Tile found
13/12/2022	2	N	10:46	16	0	High	Low	-	-
13/12/2022	3	N	11:25	16.2	0	Moderate	Low	1x <i>Limnodynastes tasmaniensis</i>	A5
13/12/2022	4	N	10:34	16	0	High	Low	1x <i>Ctenotus taeniolatus</i>	A6
13/12/2022	5	N	11:10	16	0	High	Low	-	-
13/12/2022	6	N	10:12	15.1	0	High	Low	-	-
13/12/2022	7	N	10:19	15.6	0	High	Low	-	-
13/12/2022	8	N	9:21	13	0	Moderate	Low	-	-
13/12/2022	9	N	9:03	13	0	Moderate	Low	-	-
13/12/2022	10	N	9:12	13	0	Moderate	Low	-	-

4.0 Construction Activities

4.1.1 Site Preparation and Earthworks

The first stages of construction would include:

- Identification and establishment of no-go zones around sensitive biodiversity, hydrology and heritage features as required.
- Site survey, based on initial geotechnical investigations and LIDAR data, to confirm infrastructure positioning and placement.
- Ongoing geotechnical investigations to confirm the ground conditions.
- Biosecurity controls (e.g. weed spraying) prior to ground disturbance commencing.
- Construction of internal access tracks for accessing the site from the local road network and car parking, including creek crossings (i.e. small culverts and bed level crossings).
- Installation of temporary construction fencing around work areas and boundary fencing.
- Establishment of temporary construction compounds, site facilities and laydown areas for construction materials and equipment (refer to **Section 4.1.2**).
- Preliminary earthworks and installation of environmental controls including erosion and sediment control structures.

The need for heavy earthworks and compaction will be minimised as much as practicable although some grading and levelling is likely to be required for the substation, BESS and temporary construction compound and laydown areas.

4.1.2 Temporary Construction Facilities

To facilitate construction of the Project, a range of temporary buildings and facilities will be required within the construction compound site. Temporary staff amenities would be designed to accommodate the number of workers at the peak of the construction period, and include:

- Car parking
- Staff offices
- Control room
- Lunchroom and first aid room
- Toilet and shower facilities
- Water tanks
- Covered walkways
- Covered storage area
- Associated data, water, and electrical reticulation.

4.1.3 Infrastructure Installation

The construction and commissioning phase of the Project is anticipated to involve the following works:

- Installation of steel posts and framing system to support the solar panels, which would be driven or screwed into the ground to a depth of approximately 1.5 to 2.4 m depending on geotechnical conditions.
- Installation of PV panels.
- Installation of permanent perimeter fencing and security.
- Installation of inverters, combiner boxes, transformers and other electrical equipment.
- Construction of permanent and non-permanent civil balance of plant, including but not limited to; roads, culverts, river crossings etc.
- Planting of vegetation required for visual screening and removal of certain required vegetation for bushfire asset protection zones.
- Preparation of foundations for the permanent buildings, BESS and on-site substation.
- Installation of underground cabling (trenching and installation of power conversion stations).
- Construction of site operations and maintenance facility.
- Establishment of the BESS.
- Construction of the onsite substation and associated grid connection infrastructure.
- Testing and commissioning of infrastructure.
- Removal of temporary construction facilities.
- Revegetation of temporarily disturbed areas.

It is expected that some of these construction tasks would occur concurrently. It is noted that the solar array would be sited above the ground and existing ground cover would be maintained underneath, to facilitate continued agricultural practices with sheep grazing across the site.

5.0 Groundcover Rehabilitation and Restoration Measures

Lightsource bp would develop and implement a Biodiversity Management Plan (BMP) as part of the Environmental Management Strategy (EMS) for the Project, should the Project be approved. The BMP will outline a range of measures to control ground disturbance, restore temporary disturbed areas, retain native vegetation, control weeds and pests as well as other biodiversity related impacts on vegetation cover. The BMP would be implemented by the Engineer, Procurement & Construction (EPC) Site Manager during all stages of the Project.

Measures to be included in the BMP would typically involve, but not be limited to the following:

5.1.1 Rehabilitation of Temporarily Disturbed Areas

Areas temporarily disturbed during the construction phase, would be rehabilitated as soon as practicable using native species that are endemic to the area. Temporarily disturbed areas may include:

- Grassland mowed for construction activities.
- Temporary access tracks that are utilised before permanent site access tracks have been completed.
- Construction laydown areas including, but not limited to, construction vehicle parking areas and demountable amenity buildings.
- Cable trenches.

The aim of the rehabilitation of temporarily disturbed areas with locally indigenous species from the area would be to minimise disturbance and return these areas to a condition that is similar or better than its pre-disturbed state.

5.1.2 Re-use of Soil Resources

Suitable topsoil material and vegetative debris, when available, would be stockpiled or directly reused and incorporated into the rehabilitation of the temporary disturbed areas. This would assist in providing a stable post work ground surface and/or suitable growing medium for native seed base vegetation establishment. Topsoil would be stockpiled and reapplied as close as possible to the point of disturbance to promote successful natural regeneration of temporary disturbed areas.

Where topsoil is available, the following measures would be adopted to protect its quality and enhance rehabilitation outcomes:

- Where practical, topsoil would be directly placed on temporarily disturbed areas which are available for rehabilitation.
- When direct placement of topsoil is not practicable, stockpiles would be formed, located away from traffic areas and watercourses.

- Level or gently sloping areas would be selected as stockpiles sites to minimize erosion and potential soil loss.
- Appropriate sediment controls would be installed at the base of stockpiles to prevent soil loss.
- Weed growth for stockpiles would be monitored and subsequently controlled as necessary.

It is generally considered that topsoil stockpiles will be no greater than 3 m in height to preserve soil structure, maximise surface exposure and biological activity. Topsoil will be salvaged where possible within the approved development footprint and stockpiled for beneficial reuse in the rehabilitation of the temporary disturbed areas.

5.1.3 Management of Retained Vegetation

Retained native vegetation outside the development footprint will be managed throughout construction and operation to protect it from any impacts from the Project, with the aim to maintain or improve the biodiversity value of the retained vegetation over the life of the Project. Ongoing restoration of rehabilitated areas would also occur as part of the operation of the Project.

Vegetation management activities would typically include, but not be limited to:

- Establishment of permanent exclusion fencing around retained native vegetation areas, to be regarded as 'no-go' areas.
- Weed management as detailed within **Section 5.1.4**.
- Establishment of fauna habitat using the fauna habitat features salvaged from within the development footprint.
- Requirements for ongoing monitoring of retained vegetation.
- Adaptive management including trigger thresholds for active management or remediation if vegetation condition or biodiversity values decline.

5.1.4 Weed Management

The Project Area will be managed for weed and exotic species by a suitably qualified bush regeneration contractor. Baseline weed density mapping should be carried out prior to weed management activities commence.

5.1.5 Response to Decline in Condition

If a quantitative assessment of the condition of retained vegetation determines the need for an additional management response, actions may include, but are not limited to:

- Erect permanent fencing to exclude pest and human/vehicle access.
- Additional targeted weed or pest control.
- Active management or restoration measures including groundcover rehabilitation and shrub/tree plantings as required.

5.1.6 Management of Watercourses

As discussed in **Section 2.0**, the Project has been designed to avoid hydrology impacts. Although no solar infrastructure would occur within second order and higher streams, a number of watercourse crossings may be required to allow access to all parts of the Project Area.

The design of the watercourse crossings would be done in accordance with the following publications, to minimise erosion and protect the watercourse:

- Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings (Fairfull & Witheridge, 2003).
- Policy and Guidelines for Fish Friendly Waterway Crossings (NSW DPI, 2003).
- Guidelines for Watercourse Crossings on Waterfront Land (NSW DPI, 2012).

A Spill and Contamination Response Plan would be developed as part of the overall Emergency Response Plan for the Project to prevent contaminants affecting the surrounding waterways.

6.0 Operations and Maintenance

The operational lifespan of the Project is expected to be around 35 years, with operations commencing in Q3 2026.

Throughout operations, ongoing maintenance of the development footprint and project infrastructure will be required which would generate up to four full time equivalent employment opportunities. Operational and maintenance staff would access the site daily via light vehicles.

Ongoing maintenance activities will include:

- Routine visual inspections, general maintenance and cleaning operations of the solar arrays and substation, as required.
- Vegetation management (including sheep grazing, maintenance of groundcover vegetation and the use of seeding or armouring (i.e. jute mesh) to avoid erosion.
- 24-hour site security response.
- Replacement of equipment and infrastructure, as required.
- Pest and vermin control.

7.0 Decommissioning

The Project is expected to operate for 35 years or more. After the initial 35-year operating period, the solar farm would either be decommissioned, removing all above ground infrastructure, and returning the site to its existing pre-solar agricultural land capability, or repurposed with new PV equipment subject to additional technical feasibility and planning consents.

At the end of the useful life of the asset, decommissioning would involve the mobilisation of a workforce and additional temporary facilities, and the subsequent removal of equipment and infrastructure. At this time, it is expected that significant movements of light vehicles and trucks for transporting waste would occur. The decommissioning phase would be expected to last less than eight months.

During decommissioning, works would typically include:

- Removal of solar arrays, including the foundation posts, and sorting and packaging of all materials for removal from the site and recycling and/or reuse.
- Removal of all site amenities and equipment, and recycling and/or reuse of materials wherever practicable.
- Removal and recycling of posts and cabling and removal of security fencing including small concrete footings, unless otherwise useable for livestock operations
- Rehabilitation and restoration of the vegetation cover within the development footprint to a condition that is similar or better than its pre-disturbed state.

8.0 Environmental Management

Lightsource bp would develop and implement an Environmental Management Strategy (EMS) as part of the Project to provide the strategic framework for environmental management. The EMS would:

- Incorporate a Construction Environmental Management Plan (CEMP), Operational Environmental Management Plan (OEMP) and Decommissioning and Rehabilitation EMP (DREMP), including all required sub-plans, protocols, management, and mitigation measures proposed in this EIS.
- Identify all relevant statutory approvals.
- Establish roles, responsibilities, authority, and accountability of all key personnel involved in the environmental management of the Project.
- Establish procedures for consulting with the local community and relevant agencies about the operation and environmental performance of the Project.
- Establish procedures for handling of complaints, disputes, non-compliances, and emergency response.

9.0 References

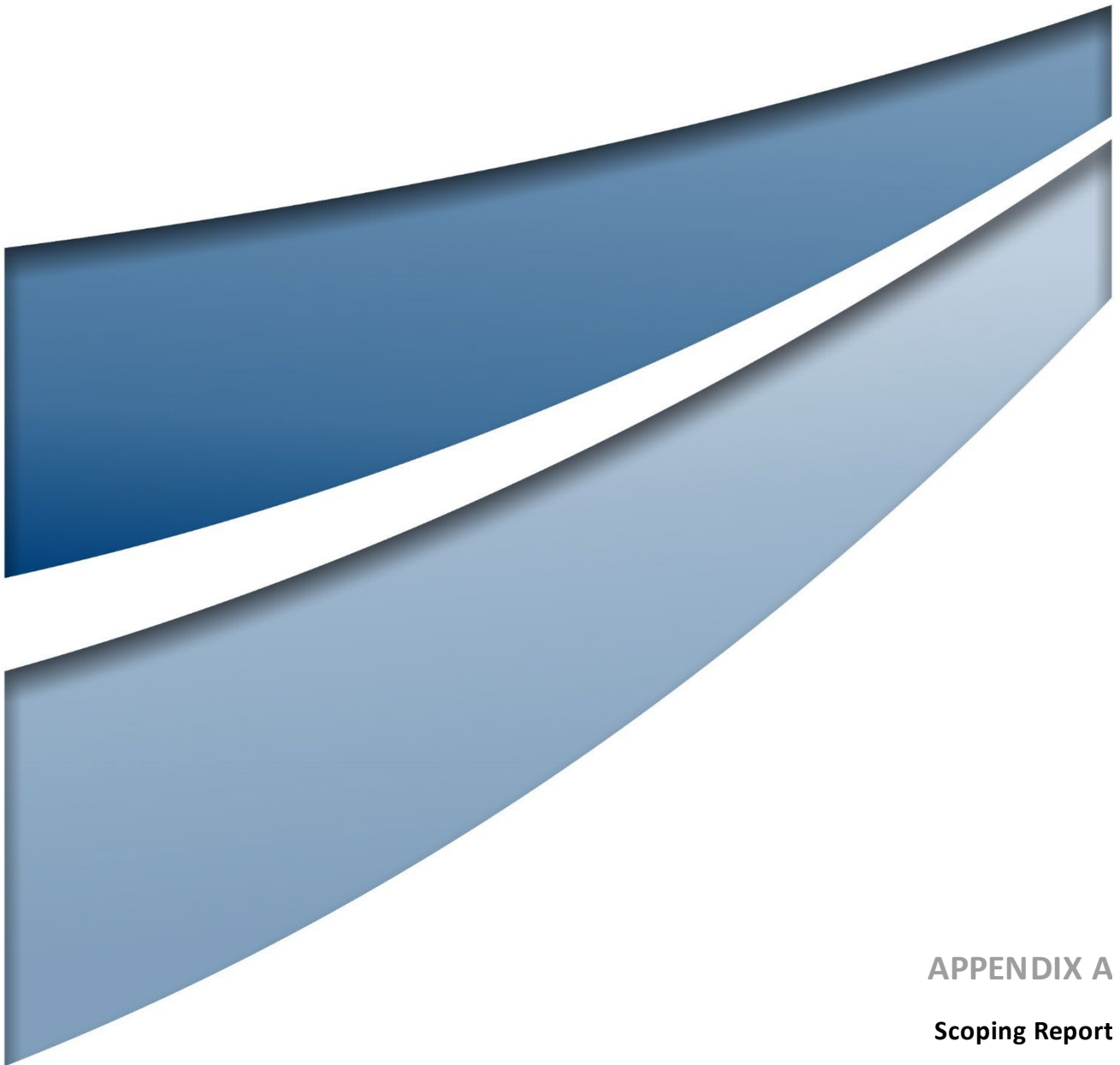
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APPENDIX A

Scoping Report

Gundry Solar Farm

SCOPING REPORT

October 2022



GUNDARY SOLAR FARM

Scoping Report

FINAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Lightsource bp

Project Director: Malinda Facey
Project Manager: Marion O'Neil
Report No. 22223/R01

Date: October 2022



This report was prepared using
Umwelt's ISO 9001 certified
Quality Management System.

Acknowledgement of Country

Umwelt would like to acknowledge the traditional custodians of the country on which we work and pay respect to their cultural heritage, beliefs, and continuing relationship with the land. We pay our respect to the Elders – past, present, and future.

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Document Status

Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date
Final_V1	Malinda Facey	06/09/2022	Malinda Facey	06/09/2022
Final_V2	Malinda Facey	25/10/2022	Malinda Facey	27/10/2022

Abbreviations

Term/Abbreviation	Definition
°C	Degrees Celsius
ABS	Australian Bureau of Statistics
AC	Alternating current
ACHA	Aboriginal Cultural Heritage Assessment
AHD	Australia Height Datum
AHIMS	Aboriginal Heritage Information Management System
BAM	Biodiversity Assessment Methodology
BAM-C	Biodiversity Assessment Method Calculator
BC Act	NSW <i>Biodiversity Conservation Act 2016</i>
BDAR	Biodiversity Development Assessment Report
BESS	Battery Energy Storage System
BSAL	Biophysical Strategic Agricultural Land
CEMP	Construction Environmental Management Plan
CIV	Calculated intangible value
CLM Act	NSW <i>Contaminated Land Management Act 1997</i>
Crown Land Act	NSW <i>Crown Land Management Act 2016</i>
DECC	NSW Department of Environment and Climate Change (former)
DECCW	NSW Department of Environment, Climate Change and Water (former)
DPE	NSW Department of Planning and Environment (now)
DPI	NSW Department of Planning and Infrastructure (former)
DPIE	NSW Department of Planning, Industry and Environment (former)
EEAP	NSW Energy Efficiency Action Plan
EIS	Environmental impact statement
EMF	Electromagnetic field
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	NSW <i>Environmental Planning and Assessment Regulation 2021</i>
EPA	Environment Protection Authority
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPL	Environment Protection Licence
FM Act	NSW <i>Fisheries Management Act 1994</i>
GW	Gigawatt
GWh	Gigawatt-hour
ha	Hectare
Heritage Act	NSW <i>Heritage Act 1977</i>
Host Landholder / Residence	Property and/or residence located on land owned by landholders involved in the Project. Also referred to as 'involved landholder / residence'.
ICNIRP	International Commission on Non-Ionizing Radiation Protection
km	Kilometres

Term/Abbreviation	Definition
kV	Kilovolt
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
LLS Act	Local Land Services Act
LVIA	Landscape and Visual Impact Assessment
MNES	Matter of National Environmental Significance
MW	Megawatt
NDC	Nationally Determined Contribution
Non-host Landholder / Residence	Property and/or residence located on land owned by landholders not involved in the Project. Also referred to as 'non-involved landholder / residence'.
NPW Act	<i>NSW National Parks and Wildlife Act 1974</i>
NSW	New South Wales
NVIA	Noise and Vibration Impact Assessment
NVR Map	Native Vegetation Regulatory Map
OEHS	NSW Office of Environment and Heritage (former)
PCT	Plant community type
PCU	Power conditioning unit
PHA	Preliminary hazard analysis
PMST	Protected Matters Search Tool
POEO Act	<i>NSW Protection of the Environment Operations Act 1997</i>
Project Area	Refers to the total area of the proposed solar farm
REAP	Renewable Energy Action Plan
RET	Renewable Energy Target
RFS	NSW Rural Fire Service
Roads Act	<i>NSW Roads Act 1993</i>
SEARs	Secretary's Environmental Assessment Requirements
SIA	Social Impact Assessment
SSC	State Suburb (Census statistical unit)
SSD	State Significant Development
TEC	Threatened ecological community
TIA	Traffic Impact Assessment
UNFCCC	United Nations Framework Convention on Climate Change
Viewpoint	A location within the public or private domain with a potential view of the Project.
WM Act	<i>NSW Water Management Act 2000</i>
WRIA	Water Resources Impact Assessment
WSP	Water Sharing Plan

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1.0 Introduction

Lightsource Development Services Australia Pty Ltd (Lightsource bp) proposes to develop a large scale solar photovoltaic (PV) generation facility, in the locality of Gundry, New South Wales (NSW), approximately 10 kilometres (km) southeast of Goulburn (see **Figure 1.1**), in Goulburn Mulwaree Local Government Area (LGA).

The Project will include an approximate 400 Megawatt peak (MWp) of solar electricity generation with a Battery Energy Storage System (BESS) of between approximately 200 to 400 Megawatts (MW). The Project will be accessed from Windellama Road off the Hume Highway, at 961 Windellama Road. The location of the Project and its regional context is presented in **Figure 1.1**.

The Project will supply electricity to the National Electricity Market, via a connection to the 330kV overhead transmission line traversing the north-west corner of the Project Area. The Project will generate enough clean energy for about 133,000 homes and reduce carbon emissions by 670,000 tonnes. The BESS will have capacity to store approximately 400 to 800 Megawatt hours (MWh) of on-demand energy for supply to the grid.

The Project would be located on land zoned RU1 – Primary Production. The area surrounding the Project is characterised predominantly by cleared agricultural lands, rural residential areas, small settlements, conservation areas, and rural tourism. Land within and adjacent to the Project has been subject to extensive vegetation clearing associated with historic agricultural land uses.

The Project will be developed across five freehold properties, covering an area of approximately 708 ha (the Project Area). Refer to **Section 3.1** for a list of the lots comprising the Project Area. These properties are primarily used for grazing activities. The Project infrastructure will cover approximately 473 ha (the development footprint). The Project layout, development footprint and site access requirements will be subject to further review and refinement as the environmental and social impact assessments progress. Further detail regarding the Project and the Project Area is provided in **Section 3.0**.

The Project is considered a State Significant Development (SSD) under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and *State Environmental Planning Policy (Planning Systems) 2021*.

The objectives of the Project are to:

- Deliver affordable and sustainable solar power to businesses and communities within NSW.
- Provide renewable energy that would contribute to the reduction of greenhouse gases across NSW, avoiding up to 670,000 tonnes per annum of carbon dioxide.
- Support the local regional economy by preferencing local workers and businesses in the development, construction and operation of the Project.
- Facilitate community engagement and participation in the design, development and operation of the Project.
- Minimise environmental, social and cultural impacts to the Project Area through adaptive design.

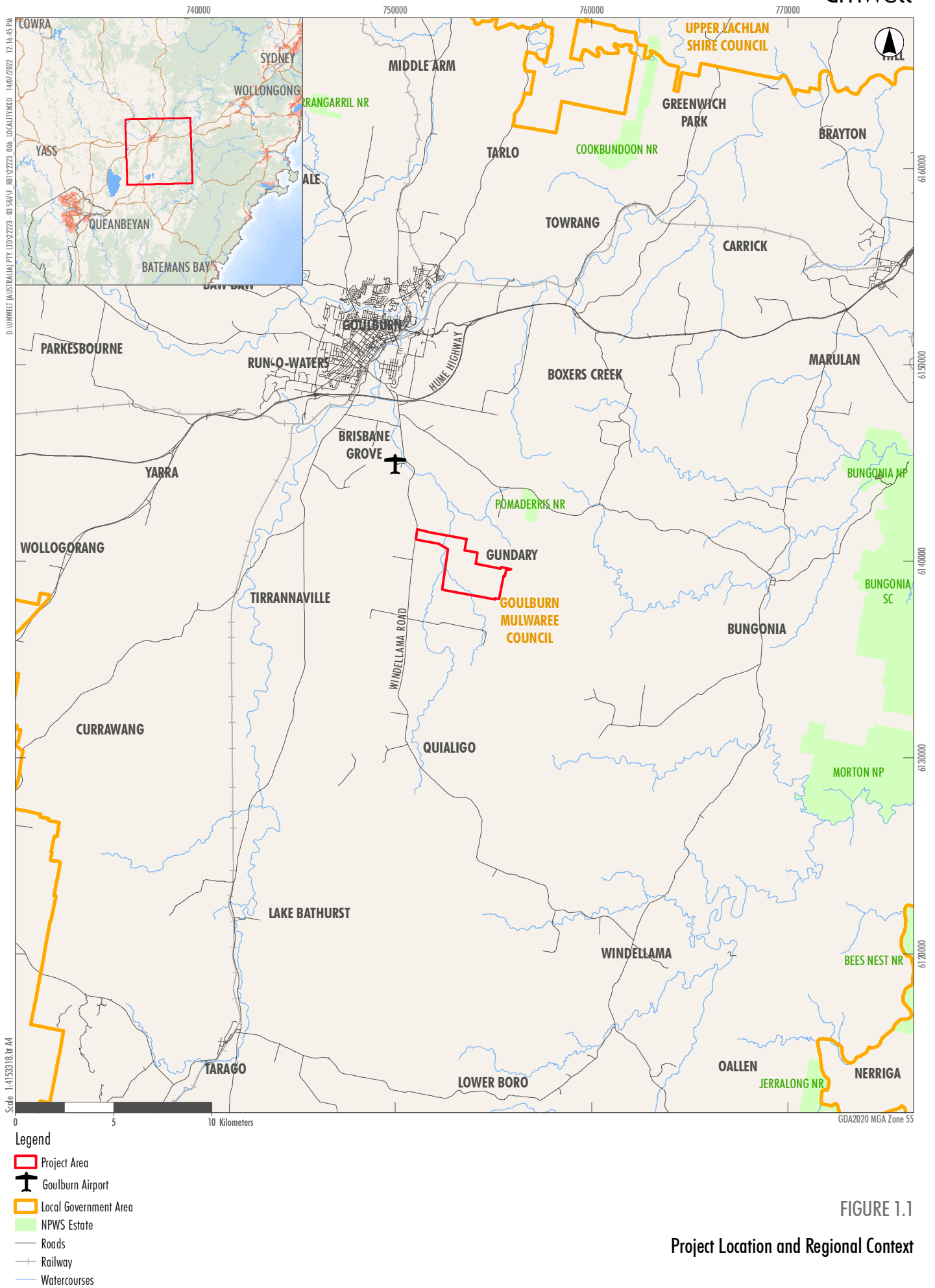


FIGURE 1.1

Project Location and Regional Context

1.1 The Proponent

The Proponent for the SSD application for the Project is Lightsource Development Services Australia Pty Ltd (Lightsource bp) (ABN 26 623 301 799). Lightsource bp was formed in 2017 as a partnership between the European solar farm developer Lightsource and global energy company, bp. Lightsource bp is a global leader in the development and management of utility scale solar projects, with a successful track record of progressing projects from early-stage development through to operation. The Proponent details are presented in **Table 1.1**.

Table 1.1 Proponent details

Requirement	Details
Full Name/s	Lightsource Development Services Australia Pty Ltd
Address	Level 29, 420 George Street, Sydney NSW 2000
ABN	26 623 301 799
Nominated Contact	Diana Mitchell
Contact Details	diana.mitchell@lightsourcebp.com

Lightsource bp has developed over 300 solar projects worldwide to date, equating to a total of 3.5 gigawatts (GW), and currently has a 20+ GW development pipeline across 17 countries. Lightsource bp first entered the Australian market in 2018 and will shortly commence operations of their 200 megawatt-peak (MWp) site in Wellington, NSW. Lightsource bp is the owner and operator of this solar farm. Several more projects are in development and under construction across Australia, including, but not limited to:

- West Wyalong Solar Farm, NSW (108 MWp): planning approval received in November 2019. Construction underway, to be completed in late 2022.
- Woorolga Solar Farm, QLD (210 MWp): planning approval received in March 2020. Construction underway, to be completed in late 2022.
- Wellington North Solar Farm, NSW (415 MWp): planning approval received in April 2021. Financial close expected in 2022, with construction to be completed 2024.
- Wungnhu Solar Farm, VIC (90 MWp): acquired by Lightsource bp in December 2021. Planning approval received June 2018. Financial close expected in 2022, with construction to be completed in 2023.
- Mokoan Solar Farm, VIC (52 MWp): planning approval received December 2018 and June 2021 across two sites.
- West Mokoan Solar Farm, VIC (364 MWp): the Project is made up of two separate sites, one of which received planning approval in November 2020, the other of which planning application is currently under review.
- Goulburn River Solar Farm, NSW (520 MWp): Secretary's Environmental Assessment Requirements received February 2022. Environmental Impact Statement in preparation.
- Sandy Creek Solar Farm, NSW (840 MWp): Secretary's Environmental Assessment Requirements received May 2022. Environmental Impact Statement in preparation.

To achieve local and regional community outcomes, Lightsource bp is committed to building strong relationships with key stakeholders and local communities. At the early development stage, emphasis is put on encouraging local participation and community input.

1.2 Impact Avoidance Measures

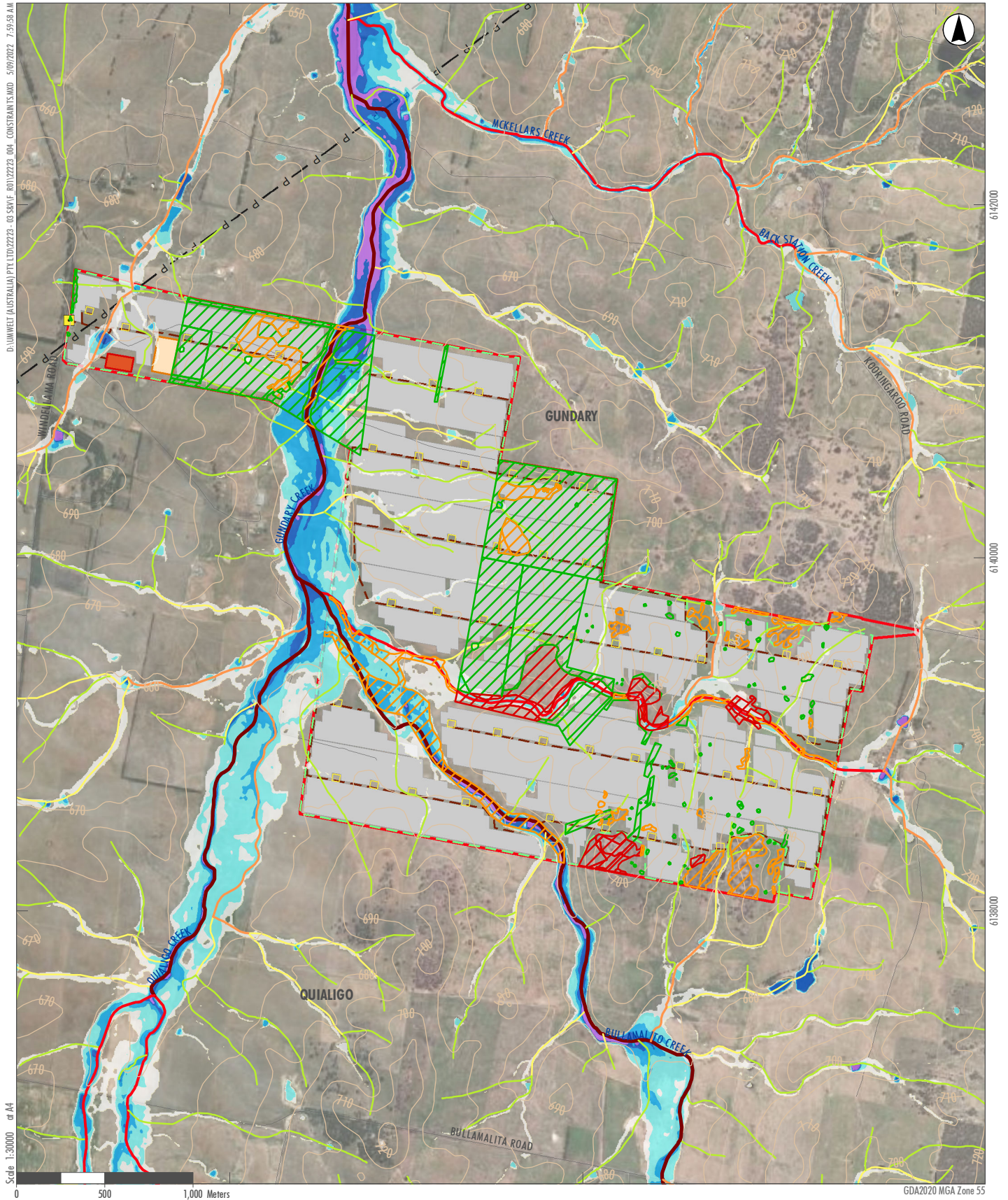
The Project will have an onsite grid connection via the which traverses the Project Area. This avoids the need to construct additional connection infrastructure offsite, such as high voltage (HV) transmission lines and substations. The Project's ability to have an onsite grid connection would result in the avoidance of further environmental, social and cultural impacts to a number of neighbouring landholders.

The Project's layout has been strategically designed to avoid impacts to Gundry Creek, Bullamalito Creek as well as some Threatened Ecological Communities (TECs), including biodiversity areas mapped as 'high sensitivity' and the majority of the biodiversity areas mapped as 'moderate sensitivity', as shown in **Figure 1.2**. The Project layout has further been designed to maintain appropriate setbacks in accordance with the *Guidelines for riparian corridors on waterfront land* (DPI, 2012a) around watercourses within the Project Area where there are biodiversity constraints. Preliminary flooding risks, as discussed in **Section 6.2.4**, have also been considered in the Project design and layout, as illustrated in **Figure 1.2**.

The Project layout will be subject to further review and refinement based on the outcome of additional environmental investigations during the EIS and further community and stakeholder engagement. Onsite civil works including drainage line crossings, levelling and potential vegetation clearing, if and where required, will be determined during further design development. Vegetation screening to mitigate visual impacts may be required and will be considered following consultation with neighbouring landholders.

In addition, Lightsource bp has a track record of minimising impacts on agricultural land by continuing to graze sheep on most of its sites globally, creating a dual land use with the co-existence of agriculture and solar power generation. This approach will be considered for the Project, in consultation with the landholder.

Where impacts are unavoidable, the Project will mitigate and manage those impacts throughout construction, operation and decommissioning. Preliminary avoidance and mitigation measures for the Project are presented in **Table 6.1** and will be further analysed and refined as part of the EIS process.



Legend

- | | | | |
|---|---|--|---|
| <ul style="list-style-type: none"> Project Area Internal Access Tracks Security Fence Existing Transmission Line Inverter Stations and BESS Option 1 (Decentralised) Solar Panels Indicative Site Access | <ul style="list-style-type: none"> BESS Option 2 (Centralised) Substation and OM Facility Area Roads Watercourses 10m Contours | Depth of Predicted Flood Water (m) (1% AEP) <ul style="list-style-type: none"> < 0.5 0.5 - 1.0 1.0 - 1.5 1.5 - 2.0 > 2.0 | Strahler Stream Ordering <ul style="list-style-type: none"> 1 2 3 4 ≥ 5 |
|---|---|--|---|
- Ecological Constraints**
- High
 - Moderate
 - Low

FIGURE 1.2

Constraints Map

1.3 Purpose of this Report

This Scoping Report has been prepared to provide a description of the Project to key regulatory agencies and to identify the key environmental and social matters of relevance to the Project to inform the preparation of the Secretary's Environmental Assessment Requirements (SEARs) for the EIS. The SEARs will identify specific assessment considerations relevant to the Project that must be addressed in the EIS.

This report has been prepared in consideration of the following guidelines:

- *State significant development guidelines – preparing a scoping report (Appendix A to the state significant development guidelines), July 2021 (DPIE, 2021b)* and referred to hereafter as the DPE Scoping Guideline.
- *Large-Scale Solar Energy Guideline (DPE, 2022) and the Technical Supplement - Landscape and Visual Impact Assessment (DPE, 2022).*
- *Social Impact Assessment Guideline for State Significant Projects, July 2021 (DPIE, 2021a).*
- *Undertaking Engagement Guidelines for State Significant Projects (DPIE, 2021c)* and referred to hereafter as the Engagement Guidelines.
- *Cumulative Impact Assessment Guidelines (DPIE, 2021d).*

1.4 Terminology

The Scoping report will use the following terminology:

- **The Project** – the Gundry Solar Farm, including the 400 MWp solar farm, 200 to 400 MW BESS and all associated infrastructure as described in **Section 3.0**.
- **Project Area** – the parcels of land on which the Project will be located encompassing five freehold properties, measuring approximately 708 ha in size.
- **Development footprint** – the exact land area to be covered by the project infrastructure, measuring approximately 473 ha.
- **Host Landholder / Residence** – a property and/or residence owned by a landholder that is involved in the Project, therefore also referred to as involved landholder / residence.
- **Non-host Landholder / Residence** – a property and/or residence owned by a landholder that is not involved in the Project, also referred to as non-involved landholder / residence.

2.0 Strategic Context

2.1 Project Justification

The development of renewable energy projects aligns with federal, state and local commitments to increase renewable energy generation and reduce carbon emissions. The Project will generate around 780,000 megawatt-hours (MWh) of electricity each year, which could power approximately 133,000 homes and reduce carbon emissions by 670,000 tonnes, equivalent to the removal of over 278,000 cars off the roads.

The Project will provide a range of long-term strategic benefits including:

- Renewable energy supply to assist with fulfilling the current obligations under state and federal renewable energy targets.
- Energy supply to help safeguard both NSW and eastern Australia's energy security, specifically with the imminent closure of Australia's ageing fleet of coal fire power plants.
- Provision of clean reliable electricity generation and assisting with meeting current and future load demand while reducing greenhouse gas emissions and the impacts of climate change.
- Provision of regional investment in the NSW renewable energy sector.

The Project will also provide direct financial benefits to the regional and local community, including:

- Capital investment of approximately \$540 million.
- Employment generation and the creation of approximately 400 jobs during the construction phase and two to four permanent staff during the operational phase.
- Establishment of a community fund to support local charitable, environmental and educational organisations and groups.
- Indirect benefits to local services through the construction and operation phases.
- Mixed use agriculture activities within the project area, involving sheep grazing within the development footprint.

Further detail regarding the site suitability as well as strategic context of the development is provided in the following sections.

2.2 Site Suitability

The Project Area was selected for several reasons including:

- The electricity network in the area is strong with multiple high voltage (HV) transmission lines passing through the area, providing good system strength. A strong point of connection to the existing transmission network is available, making it an ideal site for increasing generation capacity on National Electricity Market (NEM) with minimal requirements for additional transmission infrastructure.

Moreover, the proximity of load centres means that less energy is lost in the transportation of the generated energy so more can be used rather than wasted.

- Goulburn has been identified as having renewable resources, including solar and wind.
- Proximity to high population and electrical load (demand) centres of Canberra, Sydney, Goulburn and other towns in the region.
- The Project Area is currently used for grazing and is not classified as either Biophysical Strategic Agricultural Land (BSAL) or mapped as Class 1, 2 or 3 under the Land and Soil Capability Mapping for NSW. The existing agricultural land use within and surrounding the Project Area, which is compatible with large scale solar energy generation, and potential to implement agri-solar.
- The Project Area has been cultivated for agricultural production and is relatively flat minimising land clearing and earthworks through construction.
- Preliminary environmental assessment indicates much of the area has been intensively cultivated for agricultural purposes, any remaining areas of significance can be avoided or mitigated.
- The Project Area has access from Windellama Road via the Hume Highway. Two access routes off the Hume Highway are currently being investigated (refer to **Figure 3.3**). The transport route to the Project Area will be reviewed and confirmed as the environmental and social impact assessment progresses.

2.3 Strategic and Regional Context

2.3.1.1 National and International Commitments

UNFCCC Paris Agreement

Australia is one of 192 countries from around the world signed to the international climate change agreement (The Paris Agreement). The Paris Agreement aims to:

- hold the increase in the global average temperature to below 2°C above pre-industrial levels, and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels
- increase the ability (of nations) to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production
- make finance flows consistent with a pathway towards low greenhouse gas emissions and climate resilient development.

The Paris Agreement seeks to meet its objectives by developing programs and mechanisms that:

- require participating Parties to prepare and communicate greenhouse gas mitigation contributions. Parties were expected to set mitigation targets for 2020, and then develop new targets every five years. Each successive target is expected to represent a larger mitigation effort than the previous target
- promote climate change resilience and adaptation
- provide mitigation and adaptation funding to developing countries

- foster mitigation and adaptation technology transfer between Parties
- require participating Parties to report progress towards their mitigation contributions on an annual basis.

Australia signed The Paris Agreement on 22 April 2016. The obligations under The Paris Agreement are driving national greenhouse gas policy between 2020 and 2030. Australia's commitment to The Paris Agreement includes reducing greenhouse gas emissions by 26% to 28% on 2005 levels by 2030 (Commonwealth Department of Industry, 2021). Australia's Nationally Determined Contribution (NDC) prescribes an unconditional economy-wide target to reduce greenhouse gas emissions, and states that future policies will target emissions generated from energy use, industrial processes, agriculture, land-use, land-use change and forestry and waste (UNFCCC, 2015).

The Project is a large-scale renewable energy project that will contribute to achieving Australia's greenhouse gas emission reduction targets through reducing emissions from energy production in NSW.

Australian Renewable Energy Target (RET)

The RET is an Australian Government scheme introduced in 2001 to reduce greenhouse gas emissions in the electricity sector and encourage electricity generation from renewable and sustainable sources (Australian Government Department of Industry, Science, Energy and Resources, 2018). The objectives of the RET are to:

- encourage the additional generation of electricity from renewable sources
- reduce emissions of greenhouse gases in the electricity sector, and
- ensure that renewable energy sources are ecologically sustainable.

The RET is achieving these objectives by stimulating investment in large-scale renewable energy projects through the Large-scale Renewable Energy Target (LRET) that create financial incentives for the installation of renewable energy power stations.

The LRET target of 33,000 GW hours of additional renewable electricity generation was met on a rolling 12-month basis at the end of January 2021 and this target will remain until the scheme ends in 2030.

The Project would generate approximately 400 MW of electricity annually, which would contribute to the RET meeting its objectives. The Project would not generate greenhouse gas emissions through the process of energy generation and would contribute to energy diversity.

2.3.1.2 NSW Commitments

NSW Climate Change Policy Framework

The NSW Government has developed its NSW Climate Change Policy Framework, which aims to deliver net zero emissions by 2050, and a state that is more resilient and responsive to climate change (NSW Government, 2016).

Under the NSW Climate Change Policy Framework, NSW has committed to follow the Paris Agreement and to work to complement national action.

The policy framework is being delivered through:

- the Climate Change Fund
- developing an economic appraisal methodology to value greenhouse gas emissions mitigation
- embedding climate change mitigation and adaptation across government operations
- building on NSW's expansion of renewable energy
- developing action plans and strategies.

In 2013 the NSW Government released the Renewable Energy Action Plan (REAP) and the NSW Energy Efficiency Action Plan (EEAP).

The REAP aimed to increase the generation, storage and use of renewable energy in NSW, at least cost to customers and with maximum benefits to NSW. The three core goals of the REAP were to attract renewable energy investment, build community support for renewable energy and attract and grow expertise in renewable energy. Based on the implementation of the REAP, renewable energy is now well-placed to play a leading role in meeting NSW's energy needs into the future.

NSW Electricity Strategy and Electricity Infrastructure Roadmap

Current and future electricity development in NSW is supported through the NSW Government's Electricity Strategy (NSW Government, 2020a) and the NSW Electricity Infrastructure Roadmap which builds on the framework set out in the Electricity Strategy taking an integrated approach to all demand and supply options, including action by households and small businesses, demand management and investment in large-scale, affordable and reliable generation. The Project is consistent with the objectives of the Electricity Strategy and Infrastructure Road Map, in aiming to provide large-scale renewable electricity generation that is affordable and reliable.

2.3.1.3 Local and Regional Context

South East and Tablelands Regional Plan 2036

The *South East and Tablelands Regional Plan 2036* is the NSW Government's 20-year blueprint for the future of the South East and Tablelands Region of NSW. This plan acts as the overarching strategic plan for the region, guiding the implementation of Local Strategic Planning Statements and the assessment of planning proposals such as rezonings as well as supporting key infrastructure and policy priorities for the region.

Under this plan, renewable energy is identified as a priority growth sector to diversify the region's economy based on the established network of high voltage transmission lines that traverse the region and contribute to the NSW Government's target for net zero emissions by 2050. Direction 6 under Goal 1 (a connected and prosperous economy) of the plan is to "*position the region as a hub of renewable energy excellence*".

The Project is considered to be consistent with the goals, directions and actions for renewable energy development set out in the *South East and Tablelands Regional Plan 2036*.

Goulburn Mulwaree Council Local Strategic Planning Statement

Adopted on 18 August 2020, the *Goulburn Mulwaree Local Strategic Planning Statement* (Goulburn Mulwaree Council, 2020) is a 20-year vision for land use planning for Goulburn Mulwaree and provides an overarching strategic direction for future land use planning in the Goulburn Mulwaree LGA.

Planning themes and priorities of the Local Strategic Planning Statement are around infrastructure, community services and wellbeing, economy, environment and sustainability. Specifically, Goulburn Mulwaree Council aims to promote renewable energy projects, particularly in areas not identified as being of prime crop and pasture potential, in order to diversify the regional economy and promote a sustainable future.

The Project is consistent with the vision and intent of the Local Strategic Planning Statement, specifically in relation to the proposed development of renewable energy generation.

2.4 Environmental and Social Context

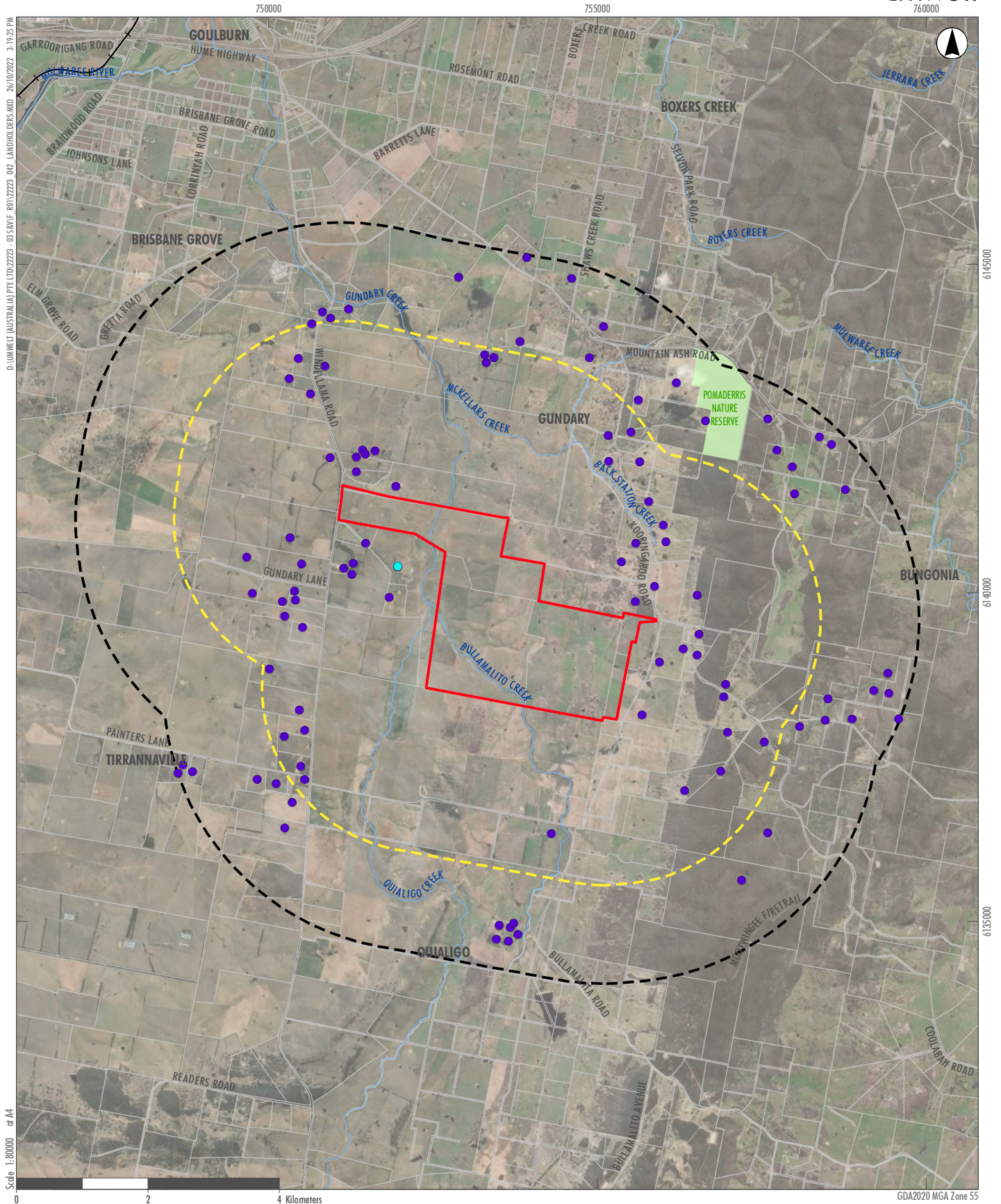
The Project is located within the small rural locality of Gundary, having a population of 270 residents of median age of 42, and 109 households (ABS, 2016), within the broader Goulburn Mulwaree LGA. Other small localities in the vicinity of the Project Area are:

- Brisbane Grove, approximately 7 km northwest.
- Boxers Creek, approximately 9.3 km northeast.
- Tirrannaville, approximately 6.3 km west.
- Quialigo, approximately 9 km south.
- Bungonia, approximately 13.5 km east.

Goulburn is approximately 10 km northwest of the Project Area and provides the above-mentioned localities with their primary access to services and facilities. Further demographic details of the area are described in **Section 6.2.7**.

Goulburn Airport is approximately 3.3 km northwest of the Project Area. The Hume Highway is approximately 7 km north of the Project Area and acts as the primary connection between Sydney and Canberra. Other key routes and transport options to the Project Area are detailed in **Section 6.2.6** and shown in **Figure 3.3**.

The Scoping Report (Rev 1, dated September 2022) was based on the 2018 *Large-scale Solar Energy Guideline*. The original preliminary analysis was based on a 2.5 km radius around the Project Area and identified 59 private residences (receivers) within this area (refer to **Figure 2.1**). This Scoping Report (Rev 2, dated October 2022) has been updated to reflect the requirements of the new *Large-scale Solar Energy Guideline*, including the *Technical Supplement – Landscape and Visual Impact Assessment*, released in late August 2022. To this end, the preliminary analysis has been updated to identify all private residences (receivers) within a 4 km radius from the Project Area.



- Legend
- Project Area
 - 2.5km Project Buffer
 - 4km Project Buffer
 - Potential residences (sensitive receivers)
 - Host/involved residence
 - + Railway
 - Watercourses
 - NPWS Estate

FIGURE 2.1

Surrounding residences

Based on the updated preliminary analysis, an additional 43 private residences (receivers) have been identified between 2.5 km to 4 km from the Project Area. Therefore, a total of 102 private residences (receivers) have been identified within a 4 km radius from the Project Area (refer to **Figure 2.1**). The number of identified residences within 2.5 km remains the same as in the original preliminary assessment, there has been no change or increase. One of these residences is an involved residence (i.e. owned by the landholder involved in the Project also referred to as a host landholder) and therefore not considered a sensitive receiver. The remaining 101 residences are non-involved residences (i.e. owned by landholders not involved in the Project) and are considered sensitive receivers. The closest non-involved residence is located approximately 170 m north of the Project Area. It is noted that not all the residences identified and analysed are necessarily dwellings (some are likely to be sheds or other buildings and therefore not sensitive receivers).

Of the 101 non-involved residence (receivers), 53 have been identified through the preliminary visual assessment (refer to **Section 6.2.3.1**) as being within the Project's viewshed (previously called the zone of theoretical visibility (ZTV)), also referred to as viewpoints¹. Of these 53 non-involved residence (receivers), 40 have been identified as requiring further detailed assessment as part of the Landscape and Visual Impact Assessment (LVIA) to be completed during the EIS phase. The proximity and number of non-involved residence (receivers), including the sensitivity of these receivers, will be further investigated and verified during the EIS process. In addition to the 40 non-involved residence (receivers), 3 public viewpoints have been identified as requiring further detailed assessment as part of the LVIA to be completed during the EIS phase. Refer to **Section 6.2.3.1** for further details of the preliminary visual assessment.

Agriculture is the primary land use within the Project Area and the surrounding area, including sheep and cattle grazing with scattered rural residences. The closest national park, state park or nature reserve is the Pomaderris Nature Reserve which is approximately 3.5 km northeast of the Project Area (refer to **Figure 1.1**).

The Project Area falls within the Hawkesbury-Nepean catchment which is within the Sydney drinking water catchment. On a local scale, the Project Area is located within the Gundry Creek catchment. Gundry Creek is a tributary of the Mulwaree River and traverses through the western part of the Project Area, flowing in a northerly direction towards Goulburn as shown on **Figure 1.2**. The Bullamalito Creek and Quialigo Creek convergence is located just outside the Project Area (to the west), becoming Gundry Creek from this confluence. Bullamalito Creek traverses through the southwestern part of the Project Area. The Project Area has a ground surface elevation ranging from 645 m Australian Height Datum (AHD) to 710 m AHD, comprised of hills and ridgelines with intervening valleys.

An existing 330 kV TransGrid transmission line bisects the north-western corner of the Project Area allowing the Project to have an onsite connection point to the grid.

No existing mineral exploration licences apply to the Project Area with the closest exploration licence boundary (EL9048) being approximately 1.5 km northwest of the Project Area. None of the Project Area is identified as Biophysical Strategic Agricultural Land (BSAL). Furthermore, land within the Project Area is predominantly mapped as land soil capability (LSC) Class 5, with a small portion of Class 4 (about 56 ha) as further discussed in **Section 6.2.5**.

¹ A location within the public or private domain with a potential view of a large-scale solar energy project.

Parts of the Project Area are mapped as bushfire prone under the Goulburn Mulwaree Council's Bushfire Prone Vegetation Map (refer to **Figure 6.10**). With the presence of remnant or plantation vegetation and grasses, bushfire presents a potential hazard for the Project Area. Further detail regarding bushfire threat is provided in **Section 6.2.8.2**.

Potential hazards associated with the Project infrastructure and materials are discussed **Section 6.2.8**. The EIS will include an assessment of potential hazards associated with the Project.

2.5 Cumulative Impacts

A key component of environmental impact assessment is the consideration of cumulative impacts. The *Large-scale Solar Energy Guideline* (DPE, 2022) and the *Cumulative Impact Assessment Guideline* (DPIE, 2021) contain requirements for assessing any cumulative impacts of a project with other developments (proposed, approved and operating), relating to biodiversity, visual, socio-economic and construction traffic impacts. The EIS will include an assessment considering other relevant construction, industrial and employment generating projects within the locality as further outlined in **Section 6.2.9. Appendix 1** outlines where a cumulative impact assessment (CIA) will be undertaken for the relevant matters including the level of assessment and engagement.

2.6 Project Alternatives

A number of alternative sites were considered for the Project. The site selection process was grid-led, involving identification of existing electricity infrastructure with sufficient transmission capacity to accommodate a solar farm in areas with a good solar resource. Once a preferred transmission line was selected, potential land options were identified based on planning and environmental constraints. Contact was then made with several landowners in the Project region, with negotiations ultimately being successful with the landowner of the proposed Gundry Solar Farm site.

The proposed solar farm site has been strategically selected in a strong part of the National Electricity Market, with an existing 330 kV transmission line that transects the site and transports electricity to nearby major populations centres including Sydney and Canberra.

The design of the Project has been developed taking into account environmental constraints relevant to the Project Area and the surrounding land. Identification of environmental constraints has been informed by preliminary desktop assessments (including preliminary flood modelling) and supported by preliminary ecology and visual fieldwork. The design of the Project will continue to be developed in response to further information obtained during the environmental and social impact assessment processes and engagement with landowners, the community and other stakeholders.

Key factors that have influenced the design of the Project during the scoping phase include:

- Ability for the Project to connect to the existing transmission network onsite to avoid further impacts associated with the construction of connection infrastructure outside of the Project Area.
- Avoidance of Gundry Creek, Bullamalito Creek and mapped unnamed creeks (second order and higher) within the Project Area, mainly for drainage, flooding risks, ecological and potential Aboriginal cultural heritage reasons.

- Avoidance of areas with high biodiversity value, including all areas of EPBC Act listed TEC, and the majority of areas with moderate biodiversity value including stands of paddock trees and degraded areas of NSW listed TEC.
- Primary access via Windellama Road only, as opposed to having a second major access point on Kooringaroo Road, which would require significant upgrades and impact on residents living in that vicinity.

2.7 Project Related Community Benefits

Lightsource bp is considering a range of community benefit mechanisms, including, but not be limited to:

- A Voluntary Planning Agreement (VPA) with Council.
- Negotiated agreements with neighbouring landholders.
- Community Benefit Fund which looks to allocate funds to local sporting, cultural and educational organisations, fund traineeships and generally support the local community.
- Power Purchase Agreement (PPA) with Council.
- Partnerships with local training and education organisations.

Further detail regarding Project related community benefits will be provided in the EIS.

3.0 The Project

3.1 Project Area

The Project Area is approximately 708 ha and comprises (wholly or partly) five cadastral lots listed in **Table 3.1**. The Project Area is zoned RU1 Primary Production in its entirety under the Goulburn Mulwaree LEP (refer to **Figure 3.1**). Properties within the Project Area have been subject to agricultural activities such as grazing (sheep and cattle).

Table 3.1 Lots and Deposited Plans

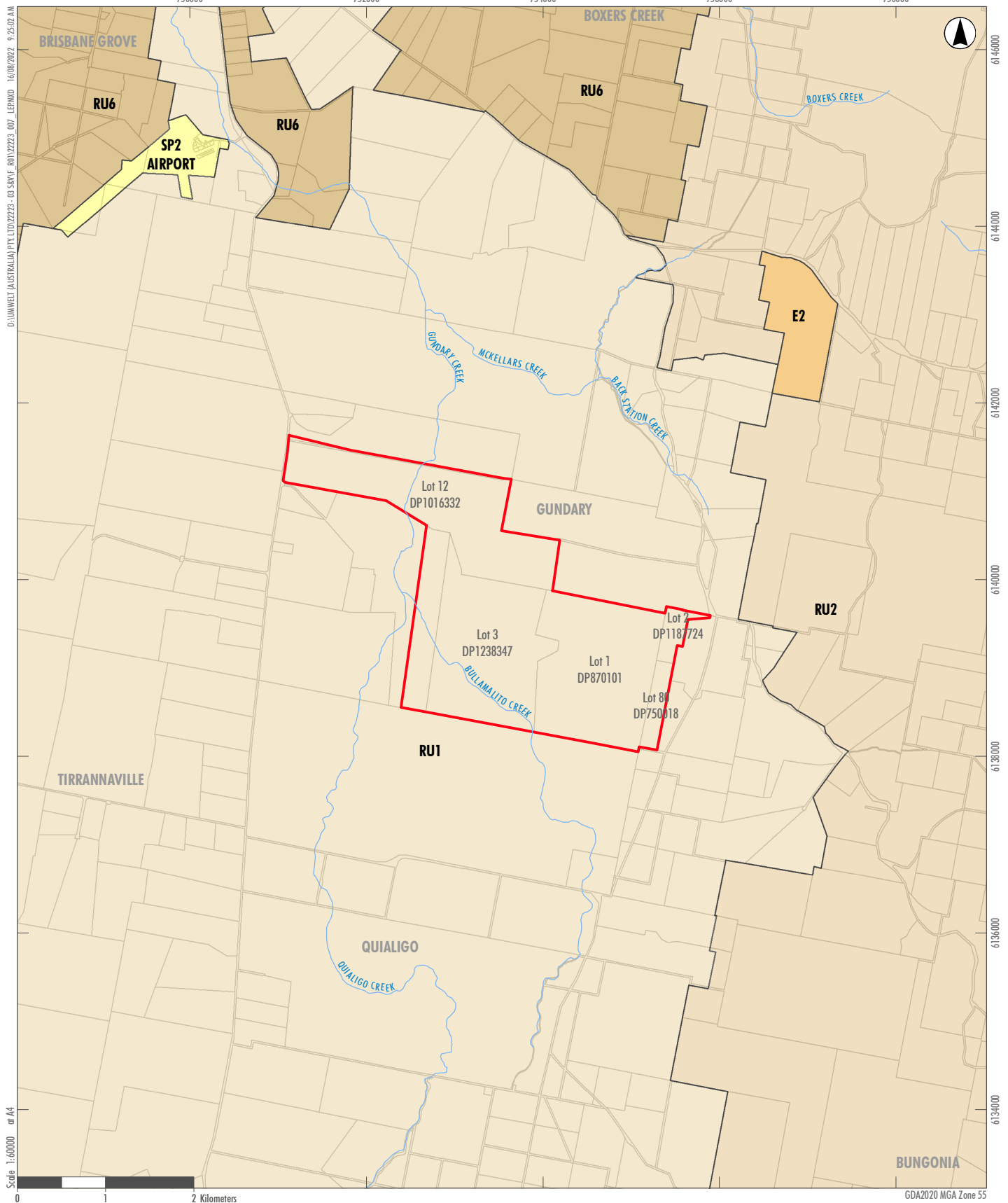
Lot	Deposited Plan (DP)	Ownership
Part of Lot 3	DP 1238347	Freehold
12	DP 1016332	Freehold
1	DP 870101	Freehold
2	DP 1187724	Freehold
80	DP 750018	Freehold

An overview of the Project Area is provided in **Figure 3.1** showing the project area boundaries, legal description, surrounding road network and potential access points.

An indicative development footprint of approximately 473 ha has been identified within the Project Area which considers the preliminary biodiversity and hydrology constraints identified during the scoping phase. The development footprint within the broader Project Area will be further refined based on further stakeholder engagement, environmental assessment, and constraints identification.

The Project Area is bounded by Windellama Road on the west for approximately 500 m with Koorringaroo Road bordering the northeast corner of the Project Area. Land surrounding the Project Area is zoned RU1 Primary Production and used for agricultural activities such as cattle and sheep grazing. Primary access to the Project will be via Windellama Road as shown in **Figure 3.1**. Options for site access are described further in **Section 6.2.6**.

A spatial search conducted on 1 July 2022 has shown there are no exploration or mineral licenses currently over the Project Area. The Project Area has an existing 330 kV transmission line and associated pylons crossing through the north-western corner, with an easement of approximately 60 m under the transmission lines.



- Legend**
- Project Area
 - Cadastre Boundaries
 - Watercourses
- Local Environmental Plan Zoning**
- E2 Environmental Conservation
 - RU1 Primary Production
 - RU2 Rural Landscape
 - RU6 Transition
 - SP2 Infrastructure

FIGURE 3.1
Project Area

3.2 Project Overview

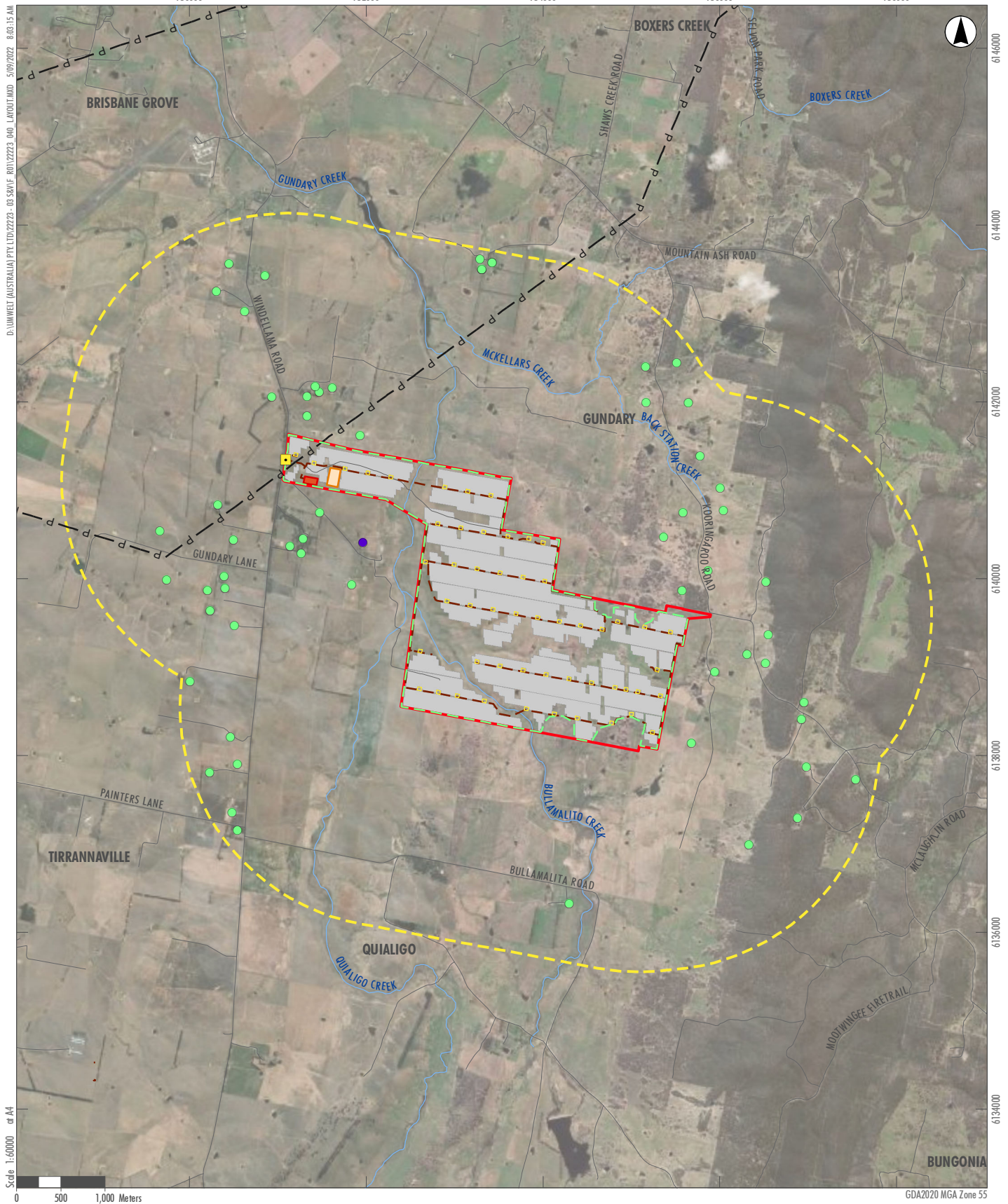
3.2.1 Key Components of the Project

Subject to detailed design, the Project comprises the following key elements:

- Approximately 740,740 solar panels bifacial flat plate solar photovoltaic (PV) modules each generating approximately 540 watt (W) in single-axis tracking arrangement with a maximum height of 5 m above ground level.
- A system of inverters and voltage step-up transformers positioned throughout the solar arrays. Each inverter/transformer station will comprise two inverters and one transformer on a single skid with dimensions of approximately 20 m (L) x 2 m (W) x 3 m (H).
- Onsite underground electrical conduits and cabling to connect inverter stations to the onsite substation to be built for the project.
- A lithium-ion BESS to store energy generated by the Project, including approximately 154 battery stations with a combined capacity of up to 200 to 400 MW. Dimensions of each battery station will be up to 18 m (L) x 2 m (W) x 4 m (H). The BESS will be housed in a series of outdoor containers, either distributed across the site (Option 1 – decentralised) or aggregated in one central location (Option 2 – centralised), as illustrated on **Figure 3.2**.
- An onsite switchyard, 33/330 kilovolt (kV) substation, approximate dimensions of 150 x 200 m, and ancillary infrastructure to connect the Project to the existing 330 kV transmission line. An additional transmission tower may be erected on the current line to accommodate the grid connection.
- Internal access tracks to allow for site maintenance.
- Site office and operations and maintenance building with parking for the operations team.
- Primary solar farm site access point from Windellama Road.
- Drainage line crossings if and where required to manage existing surface water flows (to be determined during further design development) and access points for construction purposes.
- Emergency access and egress points at select points on the project boundary.
- Perimeter security fencing, crossing gates, water tanks or dams, and access points to facilitate sheep grazing.

An indicative layout of the Project is provided in **Figure 3.2**. The layout and design of the Project will be refined further during the preparation of the EIS based on further stakeholder consultation and outcomes of detailed assessments.

Existing 330 kV overhead powerlines, owned and operated by Transgrid, transect the northwest corner of the Project Area and would provide the connection point for the Project to the existing electricity distribution network (refer to **Figure 3.2**). As this connection can occur onsite, no infrastructure external to the Project Area is proposed.



- Legend**
- Project Area
 - 2.5km Project Buffer
 - Internal Access Tracks
 - Security Fence
 - Existing Transmission Line
 - Inverter Stations and BESS Option 1 (Decentralised)
 - Solar Panels
 - Indicative Site Access
 - BESS Option 2 (Centralised)
 - Substation and OM Facility Area
 - Roads
 - Watercourses
 - Host Landholder
 - Potential Receivers within 2.5 km (Non-associated Landholders)

FIGURE 3.2

Indicative Project Layout

To facilitate construction, a range of temporary facilities and ancillary structures will be required, including a site office, a storage shed, amenities and wastewater disposal system, vehicle parking areas, water storage systems, security fencing, and material laydown areas.

Primary access to the Project will be from Windellama Road via the Hume Highway. Imported project infrastructure will be transported by truck from the relevant port, which would likely be either Port Botany in Sydney or Port Kembla south of Wollongong, to the Project Area via the public road network. Two access routes off the Hume Highway are currently being investigated (refer to **Figure 3.3**). The transport routes to the Project Area will be reviewed and confirmed as the environmental and social impact assessment progresses.

3.2.2 Economic Investment and Employment

The Project has a capital investment value (CIV) of approximately \$540 million and is anticipated to generate up to 400 Full Time Equivalent (FTE) employment opportunities during construction with approximately 250 personnel on site during peak construction with a range of different skills required. Lightsource bp will engage an Engineering, Procurement and Construction (EPC) Contractor to construct the Project. The EPC Contractor will aim to engage a minimum of 35% local labour for construction and source local sub-contractors and suppliers, where possible and subject to local constraints. Furthermore, Lightsource bp is proposing to partner with the local TAFE and other education providers to facilitate training in renewable energy employment opportunities.

3.2.3 Construction Timing and Duration

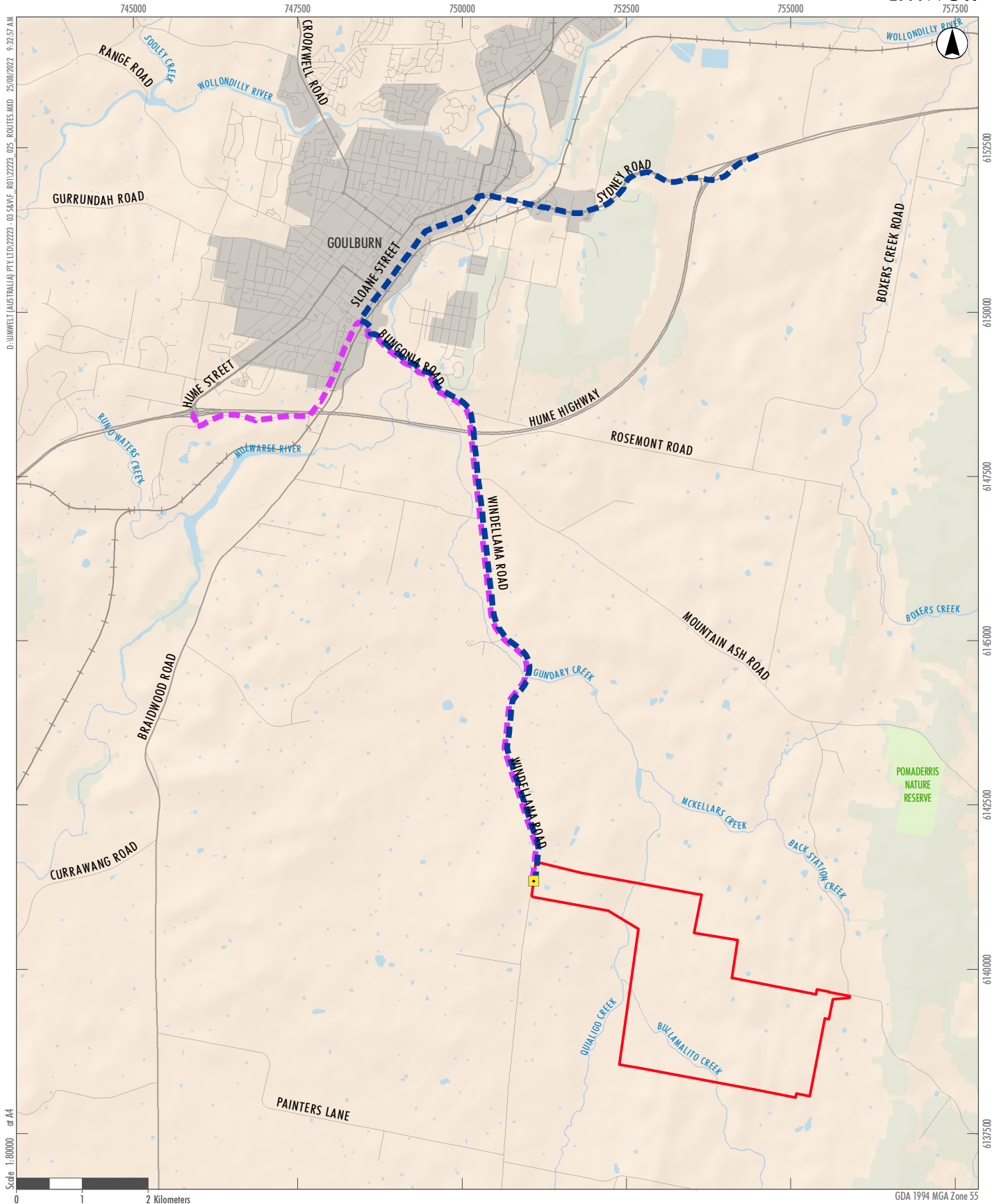
Construction and commissioning of the Project will take approximately 18 to 24 months, with a peak period of approximately 9 months towards the middle of the construction period. Site preparation and Project construction is planned to commence in late 2024 or early 2025, pending environmental approvals, licensing and completion of design and procurement processes.

3.2.4 Operations

Operations of the Project is expected to generate between two to four permanent full time employment opportunities. These may either be with Lightsource bp directly or contracted through an Operations and Maintenance (O&M) Contractor. Operational staff will be responsible for day-to-day operations and maintenance activities, ground patrols, communication with local stakeholders and facilitation of third-party access to the site. It is estimated that the operational life of the Project is around 35 years, after which time it will either be extended, refurbished to extend its life and improve generation or decommissioned.

3.2.5 Decommissioning

Decommissioning of the Project will occur at the end of its operational life. A decommissioning plan for the Project and associated infrastructure will be prepared in advance of decommissioning in consultation with the relevant regulatory authorities and landholders. The basis of the plan will be that the Project and associated infrastructure are to be decommissioned in line with the applicable legislative requirements and best practice guidelines existing at that time. Should the Project be approved, the development consent for the Project will include standard conditions regarding the cessation of operations, decommissioning and rehabilitation of the Project Area.



Legend

- Project Area
 - Indicative Site Access
 - Main Roads
 - Railway
 - Watercourses
 - Hydro Areas
 - NPWS Estate
- Proposed Access Route**
- Option 1: Hume Hwy – Sydney Road – Sloane Street – Braidwood Road – Bungonia Road – Windellama Road
 - Option 2: Hume Hwy – Hume Street – Garroirang Road – Sloane Street – Braidwood Road – Bungonia Road – Windellama Road

FIGURE 3.3

Transport Route Options

4.0 Statutory Context

The statutory requirements that apply to the Project with respect to environmental assessment and planning approval at federal, state and local level, as well as the roles that these play in the Project's assessment and determination are outlined in **Table 4.1** below. This table has been set out in accordance with Table 1 of the DPE Scoping Guidelines and covers the following:

- power to grant approval (i.e. approval pathway)
- permissibility
- consistent approvals
- Commonwealth approvals
- approvals not required (pursuant to Section 4.41 of the EP&A Act)
- mandatory matters for consideration.

Detailed consideration of relevant statutory requirements will be provided in the EIS.

Table 4.1 Statutory Requirements Summary Table

Matter	Legislation	Requirement
Power to grant consent	<i>Environmental Planning and Assessment Act 1979</i> (EP&A Act) <i>State Environmental Planning Policy (Planning Systems) 2021</i> (Planning Systems SEPP)	Part 4 of the EP&A Act relates to development assessment and consent. Part 4, Division 4.7 relates to the assessment of development deemed to be significant to the State (or SSD). Section 4.36(2) of the EP&A Act states that a '<i>State environmental planning policy may declare any development, or any class or description of development, to be State significant development</i>'. The Planning Systems SEPP identifies development that is SSD. Clause 2.6(1) of the Planning Systems SEPP states: <i>(1) Development is declared to be State significant development for the purposes of the Act if:</i> <i>(a) the development on the land concerned is, by the operation of an environmental planning instrument, not permissible without development consent under Part 4 of the Act, and</i> <i>(b) the development is specified in Schedule 1 and 2.</i> Clause 20 of Schedule 1 of the Planning Systems SEPP defines the following as SSD: <i>Electricity generating works and heat or co-generation - Development for the purpose of electricity generating works or heat or their co-generation (using any energy source, including gas, coal, biofuel, waste, hydro, wave, solar or wind power) that:</i> <i>(a) has a capital investment value of more than \$30 million.</i> The Project is development for the purpose of electricity generation and will have a capital investment value of more than \$30 million. Consequently, the Project is SSD and will require development consent under Part 4 of the EP&A Act. The development application for the Project will be subject to the

Matter	Legislation	Requirement
		requirements of Division 4.7 of the EP&A Act and will be lodged with the Planning Secretary of the NSW Department of Planning and Environment (DPE). The consent authority will be the Minister for Planning and Homes or the Independent Planning Commission (IPC) if public objections to the Project exceed 50; any reportable political donations are made by the proponent; or the Goulburn Mulwaree Council lodge an objection to the Project.
Permissibility	Goulburn Mulwaree Local Environment Plan 2009 <i>State Environmental Planning Policy (Transport and Infrastructure) 2021</i>	The Project is located within the Goulburn Mulwaree LGA and is zoned RU1 Primary Production under the Goulburn Mulwaree Local Environment Plan 2009 (LEP). Under the LEP, 'electricity generating works' are not listed as prohibited within the RU1 zoning and therefore, under the provisions of the LEP, the Project is permissible with consent. Clause 2.36(1) of the <i>State Environmental Planning Policy (Transport and Infrastructure) 2021</i> provides that development for the purposes of 'electricity generating works' (which includes battery storage) may be carried out by any person with development consent on a prescribed rural zone, which includes land zoned RU1 under a LEP. The Project, being located on land zoned as RU1 Primary Production, is therefore permissible with consent.
Consistent approvals	<i>Roads Act 1993</i>	Under Section 138 of the <i>Road Act 1993</i> , a person must not undertake any works that impact on a road, including connecting a road (whether public or private) to a classified road, without approval of the relevant authority, being either Transport for NSW or local council, depending upon the classification of the road. The interaction of the Project with the local and regional road network, including the requirement for any road works, will be addressed in the EIS and include engagement with relevant authorities.
Commonwealth approvals	<i>Environmental Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)	Under the EPBC Act a referral is required to be submitted to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for any 'action' that is considered likely to have a significant impact on any Matter of National Environmental Significance (MNES). If DCCEEW determines the action to be a controlled activity, under Part 9 of the EPBC Act, approval is required from the Australian Minister of the Environment. A search of the Commonwealth Protected Matters Search Tool in May 2022 indicated that the Project Area is not within a world heritage property or national heritage place, is not in proximity to wetlands of international importance, is not within either a Commonwealth marine area or the Great Barrier Reef Marine Park, and does not relate to a nuclear action, coal seam gas or coal mining development (refer Appendix 2). Preliminary ecological investigations have identified that two Threatened Ecological Communities (TECs) may be present in the Project Area, namely White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland and Natural Temperate Grassland of the South Eastern Highlands. Early project design has sought to avoid impacts to the TECs, where possible. Further biodiversity assessment will be carried out through the preparation of the EIS to confirm whether threatened species, such as the Striped Legless Lizard are present on site (refer to Section 6.2.1).

Matter	Legislation	Requirement
		A referral will be submitted to DCCEW once further detailed field surveys have been completed to confirm whether the Project requires assessment and approval under the EPBC Act. If the Project is determined to be a controlled action, it will be assessed under the Assessment Bilateral Agreement currently in place between the NSW and Commonwealth Governments, which allows DPIE to undertake assessments of MNES on behalf of DCCEW for certain developments, including SSD.
	<i>Native Title Act 1993</i>	Searches of the National Native Title Register, the Register of Native Title Claims, and Native Title Applications Registration Decisions and Determinations, has not identified the Project Area as within a registered or determined native title claim. An Aboriginal Cultural Heritage Assessment (ACHA) will be completed as detailed in Section 6.2.2.1 and an archaeology field survey will seek to identify indigenous archaeological sites and areas of Potential Archaeological Deposits (PADs) within and around the Project Area. Management and mitigation measures will be implemented as part of the Project to ensure protection of any un-expected Indigenous heritage finds.
	<i>Renewable Energy (Electricity) Act 2000</i>	Solar energy is listed as an eligible renewable energy source under Section 17 of the <i>Renewable Energy (Electricity) Act</i> . The Project aligns with the aims of this Act, such that it will generate significant quantities of renewable energy, whilst emitting negligible GHG emissions. The principles of Ecologically Sustainable Development will be addressed in the EIS.
Approvals not required	<i>Fisheries Management Act 1994</i>	A permit under the <i>Fisheries Management Act 1994</i> to dredge or carry out reclamation work (section 201) or block fish passage (section 219) will not be required pursuant to Section 4.41 of the EP&A Act. The project may require work in water land to facilitate the upgrade of road crossings or establish new crossings of mapped watercourses within the Project Area. These works will be undertaken in accordance with the <i>Guidelines for riparian corridors on waterfront land</i> (DPI, 2012a) and <i>Guidelines for watercourse crossings on waterfront land</i> (DPI, 2012b). A Water Resources Impact Assessment will be undertaken during the EIS phase as discussed in Section 6.2.4 .
	<i>Heritage Act 1977</i>	An approval under Part 4, or an excavation permit under Section 139, of the <i>Heritage Act 1977</i> will not be required pursuant to Section 4.41 of the EP&A Act. The preliminary historic heritage analysis found that there are no listed heritage items within the Project Area. A detailed assessment of potential impacts on historic heritage will be undertaken as part of the EIS as discussed in Section 6.2.2.2 .
	<i>National Parks and Wildlife Act 1974</i>	An Aboriginal heritage impact permit under Section 90 of the <i>National Parks and Wildlife Act 1974</i> will not be required pursuant to Section 4.41 of the EP&A Act. No sites have been previously recorded within the Project Area however this may be reflective of the lack of prior assessment in this area. An Aboriginal Cultural Heritage Assessment (ACHA) will be prepared as part of the EIS and will include consultation with the registered Aboriginal parties for the Project as outlined in Section 6.2.2.1 .
	<i>Rural Fires Act 1997</i>	A bush fire safety authority under section 100B will not be required pursuant to Section 4.41 of the EP&A Act. A bushfire threat assessment will be completed during the EIS as discussed in Section 6.2.8.2 . Consultation with NSW Rural Fire Services (RFS), Fire and Rescue NSW and the local RFS fire brigade will be conducted during the preparation of the EIS.

Matter	Legislation	Requirement
	<i>Water Management Act 2000</i>	A water use approval under section 89, a water management work approval under section 90 and an activity approval (other than an aquifer interference approval) under section 91 will not be required pursuant to Section 4.41 of the EP&A Act. Construction work near or within watercourses within the Project Area may be required. These works will be carried out in accordance with DPIE's various guidelines for controlled activities. A Water Resources Impact Assessment will be undertaken during the EIS phase as discussed in Section 6.2.4.
Other NSW approvals	<i>Crown Land Management Act 2016</i>	Crown land may not be occupied, used, sold, leased, licensed, dedicated, reserved or otherwise dealt with unless authorised by the <i>Crown Land Management Act 2016</i>. There are no areas of Crown land within the Project Area.
Pre-conditions to exercising the power to grant consent	Biodiversity Conservation Act 2016 (BC Act)	Under the BC Act, biodiversity assessment in accordance with the Biodiversity Assessment Method (BAM) is required for any SSD project. The Project (as SSD) will trigger the need to prepare a Biodiversity Development Assessment Report (BDAR) in accordance with the BAM. The EIS will include a BDAR as discussed in Section 6.2.1 . Consultation with the NSW Biodiversity, Conservation and Science (BSC) Division will be undertaken during the preparation of the EIS.
	<i>State Environmental Planning Policy (Biodiversity and Conservation) 2021</i>	Under Chapter 8 of the <i>State Environmental Planning Policy (Biodiversity and Conservation) 2021</i> a consent authority must not grant consent to a proposed development within the Sydney drinking water catchment unless it is satisfied that the proposed development will have a neutral or beneficial effect on water quality and supports the maintenance or achievement of the water quality objectives for the Sydney drinking water catchment. The Project Area is within the Sydney drinking water catchment and subject to the relevant water quality provisions. As outlined in Section 6.2.4, a Water Resources Impact Assessment will be undertaken as part of the EIS and will include a neutral or beneficial effect (NorBE) assessment on water quality. Consultation with DPE Water / Sydney Water / Natural Resource Access Regulator (NRAR) will be undertaken during the preparation of the EIS.
	<i>State Environmental Planning Policy (Transport and Infrastructure) 2021</i>	The Project is located near electrical infrastructure and could be subject to requirements listed under clause 2.48 of <i>State Environmental Planning Policy (Transport and Infrastructure) 2021</i> , including providing notice to the relevant electricity supply authority regarding the proposed Project works and inviting comments about potential safety risks. The above will be considered in the EIS.
Mandatory matters for consideration	EP&A Act Section 1.3	Relevant objects of the EP&A Act are: (a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources, (b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment, (c) to promote the orderly and economic use and development of land, (e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,

Matter	Legislation	Requirement
		(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage), (g) to promote good design and amenity of the built environment, (j) to provide increased opportunity for community participation in environmental planning and assessment. The above will be considered in the EIS.
	EP&A Act Section 4.15	Under Section 4.15 of the EP&A Act the consent authority must consider the following relevant matters for consideration: a. the provisions of - i. any environmental planning instruments - namely: ▪ <i>State Environmental Planning Policy (Biodiversity and Conservation) 2021</i> ▪ <i>State Environmental Planning Policy (Resilience and Hazards) 2021</i> ▪ <i>State Environmental Planning Policy (Transport and Infrastructure) 2021</i> ▪ <i>State Environmental Planning Policy (Primary Production) 2021</i> ▪ <i>Goulburn Mulwaree LEP 2009.</i> ii. any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Planning Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved) iii. relevant development control plans – It is noted that in accordance with Section 2.10 of the <i>State Environmental Planning Policy (Planning Systems) 2021</i>, Development Control Plans do not apply to SSD and are not a relevant consideration for the project. iv. any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4 v. the regulations (to the extent that they prescribe matters for the purposes of this paragraph) that apply to the land to which the development application relates b. the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality c. the suitability of the site for the development d. any submissions made in accordance with this Act or the regulations e. the public interest. The above will be considered in the EIS and addressed based on the outcomes of environmental assessments to be undertaken (refer to Section 6.0).

Matter	Legislation	Requirement
	<i>Biodiversity Conservation Act 2016</i> (BC Act)	Mandatory matters for considerations under section 7.14 and section 7.16 (serious and irreversible impacts on biodiversity values) of the BC Act will be considered in the BDAR and EIS.
	<i>Contaminated Land Management Act 1997</i> (CLM Act)	The CLM Act establishes the process for investigating and if required, remediating land that the NSW Environment Protection Authority (EPA) considers to be sufficiently contaminated to require regulation under Part 3, Division 2. The Project Area does not contain land listed on the Contaminated Lands Register. Relevant mitigation and management measures would be incorporated into the EIS to address any potential contamination issues.
	<i>State Environmental Planning Policy (Resilience and Hazards) 2021</i>	Pursuant to clause 3.7, consideration must be given to current circulars or guidelines published by DPE relating to hazardous or offensive development when determining whether a development is: (a) a hazardous storage establishment, hazardous industry or other potentially hazardous industry, or (b) an offensive storage establishment, offensive industry or other potentially offensive industry. The EIS will consider the following: • Applying State Environmental Planning Policy (Resilience and Hazards) 2021. • HIPAP No. 3 – Risk Assessment • HIPAP No. 12 – Hazards.
	Goulburn Mulwaree LEP 2009	The EIS will consider all relevant provisions of the LEP, including: • the relevant objectives and land uses for RU1 zone • Clause 4.2 Rural Subdivision • Clause 5.21 Flood planning • Clause 7.1A Earthworks • Clause 7.2 Terrestrial biodiversity.
	Goulburn Mulwaree Development Control Plan 2009	In accordance with Section 2.10 of the <i>State Environmental Planning Policy (Planning Systems) 2021</i> , Development Control Plans do not apply to SSD and are not a relevant consideration for the project.

5.0 Engagement

Umwelt is preparing a Social Impact Assessment (SIA) to support the EIS. The scoping phase (Phase 1) of the SIA has been conducted in accordance with the *Social Impact Assessment Guideline for State Significant Projects* (DPIE, 2021a) and *Undertaking Engagement Guidelines for State Significant Projects* (DPIE, 2021c) (Engagement Guidelines). Phase 1 of the SIA has involved key phases of work to inform Project planning and design process including consultation with relevant stakeholders to identify social impacts/issues relevant to the Project.

Stakeholders identified for the Project include the host landholder of the Project Area, residents of nearby communities including proximal neighbours, employees and suppliers, local business and service providers, local government, State government, Federal government, traditional custodians and Aboriginal stakeholders, community and special interest groups, broader community and local media. These stakeholders have been identified within the Project's Community and Stakeholder Engagement Plan (CSEP) (refer to **Appendix 3**).

The CSEP has the following objectives:

- To ensure people potentially affected by the Project understand the Project and its potential effects.
- To consider the views of people in a meaningful way, including their values, interests and priorities, and how impacts may be experienced from their perspective.
- To scope social and community interest or issues, by collecting relevant data, evidence and insights to ensure representativeness and diversity of views.
- To ensure people know how their input has been considered, and what strategies will be put into place to address their concerns.
- To listen, understand and respond to matters and concerns raised.

The engagement of stakeholders has been through consultation, discussion, and provision of information. These engagement methods aim to facilitate stakeholder involvement in the identification of issues/impacts, areas of interest/concern and strategies to address the issues raised. Also, engagement of stakeholders aims to improve knowledge and awareness of the Proponent, its activities, the Project, and key issues and impacts as they arise.

5.1 Phase 1 Engagement (Scoping)

As part of the scoping phase of the Project, the Proponent has undertaken extensive and wide-ranging level of engagement with the local community and key stakeholders within the area. Community engagement activities have sought to introduce the Project to relevant key stakeholders, share preliminary information, and to scope and understand stakeholder and community views. This round of stakeholder engagement provides an opportunity for the Proponent to establish working relationships with proximal landholders and key stakeholders. Subsequent phases of the SIA will seek broader involvement across the stakeholder groupings identified and will include further community involvement in relation to key social impacts raised in the scoping phase.

The SIA Scoping Report attached in **Appendix 3** includes community views and any concerns raised throughout this engagement, as well as Project constraints and opportunities identified as a result of engagement. Discussion items included in consultation activities appropriate to this phase of the Project included topics relating to:

- Awareness and attitudes towards solar farm development (and other renewables or industry development in the local region).
- Awareness and public perceptions of Lightsource bp.
- Community values, identity, local needs and aspirations.
- Areas of value and use within and near the Project.
- Potential issues, concerns or interests related to the proposed project.
- Potential sensitive receivers and/or vulnerable community groups.
- Preferred engagement mechanisms, frequency and content.

A range of engagement mechanisms have been used to obtain input from the various stakeholder groups during the Phase 1 engagement activities that occurred during March to June 2022 as summarised in **Table 5.1**.

Table 5.1 Summary of Consultation Mechanisms

Engagement mechanism	Stakeholder category	Number of events	Number of people engaged
One-on-one neighbour in-person meetings	Proximal landholders	13	23
Neighbour phone calls	Proximal landholders	52	33
In-person neighbour group meeting held in proximal landholder residence	Proximal landholders	1 meeting	15
Key stakeholder group interviews (online and in-person)	Local, State and Federal Government Community groups and associations Training / education Providers Aboriginal Organisation	15	34 participants
Community information stalls at local markets – Bungonia and Goulburn	Broader community	2 market events	Approximately 50 people consulted across both markets

Engagement mechanism	Stakeholder category	Number of events	Number of people engaged
Online survey	Community groups Proximal landowners	1	53 survey responses completed ² (up to 12 July 2022)
Letterbox drop of Information sheets (April 2022)	Broader community	1	Letters distributed via mail to 3,525 households across the Goulburn Mulwaree LGA
Email of FAQ information sheet (July 2022) (See Appendix 3)	Key stakeholders	1	105
Letterbox drop of FAQ information sheets (July 2022) (See Appendix 3)	Broader community	1	Letters distributed via mail to 12,420 households across the Goulburn Mulwaree LGA

**It should be noted that some stakeholders were engaged via multiple mechanisms.*

Source: Umwelt, 2022

While **Table 5.1** presents numbers of stakeholders engaged based on engagement mechanism, **Table 5.2** provides an overview of numbers of stakeholders engaged based on stakeholder type. Numbers are presented in this way to provide transparency around numbers of stakeholders engaged, acknowledging there is overlap for many stakeholders, especially neighbours that immediately adjoin the Project Area.

Table 5.2 Stakeholders Consulted

Stakeholder Group	Number of Participants
Proximal Landholders (neighbours within 2 km of the Project)	23 households engaged, 55 people
Community group/ Association	15 groups engaged, 30 participants
Community resident (wider community)	Approximately 50
Government (Local, State and Federal representatives)	10
Business or Service Provider (Including Training NSW, local real estate agents and the RFS)	4
Aboriginal Group Representatives	3 groups engaged, 10 participants
Total number of stakeholders consulted	160
Unaddressed mail FAQ documentation information recipients in broader Goulburn Mulwaree LGA	12,420

² It should be noted that of the 185 online survey responses received, only 53 respondents provided answers to the survey questions beyond stating their stakeholder grouping. Therefore, outcomes of the survey have only been analysed for the 53 respondents that completed the survey.

5.1.1 Community Views

Phase 1 engagement activities focused on the proximal neighbours who are more likely to be impacted by the Project. The preliminary views from the community and data presented in the SIA scoping report are localised and do not necessarily represent the broader community.

When stakeholders and community members were asked directly about potential negative impacts of the Project, both prompted and unprompted, the top issues raised included:

- impacts on surrounds, and in particular the potential for the Project to impact on the visual amenity of the social locality
- public safety risks associated with natural disasters
- site disturbance and impacts on environmental values and land uses
- social amenity impacts (including traffic, noise and dust)
- public safety risks associated with increased traffic and impact to road condition
- impacts relating to changing land uses and the associated impacts on how people sustain their livelihoods, such as devaluation of property values, inequitable distribution of Project impacts as well as lack of long-term job creation
- change in the way of life and land use conflict risks
- physical health impacts from electromagnetic or radiation fields as well as in increase in stress.

When community members were asked directly to identify potential positive impacts of the Project, the most frequently cited response related to:

- minimal environmental impact and complimentary with agricultural land use
- training, local employment and procurement opportunities
- the provision of renewable energy to the National Electricity Market and long-term energy security
- reduced power costs for the local community
- economic benefits and the sharing of these benefits through direct investment in the local community.

Key issues raised by stakeholders are discussed in detail in Section 3.0 of the SIA Scoping Report included in **Appendix 3**.

5.2 Phase 2 Engagement (EIS preparation)

The stakeholder identification process within the scoping phase involved identifying stakeholders with an interest in the Project, or those directly and indirectly affected, including any potentially vulnerable or marginalised groups in the community. The identified stakeholders were grouped according to the level of engagement needed for the Project. Proposed engagement activities to be undertaken during the EIS phase will be focused on exploring and validating the matters identified during the scoping phase. Similar engagement mechanisms will be used in Phase 2 as for Phase 1.

Engagement in this round will focus on:

- Sharing information and gathering feedback on the proposed design of the Project.
- Assessment of perceived or key social and environmental issues, impacts and opportunities associated with the Project.
- Potential mitigation or enhancement strategies to address and respond to issues, impacts and opportunities.
- Existing capacity of local land service provision and project future demand as relevant to the predicted project impacts.
- Measures to improve collaboration between Lightsource bp and community or stakeholders, including potential community investment and benefit-sharing opportunities.
- Round 2 of the Stakeholder engagements is expected to commence in late 2022 or early 2023 and continue throughout the EIS phase.

5.3 Aboriginal Community Engagement

Formal notification for the Aboriginal Cultural Heritage Assessment process have commenced in May 2022. This involved:

- **Stage 1 – Notification and Registration of Aboriginal Parties.** Notifications were developed and the registration of Aboriginal parties was completed in accordance with Part 5, Division 2 Clause 60 of the NPW Regulation. Public notification was given in the Goulburn Post on 1 June 2022.

Further detailed consultation will be undertaken with the Registered Aboriginal Parties (RAPs) for the Project. Consultation will be undertaken in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010a). Further details on the proposed heritage assessment are provided in **Section 6.2.2**.

5.4 Agency Engagement

The engagement program to inform the Scoping Report for the Project has included initial briefings with relevant government agencies. These briefings included an overview of the Project, discussion of the approvals processes and sought preliminary feedback on issues to be considered in the EIS.

The following agencies have been briefed on the Project:

- Goulburn Mulwaree Council – Meeting held 4 April 2022.
- Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) – Meeting held 21 July 2022.
- NSW Division of Biodiversity, Conservation and Science (BSC) – Meeting held on site 5 August 2022.
- NSW Department of Planning and Environment (DPE) – Meeting held 10 August 2022.

During the preparation of the EIS, the agencies listed above will continue to be consulted on the EIS findings. Additional government agencies that may be consulted include:

- NSW Environment Protection Authority (EPA).
- Water NSW / Sydney Water / National Resources Access Regulator (NRAR) and / or DPE Water.
- Rural Fire Service (RFS) and / or Fire and Rescue NSW.
- DPE Hazard.
- Heritage NSW.

6.0 Proposed Assessment of Impacts

6.1 Key Environmental, Cultural and Social Impacts

A review of the environmental, cultural and social matters relevant to the Project have been conducted to determine which issues need to be assessed as part of the EIS and the level of assessment that is required. This review has been undertaken with reference to the categories of assessment matters identified by the *DPIE Scoping Guideline* (DPIE, 2021b), with the key issues and the proposed level and scope of assessments discussed in the following sections.

The environmental and social matters relevant to the Project are identified and have been characterised (in accordance with DPIE, 2021b) as follows:

- matters requiring further assessment in the EIS (refer to **Section 6.2**)
- matters requiring no further assessment in the EIS (refer to **Section 6.3**).

For the matters requiring further assessment in the EIS, **Section 6.2** identifies whether detailed or standard assessment is required (as defined by Appendix D of DPIE Scoping Guideline). **Appendix 1** presents a Scoping Table Summary showing the outcome of the scoping stage review of matters as required by DPIE (2021b).

This section provides further detail on the preliminary analysis undertaken and scope of the assessments proposed to be prepared for the EIS. **Table 6.1** provides a summary of the key issues and other issues, potential impacts and preliminary mitigation controls.

Table 6.1 Preliminary Environmental Assessment Summary Table

Issue	Potential Project impacts	Preliminary mitigation measures	Issue level	Where further addressed in this report
Biodiversity	- Loss or modification of terrestrial habitats due to vegetation clearing - Impact to threatened species or endangered ecological communities - Spread of weeds across the Project Area due to construction activities - Cumulative biodiversity impacts.	- Detailed site-specific assessment as part of the EIS - Project strategically designed to avoid and/or minimise impacts where practicable - Implementation of mitigation measures - Implementation of construction and operation management plans.	Key issue	Section 6.2.1
Heritage	Potential impact to Aboriginal or historic heritage objects or heritage values in the Project Area.	- Detailed site-specific assessment as part of the EIS, including consultation with relevant Indigenous stakeholders - Project strategically designed to avoid impacts (if required) - Implementation of mitigation measures (if required) - Implementation of construction and operational environmental management plans.	Key issue	Section 6.2.2
Landscape Character and Visual Amenity	- Impact to current scenic landscape/character of the locality - Loss of visual amenity of specific adjoining landholders - Cumulative visual impacts.	- Detailed site-specific assessment as part of the EIS, including consultation with affected landholders - Project strategically designed to avoid and/or minimise impacts where practicable - Implementation of mitigation measures such as landscaping and planting of vegetation screening.	Key issue	Section 6.2.3.1

Issue	Potential Project impacts	Preliminary mitigation measures	Issue level	Where further addressed in this report
Noise and vibration	- Noise and vibration disturbance associated with increased road traffic and works during the construction phase - Noise and vibration associated with construction methodologies e.g. pile driving - Noise and vibration disturbance associated with the operations on the substation and other infrastructure - Cumulative noise and vibration impacts.	- Detailed site-specific assessment as part of the EIS - Detailed project design and location of critical infrastructure - Implementation of appropriate mitigation measures (if required) - Implementation of construction and operational management plans.	Key issue	Section 6.2.3.2
Water	- Potential soil erosion associated with land clearing during construction and potential for runoff from solar panels during operation if not managed appropriately - Water supply for construction and operational purposes - Potential for surface water and groundwater quality impacts during the construction and operation of the Project.	- Detailed site-specific assessment as part of the EIS (including flood modelling) - Detailed project design and employing buffer zones from waterways - Stormwater management and design. - Implementation of construction and operation environmental management plans - Erosion and Sediment control plan in construction environmental management plan (CEMP)	Key Issue	Section 6.2.4

Issue	Potential Project impacts	Preliminary mitigation measures	Issue level	Where further addressed in this report
Land	- Change in land use - Potential impact to agricultural activities on the Project area, including loss of agricultural land.	- Detailed site-specific assessment as part of the EIS, including specific engagement with host and neighbouring landholders - Implementation of appropriate mitigation measures - Co-location of sheep on site to create dual land use between energy and agriculture - Implementation of a construction and operational management plan.	Key issue	Section 6.2.5
Access and Transport	- Increased traffic during the construction phase - Damage to roads caused by additional trucks movements and turning paths - Disruption to traffic due to road upgrade works (if required) - Disruption to traffic due to heavy vehicle delivery of Project materials to site - Cumulative traffic and transport impacts.	- Detailed site-specific assessment as part of the EIS, including consultation with relevant road authorities - Implementation of a construction traffic and access management plan – including maintenance of roadways to avoid or repair any damage - Operational Management plan including hours of operations, parking and deliveries.	Key issue	Section 6.2.6

Issue	Potential Project impacts	Preliminary mitigation measures	Issue level	Where further addressed in this report
Socio-economic	• Amenity impacts due to increased noise, dust – primarily in construction - and visual impacts • Change in community environmental values • Temporary rise in population could potentially put strain on accommodation and community services • Change in composition or character of the community • Potential property devaluation • Physical health impacts due to increased stress and anxiety • Economic benefits locally and regionally (employment, training and procurement opportunities as well as direct and indirect expenditure).	• Detailed social and economic assessments, including comprehensive community and stakeholder engagement as part of the EIS • Development and implementation of Community and Stakeholder Engagement Plan (CSEP) • Targeted visual screening and strategic design to reduce visual impacts • Voluntary Planning Agreement (VPA) with Council • Negotiated agreements with neighbouring landholders • Community Benefit Fund which looks to allocate funds to local sporting, cultural and educational organisations, fund traineeships and generally support the local community • Power Purchase Agreement (PPA) with Council • Partnerships with local training and education organisations • Implementation of appropriate management measures • Implementation of management plans i.e. Social Impact Management Plan (SIMP) to include an employment and accommodation strategy.	Key issue	Section 6.2.7

Issue	Potential Project impacts	Preliminary mitigation measures	Issue level	Where further addressed in this report
Hazards and risks	Risk to human health and infrastructure from bushfires, spontaneous ignition, electric and magnetic fields (EMF)	- Detailed site-specific assessment as part of the EIS - Project designed to manage risks - Implementation of appropriate controls, emergency response management measures, and management of infrastructure on surrounding land - Implementation of an emergency response plan.	Key Issue	Section 6.2.8
Waste	Generation of waste associated with construction and operation.	- Avoid, reduce, recycle (where possible) - Implementation of a waste management plan.	Other issue	Section 6.2.10
Air quality	Elevated dust levels associated with construction works.	Implementation of appropriate controls as part of a CEMP, including appropriate dust suppression measures.	Other issue	Section 6.2.10
Decommission and rehabilitate	- Potential for various environmental impacts from decommissioning works - Potential for various environmental impacts from rehabilitation practices.	Commitments to appropriate decommissioning and rehabilitation practices following cessation of Project operation.	Other issue	Section 6.2.10

6.2 Matters Requiring Further Assessment in the EIS

6.2.1 Biodiversity

As SDD, a Biodiversity Development Assessment Report (BDAR) following the NSW Biodiversity Assessment Method (BAM) will need to be completed for the Project during the preparation of the EIS. Biodiversity is a key consideration in the Project design and assessment work commenced in 2022 aiming to progressively gather information to inform the Project design process, assisting to avoid and minimise impacts.

The biodiversity assessment commenced in March 2022 with preliminary field surveys undertaken over two days to ground-truth existing regional vegetation mapping and results of database searches undertaken to identify both NSW and Commonwealth listed species and ecological communities in the Project Area (see **Appendix 2**).

6.2.1.1 Preliminary Vegetation Mapping

Preliminary vegetation mapping in **Figure 6.1** indicates that six PCTs occur across the Project Area. These are:

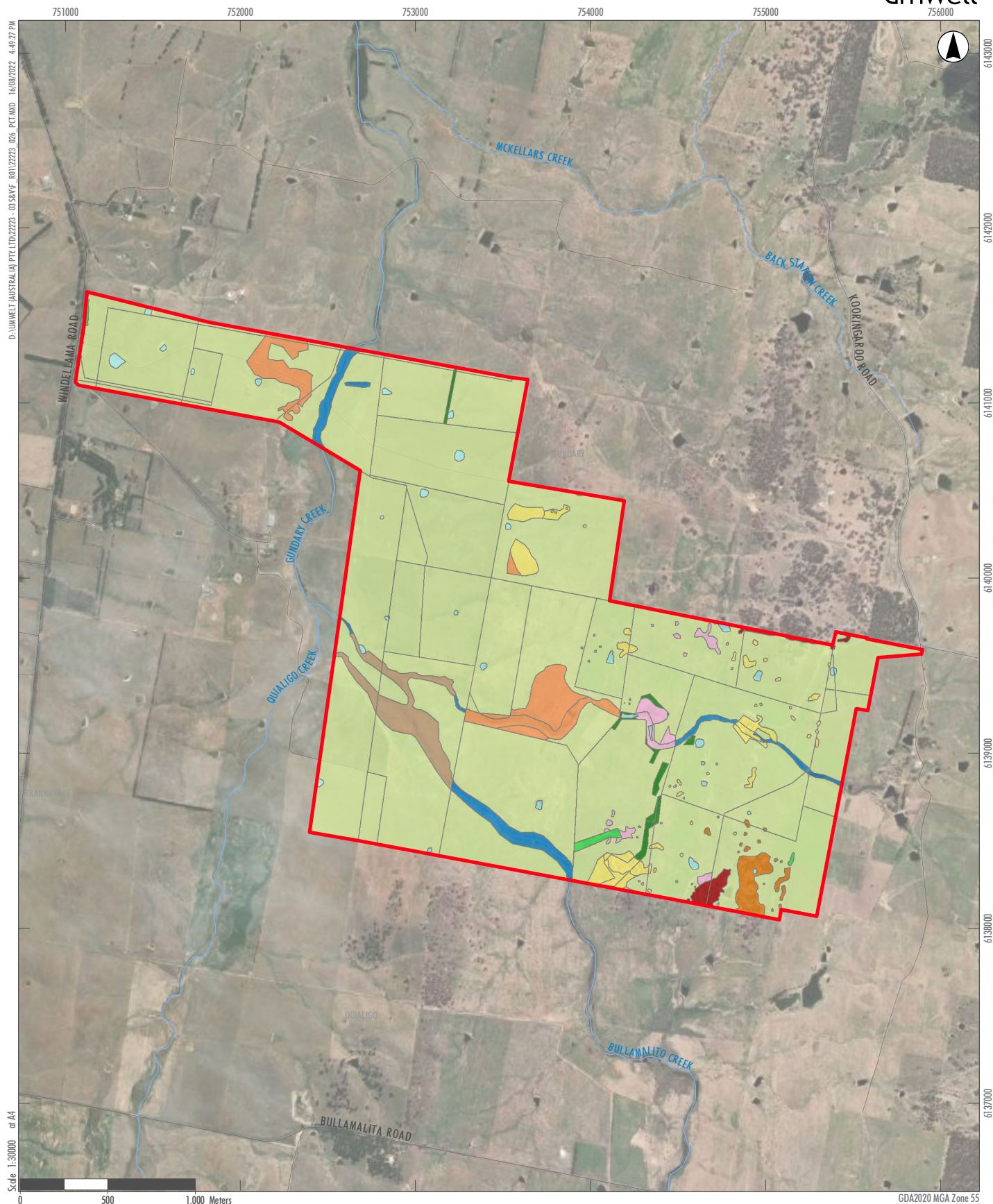
- PCT 731 - Broad-leaved Peppermint – Red Stringybark grassy open forest on undulating hills, South Eastern Highlands Bioregion.
- PCT 888 - Inland Scribbly Gum – Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion.
- PCT 1110 - River Tussock – Tall Sedge – Kangaroo Grass moist grasslands of the South Eastern Highlands Bioregion.
- PCT 1191 - Snow Gum – Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion.
- PCT 1289 - Wallaby Grass – Red-grass – Tall Speargrass – Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion.
- PCT 1330 - Yellow Box – Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion.

As outlined in **Table 6.2**, four of these PCTs are listed as potentially conforming to Critically Endangered Ecological Communities (CEECs) with varying conditions under the *NSW Biodiversity Conservation Act 2016* (BC Act) and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Further analysis of the PCTs and potential TECs occurring within the Project Area will be completed as part of the BDAR and documented in the EIS.

Table 6.2 Preliminary plant community types and their extent in the Project area

PCT #	PCT Name	Potential condition classes (TBC)	Project area (ha)	Development footprint (ha)	BC Ac	EPBC Act
731	Broad-leaved Peppermint – Red Stringybark grassy open forest on undulating hills, South Eastern Highlands Bioregion	Low	2.08	0.08	Not listed	Not listed
		Moderate	2.47	0.01		
		Scattered trees	0.07	0.01		
888	Inland Scribbly Gum – Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion	Low	0.75	0	Not listed	Not listed
		Moderate	4.79	0.02		
		Scattered trees	0.36	0.20		
1110	River Tussock – Tall Sedge – Kangaroo Grass moist grasslands of the South Eastern Highlands Bioregion	Low	12.78	0.03	Not listed	Critically Endangered: Candidate – Natural Temperate Grassland of the South Eastern Highlands
1191	Snow Gum – Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	Low	1.50	0.23	Critically Endangered: Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	Not listed
		Moderate	3.41	0.02		
		Scattered trees	0.33	0.21		
1289	Wallaby Grass – Red-grass – Tall Speargrass – Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion	Low	7.95	6.91	Not listed	Critically Endangered: Candidate – Natural Temperate Grassland of the South Eastern Highlands
		Moderate	14.45	0		

PCT #	PCT Name	Potential condition classes (TBC)	Project area (ha)	Development footprint (ha)	BC Ac	EPBC Act
1330	Yellow Box – Blakely’s Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	Derived native grassland	2.62	0.01	Critically Endangered: White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	Critically Endangered: White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland
		Low	1.72	0.35		
		Moderate	4.34	0		
		Native pasture	4.19	4.05		
		Scattered trees	1.00	0.64		
EXOTIC	Non-native	Cultivated,	622.74	457.40	Not listed	Not listed
		Exotic plantings,	1.78	0.74		
		Planted native trees (recent plantings in existing fenced areas)	3.51	2.2		
		Riparian	11.54	0		
		Waterbody	3.99	0		
Total			708.37	473.11 ha		



Legend

- Project Area
- Roads
- Watercourses

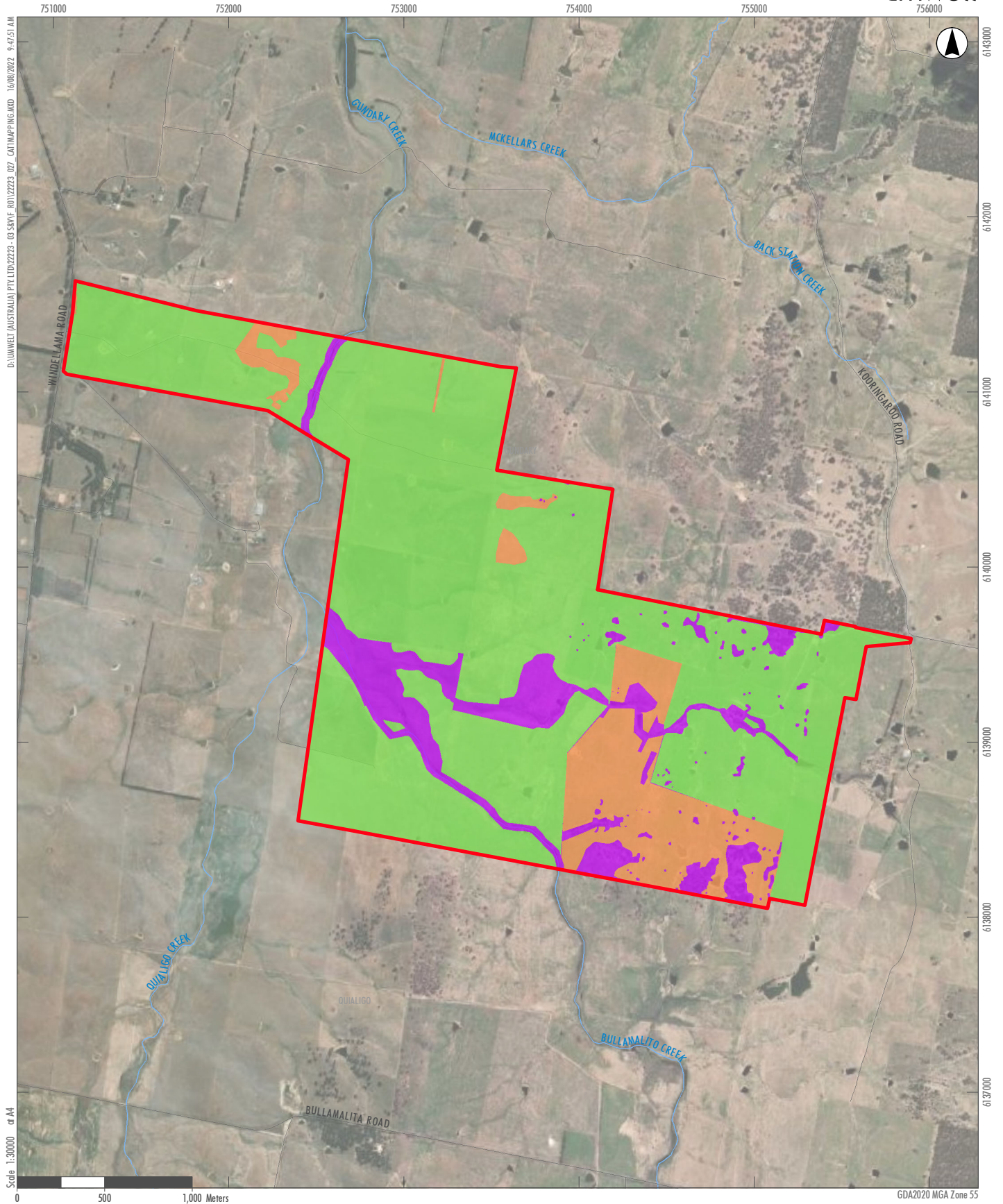
Plant Community Type

- PCT 731 - Broad-leaved Peppermint - Red Stringybark grassy open forest on undulating hills, South Eastern Highlands Bioregion
- PCT 888 - Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion
- PCT 1110 - River Tussock - Tall Sedge - Kangaroo Grass moist grasslands of the South Eastern Highlands Bioregion
- PCT 1191 - Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion

- PCT 1289 - Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion
- PCT 1330 - Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
- Cultivated pasture
- Dam
- Exotic plantings
- Planted native trees
- Riparian exotic

FIGURE 6.1

Preliminary Vegetation Mapping



Legend

- Project Area
- Roads
- Watercourses

Preliminary Category Mapping

- Category 1
- Category 2
- Review

FIGURE 6.2

Preliminary Land Categorisation
Mapping

As part of the preliminary assessment, areas potentially conforming to Category 1 – Exempt Land under the *Local Land Services Act 2016* (LLS Act) were identified within the Project Area. **Figure 6.2** shows land within the Project Area that has been mapped as Category 1 – Exempt Land. Areas that are mapped with a low confidence (assigned ‘Review’ category on **Figure 6.2**) will be verified during further ecological investigations carried out as part of the EIS.

Detailed vegetation mapping has not yet been completed and updates to the preliminary mapping will be necessary for the Project as it progresses. Detailed BAM Plots will be undertaken to verify the Plant Community Types (PCTs). Further biodiversity assessment to be undertaken as part of the EIS is described in **Section 6.2.1**.

6.2.1.2 Threatened species

Desktop database searches identified a number of potential threatened species that could occur within the Project Area, including 15 flora and 28 fauna species. Results of the database searches are provided in **Appendix 2**.

Table 6.3 summarises the listed species that have been identified across the Project Area. Many of these are likely to be excluded based on lack of habitat and conditions within the Project Area. A preliminary likelihood rating has been assigned to each species in **Table 6.3** with the categories ranging as follows: High, Moderate, Low, None and Review. These categories would be reviewed and refined during the EIS phase with all relevant species habitat outlined in the BDAR.

Table 6.3 Species credit species with associated PCT

Species	Common Name	Likelihood	Comments
Acacia flocktoniae	Flockton Wattle	Review	Most vegetation likely to degraded to support the species. Absent from grassland areas. Some woodland patches may require survey.
Anthochaera phrygia	Regent Honeyeater	None	Important habitat absent.
Aprasia parapulchella	Pink-tailed Legless Lizard	Moderate	Restricted areas of potential habitat possibly present, however species typically occurs in highly rocky river corridors and is outside core distribution.
Bossiaea oligosperma	Few-seeded Bossiaea	Review	Associated PCT is highly restricted. Some habitat likely too degraded to support the species. Some woodland patches may require survey.
Caladenia tessellata	Thick Lip Spider Orchid	Review	Most vegetation is likely too degraded to support the species, however some woodland patches may require survey.
Callitris oblonga	Pygmy Cypress Pine	None	Outside geographic constraints.
Callocephalon fimbriatum (Breeding)	Gang-gang Cockatoo	Review	Breeding and foraging habitat absent from grassland areas. Unlikely to utilize hollows in paddock trees due to habitat level but survey of woodland areas likely warranted if impacts are to occur.

Species	Common Name	Likelihood	Comments
Calyptorhynchus lathamii (Breeding)	Glossy Black-Cockatoo	Review	Foraging habitat absent. Breeding and foraging habitat absent from grassland areas. Unlikely to utilize hollows in paddock trees due to habitat level but survey of woodland areas likely warranted if impacts are to occur.
Cercartetus nanus	Eastern Pygmy-possum	Review	Isolated paddock trees are likely too degraded to support the species or warrant survey. Survey likely be warranted if woodland areas are impacted.
Chalinolobus dwyeri	Large-eared Pied Bat	Low	No known suitable escarpments or rocky areas likely to be roosting habitat within two kilometers of sites. Further desktop review of mine locations warranted.
Commersonia prostrata	Dwarf Kerrawang	Review	Most native vegetation likely to degraded to support the species. Survey may be required where impacts to associated PCTs occur.
Delma impar	Striped Legless Lizard	High	Known record in similar landscape adjacent to Goulburn Airport, suitable potential habitat (grasslands and derived grasslands) in the former extent of natural temperate grasslands and in box – gum woodland within 2 km of the natural temperate grassland boundary. Targeted surveys are planned for the Striped Legless Lizard during September to November 2022.
Dillwynia glauca	Michelago Parrot-pea	Review	Associated PCT is highly restricted. Some habitat likely too degraded to support the species.
Diuris aequalis	Buttercup Doubletail	Review	Most vegetation is likely too degraded to support the species, however some woodland patches may require survey.
Diuris tricolor	Pine Donkey Orchid	Review	Most vegetation is likely too degraded to support the species, however some woodland patches may require survey. Associated PCT is restricted.
Eucalyptus aggregata	Black Gum	Review	Not observed on site during preliminary assessment. Unlikely to occur due to restricted distribution of associated PCTs.
Eucalyptus macarthurii	Paddy River Box, Camden Wollybutt	Review	Most vegetation likely to degraded to support the species. Absent from grassland areas.
Eucalyptus recurva	Mongarlowe Mallee	None	Outside of the geographic constraints.
Genoplesium superbum	Superb Midge Orchid	Review	Most vegetation is likely too degraded to support the species, however some woodland patches may require survey. Associated PCT is restricted.
Grevillea renwickiana	Nerriga Grevillea	None	Outside of the geographic constraints.
Haliaeetus leucogaster (Breeding)	White-bellied Sea-Eagle	Moderate	No stick nests observed during survey. Initial BAM assessments will determine if any potential nest trees are present prior to determining if targeted survey of stick nests is warranted.

Species	Common Name	Likelihood	Comments
Heleioporus australiacus	Giant Burrowing Frog	Review	Most vegetation is likely too degraded (i.e. cleared) to support the species, however some woodland patches may require survey.
Hieraaetus morphnoides (Breeding)	Little Eagle	Moderate	No stick nests observed during survey. Initial BAM assessments will determine if any potential nest trees are present prior to determining if targeted survey of stick nests is warranted.
Hoplocephalus bungaroides (Breeding)	Broad-headed Snake	None	Sydney Sandstone Geology is absent.
Lathamus discolor (Breeding)	Swift Parrot	Low	Important habitat absent.
Leucochrysum albicans var. tricolor	Hoary Sunray	Moderate	Most vegetation is likely too degraded (i.e. cleared) to support the species, however some woodland patches and native grasslands may require survey.
Litoria booroolongensis	Booroolong Frog	Low	Suitable rocky streams are absent from the site. Consultation with BCD recommended to confirm that survey is not required.
Miniopterus australis (Breeding)	Little Bent-winged Bat	Low	No known breeding habitat located in or within 2 km of the Project Area.
Miniopterus orianae oceanensis (Breeding)	Large Bent-winged Bat	Low	No known breeding habitat located in or within 2 km of the Project Area.
Mixophyes balbus	Stuttering Frog	Low	Most vegetation is likely too degraded (i.e. cleared) to support the species, however if impacted some woodland patches may require survey.
Myotis Macropus	Southern Myotis	Moderate	Survey likely to be warranted. May utilize isolated paddock trees within 200m of riparian areas.
Ninox connivens	Barking Owl	Review	Breeding and foraging habitat absent from grassland areas. Unlikely to utilize hollows in paddock trees due to habitat level but survey of woodland areas likely warranted if impacts are to occur.
Ninox strenua	Powerful Owl	Review	Breeding and foraging habitat absent from grassland areas. Unlikely to utilize hollows in paddock trees due to habitat level but survey of woodland areas likely warranted if impacts are to occur.
Persoonia mollis subsp. revoluta	Persoonia mollis subsp. revoluta	Review	Most vegetation is likely too degraded (i.e. cleared) to support the species, however if impacted some woodland patches may require survey.
Petauroides volans	Greater Glider	Low	Most vegetation is likely too degraded (i.e. cleared) to support the species, however if impacted some woodland patches may require survey.

Species	Common Name	Likelihood	Comments
Petaurus norfolcensis	Squirrel Glider	Review	Most vegetation is likely too degraded (i.e. cleared) to support the species, however if impacted some woodland patches may require survey.
Petrogale penicillata	Brush-tailed Rock-wallaby	Low	Habitat constraints absent.
Petroica rodinogaster	Pink Robin	Review	Most vegetation is likely too degraded (i.e. cleared) to support the species, however if impacted some woodland patches may require survey.
Phascolarctos cinereus	Koala	Low	Timbered areas likely to require survey due to presence of potential feed species.
Potorous tridactylus	Long-nosed Potoroo	Low	Habitat constraints absent.
Pteropus poliocephalus (breeding)	Grey-headed Flying-fox	Review	Habitat too degraded to support camps. However, if impacted some woodland patches may require survey.
Pultenaea pedunculata	Matted Bush-pea	Review	Most vegetation is likely too degraded (i.e. cleared) to support the species, however if impacted some woodland patches may require survey.
Tyto novaehollandiae	Masked Owl	Review	Breeding and foraging habitat absent from grassland areas. Unlikely to utilize hollows in paddock trees due to habitat level but survey of woodland areas likely warranted if impacts are to occur.

6.2.1.3 Further Biodiversity Development Assessment

Under the BAM all threatened entities are allocated to one of two biodiversity credit classes: 'ecosystem' or 'species' credit species. Biodiversity credit classes are used to inform the calculation of the impacts of a proposed development and the effects of management actions on biodiversity values. Targeted surveys for ecosystem and species credit species will be completed within the Project Area as required by the BAM.

Following the completion of the detailed vegetation and species surveys, a BDAR will be prepared to report the findings of the assessment, including the outcomes of a BAM calculator assessment identifying any biodiversity credits that will require offsetting for the Project. The BDAR will include:

- field surveys and GIS mapping:
 - PCT survey and GIS mapping
 - targeted species-credit survey
- results of the literature review
- methods and results of vegetation surveys including a vegetation community map (based on PCTs and including TECs)
- methods and results of surveys targeting species-credit species
- assessment of prescribed impacts

- outcomes of the calculator assessment identifying the credits generated by the PCTs (and ecosystem-credit species) and species-credit species
- relevant data and mapping for Agency submission including field sheets, figures and associated GIS files.

Potential mitigation measures to reduce biodiversity impacts may include, but will not necessarily be limited to:

- avoiding areas of high value native vegetation (including TECs) as far as practicable
- implementation of a comprehensive biodiversity mitigation and management strategy to minimise the unavoidable impacts of the Project on biodiversity values, including:
 - salvage of biodiversity features, including habitat resources (e.g. hollow logs, tree hollows, fallen timber and rocks/boulders) from areas to be cleared
 - implementation of a pre-clearing procedures
 - weed management
 - bushfire management
 - erosion and sedimentation control
- a biodiversity offset strategy.

6.2.1.4 Avoidance of Biodiversity Constraints

The Project's layout has been strategically designed to avoid impacts to some Threatened Ecological Communities (TECs), including biodiversity areas mapped as 'high sensitivity' and the majority of the biodiversity areas mapped as 'moderate sensitivity', as shown in **Figure 1.2**.

The Project layout will be subject to further review and refinement.

Where impacts are unavoidable, the Project will mitigate and manage those impacts throughout construction, operation and decommissioning. Preliminary avoidance and mitigation measures for the Project are presented in **Table 6.1** and will be further analysed and refined as part of the EIS process.

6.2.2 Heritage

6.2.2.1 Aboriginal Heritage

The Project Area falls within the Pejar Local Aboriginal Land Council (LALC) area. Based on a review of the spatial database maintained by the National Native Title Tribunal on 28 April 2022, there are no registered or determined Native Title claims relating to the Project Area.

A search of the Aboriginal Heritage Information Management System (AHIMS) database was conducted for an area of approximately 30 km by 16 km centred on the Project Area (comprising the area MGA55 E740000-770000, N6129000-6145000). A total of 65 sites were recorded within the search area, including one site (51-6-0912) for which information is restricted. Subsequent consultation with Heritage NSW identified that this site is not within the Project area. The majority of sites are isolated artefacts or artefact

scatters (n=61), with one scarred tree, one set of grinding grooves and one stone quarry with associated artefacts also present within the search area. The distribution of the sites is shown in **Figure 6.3**. No sites have been previously recorded within the Project Area however this may be reflective of the lack of prior assessment in this area.

With reference to the above information, it is anticipated that the SEARs for the Project will require that an Aboriginal Cultural Heritage Assessment (ACHA) be prepared. The ACHA will be required to be undertaken in accordance with the following key guidelines:

- the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH, 2011)
- the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (DECCW, 2010b).

The ACHA will include consultation with the Registered Aboriginal Parties (RAPs) for the Project in determining and assessing impacts, developing and selecting options and mitigation measures, having regard to the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010a).

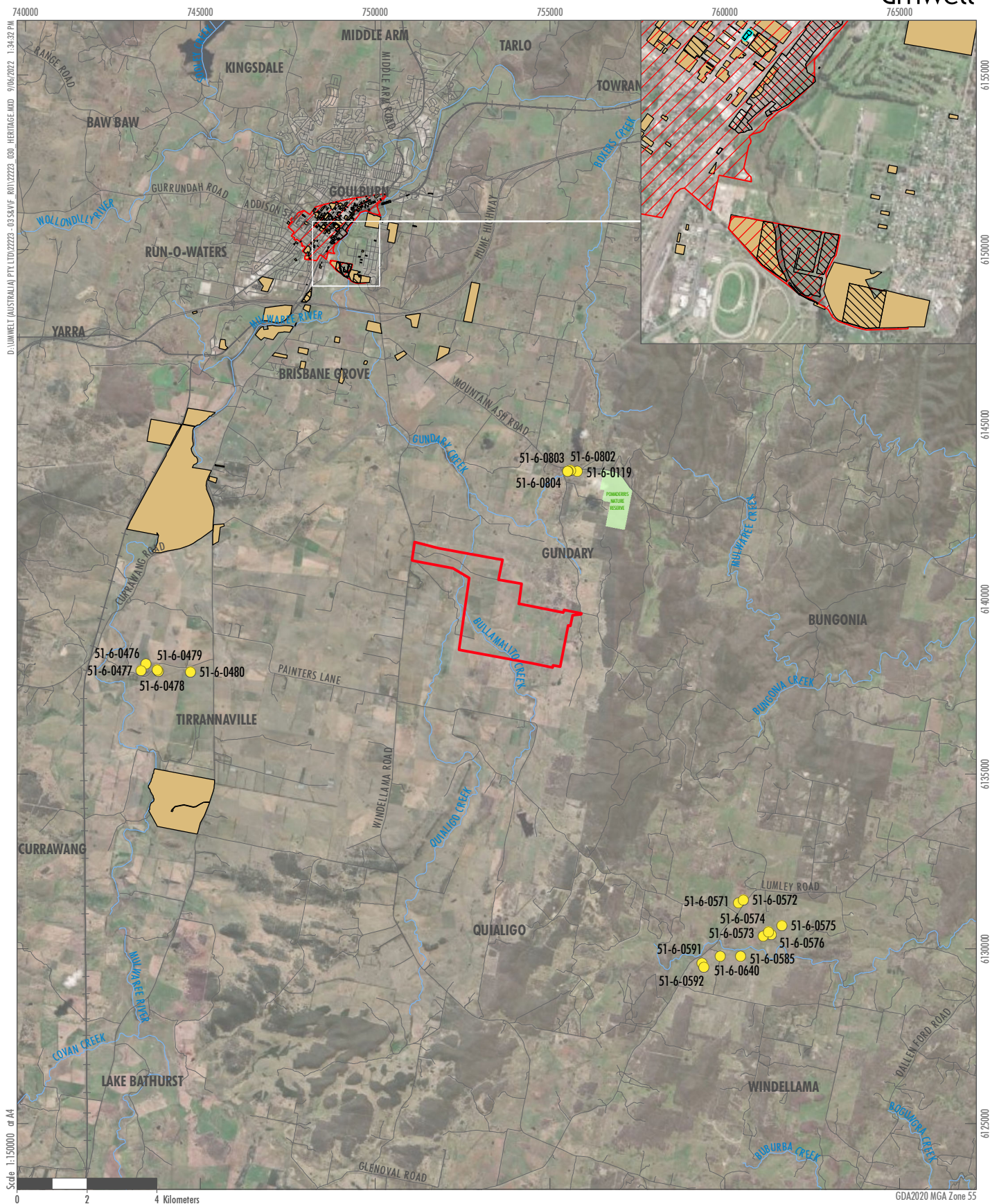
A range of management strategies may be available in relation to the Project that include varying levels of mitigation of identified sites or potential harm to Aboriginal cultural heritage. When impacts to sites or areas of archaeological potential are unavoidable, a strategy will be developed that involves implementing appropriate measures to manage and mitigate these impacts with reference to the archaeological and Aboriginal cultural significance of the sites/areas of potential.

6.2.2.2 Historical Heritage

Desktop searches of several databases were undertaken to identify any potential historic heritage values in the area within and surrounding the Project Area. No items of historic heritage were identified within or in 5 km of the Project Area. This includes items on the World, National and Commonwealth Heritage Lists, in addition to items listed on the State Heritage Inventory and Goulburn Mulwaree LEP.

The closest State listed heritage sites are located within the township of Goulburn and includes the Goulburn Railway Station, Yard Group and Moveable Heritage (SHR Item 01152) and the Lansdowne property (SHR Item 00132), located over 7 km north of the Project area. Several local heritage sites are located in the region surrounding the Project area. The closest site, “Pelican” Homestead, is located approximately 5 km west of the Project area. The location of these sites in relation to the Project Area is shown on **Figure 6.3**.

None of these heritage sites will be impacted by the Project. Nevertheless, a detailed assessment of potential impacts on historic heritage will be undertaken as part of the EIS. The assessment will be prepared with regard to the *NSW Heritage Manual* (NSW Heritage Office, 1996), relevant Heritage Council of NSW guidelines and with consideration of the principles contained in the *Australia ICOMOS Charter for Places of Cultural Significance* (Australia ICOMOS Incorporated, 2013).



Legend

- Project Area
- Roads
- Railway
- Watercourses
- NPWS Estate
- Heritage Sites
- Conservation Area - General (Goulburn Mulwaree Local Environment Plan)
- Item - General (Goulburn Mulwaree Local Environment Plan)
- State Heritage Register Curtilage
- Commonwealth Listed Heritage Sites
- AHIMS Sites
- Artefact

FIGURE 6.3

Recorded Heritage Items in Proximity to the Project Area

6.2.3 Amenity

6.2.3.1 Landscape Character and Visual Amenity

The Project Area is located in a rural setting, approximately 10 km southeast of Goulburn in the Southern Tablelands of NSW. Land within and surrounding the Project Area has been subject to agricultural land use and is predominately utilised for grazing activities.

The Project Area is bordered by Windellama Road (to the west), Koorringaroo Road (to the east) and is around 3.3 km from the Goulburn Airport. Extensive areas within and surrounding the Project Area have been cultivated and cleared for agricultural purposes, with areas of remnant vegetation and few stands of trees scattered across the Project Area and its surrounds.

As outlined in **Section 5.0**, Lightsource bp undertook community consultation during the scoping phase with key stakeholders, including proximal landholders surrounding the Project Area. Visual changes to the landscape were identified by proximal landholders as a key issue, in particular the impact to the views from their properties. The increase of built infrastructure and associated changes to the rural character of the landscape was also described as an issue by some.

Original Preliminary Visual Assessment (based on 2018 Large-scale Solar Energy Guidelines)

The original preliminary visual assessment completed for the scoping phase was based on the 2018 Large-scale Solar Energy Guidelines and found that of the 59 private residences³ located within the 2.5 km radius of the Project Area, 38 potential residences were identified within the zone of theoretical visibility (ZTV). Of the 38 residences with potential visibility, the preliminary visual assessment determined that the most visually impacted would be within 1 km of the Project and include:

- Four residences within 500 m of the Project Area that would see around 10 to 20% of the Project, including the substation and centralised BESS option.
- Two residences (of which one is the host landholder's) within around 800 m that would have wide views over the Project Area and would see over 50% of the Project.
- Four residences between around 300 m and 650 m of the Project Area will have relatively narrow views (framed by existing trees or buildings) and would see up to 20% of the Project.
- One residence within 500 m to the east that would see less than 10% of the Project.

The above findings were presented in the Scoping Report (Rev 1, dated September 2022).

Updated Preliminary Visual Assessment (based on the 2022 Large-scale Solar Energy Guidelines, including the Technical Supplement for Landscape and Visual Impact Assessment)

The preliminary visual assessment was subsequently updated by Envisage Consulting Pty Ltd in accordance with the newly released *Large-scale Solar Energy Guideline* (DPE, 2022) and the *Technical Supplement for Landscape and Visual Impact Assessment* (DPE, 2022) (the Technical Supplement). The update involved extending the study area of the preliminary visual assessment to identify private receivers within a 4 km radius from the Project Area (increased from the previous radius of 2.5 km) that may potentially have views

³ Being 58 non-involved residences and one involved residence.

of the Project (referred to as ‘viewpoints’⁴), as well as identifying which of those viewpoints will be subject to further detailed assessment during the EIS phase.

To identify viewpoints, a viewshed map was prepared in line with the Technical Supplement (refer to **Figure 6.4**). The viewshed, previously referred to as the zone of theoretical visibility (ZTV), is a ‘bare earth’ projection generated from topography mapping only and does not account for other intervening elements such as vegetation or buildings which would screen views. Hence, the areas highlighted in the viewshed as having ‘theoretical’ visibility to the Project are conservative and considered as a ‘worst case’. The viewshed (shown at **Figure 6.4**) was based on a height of 5 m for the solar panels and including both BESS layout options (Option 1 and Option 2 as illustrated on **Figure 3.2**).

Of the 101 non-involved receivers within 4 km from the Project Area (discussed in **Section 2.4**), 53 of these were within the viewshed and therefore determined to be potential viewpoints (shown on **Figure 6.5**). The number and location of private viewpoints will be subject to further investigation and will be verified during the detailed assessment phase. Additionally, the following public viewpoints were identified within the viewshed (shown on **Figure 6.5**):

- three public viewpoints within 2.5 km of the Project i.e. Windellama Road, Bullamalita Road, and Kooringaroo Road
- one public viewpoint within 4 km of the Project i.e. Goulburn Airport.

The preliminary visual assessment involved calculating the following for each of these viewpoints, as presented in **Table 6.4**:

- the distance from the nearest point of the Project
- the ‘relative height difference’ between the Project and the viewpoint
- the vertical field of view
- the horizontal field of view.

As shown in **Table 6.4**, the matrix in Table 1 of the Technical Supplement was then used to determine whether a detailed assessment of each of the 53 private viewpoints and four public viewpoints would be required during the EIS phase. The matrix identified a detailed visual assessment would be required for:

- three public viewpoints (Windellama Road, Bullamalita Road, and Kooringaroo Road)
- 40 private viewpoints.

The calculations for each viewpoint, and the resulting identification of viewpoints requiring detailed assessment is shown in **Table 6.4**.

⁴ A location within the public or private domain with a potential view of a large-scale solar energy project.

Table 6.4 Summary of Preliminary Visual Assessment Results

VP ⁵	Type	Approx distance to Project (km)	VP height (m)	Height of standard viewer (m)	Final height of VP (ground height + height of viewer)	Relative Height Difference (m)	Vertical field of view (°)	Horizontal field of view (°)	Detailed assessment required?
1	Residence	1.85	679	1.5	680.5	64	2	70	Yes
2	Residence	1.5	727	1.5	728.5	76.5	2	52	Yes
3	Residence	0.36	703	1.5	704.5	64	4	96	Yes
4	Residence	0.48	695	1.5	696.5	64	4	120	Yes
5	Residence	1	720	1.5	721.5	69.5	3	70	Yes
6	Residence	0.75	710	1.5	711.5	64	3	80	Yes
7	Residence	0.92	721	1.5	722.5	70.5	3	78	Yes
8	Residence	0.95	729	1.5	730.5	78.5	3	80	Yes
9	Residence	0.13	725	1.5	726.5	74.5	4	142	Yes
10	Residence	0.71	721	1.5	722.5	70.5	3	133	Yes
11	Residence	2	690	1.5	691.5	64	1	92	Yes
12	Residence	2.3	703	1.5	704.5	64	1	84	Yes
13	Residence	2.5	676	1.5	677.5	64	1	77	Yes
14	Residence	2.4	674	1.5	675.5	64	1	80	Yes
15	Residence	2.3	671	1.5	672.5	64	1	80	Yes
18	Residence	0.6	669	1.5	670.5	64	4	110	Yes

⁵ VP16, VP17, VP23, VP24, VP28 and VP33 have been removed from the summary of the preliminary visual assessment as these have subsequently been identified as other structures (not residences); VP26 was removed as this is the host landholder's residence

VP ⁵	Type	Approx distance to Project (km)	VP height (m)	Height of standard viewer (m)	Final height of VP (ground height + height of viewer)	Relative Height Difference (m)	Vertical field of view (°)	Horizontal field of view (°)	Detailed assessment required?
19	Residence	0.58	680	1.5	681.5	64	4	95	Yes
20	Residence	0.45	682	1.5	683.5	64	4	98	Yes
21	Residence	0.23	670	1.5	671.5	64	4	120	Yes
22	Residence	0.14	674	1.5	675.5	64	4	165	Yes
25	Residence	0.31	684	1.5	685.5	64	4	200	Yes
27	Residence	0.78	669	1.5	670.5	64	3	190	Yes
29	Residence	0.8	707	1.5	708.5	64	3	92	Yes
30	Residence	0.81	692	1.5	693.5	64	3	159	Yes
31	Residence	0.63	697	1.5	698.5	64	3	169	Yes
32	Residence	0.92	690	1.5	691.5	64	3	106	Yes
34	Residence	1.32	687	1.5	688.5	64	2	100	Yes
35	Residence	1.42	686	1.5	687.5	64	2	101	Yes
36	Residence	1.7	698	1.5	699.5	64	2	93	Yes
37	Residence	2	683	1.5	684.5	64	1	100	Yes
38	Residence	2.4	689	1.5	690.5	64	1	77	Yes
39	Residence	2	685	1.5	686.5	64	1	82	Yes
40	Residence	2.3	679	1.5	680.5	64	1	72	Yes
41	Residence	2.3	677	1.5	678.5	64	1	72	Yes
42	Residence	2.4	678	1.5	679.5	64	1	72	Yes
43	Residence	2	674	1.5	675.5	64	1	80	Yes
44	Residence	0.73	697	1.5	698.5	64	3	162	Yes

VP ⁵	Type	Approx distance to Project (km)	VP height (m)	Height of standard viewer (m)	Final height of VP (ground height + height of viewer)	Relative Height Difference (m)	Vertical field of view (°)	Horizontal field of view (°)	Detailed assessment required?
45	Residence	2.65	642	1.5	643.5	72.5	1	41	No
46	Residence	2.53	640	1.5	641.5	74.5	1	42	No
47	Residence	3.45	685	1.5	686.5	64	1	49	No
48	Residence	2.75	700	1.5	701.5	64	1	73	Yes
49	Residence	3.1	746	1.5	747.5	64	1	63	No
50	Residence	2.93	677	1.5	678.5	64	1	64	No
51	Residence	2.7	674	1.5	675.5	64	1	67	No
52	Residence	2.65	680	1.5	681.5	64	1	67	No
53	Residence	3	685	1.5	686.5	64	1	63	No
54	Residence	3.5	689	1.5	690.5	64	1	58	No
55	Residence	4	687	1.5	688.5	64	1	57	No
56	Residence	3.8	698	1.5	699.5	64	1	60	No
57	Residence	2.7	688	1.5	689.5	64	1	74	Yes
58	Residence	3.5	726	1.5	727.5	75.5	1	66	No
59	Residence	3.3	728	1.5	729.5	77.5	1	63	No
60	Residence	2.2	703	1.5	704.5	64	1	87	Yes
VP Bullamalita Road	Public	1.66	717	1.5	718.5	66.5	2	85	Yes
VP Goulburn Airport	Public	3.36	638	1.5	639.5	76.5	1	32	No

VP ⁵	Type	Approx distance to Project (km)	VP height (m)	Height of standard viewer (m)	Final height of VP (ground height + height of viewer)	Relative Height Difference (m)	Vertical field of view (°)	Horizontal field of view (°)	Detailed assessment required?
VP Koorngaroo Road	Public	0.2	701	1.5	702.5	64	4	101	Yes
VP Windellama Road	Public	0.2	680	1.5	681.5	64	4	170	Yes

⁵ VP16, VP17, VP23, VP24, VP28 and VP33 have been removed from the summary of the preliminary visual assessment as these have subsequently been identified as other structures (not residences); VP26 was removed as this is the host landholder's residence.

Goulburn Airport was not identified by the matrix as requiring a detailed visual assessment, and the Civil Aviation Safety Authority (CASA) generally considers large scale solar farms very unlikely to be a visual hazard to aircraft operations. Notwithstanding, due to the proximity of the Project to the airport, CASA will be consulted regarding the alignment of the solar array in relation to the airport's runways. Furthermore, consultation with the Goulburn Airport has commenced and will be ongoing through the EIS phase.

Further Landscape and Visual Impact Assessment

A detailed Landscape and Visual Impact Assessment (LVIA) will be prepared for the Project as part of the EIS phase, to assess the visual impacts on the 40 private viewpoints and three public viewpoints identified in the preliminary visual assessment. The LVIA will be assessing both BESS layout options (decentralised and centralised). The LVIA will be undertaken in accordance with the 2022 *Large-scale Solar Energy Guideline* and the Technical Supplement.

A key focus of the LVIA will be to review and verify the preliminary assessment findings. It is noted that some of the findings, in particular the possible view effects to receivers, may change subject to detailed assessment. The location, number and sensitivity of receivers will also be reviewed and verified through the detailed LVIA.

6.2.3.2 Noise and Vibration

Potential noise impacts associated with the Project will primarily be associated with construction activities and will have the potential to affect rural residential properties located in proximity to the Project Area.

A Noise and Vibration Impact Assessment (NVIA) will be prepared as part of the EIS in accordance with relevant NSW guidelines including the *Noise Policy for Industry* (EPA, 2017), *Interim Construction Noise Guideline* (DECC, 2009) and *NSW Road Noise Policy* (DECCW, 2011). The NVIA will include the following components of work:

- Establishing the relevant levels of background noise using minimum noise levels specified in the *Noise Policy for Industry*.
- Undertaking predictive noise modelling of the Project's construction and operation activities.
- Assessing the road traffic noise during construction activities.
- Assessing any vibration impacts at sensitive receptors.
- Assessing potential cumulative noise and vibration impacts.
- Identifying any reasonable and feasible mitigation and management measures to reduce noise impacts.

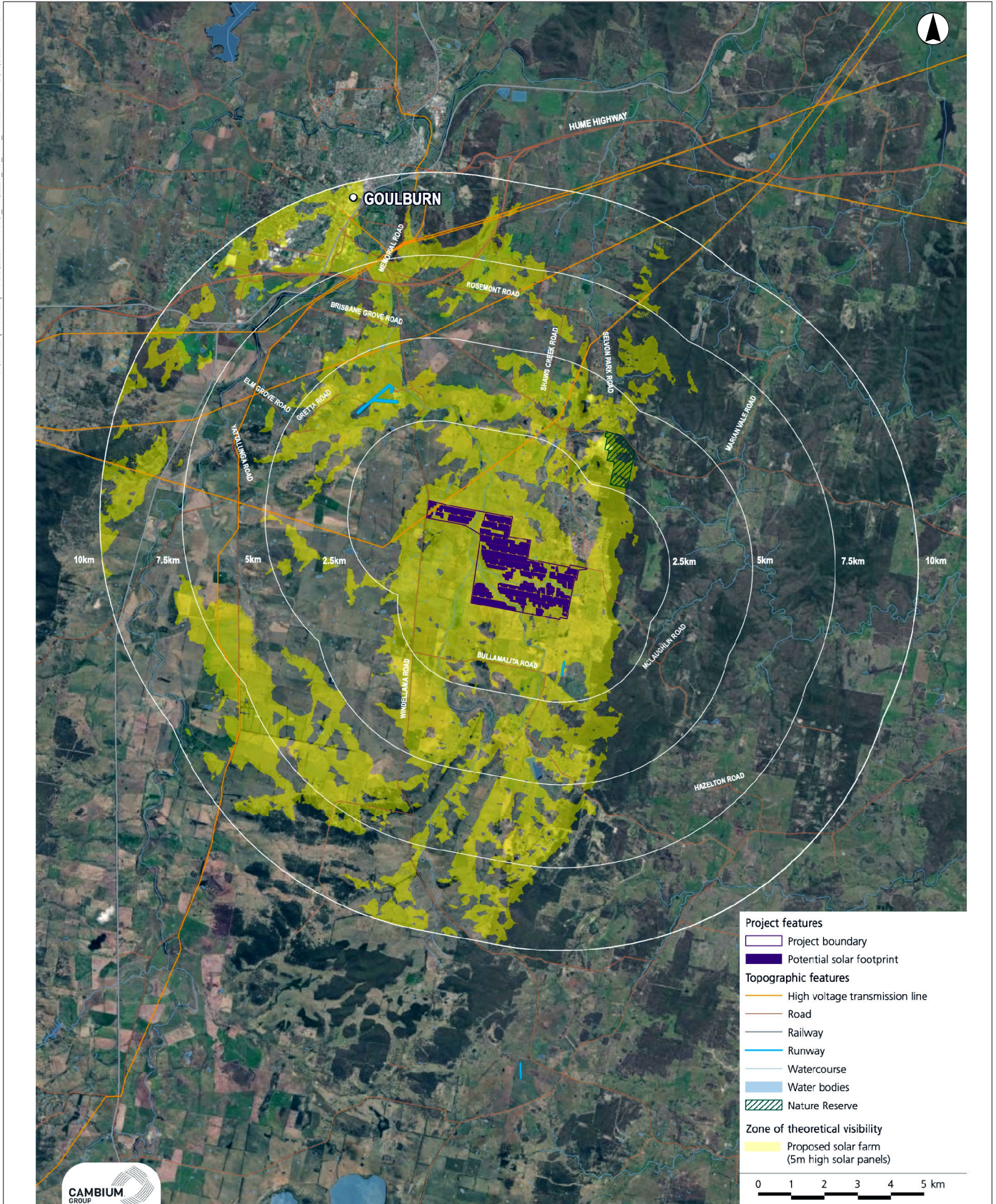
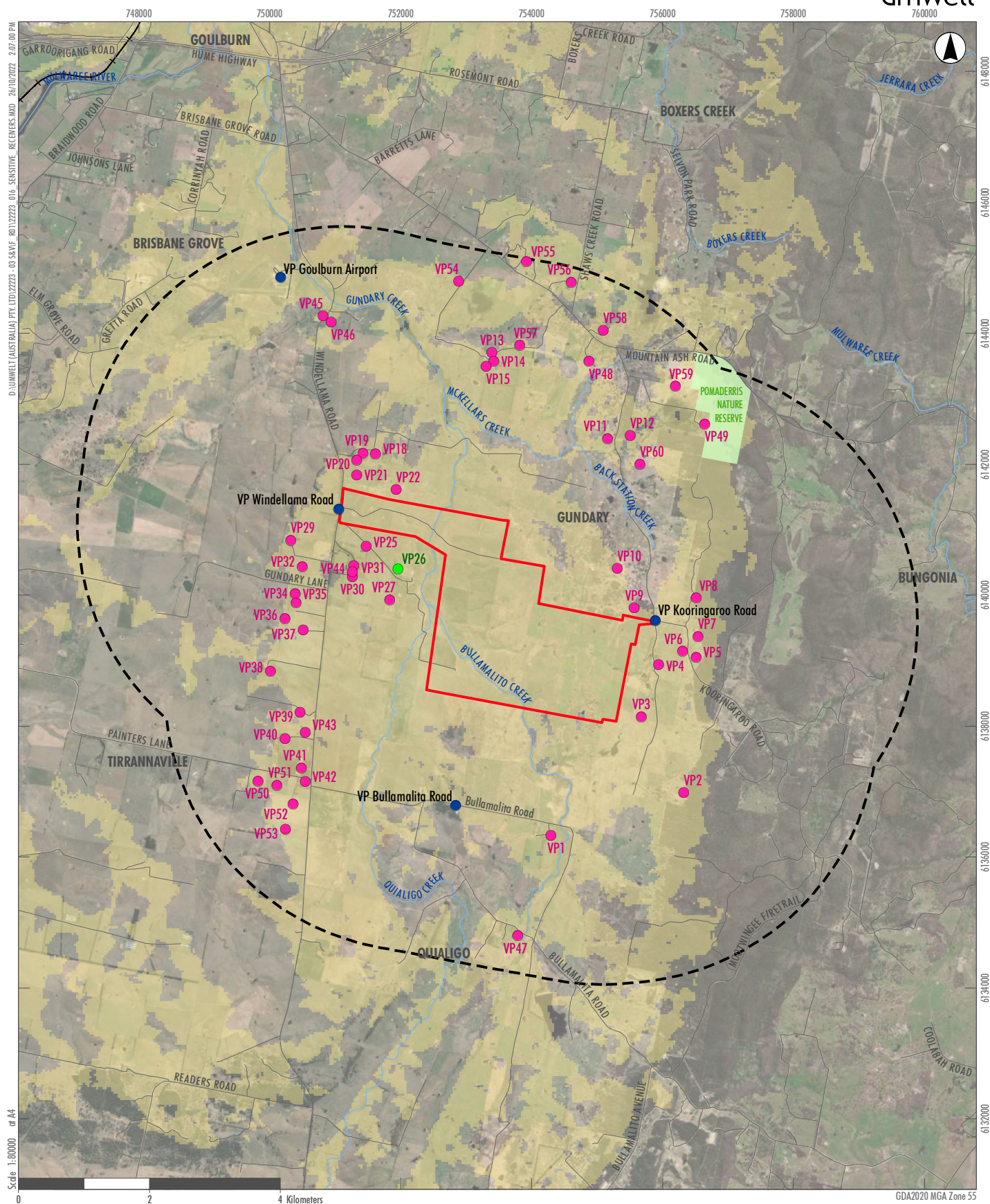


FIGURE 6.4

Viewshed mapping to 10km (5 m high solar panels)



Legend

- Project Area
- Viewshed mapping
- 4km Project Buffer
- Private viewpoints (non-involved residences)
- Public viewpoints
- Private viewpoint (involved residence)
- NPWS Estate
- Roads
- Railway
- Watercourses

FIGURE 6.5

Potential Visual Receivers within 4 km

6.2.4 Water Resources

The Project Area falls within the Hawkesbury-Napean catchment and drains into Lake Burragorang (Warragamba Dam), which is part of the Sydney drinking water catchment.

On a local scale, the Project Area falls within the Gundry Creek catchment, covering an area of 102 km², extending from the southern range at elevations above 800 m Australia Height Datum (AHD). The catchment area of Gundry Creek is shown in **Figure 6.6**. There are a number of mapped creeks traversing through the Project Area as shown on **Figure 6.7**. Existing flood mapping for the Goulburn Mulwaree LGA does not extend to the Project Area. Accordingly preliminary flood modelling has been undertaken to estimate design flood inundation across the Project Area as detailed in **Section 6.2.4.1**.

6.2.4.1 Preliminary Hydrology Analysis

A preliminary hydrology assessment was undertaken by Umwelt to characterise the existing surface water environment, identify key hydrology constraints to be considered in the Project layout and design and identify required considerations for a detailed water resources impact assessment (WRIA) to be completed during the EIS phase of the Project. The following sections detail the key findings of this preliminary assessment.

Local Drainage and Waterway Classification

The identified watercourse alignments with their corresponding Strahler order are shown in **Figure 6.7**. Gundry Creek, a 6th order stream, is a tributary of the Mulwaree River and flows through the western part of the Project Area in a northerly direction towards Goulburn. Bullamalito Creek, a 5th order stream, is a tributary of Gundry Creek and flows through the south-west corner of the Project Area.

Bullamalito Creek and Quialigo Creek converge just outside the south-eastern boundary of the Project Area becoming Gundry Creek. The general flow of the mainstream watercourses in the Gundry catchment is in a northerly direction from the catchment area located south of the Project.

A substantial number of the mapped watercourses within the Project Area are 1st order streams. Drainage of the Project Area incorporates local catchments flowing in a general westerly direction from the ridge line to the east which defines the Gundry Creek catchment boundary. The layout for the Project has been designed to provide appropriate setbacks to 2nd order and higher streams to assist with minimising the potential for impacts on water flow, quality and aquatic ecology.

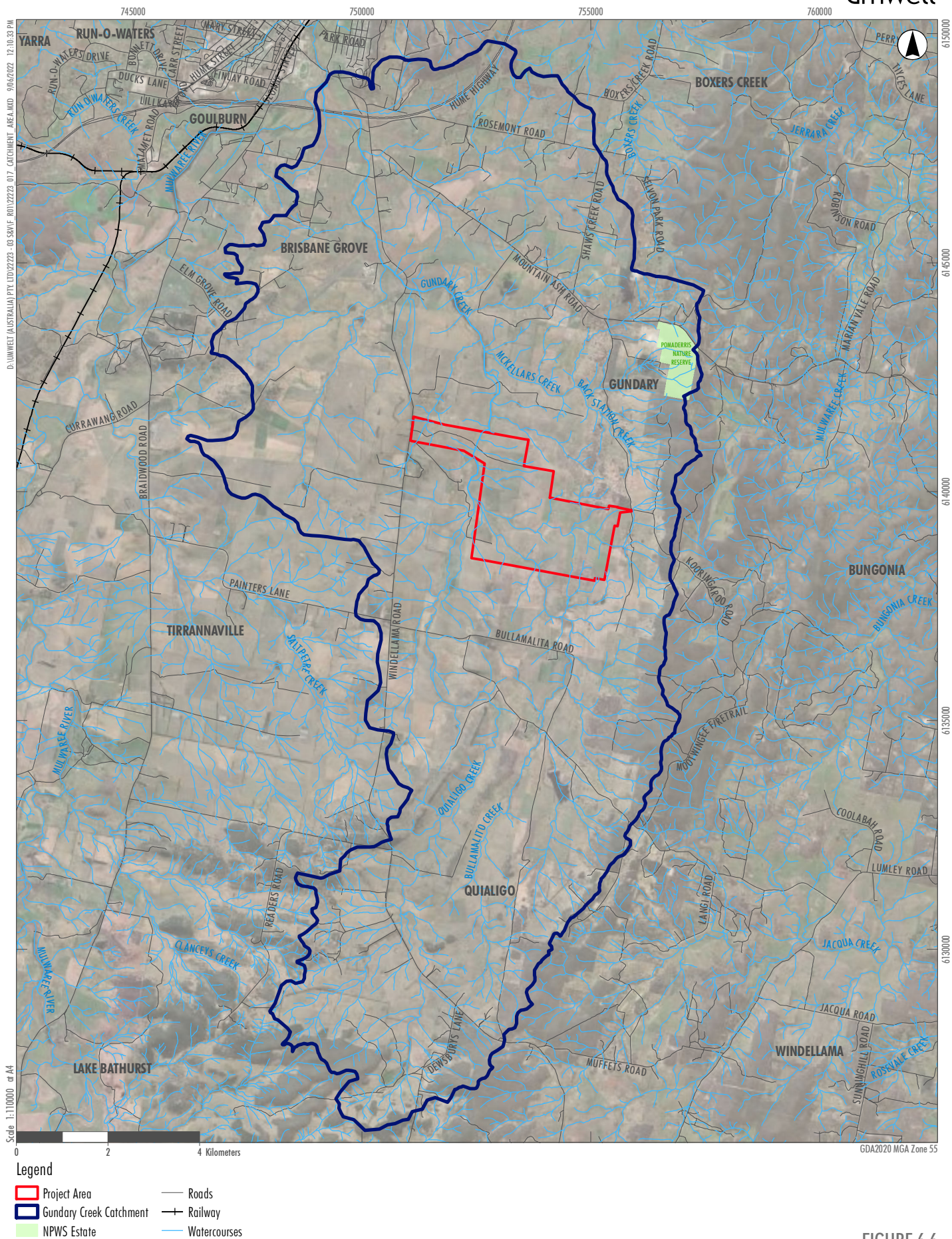


FIGURE 6.6

Catchment Area of Gundary Creek

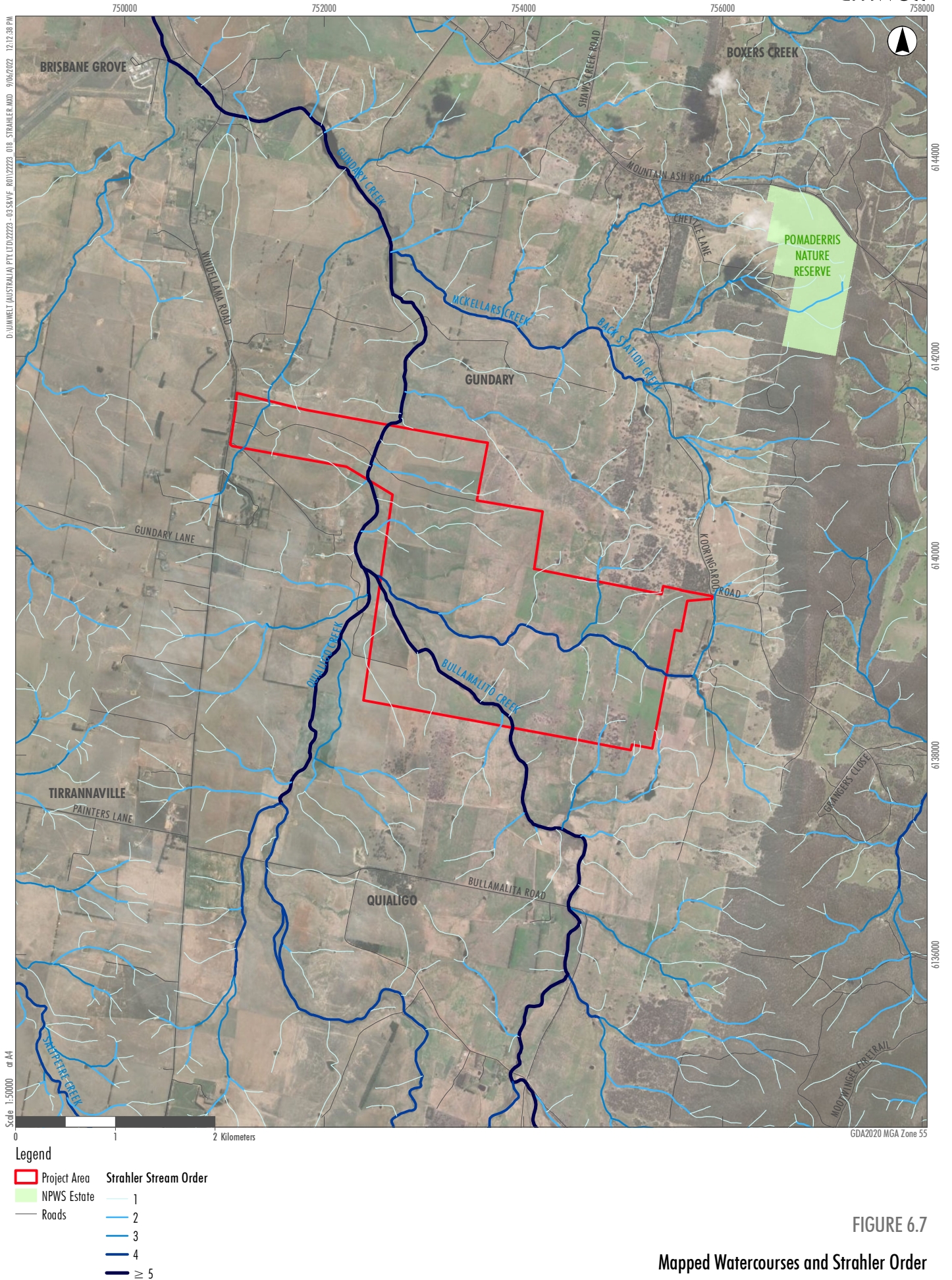


FIGURE 6.7

Mapped Watercourses and Strahler Order

Flooding

A high-level hydrology assessment was undertaken to map the watercourse features in the Project Area and develop a preliminary TUFLOW 2-dimensional (2D) model to map indicative 1% Annual Exceedance Probability (AEP) flood inundation extents.

The setup and configuration of the TUFLOW model was as follow:

- 5 m resolution terrain grid was developed using LiDAR data.
- No hydraulic structures were included in the model.
- Direct rainfall was applied to the model using a simplified approach consisting of Intensity-Frequency-Duration (IFD) design rainfall derived using the 2016 ARR IFD analysis available from the Bureau of Meteorology (<http://www.bom.gov.au/water/designRainfalls/revised-ifd/>).
- Design storm rainfall losses were estimated using the ARR2019 datahub. For the 1% AEP design event the initial loss was 12.0 mm. The continuing loss was 2.4 mm/hr.
- The Manning 'n' value adopted was 0.04 for light vegetation.

Figure 6.8 shows the principal flood extents within the Project Area are along the mainstream alignments of Bullamalito Creek and Gundary Creek. Peak flood depths of up to 3 m are simulated within the mainstream channel of Gundary Creek at the northern end of the Project Area. The flood inundation extends up to 400 m in width across the floodplain at this location.

Significant flood depths of 2.5 m are also simulated in the reaches of Bullamalito Creek at the southern boundary of the Project Area, albeit with flood inundation being confined to narrower extents of approximately 100 m along the creek alignment. For most of the minor watercourse through the Project Area, flooding is typically confined to narrow extents along the main channel alignments.

Sensitive Surface Water Areas

The Project Area was assessed to determine whether any sensitive areas, such as wetlands, riparian areas, areas of groundwater vulnerability and groundwater dependant ecosystems are located within the Project area. The assessment found:

- The Project area is not located within a wetland. The closest wetland, 'Goulburn Wetlands', is approximately 10 km northwest of the Project area.
- The Project area is not mapped as being within an area with groundwater vulnerability.
- Aquatic groundwater dependent ecosystems (GDEs) were identified within the Project area. Gundary Creek and Bullamalito Creek located within the Project Area are identified as high potential GDEs. This will be further investigated during the EIS phase.

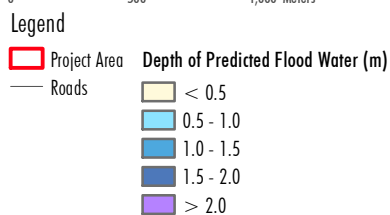
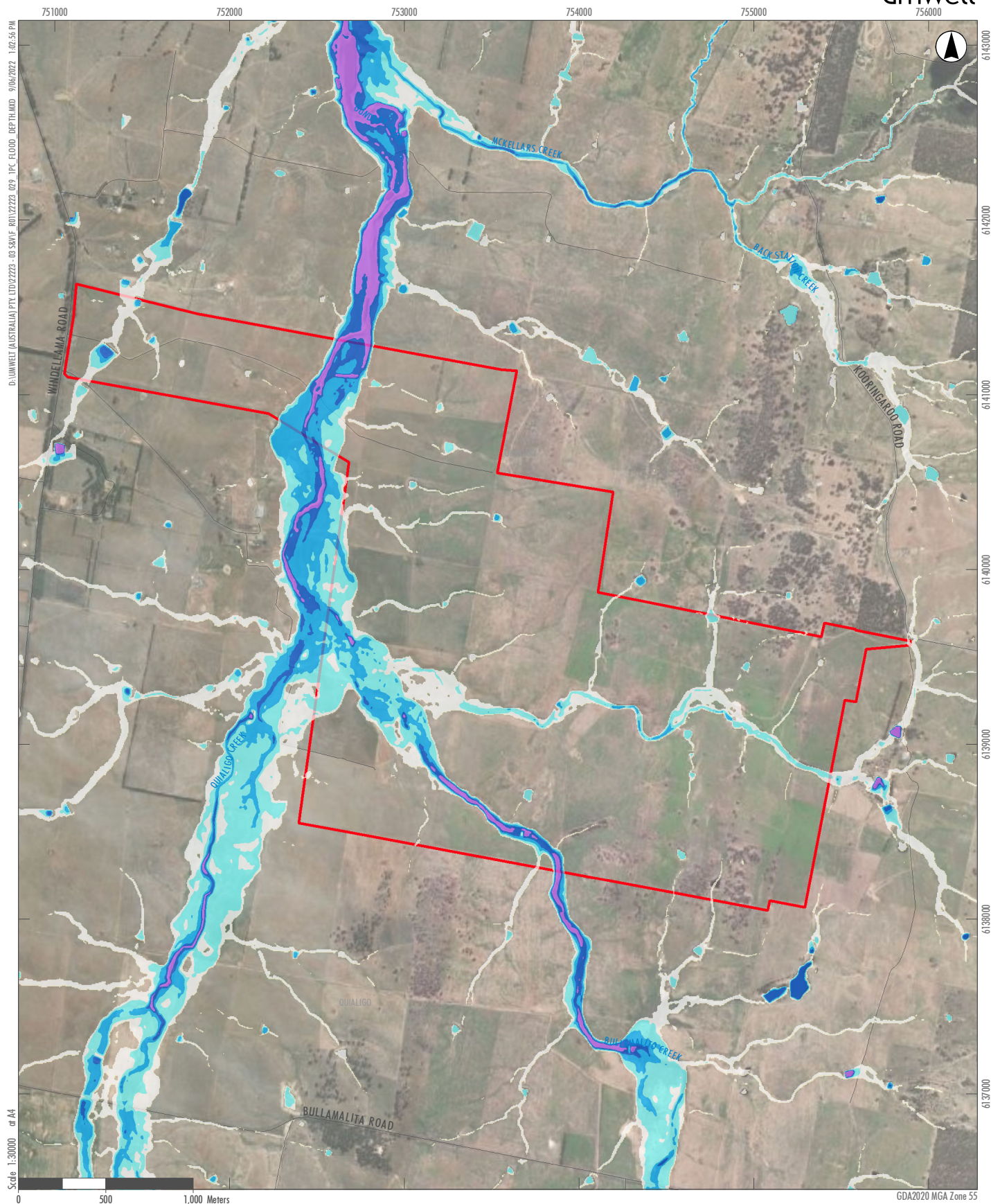


FIGURE 6.8

Indicative 1% AEP Flood Inundation Extents
for the Project Area

6.2.4.2 Further Assessment

A detailed Water Resources Impact Assessment (WRIA) will be undertaken as part of the EIS. This will consider potential impacts of the Project on water resources within the Project Area as well as downstream, including erosion and sedimentation, surface water and groundwater quality, flooding, groundwater levels, impact to water users (including licensed surface water and groundwater users), and water availability and demand. To further define flood inundation risks for the Project, the WRIA will include further detailed flood modelling for the 2, 5 and 100-year Average Recurrence Interval (ARI) floods (or alternative events as required). The WRIA will also identify any mitigation and management measures to minimise potential impacts of the Project on water and soil resources.

Furthermore, as the Project is within the Sydney drinking water catchment (Hawkesbury-Nepean), the WRIA will include a neutral or beneficial effect (NorBE) assessment on water quality in accordance with the *Neutral or Beneficial Effect on Water Quality Assessment Guideline* (WaterNSW, 2022) to identify potential risks to water quality (e.g. sediment from construction) and ways to avoid any adverse impacts from those risks (e.g. by applying current recommended practices and standards). As there are no specific Water Quality Objectives (WQOs) for the Hawkesbury-Nepean catchment, the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000* (ANZECC & ARMCANZ, 2000) will be used to provide a guide for the WQOs for the Project area.

6.2.5 Land

Soils across the Project Area and surrounding areas are predominately mapped as kurosols under the Australian Soil Classification Soil Type map of NSW, with sodosols occurring within and along the drainage lines (DPIE, 2020). Kurosol soils generally have unusual subsoil chemical attributes such as high magnesium, sodium and aluminium with the upper part of the subsoil generally strongly acidic (pH <5.5). These soils tend to be freely draining. Sodosols have a strong texture contrast between surface horizons and subsoil horizons. Generally, sodosols have low agricultural potential, high erodibility, poor structure, and low permeability.

Land within the Project Area is predominantly mapped as land soil capability Class 5, with a small portion of Class 4 (about 56 ha) as shown in **Figure 6.9**. Class 4 and 5 are categorised as moderate to low capability land and largely restrict land use to grazing, some horticulture, forestry and nature conservation (OEH, 2012). The Project Area is not identified as BSAL and as such is not considered to have high quality soils and water resources capable of sustaining high levels of productivity (DPIE, 2020).

The Project Area is zoned RU1 Primary Production under the Goulburn Mulwaree LEP. The Project Area has been subject to extensive clearing associated with agricultural activities. Cattle and sheep grazing are currently the main land use across the Project Area and adjoining parcels of land. The Project will result in a change in land use from agricultural to electricity generation.

Following further consultation with the host landholder, the Project has the potential to allow for the continuation of onsite sheep grazing within the Project Area once operational. The proponent has successfully co-located ongoing agricultural activities (such as sheep grazing) with other solar projects in Australia. This would create an agrisolar land use with the co-existence of agriculture and solar power generation. A Land Use Conflict Risk Assessment (LUCRA) will be undertaken during the EIS phase to assess the impact on agricultural land and land surrounding the Project Area.

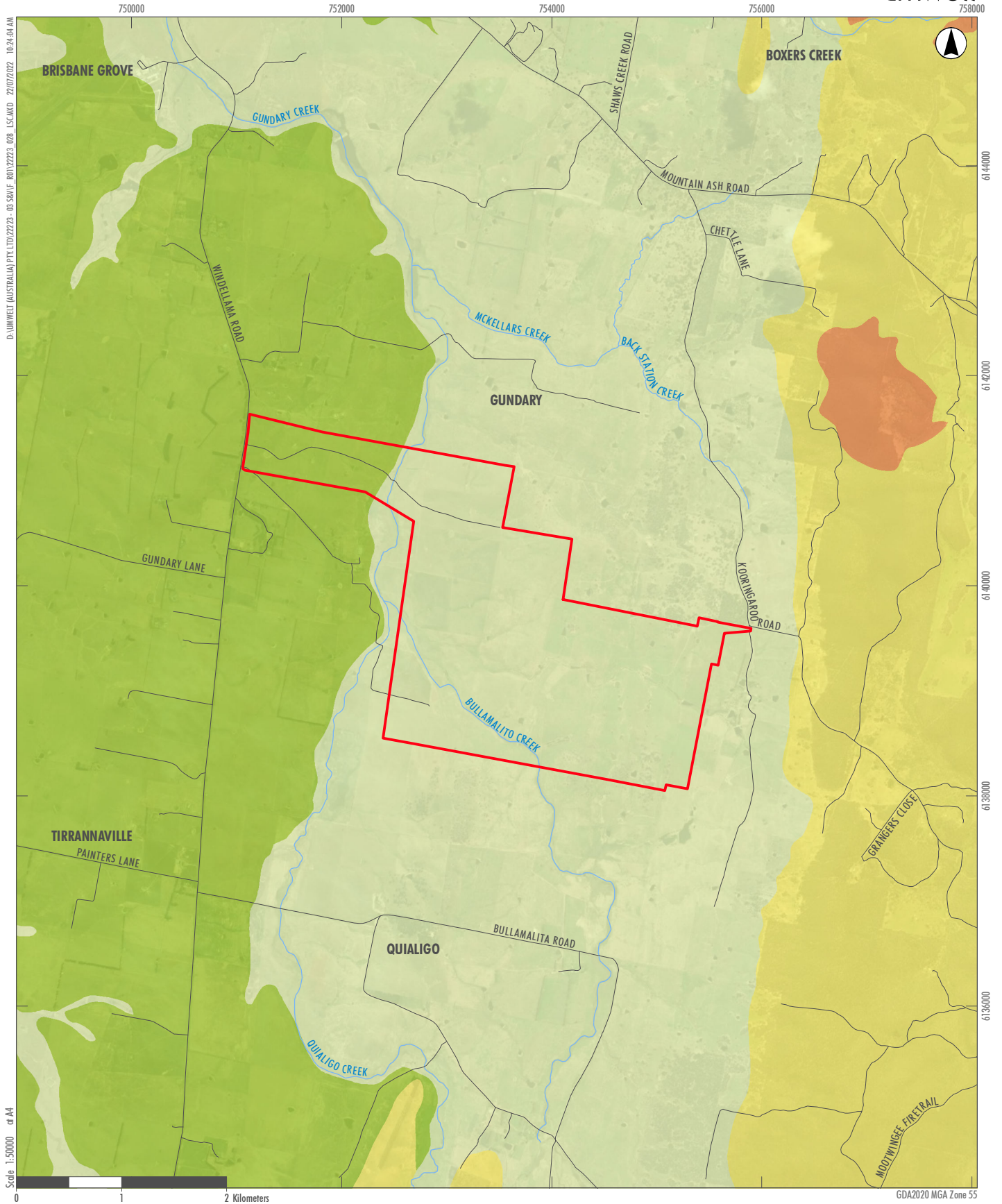


FIGURE 6.9

Land and Soil Capability Mapping

As part of the EIS phase, a Soil, Land Capability and Agriculture Impact Assessment will be completed for the Project. This will involve:

- Field survey, soil sampling and laboratory analysis - consisting of a site soil survey and classification of the soil profiles within the Project Area using the Australian Soil Classification (ASC) system (Isbell, 2007), including a description and mapping showing the distribution of each soil type. Soil profiles will be assessed in accordance with the *Australian Soil and Land Survey Field Handbook soil classification procedures* (NCST, 2009). The survey and resulting laboratory analysis of representative soils will aim to describe soil type, fertility, land and soil capability, baseline soil conditions and verify LSC of the land (and provide updated 'verified' mapping).
- A Land and soil capability assessment in accordance with *The Land and Soil Capability Assessment Scheme: Second Approximation* (OEH, 2013).
- A Land Use Conflict Risk Assessment (LUCRA) in accordance with the *Land Use Conflict Risk Assessment Guide* (DPI, 2011) fact sheet, including targeted engagement with affected landholders.
- An assessment of impacts to agricultural resources and agricultural production of the Project Area and the region in accordance with the *Large-Scale Solar Energy Guidelines* (DPE, 2022).
- Identify suitable management and mitigation measures to mitigate any potential impacts in relation to soil, land capability or agriculture (e.g. erosion potential) during design, construction, operation and decommissioning of the Project.

6.2.6 Access and Transport

The construction phase of the Project will result in increased traffic movements by both lightweight vehicles transporting construction personnel and light construction materials, and heavy vehicles transporting the Project infrastructure equipment. Traffic increases associated with the operational phase of the Project will be minimal and will generally only involve the movement of light vehicles transporting operational staff to and around the site.

Major solar and BESS components will be delivered to the Project Area by road via the Hume Highway (refer to **Figure 3.3**). Primary access to the Project would be from Windellama Road. Two access routes off the Hume Highway are currently being investigated (refer to **Figure 3.3**). The transport route to the Project Area will be reviewed and confirmed as the environmental and social impact assessment progresses.

A Traffic Impact Assessment (TIA) will be undertaken as part of the EIS to assess the potential transport routes required for the construction of the Project and any potential impact to the road network. The TIA will be undertaken in accordance with relevant NSW Government guidelines and assessment standards including *Guide to Traffic Generating Developments* (RTA, 2002), the *Austroads Guide to Road Design* (2015), *Guide to Traffic Management* (2020) and relevant standards. The TIA will include the following components of work:

- Reviewing and assessing the existing transport network conditions.
- Reviewing and assessing the proposed layout including vehicle access, onsite vehicle passage, and parking provisions.

- Assessing the likely traffic impacts of the Project during the construction and operational phases, including estimation of peak traffic volumes generated by the Project and impacts on the existing road network, evaluation of traffic impacts on surrounding roads and intersection (particularly in relation to the capacity and condition of the road network), and identification of any traffic-related safety implications of the Project.
- Identifying any mitigation and management measures that may be required to reduce traffic impacts.

6.2.7 Socio-Economic Impacts

A Social Impact Scoping Report (SISR) has been completed by Umwelt in accordance with the scoping phase (Phase 1) requirements of the *Social Impact Assessment (SIA) Guideline for State Significant Projects* (DPIE 2021a). As part of Phase 1, a range of consultation activities were undertaken (as outlined in **Section 5.2**). The outcomes of this consultation were incorporated into the SISR (refer to **Appendix 3**), in which social impacts and issues relevant to the Project were preliminarily identified and evaluated. The SISR is provided in full in **Appendix 3** and key findings summarised in this section below.

The Project area is located within the Goulburn Mulwaree LGA and near Goulburn and localities of Gundary, Tirrannaville, Brisbane Grove and Quialigo (refer to **Figure 1.1**). Based on a preliminary review of key community and demographic information (see **Table 6.5**), these proximal localities can be described as follows:

- Key industries of employment include hospitals, other allied health services and central government administration.
- Age distribution is varied, but older than the NSW median age.
- All the localities (except Brisbane Grove) have higher proportions of houses with no internet access compared to NSW.
- Lower than NSW median housing costs (except for mortgage repayments in Gundary).

Table 6.5 Selected demographic characteristics of key communities (ABS, 2016)

Characteristic	Goulburn (SSC)	Gundary (SSC)	Tirrannaville (SSC)	Brisbane Grove (SSC)	Quialigo (SSC)	NSW
Population	22,419	270	237	131	253	7,480,231
Median age	40	42	48	42	45	38
Private residence number	9,922	109	113	47	120	3,059,599
Top industry of employment	Hospitals (except psychiatric hospitals): 4.6%	Central government administration: 10.3%	Hospitals (except psychiatric hospitals): 12.9%	Hospitals (except psychiatric hospitals): 14.7%	Other allied health services: 9.2%	Hospitals (except psychiatric hospitals): 3.5%

Characteristic	Goulburn (SSC)	Gundry (SSC)	Tirrnaville (SSC)	Brisbane Grove (SSC)	Qualigo (SSC)	NSW
Top occupation	Community and personal service workers: 16.2%	Professionals: 20.2%	Managers: 28.1%	Professionals, technicians and trade workers, and clerical and administrative workers: 19.7%	Managers: 19.3%	Professionals: 23.6%
Median weekly family income	\$1,477	\$1,480	\$1,854	\$1,687	\$1,604	\$1,780
Median weekly rent	\$260	\$275	\$180	\$260	\$298	\$380
Median monthly mortgage repayments	\$1,517	\$2,392	\$1,800	\$1,650	\$1,688	\$1,986
Internet not accessed from residence	24.1%	19%	17.2%	11.8%	23.1%	14.7%

The potential social and economic impacts associated with the Project are both positive (opportunities) and negative (impacts).

Table 6.6 summarises some of the potential opportunities and impacts as a result of the Project.

Table 6.6 Potential opportunities and impacts

Potential opportunity	Potential negative impacts
• Employment generation creating approximately 400 FTE jobs during the construction phase and 2 to 4 permanent jobs during the operational phase. • Local procurement of materials. • Permanent infrastructure and services improvements (e.g. road networks). • Improvements to the local economy due to accommodation and food requirements. • An infrastructure investment of approximately \$540 million in the region. • Income generation for involved landowners providing additional income to farmer/s. • A community development funding scheme. • Neighbourly benefit program to provide further benefits to impacted/neighbouring properties being investigated	• Construction activities may cause disruption to nearby residences and motorists on Windellama Road (e.g. from noise or traffic impacts). • Community members, including non-involved landowners, may perceive the Project infrastructure to impact visual amenity and compete with the agricultural use of the landscape. • Community concern about environmental impacts such as impacts on biodiversity. • Changes to local population and composition and character of the community through an influx of construction workers, which could cause a shift in local relations, in particular associated with multiple concurrent and nearby major projects. • Increased pressure on local facilities and services, particularly housing and accommodation, in particular associated with multiple concurrent and nearby major projects.

Potential opportunity	Potential negative impacts
• Generation of clean energy to the National Electricity Market thereby improving regional and national energy security • Possible power purchase agreements with Council and other energy users to access affordable, clean energy • State and regional net zero and emissions reduction targets. • Improved sustainability and reduction of CO2 emissions creating climate benefits	• Social amenity impacts due to increased noise and dust, specifically during construction • Devaluation of adjacent or nearby properties.

The Proponent has prioritised early stakeholder engagement to build positive relationships with near neighbours and key stakeholders of the Project, to inform Project design and development, and to identify and understand perceived issues and impacts as early as possible in the planning and assessment process. Feedback from the community and other stakeholders discussed in **Section 5.0** identified perceived social impacts from the Project.

These social categories and perceived impacts are summarised in **Table 6.7** and will be subject to assessment as part of the SIA.

Table 6.7 Perceived Social Impacts

Category	Perceived Social Impact
Surroundings	• Visual amenity impacts • Public safety associated with natural disasters • Site disturbance and impacts on environmental values and agricultural use • Social amenity impacts (noise, dust and traffic impact to roads) • Public safety associated with increased traffic • Project lifespan and waste generation • Minimal environmental impact and complimentary with agricultural land use.
Community	• Change in land use and way of life • Community sentiment and division • Transition to renewable energy • Changes in sense of place and community.

Category	Perceived Social Impact
Livelihoods	• Possible property devaluation • Local employment and training opportunities • Inequitable distribution of project impacts • Local economic benefits • Lack of long term jobs and available work force • Support for reduced power costs in Goulburn.
Health and Wellbeing	• Mental health impacts of stress and anxiety • Physical health impacts from electromagnetic field and radiation.
Accessibility	• Accessibility to short term housing and accommodation • Provision of energy security in Goulburn area and regionally.
Engagement and Decision-Making Systems	• Lack of trust in the planning process • Positive experience of an involve in engagement.
Cumulative	• Setting precedent for more industrial projects in the area
Culture	• Impacts on Aboriginal cultural heritage

Addressing the perceived social impacts identified in **Table 6.7** will be guided by the community stakeholder engagement plan (CSEP).

Lightsource bp will continue to implement the CSEP to engage the community throughout the environmental assessment and approval process and the operational life of the Project. This early engagement will inform the assessment of the social and economic impacts associated with the Project.

6.2.7.1 Further Assessment

A comprehensive Social Impact Assessment (SIA) will be undertaken as part of the EIS prepared in accordance with the *Social Impact Assessment Guideline for State Significant Projects* (DPIE, 2021a). A key component of this process will be community engagement, which will inform the assessment of social and economic impacts associated with the Project.

Furthermore, an Economic Impact Assessment (EIA) will be undertaken as part of the EIS process to determine the likely local and regional economic benefits arising from the Project and will identify potential economic impacts associated with the Project, including investment, employment, business participation, local wage stimulus, impact on accommodation, impact on agricultural activities, cumulative impacts, local economic stimulus, financial returns to Council, environmental benefits and tourism impacts.

6.2.8 Hazards and Risks

The following section addresses the proposed approach to assessing potential hazards and risks impacts associated with the Project including hazardous materials, electromagnetic fields (EMF) and bushfire threat.

6.2.8.1 Preliminary Hazard Analysis

The Project will result in the introduction of a limited number of hazardous materials that present potential risks to the environment and public safety.

Hazardous materials that may be transported to the Project Area, stored and used at the Project Area and transported from the Project Area are presented in **Table 6.8** below.

Table 6.8 Project Hazardous Materials

Material	Dangerous Goods Class/Division and (Packing Group)	Phase(s) of Project
Lithium-Ion Batteries (LIBs)	9 (II)	Construction, Operations and Decommissioning
Unleaded Petrol	3 (II)	Operations
Diesel Fuel	C1	Construction, Operations and Decommissioning
Herbicides	9 (II)	Operations
Transformer Oil	-	Construction, Operations and Decommissioning
Aerosols	Class 2.1	Construction, Operations and Decommissioning
Solvents	3 (II)	Construction, Operations and Decommissioning

A preliminary risk screening for all hazardous materials and dangerous goods to be stored and transported to/from the Project will be undertaken in accordance with Chapter 3 Hazardous and Offensive Development of *State Environment Planning Policy (Resilience and Hazards) 2021* (the Resilience and Hazards SEPP) to determine the requirement for a Preliminary Hazard Analysis (PHA).

A Preliminary Hazard Analysis (PHA) incorporating a Level 1 Qualitative Risk Analysis and Level 2 Semi-quantitative will be prepared for both BESS layout options (centralised and decentralised) illustrated on **Figure 3.2**.

The PHA will involve:

- A preliminary risk screening for all hazardous materials and dangerous goods to be stored and transported to/from the Project will be undertaken in accordance with Chapter 3 of the Resilience and Hazards SEPP.
- Risk classification and prioritisation and estimation of societal risk in accordance with *Multi Level Risk Assessment* (NSW Department of Planning, 2011).

- A qualitative risk assessment (for the Level 1 analysis) workshop to identify Project hazards that pose an off-site risk.
- Consequence (e.g. fire, explosion, toxic release) and frequency analysis (Level 2 analysis) for hazard scenarios identified as requiring further assessment in the qualitative risk assessment.
- Assessment of the Level 2 analysis results with respect to *Hazardous Industry Planning and advisory Paper No 4 Risk Criteria for Land Use Planning* (NSW Department of Planning, 2011).
- Consultation with Fire and Rescue NSW regarding fire and life safety systems as well as the unique challenges posed by BESSs during incident response.

The PHA will consider relevant contemporary standards and guidelines with respect to BESSs including:

- UL 9540 Standard for Safety of Energy Storage Systems and Equipment, Underwriters Laboratory, 2020.
- UL 9540A Standard for Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems, Underwriters Laboratory, 2019.
- NFPA 855 Standard for the Installation of Stationary Energy Storage Systems, National Fire Protection Association, 2020.
- AS/NZS 5139:2019 Electrical Installations – Safety of battery systems for use with power conversion equipment, Standards Australia, 2019.
- Property Loss Prevention Data Sheet 5-33, Electrical Energy Storage Systems, FM Global, 2020.

6.2.8.2 Bushfire Threat

The Project Area is identified as bush fire prone land by the Goulburn Mulwaree Council Bushfire Prone Land Mapping, as shown on **Figure 6.10**.

Although the Project Area has been subject to extensive cultivation associated with agricultural land use, there are areas of remnant vegetation which form a potential fuel load capable of sustaining and spreading bushfire. Areas of vegetation within the Project Area also represent a potential linkage between vegetated areas within and adjoining the Project Area, with the potential to support the spread of bushfire.

A bushfire threat assessment will be undertaken as part of the EIS, informing a Bushfire Management Plan (BMP) that will be developed in accordance with the requirements of the *Planning for Bush Fire Protection* (NSW Rural Fire Service, 2019). Consultation with the Rural Fire Service (RFS) and/or NSW Fire and Rescue will also be undertaken during preparation of the EIS and the BMP.

Typical bushfire management strategies that would be further investigated during the EIS phase will include, but not be limited to:

- on-site water tanks
- establishment of an Asset Protection Zone (APZ) and perimeter roads to serve as a fire break while providing access
- strategic placement of access gates along the perimeter fence line

- management of vegetation cover (including grass height)
- 24/7 automated monitoring of panels and electrical connections.

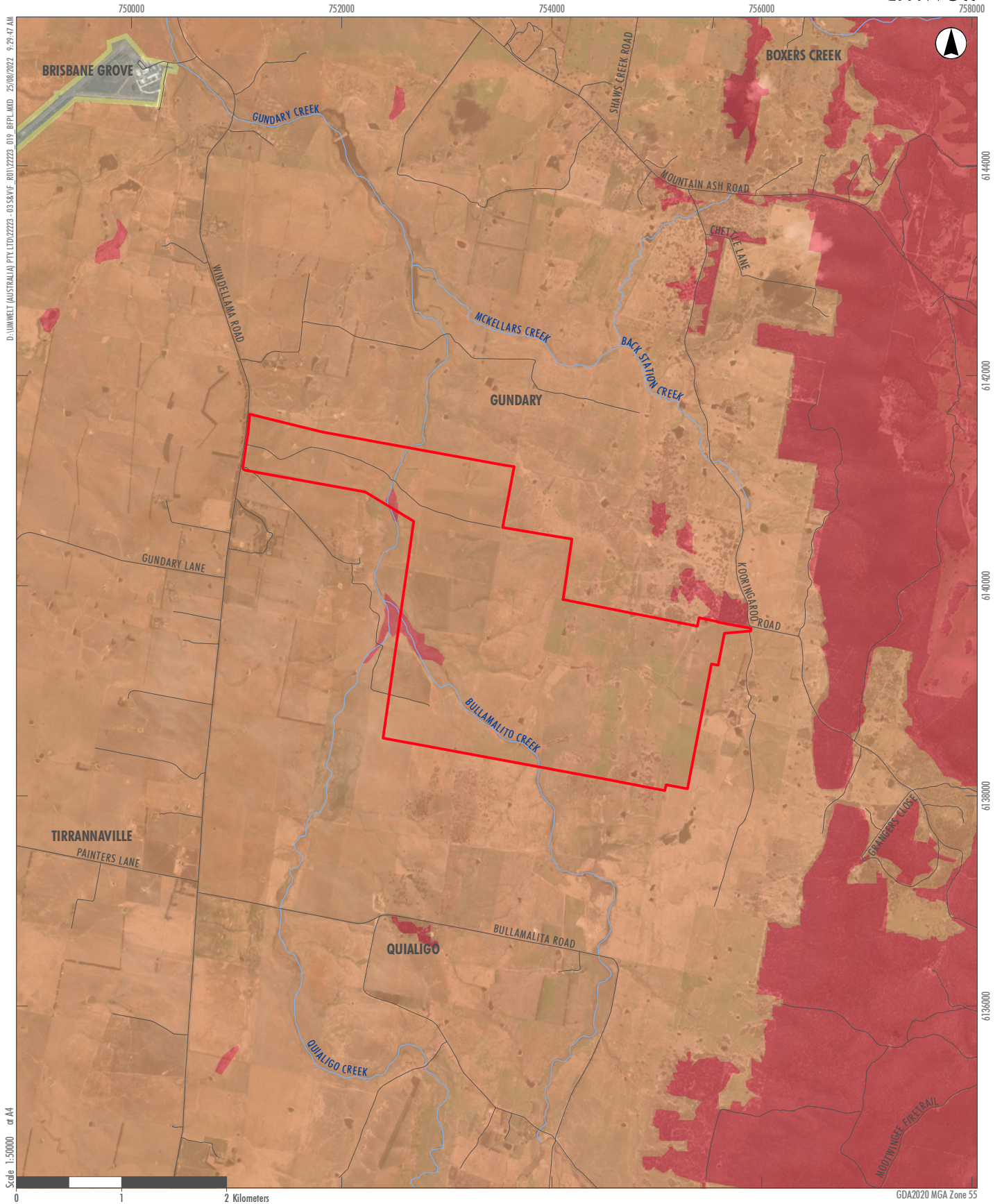


FIGURE 6.10

Bushfire Prone Land

6.2.8.3 Electromagnetic Fields

Electromagnetic fields (EMFs) are present where electric current flows, including overhead and underground transmission lines and substations and electrical appliances. It is expected that electromagnetic field (EMF) risks associated with the Project will be below the International Commission on Non-Ionizing Radiation Protection (ICNIRP) *Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz – 100 kHz)* (2010).

A review of potential EMF risks associated with the Project will be undertaken as part of the EIS, and suitable safeguards and mitigation measures will be proposed to reduce any potential risks.

6.2.9 Cumulative Impacts

The *Large-Scale Solar Energy Guidelines 2022* contains requirements for assessing any cumulative impacts of a project with other developments (proposed, approved and operating), especially relating to biodiversity, visual, socio-economic and construction traffic impacts. The *Cumulative Impact Assessment (CIA) Guidelines for State Significant Projects 2021* are applicable to the Project.

The Scoping Report Summary Table provided in **Appendix 1** outlines where a cumulative impact assessment (CIA) will be undertaken for the relevant matters including the level of assessment and engagement. **Table 6.9** provides a summary of other projects in proximity to the Project area that may need to be considered in the CIA for the Project.

Table 6.9 Nearby Developments

Project Name	Description	Reference	Status	Distance to Project
Goulburn Base Hospital Redevelopment	Staged hospital redevelopment	SSD-8667	Operational	12 km
Goulburn Poultry Processing Mixed Use Development	Meat processing facility	SSD-9143	Under assessment - Response to submissions	11 km
Marulan Solar Farm	150 MW solar farm	SSD-13137914	Under assessment - Prepare EIS	35 km
Parkesbourne Solar Farm	600MW Solar Farm	NA	Under assessment - Preparing EIS	20 km
Woodlawn Wind Farm	50 MW Wind Farm	DA250-10-2004	Operational	27 km
Woodlawn Advanced Energy Recovery Centre	30 MW Energy recovery facility from approximately 380,000 tonnes of residual waste feedstock each year.	SSD-21184278	Wingecarribee-Goulburn Water Pipeline MP09_0193 Complete Prepare EIS	45 km

6.2.10 Other Issues

The EIS will also address other potential impacts relating to the following matters:

- **Glint and Glare** – the EIS will assess the potential glint and glare related impacts of the Project in accordance with the *Large-scale Solar Energy Guideline*.
- **Waste** – the EIS will classify and quantify the likely waste streams to be generated during construction and operation and describe measures to manage, reuse, recycle and dispose of this waste in accordance with relevant guidelines.
- **Air quality and dust management** – the EIS will assess potential air quality impacts of the Project in accordance with relevant NSW guidelines in relation to construction activities.
- **Decommissioning and rehabilitation** – the EIS will assess potential impacts of the Project arising from decommissioning and rehabilitation activities, particularly on the final landform and compatibility with existing land uses.

Whilst these matters will be appropriately assessed in the EIS, detailed assessments are not proposed as the issues can be readily defined, assessed and mitigated using well recognised approaches.

6.3 Limitations and Uncertainties

Preliminary assessments undertaken during the scoping phase, and as documented in this report, have been based on publicly available data and predominantly desktop specialist investigations, with the addition of preliminary (rapid) ecological surveys and a preliminary visual site inspection. Further detailed investigations including field inspections and surveys will be undertaken during the preparation of the EIS for the Project.

Key matters to be considered further in the development of the EIS include (but are not limited to):

- The access route to the Project Area including the need for any road upgrades.
- Visual impacts of the Project and potential landscape mitigation, including screen planting on site and off site.
- Location, number and sensitivity of the sensitive receivers.
- Aboriginal and Non-Aboriginal heritage constraints (unknown at this stage).
- Flooding risks and potential hydrology impacts.
- Presence of threatened fauna and flora species including potential habitat for these species.
- Development footprint and layout for the Project to be reviewed and refined based on the findings of the detailed environmental assessments and further engagement with stakeholders, the community and government agencies.

6.4 Matters Requiring No Further Assessment in the EIS

Table 6.10 outlines the matters that are considered to not require further assessment in the EIS based on the scoping phase assessment along with a comment justifying why no further assessment is required.

Table 6.10 Matters Requiring No Further Assessment in the EIS

Issue	Comment
Greenhouse gas and energy	As the Project will generate renewable energy, the emissions resulting from the construction, operation or decommissioning will be readily offset by the reduction in energy generation emissions. Greenhouse gas emissions will be addressed in the justification for the Project as part of the EIS.
Port and airport facilities	The Project does not result in any change to port or airport facilities. Other than the delivery of Project components to the port, the transportation of Project components to the Project Site will be assessed as part of the TIA.
Rail facilities	The Project does not propose to utilise any rail facilities.
Odour	The Project is not anticipated to cause any odour.
Coastal hazards	The Project is not located within a coastal zone and will not result in any impacts to coastal zones.
Dam safety	The Project does not require the construction or maintenance of a dam.
Land movement	The Project is not anticipated to result in any land movement. The Project results in relatively minor excavation works only.

7.0 Conclusion

The Project area is located in a region with a good solar resource and there is sufficient capacity on the existing transmission line that transects the Project area to accommodate the Project. The Project will contribute to achieving Federal and NSW Government commitments to establishing renewable energy and reducing carbon emissions.

The preliminary Project layout and design has taken into consideration biodiversity and hydrology constraints with the aim of avoiding areas of higher sensitivity. It will be subject to further analysis and refinement as part of the EIS process, as informed by the specialist studies and stakeholder engagement, to avoid and mitigate impacts to the environment and community insofar as is possible.

All identified environmental and social issues will be subject to assessment as part of the EIS as detailed in **Section 6.0** and in accordance with the SEARs.

In addition to providing long-term, strategic benefits to the State of NSW through provision of regional investment and cleaner electricity generation, the Project will also provide direct economic benefits to the regional and local community, including:

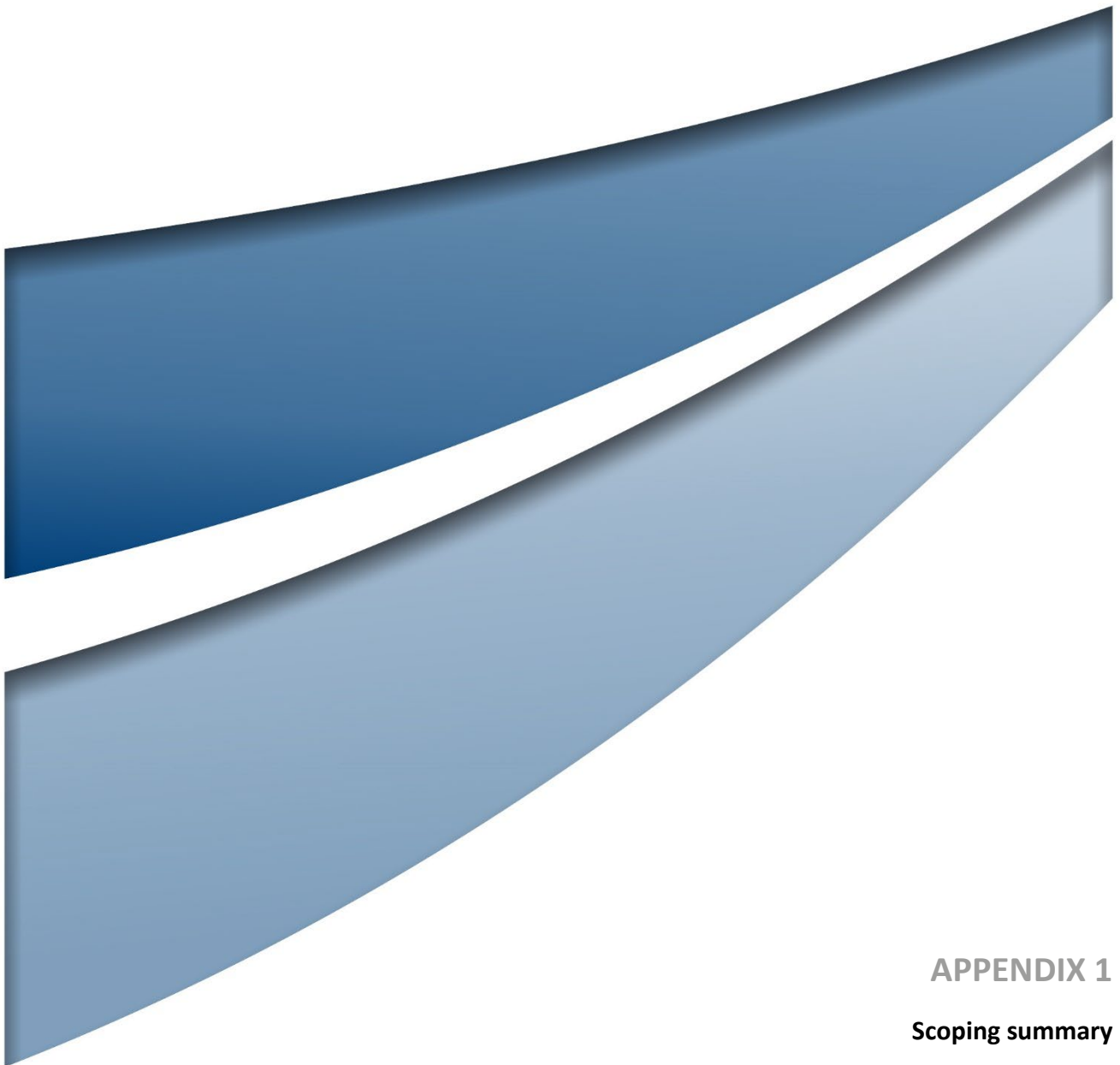
- Infrastructure investment of approximately \$540 million.
- Employment generation creating approximately 400 FTE jobs during the construction phase and two to four permanent jobs during the operational phase.
- Indirect benefits to local services through the construction and operation phases.
- Additional landowner income to involved landowners resulting in financial contributions to the local community.
- Local community benefits through the implementation of a proposed community benefit fund that will invest in local community project and initiatives to provide a direct and targeted local benefit.
- Possible negotiated agreements with neighbouring landholders.
- Possible power purchase agreements with the local Council and other large electricity users.

After preliminary assessment and engagement, in general, the Project is well sited to maximise and enable the benefits of clean energy generation, investment and job creation while minimising possible impacts to the environment, locality and region in which it is sited.

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APPENDIX 1

Scoping summary

Appendix 1 - Scoping Summary Table

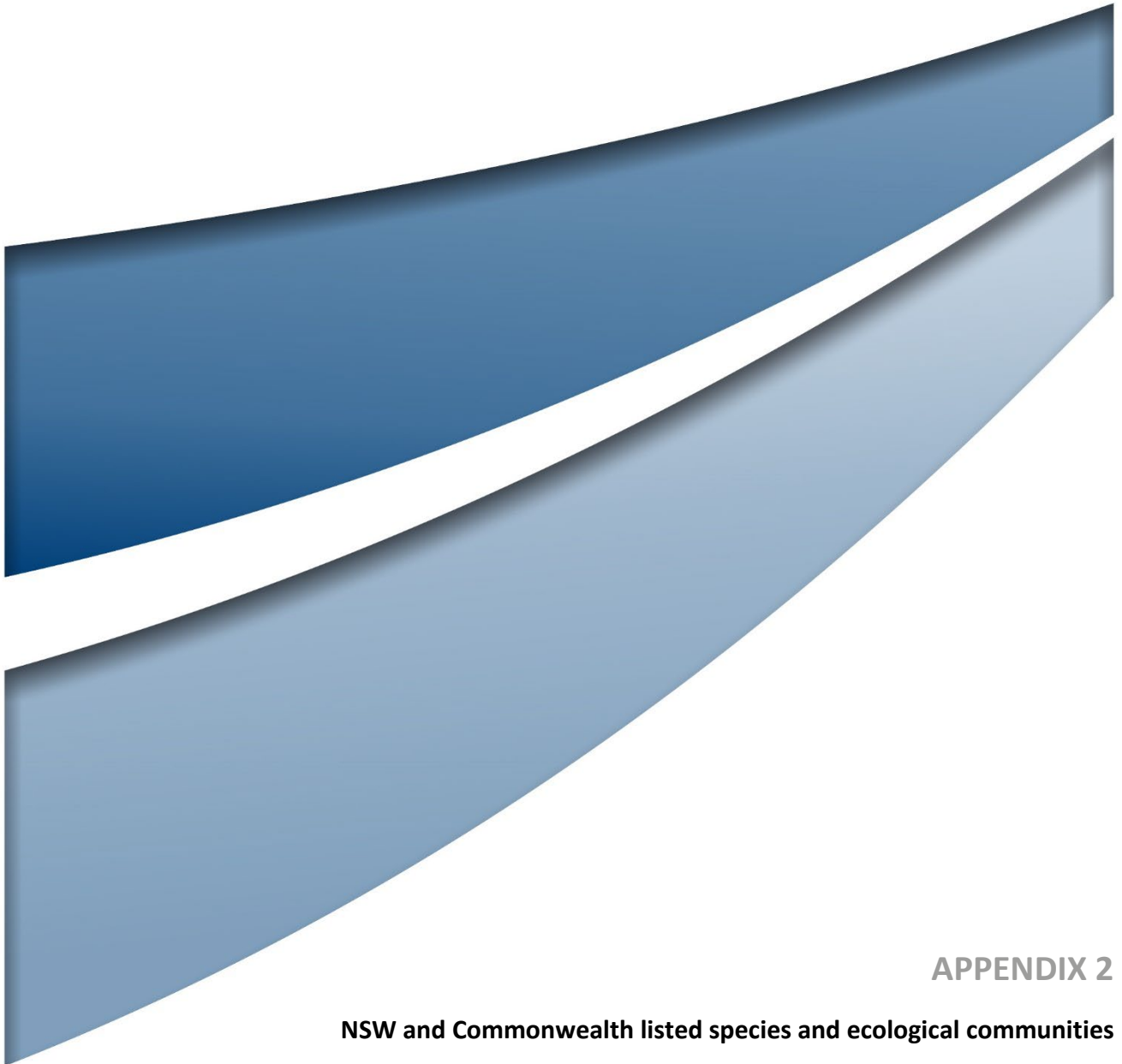
Level of Assessment	Matter	Cumulative Impacts	Engagement	Relevant government plans, policies and guidelines	Scoping report reference
Detailed	Biodiversity	Y	Specific	- Commonwealth EPBC 1.1 Significant Impact Guidelines – Matters of National Environmental Significance (Commonwealth of Australia, 2013) - Commonwealth EPBC 1.2 Significant Impact Guidelines – Actions on, or Impacting Upon Commonwealth Land and Actions by Commonwealth Agencies (Commonwealth of Australia, 2013) - Commonwealth Department of the Environment – Nationally Threatened Ecological Communities and Threatened Species Guidelines (various) - Commonwealth Department of the Environment – Survey Guidelines for Nationally Threatened Species (various) - Biodiversity Assessment Method (BAM) 2020 - DPIE Threatened Biodiversity Data Collection (TBDC) (DPIE, 2022) - Threatened Species Survey and Assessment Guidelines at http://www.environment.nsw.gov.au/threatenedspecies/surveyassessmentgdlns.htm - NSW Biodiversity Offsets Policy for Major Projects (Office and Environment and Heritage, 2014) - Framework for Biodiversity Assessment (Office and Environment and Heritage, 2014).	Section 6.2.1

Level of Assessment	Matter	Cumulative Impacts	Engagement	Relevant government plans, policies and guidelines	Scoping report reference
Detailed	Aboriginal Cultural and Historic Heritage	N	Specific	• Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH, 2011) • Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW, 2010) • Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW, 2010 b) • The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance (ICOMOS, 2013) • NSW Heritage Manual 1996 • Relevant Heritage Council of NSW guidelines.	Section 6.2.2
Detailed	Landscape and Visual	Y	Specific	• Large-Scale Solar Energy Guideline (DPE, 2022) and the Technical Supplement - Landscape and Visual Impact Assessment (DPE, 2022).	Section 6.2.3
Detailed	Water	N	General	• Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC /ARMCANZ, 2000) • Using the ANZECC Guidelines and Water Quality Objectives in NSW (Department of Environment and Conservation, 2006) • Neutral or Beneficial Effect on Water Quality Assessment Guideline (WaterNSW, 2021) • Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004)	Section 6.2.4

Level of Assessment	Matter	Cumulative Impacts	Engagement	Relevant government plans, policies and guidelines	Scoping report reference
				- Managing Urban Stormwater: Soils and Construction Volume 2 (Department of Environment and Climate Change, 2008) - Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (Department of Environment and Climate Change, 2008).	
Detailed	Land	N	General and Specific	- Acid Sulphate Soils Assessment Guidelines (Department of Planning, 2008) - Guidelines for Consultants Reporting on Contaminated Sites (Office of Environment and Heritage, 2000) - Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997 (Department of Environment and Climate Change, 2009) - Goulburn Mulwaree Local Environment Plan. - Land Use Conflict Risk Assessment Guide (2011).	Section 6.2.5
Detailed	Noise and Vibration	Y	Specific	- Construction Noise Strategy (Transport for NSW, 2012) - Interim Construction Noise Guideline (Department of Environment, Climate Change and Water, 2009) - NSW Industrial Noise Policy (Environment Protection Authority, 2000) - Rail Infrastructure Noise Guideline (Environment Protection Authority, 2013)	Section 6.2.3

Level of Assessment	Matter	Cumulative Impacts	Engagement	Relevant government plans, policies and guidelines	Scoping report reference
				• NSW Road Noise Policy (Environment Protection Authority, 2011) • Assessing Vibration: A Technical Guideline (Department of Environment and Conservation, 2006) • German Standard DIN 4150-3: Structural Vibration – Effects of Vibration on Structures • Environmental Noise Management Assessing Vibration: A Technical Guideline (Department of Environment and Conservation, 2006).	
Detailed	Traffic and Transport	Y	Specific	• Guide to Traffic Generating Developments (RTA, 2002) • Road Design Guide • Relevant Austroads Standards • Austroads Guide to Traffic Management.	Section 6.2.6
Detailed	Socio-Economic	Y	Specific	• Social Impact Assessment Guidelines for State Significant Projects (DPIE, 2021) • Undertaking Engagement Guidelines for State Significant Projects (DPIE, 2021).	Section 6.2.7
Detailed	Hazards and Risks	N	Specific	• Chapter 3 Hazardous and Offensive Development of <i>State Environment Planning Policy (Resilience and Hazards)</i> 2021. • Planning for Bushfire Protection (PBP) 2019 (NSW Rural Fire Service, 2019).	Section 6.2.8

Level of Assessment	Matter	Cumulative Impacts	Engagement	Relevant government plans, policies and guidelines	Scoping report reference
				International Commission on Non-Ionizing Radiation Protection Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz – 100 kHz) (2010).	
Detailed	Cumulative Impacts	Y	General	Cumulative Impact Assessment (CIA) Guidelines for State Significant Projects (DPIE, 2021).	Section 6.2.9
Detailed	Glint and Glare	N	General	Large-Scale Solar Energy Guideline (DPE, 2022) and the Technical Supplement - Landscape and Visual Impact Assessment (DPE, 2022).	Section 6.2.10
Standard	Waste	N	General	Waste Classification Guidelines (DECCW, 2009).	Section 6.2.10
Standard	Air Quality	N	General	The Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA, 2016).	Section 6.2.10
Standard	Decommissioning and Rehabilitation	N	General	Decommissioning and rehabilitation following closure of Project will be undertaken in accordance with relevant consent conditions and legislation/licence requirements.	Section 6.2.10



APPENDIX 2

NSW and Commonwealth listed species and ecological communities



EPBC Act Protected Matters Report

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

Report created: 07-Aug-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	43
Listed Migratory Species:	12

Other Matters Protected by the EPBC Act

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

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

A [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 Lands:	13
Commonwealth Heritage Places:	1
Listed Marine Species:	19
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	5
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities

[Resource Information]

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

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

Community Name	Threatened Category	Presence Text	Buffer Status
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community likely to occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species

[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
FISH			
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat known to occur within area	In feature area
FROG			
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat may occur within area	In feature area
INSECT			
Synemon plana Golden Sun Moth [25234]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat may occur within area	In feature area
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In feature area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			
Acacia bynoeana Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Calotis glandulosa Mauve Burr-daisy [7842]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Commersonia prostrata Dwarf Kerrawang [87152]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diuris aequalis Buttercup Doubletail [21588]	Endangered	Species or species habitat known to occur within area	In feature area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eucalyptus aggregata Black Gum [20890]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Lepidium aschersonii Spiny Pepper-cress [10976]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat likely to occur within area	In feature area
Leucochrysum albicans subsp. tricolor Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat known to occur within area	In feature area
Pomaderris cotoneaster Cotoneaster Pomaderris [2043]	Endangered	Species or species habitat may occur within area	In buffer area only
Pomaderris delicata [67208]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pomaderris pallida Pale Pomaderris [13684]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area	In feature area
Rhizanthella slateri Eastern Underground Orchid [11768]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rutidosia leptorhynchoides Button Wrinklewort [67251]	Endangered	Species or species habitat known to occur within area	In feature area
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In feature area
Swainsona recta Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area	In buffer area only
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area

REPTILE			
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]		Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands

[Resource Information]

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

Commonwealth Land Name	State	Buffer Status
Commonwealth Bank of Australia		
Commonwealth Land - Commonwealth Bank of Australia [12499]	NSW	In buffer area only
Commonwealth Trading Bank of Australia		
Commonwealth Land - Commonwealth Trading Bank of Australia [12503]	NSW	In buffer area only

Commonwealth Land Name		State	Buffer Status
Commonwealth Land - Commonwealth Trading Bank of Australia [12498]		NSW	In buffer area only
Communications, Information Technology and the Arts - Australian Postal Corporation			
Commonwealth Land - Australian Postal Commission [12497]		NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [12500]		NSW	In buffer area only
Communications, Information Technology and the Arts - Telstra Corporation Limited			
Commonwealth Land - Telecommunications Commission [15452]		NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [12580]		NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [12496]		NSW	In buffer area only
Defence			
Commonwealth Land - Defence Service Homes Corporation [12502]		NSW	In buffer area only
Defence - GOULBURN AIR TRAINING CORP [11211]		NSW	In buffer area only
Defence - GOULBURN RESERVE DEPOT (GOULBURN TRAINING DEPOT) [10069]		NSW	In buffer area only
Defence - Defence Housing Authority			
Commonwealth Land - Director of War Service Homes [12501]		NSW	In buffer area only
Transport and Regional Services - Airservices Australia			
Commonwealth Land - Airservices Australia [12495]		NSW	In buffer area only
Commonwealth Heritage Places [Resource Information]			
Name	State	Status	Buffer Status
Historic			
Goulburn Post Office	NSW	Listed place	In buffer area only
Listed Marine Species [Resource Information]			
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]		Species or species habitat known to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]	
Protected Area Name	Reserve Type	State	Buffer Status	
Pomaderris	Nature Reserve	NSW	In buffer area only	
EPBC Act Referrals			[Resource Information]	
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Highland Source Project	2010/5697	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Southern Distribution Business Park	2006/2960	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

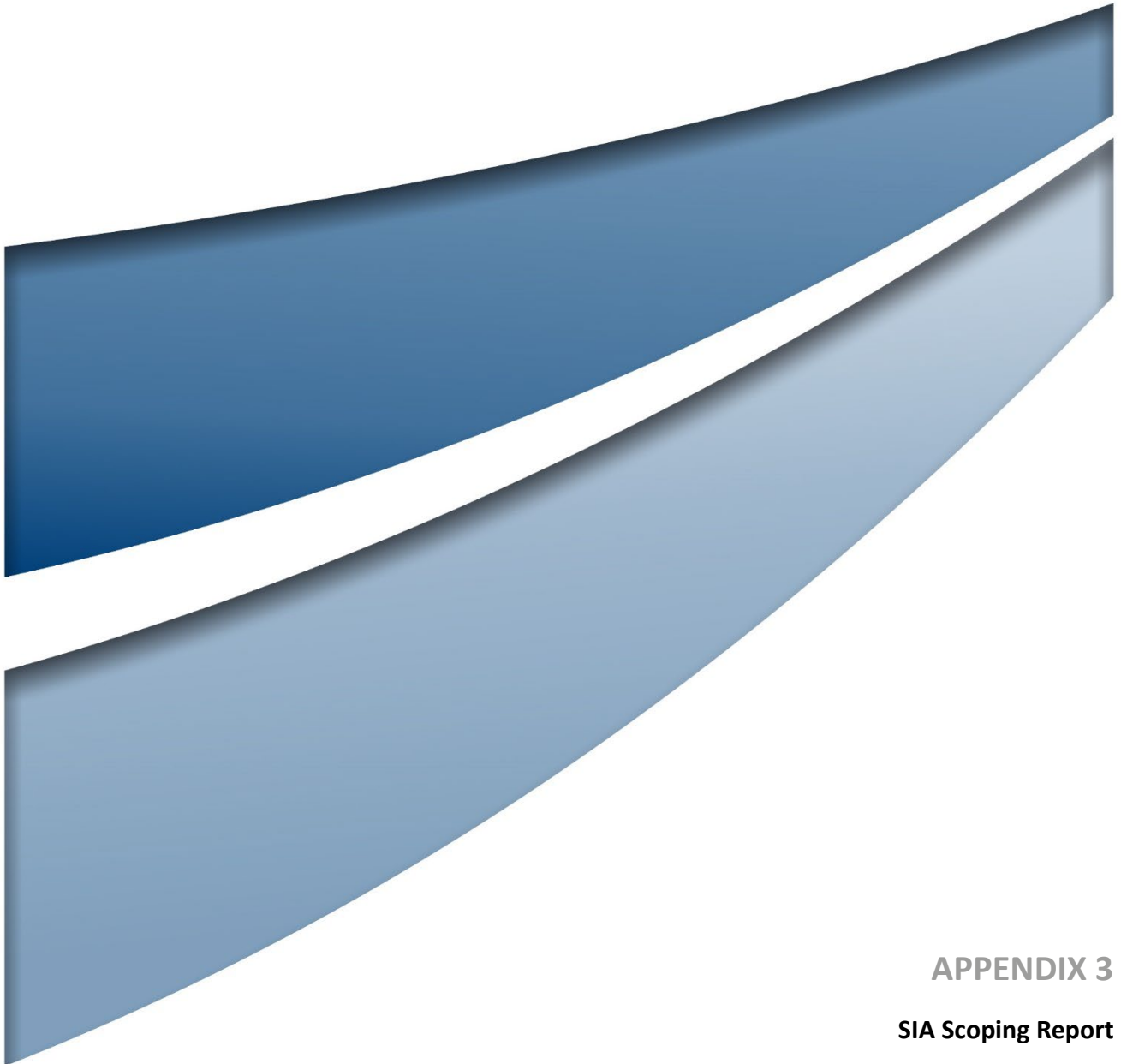
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APPENDIX 3

SIA Scoping Report

SIA SCOPING REPORT

Gundry Solar Farm

FINAL

August 2022



SIA SCOPING REPORT

Gundry Solar Farm

FINAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Lightsource bp

Project Director: Malinda Facey
Project Manager: Marion O'Neil
Technical Director: Dr Sheridan Coakes
Technical Manager: Dr Kate Raynor
Report No. 22223/R05
Date: August 2022



75 York Street, Teralba, NSW 2284



This report was prepared using
Umwelt's ISO 9001 certified
Quality Management System.

Acknowledgement of Country

Umwelt would like to acknowledge the traditional custodians of the country on which we work and pay respect to their cultural heritage, beliefs, and continuing relationship with the land. We pay our respect to the Elders – past, present, and future.

Disclaimer

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Document Status

Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date
Draft V0	Dr Sheridan Coakes	13 July 2022	Malinda Facey	13 July 2022
V1	Kate Raynor	25 August 2022	Malinda Facey	25 August 2022

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1.0 Introduction

This Social Impact Scoping Report documents the process and outcomes of the scoping phase of the Social Impact Assessment (SIA) undertaken by Umwelt for the Gundry Solar Farm (the Project). This Report forms part of the Project's Request for Secretary's Environmental Assessment Requirements (SEARs) lodged with the New South Wales (NSW) Department of Planning and Environment (DPE) by Lightsource bp, as part of the Project's State Significant Development (SSD) application under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This Report has been prepared in accordance with the DPE *Social Impact Assessment Guideline* (2021) or 'the SIA Guideline' and represents the 'Phase 1 SIA' for the Project. The 'Phase 2 SIA' for the Project will form part of the detailed environmental impact assessment (EIA) process and will be incorporated in the Environmental Impact Statement (EIS) for the Project.

1.1 Project Overview

Lightsource Development Services Australia Pty Ltd (Lightsource bp) proposes to develop a large scale solar photovoltaic (PV) generation facility, in the locality of Gundry, New South Wales (NSW), approximately 10 kilometres (km) southeast of Goulburn (see **Figure 1.1**), in Goulburn Mulwaree Local Government Area (LGA). The Project entrance is located at 961 Windellama Road, Gundry, NSW.

The Project will include an approximate 400 Megawatt peak (MWp) of solar electricity generation with a Battery Energy Storage System (BESS) of approximately 200 to 400 Megawatts (MW). The Project will be accessed from Windellama Road off the Hume Highway. The location of the Project and its regional context is presented in **Figure 1.1**.

The Project will supply electricity to the National Electricity Market, via a connection to the 330kV overhead transmission line traversing the north-west corner of the Project Area. The Project will generate enough clean energy for about 133,000 homes and reduce carbon emissions by 670,000 tonnes. The BESS will have capacity to store approximately 2 to 4 hours of (400 to 800 Megawatt hours (MWh) for a 200MW BESS or 800 to 1600MWh for 400MW) of on-demand energy for supply to the grid.

The Project would be located on land zoned RU1 – Primary Production. The area surrounding the Project is characterised predominantly by cleared agricultural lands, rural residential areas, small settlements, and conservation areas. Land within and adjacent to the Project has been subject to extensive vegetation clearing associated with historic agricultural land uses. The site has limited vegetation, and while currently used for agricultural purposes, specifically livestock, is not classified as either Biophysical Strategic Agricultural Land (BSAL) or mapped as Class 1, 2 or 3 under the Land and Soil Capability Mapping for NSW.

The Project will be developed across five freehold properties, covering an area of approximately 708 ha (the Project Area). These properties are primarily used for grazing activities. The Project infrastructure will cover approximately 473 ha (the development footprint) of the 708 ha. The Project layout, development footprint and site access requirements will be subject to further review and refinement as the environmental and social impact assessments progress.

Development consent for the Project is required under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The Project is State Significant Development (SSD) pursuant to Schedule 1

of the *State Environmental Planning Policy (Planning Systems) 2021* as the Project is development for the purposes of electricity generating works with a capital value of over \$30M.

The objectives of the Project are to:

- deliver affordable and sustainable solar power to businesses and communities within NSW
- ensure energy security to NSW and Australia, particularly as the nation's ageing coal fleet is retired
- provide renewable energy that would contribute to the reduction of greenhouse gases across NSW, avoiding up to 670,000 tonnes per annum of carbon dioxide
- through the addition of a BESS, enable the provision of dispatchable energy and possible network and support services to the National Energy Market
- create local and regional economic benefits through significant direct and indirect investment in the area
- support the local regional economy by preferencing local workers and businesses in the development, construction and operation of the Project
- facilitate community engagement and participation in the design, development and operation of the Project
- minimise environmental, social and cultural impacts to the Project Area through adaptive design.

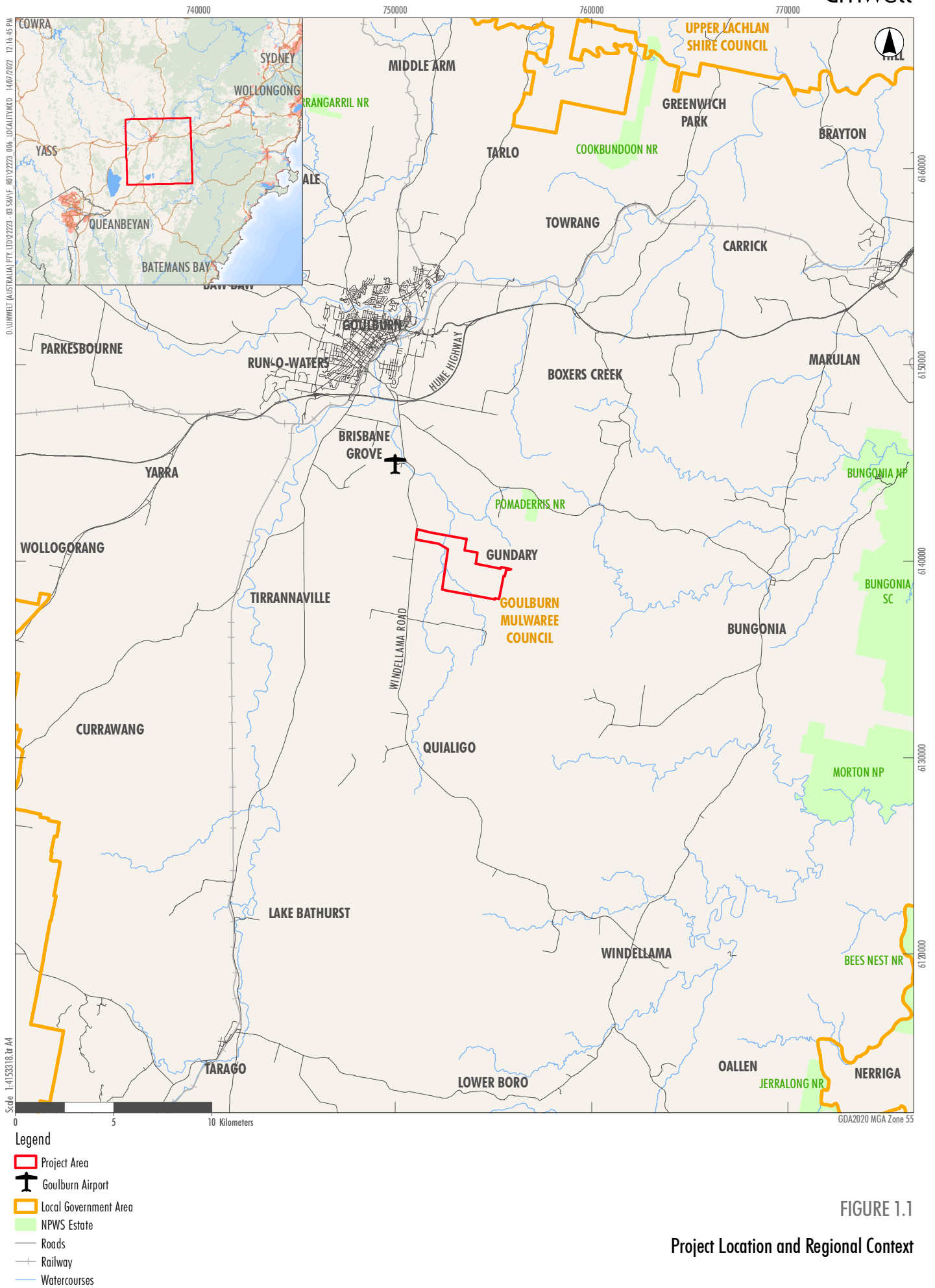


FIGURE 1.1

Project Location and Regional Context

1.2 The Proponent

The Proponent for the Project is Lightsource Development Services Australia Pty Ltd (ABN 26 623 301 799), a wholly owned subsidiary of Lightsource bp Renewable Energy Investments Limited (Lightsource bp). Lightsource bp was formed in 2017 as a joint-venture (JV) between the European solar farm developer Lightsource and global energy company, bp. Lightsource bp is a global leader in the development and management of utility scale solar projects, with a successful track record of progressing projects from early-stage development through to operation. Lightsource bp is a long-term project owner who works closely with local businesses and individuals to deliver sustainable renewable energy projects in a manner that reduces impacts and increases local benefits.

Lightsource bp has developed over 5.5 GW of solar projects worldwide to date,) and currently has a 20+ GW development pipeline across 18 countries. Lightsource bp first entered the Australian market in 2018 and will shortly start operation of their 200 megawatt-peak (MWp) site in Wellington, NSW. Lightsource bp is the owner and operator of this solar farm. Several more projects are in development and under construction across Australia, including, but not limited to:

- West Wyalong Solar Farm, NSW (108 MWp): planning approval received in November 2019. Construction underway, to be completed in late 2022.
- Woolooga Solar Farm, QLD (210 MWp): planning approval received in March 2020. Construction underway, to be completed in late 2022.
- Wellington North Solar Farm, NSW (415 MWp): planning approval received in April 2021. Financial close expected in 2022, with construction to be completed in 2024.
- Wunghnu Solar Farm, VIC (90 MWp): acquired by Lightsource bp in December 2021. Planning approval received June 2018. Financial close expected in 2022, with construction to be completed in 2024.
- Mokoan Solar Farm, VIC (52 MWp): planning approval received December 2018 and June 2021 across two sites.
- West Mokoan Solar Farm, VIC (364 MWp): the Project is made up of two separate sites, one of which received planning approval in November 2020, the other of which planning application is currently under review.
- Goulburn River Solar Farm, NSW (520 MWp): Secretary's Environmental Assessment Requirements received February 2022. Environmental Impact Statement in preparation.
- Sandy Creek Solar Farm, NSW (840 MWp): Secretary's Environmental Assessment Requirements received May 2022. Environmental Impact Statement in preparation.

To achieve positive local and regional community outcomes, Lightsource bp is committed to building strong relationships with key stakeholders and local communities. At the early development stage, emphasis is put on encouraging local participation and community input.

2.0 Methodology

2.1 Assessment Requirements

This Social Impact Scoping Report has been prepared in accordance with the NSW Government's *Social Impact Assessment Guideline* (DPIE, 2021), as part of the environmental impact assessment process, as per **Figure 2.1**.

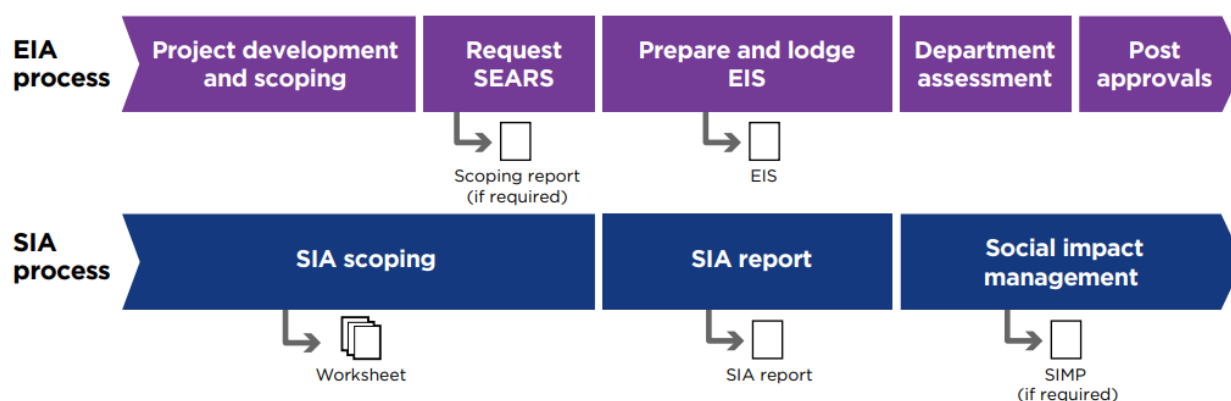


Figure 2.1 SIA and EIS process

Source: (DPIE, 2021)



Figure 2.2 SIA steps in detail

Source: (DPIE, 2021)

This Report forms part of the Scoping Report and accompanies the Request for SEARs to be lodged with the NSW DPE and includes the following key components:

- Social baseline profiling – defining the baseline social context in which the Project is situated.
- Issues scoping – preliminary identification and evaluation of social impacts and issues relevant to the Project, to determine the level of assessment required for the EIS, proportionate to the scale of the Project and the potential impacts of importance to the community.

- As shown in **Appendix A**, the SIA is part of the broader EIS process, with findings from engagement with local landholders and social baseline studies informing impact evaluation and mitigation strategies.

Commencement of SIA early in the Project, informed by community and stakeholder engagement, affords opportunities to effectively integrate social outcomes within the detailed Project planning and design. As is the case with any type of change, some individuals or groups within the community may benefit, while others may experience negative impacts. If negative impacts are predicted, it is the role of the SIA and EIS to determine how such impacts may be addressed effectively to reduce the degree of disruption to those affected. If positive impacts are predicted, the aim of the SIA and EIS is to maximise these opportunities and identify how they might be further enhanced and realised.

Figure 2.3 provides an overview of the key SIA program phases, with this report relevant to ‘Phase 1 – Scoping’.

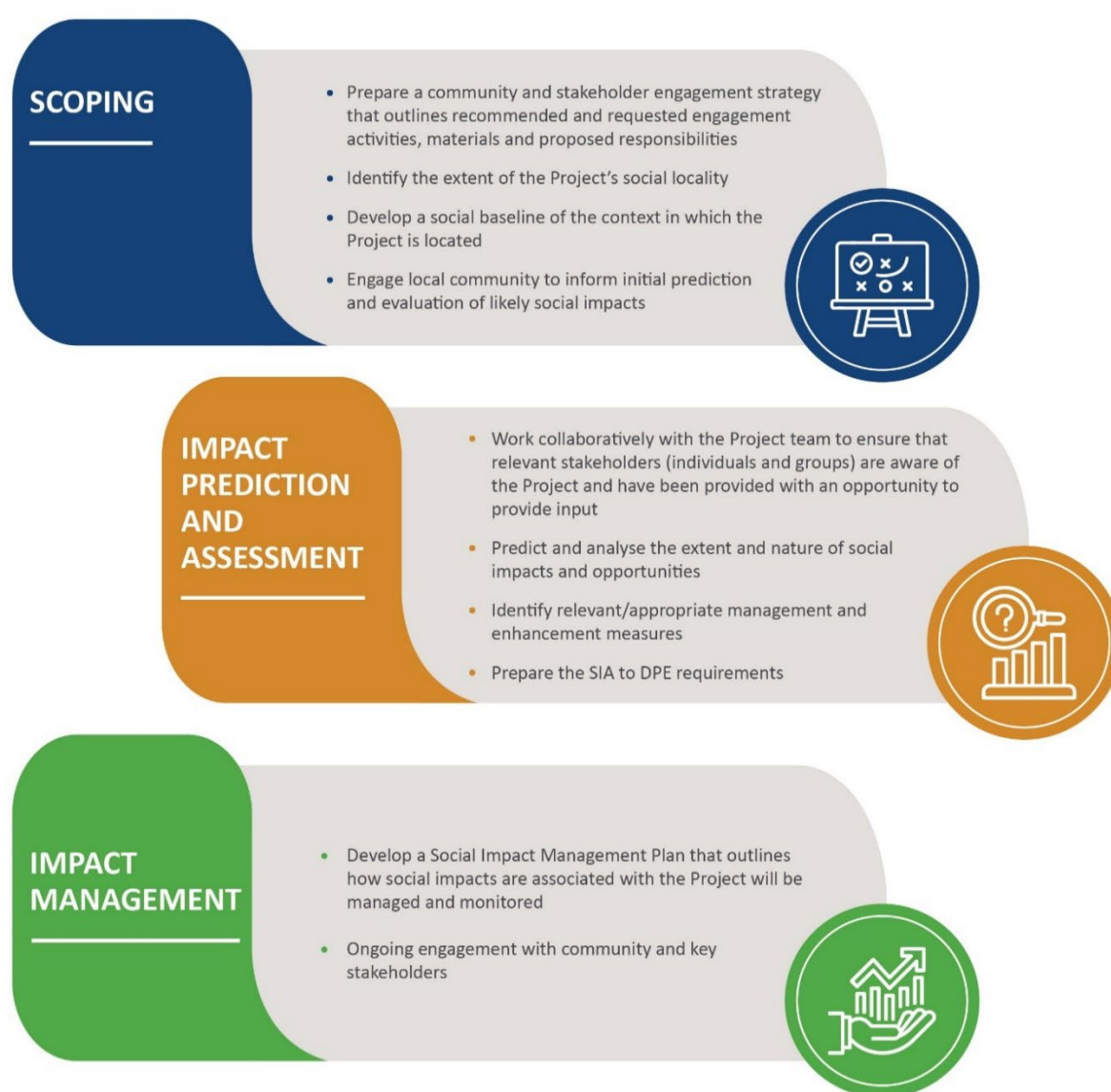


Figure 2.3 SIA Program Phases

Source: Umwelt, 2022

According to the SIA Guideline and as outlined in **Figure 2.4**, social impacts can involve changes to people's:



Figure 2.4 Social Impact Categories

Source: Umwelt, 2022

2.2 Social Locality / Area of Social Influence

The social baseline profile has been compiled based on the Project's social locality or 'area of social influence'. The area of social influence for this Project is defined as:

- The landholdings, property owners and residents situated on or intersecting with the Project Area as well as the footprint of any ancillary infrastructure.
- The State Suburbs (SSC)¹, as per the Australian Bureau of Statistics' (ABS) statistical areas, of Gundry and Goulburn.
- The host local government area (LGA) of the Goulburn-Mulwaree Council.

The area of social influence may extend beyond these boundaries at subsequent stages of Project planning and assessment, to include locations where construction workforces may be sourced and/or housed and where materials may be supplied for the Project.

2.2.1 Social Baseline Profiling

A baseline social profile gathers knowledge from both primary and secondary data sources to increase understanding of the existing social environment in which a project is proposed, and of potentially affected communities. The social baseline profile is a foundational component of SIA, as it provides the basis for which social impacts associated with the Project may be predicted, assessed, monitored, and managed over time.

The SIA Guideline (DPIE, 2021) outlines the key components of a social baseline study, including:

- an understanding of the project's social locality
- identification of who may be affected, including any marginalised or vulnerable groups
- any built or natural features on or near the project that could be affected, or which hold tangible and intangible community values and associations
- an initial analysis of the defining characteristics of the communities within the project's area of social influence, including social, cultural, and demographic trends and other change processes
- history of development within the social area of influence, and how people have responded to these changes previously.

Profiling provides a comprehensive summary of the key characteristics of the people of a community or Project Area and is concerned with developing a detailed understanding of the social and economic context of potentially affected communities.

To gain an understanding of the demographic characteristics and composition of the Gundry locality, and broader Goulburn-Mulwaree LGA, and to ascertain how the Project may potentially change or impact these characteristics, data has been gathered and summarised from the ABS Census (2016 and 2021), the Social Health Atlas of Australia (PHIDU, 2020), and relevant updated data sources where available, and a review of

¹ State Suburbs (SSC) are an ABS approximation of localities gazetted by the Geographical Place Name authority in each State and Territory. (ABS, 2016)

local media, regional strategies and Local Government plans and studies. The key indicators of interest and a brief explanation of their relevance to the study are outlined in **Appendix B**.

Further detail on characteristics of the social locality is outlined in **Section 3.2** through to **Section 3.10**.

2.3 Stakeholder Identification and Consultation

SIA involves the participation and collaboration of people who have an interest in, or those that are affected by, a project. Consultation in this project has been undertaken in accordance with the requirements of Undertaking Engagement Guidelines for State Significant Developments (NSW DPE , 2021). As Burdge (2004) outlines, stakeholders may be affected groups or individuals that:

- live, work, or recreate near the Project
- have an interest in the proposed action or change
- use or value a resource associated with the Project
- are affected by the Project e.g., may be impacted or are required to relocate because of the project.

A stakeholder identification process was undertaken during the scoping phase for the Project to support the planning and delivery of community and stakeholder consultation to inform the SIA. This process involved identifying stakeholders with an interest in the Project, or those directly and indirectly affected by the Project. This included identifying any potentially vulnerable or marginalised groups.

Further definition of the stakeholder identification process is outlined in the Community and Stakeholder Engagement Plan in Appendix D. Consultation in this phase has been undertaken in accordance with the requirements of Undertaking Engagement Guidelines for State Significant Developments (NSW DPE , 2021).

Key stakeholders who were consulted or engaged during the scoping phase (beginning March to August 2022) are outlined in **Table 2.1**. Subsequent phases of the SIA will seek broader involvement across the stakeholder groupings identified and will include further community involvement in relation to key social impacts raised in the scoping phase. It should be noted that levels of engagement are well above standard practice for projects of this scale, especially during the Scoping Phase of engagement.

Table 2.1 Summary of Consultation Mechanisms

Engagement mechanism	Stakeholder category	Number of events/meetings	Total number of people engaged
One-on-one neighbour in-person meetings	Proximal landowners	13	23 ²
Neighbour phone calls	Proximal landowners	52	33 ³
In-person neighbour group meeting held in proximal landholder residence	Proximal landowners	1 meeting	15 ⁴

² Total number of people engaged is higher than number of events/ meetings because many meetings were with more than one person at a time

³ Total number of people engaged is lower than number of events recorded as some neighbours were called numerous times over the course of engagement.

⁴ Most, but not all, proximal landholders who attended this meeting were also engaged via one-on-one meetings

Engagement mechanism	Stakeholder category	Number of events/meetings	Total number of people engaged
Key stakeholder group interviews (online and in-person)	Local, State and Federal Government Community groups and associations Training / education Providers Aboriginal Organisation	15	34 participants
Community information stalls at local markets – Bungonia and Goulburn	Broader community	2 market stalls	Approximately 50 people consulted across both markets
Online survey	Community groups Proximal landowners	1	53 survey responses completed ⁵ (up to 12 July 2022)
Letterbox drop of Information sheets (April 2022) (See Appendix F)	Broader community	1	Letters distributed via mail to 3,525 households across the Goulburn Mulwaree LGA
Email of FAQ information sheet (July 2022) (See Appendix F)	Key stakeholders	1	105
Letterbox drop of FAQ information sheets (July 2022) (See Appendix G)	Broader community	1	Letters distributed via mail to 12,420 households across the Goulburn Mulwaree LGA

**It should be noted that some stakeholders were engaged via multiple mechanisms.
Source: Umwelt, 2022*

While **Table 2.1** presents the numbers of stakeholders engaged, based on the type of engagement mechanism utilised (i.e. interview, in-person meeting etc), **Table 2.2** provides a summary of the number of stakeholders engaged by stakeholder group in the scoping phase. Numbers are presented in this way to provide transparency, acknowledging there is overlap across mechanisms for a number of stakeholders, especially neighbours that immediately adjoin the Project area. Similarly, not all stakeholders in a single stakeholder group were engaged in the same way.

Table 2.2 Stakeholders Consulted

Stakeholder Group	Number of Participants
Proximal Landholders ⁶ (this refers to neighbours within 2 km of Project area boundary).	23 households engaged, 55 people
Community group/ Association	15 groups engaged, 30 participants
Community resident (wider community)	Approximately 50 ⁷

⁵ It should be noted that of the 185 online survey responses received, only 53 respondents provided answers to the survey questions beyond stating their stakeholder grouping. Therefore, outcomes of the survey have only been analysed for the 53 respondents that completed the survey.

⁶ Proximal neighbours refers to landholders within 2km of the Project boundary. Not all proximal neighbours share a boundary with the Project Area.

⁷ Please note, numbers are approximate to reflect approximate numbers of people engaged across the two market stalls in Bungonia and Goulburn. While Umwelt gathered contact details for most people, not everyone wanted to receive follow-up information and so were not formally counted in engagement counting

Stakeholder Group	Number of Participants
Government (Local, State and Federal representatives)	10
Business or Service Provider (Including Training NSW, local real estate agents and the RFS)	4
Aboriginal Group Representatives	3 groups engaged, 10 participants
Total number of stakeholders consulted	Approximately 160
Unaddressed mail FAQ documentation information recipients in broader Goulburn Mulwaree LGA	12,420

Source: Umwelt, 2022

Of the landholders who completed the online survey (n=53), 32 were aged 55 years and over, with 20 aged between 35 – 54 years, and 3 aged under 35 years. The average length of time landholders had lived in the area was 16 years, with a median length of residence of 13 years.

Proximal properties to the Project ranged in size from 13 to 200+ acres (5 to 80+ hectares), with some grazing sheep, and others smaller hobby farms. There are 3 identified proximal neighbours (proximal neighbours are defined as those living within 2km of the Project Area) who have lived on their respective properties as multiple generation farmers.

Community groups and key stakeholders engaged in the scoping phase of engagement include: Goulburn Mulwaree Council; Community Energy for Goulburn; Training NSW; Wendy Tuckerman MP; The Goulburn Group; Goulburn Chamber of Commerce; Angus Taylor MP; Regional NSW; Mulwaree Aboriginal Community Inc; Tarago Progress Association; Regional Development Australia; NSW Farmers Association; Penny Ackery (independent candidate for Hume); Greg Bairnes (Labor candidate for Hume); Citizens' Climate Lobby; and the Rotary Club of Goulburn.

In terms of information provision in relation to the Project, the first information sheet was delivered to 3,525 residences in Goulburn and Gundry. The Community Information Sheet (refer to **Appendix F**) provided an overview of the Project, an outline of the assessment process, and contact details to facilitate engagement with the project team.

The FAQ document was developed based on questions raised during the first round of consultation and was emailed to 105 key stakeholders. This document was also distributed via mail to 12,420 residents in the Goulburn, Gundry and broader LGA area. This can be found in **Appendix G**.

2.4 Preliminary Social Impact Assessment

As noted above, a preliminary evaluation of the social issues and impacts identified during the Scoping Phase (outlined in **Section 5.0**) has been undertaken to inform Project refinements, design, and detailed planning and understand the level of assessment required for each impact in the EIS/SIA-preparation phase.

The significance assessment has been undertaken using the risk matrix provided in the NSW DPE SIA Guideline (2021) which considers social impact magnitude and likelihood, as well as key characteristics of impact (extent, duration, intensity or scale, sensitivity or importance and level of concern or interest). A significance rating has been assigned from the perspective of the affected stakeholder group, in addition to

a significance rating derived from the risk matrix in the SIA Guideline and defines what impacts will be further investigated and validated as part of subsequent phases of the SIA and the EIS.

		Magnitude level				
		1 Minimal	2 Minor	3 Moderate	4 Major	5 Transformational
Likelihood level	A Almost certain	Medium	Medium	High	Very High	Very High
	B Likely	Low	Medium	High	High	Very High
	C Possible	Low	Medium	Medium	High	High
	D Unlikely	Low	Low	Medium	Medium	High
	E Very unlikely	Low	Low	Low	Medium	Medium

Figure 2.5 Social Impact Significance Matrix

Source (DPE, 2021)

A key objective of the scoping phase SIA is to identify the level of assessment required for each impact in the assessment phase, as per the SIA Guideline. The level of assessment determines the extent of effort and data required to assess the impact and will fall into one of four categories as outlined in **Table 2.3**.

Table 2.3 Guide to Determining Levels of Assessment for Each Social Impact

Threshold	Level of assessment of the impact	Meaning
Three or more 'yes' or 'unknown' significant characteristics	Detailed assessment	Impact will not be assessed in other EIS technical studies and will be primarily assessed by specialists in the Phase 2 SIA.
Two 'yes' or 'unknown' significant characteristics	Standard assessment	Impact will be partially assessed in other EIS technical studies; however, further information and evaluation is required in the SIA to analyse the social dimensions of the impact.
One 'yes' or 'unknown' significant characteristic	Desktop integration assessment	Impact will be mostly assessed in other technical studies in the EIS, and desktop review will cross-reference and integrate those studies in the SIA Report
No 'yes' or 'unknown' significant characteristics	No further assessment	The social impact is unlikely to be experienced by anyone, although a monitoring framework will incorporate mechanisms to respond to any unanticipated impacts.

Source: (NSW Department of Planning, Industry, and Environment, 2020)

3.0 Social Baseline

This section describes the social baseline profile of the communities based on the definition of the social locality and area of influence for the Project. It provides initial analysis of the defining characteristics of the Goulburn Mulwaree LGA communities considering demographic, social and economic indicators. Further, it considers the natural and physical attributes of the locality and an understanding of how people currently live, work and recreate in the area.

The following components have been considered in the social baseline for this Project, namely:

- geographic and spatial – identification of communities of interest and relevant stakeholders (as noted in **Section 2.3**)
- governance – an understanding of the relevant governance structures including those of the Traditional Owners and local, State and Federal government jurisdictions
- development context – a review of the recent history of local communities, including cultural characteristics and community values, as well as previous experiences with renewable energy development projects and other development issues to ascertain the response of local communities to these changes
- community capital/assets – an assessment of levels of vulnerability or resilience across the communities of interest and their capacity to cope with change
- key community values, issues, and concerns – documentation of current community issues, as identified in key strategic planning documents, regional plans and/or studies as well as within local and regional media.

3.1 Federal Energy Policy and Community Context

There has been growing global recognition, including at a societal, political and individual level, of the need to mitigate the environmental effects associated with fossil fuel energy generation. Such thoughts have manifested into international, national, and state-wide commitments supporting the development of clean and sustainable energy projects. A 2021 survey of 3,915 Australians conducted by Griffith University found that 87% of respondents believed climate change should be a key priority of government, 22% felt climate change was an ‘extremely serious’ problem right now and 45% believed climate change would be an extremely serious problem by 2050 (Bradley, Deshpande, & Foxwell-Norton, 2022). The Lowy Institute Poll 2021 found that 91% of Australians support subsidising renewable energy (Lowy Institute, 2021) while 92% of people either strongly support or support renewable energy in NSW (Office of Environment and Heritage, 2015).

At the COP21 climate talks in Paris (December 2015), the Australian Government committed to (and has now ratified) an emissions target of a 26-28% reduction by 2030 compared to 2005 levels. The recently elected Federal Labor Government’s Powering Australia plan highlights its goals to create jobs, cut power bills and reduce emissions by boosting renewable energy (Australian Labor Party, 2021). This includes a goal to reduce Australia’s emissions by 43% by 2030, supported by large-scale support for renewable energy projects and infrastructure. A reduction of 43% requires approximately 82% renewables on the NEM by

2030, thereby requiring a massive acceleration in the amount of new renewable generation required to be added to the NEM in the next eight years. The Australian Energy Market Operator (AEMO), the independent organization who manages the National Energy Market (NEM) in Eastern Australia, recently released their draft 2022 Integrated Systems Plan (ISP) setting out their 30-year plan for the development of the Australian Electrical system. In this document they stated that their most likely scenario required an additional 122GW of renewable energy generation, more than double the amount of the total generation in the NEM today, to meet Australia's growing demand for power and maintain Australia's energy security (AEMO, 2022).

At a state level, the NSW Government has also recently developed a draft NSW Climate Change Policy Framework in support of the COP21 commitments and to demonstrate action on climate change (further discussed in **Section 3.1.1** below) (NSW DPE, 2020). While still in its infancy, long term objectives of this Framework include achieving net zero emissions by 2050 and enabling NSW to become more resilient to climate change. This includes taking advantage of opportunities to grow new industries in NSW, such as 'advanced energy', including combined renewables and storage.

3.1.1 Energy Policy in NSW

Australia's commitment at the international level to the Paris Climate Accord has influenced the growth of and investment in the renewable energy sector across the country.

In 2013, the NSW Government released the *NSW Renewable Energy Action Plan* (the Plan) which consists of 24 actions under 3 goals outlining the State Government's intention to work with communities and the renewable energy industry to increase renewable energy generation in the state. The Plan was implemented alongside the *Energy Efficiency Action Plan*, and the successful implementation of the Plan was completed in December 2018.

The Plan guides renewable energy development and aims to streamline negotiations between network service providers and investors to make timeframes for grid connections in NSW more competitive. The Action Plan also encourages early and effective community engagement in renewable energy projects (NSW Government, Planning & Environment, 2017).

In November 2020, the NSW Government announced its plans to invest \$32 billion into renewable energy over the next decade as part of its *NSW Electricity Infrastructure Roadmap*. The Government outlined that such investment will generate 6,300 construction jobs and 2,800 ongoing jobs, along with \$1.5 billion in lease payments for landowners, especially in regional NSW for wind and solar farms. The government also announced a Manufacturing Renewables Taskforce to "create local jobs and support local industry".

The NSW Government's current energy security policy and approach to a clean energy transition is being delivered through the strategic development of the renewable energy sector, as outlined through the *NSW Government's Renewable Energy Action Plan* (2013), *Electricity Strategy* (2019) and the *Electricity Infrastructure Roadmap* (2020).

The Project is consistent with the objectives of the Electricity Strategy and Infrastructure Road Map, in aiming to provide large-scale renewable electricity generation that is affordable and reliable

Furthermore, in supporting the implementation of these projects, and in providing communities more certainty around the delivery of energy infrastructure, the Government has provided an opportunity for

communities to participate more centrally in the projects' development through the introduction of the NSW *SIA Guideline* (DPIE, 2021) and updated guidelines relating to key assessment issues.

3.1.2 Regional and Local Policy

Renewable energy is also addressed in regional and local policy documents, with the key documents summarised below.

South East and Tablelands Regional Plan 2036

The *South East and Tablelands Regional Plan 2036* is the NSW Government's 20-year blueprint for the future of the South East and Tablelands region of NSW. This plan acts as the overarching strategic plan for the region, guiding the implementation of Local Strategic Planning Statements and the assessment of planning proposals such as rezonings as well as supporting key infrastructure and policy priorities for the region.

Under this plan, renewable energy is identified as a priority growth sector to diversify the region's economy based on the established network of high voltage transmission lines that traverse the region and contribute to the NSW Government's target for net zero emissions by 2050. Direction 6 under Goal 1 (a connected and prosperous economy) of the plan is to "*position the region as a hub of renewable energy excellence*".

The Project is considered to be consistent with the goals, directions and actions for renewable energy development set out in the *South East and Tablelands Regional Plan 2036*.

Goulburn Mulwaree Council Local Strategic Planning Statement

Adopted on 18 August 2020, the *Goulburn Mulwaree Local Strategic Planning Statement* (Goulburn Mulwaree Council, 2020) is a 20-year vision for land use planning for Goulburn Mulwaree and provides an overarching strategic direction for future land use planning in the Goulburn Mulwaree LGA.

Planning themes and priorities of the Local Strategic Planning Statement are around infrastructure, community services and wellbeing, economy, environment and sustainability. Specifically, Goulburn Mulwaree Council aims to promote renewable energy projects, particularly in areas not identified as being of prime crop and pasture potential, in order to diversify the regional economy and promote a sustainable future.

The Project is considered to be consistent with the goals, directions and actions for renewable energy development set out in the *Goulburn Mulwaree Council Local Strategic Planning Statement*. In particular, it furthers strategic priorities in renewable energy and is not located on land identified as having with prime crop and pasture potential.

3.1.3 Renewable Energy Projects near Goulburn

Goulburn Mulwaree LGA is home to 31,132 residents. While almost two thirds of residents live in the township of Goulburn, there are also a series of towns, villages and rural localities across the LGA including Marulan, Middle Arm, Tarago, Tallong, Bungonia, Lake Bathurst, Towrang, Windellama and Parkesbourne (Goulburn Mulwaree Council, 2020).

In recent years, proposed renewable energy projects across NSW have had diverse responses from local communities in relation to their perceived environmental and social impacts. The cumulative nature of renewable energy projects must also be considered given the NSW Government's *NSW Electricity Infrastructure Roadmap* and other proximal renewable energy projects proposed or developed within the Goulburn Mulwaree LGA which have experienced community opposition in recent years (largely wind farm developments).

The Project is located outside of a Renewable Energy Zone (REZ). In line with the strategies noted in **Section 3.1.1**, the NSW Government has announced a number of REZ's including in the Central West Orana (CWO) and New England (NE), with numerous other areas under review. In total, these REZ's will deliver an intended network capacity of 12 gigawatts of new renewable energy generation to the NEM. More broadly, in contrast, the Australian Energy Market Operator (AEMO) forecasts the need for 125 GW of additional Variable Renewable Energy by 2050 to meet demand for energy as coal-fired generation withdraws. This means trebling the existing 16GW of VRE by 2030 – then doubling that capacity by 2040, and again by 2050 (AEMO, 2022). To achieve this, energy policy supports development of energy projects throughout many locations in Australia and substantial investment in renewable energy will be required across the country, both within and outside of REZ's to ensure ongoing energy security.

Further, as **Figure 3.1** illustrates, the Project is proposed within an area where there exists a critical mass of other wind and solar projects. Within NSW, the REZ concept is still quite recent, with REZs only being formally announced in 2020. Given that until recently no REZ existed, all renewable energy projects constructed and approved to date in Australia, even those now geographically located in planned REZs, have been developed outside of the REZ process.

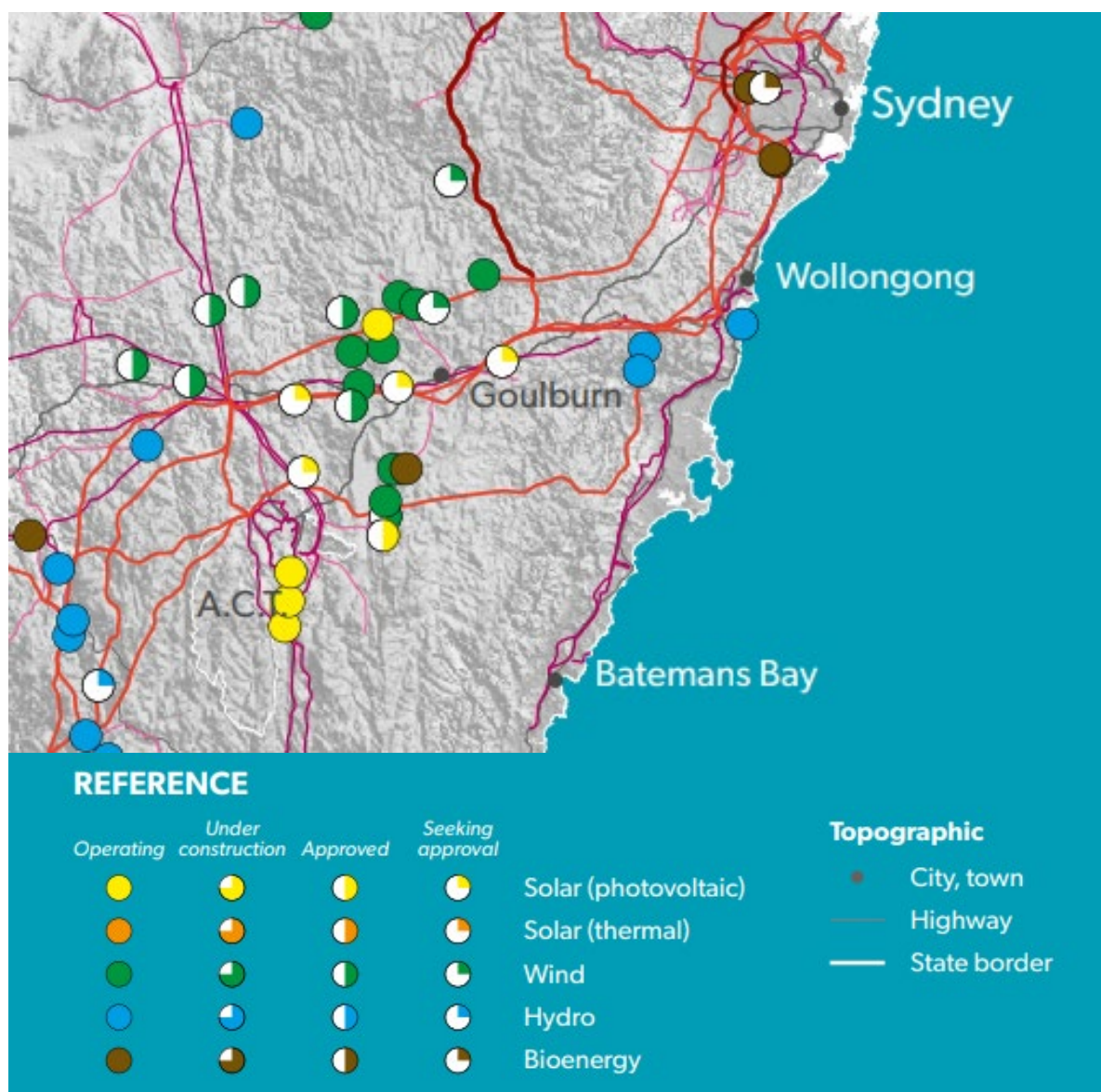


Figure 3.1 Renewable Energy Pipeline

Source: (Department of Regional NSW, 2018)

Crookwell Wind Farm and Collector Wind Farms are examples of renewable energy projects that have been developed in the area surrounding Goulburn. Commissioned in 1998, Crookwell was the first wind farm in New South Wales and utilises 8 Vestas V44-600 kW wind turbines, which at the time were state of the art. The project was used also to educate the wider community about the effects and benefits of the technology and included information displays and a viewing platform (Tilt Renewables, 2022). The Collector Wind Farm reached full generation in February 2021 with 226.8MW capacity, with the potential to save approximately 320,000 tonnes of CO₂ emissions per year. Close to 150 jobs were created during the project's construction which took place during the pandemic, with 10 full-time roles to manage ongoing operations (Collector Wind Farm, 2022).

A select number of comparable projects currently proposed in the region have been reviewed to identify how relevant stakeholders and communities have responded to these proposed developments, to inform an understanding of community perceptions and potential impacts in relation to the proposed Gundry Solar Farm. These projects are outlined in **Table 3.1**.

Table 3.1 Solar Energy Projects proposed in Proximal Region

Project	Location	Status	Notes on opposition/ support	Likely cumulative Impact
Marulan Solar Farm Proposed by Terrain Solar	Carrick Approx. 35 km from Project Area	Preparing EIS	Preliminary engagement with council identified the following key issues: need for effective engagement, benefits of co-location with other projects like Gunlake and Holcim quarries, bushfire prone status of land, and emphasized the importance for considering any potential impacts on Sydney Drinking Water catchment, considering the Project area's proximity. Further, the Project includes disruption to cultural heritage values and accessibility issues.	Scoping report stated construction to start late 2021, however EIS is still being prepared. During the peak of construction there will be roughly 200 workers on site, drawing in skilled local and non-local contractors and sub-contractors. Cumulative impact may emerge in the form of pressure on workforces, housing supply and sense of place. Positive impacts may emerge by supporting a concentration of renewable energy expertise and production in Goulburn.
Parkesbourne Solar Farm Parkesbourne Solar Pty Ltd (the Applicant).	16 km southwest of Goulburn Approx. 20 km from Project area	Preparing EIS	Preliminary community feedback generally positive. Some neighbours raised concerns about impacts on property value, glare and visual amenity.	The project construction is likely to commence in 2023 and is expected to enter into commercial operation in 2025. There is no indication on workforce numbers. Cumulative impact may emerge in the form of pressure on workforces, housing supply and sense of place. Positive impacts may emerge by supporting a concentration of renewable energy expertise and production in Goulburn.

Source: (NSW Planning Portal , 2022)

As noted in the table above, key impacts relating to these projects included concerns relating to bushfire prone land, local groundwater contamination, property devaluation, visual amenity from glint and glare and cultural heritage, with emphasis placed on the need for effective community engagement.

General community perceptions of renewable energy can also be drawn from local media reporting. See **Appendix C** for a media review of community attitudes to renewable energy, including a strong emphasis on support for renewable energy projects, community opposition from immediate neighbours and political contention about the Project, climate change and renewable energy more broadly.

3.1.4 Other Major Projects in the Region

There are a number of other major projects which are currently underway within the Region, which provide an understanding of cumulative impacts that may be experienced should the project proceed.

Table 3.2 Major Projects in the Goulburn Area

Project	Location	Status	Notes on opposition/ support	Likely cumulative Impact
Woodlawn Advanced Recovery Centre	Tarago	Preparing EIS	Tarago Progress Association calls on neighbouring councils to oppose Veolia plan, strongly against the project.	3-year construction period 300 jobs will be created during construction and 40 jobs will be created during operation. There is a potential for cumulative impacts on accommodation, traffic and workforce access.
Goulburn Poultry Processing Mixed Use Development	Goulburn	Response to Submissions	Submissions outlined concerns for noise, water access and use, including project locations in relation to river systems, biosecurity, Water discharge quality, Visual impact, Aboriginal Cultural Heritage, Air Quality and odour	Peak of 100 people during construction, peak operation will see workforce of 264. Limited cumulative impact
Goulburn Base Hospital Redevelopment – Modification 2 Design refinements	Goulburn	Determination	Community largely supportive	Construction workforce may have a cumulative impact on access to accommodation, and an increase in traffic.
Wingecarribee-Goulburn Water Pipeline	Goulburn	Determination	Submissions outline concerns for Water discharge quality, Visual impact, Aboriginal Cultural Heritage	Construction workforce may have a cumulative impact on access to accommodation, and an increase in traffic.

Source: (NSW Planning Portal, 2022)

3.2 Local Setting

The Project area covers 708 ha and is situated in the small suburb of Gundary, home to 270 people and 109 households with a median age of 42 years (ABS, 2016). The site is located within the broader Goulburn Mulwaree Local Government Area (LGA), with other small localities in the Project Area including:

- Tirrannaville, approximately 6.3 km west
- Brisbane Grove, approximately 7 km north-west
- Boxers Creek, approximately 9.3 km north-east
- Quialigo, approximately 9 km south
- Bungonia, approximately 13.5 km east.

These surrounding localities are all small suburbs with higher than state average median ages.

The site is located approximately 10 km south-east of the Goulburn city centre which is the primary location where residents from the abovementioned suburbs access services and facilities.

Goulburn Airport is approximately 4 km north-west of the Project Area. The Hume Highway is approximately 7 km north of the Project Area and acts as the primary connection between Sydney and Canberra. Other key routes and transport options to the Project Area are detailed in **Section 3.10**.

As **Table 3.3** illustrates, most of the population of the social locality live in Goulburn (population 28,835), with smaller populations located in the suburbs and townships surrounding Goulburn.

Table 3.3 Population surrounding the Project

Communities	Population (2016)	Approximate distance from Project area
Goulburn Mulwaree LGA		
Goulburn	28,835	10 km
Marulan	1,178	42.4 km
Middle Arm	474	28.5 km
Tarago	426	33.8 km
Tallong	813	49.1 km
Bungonia	367	30.5 km
Lake Bathurst	228	27.8 km
Towrang	171	26.4 km
Windellama	357	27.8 km
Parkesbourne	170	30.9 km

Source: (ABS, 2016)

3.3 Sustainable Livelihoods Approach – Community Capitals

To understand the communities of interest to the Project and to evaluate their resilience and adaptive capacity to change, the social baseline has utilised the Sustainable Livelihoods Approach (U.K. Department for International Development [DFID] 1999) for analysis purposes.

The DFID approach draws on broad categories of community capitals as a fundamental basis to identifying and further enhancing community capacity and resilience. This methodology has been further developed by Coakes and Sadler (2011) to reflect the five capitals approach – human, social, natural, physical, and economic/financial, with the addition of political capital. The vulnerability of each capital area can be assessed through the selection of a suite of socio-economic indicators specific to each capital area to assess a community's vulnerability to change or conversely their adaptive capacity; and has been widely applied within SIA practice. Elements of each capital area are further outlined in **Figure 3.2**.

Using the Capitals framework outlined above, the following sections summarise key community strengths and vulnerabilities of the social locality with additional information provided in the following sections.

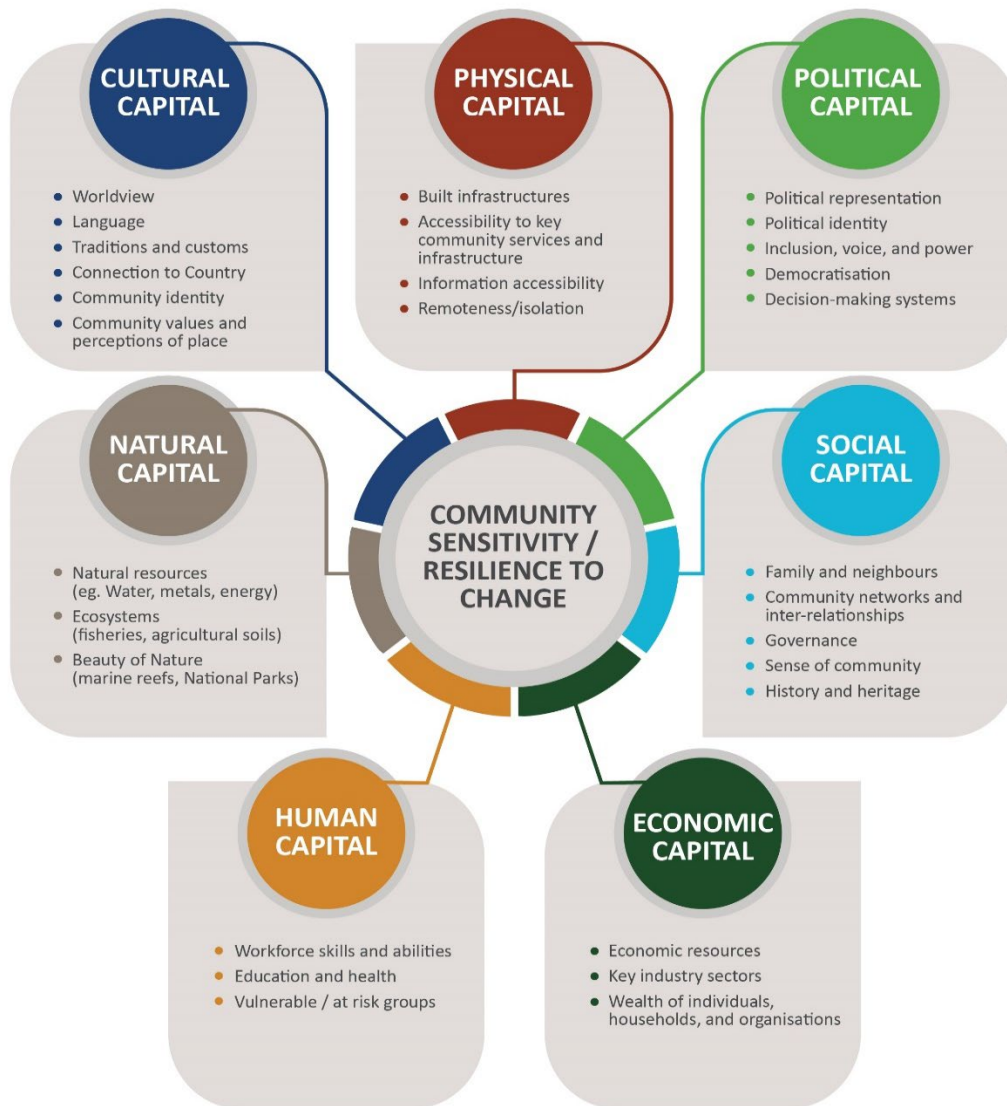


Figure 3.2 Community Capitals

Source: (Coakes & Sadler, 2011)

3.4 Natural Capital

Natural capital refers to the natural assets and resources that contribute to community sustainability. Natural capital can include resources such as minerals, land, forests, and waterways, that provide benefit to the community, as well as environmental assets that provide cultural, social, or recreational value.

The natural capital of the Project Area and locality can be characterised as outlined below.

Key aspects	Description
Situated in the Sydney Drinking Water Catchment	Goulburn is located at the confluence of the Wollondilly and Mulwaree Rivers, and the Goulburn Mulwaree LGA is located within the Warragamba and Shoalhaven catchments which form part of the Sydney drinking water catchment. The Sydney Drinking Water Catchment supplies drinking water for almost 60 per cent of the State's population. Rigorous planning and development controls apply to proposals within the Sydney Drinking Water Catchment and is regulated by State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 (SEPP) (Water NSW, 2020). Under the SEPP, proposed developments that need consent under a council's local environmental plan cannot be approved unless the consent authority is satisfied that the development will have a neutral or beneficial effect (NorBE) on water quality (Water NSW, 2020).
Extensively modified vegetation	The natural ecosystems of Goulburn Mulwaree have been extensively modified since European settlement and vegetation cover has been reduced by more than half. Clearing has occurred predominately in the more fertile lands and along riparian zones as this is the most productive land. Only a small portion of the LGA is part of formal reserves. The main threat to remaining vegetation and to important ecosystem functions (carried out by riparian zones and wetlands) is posed by further clearing associated with agricultural practices, gully erosion and rural residential development in agricultural areas. Weed invasion has the potential to reduce, and in some cases, eliminate native and introduced pastures and impact significantly upon agricultural enterprise (Goulburn Mulwaree Council, 2020).
History of agriculture and grazing	The soils, climate, topography, and land use vary significantly across the Region, with high and medium rainfall production zones and a range of farming enterprises. The predominant farm enterprises are focused on livestock (sheep and beef, and mixed farming production) (AgEconPlus, 2018). Agriculture is the primary land use within the Project Area and the surrounding area, including sheep and cattle grazing and dry land cropping, with scattered rural dwellings. The usability of the agricultural land has been decreasing in the past decade due to properties being subdivided from larger rural lots to smaller rural lifestyle blocks.
Region includes conservation areas, national parks and reserves	The closest national park, state park or nature reserve is the Pomaderris Nature Reserve (covering 100 ha) which is approximately 3.5 km northeast of the Project Area. The Project is located in the Southeast and Tablelands region. The region hosts large conservation areas, national parks and reserves and is home to threatened plant and animal species. Bungonia National Park is less than 40km away from the site, and offers caving, canyoning, rock climbing, abseiling, hiking, and bike trails (NSW National Parks and Wildlife Service, 2022)
The land is generally more suitable for grazing and is not capable of supporting regular cultivation due to various limitations	The proposed site has a Land Soil Capability rating of 4 and 5 across the site. It is not classified as Biophysical Strategic Agricultural Land (BSAL) or State Significant Agricultural Land (SSAL) in the Draft State Significant Agricultural Land Map (Department of Primary Industries, 2022)

Sources: (Water NSW, 2020) (Goulburn Mulwaree Council, 2020) (Ag Econ Plus Consulting, 2018) (NSW National Parks and Wildlife Service, 2022)

3.5 Human Capital

The level of human capital within a community is assessed by considering population size, age distribution, education and skills, general population health and the prevalence of at-risk groups within the community. The following table characterises the human capital of the social locality.

According to the 2021 census, the Goulburn Mulwaree LGA is home to 32,053 people. This population predominantly lives within Goulburn (23,320 people, 76% of the total population), with a further 16% (4,897 people) living in the Rural North and 8% (2,545 people) living in the Rural South (Goulburn Mulwaree Council, 2019).

Compared to the broader population of NSW, the social locality exhibits:

Key aspects	Description
Relatively steady population growth	From 2016 to 2021, Goulburn Mulwaree Council area's population increased from 29,609 to 32,053 people (8.25% increase). This represents an average annual population change of 1.8% per year over the 5-year period, compared to an 8.1% increase in population in NSW across the same time frame. This indicates that population increases are slightly faster than average (Profile ID Community, 2022). Goulburn-Mulwaree's population is projected to increase by at least 4,700 people by 2036, requiring more than 3,000 new dwellings (Goulburn Mulwaree Council, 2020).
An older and ageing population	Goulburn Mulwaree has a median age of 41 years, higher than the NSW and Australian average of 39 years. The population growth projections show strong growth in the number of people aged over 65 years old living in Goulburn Mulwaree, rising from 5,700 in 2016 to 9,350 in 2041.
Lower density population	Goulburn Mulwaree is a predominantly rural, low-density area. The township of Goulburn has the highest population density within the LGA, 430 persons per square km (Goulburn Mulwaree Council, 2019). As a means of comparison, the population density for Canberra is 443.5 people per square km.
Good access to health and education facilities	Goulburn provides several major government and private facilities with health, education and correctional services contributing significantly to employment. The Government facilities include the Goulburn Correctional Centre, the NSW Police Academy, Goulburn Base Hospital, and the Illawarra Institute of Technology (TAFE).
Substantial labour resources	The Southern Tablelands Region has substantial labour resources that well exceeds the internal demand for labour. At least 29% of the employed labour force residing in the region commute to a work location outside of the region. Compared to Regional NSW, the Region has a higher proportion of people who have completed Year 12 or equivalent and a higher proportion of people holding university qualifications (AgEconPlus, 2018). Within the Goulburn-Mulwaree LGA, 89% of jobs are held by local residents.
Medium SEIFA Socio-Economic Index	The Goulburn Mulwaree LGA Socio-Economic Indexes for Areas (SEIFA) in 2016 fall in the 5 th decile, which measures the relative level of socio-economic disadvantage and/or advantage based on a range of Census characteristics. Comparisons with other SSCs in the area is further detailed in Figure 3.3 below.

Key aspects	Description
Lower University educational attainment but higher levels of trade skills	The population of Goulburn Mulwaree has lower levels of educational attainment on average than the broader population of NSW. For example, a much higher percentage of the population indicated that their highest level of schooling was year 10 or equivalent in the LGA (35%) in comparison to NSW (23%). For post-secondary education, more people within the LGA completed certificates (24%) in comparison to NSW (18%). A smaller percentage within the LGA completed bachelor's degree Level and above (11%) than those in NSW (24%).

Sources: (Profile ID Community, 2022) (Goulburn Mulwaree Council, 2020) (Goulburn Mulwaree Council, 2019) (Ag Econ Plus Consulting, 2018) (ABS, 2016) (ABS, 2021)

Figure 3.3 below indicates the communities of interest to the Project in relation to their levels of relative socio-economic disadvantage. As the figure illustrates, Gundry and Goulburn are both in the 5th decile and below, indicating that approximately half of the other SSC's and LGAs in NSW have a higher level of socio-economic advantage in comparison to these areas. Specifically, Gundry has the lowest level of socio-economic advantage compared to other communities within the area of social influence and is within the lowest 20% in NSW.

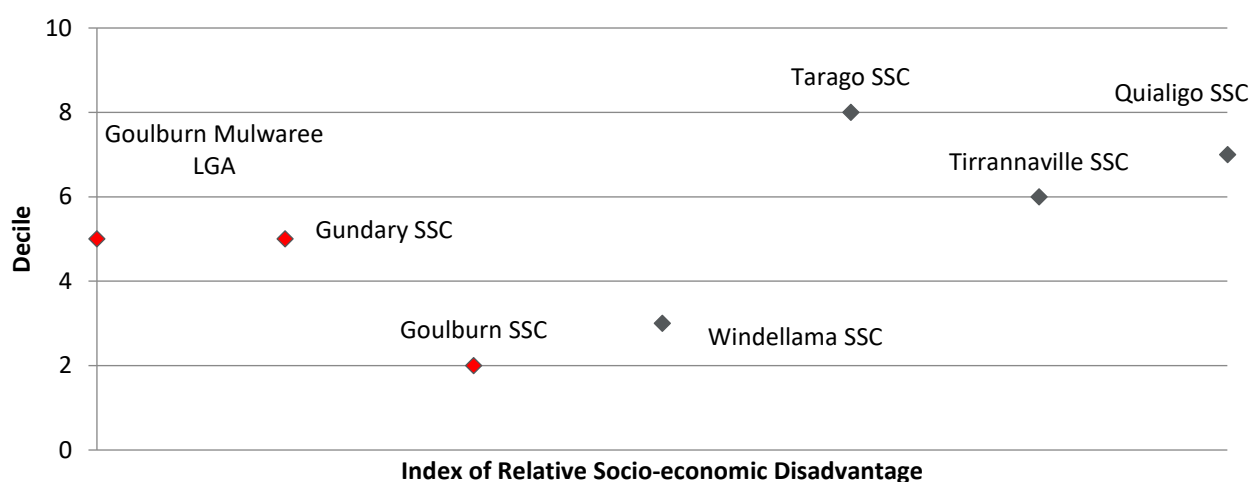


Figure 3.3 Index of Relative Socio-economic Disadvantage

Scores: a lower score indicates that an area is relatively disadvantaged compared to an area with a higher score.

Source: (ABS, 2016)

3.6 Social Capital

Various indicators can be used to examine and assess social capital, including the level of volunteering, population mobility, crime rates, and the demographic composition of the community, such as the percentage of people born overseas and language proficiency. The following provides a summary of the key characteristics of the social locality from a social capital perspective.

In comparison to the broader NSW population, the social locality is characterised by:

Key aspects	Description
Strong social connections and volunteerism	Goulburn Mulwaree has a strong and collaborative social services sector and a strong sense of community. As the Draft Social Sustainability Strategy and Action Plan 2019-2029 states, <i>"it's the kind of community where you know your neighbours and say "hi" to people in the street"</i> (Goulburn Mulwaree Council, 2019). The proportion of the LGA who participated in voluntary work through an organisation or group in the last 12 months was slightly above the State proportion at 13.8% and 13%.
Well organised community groups with a strong interest in renewable energy	Goulburn also has a highly engaged and invested population with an interest in solar energy and community-led energy infrastructure, as evidenced by the Community Energy for Goulburn community group. The Goulburn Group (TGG) is a not-for-profit community group committed to sustainable economic, social, and environmental development in the Goulburn Region. TGG received \$2 million funding from the NSW Office of Environment and Heritage to investigate the possibility of setting up a community energy project in the Goulburn area, following a forum in 2014 at the Goulburn Connects Sustainability Festival on Community Energy (Community Energy 4 Goulburn, n.d.). TGG then established a committee to administer the project, creating Community Energy for Goulburn.
A higher proportion of lone person households and less couples with children.	The family compositions in the LGA sees substantially fewer couple families with children (38.3%) than NSW (44.7%), and more families without children (43%) than NSW (37%). There is also a higher proportion of one parent families in the LGA (17%) in comparison to NSW (16%). In contrast, lone households are more common in the LGA (30%) in comparison to NSW (25%).
A slightly less transient population	There is less mobility in the LGA, as the proportion living at a different address 5 years ago in the LGA (37%) is lower than NSW (39%). Of those living in the Gundry SSC, 39% lived at a different address 5 years ago, indicating a level of mobility on par with NSW.
A higher percentage of those who identify as Aboriginal and/or Torres Strait Islander people	In the 2021 Census, Aboriginal and/or Torres Strait Islander people comprise 5.1% of the population, in comparison to 3.4% of the NSW population and 3.2% of the Australian population.

Sources: (Goulburn Mulwaree Council, 2019) (Community Energy 4 Goulburn, n.d.) (ABS, 2016) (ABS, 2021)

3.7 Economic Capital

Examining a community's economic capital involves consideration of characteristics which could include industry and employment, levels of workforce participation, household income and cost of living, such as weekly rent or mortgage repayments. The following provides a summary of the key characteristics of the study areas from an economic capital perspective.

In comparison to the broader NSW population, the social locality displays:

Key aspects	Description
A competitive advantage and strong focus on agriculture and mining in the Southern Tablelands	Agriculture continues to be a significant contributor to the economy with livestock meat processing being a significant sector (Goulburn Mulwaree Council, 2020). Goulburn Mulwaree LGA's total value of agricultural output in the 2015/16 financial year totalled \$48.7 million, and 68.6% percent of that agricultural output was livestock for slaughter, mostly beef (just over \$16.8 million), along with lamb and sheep (nearly \$9.3 million combined) (ABS, 2016). Wool (almost \$11.8 million) is also a very significant commodity. As Figure 3.4 demonstrates, the Southern Tablelands features a substantial regional advantage in sheep, beef and grain farming as shown by the Location Quotient (LQ, y-axis). The figure shows that sheep, beef and grain farming is growing at a 6.7% faster rate than the rest of NSW (x axis) and that the region is substantially more specialised in this area than the rest of NSW (y axis). Non-metallic mineral mining and quarrying also exhibits a very high level of specialisation in the region and exhibits very strong growth compared to NSW.⁸
A diversifying industry and services base	Goulburn-Mulwaree Local Government Area has expanded from a focus on agriculture, with the region's largest employers being Health care and social assistance (15%), Public administration and safety (10.9%) and Retail trade (10.7%). Goulburn Mulwaree LGA is actively promoting renewable energy projects through their Local Strategic Planning Statement while the South East Tablelands Regional Plan has identified renewable energy as a priority growth sector to diversify the region's economy.
Supportive economic and business groups	The Goulburn region is well supported with a chamber of commerce in Goulburn. Together with village-based progress associations, these institutions provide ideas and support for economic development (Goulburn Mulwaree Council, 2020). In addition, the council is a member of the Canberra Region Joint Organisation of Councils, providing strong relationships with businesses and economic development institutions.
High demand for housing	The Goulburn-Mulwaree LGA has experienced growth, which has led to a growth in demand for housing, as in 2021 Q4 there were 169 house sales with a typical price of \$674,280 (Goulburn Mulwaree Council, 2022). This is a significant increase of 32.5% in comparison to 2019 Q4 where there were 114 house sales, with a typical average price of \$485,454 (Goulburn Mulwaree Council, 2022).
A resilient economy throughout COVID	The Goulburn-Mulwaree LGA experienced impacts from COVID-19 throughout 2020 and 2021, however, the region demonstrated resilience as the percentage of Gross Regional Product (GRP) outputs still increased, as did local jobs and number of employed residents, as outlined in Figure 3.5 (Economy ID, 2022). For example, while regional NSW and all of NSW saw a 2% and 4% decrease in GRP respectively between September 2019 and September 2020, Goulburn Mulwaree LGA's Gross Regional Product increased by 1%.
Housing affordability	The cost of living is understood through the median monthly mortgage repayment, and median weekly rent, which are both smaller dollar amounts in the LGA compared to the State, as outlined in Table 3.4.

⁸ The Southern Tablelands Regional Economic Development Strategy outlines the region's competitive advantages through Location Quotients (LQs), and LQs measure the employment concentration in industry sectors within a regional economy, compared with the same sectors across NSW (Ag Econ Plus Consulting, 2018). The higher the LQ, the more specialised a region is in that industry relative to the rest of NSW (Ag Econ Plus Consulting, 2018).

Key aspects	Description
	Both rental and mortgage payments are lower in the Goulburn Mulwaree LGA than the NSW average. Similarly, the proportion of renters and mortgage holders paying more than 30% of household income on housing costs is lower in the LGA. A higher proportion of residents in the LGA owned their house outright (35.3%) in comparison to NSW (31.5%), and a lower proportion of residents in the LGA rented (28.9%) compared to NSW (32.6%). The median listing price for houses is \$610,000 and this has increased by 20.8% over the past year and increased 24.48% over the last 2 years (Real Estate Investar, 2022). This presents challenges for rising rates of housing stress. The median listing price for units is \$350,000, which has decreased 12.50% over the past year. The average unit takes 270 days to sell and the median rent for a unit in Goulburn is \$295 per week (Real Estate Investar, 2022).
Smaller proportion of population working full-time and a larger proportion working part-time in the region in comparison to NSW	Within the LGA, a lower proportion of the population worked full time (57.9%) than NSW (59.2%), and a slightly higher proportion of the LGA worked part time (30.4%) in comparison to NSW (29.7%).
Lower than state average of youth unemployment	Unemployment rates between the LGA and the state are on par with each other (6.3%), however the LGA has a lower proportion of youth unemployment (11.5%) than the state (13.6%).

Source: (ABS, 2016) (Goulburn Mulwaree Council, 2020) (Economy ID, 2022) (ABS, 2021)

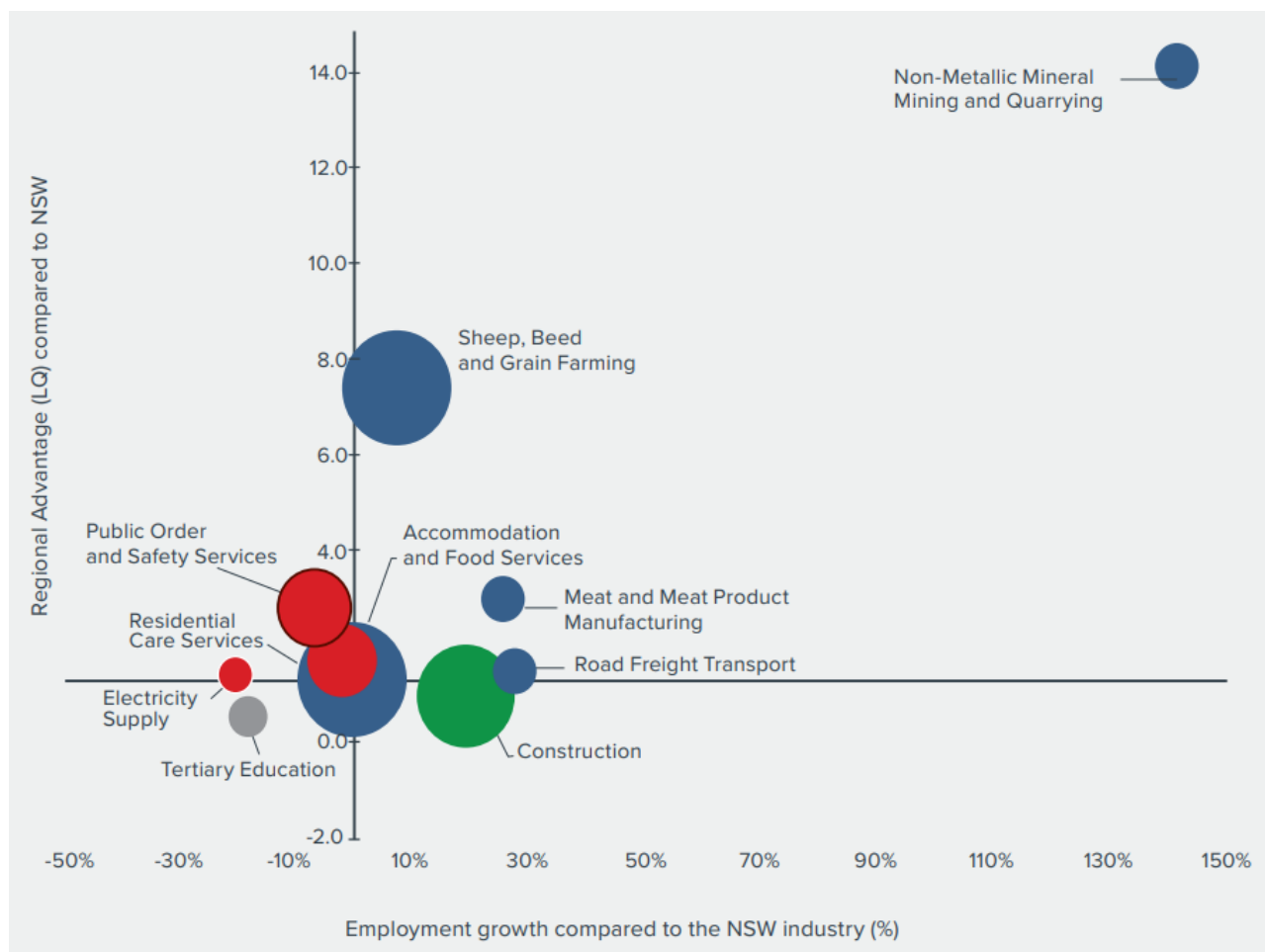
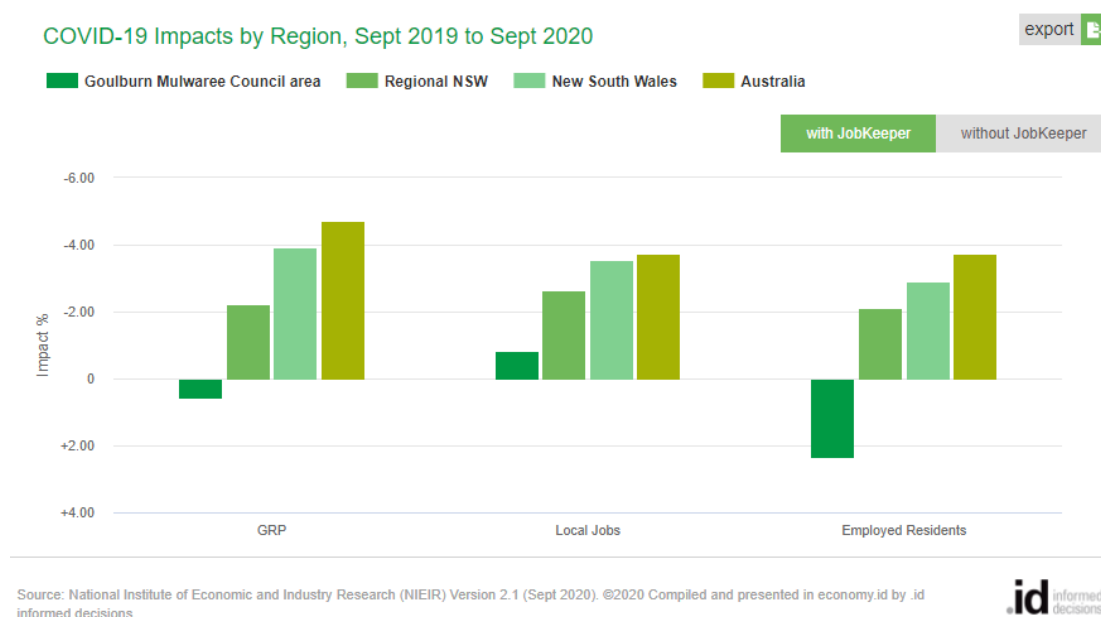


Figure 3.4 Regional Advantage and Employment Growth compared to the NSW Industry

Source: (Ag Econ Plus Consulting, 2018)



Source: National Institute of Economic and Industry Research (NIEIR) Version 2.1 (Sept 2020). ©2020 Compiled and presented in economy.id by .id informed decisions.

Figure 3.5 COVID-19 Impacts by Region 2019-2020

Source: (Economy ID, 2022)

Table 3.4 Housing Stress Indicators for LGA and NSW

Indicator	Goulburn-Mulwaree LGA, 2021	NSW, 2021
Median household income (\$/week)	\$1,466	\$1,829
Median mortgage repayment (\$/week)	\$400	\$500
Median rent (\$/week)	\$320	\$340
Renter households with rent payments >30% of household income	33.6%	35.5%
Owner with mortgage households with mortgage repayments >30% of household income	12.9%	17.3%

Source: (ABS, 2021)

3.8 Physical Capital

Physical or built capital includes the provision of infrastructure and services to the community and what is currently available or accessible to people. Within this, it is important to consider the type, quality, and degree of access to public, built and community infrastructure (including amenities, facilities, services, and utilities) as well as the provision of, and diversity of housing.

The social locality is characterised by the following physical capital aspects:

Key aspects	Description
The rural economy makes a significant contribution to the LGA economy	As identified by Council, Goulburn's rural areas play a significant role in the shaping of the past, present and future council needs to ensure there are adequate protections in place for agricultural land. The rural economy makes a significant contribution to the overall Goulburn Mulwaree economy, the largest commodity being meat processing accounting for 68.6% of Goulburn Mulwaree's total agricultural output in value terms (Goulburn Mulwaree Council, 2020). The largest exporting industries by value are sheep, grains, beef and dairy cattle, and meat and meat product manufacturing. Sheep, beef cattle and grain farming are key industries, comprising around 8.6% of employment (Goulburn Mulwaree Council, 2020).
Significant heritage buildings in Goulburn reflecting its agricultural industry history	Queen Victoria declared Goulburn Australia's first inland city in 1863. Since then, Goulburn's growth has been underpinned by agriculture (particularly the wool industry), a short-lived gold rush in the region and further enhanced by the railways, with development focused on Goulburn as a regional centre (Goulburn Mulwaree Council, 2020). The legacy of which is a wealth of significant heritage buildings (Goulburn Mulwaree Council, 2020). Maintaining the heritage character of Goulbourn is a key goal of the region (Goulburn Mulwaree Council, 2020)
Strategically placed between Sydney and Canberra	Goulburn Mulwaree LGA is strategically situated on the Hume/ Federal Highways approximately 2 hours south-west from Greater Sydney and 1 hour north from Canberra. The LGA is also strategically positioned to provide an alternative route to the South Coast via Nerriga from Greater Sydney. This route provides economic benefits in relation to heavy vehicles (as it is less topographically constrained than the northern passes to the coast) and offers an alternate tourist drive (Goulburn Mulwaree Council, 2020).

Key aspects	Description
Goulburn is accessible due to being located on Hume Highway	Goulburn is located on Australia's arterial highway, the Hume Highway, home to an intermodal rail transport facility, and an hour from Canberra's 24-hour international freight airport. Canberra Airport has domestic and international passenger and freight capability. This provides the Southern Tablelands with expanded access to domestic and international markets (AgEconPlus, 2018). Canberra Airport will drive economic growth in the region and is expected to generate over 21,000 jobs by 2030 and contribute \$2.42 billion per year to the regional economy (NSW Government, Planning & Environment, 2017).
Goulburn has significant access to many high order services	As Australia's first inland city, Goulburn is a strategic regional centre, which provides a variety of high order services such as a Public Hospital, NSW State Offices, Country Universities Centre, TAFE, NSW Police Academy, Local Court, Goulburn Correctional Facility, Cathedrals, Conservatorium of Music and Local Government services including: Council Civic Centre, Aquatic and Leisure Centre, Regional Art Gallery, Library, Museums and a Community Centre (Goulburn Mulwaree Council, 2020). The Region also contains the Goulburn Base Hospital which is currently undergoing a \$120 million redevelopment (NSW Government, Planning & Environment, 2017).
Airport located in Brisbane Grove	Goulburn also has its own public Airport, home of the Goulburn Flight Training Academy who provide flight training. Alongside the Goulburn Airport is the Airport Motel, Airport Restaurant, and swimming pool, to provide facilities for people who may be training and who live further away (Goulburn Flight Training Academy , 2022).
High rates and capacity for tourists and travellers	Goulburn is an important stopover point for visitors travelling by road (and rail) between Sydney, Canberra, and Melbourne. Goulburn has a good range of accommodation options for overnight visitors including the recent development of new properties (Destination Southern NSW, 2020). Goulburn Mulwaree Council has invested in infrastructure and facilities development that help to make Goulburn a good place to live, invest and visit (e.g. new Performing Arts Centre, refurbished Regional Art Gallery, Adventure Playground, Wollondilly River Walking Track, Aquatic Centre Redevelopment and War Memorial Museum).
Accommodation availability	Figure 3.6 provides data from AirDNA that indicates that accommodation listed on AirBnB and Stays.com has had an average occupancy rate of 52% between January 2019 and May 2022, with maximum occupancy rates of 67% in April 2022. While this does not capture hotel accommodation, AirBnB and commercial accommodation usually present similar occupancy rates and patterns of seasonality, suggesting there is remaining capacity in the short-term accommodation system.
Higher rates of unoccupied dwellings	The LGA consists of a higher proportion of unoccupied private dwellings (13%) in comparison to NSW (9.4%).
Less access to the internet	A lower percentage of the population have internet access in the LGA (76%) than NSW (85%).

Sources: (ABS, 2016) (State of NSW and Office of Environment and Heritage, 2012) (NSW Government, Planning & Environment, 2017) (Goulburn Flight Training Academy , 2022) (ABS, 2016) (Real Estate Investar, 2022) (Destination Southern NSW, 2020) (ABS, 2021)

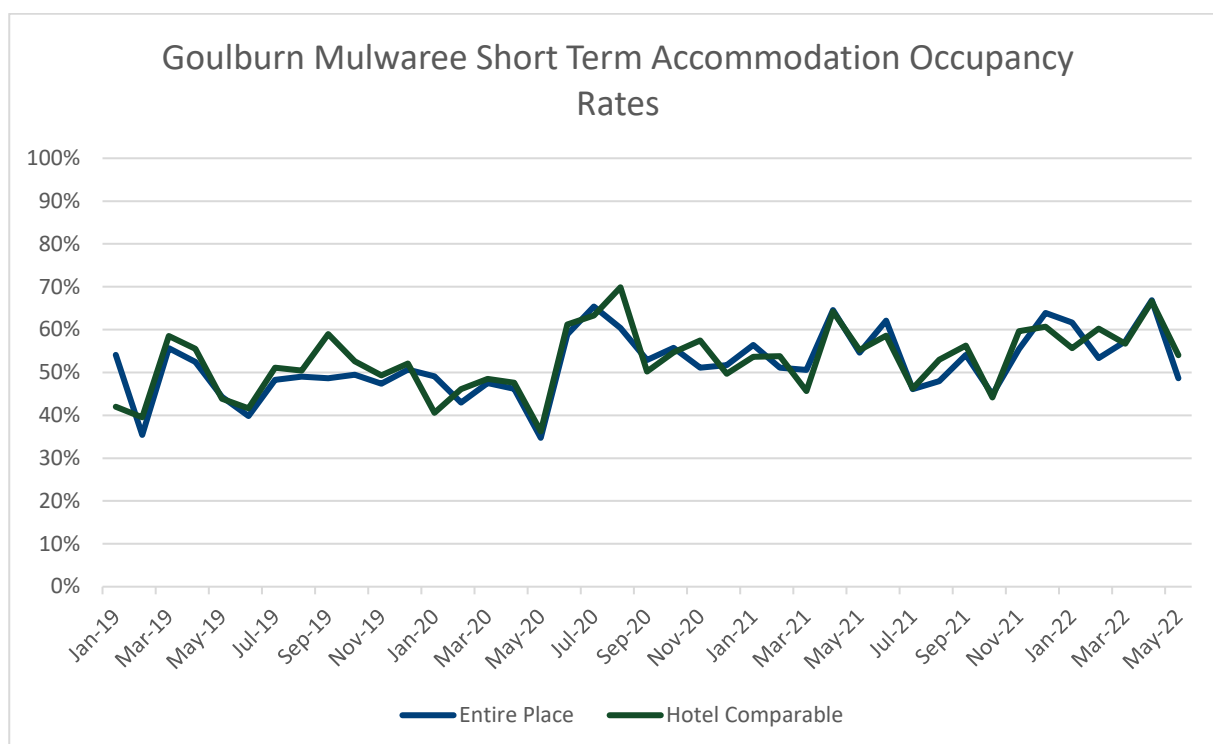


Figure 3.6 Goulburn Mulwaree Short Term Accommodation Occupancy Rates

Source: (AirDNA, 2022)

3.9 Cultural Capital

Cultural capital refers to underlying factors that provide human societies with the means and adaptations to maintain themselves in their environment (Cochrane, 2006). It includes the way people know and understand their place within the world. It may also refer to the extent to which the local culture, traditions, or language, may promote or hinder wellbeing, social inclusion, and development (IAIA, 2015).

The social locality is characterised as:

Key aspects	Description
An area with contested traditional ownership including lands of the Wiradjuri Nation, the Gandangara and the Ngunawal	The Project Area is located within the traditional lands of the Wiradjuri nation. Wiradjuri means '<i>the people of the three rivers</i>', and the nation's traditional and modern-day connections to Country extend over a large area of NSW encompassing the Macquarie, Lachlan, and Murrumbidgee Rivers, bounded by the Murray River in the south. However, according to anthropologist, Norman Tindale, two major language groups occupied the Goulburn Mulwaree region at the time of first European contact: the Gandangara to the north of Goulburn, and the Ngunawal to the south. The Wandandian and Wodi Wodi people lived on the land to the east of the Great Dividing Range, down to the coast (Barker Ryan Stewart Pty Ltd and Sue Rosen and Associates, 2018; Australian Museum Business Services, 2012).

Key aspects	Description
Representation by the Pejar LALC and the Mulwaree Aboriginal Community (MACI)	The Local Aboriginal Land Council (LALC) for the Project is the Pejar LALC. Mulwaree Aboriginal Community Incorporated is an inclusive organisation for people living in Goulburn Mulwaree and the Upper Lachlan LGA's. The LALC works collaboratively with other organisations to provide support to the community and are available for government consultations (My Community Directory, 2022).
Significant European heritage represented throughout the buildings in Goulburn and surrounding suburbs	The European heritage reflects historical agricultural and gold mining booms that resulted in the construction of many significant buildings particularly within the Goulburn CBD. Goulburn and its surrounding towns and villages – including Marulan, Middle Arm, Tarago, Tallong, Bungonia, Lake Bathurst, Towrang, Windellama and Parkesbourne – combine an easy-going lifestyle and city accessibility.
Growth of the tourism industry through festivals related to cultural heritage	In recent years, several festivals and niche events have begun to be held in Goulburn and surrounding areas which have not only created new jobs, but flow on effects to retail, tourism, and service industries (Barker Ryan Stewart Pty Ltd and Sue Rosen and Associates, 2018). The Goulburn Mulwaree Employment Lands Strategy, prepared in 2016, identified the growth of the tourism industry and its relationship to cultural heritage. <i>“Goulburn has many beautiful heritage buildings within the town centre as well as the multiple museums such as Goulburn Rail Heritage Centre, the Waterworks and the Riversdale Homestead. Additionally, the Goulburn War Memorial, the multiple churches within the town centre and the Big Merino all attract visitors.”</i>
Strong sense of pride in the heritage, arts, and cultural scenes of the area	Residents take pride in the city's heritage and modern assets, strong arts and emerging entertainment scene, and economic opportunities (NSW Government, Planning & Environment, 2017). Cultural projects like the Wollondilly Walking Track and adaptive re-use of a heritage building for a Performing Arts Centre contribute to community life (NSW Government, Planning & Environment, 2017).

Sources: (Barker Ryan Stewart Pty Ltd and Sue Rosen and Associates, 2018) (My Community Directory, 2022) (Goulburn Mulwaree Council, 2020) (NSW Government, Planning & Environment, 2017) (Goulburn Mulwaree Council, 2019)

3.10 Political Capital

Political capital refers to the individuals, institutions, and systems that contribute to a community's ability to maintain and uphold a governance structure. Political capital can determine the extent to which people are able to participate in decisions that affect their lives, the level of democratisation within a community, and the resources provided for this purpose. A summary of the political capital relating to the social locality is provided below.

Key aspects	Description
Traditional Owners and Aboriginal Governance	As noted in Section 3.9 , the Project Area falls within the Pejar Local Aboriginal Land Council (LALC) area. The Mulwaree Aboriginal Community Inc is another important Aboriginal group identified in the area.

Key aspects	Description
Local Government	The Goulburn Mulwaree LGA is governed by the Goulburn Mulwaree Council, which was formed in 2004 following the amalgamation of Goulburn City and parts of the former Mulwaree Shire. The Council administers an area of 3,223 km² encompassing Goulburn, Marulan, Tarago, and Towrang. The Council is governed by Mayor Peter Walker and nine other Councillors as of January 2022. The Council is part of the Canberra Region Joint Organisation (CRJO), a group of 10 LGA councils as members, and complemented by associate members including the ACT government and other LGAs. The CRJO provides a forum for councils, state agencies and stakeholders to collaborate in addressing shared priorities and delivering regional projects. Councillor Peter Walker was elected Mayor of Goulburn Mulwaree Council for the first time on January 11, 2022. The Councillors include Andrew Banfield, Andy Wood, Bob Kirk, Carol James, Daniel Strickland, Jason Shepherd, Michael Prevedello and Steven Ruddell (Goulburn Mulwaree Council, 2022).
State Government	The Project Area is in the state electoral district of Goulburn, which extends to the Australian Capital Territory border in the south-west, bordered by the Abercrombie River in the north, and encompassing Moss Vale in the east. The Member of Parliament representing Goulburn on the NSW Legislative Assembly is the Hon. Wendy Tuckerman. Wendy Tuckerman has been the Member for Goulburn since 2019 and is a member of the Liberal Party (Parliament of New South Wales, 2022) and has been vocal regarding renewable energy projects within the region. Elections are held for State Members every 4 years.
Federal Government	The Federal member of Parliament representing Hume in the House of Representatives is Hon Angus Taylor, who is also a member of the Liberal Party of Australia, and was elected in 2013, re-elected in 2016, 2019 and 2022. Angus Taylor was the Minister for Energy and Emissions Reduction from 2019 to 2021 and the Minister for Industry, Energy and Emissions Reduction from October 2021 to May 2022 (Parliament of Australia, 2022). His length of term in the House of Representatives is 3 years.

Sources: (Goulburn Mulwaree Council, 2022) (Parliament of New South Wales, 2022) (NSW DPIE, 2017)

3.11 Local Challenges and Opportunities

In summary, key challenges and opportunities being experienced in the region are outlined in **Table 3.5**.

Table 3.5 Local Challenges and Opportunities

Challenges	Capital	Opportunities
- Limited public transport accessibility - Increases in housing price - Less access to the internet for locals	Physical	- Strategic location and strong highway and rail freight linkages, providing access to proximal labour forces and products - Very well located in the energy network with strong transmission lines and grid stability - High quality land for sheep and cattle grazing

Challenges	Capital	Opportunities
- Extensively modified vegetation - History of grass fires	Natural	- History of agriculture and grazing - Extensive cultivation for the purpose of development of exotic pasture has resulted in loss of native grassland and therefore lower biodiversity constraints for renewable energy development - Region includes conservation areas, national parks and reserves
Community division regarding renewable energy projects in the region	Social	- Strong community and social relationships - Well organised community groups with a strong interest in renewable energy
- High demand for housing - Housing affordability decreasing - Lower than state average labour force participation	Economic	- Diversified economy - Heritage values linked with tourism sector to promote economic benefits - Supportive economic and business groups - A resilient economy throughout COVID
- Mental health is a growing concern for community - Smaller proportion of population (compared to NSW) having completed Year 12, and bachelor's degree level and above education, indicating possibilities of a future skills shortage - Lack of access to internet at home for population compared to NSW	Human	- Population growth and city-to-regional population trends - Opportunities for local skills, as Goulburn is a regional centre with a Country University Centre and TAFE. - Growing population
Contested Traditional Owner and tensions between Aboriginal Groups	Cultural	- Community support for solar - Presence of the Pejar LALC and MACI
- Not part of a Renewable Energy Zone - History of community opposition to development in the area	Political	- Regional plan has a direction of positioning the region as a hub of renewable energy - Strong Local, State and Federal community representation

Source: Umwelt, 2022

4.0 Perceived Social Impacts

This section documents the perceived impacts (both positive and negative) in relation to the Project, as identified through engagement with key stakeholders and social impact evaluation.

As outlined in **Section 2.3** the community engagement mechanisms included an in-person neighbour group meeting, community information stalls at local markets – Bungonia and Goulburn, one-on-one neighbour in-person meetings or phone calls, the online survey, key stakeholder group interviews (online and in-person), a letterbox drop of Information sheets and a letterbox drop of FAQ information sheets.

As detailed in **Table 2.3** in **Section 2.3**, of the total number of people engaged throughout the consultation process was (n=117), the most common stakeholder group was neighbouring landholder (n=55), in the age range above 64 (39%, n=25), with an average of 15.85 years living in the area.

Through engagement with key stakeholders in the scoping phase of the SIA, a number of social impacts were identified in relation to the Project. In this regard, neighbouring landholders to the proposed development were more likely to raise impacts including visual amenity, land / property devaluation, the potential loss of agricultural/farming land, public safety issues related to increased traffic (particularly during construction) and risks associated with natural disaster and social amenity impacts more generally.

Community groups, government stakeholders and wider community residents, were more likely to raise more positive impacts associated with the Project, including training, employment and procurement opportunities, and support for energy transition; however also raised concerns relating to fire risk and management, and conflicting land use with agricultural enterprises.

These positive and negative impacts are further illustrated in **Figure 4.1** (collated based on survey responses and qualitative coding of interview notes) and described in the following sections. It should be noted that while some stakeholders raised negative impacts associated with the project, others identified positive impacts or both positive and negative impacts. Engagement in the scoping phase of the Project has revealed a large difference in attitudes to the proposed Project, with opinion differing between community groups (who predominantly strongly supported or felt ambivalent about the Project) and proximal landholders (who predominantly expressed strong opposition to the Project). It should be noted that engagement in the scoping phase has largely been undertaken with landholders in proximity to the Project Area as outlined in **Table 2.3** and therefore a skew towards negative feedback that may not reflect broader perceptions is evident.

As has been noted earlier in this report, the role of SIA (throughout the EIS phase of the Project) is to assess and evaluate these impacts and identify management measures that may be employed to address negative social impacts and/or enhance positive social impacts, should the Project be approved.

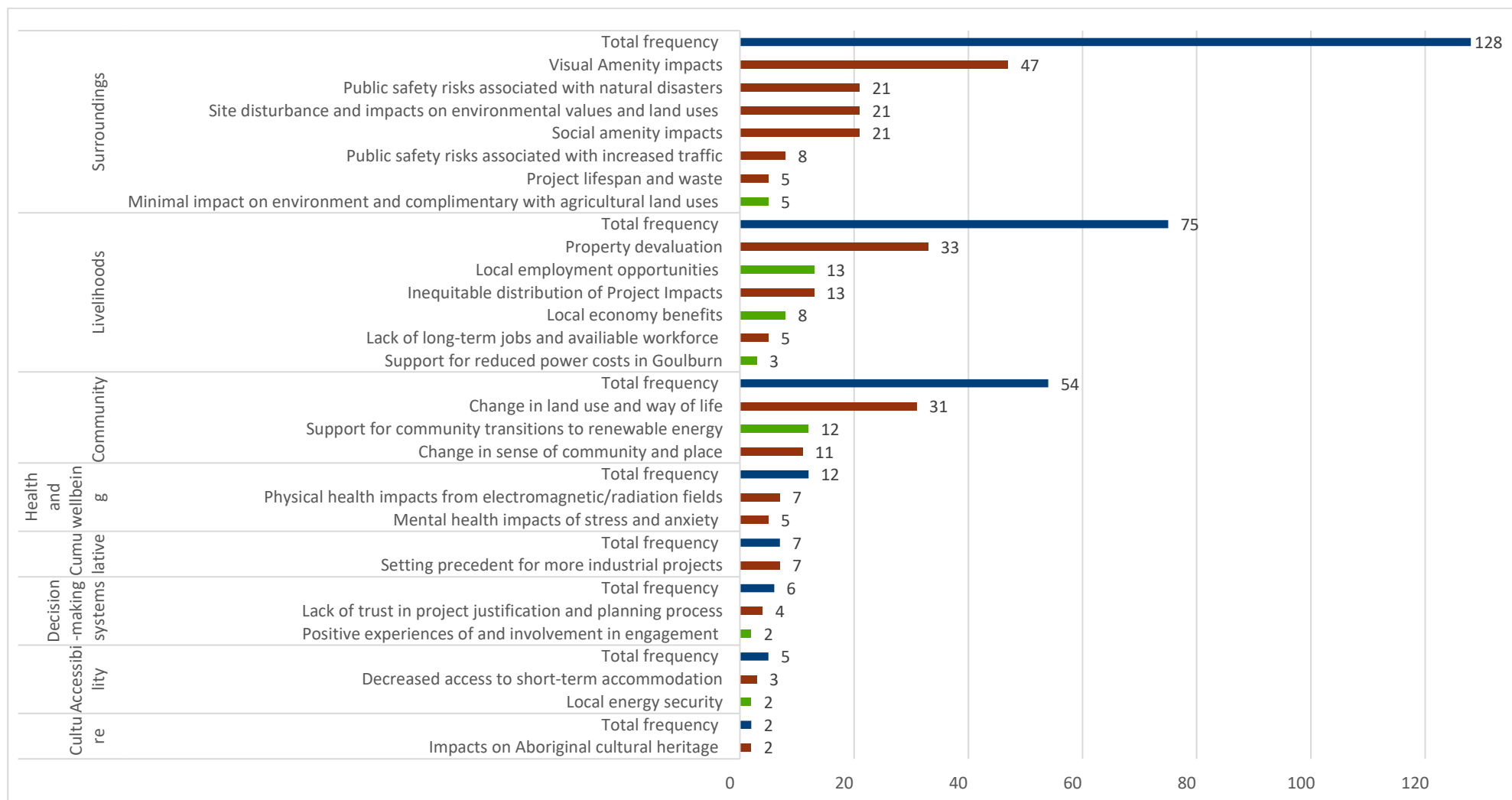


Figure 4.1 Summary of Social Impacts based on survey responses and stakeholder interviews

Note: Multiple responses allowed, green = positive impact, red = negative impacts, blue = total frequency

Source: Umwelt, 2022

4.1 Surroundings

As outlined in the SIA Guideline (DPIE 2021), impacts in this category often include changes in services or functions provided by ecosystems such as shade, pollution control, erosion control, public safety and security, access to and use of the natural and built environment and aesthetic value and amenity. Potential impacts on surroundings identified in relation to the Project included:

- Changes in the visual amenity of the area – change in land use and industrialisation of the landscape.
- Site disturbance and impacts on environmental values.
- Social amenity impacts, including noise, dust, heat, and potential damage to local roads, primarily during the construction phase.
- Public safety risks associated with increased traffic and natural disaster response.
- Project lifespan and possible waste creation.

4.1.1 Visual amenity impacts

The impact on visual amenity was the most cited concern for neighbouring landholders (n=47), as detailed in **Figure 4.1**. Some landholders explained that the rural vistas and natural environment had been central in their decision to purchase their properties and in designing their homes. Some explained that they had commissioned architects or renovated their homes to maximise the views, which would potentially be impacted by the proposed Project.

The visual impact is very very important. There are a lot of farmers in the region that have been there all their lives who are suddenly seeing these technologies displayed on top of their hills.

We bought this place for that vista.

No one will buy this property if there is a solar farm there. No one wants to look at that.

Others expressed a fear that the Project would trigger their neighbours to sell or lease their land for further solar farm development, resulting in them ending up as ‘an island’ surrounded by solar farms.

There was also a concern among neighbouring landholders of the potential glint and glare that may be experienced from the solar panels. While panels are designed to absorb light and do not generate significant glint or glare, there can be glare associated with the steel frames in which the panels are mounted. Further assessment of this issue will be undertaken as part of the EIS.

Conversely some positive responses from respondents were also received, with views expressed that solar technologies were much less visually obtrusive than, for example, wind turbines. People from the broader community typically felt there would be little visual impact to the broader community beyond the near neighbours. There was also an acknowledgement that there may be ways to reduce any visual impact.

When respondents were asked to identify any strategies for Lightsource bp to consider in reducing the visual impact of the solar farm, or to make it more visually appealing, a common response was to move the farm elsewhere (n=28, 62%). However, some participants outlined the possibility of visual screening, through the planting of trees around the boundary of the farm to screen it from the road and from

proximal landholders (n=14, 33%), building a wall and/or fence around the farm (n=2, 4%) or reducing the size of the project (n=1, 2%). Others proposed co-existence strategies suggesting that both the solar farm and sheep grazing (n=1, 2%) could be accommodated. Lightsource bp is committed to exploring options to further reduce visual impacts and to facilitate co-existence with other industry where possible. This will be further investigated during the detailed assessment in the EIS phase.

According to the findings of the preliminary Visual Analysis undertaken as part of the Scoping Phase, most viewing locations (receivers) are located within approximately 3 km north-west to west, and within 1 km to the east of the Project Area. Many viewpoints, in particular those located beyond 1 km east, have views that are limited by dense vegetation, and locations to the north and south have views that are limited by vegetation and landform. A detailed Landscape and Visual Impact Assessment (LVIA) will be undertaken as part of the EIS preparation in accordance with the *Large-scale Solar Energy Guideline* (DPE, 2018), or the most recent version of this guideline, to further investigate potential visual impacts and recommend suitable mitigation measures.

In relation to visual impact, a few residents (n=3) raised concerns that the presence of the solar farm may impact flight activities associated with the Goulburn Airport, located approximately 4 km from the Project Area; in particular whether glint or glare from the solar panels would impact aircraft safety.

Preliminary findings have indicated that there is potential for parts of the Project to be visible from the Goulburn Airport terminal, however the visual impact is considered to be low. The visual impact and any potential glint and glare impacts of the Project on the Goulburn Airport will be assessed as part of the EIS through the detailed LVIA and in consultation with the Airport.

In relation to visual impacts, the Community has recommended the following mitigation strategies, which include:

- Planting of native vegetation around the Project boundary to minimise visual impact.
- Providing alternative screening options for impacted neighbours.

4.1.2 Public Safety associated with natural disasters

Public safety concerns associated with natural disasters, such as fire and flooding, were also frequently raised during consultation, (n=21), as proximal landholders described fears associated with increased fire risk as a result of the Project.

Gundary gets serious grass fires – how will you manage fire risk?

Landholders described their experiences with previous grass fires in the area, expressing fears that a solar farm could further contribute to higher fire risk. In this regard reference was made to a grass fire incident near the Finley Solar Farm where the RFS had refused to enter the site due to safety concerns. In particular, there were concerns that should fire occur in the area, that access may be cut off for local landholders, particularly those located south of the Project on Kooringaroo Road.

In the event of any grass fire on your planned farm (and the high likelihood of those said panels burning), it can quickly spread to the extensive surrounding bushland. As a dead-end, Kooringaroo Road to Mt Ash Road is our only escape and it would be blocked, cutting off our escape.

Engagement with representatives of the local Rural Fire Service (RFS) identified an interest in better understanding fire mitigation strategies and a desire to learn more about risks posed by solar farms.

There are lots of grass fires in the area – what are the risks around Photovoltaics on agricultural land and firefighting?

Research into utility scale solar farms has found that the greatest risk of fire ignition may occur during the commissioning phase of a project with risks decreasing substantially during operation. Notwithstanding, it is important to note that during commissioning there would be a number of personnel on site, therefore reducing the risk of fire spreading beyond the Project Area. Risk may be associated with electrical faults, arson, high ambient temperatures, faulty equipment and incorrect connecting of inter module connectors. Management strategies to reduce fire risk include asset protection zones – i.e. areas around the perimeter of the project with no infrastructure and where vegetation is maintained - keeping grass heights low through sheep grazing, engagement with the RFS, inclusion of periphery roads and access routes, gates, on-site water tanks and daily maintenance and land management and panel monitoring.

Parts of the Project Area are located within bush fire prone land as identified by the Goulburn Mulwaree Council Bushfire Prone Land Mapping. A bushfire threat assessment will be undertaken as part of the EIS, to inform the development of a Bush Fire Management Plan (BFMP), that would be developed in accordance with the requirements of the *Planning for Bush Fire Protection 2019*. Consultation with the Rural Fire Service (RFS) and/or NSW Fire and Rescue will also be undertaken during preparation of the BFMP. As part of the BFMP, Lightsource bp will continue to undertake vegetation management for the life of the Project.

Proximal landholders also raised the low-lying nature of the Project Area and the frequency and severity of flooding on areas of the site as a reason for the Project to consider a second access for when the site is impassable and at risk. The need for improved road development in the area to reduce flooding impacts was also noted by a number of stakeholders.

Enhancement of roads- widening, fix adjoining access lanes/roads, flood/water management of roads to reduce disruption during heavy rain/flooding

Preliminary hydrology assessment, including initial flood modelling, has been completed as part of the Scoping Phase. The Project layout has been strategically designed to avoid impacts to Gundry Creek, Bullamalita Creek and other creeks within the Project Area. This has the added benefit of avoiding areas with biodiversity value. Flooding risks have also been considered in the Project design and layout, with no infrastructure being proposed in areas mapped as prone to flooding or inundation.

Flooding and hydrology will be considered as part of a detailed Water Resources Impact Assessment to be completed during the EIS phase. Outcomes of the Water Resources Impact Assessment will be used to further inform the Project's design.

The Community has recommended the following mitigation strategies, which include:

- Implement a bushfire management plan.
- Upgrades or safety improvements to Koorngaroo Road.
- Liaison with the RFS.

4.1.3 Site disturbance and impacts on environmental values and agricultural land uses

A number of concerns were raised about the potential impacts of the development of the solar farm on land and the natural environment, with these concerns relating to the use and management of water, water run-off and flood impacts, potential contamination of land/soil from the panels, and subsequent impacts on soil and livestock and impacts on local biodiversity.

A lot of our property is water-logged, and footrot is a concern in the area – how will you manage that?

Pollution of waterways

Possible leak affecting water supply

May impact water runoff to the Sydney Catchment

Provide evidence that the proposal will not affect the natural water courses and water supply to many communities

Once constructed, the Project does not rely intensively on water use. There will be some usage for dust management during construction. Solar panels are not known to leak chemicals into the environment or cause ground or water contamination while in use. Further, all development within the Sydney Water Catchment Management Area must demonstrate that it will have a neutral or beneficial effect on water quality. As part of the EIS process, a Neutral or Beneficial Effect (NorBE) Assessment on Water Quality will be undertaken for the Project, in accordance with the relevant policies and guidelines.

Other stakeholders felt that the Project may serve to improve the land given reduced agricultural activity and may facilitate opportunities for the dual use of land for both renewable energy production and agriculture (grazing and horticulture (n=5)).

It [the site] could be in better condition in 50 years because less chemicals will be going into the soil and it will not be overgrazed

Look at complementary use of land, eg sheep pasture

Continued agricultural use for sheep grazing.

Look to plant biodiversity around solar farm or adjacent land, without compromising the effectiveness of the solar panels. Raise panels and use the shaded area underneath for sheep grazing or other useful agricultural purpose. Ensure that moisture is retained in the soil to keep it cool, without affecting the structural stability of the farm.

Concern for the welfare of livestock was raised by several neighbouring landholders, as was the impact of poor agricultural management on the broader region. Stakeholders raised concerns that foot rot or foot and mouth disease could spread if sheep were poorly managed. They raised further concerns that given farming was not Lightsource bp's business focus, that such activities could further impact proximal farmers and hinder the ongoing agricultural land use of the region.

Should the Project be approved and sheep farming continue on the land, as is planned, the livestock will be managed by an external party in conjunction with LSbp. This is already being undertaken on LSbp's Wellington Solar Farm and is planned on a number of other LSbp projects once they are operational. There is growing evidence that co-location of sheep and solar farms may be mutually beneficial. Recent news stories suggest that sheep grazing under solar panels at sites in NSW's Central West have produced improved wool yield and quality, given access to water for livestock (condensation from panels, which has assisted during periods of drought) and improved weed management (ABC News, 2022).

In relation to ecological values, some participants (n=21) expressed concerns regarding impacts on areas of vegetation and loss of habitat for native flora and fauna (as detailed in **Figure 4.1**).

I'm concerned about local bird-life deaths due to heat exposure and toxicity around land and water

We have seen a diamond-tailed finch twice since moving here and a dusky wood swallow once – what will this project do to them?

Considerations are needed to ensure that the site is not heavily impacting local native species and considerations are taken to reintroduce native species once construction is complete.

Creating this site would result in land clearing that is a negative impact for local native flora and fauna.

Preliminary ecological surveys as part of the scoping phase for the Project have been undertaken during March 2022 in accordance with the Biodiversity Assessment Method (BAM), specified by the NSW Government. Preliminary vegetation mapping has identified some plant community types (PCTs) present within the Project Area. The Project Area is seen as being heavily modified for agricultural land uses with relatively low biodiversity values and native vegetation.

The Project has been designed to avoid impacts to areas of high ecological value and will be subject to further review and refinement based on the outcome of the detailed biodiversity assessment.

The Community has recommended the following mitigation strategies, which include:

Biodiversity

- Strategically designing the Project to avoid infrastructure located in high biodiversity constraint areas.
- Development of a management plan to protect local wildlife.
- Development of a land-based biodiversity offset plan to offset any impacts on biodiversity.
- Avoiding remnant vegetation and newly planted trees.

Land use

- Exploration of options to co-exist with agriculture.

4.1.4 Social amenity impacts due to noise, dust, and temperature

Stakeholders also raised concerns about impacts that may be experienced should the Project be approved, particularly in relation to noise, dust and temperature increases both during construction and operations.

We don't get much background noise around here, will that change?

Aside from the approximate 2 years construction period creating noise levels of 100db, neighbours will have to contend with noise levels of 95db generated as the panels are rotated every 15 min. This would be unbearable.

We only have tank water and during construction the amount of dust created would clog and silt our water.

Potential noise and dust related impacts associated with the Project will primarily be associated with the construction activities and will have the potential to affect rural residential properties located in proximity to the Project Area. Some concerns were raised regarding the potential noise that may also be associated with inverters and operation of the substation during operations. A detailed Noise and Vibration Impact Assessment (NVIA) and Traffic Impact Assessment (TIA) will be undertaken as part of the preparation of the EIS and will further investigate potential impacts to nearby receivers. Air quality impacts as a result of the Project will be investigated during the EIS with suitable management measures identified to mitigate any potential air emissions.

The potential for the Project to increase the temperature in the area was also mentioned by a couple of stakeholders, as there was a perception that the presence of solar panels can cause localised temperature increases:

Local temperature increase means greater heat stress in summer or in drought. I understand surrounding properties will be subject to a 5% increase in temperature due to the scale of these developments. I also understand this cannot be mitigated.

Sun Glare and reflection and heat. The panels will reflect massive amounts of sun which will impact our environment and potentially raise temperatures.

While solar panels do generate power and electricity, increases in temperature within the locality are very unlikely to occur. Solar panels are designed to absorb as much solar energy as possible and are known to reflect less than 3% of the sunlight falling upon them. Consequently, PV solar farms are known to produce less glare than other natural and man-made features. Heat build-up under single axis tracking (SAT) technology, the technology planned to be used for the Project, is even more unlikely than other solar technologies. SAT systems are elevated with the axis of rotation typically around 1.2 – 1.8 m off the ground and rows are typically spaced at least five meters apart, providing significant spacing between panels. This elevation and panel spacing means that heat build-up under the panels is very unlikely, and if anything there is a slight decrease in temperature underneath the panels due to shading.

4.1.5 Public safety and social amenity reduction associated with increased traffic

Local stakeholders also identified that the quality and maintenance of local roads in the area was a common concern and questioned whether the Project would result in deterioration of local roads, particularly during construction.

Goulburn Mulwaree Council continues to 'fix' damage to all roads around Goulburn due to heavy machine damage and this is years after a development has been approved. No amount of funds allocated by developers can fix the damage and this takes away from the community with potholes dirt roads, damage to cars, and dangerous driving conditions. Promised playgrounds do not fix the problem or an injection of money into schools does not go anywhere near the inconvenience or damage unsightly developments like this incur.

The TIA to be undertaken as part of the EIS will assess the potential transport routes required for the construction of the Project and any potential impact to the road network. The requirement for any road improvements as a result of the Project's transport will be identified and investigated during the EIS phase.

The Community has recommended consideration of the following mitigation strategies, which include:

- Provide water tank filters to impacted neighbours, to mitigate the dust impacts during the construction period.
- Support upgrades or maintenance of local roads.
- Design the Project to reduce noise impacts on neighbours.

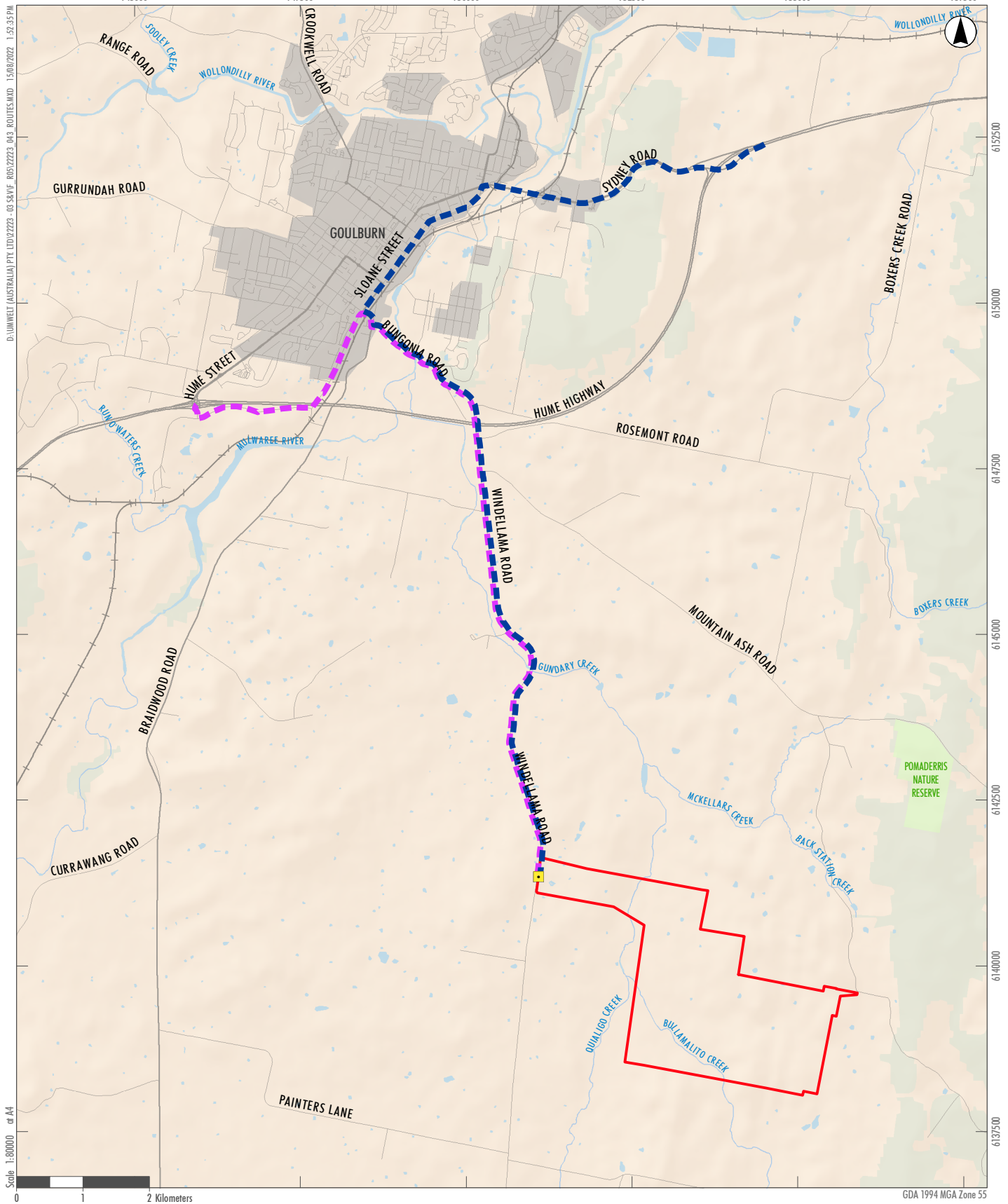
Similarly, several stakeholders (n=8) identified the potential for the Project to result in greater public safety risks to road users, due to use of local roads, and increased traffic associated with construction and operational activities. Given the existing poor condition of local roads, it was perceived that such issues would be further exacerbated.

The construction and operation of the Solar Farm could create the risk of serious accidents occurring due to the higher volume of traffic

Road quality is a concern around here

People have died on the road out there; this will make it worse

The Project Area is located on Windellama Road, with the proposed access routes to the site outlined in **Figure 4.2**.



- Legend**
- Project Area
 - Indicative Site Access
 - Main Roads
 - Railway
 - Watercourses
 - Hydro Areas
 - NPWS Estate
- Proposed Access Route**
- Option 1: Hume Hwy — Sydney Road — Sloane Street — Braidwood Road — Bungonia Road — Windellama Road
 - Option 2: Hume Hwy — Hume Street — Garroirang Road — Sloane Street — Braidwood Road — Bungonia Road — Windellama Road

FIGURE 4.2

Transport Route Options

Several concerns were raised regarding the proposed access routes to the site, with participants frequently noting that local roads were currently unsuitable for heavy vehicle traffic and would not be able to cope with additional traffic volumes.

Major solar and battery components would be delivered to the Project Area by road via the Hume Highway (refer to **Figure 4.2**). Primary access to the Project would be from Windellama Road. Two access routes off the Hume Highway are currently being investigated (refer to **Figure 4.2**). The transport route to the Project Area will be reviewed and confirmed through the detailed Traffic Impact Assessment and further consultation with the community, key stakeholders and the relevant road authority.

The Community has recommended the following mitigation strategies, which include:

- Consider bringing freight to Goulburn via rail rather than road.
- Funding of road maintenance and upgrades.

4.1.6 Project lifespan and waste creation

Concerns regarding the short lifespan of the Project and decommissioning of the farm at the end of its lifecycle were discussed during consultation (n=5) by different stakeholders.

Solar panels that are at the end of their efficiency will require specific recycling methods to renew them. The project needs to select a designated recycler and plan for future costings around this activity. Without a proper plan, these panel will end up in landfill.

Disposal of end-of-life panels. Negative environmental impact.

Focus on what happens at decommissioning. People are concerned about that!

The Project is proposed to have an operational life of at least 35 years. Decommissioning of the Project will occur at the end of its useful life. or it may be extended, or repowered, with equipment being replaced. A decommissioning plan for the Project and associated infrastructure will be prepared in advance of decommissioning in consultation with the relevant regulatory authorities and landholders. The basis of the plan will be that the Project and associated infrastructure are to be decommissioned in line with the applicable legislative requirements and best practice guidelines existing at that time.

In addition, likely waste streams to be generated during construction and operation will be identified and quantified in the EIS with recommended measures to manage, reuse, recycle and dispose of this waste in accordance with relevant guidelines.

Lightsource bp has a partnership with Lotus Energy to manage the recycling of solar panels, including both through the life of the Project, if panels are damaged during construction or operations and in the decommissioning stage.

The Community has recommended the following mitigation strategies, which include:

- Select a designated recycler and plan for future costings around this activity.

4.2 Livelihoods and Economic Security

Livelihood impacts refer to the Project's effect on people's capacity to sustain themselves through employment or business activities, and the economic contribution that a Project may contribute to local communities and the broader region. In this regard, the Project has the potential to contribute positively to the local community through employment and procurement opportunities. However, in relation to this social impact category, concerns were also raised in relation to the impact on property values for proximal landholders of the Project. These impacts are further described in the sections below.

4.2.1 Property Devaluation

Among local landholders, there was a fear that the Project would result in a reduction in property value, particularly for landholders neighbouring or near the Project (n=33). For one person, this reflected an attack on property rights. Concerns appeared to be heightened because of communication by some real estate agents in the area.

loss of value to properties and people's assets and future abilities to sustain themselves

A real estate agent told me this solar farm could reduce my property value by up to 50%

Landholders with properties that have expansive views over the Project Area were particularly concerned about this issue, explaining that even if the solar farm didn't proceed, rumours in the market would make it harder for them to sell their property, with additional concerns expressed around intergenerational equity and their ability to pass their property assets to their children.

We chose here, and it wasn't because we wanted solar panels, it was because of the position and the surroundings. It is also something we can hand on to our children.

Australian researchers have previously investigated the impact of wind farms on property values. The key outcome of the study indicated that wind farm projects are unlikely to significantly impact the value of rural properties used for agricultural purposes (Ostwald & Blackwell, 2016, p. 20). However, there has been no significant research in Australia on the impact of utility-scale solar farms to property values of near residents.

We were a real estate agency in Goulburn for 30yrs - the evidence was that some people wouldn't buy [properties neighbouring wind farms]. Wind farms wouldn't affect the prices, just limited the number of buyers. There is no evidence of solar farms impacting property values - yet anyway. – Local real estate agent

Research undertaken in the Netherlands (Dröes & Koster, 2021) and in the United States (Gaur & Lang,, 2020) has indicated that in certain cases some small reduction in property values may be experienced, particularly for properties within 1 km of solar farms and in populated suburban areas. Research conducted in Rhode Island and Massachusetts has found that, on average, houses lying within one mile (1.6 km) of solar installations sell for 1.7% less post construction relative to properties further away (Gaur & Lang,, 2020).

The Community has recommended the following mitigation strategies for consideration, which include:

- Strategies to reduce or eliminate impact on residences, for example:
 - design of the Project infrastructure to change the location of, or remove infrastructure from specific viewpoints
 - visual screening, particularly the use of native plants
- Provision of benefits to neighbours, including:
 - installation of home solar systems
 - neighbour compensation payments or mechanisms (to address perceptions of a decrease in property value).

4.2.1.1 Community Benefit Schemes and Neighbour Benefit Agreements

Some stakeholders expressed that it was the landholders residing closer to the development, and the local Gundry community, that were likely to experience the greatest level of negative impact associated with the Project. Moreover, unless specifically considered, they felt there would be little or no benefit to be experienced by this stakeholder group. In this regard, many neighbouring households outlined their expectation to receive compensation for the impacts the solar farm would have on their properties and livelihoods. This was usually framed as a reflection of the potential for property value loss and/or reduction in visual amenity.

While there is precedent for neighbour payments in windfarm development e.g. Crookwell and Collector Wind Farm Projects, there is virtually no precedent in the case of solar farms. Despite this, the development of neighbour benefit programs is increasingly becoming a consideration and were raised frequently in the engagement process by those consulted.

Lightsource bp has outlined their commitment to the development of a community benefit scheme and is considering a neighbour benefit program as part of the Project. Further information will be provided in the EIS phase.

4.2.2 Employment and Training Opportunities for Local People

Stakeholders expressed enthusiasm and support for local employment opportunities (n=13) and local economic benefits (n=8) that may be associated with the Project, particularly the opportunity for capacity development within the renewable energy sector.

With the planned jobs amount during construction will result in an increase in activity in the local economy.

Multiple stakeholders raised potential opportunities to partner with local schools, the TAFE, and the Country University Centre to build required skills and increase community resilience. In relation to the TAFE, there was concern that many courses were no longer being offered locally, and that further development of renewable energy in the region could assist in expanding education and skills training in the sector.

Representatives of The Goulburn Group also highlighted the opportunities of renewable energy development within the region through consultation and in the local media:

TGG will make strong representations for the 400 jobs promised during construction to be sourced locally and for local businesses to be engaged. It will press the company to provide training and to support our local TAFE.

It is staggering that Angus Taylor and Wendy Tuckerman are backing the campaign by a small number of landholders against a project that has the potential not only to provide a boost to the local economy but to open up much larger opportunities for renewable energy developments in our region (Goulburn Post , 2022)

Despite the potential benefits, some participants (n=5) also highlighted some of the challenges experienced at a local level with the development of large-scale projects and existing low unemployment rates:

Unemployment is less than 4%. Finding workforce in the region is a huge issue. Each local council has received funding to do infrastructure upgrades and they do not have crews to roll out infrastructure. Renewable energy projects take local workers and redirect them away from local projects. Backfilling local roles is impossible when new projects have come in.

We don't have workers. Locally, businesses struggle to get employees, people are shutting parts of their businesses because they can't get people to work for them. Some cafes don't open in the afternoon anymore because they can't find staff

Strategies and options to enhance local and regional procurement, training and employment outcomes will be developed as part of the next phase of the SIA process to inform the EIS and Project development.

4.2.3 Inequitable distribution of Project Benefits

As has been noted above, a key concern raised by some community members (n=13) related to the inequitable distribution of Project benefits. Such concerns included:

- Solar panels being manufactured overseas resulting in carbon emissions within these countries and the perception that construction generated negative impacts in the country of manufacture

Solar panels from China which means they are not produced sustainably. On a global front it's appalling. Source them from a responsible manufacturer

- Energy produced because of the Project not providing local benefits

Panels made in China. Loss of income for Australia.

Purpose to provide power to Canberra and Sydney. Benefit is not for locals.

Secure low-cost power to Goulburn

Locals sacrifice their surroundings for those who live unaffected in Canberra or Sydney unfair load the bush is expected to pay to provide power for Sydney

- Given Lightsource bp is an international company, the profit generated by the Project will not benefit the Australian economy

“The Southern Tablelands region is being crushed by city bankers, global financiers and large multinationals. The holding company of the Gundry solar facility proposer is located in the UK and is 50% owned by British Petroleum (BP).”

As noted previously, strategies and options to enhance local and regional procurement, training and employment outcomes will be developed as part of the next phase of the SIA process to inform the EIS and Project development.

The Community has recommended strategies to enhance the distributive equity and local benefit sharing associated with the Project, including:

- Local employment, procurement, and training strategies.
- Partnerships with local schools to create scholarships, work experience opportunities or site tours.
- Proactive support for the establishment of programs that encourage and incentivise re-skilling and upskilling of local workers to remain in the region.
- Social procurement and employment opportunities, especially for women, Indigenous people and people with disabilities.
- Housing, Infrastructure, and service provision improvements.
- Work with councils to ensure required road upgrades, so as the local road network is improved and left in better conditions.
- Partnerships with TAFE to deliver targeted training modules and scholarships.

4.3 Way of Life, Community and Culture

Potential impacts to way of life and community may include changes to how people live, work, and play within their communities. Such impacts may include a change in community composition, cohesion, character, function, resilience, and sense of place because of a Project.

Impacts or changes to culture include effects on people’s shared beliefs, customs, values, language, and dialect, as well as their local culture, heritage, and ability to access cultural resources.

4.3.1 Change in Land Use and Way of Life

A key concern for many neighbouring landholders and community members was the impact of the Project on agricultural land, with a strong belief that the Project would be utilising prime agricultural land that would be better used for grazing purposes. This is a multidimensional issue that encompasses community and sense of place considerations, livelihoods and economic productivity, food security, impacts on surroundings and visual and social amenity.

As discussed in **Section 3.8** and **3.9**, Goulburn and Gundary have long histories of agricultural land uses and large and productive land holdings. The Project area is currently used to graze sheep, with most adjoining properties also used for sheep and/or cattle grazing.

Agriculture/ farming has occurred on the Gundary Plain for over 200 years and should remain prime agricultural land

One neighbour, reflecting on the difficulty of cultivating crops on the land, explained that new technologies, new strains of wheat and canola, and new land practices were changing the productivity of the land and from his perspective, changing land use was disrupting an important way of life for both him and his family. Many stakeholders questioned why solar farms could not be located on less productive farming land or in less densely populated areas. While currently the Project area is used for agricultural purposes, specifically livestock, the site is not classified as either Biophysical Strategic Agricultural Land (BSAL) or mapped as Class 1, 2 or 3 under the Land and Soil Capability Mapping for NSW.

The EIS phase of the SIA will continue to engage with community members to identify mechanisms to reduce impacts on way of life where possible. This may include design refinements to reduce visual amenity impacts and further investigation of mechanisms for more integrated additional agricultural land uses in the Project area.

4.3.2 Community Sentiment and Division

Large-scale transitions, the introduction of new projects in a social locality, changes to the built and natural environment, and the subsequent influx of new residents, can influence the levels of social cohesion within a community as well as alter a community's stability and character (NSW DPIE, 2021).

Consultation revealed two key points of community contention surrounding the solar farm: conflict between proximal landholders and the host landowner and the 'politicisation' of renewable energy, climate change and the Project.

4.3.2.1 Conflict between landholders

The development of projects within communities has the potential to create community division. For example, neighbour agreements on other renewable energy projects have resulted in conflict between landholders that agree to host projects and/or receive neighbour benefits and those that feel they receive negative impacts without any/sufficient compensation.

Such tensions, however, also appear to exist at the community level between a vocal opposition and others with differing opinions or different levels of involvement and/or project impact. For instance, a website opposing the Project has been developed by members of the Goulburn Mulwaree community and media coverage has identified conflicting opinions surrounding the Project. Some community residents explained that they did not feel comfortable raising the Project in public for fear of conflict with proximal landholders and other community members. Similarly, community engagement has revealed misinformation and differing interpretation of Project details circulating within the community.

4.3.2.2 Politicisation of renewable energy, climate change and the Project

A further aspect that was evident through discussions with stakeholders, was a difference in sentiment that existed between those that were more supportive of the Project and renewable energy development more broadly, and those that were not.

Most of the community supports additional renewable energy. But there are two sides of the story. Some will be very supportive, and some ... don't want a bar of it.

Many people broadly support renewable energy, they just don't want it in their backyard

Engagement revealed disagreements in the community between those who acknowledged the existence of climate change and supported renewable energy development and energy transition, and those that saw no evidence it was occurring, or who did not believe that Australia, as a small country, should have to respond to it. Engagement revealed a common and incorrect assumption that renewable energy projects received government subsidies. For example, as one respondent noted:

[We are] down to earth, hardworking people who know the truth about so-called climate change. We are fully aware of the highly subsidised renewables industry that's sucking money out of Australians' pockets. We also know that if it wasn't for subsidies paid by government, you would not exist.

Community members explained their belief that there was local political opposition to renewable energy and climate change action:

Goulburn groups tried to bring renewable energy to Goulburn – this was hard because Local Government was anti climate change etc.

Others argued that Goulburn had already experienced enough of the 'burden' of renewable energy because of the development of the Crookwell and Collector wind farms in the region. This was a view reflected by the local state member, the Hon. Wendy Tuckerman MP, in an address to the NSW parliament in June 2022.

Goulburn is saturated with renewable energy projects.... I am sure many people will assume that this is a good news story, but the reality is that the national push for renewable energy is coming at a cost—a cost to agriculture production, impacting the productive prime agricultural land that supplies our nation's tables, and causing emotional distress to the residents impacted by these foreign-owned businesses and the uncertainty of the planning process... While I understand the importance of these projects, as an alternative power source, it should not be at the expense of the local community, agriculture, and environment. – Hon. Wendy Tuckerman MP

4.3.3 Transition to Renewable Energy

Others in the community expressed excitement and support for the Project and welcomed opportunities for the Project to change their community and way of life (n=12). Many argued that the transition to renewable energy was inevitable, was important and that the Project was a positive opportunity for the region, reducing reliance on carbon intensive industry.

Reduced reliance on coal fired power stations

Increase in clean energy businesses in region

As one proximal neighbour noted;

We live on [a nearby Road⁹] and we Welcome this project. I have been concerned about climate change my whole life and believe we should have started these projects years ago. The negative and divisive attitude of the previous Liberal Federal Governments to renewable energy has been an international embarrassment.... Solar farms produce no noise no traffic with minimal impact on adjoining properties and will produce cheap clean electricity for decades. Just 2 years ago Our community was faced with the prospect of a polluting and noisy waste incinerator on our doorstep. Locating such an industrial complex in a quiet rural setting was an insane idea which fortunately we were able to stop. However solar farms are just that (farms not factories) You're welcome to install one on my doorstep as we would actively encourage the progress.

It was acknowledged that there was a history of wind farm development in the region, and that the development of solar projects was a further renewable energy opportunity. Those consulted spoke of their own experiences with wind farms in the social locality, referring to Crookwell and Collector wind farms, with the benefits of the transition clearly stated.

Reduction of CO2 emissions

Local energy security

A recent media release by The Goulburn Group (TGG) noted:

As a community association with a strong commitment to action on climate change, TGG supports this project provided that the promises made by the company, Lightsource bp, are kept and there are further benefits for our community. (Goulburn Post , 2022)

As noted in **Section 3.1.2**, there are robust existing networks in the Goulburn region that place a strong emphasis on renewable energy, climate change and transitions away from fossil fuels. For example, as noted in **Section 3.1.2**, the Community Energy for Goulburn project is one of the first community-led renewable energy projects in Australia.

During consultation with the wider community, through the Goulburn and Bungonia markets, many community members that visited the market stall identified a desire to install personal solar systems and asked a number of questions of company representatives. Several local community groups have also invited Lightsource bp to attend meetings to present on the Project and explain the broader solar energy system to their members.

Present to the Goulburn Group – when you are in town next, organize with the committee to present the Project to them

Community members explained that solar was the next step for the region, while others reflected on renewable energy being the obvious alternative to coal-fuelled power.

It's just obvious isn't it? We need electricity and you'd rather this than a coal mine

⁹ Road name removed for anonymity

Similarly, for community members seeking employment or contracting opportunities associated with the Project, it was considered an important opportunity to stimulate a growing industry. Indeed, the Goulburn Group expressed their disappointment in not attracting further investment in renewable energy in the region, stating:

Professor Andrew Blakers of the Australian National University, a leading expert on renewable energy, has described the Goulburn district as “highly suitable” for a renewable energy zone of the type that has attracted billions of dollars of investment in other areas of NSW, but Mr Taylor was not interested in such an initiative, so we missed out.

The transition to renewable energy is underway around Australia and, as recent large increases in coal and gas prices emphasise, it needs to be accelerated. (Goulburn Post , 2022)

In relation to this issue theme, the Community recommended strategies, that include:

- Lightsource bp presenting on the Project to local community groups.
- Lightsource bp identifying and delivering other capacity building programs in the region, through partnerships with local schools, TAFE or universities.
- Community benefit fund development and opportunities including investment in education and training, sporting groups, local charities, local agricultural and community farming initiatives and community battery programs.

4.3.4 Changes in Sense of Place and Community

Rapid changes to a social locality can cause a sense of loss or anxiety for existing community members, especially for those who feel a strong sense of place attachment. Place attachment refers to the cognitive and emotional connection of an individual to a particular environment or the experience of a long-term emotional bond to a particular geographical area (Low, 1992). Place attachment is associated with a sense of belonging or the emotional need to be an accepted member of a group that forms identity and social reference.

As **Table 4.1** illustrates, the way of life in communities within the area is strongly connected to agriculture – a sense of rurality, connection to the rural landscape/vista and the local community.

The people, the lifestyle, people are straightforward, it’s quiet.

Table 4.1 Values associated with living in the area

What do you like most about living in the area? What is important to you and why?	%	n
Rural / Country lifestyle	53%	26
Quietness	43%	21
Views / visual amenity	27%	13
Communities	14%	7
Isolation	2%	1
Connection to land	2%	1

Total sample; Unweighted; base n = 49; total n = 85; 36 missing
Source: Umwelt, 2022

Through discussions with local community members, the impact of the Project on people's sense of place and community was raised frequently (n=11). It was noted that many properties within the area have been owned by the same families for generations, with the land predominantly used for sheep and cattle grazing.

The land is the pride and joy of Goulburn. It's where the Big Merino is. In comparison to the rest of the region, these are intergenerational, large landholders. They are the largest broadacre farming landholders and the largest GDP-creating farms.

Neighbouring landholders spoke of their deep connection to their respective properties. Those that had moved to Gundary from Sydney or other larger cities in Australia spoke of the quiet, rural lifestyle as their primary reason for relocating to the area, expressing that they had moved out of Sydney and other major cities to get away from industrialisation.

Others spoke of their desire to see their children and grandchildren remain living on the land, fearing that reduced amenity would limit their grandchildren's ability to feel connected to the area and desire to remain in the area.

We moved here for a rural lifestyle, we left Sydney for a reason

It will be less of a 'town & country' community in Goulburn. Whilst I agree with solar power per se, I do not agree that it should spawn our productive landscape

The town of Goulburn and surrounding localities are changing rapidly, with increasing numbers of people who have purchased hobby farms/properties, as well as homes in rapidly growing housing estates. One neighbouring landholder explained that Gundary had changed from agricultural landholdings to 'blockies' or lifestyle blocks, for 'tree-changers' moving from Sydney. While some have settled permanently in the area and work in the social locality, many households commute to Canberra for work each day or only live on their properties for a proportion of the week.

This is a community where there is a heart in grazing and farming but there are also places that are hobby farms that people live on and commute to other places

The impact on historical land uses or built form was raised as a concern by some of those consulted, who argued that the Project was not in keeping with traditional land uses. Community members drew on histories of the region to suggest that:

Gundary Plain has over 200 years of rural/farming history and this will come to an end if the proposal is approved for exploitation by a 12-year-old foreign company and a city-based property owner who has owned the property for only around 2 Years.

Consequently, there was a sense among those consulted, that the nature of the community was changing from a more traditionally rural community to a more lifestyle community, with subsequent change in community composition and characteristics. For many, the arrival of a solar farm was likely to disrupt connections to place for long-term residents and newer arrivals.

4.3.5 Cultural and Heritage Values

Impacts or changes to culture include effects on people's shared beliefs, customs, values, language, and dialect, as well as their local culture, heritage, and ability to access cultural resources.

In relation to Aboriginal cultural values and sites of importance, there was concern among Aboriginal stakeholders that the site may contain specific values and artefacts of importance to the community. Through consultation, the possible negative impacts on Aboriginal cultural heritage were raised by two key stakeholders, as outlined in **Figure 4.1**.

Aboriginal stakeholders identified several important artefacts and sites in the area, including the breast plate of King John Cry, Chief of the Doudolgong tribe, found in Tirrannaville to the Project's west. Similarly, they spoke of scar trees located on Kooringaroo Road to the East of the Project boundary.

There is something nice about the feel of the landscape, it is a peaceful place

Further queries raised by community members related to the earthworks required to develop the solar farm, the degree of water management or disruption likely to occur, the presence of lightning rods on the site, the potential fire risk, and the visual impacts of the solar panels.

Stakeholders expressed their satisfaction with the engagement process, explicitly noting appreciation with the early engagement and respectful and informative communication in relation to the project, with the following advice offered.

Follow due process, get RAPs (recognised aboriginal parties) involved and follow through

Other key stakeholders also raised several opportunities to involve local Aboriginal groups and individuals in employment, training and education opportunities associated with the project. Stakeholders recommended school scholarships, collaboration with TAFE and the Country University, collaboration with the Aboriginal Education Consultation Group and support for the Clontarf Foundation.

An Aboriginal Cultural Heritage Assessment (ACHA) will be prepared as part of the EIS in accordance with the relevant guidelines. The ACHA will include consultation with the Registered Aboriginal Parties (RAPs) for the Project in determining and assessing impacts, developing and selecting options and mitigation measures, having regard to the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010b).

The Community has recommended the following mitigation strategies, which include:

- Involvement of Registered Aboriginal Parties in Project development, assessment and design.
- Development of training, employment and skills programs for Aboriginal groups and individuals.

4.4 Health and Wellbeing

Health and wellbeing impacts include impacts to both physical and mental health and may include psychological stress resulting from uncertainty, financial and/or other pressures, as well as anticipated changes to individual and public health.

During the engagement process, participants raised concerns about the Project impacts on their health and wellbeing and noted an increase in anxiety and stress of residents since public notification of the Project. Additionally, concerns were raised regarding potential health impacts from electric and magnetic fields (EMF) generated from the solar panels. These are further described below.

4.4.1 Electric and Magnetic Fields

Some stakeholders (n=7) raised health concerns associated with EMF as a topic of concern. One person spoke of a family history of cancer and proximity to electrical stanchions and a fear that the development could lead to cancer and other health issues. Survey responses reflected a level of uncertainty and fear about potential impacts in this regard, requesting further information in relation to this potential impact.

Electromagnetic Radiation is unknown. Health issues and strain on the hospital system. Mental health. Provide the science that it will have no impact on the community

*Unknown radiation (electromagnetic) effects to residents, livestock both immediate and into future
Unknown, increase cancer incidence, abnormalities in fertility of offspring in both humans / animals*

Power lines, electrical wiring, and electrical equipment all produce EMFs (National Institute of Environmental Health Sciences, 2022). EMFs consist of waves of electric and magnetic energy moving together through space. An example of electromagnetic radiation is visible light. Electromagnetic fields associated with electricity are a type of low frequency, non-ionizing radiation, and they can come from both natural and man-made sources (US Environmental Protection Agency, 2022).

Most of the infrastructure at solar generating facilities, including the solar panels and most cables, produce direct current (DC) electricity, which does not produce EMF. In a solar farm, the type of equipment that produces EMF includes inverters, transformers, AC cabling and the substation. All equipment produces EMFs at rates well below Australian and International standards. Further, EMFs drop off extremely rapidly with distance from the source. For substations and transformers, the magnetic fields at distances of 5-10 m away are generally indistinguishable from typical background levels in the home (Australian Radiation Protection and Nuclear Safety Agency, 2022).

It is expected that EMF risks associated with the Project will be well below the International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines for limiting exposure to time-varying EMF (1 Hz – 100 kHz) (2010). Nevertheless, a review of potential EMF risks associated with the Project will be undertaken as part of the EIS, and suitable safeguards and mitigation measures will be proposed to reduce any potential risks.

In relation to this potential impact, the Community recommended that the company share evidence on the health impacts of EMFs.

4.4.2 Stress and anxiety

Stakeholders (n=5) raised the impact of uncertainty around the solar farm as a substantial health and wellbeing impact for themselves, their families, and the community. Some stakeholders spoke of disrupted sleep patterns due to stress and anxiety surrounding the Project, with a further stakeholder outlining the flow-on impacts of increased stress and anxiety, to conditions such as heart disease, diabetes, obesity, and asthma.

The mental health impacts are bad. Stop the solar farm

Not knowing what will happen is keeping me from sleeping and causing me stress

The potential mental health issues within the broader community, because of the Project, were also noted.

Mental health of neighbours and near neighbours of these projects is a major social impact and developers should be held accountable.

Psycho-social disruption may have a wide array of impacts that can affect individual wellbeing (e.g., psychological distress, fear, grief, and mental and physical health), project acceptance (e.g., attitudes, potential for division, trust), capacity to adapt to change (e.g., coping mechanisms) and community wellbeing (e.g., family relations and community support networks). Uncertainty about a possible future threat disrupts our ability to avoid it or to mitigate its negative impact, thus resulting in stress and anxiety (Grupe DW, 2013). Psycho-social impacts, as noted, can have real and negative consequences for individuals and local populations. Engagement to date has included significant and on-going information sharing, one-on-one meetings, and frequent phone calls from very early in the Project, to assist in addressing uncertainty in relation to the Project and to share information with potentially impacted landholders and broader stakeholders early in the scoping phase of the Project

4.5 Cumulative Impacts

When survey respondents were asked if they had any concerns about the cumulative impacts of multiple renewable energy projects being developed in the region, the responses provided in **Table 4.2** were obtained. The most common cumulative impacts noted included visual impacts (n=10, 22%), a decrease in property investment/land value (n=8, 18%), changes to way of life / lifestyle in the area (n=7, 16%) and project benefits not being experienced locally (n=6, 13%), as detailed in **Table 4.2** below.

Table 4.2 Perceived Cumulative Impacts associated with the Project

Do you have any concerns about the cumulative impact of having multiple renewable energy projects being developed nearby? If so, what are the cumulative social impacts that you are most concerned about based on your knowledge of these developments?		
Cumulative Impacts	%	n
Visual impacts	22%	10
Decrease in property investment / land value	18%	8
Change to way of life / lifestyle	16%	7
Preservation of agricultural land – food security	9%	4
Impact to native flora and fauna	9%	4
Large scale of the Project	7%	3
Lack of jobs for locals	7%	3
Mental health impacts on near neighbours	4%	2
Long term viability of renewable projects	4%	2
Temperature rise in the locality	2%	1
Constraints to local population growth	2%	1
Noise impacts	2%	1
Other responses to the question		
Benefits from projects not felt locally	13%	6
No concerns	9%	4
Opposed to the development	7%	3
Unspecified concerns	4%	2
Asset to Goulburn	2%	1

Do you have any concerns about the cumulative impact of having multiple renewable energy projects being developed nearby? If so, what are the cumulative social impacts that you are most concerned about based on your knowledge of these developments?

Unsuitability of zoned areas	2%	1
Opposed to solar farms near Goulburn	2%	1

Total sample; Unweighted; base n = 45; total n = 85; 40 missing

Source: Umwelt, 2022

For those that were opposed to the development, concerns related to the cumulative nature of renewable development in the Goulburn area:

Goulburn is saturated with renewable energy projects; wind farms and solar farms, the waste to- energy incinerator to burn Sydney's rubbish, and the TransGrid HumeLink- project – one of New South Wales' largest infrastructure venture – which will connect these renewable energy projects.

There was also a view expressed by stakeholders (n=7) that the approval of the Project may result in further renewable energy project development in the region.

The land is zoned for rural uses and this development will trigger more development in these sensitive locations

Potentially opening this area up to more projects like this

This view has also been expressed on the Stop Gundry Website, which has been developed by landholders opposed to the Project.

If this project is approved it will set a dangerous and irreversible precedent for inappropriate development of agricultural land and have devastating effects on the environment, local economy, and aesthetics of the Goulburn Mulwaree Region - Stop Gundry Website.

Renewable energy development is permissible under the land zoning for the Project area, and it is in a location identified by local, regional and state policy documents as a priority area for renewable energy development.

A detailed Cumulative Impact Assessment will be undertaken during the EIS phase in accordance *Cumulative Impact Assessment (CIA) Guidelines for State Significant Projects* (DPIE, 2021).

4.6 Engagement and Decision-Making Systems

Impacts relating to this category refer to whether stakeholders can provide input to the planning and assessment process. This refers to whether they experience procedural fairness, are informed, and can meaningfully influence decisions in relation to the Project, and are able to access complaint, remedy, and grievance mechanisms.

During engagement for the Project, participants identified several concerns relating to engagement and decision-making, specifically a perceived lack of trust in the assessment and planning process and issues relating to the degree of community participation and information provision relating to the Project.

4.6.1 Community Consultation and Information Sharing

Effective community engagement can improve Project assessment and design and can result in improved community/social and environmental outcomes.

The engagement program that has been undertaken to inform the Project's scoping phase has afforded key stakeholders (proximal landholders, local government, Aboriginal groups, community groups and wider community residents) with the ability to provide feedback on the Project and identify key Project issues early in the Project assessment phase.

For some stakeholders, the early engagement has been well received, with positive comments received regarding transparency, timeliness, and the respectful process to date.

I want to thank you for engaging with us so early in the process. And thanks for making this clear – I know engineers often struggle with that side of communication. – Community Group

I'm here to make sure you follow due process. I think you're doing a great job. I haven't seen anyone engage this early or this well. – Community Group

Other stakeholders were critical that community groups had been consulted prior to proximal landholders, with meetings with community groups occurring a week before landholder meetings, increasing anxiety about the Project. Subsequently, further engagement has been undertaken with local landholders in proximity to the Project through personal meeting and telephone calls and through a dedicated landholder group meeting. The broader community has also been engaged through information stalls at local markets/events, with written materials provided in the form of community information sheets outlining the Project and the development of a FAQ document addressing questions raised by the community during the consultation program.

Engagement has been a core component of the scoping phase of the Project, consistent with DPE guidance, and has afforded the opportunity to identify community issues early in the Project's assessment process and stakeholder preferences for engagement moving forward. While some stakeholders raised concerns that not enough information had been provided on the Project to enable them to make informed decisions, others made suggestions as to how information could be presented to increase understanding and knowledge of the Project in subsequent phases using 3D models, photomontages and more detailed project plans. Respondents requested further information on the outcomes of assessment studies including noise, bushfire management, and biodiversity impacts.

While some stakeholders felt that the Project was a '*fait accompli*', others were aware that further assessment was to be undertaken in subsequent phases and following the provision of SEARs by the DPE, and that there would be further opportunities for stakeholder input and feedback. The Project team has worked to clarify the early-stage nature of the Project, in all communications with community stakeholders to date.

In general, there was a common view that community engagement was essential to inform the SIA and broader EIS, and central to the company obtaining a social licence to operate, should the Project be approved. Views were expressed that other project developments in the area had failed to engage effectively and adequately with the community.

A bottom-up approach is best. Let us be part of the assessment and decision-making process.

In this regard, the community identified mitigations and strategies including:

- Sharing of a 3D model, photomontages or virtual reality output to better communicate the visual impact of the Project.
- Lightsource bp to host visits to Wellington and the Wellington North Solar Farm for interested neighbouring landholders.
- Face-to-face engagement with neighbouring landholders.
- Use of newspaper or radio advertising to communicate in-person meetings or drop-in sessions.
- Development of a FAQ document addressing key community concerns.

Further stakeholder engagement, including sharing of technical reports, in-person events, one-on-one meetings with neighbours, surveys of businesses and service providers, provision of photomontages and Project design updates will occur in the EIS phase. In addition, Lightsource bp has been approached by several community groups requesting Project presentations and will share Project updates and information about the broader renewable energy sector at on-going events.

4.6.2 Lack of Trust in the Planning Process and questioning of site selection

Some stakeholders expressed scepticism with the broader government planning process in relation to large-scale/state significant development projects (n=4), questioning the impartiality of the Project team.

You might write that we are concerned about things, but then you just write it isn't relevant and it happens anyway. How impartial is the report?

Other stakeholders questioned the selection of the site for the Project, outlining that more appropriate sites could have been chosen in less densely populated areas or places with less viable agricultural land.

As **Figure 4.3** demonstrates, there is a low level of acceptance for the Project among those who completed the survey, largely neighbouring landholders (78%), with an average score of 2.7 out of 10 obtained (1 being not at all accepting and 10 being very accepting of the Project). While this acceptance rating is very low, it is likely to reflect an overrepresentation of immediately adjoining neighbours rather than perceptions of the broader community. For example, a study conducted for the NSW Government in 2015 found that 91% of those surveyed supported or strongly supported renewable energy development (Office of Environment and Heritage, 2015).

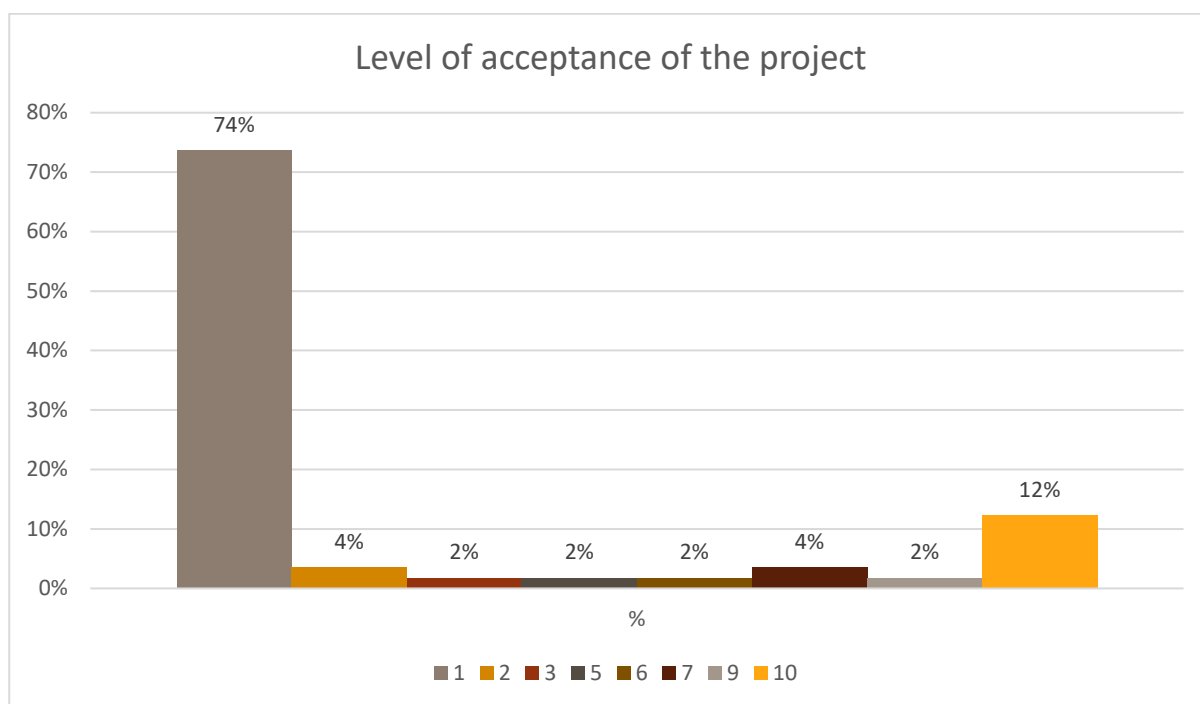


Figure 4.3 Level of acceptance of the Project

Total sample; Unweighted; base n = 57; total n = 85; 28 missing, note 4 & 8 = 0% responses therefore is not included in the graph, 1- low acceptance to 10 – high acceptance)

Source: Umwelt, 2022

This is contrasted by the results of level of acceptance of renewable energy projects in the region more broadly, with an average level of acceptance of 4.5 out of 10 obtained, as outlined in **Figure 4.4**.

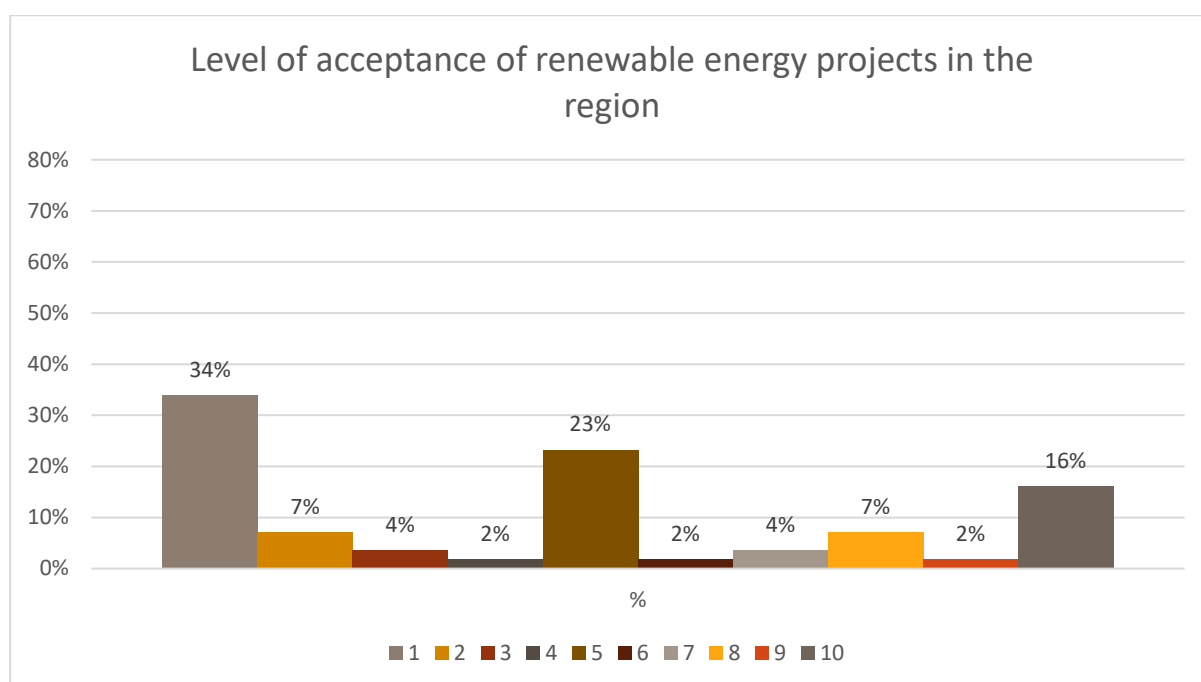


Figure 4.4 Level of acceptance of renewable energy projects in the region

Total sample; Unweighted; base n = 56; total n = 85; 29 missing. (1 – low acceptance to 10 – high acceptance)

Source: Umwelt, 2022

4.7 Accessibility

This section discusses how the Project may impact people's access to local community infrastructure, services, and facilities. Issues frequently raised during consultation in this category included potential impacts on short term rental accommodation and the provision of energy security in Goulburn. Each of these sub-impacts are further described below.

4.7.1 Accessibility to housing/accommodation

Pressure on housing and accommodation services was raised by a minority of people (n=3) during engagement, as outlined in **Figure 4.1**.

Goulburn has less issues around accommodation than other places – it has property and house and land packages being built. It has land available for development"

However, the housing of a construction workforce associated with the Project is likely to require effective management should the Project be approved.

I don't know where you are going to house 400 construction workers

Options for accommodation are relatively limited in the area – accommodation would have to be in Goulburn. Most of the villages around here have half a dozen beds [of short-term accommodation].

Several community members noted the extremely tight rental market in Goulburn (currently 0.42% with only 48 rentals available, (Real Estate Investar, 2022)) and highlighted their concern that an incoming workforce may place further pressure on the existing market.

It will generate additional short-term housing issues for our community, while hundreds of workers are brought in for the project.

As has been highlighted in the local media, Goulburn, like many other regional areas in Australia, is currently experiencing a rental market crisis, with reports suggesting that rental affordability is forcing more Goulburn families into financial hardship (Goulburn Post, 2021). Further assessment of this social impact will be explored in the subsequent phase of the SIA.

4.7.2 Provision of energy security in Goulburn area

A small number of stakeholders (n=2) mentioned that the Project would result in the provision of energy security for the Goulburn area. When asked what positive impacts the Project may have, respondents said:

Local energy security

Energy stabilised by battery storage

Further to this, interviews identified that renewable energy was essential to national energy security. This is in line with AEMO modelling which outlines that renewable energy will need to expand to 125 GW of additional Variable Renewable Energy by 2050 to meet demand for energy as coal-fired generation withdraws (AEMO, 2022). It is also in line with the policy of the current Federal Government to reduce emissions by 43% by 2030 which will require over 80% renewable energy on the NEM.

While Lightsource bp has initiated conversations with Goulburn-Mulwaree Council regarding energy agreements, the local council has made clear that they would prefer to only engage on this topic once the Project has progressed further in the development process.

The Community has however recommended a number of potential strategies to enhance Project benefits, including:

- Providing solar energy to the local council and local businesses in Goulburn.
- Coordinating power agreements with energy distributors.
- Providing renewable energy provision for near neighbour and proximal landholders.

5.0 Preliminary Impact Evaluation

The below table outlines preliminary social impact evaluation for the Gundry Solar Farm Project. Abbreviations and definitions used in the table include:

- **Timing/ Duration:** P= Planning phase, C= Construction phase, O= Operational Phase and D= Decommissioning Phase
- **SIA Rating:** - = Negative impacts, + = Positive impacts
- **Perceived stakeholder significance:** Perceived stakeholder significance reflects stakeholder feedback gathered during the scoping phase. This will be further validated/revised in the EIS Phase of engagement.
- **Level of assessment:**
 - No further assessment = The social impact is unlikely to be experienced by anyone, although a monitoring framework will incorporate mechanisms to respond to any unanticipated impacts.
 - Desktop integration assessment = Impact will be mostly assessed in other technical studies in the EIS, and desktop review will cross-reference and integrate those studies in the SIA Report.
 - Standard assessment = Impact will be partially assessed in other EIS technical studies; however, further information and evaluation is required in the SIA to analyse the social dimensions of the impact.
 - Detailed assessment = Impact will not be assessed in other EIS technical studies and will be primarily assessed by specialists in the Phase 2 SIA.
- **Stakeholders:** Proximal landholders refers to nearby, but not abutting landholders. Neighbouring landholder refers to landholders who share a boundary with the Project area.

Table 5.1 Preliminary Impact Evaluation

Impact Category	Social Impact Description	Extent/ Effected parties	Timing / Duration (P= Planning, C= Construc tion & O=Opera tion)	+ve/- ve SIA Rating ¹⁰	Perceived Stakeholder Significance ¹¹	Suggested Project refinements and Strategies to address impacts	Level of assessment ¹²
Surroundings	Visual Amenity Impacts	Proximal landholders ¹³	C & O	-	Very High	Conduct a Visual Impact Assessment to identify potential impacts and determine suitable mitigation measures Refine Project design as practicable to reduce visual impact to neighbouring landholders	Detailed assessment
		Broader community, including users of Windellama Rd	C & O	-	Low	Refine Project design to utilise site topography to reduce impacts to road users and more distant neighbours Consider use of mitigation measures such as the use of planting / screening and buffer zones.	Detailed assessment
		Impacts on Goulburn airport and safety of aircraft	O	-	Low	Undertake further studies including Visual Impact Assessment and to evaluate any potential impacts on the Goulbourn Airport	Detailed assessment

¹⁰ - = Negative impacts, + = Positive impacts

¹¹ Perceived stakeholder significance reflects stakeholder feedback gathered during the scoping phase. This will be further refined in the EIS Phase of engagement

¹² No further assessment = The social impact is unlikely to be experienced by anyone, although a monitoring framework will incorporate mechanisms to respond to any unanticipated impacts.

Desktop integration assessment = Impact will be mostly assessed in other technical studies in the EIS, and desktop review will cross-reference and integrate those studies in the SIA Report

Standard assessment = Impact will be partially assessed in other EIS technical studies; however, further information and evaluation is required in the SIA to analyse the social dimensions of the impact.

Detailed assessment = Impact will not be assessed in other EIS technical studies and will be primarily assessed by specialists in the Phase 2 SIA.

¹³ Proximal landholder refers to nearby, but not abutting landholders. Neighbouring landholders refers to landholders who share a boundary with the Project area

Impact Category	Social Impact Description	Extent/ Effected parties	Timing / Duration (P= Planning, C= Construc tion & O=Opera tion)	+ve/- ve SIA Rating ¹⁰	Perceived Stakeholder Significance ¹¹	Suggested Project refinements and Strategies to address impacts	Level of assessment ¹²
	Site disturbance and impacts on environmental values and agricultural land uses	All stakeholders	C & O	-	High	Biodiversity Assessment to be undertaken as part of the EIS process to identify biodiversity values and determine suitable management measures Refine Project design as far as practicable to minimise impacts on waterways. Communicate information and research on combined agriculture and solar farmland uses	Detailed assessment
	Social amenity impacts due to noise, dust, Heat/temperature, and road service	Neighbouring landholders	C & O	-	High	Assess and evaluate Traffic and Construction Management impacts Conduct Noise/Acoustic Assessments to analyse noise impacts during operation Refine Project design and develop mitigation strategies to minimise operational noise impacts	Detailed assessment
		Proximal landholders	C & O	-	Medium		Detailed assessment
		All stakeholders	C & O	-	Low		Standard assessment
	Public Safety Risks associated with increased traffic during construction	All stakeholders	O	-	Medium	Undertake a Traffic Assessment to assess potential impacts on road quality and safety, especially in relation to school bus movements	Detailed assessment
	Public safety risks associated with	All stakeholders	C & O	-	Low	Refine Project design to address fire risk	Standard assessment

Impact Category	Social Impact Description	Extent/ Effected parties	Timing / Duration (P= Planning, C= Construc tion & O=Opera tion)	+ve/- ve SIA Rating ¹⁰	Perceived Stakeholder Significance ¹¹	Suggested Project refinements and Strategies to address impacts	Level of assessment ¹²
	natural disasters (fire and flooding)	Proximal landowners	C & O	-	Very High	Conduct transparent community consultation with concerned community members to better understand fire risk and identify appropriate management strategies	Standard assessment
	Project lifespan and possible waste creation	All stakeholders	O & D	-	Low	Develop and communicate plans to recycle solar panels	Standard assessment
Livelihoods and Economic Security	Employment and training opportunities for local people	Local business and service providers and the Broader community	C & O	+	High	Develop a Local Procurement Strategy to generate local economic benefits Partner with local employment and training providers to implement mechanisms such as training programs, scholarships, apprenticeship programs or local employment schemes to drive renewable energy expertise in the region	Detailed assessment
	Property Devaluation	Proximal landholders	P, C and O	-	Very High	To be further assessed in the next phase of the SIA	Standard assessment
	Project benefit distribution	Broader community Proximal landholders	C & O	+	Medium	Establish and communicate a Community Benefit Strategy for the Project, including investigation of Neighbour Benefit Agreements to generate local-level benefits	Standard assessment

Impact Category	Social Impact Description	Extent/ Effected parties	Timing / Duration (P= Planning, C= Construc tion & O=Opera tion)	+ve/- ve SIA Rating ¹⁰	Perceived Stakeholder Significance ¹¹	Suggested Project refinements and Strategies to address impacts	Level of assessment ¹²
Way of life, Community and Culture	Changes in sense of place and community	Proximal landholders Broader community	C & O	-	High	Design refinements to reduce visual impact where possible Community Benefit Strategy to support community groups or initiatives Commitment to retaining agricultural land uses on the site and investigation of further co-location of agricultural land uses	Detailed assessment
	Change in Land use and Way of life	Proximal landholders Broader community	C & O	-	High	Co-existence of dual land uses such as sheep grazing.	Detailed assessment
	Community Sentiment and Division	Host landholder and proximal landholders Broader Community	P & O	-	Medium	Provide transparent communication of Project details and timelines, and outcomes of assessment studies Conduct open and transparent community consultation, including providing opportunity for further Project input in the SIA and broader EIS	Detailed assessment

Impact Category	Social Impact Description	Extent/ Effected parties	Timing / Duration (P= Planning, C= Construc tion & O=Opera tion)	+ve/- ve SIA Rating ¹⁰	Perceived Stakeholder Significance ¹¹	Suggested Project refinements and Strategies to address impacts	Level of assessment ¹²
	Transition to Renewable Energy	Broader Goulburn community Local Businesses Students Job Seekers	O	+	Medium	Develop a Local Employment and Procurement Strategy to ensure local benefits are experienced in the region Partner with local employment and training providers to implement mechanisms such as training programs, scholarships, apprenticeship programs and/or local employment schemes to drive the development of renewable energy expertise/skills in the region	Detailed assessment
	Cultural and heritage values	Traditional Owners Aboriginal groups	P, C and O	-	Medium	Conduct an Aboriginal cultural heritage assessment Involve Registered Aboriginal Parties in Project design and decision-making Establish a Local Employment and Procurement Strategy and Community Benefit Scheme to facilitate employment and education opportunities for Aboriginal stakeholders	Detailed assessment
Health and Wellbeing	Electromagnetic energy	Proximal landholders	O	-	Low	Assess Electric and Magnetic Fields (EMF) generated by the Project and share assessment outcomes	Standard assessment

Impact Category	Social Impact Description	Extent/ Effected parties	Timing / Duration (P= Planning, C= Construc tion & O=Opera tion)	+ve/- ve SIA Rating ¹⁰	Perceived Stakeholder Significance ¹¹	Suggested Project refinements and Strategies to address impacts	Level of assessment ¹²
	Stress and anxiety	Proximal landholders	P, C & O	-	High	Provide transparent communication of Project details and timelines, including FAQ documentation Conduct open and transparent community consultation, including providing opportunity for further input in the SIA and EIS assessment phase	Standard assessment
		Broader community	P, C & O	-	Low		Standard assessment
Accessibility	Decreased access to short term accommodation	All stakeholders	C	-	Medium	Develop a Workforce Accommodation Strategy	Detailed assessment
	Provision of energy security in Goulburn area	All stakeholders	C & O	+	Low	Community and neighbour benefit sharing Consider energy sharing agreements with local councils and or businesses	Standard assessment

Impact Category	Social Impact Description	Extent/ Effected parties	Timing / Duration (P= Planning, C= Construc tion & O=Opera tion)	+ve/- ve SIA Rating ¹⁰	Perceived Stakeholder Significance ¹¹	Suggested Project refinements and Strategies to address impacts	Level of assessment ¹²
Cumulative	Cumulative impacts from multiple developments	Local and State Government Neighbouring and Proximal landholders Community groups Local businesses and service providers	O	-	High	Consider cumulative impact of other proximal projects in undertaking impact assessments	Detailed assessment
	Cumulative impacts from growing regional expertise and investment	All stakeholders	O	+	Medium	Establish a Local Employment and Procurement Strategy and Community Benefit Scheme to support regional employment and training opportunities	Standard assessment

Impact Category	Social Impact Description	Extent/ Effected parties	Timing / Duration (P= Planning, C= Construc tion & O=Opera tion)	+ve/- ve SIA Rating ¹⁰	Perceived Stakeholder Significance ¹¹	Suggested Project refinements and Strategies to address impacts	Level of assessment ¹²
Engagement and Decision-making Systems	Community consultation and information sharing	All stakeholders	P, C & O	+	High	Provision of Project information and communication of Project details and timelines, including assessment outcomes Conduct open and transparent community consultation, providing opportunity for input to Project design and planning	Standard assessment
	Lack of trust in Project justification and planning process and questioning of site selection	All stakeholders	P	-	Medium		Standard assessment

Source: Umwelt, 2022

6.0 Conclusion

This Social Impact Assessment Scoping Report has documented the SIA process undertaken during the scoping phase of the Gundry Solar Farm Project, and forms part of the Scoping Report to inform the issue of SEARs by the NSW DPE.

This Report has included the compilation of a social baseline profile for the Project; early community and stakeholder engagement to inform the scoping of Project-related social impacts and opportunities; and preliminary social impact identification to inform the refinement of Project design and consider strategies to reduce negative Project impacts and enhance positive Project benefits.

Based on initial community consultation and preliminary social assessment, the following issues / potential social impacts have been identified in relation to the Gundry Solar Farm Project.

Key social impacts identified by neighbouring landholders included:

1. Visual amenity impacts due to the potential for glint and glare of the solar panels, and the presence of the solar farm and substation
2. Perceived property devaluation for proximal landholders, due to proximity to the Project
3. Change in land use from rural agricultural use to energy generation, and resulting changes to way of life, sense of place and local livelihoods
4. Public safety risks associated with natural disaster such as flooding and bushfire, exacerbated by the nature of the Project and potential access issues
5. Social amenity impacts associated with the construction and operation of the solar farm e.g., noise, dust, heat/temperature, road conditions
6. Site disturbance and impacts on environmental values and land uses
7. Equity questions about distribution of benefits and impacts and questioning of site location justification

Social impacts raised by other stakeholders including community groups, local government and the broader community included:

1. Support for the energy transition and energy security
2. Importance of community engagement to inform the assessment process
3. Bushfire risk and management
4. Employment and procurement opportunities, as well as skills training and capacity development
5. Conflicting land use with agriculture
6. Regional investment and job creation

Community identified strategies to mitigate or respond to these potential negative impacts, as well as opportunities to enhance the positive impacts of the Project and contribute to the local and regional community, have been identified and are summarised within each subheading within **Section 4.0**. Further assessment will be undertaken in the next phase of the SIA and the broader EIS to evaluate impacts and identify relevant mitigation and enhancement strategies.

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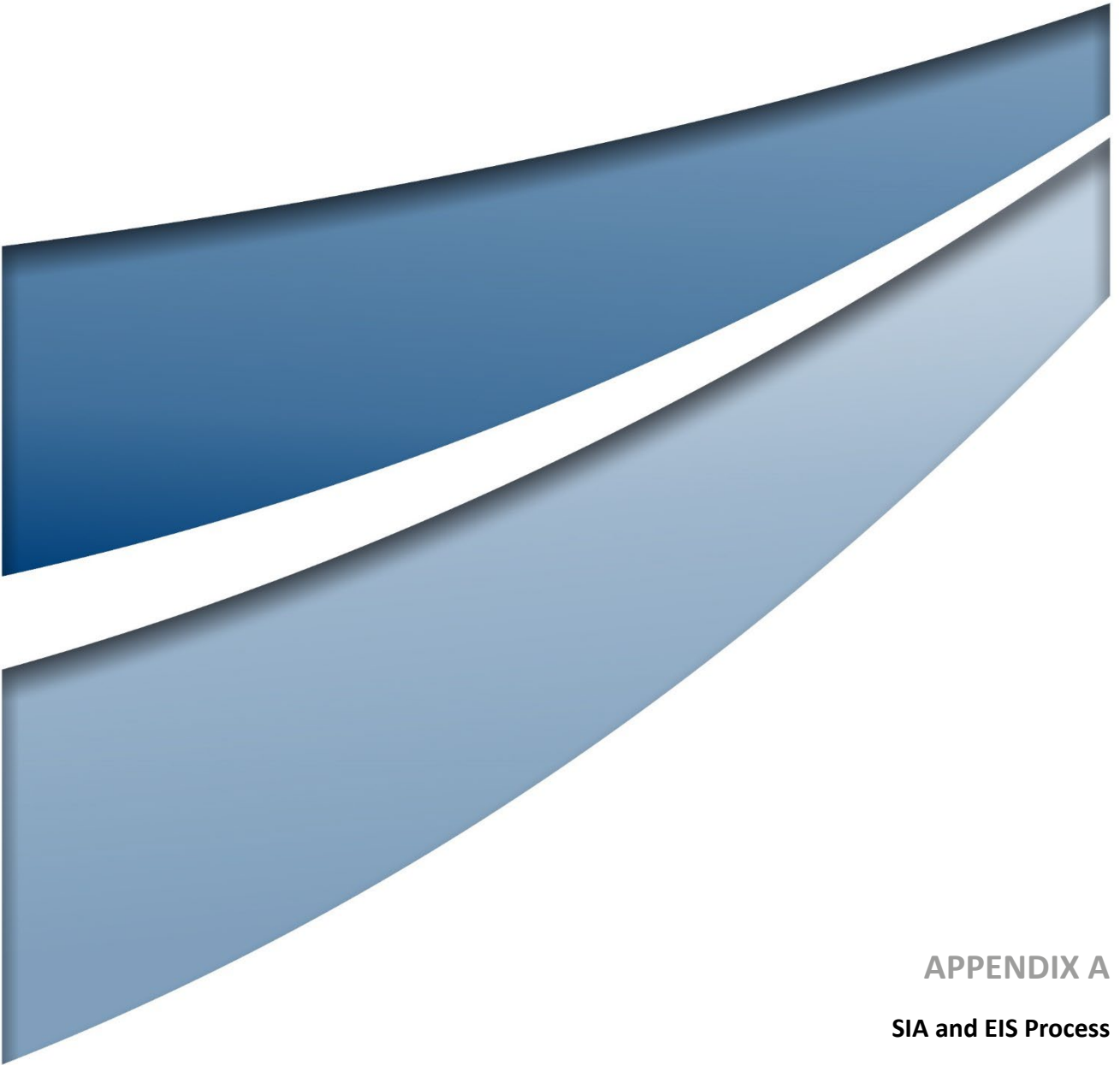
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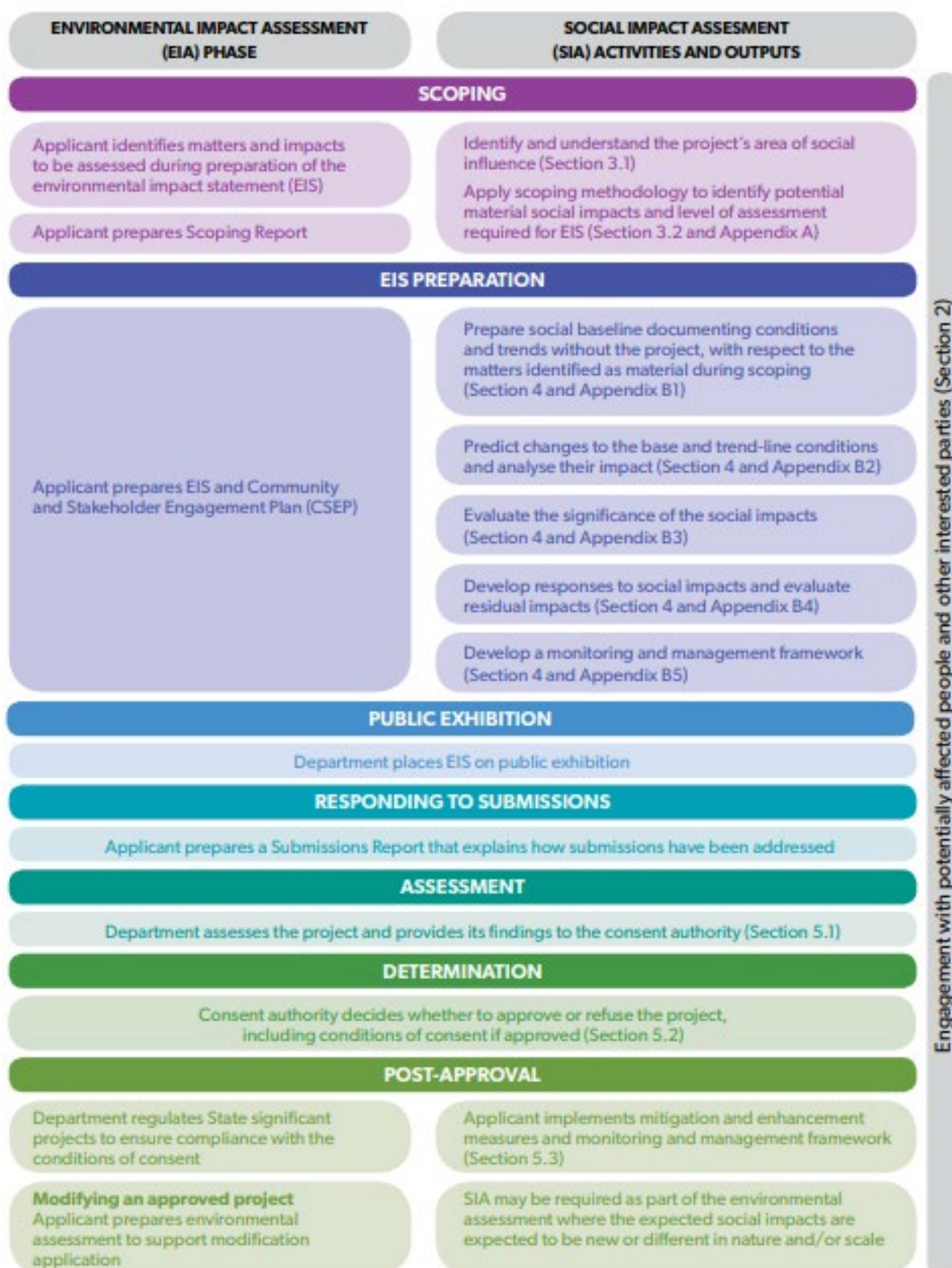
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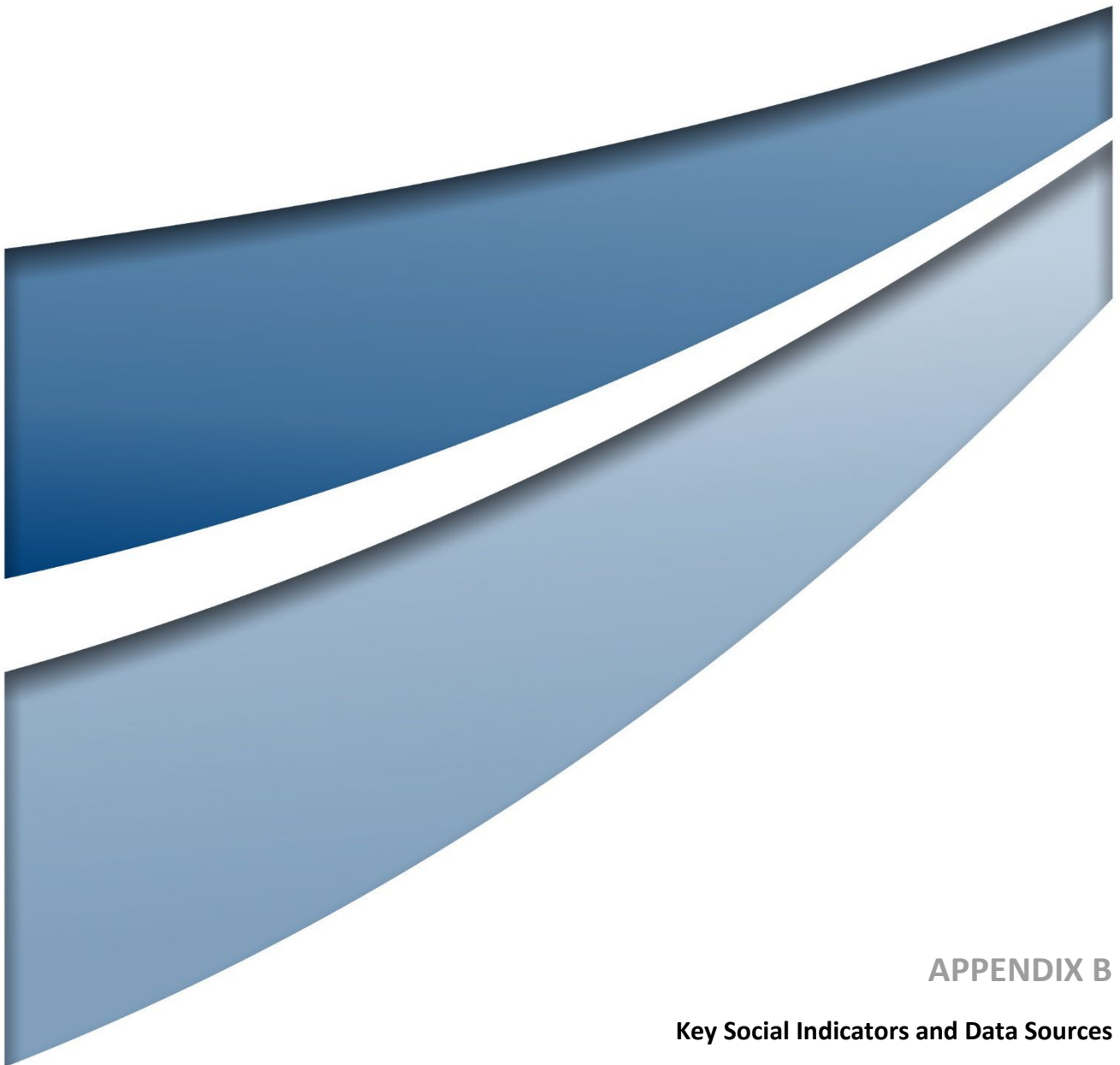
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APPENDIX A
SIA and EIS Process



Engagement with potentially affected people and other interested parties (Section 2)



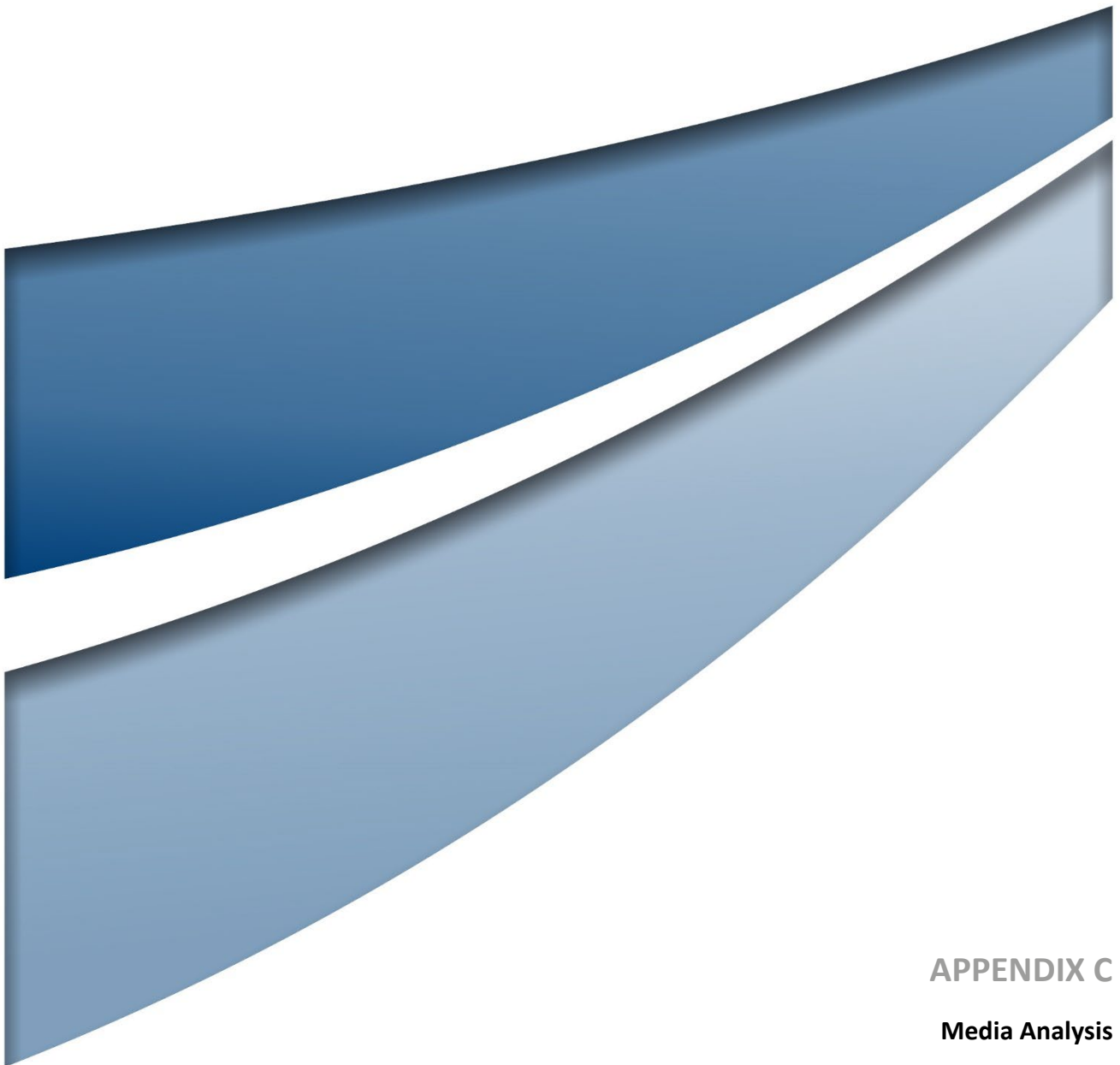
APPENDIX B

Key Social Indicators and Data Sources

Source	Level of Analysis	Indicators of Interest	Key Questions
ABS Census (2016 and 2021 ¹⁴)	Gundary SSC and Goulburn Mulwaree LGA	Current population Median age and age distribution Proportion of vulnerable groups (unemployed, low income families, elderly, Aboriginal and Torres Strait Islanders) Unemployment rate Key industries of employment Educational attainment Ownership and tenure of private dwellings Weekly household income Cost of living (rental and mortgage payments)	What is the demographic composition of the community? What is the proportion of the population that is vulnerable to the proposed project/change? What skills exist in the region, are there relevant skill sets to enable the local and regional population to capitalise on employment opportunities during construction/operations? Is the Project going to be of value to the local/regional community? Does the project align with community values, aspirations, needs? Are there any groups that will require a particular engagement approach to facilitate their involvement and participation? i.e., languages or cultural/ educational barriers, vulnerability? Are there any specific social trends evident in the region?
ABS Census of Population and Housing (2016 and 2021) Socio-Economic Indexes for Areas (SEIFA, 2016)	Gundary SSC and Goulburn Mulwaree LGA	Index of relative socio-economic advantage / disadvantage	What is the socio-economic status of the community? What is the level of advantage / disadvantage in the community?
Local papers/media including The Goulburn Post RAMfm Community Radio	Goulburn Mulwaree LGA NSW Australia	Level of support for renewable projects Number of articles relating to renewable projects Community Sentiment regarding solar farms Reported electricity prices	What has been the response of the community to similar Projects in the region? How supportive or not are community residents of renewable energy projects? Have community residents expressed concerns regarding current electricity prices?

¹⁴ 2021 census data has been used where available. Not all 2021 data has been released by ABS at the time of writing this Scoping Report. Where 2021 is not yet available, 2016 data has been used.

Source	Level of Analysis	Indicators of Interest	Key Questions
Department of the Environment and Energy (2019) Australian Energy Statistics NSW Transmission Infrastructure Strategy Renewable Energy Action Plan in 2018 Regional Community Energy Fund Energy Efficiency Action Plan 2018	NSW Australia	Level of investment in renewable energy infrastructure in NSW Support for and awareness of renewable/ wind energy in the community Strategic emphasis on energy infrastructure in the region Number of wind energy and renewables projects in the region	What are the Goulburn Council's key priority areas? Is the proposed project aligned with the Council's strategic plan? Are community values, concerns and/or aspirations documented in the Community Strategic Plan? How does the proposed project fit within the broader regional and state planning energy strategy?
Community and Stakeholder Engagement	Goulburn Mulwaree LGA	Knowledge of the project Level of support for the project Community sentiment towards renewable infrastructure and energy Concerns related to the project and perceptions of potential social impacts Ideas about ways to maximise the benefits of the project	What are the attitudes and perspectives of local and regional residents – are they likely to be supportive of the project? What are the key concerns of the community in relation to the project? Are there any strategies on how to manage the impacts of the project? To what extent will the project support the community?



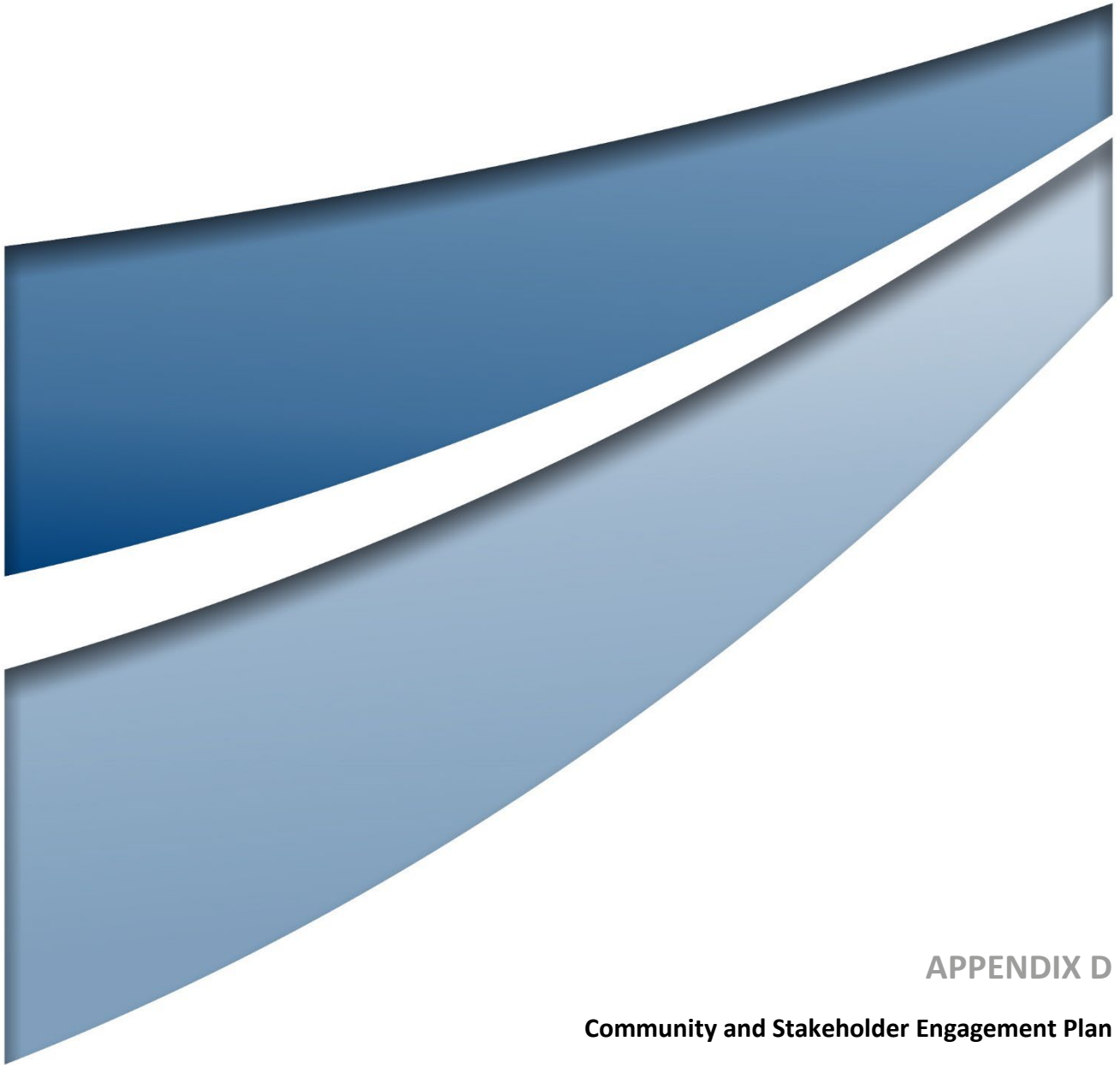
APPENDIX C

Media Analysis

Dates of article Sentiment of article	Key discussion points
2020 Strong community support for renewable energy	Media analysis has identified strong community support for renewable energy, while also identifying concerns about the cumulative impact of development near town centres. Much of the media surrounding renewable energy within the region pertains to the Goulburn Community Energy Cooperative (formally known as ‘Community Energy for Goulburn’ CE4G). The Goulburn Community Energy Cooperative (GCEC) is a community driven solar project, made up of over 200 local investors, and located only 3km from the town centre. Originally conceived by Community Energy for Goulburn (a related community association) in 2014, and supported by a feasibility study in 2016, the Goulburn Community Energy Cooperative (GCEC) was formed in mid-2020 as the investment vehicle to take the project forward (Goulburn Community Energy Cooperative, 2022). CE4G raised more than \$500,000 after a public event on October 21, 2020. After the webinar a week later, the total increased to more than \$1.2 million (Goulburn Post, 2020). The Community Energy for Goulburn Facebook page has 340 followers, and the newer Goulburn Community Energy Co Facebook page has 40 followers. <i>Articles include:</i> Sun shines on Goulburn’s community-owned solar farm (July 28, 2021). <i>Goulburn Post</i>. Goulburn solar farm raises \$1.5 million in two weeks (November 6, 2020). <i>Goulburn Post</i>. Community solar farm receives welcome supercharge (March 12, 2020). <i>Goulburn Post</i>
2021 State MP emphasises the importance of planning & community consultation regarding major energy projects	Media has also emphasised political concerns regarding renewable energy development. For example, the State MP Wendy Tuckerman has discussed power projects with the Australia Energy Infrastructure Commissioner, Andrew Dyer in late 2021. MP Tuckerman emphasised the importance of ‘proper’ planning and community consultation in relation to the region’s major energy projects (Goulburn Post, 2021), suggesting that the Goulburn Mulwaree region already has ‘plenty’ of renewable energy, and that the region did not want to become ‘saturated’ (Goulburn Post, 2021). <i>Articles include:</i> Goulburn MP takes up power projects with energy commissioner. (December 23, 2021). <i>Goulburn Post</i>

Dates of article Sentiment of article	Key discussion points
2021 Goulburn Mulwaree Council request for consideration of NSW Policy restricting encroaching renewable energy projects	Further, the Goulburn Post has also reported that the Goulburn Mulwaree Council asked to be considered as one for the regional cities in the State Environmental Planning Policy (Infrastructure) amendment (Goulburn Post, 2021) designed to protect major regional centres from “encroaching solar and wind development,” as the state ramps up its shift to a renewable powered grid (Solar Choice, 2021). The proposed State Environmental Planning Policy, if developed, will limit the construction of large-scale wind or solar projects within 10km of the commercial centres of Albury, Armidale, Bathurst, Dubbo, Griffith, Orange, Tamworth, and Wagga Wagga, and within 5km of residential land in those towns (Solar Choice, 2021). <i>Articles include:</i> NSW flags tighter rules on where wind and solar farms can be built (October 25, 2021). <i>Solar Choice</i>

Dates of article Sentiment of article	Key discussion points
2022 Neighbouring landholders and community groups share opposing views of the proposed Gundry Solar Farm Project	The proposed project has attracted some media attention in the scoping phase, including both in opposition to, and support of the project. The first article started with neighbouring landholders sharing their concerns regarding the project and responses from LSbp. Neighbouring landholders opposed the development of the project on 'prime agricultural land', suggesting that if approved, the Project would set a 'dangerous and irreversible precedent' for further inappropriate developments in the Gundry Plains and similar areas in the Goulburn Mulwaree area. Other potential impacts identified in the article included bushfire risk, impacts on biodiversity, land devaluation, cumulative impacts, and lack of local community/regional benefits. However, the article emphasised that the main concern of the proximal landowners was the visual impact of Project from their property (Goulburn Post, 2022). In response to some of this media activity, the Goulburn Group (TGG) has also reached out to the Goulburn Post to indicate support of the project, resulting in further articles outlining differing views regarding the Project. TGG accused Goulburn MP Wendy Tuckerman and member for Hume, Angus Taylor of opposing "jobs and development" and said Mr Taylor has "privately" backed a residents' opposition campaign to the project, as his property is near the intended site (Goulburn Post , 2022). Community Voice for Hume were quoted saying that Wendy Tuckerman MP and Hume MP Angus Taylor "have put the concerns of a small number of landholders ahead of the community's broader interests" (Goulburn Post, 2022). <i>Articles Include:</i> Goulburn MP speaks out against proposed Gundry Plains solar farm as company responds to criticism. (June 23, 2022) The Goulburn Group criticises Taylor, Tuckerman over solar farm stance. (June 30, 2022). <i>Goulburn Post</i> Goulburn-based Community Voice for Hume backs Gundry Solar Farm (July 5, 2022). <i>Goulburn Post</i> Gundry solar farm near Goulburn sparks calls for planning changes. (July 8, 2022). <i>Goulburn Post</i>



APPENDIX D

Community and Stakeholder Engagement Plan

GUNDARY SOLAR FARM
Community & Stakeholder Engagement Plan

DRAFT

August 2022



GUNDARY SOLAR FARM

Community & Stakeholder Engagement Plan

DRAFT

Prepared by

Umwelt (Australia) Pty Limited

on behalf of

Lightsource Development Services Australia Pty Ltd

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Report No. 22223/R02
Date: August 2022



This report was prepared using
Umwelt's ISO 9001 certified
Quality Management System.

Acknowledgement of Country

Umwelt would like to acknowledge the traditional custodians of the country on which we work and pay respect to their cultural heritage, beliefs, and continuing relationship with the land. We pay our respect to the Elders – past, present, and future.

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Document Status

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1.0 Introduction

The proposed Gundry Solar Farm (the Project) that is being initiated by Lightsource Development Services Australia Pty Ltd (Lightsource bp) (the proponent), comprises the construction, operation and decommissioning of a large-scale solar farm and battery energy storage system (BESS), approximately 13 km south of Goulburn, New South Wales (NSW) within the Goulburn-Mulwaree Council local government area (LGA).

Lightsource bp was formed in December 2017 through a partnership between European solar farm developer Lightsource Renewable Energy and global energy company bp. Lightsource bp has been operating in Australia since 2017 and has recently commenced construction of Wellington Solar Farm, West Wyalong Solar Farm (NSW) and Woorolga Solar Farm (Queensland). Lightsource bp have received planning approval for Wellington North Solar Farm (NSW), Mokoan Solar Farm and Wunghnu Solar Farm (Victoria). Lightsource bp is currently preparing the EIS for both the Goulburn River Solar Farm (NSW) and West Mokoan Solar Farm (Victoria), and are in the preliminary assessments, site design and community consultation for the Sandy Creek Solar Farm (NSW).

1.1 Purpose and Objectives

The purpose of this Community and Stakeholder Engagement Plan (CSEP) is to outline the approach and strategy for community and stakeholder engagement across the project assessment including Scoping and Environmental Impact Statement. This information / feedback from the community and stakeholder engagement will also be used in the development of the Social Impact Assessment (SIA).

The CSEP has been developed based on the NSW SIA Guidelines (2021), Undertaking Engagement Guidelines for State Significant Projects (DPE, 2021) and the NSW Government's Large-Scale Solar Energy Guideline for State Significant Development (2018). Respectful, inclusive, and meaningful engagement is a fundamental part of project planning and development. Engagement with affected communities and stakeholders provides first-hand insight into what people value and how they expect a project to affect them.

Specifically, this CSEP aims to:

1. inform and consult with the community in relation to the proposed project
2. develop an understanding of the social locality/social area of influence of the project, specifically the host community/communities in which the project is proposed.
3. scope and identify any impacts upon people associated with the project
4. enable community and stakeholder input by listening to the community, and feeding their inputs into the project design, planning and development
5. collaboratively develop relevant strategies to respond to impacts in the form of mitigation or enhancement measures
6. identify future engagement preferences of stakeholders and potential partnerships between the proponent and the community.

1.2 Approach

The NSW Government's revised SIA Guideline (DPIE, 2021) now makes SIA applicable to all SSDs in NSW, with proponents required to commission standalone Social Impact Scoping Reports as part of the Request for SEARs. These studies are informed by, and rely on, the outcomes of early, and ongoing community and stakeholder engagement through the assessment phase. The approach to stakeholder engagement for the Gundry Solar Farm will also be informed by the NSW Government's *Large-Scale Solar Energy Guideline for State Significant Development (2018)* and the *Undertaking Engagement Guide – Guidance for State Significant Development (2020)*.

Table 1.1 below outlines the relevant Guidelines, and what they recommend for engagement. The table outlines how the Community and Stakeholder Engagement Plan addressed the recommendations in the guidelines.

Table 1.1 Guideline recommendations

Guideline	Recommendations for Engagement	How these are addressed in the CSEP
SIA Guidelines DPE 2021	Aim to: - ensure likely affected people are <i>identified</i> and have enough <i>understanding</i> of the proposed project, how it may affect them, the development of the EIA, and how they can participate - collect qualitative and quantitative <i>data, evidence and insights</i> for scoping the SIA in ways that maximise diversity and representativeness of views - understand the interests people have in the project and how likely impacts <i>may be experienced from their perspectives</i> - consider the views of people in a meaningful way, and use these insights to <i>inform project planning</i> and design, mitigation and enhancement measures, and monitoring and management frameworks - provide opportunities for people to <i>collaborate</i> on project design matters and provide input into the identification and consideration of preferred solutions <i>confirm</i> data, assumptions, findings and recommendations - ensure people know how their <i>input has been considered</i>, and what strategies will be put in place to address their concerns. - help understand how <i>other specialist studies</i> prepared for the EIS assist in addressing social impacts.	The CSEP provides mechanisms and strategies to achieve the following: - inform and consult with the community in relation to the proposed project - develop an understanding of the social locality/social area of influence of the project, specifically the host community/communities in which the project is proposed. - scope and identify any impacts upon people associated with the project - enable community and stakeholder input by listening to the community, and feeding their inputs into the project design, planning and development - collaboratively develop relevant strategies to respond to impacts in the form of mitigation or enhancement measures - identify future engagement preferences of stakeholders and potential partnerships between the proponent and the community.

Guideline	Recommendations for Engagement	How these are addressed in the CSEP
Undertaking Engagement Guide: Guidance for State Significant Projects, NSW Government	A proponent will engage effectively if they: • identify upfront the people or groups who are interested in or are likely to be affected by the proposal • involve the community, interested groups, agencies and Council early in the development of the proposal, to enable their views to be considered in project planning and design • are innovative in their engagement approach and tailor engagement activities to suit the context (e.g. sensitivity of the site and surrounds), the scale and nature of the project and its impacts and the level of interest in the project • provide clear and concise information about what is proposed and the likely impacts for the relevant person/s or group they are engaging with • clearly outline how and when in the process, the community can be involved • make it easy for the community to access information and provide feedback • seek to understand issues of concern for all affected people and groups and respond appropriately to those concerns	
Large scale energy guideline, NSW Government	The Department also encourages applicants to consult with a wide range of stakeholders, including: • Government – Local council, NSW Government agencies and Commonwealth Government • Community – local landowners, special interest groups, Aboriginal community members, other potentially affected stakeholders • Network service providers	

2.0 Project Overview

2.1 The Project

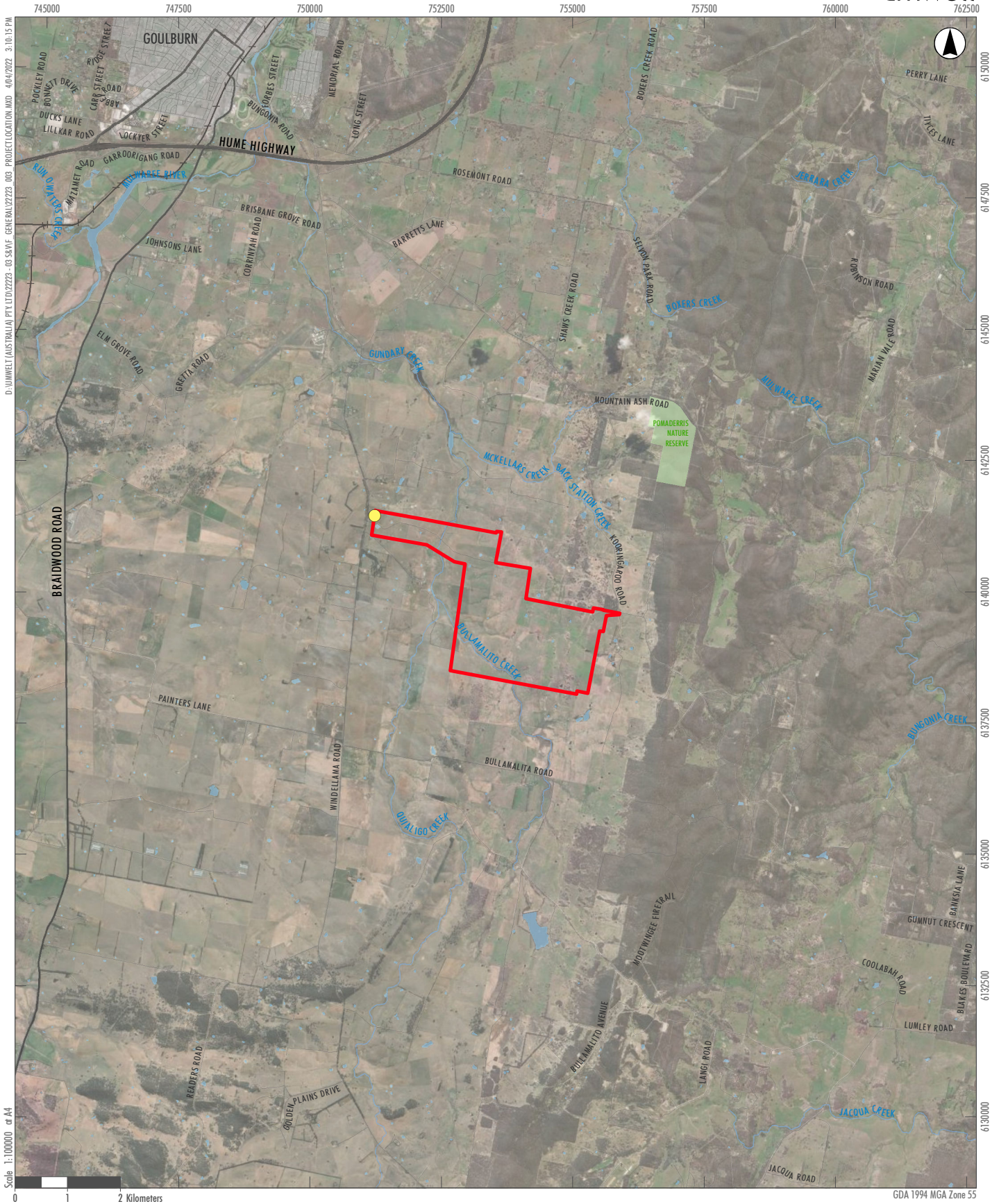
The Project will involve the construction, operation, maintenance and decommissioning of a 400 megawatt (MW) solar farm, BESS, associated infrastructure such as operation and maintenance buildings, civil works, and electrical infrastructure required to connect the Project to the electricity network. The Project will have direct access of Windellema Road.

The Project is located at 1013 Windellama Road, Gundry NSW 2580, within the Gundry State Suburb(SSC), which is in the Goulburn Mulwaree LGA, as outlined in **Figure 2.1**.

The design will be subject to further review and refinement as the environmental assessment process progresses. **Table 2.1** below outlines key project milestones throughout the EIS program.

Table 2.1 Key project milestones

Activity	Estimated timing
Landholder engagement	Early 2022
CSEP review and finalisation	Mid-March 2022
Launch of project website/'go live' date	TBC
Advertisement of engagement activities	Mid-March 2022
Scoping phase stakeholder and community engagement delivery	March – May 2022
Submission of Scoping Report (including SIA Scoping Report) to DPE	TBC
Issuance of SEARs	TBC
Submission of EIS (including SIA)	TBC
Public exhibition period	TBC
Indicative determination	TBC



- Legend**
- Windellama Development Boundary
 - Site Access
 - Main Roads
 - Railway
 - Watercourses
 - Hydro Areas
 - NPWS Estate

FIGURE 2.1
Project Location

2.2 Policy Context

The NSW Government's current energy security policy and approach to a clean energy transition is being delivered through the strategic development of the renewable energy sector, as outlined through the NSW Government's *Renewable Energy Action Plan* (2013), *Electricity Strategy* (2019) and the *Electricity Infrastructure Roadmap* (2020). This policy context is relevant to inform the public positioning and key messaging for the planning and development of the Gundry Solar Farm.

2.3 Social Context

The Gundry Solar Farm Project site is located in the small suburb of Gundry, which has a population of approximately 270 people (approximately 109 households) with a median age of 42 years (ABS, 2016).

Gundry is located within the broader Goulburn Mulwaree Local Government Area (LGA) that is governed by the Goulburn Mulwaree Council. The surrounding areas of Windellama, Lake Bathurst, Turrumbidgee, Qualigo and Bungonia are all small suburbs characterised by ageing populations. The site is located southeast of Goulburn which is the primary location where residents from the abovementioned suburbs are likely to access services and facilities.

As shown in **Figure 2.2**, residents of Gundry are more likely to be older, lack access to internet in their homes, live in households with 2 or more motor vehicles, and live in households with multiple occupants than the broader population of NSW. Further, residents of Gundry are less likely to be unemployed and are substantially less likely to have been born overseas than the broader population of NSW. The locality has higher rates of housing vacancy than the rest of NSW.

Compared to the wider Goulburn Mulwaree LGA, Gundry is less likely to have Aboriginal and Torres Strait Islander people. The top occupation in Gundry are professionals, and the top industry of employment is Central Government Administration.

These statistics, outlined in **Figure 2.2** below, present implications for engagement requirements (i.e. reduced reliance on online engagement methods), likely impacts (i.e. based on needs of an ageing population) and on opportunities or benefits (i.e. based on presence of workforce with ability to gain employment from the project).

Demographics

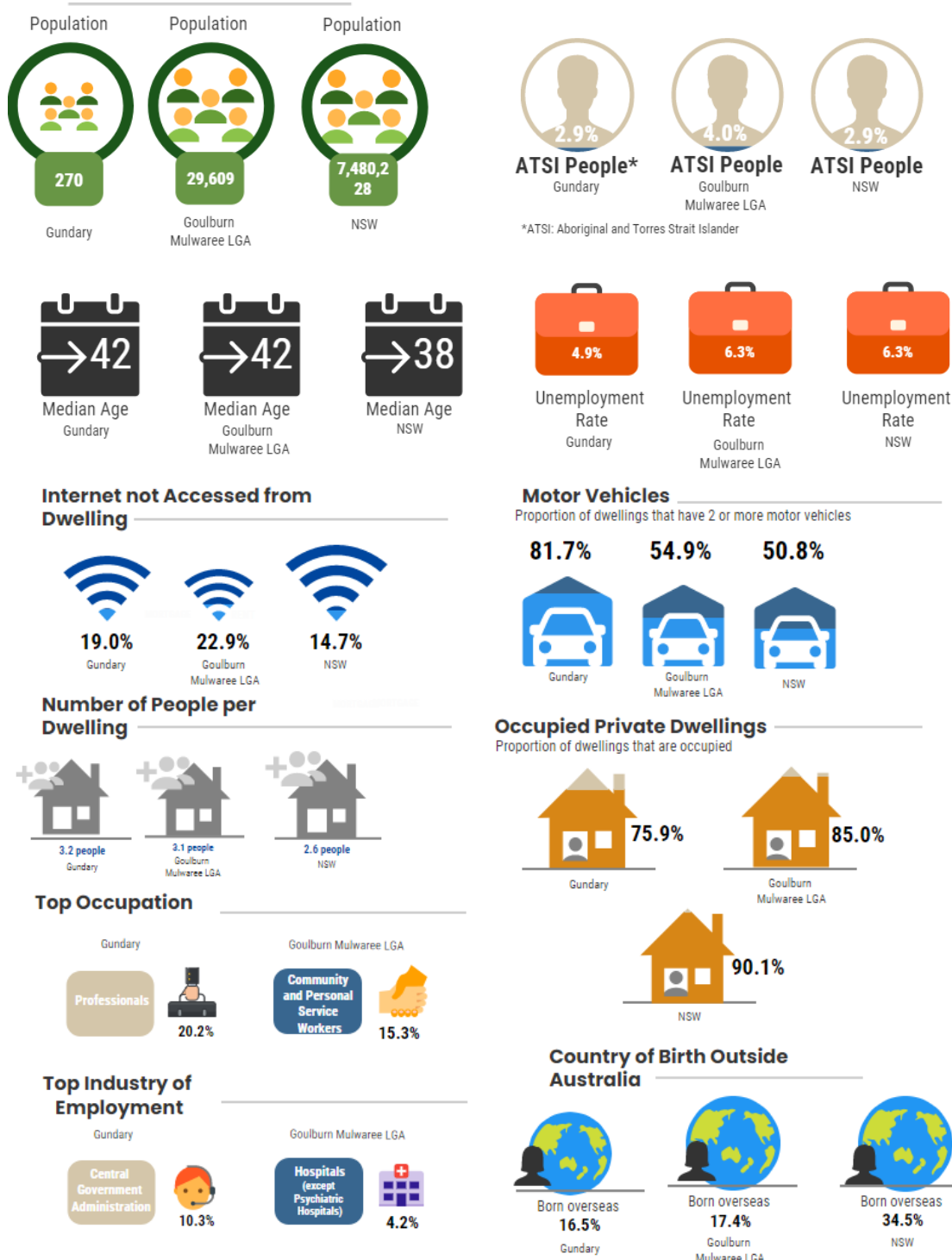


Figure 2.2 Community Demographic Snapshot

Source: (ABS, 2016)

2.4 Key Considerations

In recent years, proposed renewable energy projects across NSW have had diverse responses from local communities in relation to their perceived environmental and social impacts.

Following an initial review of submissions received, local media and other publicly available documentation across recently announced or developed solar projects, we understand the following issues to be of relevance for consideration in planning and developing the Project:

- perceived inadequacy with community engagement approaches by other proponents, including a lack of adequate community representation and limited information provision.
- land use conflict – renewables development in productive agricultural areas.
- visual amenity – power lines and poles have been a concern of residents due to the impact on the rural landscape, views of solar panels, glare and glint, lighting issues and lack of screening.
- lack of local economic benefit and detracting from local tourist areas and attractions.
- construction workforce impacts on local townships – effect on supply, demand, and accessibility of local service provision (housing, health, education, recreation, employment services etc.).
- little research demonstrated in devaluation of properties and overall local property market changes, especially where location of site is close to townships and/or to residential properties.
- acoustics and cumulative noise impacts, including impacts on sleep.
- traffic issues for local roads, road deterioration, school buses and children's safety on roads.
- concerns about electromagnetic fields (EMFs), radiation issues for residents increasing health risks, hazardous material posing a hazard/safety risk, heat generation, welfare of cattle and sheep, spread of noxious weeds, bird deaths associated with heat.
- issues around cumulative impacts of projects, especially within 10 km of towns.

The cumulative nature of renewable energy projects must also be considered in the case of this Project given the NSW Government's *NSW Electricity Infrastructure Roadmap* and other proximal renewable energy projects in the Goulburn Mulwaree LGA that have experienced community opposition in recent years (largely wind farm developments).

3.0 Engagement Strategy

The NSW DPE SIA Guideline (2021) outlines several stakeholder groups to consider in SIA engagement. The stakeholder groups that are seen to be relevant to this Project are outlined in **Figure 3.1** below.

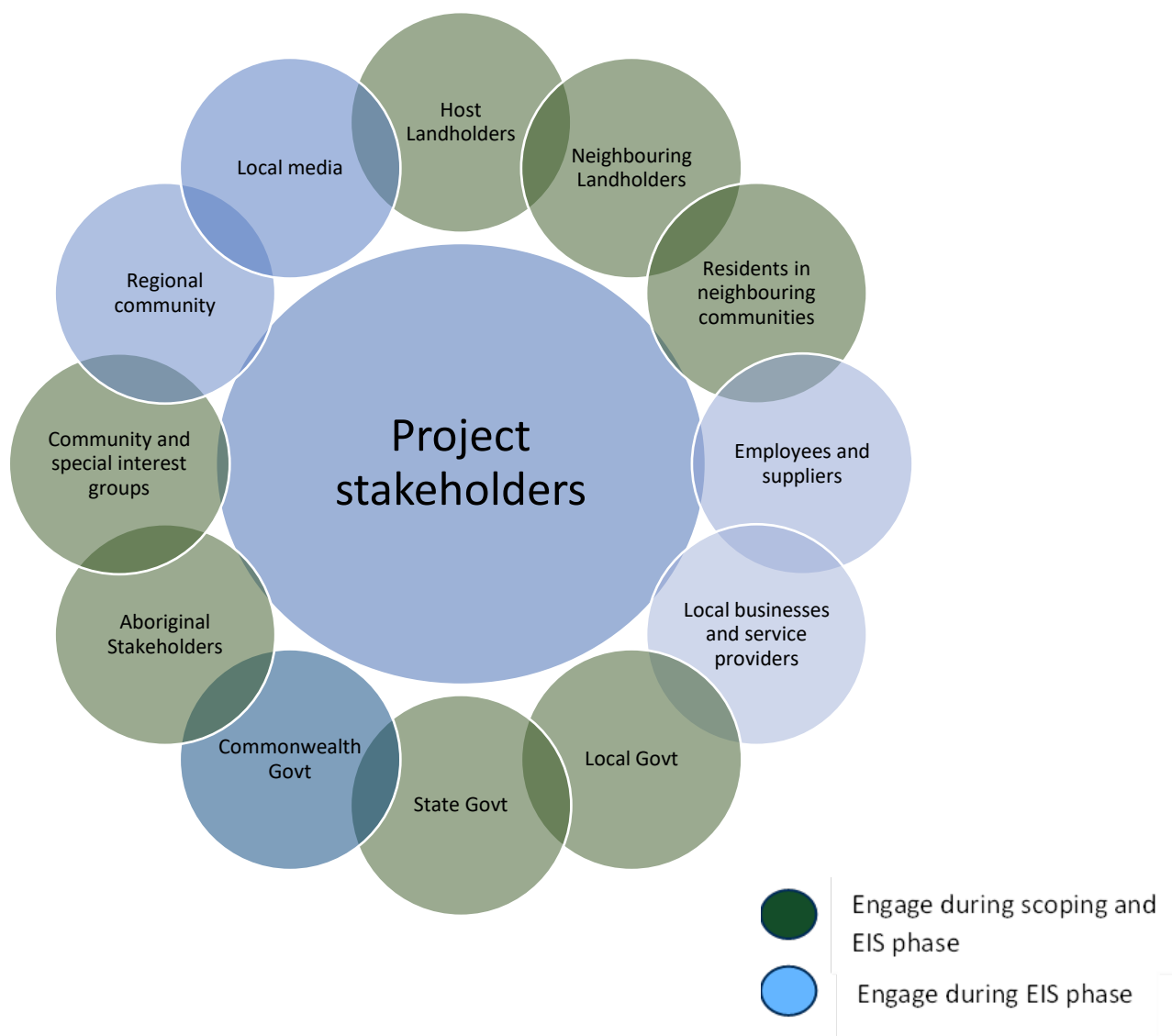


Figure 3.1 Stakeholder groups

3.1 Stakeholder Identification

A stakeholder identification process has been undertaken to further define relevant stakeholders for the project within each of these stakeholder groupings. Levels of engagement have been defined based on the International Association of Public Participation (IAP2) Public Participation Spectrum¹ as per **Figure 3.2**.

INCREASING IMPACT ON THE DECISION					
	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

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Figure 3.2 IAP2 Public Participation Spectrum

Source: International Association for Public Participation, 2019

A breakdown of these stakeholders is presented in **Table 3.1**.

Table 3.1 Stakeholder identification

Stakeholder Group	Stakeholders	Level of Engagement (IAP2)	Potential Impacts
Host landholder	1 landholder on the project site (TBC)	Collaborate	Changes to way of life and livelihood Additional financial security from the long-term lease agreement

¹ IAP2 IAP2 Spectrum | IAP2 Australasia

Stakeholder Group	Stakeholders	Level of Engagement (IAP2)	Potential Impacts
Local Government	Goulburn Mulwaree Shire Council – Mayor, Deputy Mayor and Executive team	Collaborate	Cumulative impacts from multiple projects Accessibility impacts on local and regional services and businesses Commercial stimulus for local economy Local infrastructure and services provision (e.g., road upgrades) Land use planning and/or conflict Concerns of community and local stakeholders
Adjacent landholders or proximal property owners	Approximately 14 residences within 1 km radius of the site Local road users	Involve	Social amenity impacts such as visual changes to the landscape during both construction and operation Accessibility impacts due to construction traffic Land use conflict Cumulative impacts from multiple projects Noise impacts during construction period
Local businesses and service providers	Bus companies Accommodation providers and local AirBnBs Utilities providers; TransGrid, Essential Energy, Telstra Service providers (employment, education, health, recreational etc.) Emergency services such as RFS, Fire & Rescue, SES, Ambulance and Police Bakery / general store in Gundry Tirranna Public School	Involve	Increased demand/use of local and regional services by construction workforce Livelihood impacts Public safety for other road users (e.g., children and school bus drop off locations) Commercial stimulus for local economy
Aboriginal stakeholders	Pejar Local Aboriginal Land Council (LALC) Katungul Aboriginal Corporation Regional Health and Community Services Local Aboriginal service providers	Involve	Impacts on cultural connection to Country or place or on cultural values Inequity of impacts on Aboriginal community

Stakeholder Group	Stakeholders	Level of Engagement (IAP2)	Potential Impacts
State & Commonwealth Government	DPE Secretary NSW Environment Protection Authority (EPA) Heritage NSW Transport for NSW] Biodiversity Conservation Division (BCD) DPE Water	Consult	Cumulative impacts from multiple projects Alignment to NSW Government initiatives Compliance with relevant legislation Environmental, social, cultural and economic impacts
Community and special interest groups	Community Energy 4 Goulburn Goulburn Field Naturalist Society The Goulburn Group Windellama Garden Club Inc Windellama Progress Association Inc. Goulburn Chamber of Commerce & Industry NSW Farmers Association Goulburn Landcare Group Tirranna Public School Windellama Public School Goulburn East Public School Goulburn High School Goulburn North Public School	Consult	Cumulative impacts from multiple projects Accessibility impacts from construction workforce Land use conflict Sense of community / sense of place Commercial stimulus for local economy Local infrastructure and services provision
Regional community	Residents in the broader Goulburn Mulwaree LGA	Consult	Cumulative impacts from multiple projects Accessibility impacts from construction workforce Land use conflict Regional economic benefits Infrastructure and services provision
Local media	The Goulburn Post RAMfm Community Radio	Inform	Cumulative impacts from multiple projects Regional economic benefits

3.2 Engagement Methods

The engagement of stakeholders and community groups will include a combination of:

- **Consultation and engagement:** to facilitate stakeholder involvement in the identification of issues/impacts, areas of interest/concern and strategies to address the issues raised.
- **Information provision:** to improve knowledge and awareness of the company, its activities, the project, and key issues/impacts as they arise.

Table 3.3 outlines the engagement mechanisms that will be used to engage each stakeholder group, that aligns with the level of engagement as noted in **Table 3.1**.

Table 3.2 Engagement Mechanisms Responsibility Colour Code

Lead Responsibility Colour code	
Lightsource bp	Umwelt

Table 3.3 Engagement mechanisms

	Project website	Social media	Community Hotline	Project Email ²	Project Information Sheets	Community Information Sessions	Personal Interviews/ Meetings	Project Meetings
Stakeholder Group								
Host landholders						✓	✓	
Adjacent landholders or property owners	✓	✓	✓	✓	✓	✓	✓	
Residents of neighbouring or nearby communities	✓	✓	✓	✓	✓	✓		
Local businesses and service providers	✓	✓	✓	✓	✓	✓	✓	✓
Local Government	✓						✓	✓
State Government							✓	✓
Aboriginal stakeholders	✓	✓	✓	✓	✓	✓	✓	✓
Community and special interest groups	✓	✓	✓	✓	✓	✓	✓	
Regional community	✓	✓	✓	✓	✓	✓		
Local media	✓	✓	✓	✓	✓			

² Lightsource bp will host the email and forward queries to Umwelt to respond to on an as-needed basis

3.3 Key Project Messages

Key messages (for external purposes) will be developed and refined throughout the EIS process, around the following three critical message categories and will be used to inform the engagement strategy and material development:

- **Project** – details on the site and plans, quick facts and profile of the proposed Project.
- **Process** – the development planning and assessment process, including community consultation and key milestones for the EIS submission, public exhibition, and determination.
- **Issues and Benefits** – key issues in relation to the Project i.e., social, and environmental issues, interests or concerns.

3.3.1 Project Messages

- Lightsource bp are proposing to develop a solar farm on a site of approximately 649 ha in Gundry, approximately 13 km south of Goulburn. The Project has a proposed operational life of a minimum of 35 years.
- The Project site has been strategically selected due to its location within a strong area of the NSW electricity network. The 330kv line that transports energy to major population centres including Sydney and Canberra intersects the Project site.
- The site selection process for this project was grid-led, involving initial selection of transmission infrastructure with sufficient transmission capacity to accommodate a project. Once a transmission line was selected, the site selection process was targeted in areas in vicinity to this infrastructure.
- Several land options were then selected based on avoiding planning and environmental constraints. Lightsource bp consulted several landowners in the region, with negotiations ultimately being successful with the landowner of the Gundry Project site.
- The proposed solar project will have a capacity of approximately 400MWp MW and will be comprised of solar photovoltaic (PV) modules as well as a battery energy storage system (BESS) to store the energy created by the solar farm. The energy will be transferred to an existing TransGrid 330 kilovolt transmission line located in the north-west corner of the site.
- The Project, once constructed, will also include a site office, operations and maintenance building, carpark area, and storage facilities.
- The Project will be designed to facilitate sheep grazing, in line with Lightsource bp's standard practice of facilitating co-existence with agricultural industry.
- The site will be accessed from the Hume Highway and Windellama Road. An assessment of the proposed transport route will be undertaken in the Traffic Impact Assessment for the Project that will determine whether any upgrades would be required to access roads to allow for construction vehicles to access the site.
- Local access tracks to several points on the site are also currently being investigated through the preliminary design and layout.

- Pending the Project's environmental and regulatory assessment and approvals process, construction is currently proposed to commence in Q3 2024 and extend over an 18 to 24 month period, with the Project to be operational by 2026.
- Lightsource bp has been operating in Australia since 2017, and has recently commenced construction of Wellington Solar Farm, West Wyalong Solar Farm (NSW) and Woolooga Solar Farm (Queensland). Lightsource bp have received planning approval for Wellington North Solar Farm (NSW), Mokoan Solar Farm and Wunghnu Solar Farm (Victoria). Lightsource bp have submitted Planning Applications for both the Goulburn River Solar Farm (NSW) and West Mokoan Solar Farm (Victoria), and are in the preliminary assessments, site design and community consultation for the Sandy Creek Solar Farm (NSW).

3.3.2 Process Messages

- The Gundry Solar Farm is in the early stage of planning works. It will be assessed as a State Significant Development (SSD) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (the EP&A Act).
- The NSW Department of Planning and Environment (DPE) is the State consent authority for the project.
- The EP&A Act requires a preliminary scoping report to be prepared and submitted to the DPE. DPE will then prepare and issue the Secretary's Environmental Assessment Requirements (SEARs).
- As part of Lightsource bp's application to DPE, Umwelt has been engaged to develop an EIS which will include a number of technical studies to assess the potential impacts of the project. These technical studies will include noise and vibration, biodiversity, visual amenity, Aboriginal and non-Aboriginal heritage, traffic and transport, social and community, water and soil resources, and hazards and safety.
- Once complete, DPE would assess the development application and the EIS, considering all project impacts assessed, and provide a project determination to Lightsource bp.
- The SIA assesses the impact of the project on the community. To inform the SIA, Umwelt and Lightsource bp will be consulting with the community to understand their concerns, interests, issues, or the benefits that people perceive the Project may deliver. This consultation is an important part of the Project's planning and design, and Lightsource bp will endeavour to undertake regular, open and transparent engagement that is helpful and constructive. This engagement will enable Lightsource bp to address how stakeholder feedback can be addressed in project design and planning.
- Lightsource bp will be working closely with host landholders, neighbouring landholders and property owners, Aboriginal community representatives, and the wider community, in addition to the Goulburn Mulwaree Council and NSW Government agencies, to gain a detailed understanding of the views, issues, interests and feedback on the proposed project.
- The first round of engagement will occur in March to May 2022, with the second round of engagement expected to take place in later in 2022 during the preparation of the EIS.
- Prior to the determination from the DPE, the EIS will be made public, allowing for submission to be made by any member of the community or interested party. This gives the public and the wider community the opportunity to contribute to the Project's assessment and determination.

3.3.3 Project Impacts and Opportunities

- Solar energy development supports the diversification of NSW's energy mix and more broadly is contributing to Australia's clean energy transition.
- This 400 MWp project will have the capacity to generate 800,000 MWh of clean electricity each year; enough to supply electricity to approximately 133,000 homes.
- The project's generation of solar energy will ensure that 640,000 tonnes of carbon is not emitted into the atmosphere, equating to taking approximately 213,000 cars off the road.
- The Project is expected to employ a construction workforce of up to 400 full time equivalent (FTE) employees, with approximately 250 personnel on site at peak over the construction period and 2-4 full time staff during operations of the solar farm.
- Lightsource bp aims to source at least 35% of the construction workforce from the local area, plus one locally sourced operational site manager. Local service providers and suppliers will also have opportunities to contract services during the construction period.
- Construction workers will be accommodated in towns within approximately one hour of the site, such as Goulburn and Marulan. The findings of the SIA will support Lightsource bp in refining these plans.
- Lightsource bp has an established relationship with the Clontarf Foundation, an Australian organisation that works to provide educational opportunities and life skills support to Aboriginal and Torres Strait Islander boys and young men. The Clontarf Foundation partners with schools across the country to form Clontarf academies. Lightsource bp has an ongoing partnership with the Clontarf Foundation, supporting the academies closest to each Lightsource bp project nationwide by providing annual monetary support and/or sponsorships.
- The community engagement process for the Gundry Solar Farm will support Lightsource bp to understand the community's values, priorities, and aspirations to then consider establishing relationships with local or regional groups such as a community investment program and sponsorship initiatives.
- Lightsource bp recognises the community concerns in relation to other solar projects in NSW and elsewhere, as well as in relation to recently developed or proposed wind farms in the Goulburn area, such as those relating to visual landscape changes, access to or acquisition of agricultural properties, and the level of local economic benefit.
- Lightsource bp is committed to building strong relationships in the local community from the early stages of development. Lightsource bp will work to ensure that through the EIS and associated community engagement process, the Project gathers a thorough understanding of the issues specific to the Gundry Solar Farm and ensure that these are adequately addressed.

3.4 Engagement Materials and Topics

Umwelt will draft and prepare engagement materials to support the engagement activities outlined in **Section 4.0**. These will be prepared following confirmation of the Implementation Plan for Lightsource bp's review (see **Section 4.0**). Materials and tools to support the proposed engagement activities include the following:

- interview guides
- meeting agendas/run sheets
- project information sheets/posters.

Other materials will be developed as relevant to address information requirements identified through the engagement process.

The NSW Large-Scale Solar Energy Guideline (2018) states that Proponents are encouraged to engage with relevant stakeholders at all stages of the environmental impact assessment of State significant solar energy develop, from scoping through to post-approval. Project specific "Secretary's Environmental Assessment Requirements (SEARs) and consent conditions may also include consultation requirements that must be complied with.

The NSW Large-Scale Solar Energy Guideline (2018) encourages applicants to consult with the following stakeholders:

- Government – Local council, NSW Government agencies and Commonwealth Government.
- Community – local landowners, special interest groups, Aboriginal community members, other potentially affected stakeholders.
- Mineral title holders.
- Network service providers

3.5 Discussion Topics for Community Engagement

The NSW Government's Large-Scale Solar Energy Guideline (2018) requires that proponents include the following components of their stakeholder engagement program through the appropriate project planning and development phases:

- To engage with host and proximal landholders about the proposed project area, the likely infrastructure layout, access routes and potential location of ancillary infrastructure.
- To listen to the community's concerns and suggestions.
- To discuss potential noise impacts, the potential visual impacts and landscape changes, the proposed siting, and potential alternatives.
- To discuss issues for landholder agreement if the project is approved, including siting, access, compensation, responsibility for decommissioning and rehabilitation.

3.5.1 Phase 1 (Scoping)

It is expected by DPE under the SIA Guideline (2021) that the scoping phase will include community engagement activities to understand likely stakeholder issues and concerns early in the project and to ultimately inform the social impact evaluation phase of the SIA.

Engagement in Phase 1 provides an opportunity to gauge and understand stakeholder issues/concerns/interests in relation to the project; to identify preliminary strategies/solutions to address topics raised; and to inform project design and planning.

In this regard, the SIA process calls for likely social impacts to be appropriately scoped and identified through consultation with potentially affected people and mitigation and enhancement options preliminarily explored.

To satisfy the SIA requirements, proposed engagement activities to be undertaken in this phase need to be targeted at identifying perceived issues of concern and/or positive impacts in relation to the proposed project to be further considered in the subsequent EIS phase.

Questions to include in survey or interview discussion guides appropriate to this phase will include topics relating to:

- Awareness and attitudes towards solar farm development (and other renewables or industry development in the local or regional area).
- Awareness and public perceptions of Lightsource bp.
- Potential issues, concerns or interests related to the proposed project.
- Community values, identity, local needs, and aspirations.
- Areas of value and use within and near the project area.
- Sense of community in the area.
- Potential sensitive receivers and/or vulnerable community groups.
- Preferred engagement mechanisms, frequency, and content.

3.5.2 Phase 2 (EIS preparation)

Proposed engagement activities undertaken during Phase 2 will be focused on exploring and validating the issues/interests/concerns that have been identified during the Scoping Phase. The EIS program and preliminary insights or findings gathered through the various technical studies will also be further communicated during this phase, to assist in gathering feedback from key stakeholders and the wider community, on predicted project impacts.

Therefore, engagement in this phase, to inform the EIS and SIA will focus on:

- Assessment and evaluation of perceived issues, impacts and opportunities associated with the project.
- Existing capacity of local service provision and projected future demand.
- Potential strategies to address and respond to issues, impacts and opportunities.
- Enhancement measures to improve collaboration between Lightsource bp and community or stakeholders, including potential community investment and benefit-sharing opportunities.

3.6 Recording, Monitoring and Record-keeping

Outcomes and records of each engagement activity will be documented by the team member(s) in attendance.

An Engagement Register in Excel format will also be maintained throughout the delivery of the Implementation Plan to ensure consistent tracking and recording of all community or stakeholder engagement activities and outcomes. Information to be recorded includes:

- Activity details (including stakeholder engaged, attendees, time and place, mechanism used).
- Discussion points.
- Summary of key outcomes or any actions.
- Stakeholder contact details.
- Preferences for future engagement.

Following completion of engagement for each phase, outcomes and data obtained will be collated and analysed to identify key impact themes and impact prioritisation. Identified issues or impacts may also be mapped to identify any patterns.

Communications and stakeholder engagement will be monitored throughout the project and this plan may be adapted to adjust engagement mechanisms, stakeholders, timing or content in response to feedback or changing circumstances.

Outcomes of engagement undertaken will then be summarised in the Social Impact Scoping Report and Social Impact Assessment Report respectively.

4.0 Stakeholder and Community Engagement Implementation Plan

An overview of the activities proposed to effectively engage each stakeholder group across the two assessment phases is provided below.

4.1.1 Phase 1 (Scoping)

Table 4.1 presents the Scoping Phase Implementation Plan.

Specifically, in this phase, the CSEP aims to:

1. Inform and consult with the community in relation to the Project.
2. Develop an understanding of the social locality/social area of influence of the Project, specifically the host community/communities in which the Project is proposed.
3. Scope and identify any impacts upon people associated with the Project.
4. Afford community and stakeholder input preliminary project design, planning and development.
5. Identify preliminary strategies or community benefit schemes or partnerships that may be further explored to respond to impacts in the form of mitigation or enhancement measures.
6. Identify engagement preferences of stakeholders and potential partnerships between the proponent and the community.

4.1.2 Phase 2 (EIS preparation)

Table 4.2 contains the tasks that are proposed to be undertaken in Phase 2 (EIS preparation), however, this will be revised and expanded as required following the outcomes of Phase 1 and subsequent to the issuance of SEARs.

Table 4.1 Phase 1 (Scoping) Implementation Plan

Mechanism	Detail	Alignment with Objectives (Section 1.1)	Stakeholder Group	Umwelt Responsibilities	Lightsource bp Responsibilities	Timing	Required Input from Umwelt
Project Information Sheet 1	First project information sheet that will provide an overview of the proposed project and approvals pathway, and how the community can get involved in the EIS process and specifically the SIA. Information regarding the first community information session will be included.	1	Proximal residents within 1km of site boundary Broader community	Draft content Provide input into distribution area Distribute info sheet	Review and approve content Design info sheet	March	Project description and Information Session details
Website, Project contact number and project email address	Publish a live Project webpage on the Lightsource bp website. Establish the 1300 number and Project email address	1	All stakeholder groups	Incorporate link in our correspondence with stakeholders. Share Project contact number and email to stakeholders and community members.	Design and publish website. Establish 1300 number, and Project email address	March – Early April	N/a
Personal interviews/ meetings	Meetings with individual landholders to understand the social locality, sensitivities, concerns and interests of directly affected landholders, local community values, and to scope perceived impacts of the project to be fully assessed in the EIS preparation phase, as well as any potential project refinements to be considered.	1, 2, 3, 4, 5	Host landholders Proximal residents within 1km of the site boundary Registered Aboriginal Parties	Draft interview guide Undertake meetings Record outcomes of meetings Communicate any social risks to the project team	Review and approve interview guide Attend meetings as relevant	March – April	Interview guide

Mechanism	Detail	Alignment with Objectives (Section 1.1)	Stakeholder Group	Umwelt Responsibilities	Lightsource bp Responsibilities	Timing	Required Input from Umwelt
	Meetings with key community groups and/or local key stakeholders including Registered Aboriginal Parties to understand the social locality, any concerns held regarding similar projects nearby and to identify potential community needs, values, aspirations or vulnerabilities to inform the SIA and potential mitigation measures.	1, 2, 3, 4, 5	Community/ environment/ cultural/ special interest groups	Draft interview guide Undertake meetings Record outcomes of meetings Communicate any social risks to the project team	Review and approve interview guide Attend meetings as relevant	March – April	Interview guide
	Meetings with State Government to understand key impacts of the project to inform the SIA and potential mitigation measures.	1, 2, 3, 4, 5	Regional Development Australia DPE	Draft interview guide Undertake meetings Record outcomes of meetings Communicate any social risks to the project team	Review and approve interview guide Attend meetings as relevant	March – April	Interview guide

Mechanism	Detail	Alignment with Objectives (Section 1.1)	Stakeholder Group	Umwelt Responsibilities	Lightsource bp Responsibilities	Timing	Required Input from Umwelt
	Meeting with Council staff to understand the social locality; community characteristics and values, including aspirations and needs or vulnerabilities; experiences with similar projects in the LGA; any perceived social impacts of this project; and expectations of Council on local social or economic benefits to be realised.	1, 2, 3, 4	Goulburn Mulwaree Council	Draft interview guide Undertake meetings Record outcomes of meetings Communicate any social risks to the project team	Review and approve interview guide Attend meeting	March	Interview guide
	Meeting with key service and Education providers to understand community needs and assess options for community benefit	1, 2, 3, 4	TAFE Training Services NSW Ginninderry	Draft interview guide Undertake meetings Record outcomes of meetings	Review and approve interview guide Attend meeting	March and April	Interview guide

Mechanism	Detail	Alignment with Objectives (Section 1.1)	Stakeholder Group	Umwelt Responsibilities	Lightsource bp Responsibilities	Timing	Required Input from Umwelt
Community Information Session 1	1 x in person drop-in community information session will be held with attendance by Umwelt and Lightsource bp to allow the broader community and any interested parties to review information regarding the project, ask the project team questions, provide feedback and raise any concerns or interests.	1, 2, 3	Broader community	Organise the session, including location, bookings, catering etc. Incorporate invitation into the initial community information leaflet Provide input regarding invitees Distribute the invitation/advertisements Attend the session and record outcomes	Review and approve details of the session Review and approve the invitation/advertisements Attend the session	April 30	Project posters and information

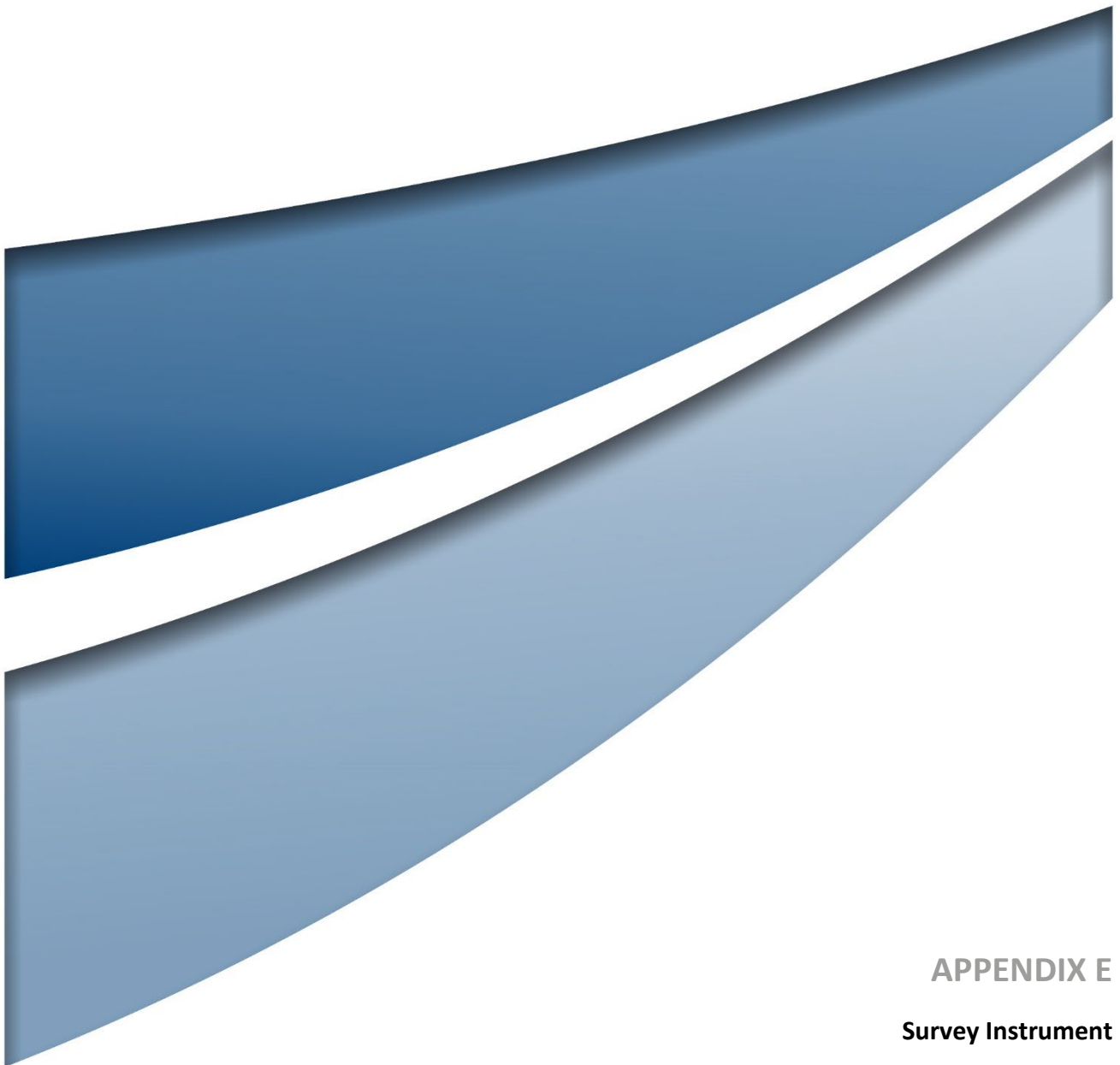
Table 4.2 EIS Preparation Implementation Plan

Engagement Mechanism	Detail	Alignment with Objectives (Section 1.1)	Stakeholder Group	Umwelt Responsibilities	Lightsource bp Responsibilities	Timing	Required Input
Project Information Sheet 2	Second project information sheet will outline the outcomes of the Phase 1 engagement program to validate understanding of the community's perceived impacts; share additional project information and detailed plans; and provide an update on the approvals process, including the EIS and technical studies' outcomes.	1	Proximal residents within 1km of site Broader community	Draft content Provide input into distribution area Distribute info sheet	Review and approve content Design info sheet	TBC	Project description
Community Information Session 2 and 3	2 x information sessions will be held with attendance by Umwelt and Lightsource bp to allow the broader community and any interested parties to review updated planning and design information (including findings of technical studies), ask the project team questions, provide feedback on the project planning and assessment. It is proposed that 2 sessions are run on different days and in different locations, to enable the wider community to access opportunities to learn about the project and provide feedback. Consideration of having a stall at a local market.	1, 2, 3	Broader community	Organise the session, including location, bookings, catering etc. Draft an invitation to/advertisement about the session Provide input regarding invitees Distribute the invitation/advertisements Attend the session and record outcomes	Review and approve details of the session Review and approve the invitation/advertisements Attend the session	TBC	Project posters and information
Personal interviews/meetings	Meetings with individual landholders to explore impacts and issues identified in Phase 1, validate their perceived impacts of the project,	2, 3, 4, 5	Host landholders Proximal residents	Draft interview guide Undertake meetings	Review and approve interview guide	TBC	Interview guide

Engagement Mechanism	Detail	Alignment with Objectives (Section 1.1)	Stakeholder Group	Umwelt Responsibilities	Lightsource bp Responsibilities	Timing	Required Input
	discuss options around mitigation measures, and evaluate any specific sensitivities to be experienced by each landholder.		within 1km of site	Record outcomes of meetings Communicate any social risks the project team	Attend meetings if requested		
	Meetings with key community groups and/or local key stakeholders to further explore and investigate issues of the project as scoped in Phase 1 and evaluate the impact from the community or stakeholder perspective. Local service providers are likely to be targeted through these interviews to understand the existing capacity of infrastructure and services in the context of an incoming construction workforce (health, housing/ accommodation, recreation etc.). Potential mitigation measures and enhancement strategies will be identified and explored through these discussions. 1 x meeting with Council to further explore any local issues and benefit sharing strategies is also likely to be included.	2, 3, 4, 5	Community/ environment/ special interest groups	Draft interview guide Undertake meetings Record outcomes of meetings Communicate any social risks the project team	Review and approve interview guide Attend meetings if requested	TBC	Interview guide
Small group discussion or collaborative	1 x small group meeting or a collaborative forum with the Lightsource bp team and key identified stakeholders, as	2, 3, 4, 5	Key stakeholders (government agencies,	Provide input to key stakeholders to be briefed	Attend project briefings	TBC	Project presentation

Engagement Mechanism	Detail	Alignment with Objectives (Section 1.1)	Stakeholder Group	Umwelt Responsibilities	Lightsource bp Responsibilities	Timing	Required Input
Assessment forum	appropriate, to work through predicted issues related to a specific impact theme (likely if any significant or complex impacts are identified in the SIA, e.g., construction workforce accommodation strategy). Mitigation and enhancement strategies relevant to the impact theme can be collaboratively developed through this forum.		Aboriginal stakeholders, local service providers)	Attend project briefings Organise project briefings Lead and record outputs of project briefings			





APPENDIX E

Survey Instrument



Gundry Solar Farm Survey

The Online Community Survey will be used to inform the initial Scoping Social Impact Assessment, **this survey will close Tuesday 12 July 5pm.**

There will be further opportunity to participate in the Social Impact Assessment process with another round of community engagement in the coming months, you can also provide feedback through the feedback form linked below, or by contacting the Project Team via email:

Gundarysolar@lightsourcebp.com or by phone: 1300 873 575.

Feedback form link: [https://forms.office.com/Pages/ResponsePage.aspx?](https://forms.office.com/Pages/ResponsePage.aspx?id=SmZf7VKHlUyCBUDIfRhRFn9sf6qbluxMimHDjoYmUbhURUszQ0JET1ROTTFORkFVU1VXOE9LUVY2Ni4u)

[id=SmZf7VKHlUyCBUDIfRhRFn9sf6qbluxMimHDjoYmUbhURUszQ0JET1ROTTFORkFVU1VXOE9LUVY2Ni4u](https://forms.office.com/Pages/ResponsePage.aspx?id=SmZf7VKHlUyCBUDIfRhRFn9sf6qbluxMimHDjoYmUbhURUszQ0JET1ROTTFORkFVU1VXOE9LUVY2Ni4u)

Who is Lightsource bp?

Lightsource bp is a global market leader in the funding, development and long-term management of large-scale solar projects and smart energy solutions and they work closely with local businesses to deliver sustainable renewable energy projects.

What is the Project?

Lightsource bp's proposed Gundry Solar Farm Project will generate approximately 400 megawatts (MW) of power. The proposed Project involves the construction, operation, maintenance and decommissioning of the solar farm. Additionally, the Project includes Battery Energy Storage System (BESS) infrastructure components, associated infrastructure including operation and maintenance buildings, civil works, and electrical infrastructure required to collect to the existing electricity network. Key project details include:

- 638-ha site

- Co-located BESS on site
- Equivalent to the energy needs of 133,000 households
- Equivalent to taking over 213,000 cars off the road
- 640,000 tonnes of carbon emissions saved
- To be connected to the existing 330Kv overhead powerlines which transect the site in the north-western corner
- \$540mn estimated capital investment value (CIV)
- Expected to create up to 400 jobs during construction
- Operational life of at least 35 years with an expected 2-4 full time operational jobs created
- Local procurement and servicing opportunities

What is the purpose of this survey?

Lightsource bp is gathering feedback on their proposed Gundry Solar Farm. This is part of a broader Social Impact Assessment (SIA) process and Environmental Impact Statement (EIS) process associated with the Project.

This survey is an opportunity for you to provide any initial feedback on the Project as part of a scoping phase of the EIS. The scoping phase occurs early in Project decisions and provides an opportunity to gather community feedback to inform design and mitigation strategies. This feedback will be compiled in the Scoping Report documentation that will go to the NSW Department of Planning and Environment. The SIA relies on community input to capture the views, interests, and concerns of all those potentially affected by the Project and to understand the level of impact on you or others around you. Your responses will also help us to understand and develop appropriate management measures tailored to your concerns or experience as the assessments progress as well as in identifying opportunities where the Project can bring local benefit.

How can I remain involved?

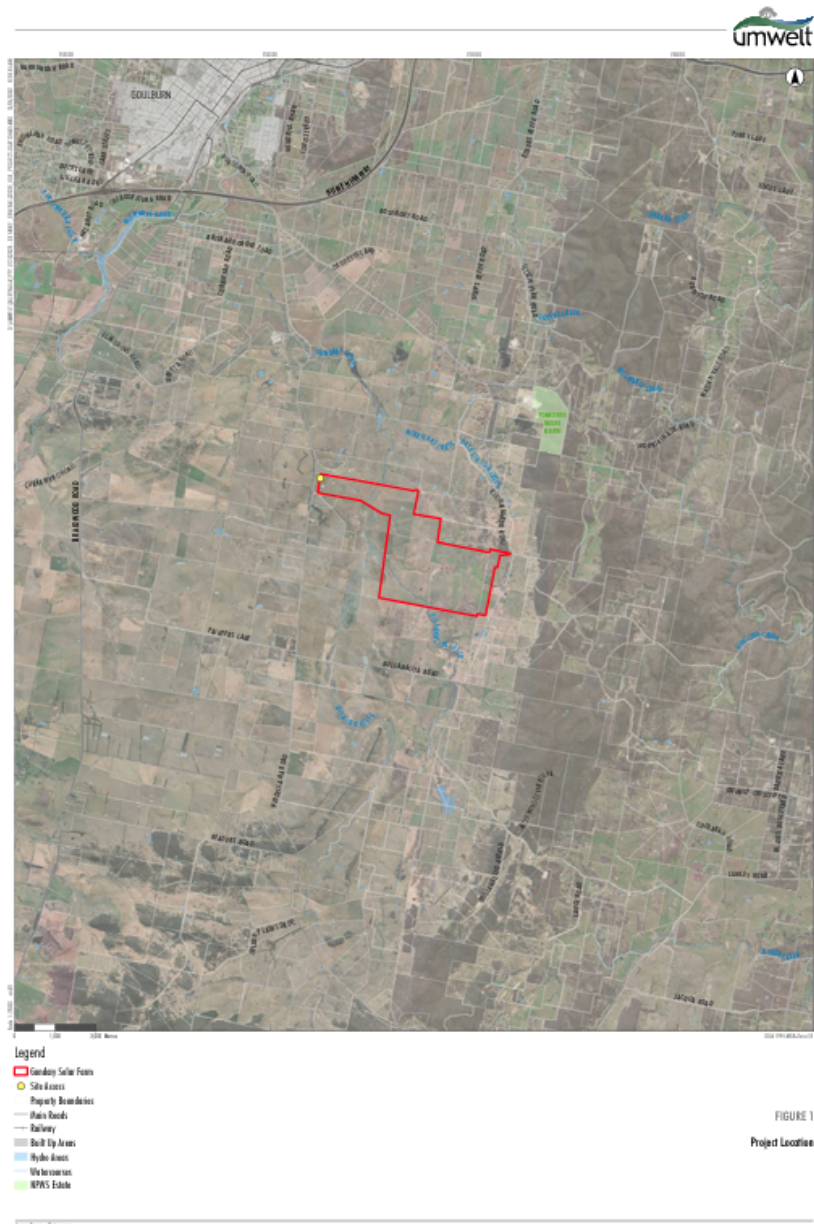
If you would like to receive project updates, please make sure you include your email in this survey and we will add you to the mailing list.

Confidentiality

Your responses will be deidentified and considered in aggregate form within our assessment, meaning that your personal information is not included in any reporting. We may use specific quotes to highlight stakeholder sentiment, but these are never attributed to you personally.

You may request a copy of your responses by emailing social-team@umwelt.com.au or by asking the interviewer.

The Figure below shows the Project site in relation to Goulburn and the Gundary SSC



Contact Information

First Name

Last Name

Phone

Email Address

Address

Postal Address if different

Community Group/Business

Position

What stakeholder group do you identify as?

- ☐ Community group / Proximal Landholder
- ☐ Local Government / Chamber of Commerce
- ☐ Business or Service Provider (Including Educational Institute, Healthcare, Community Transport Services, Accommodation Provider, Employment Services & Business Chamber)
- ☐ Indigenous Representative Group

What is your age?

- ☐ Under 18
- ☐ 18-24
- ☐ 25-34
- ☐ 35-44
- ☐ 45-54
- ☐ 55-64
- ☐ Above 64

How many years have you lived in the area? (Please enter a whole number only e.g. 15, if less than 1 year leave blank)

If less than 1 year, please enter how many months you have lived in the area? (Please enter a whole number only e.g. 3)

How would you describe the economic health of the Goulburn area?

What do you see as the key industries of employment and economic contribution in the region?

What do you see as the industries that may have been historically strong in the region and that are slowing down/ being phased out?

On a scale of 1 to 10, where 1 is 'not at all suited' and 10 is 'extremely suited', how well suited for contributing to the delivery of renewable energy projects do you think the current workforce and business composition of Goulburn and surrounds is?

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

Not at all suited

Extremely suited

What was your reason for the above answer?

What do you see as the key emerging industries in the region?

Have there been any challenges (social, economic, or environmental) to facilitating the growth of these industries?

What do you see as the key strengths / assets of the community? (social, human, economic, physical, natural/environmental)

What do you see as the key needs / requirements of the community? What would make it a better community? (see prompts below)

	Please describe the key community need	Who this need relates to (e.g. youth, elderly etc.) and/or where this need is needed most (e.g., specific locality or area)	Please suggest a management and/or enhancement strategy/project that may address this community need
Need 1			
Need 2			
Need 3			
Need 4			
Need 5			

Are you aware of or have knowledge of Lightsource bp? What comes to mind when you think of Lightsource bp?

Have you heard of, or are you aware of the proposed Gundry Solar Farm?
Do you have any comments on level of awareness or initial feedback?

What do you see as the positive impacts or opportunities of the Project and what do they mean for you for the community?
Can you think of any strategies you would like to see Lightsource bp consider to enhance these positive impacts?

	Positive Impact	What the impact means for you or the community	Enhancement Strategy
Impact 1			
Impact 2			
Impact 3			
Impact 4			
Impact 5			

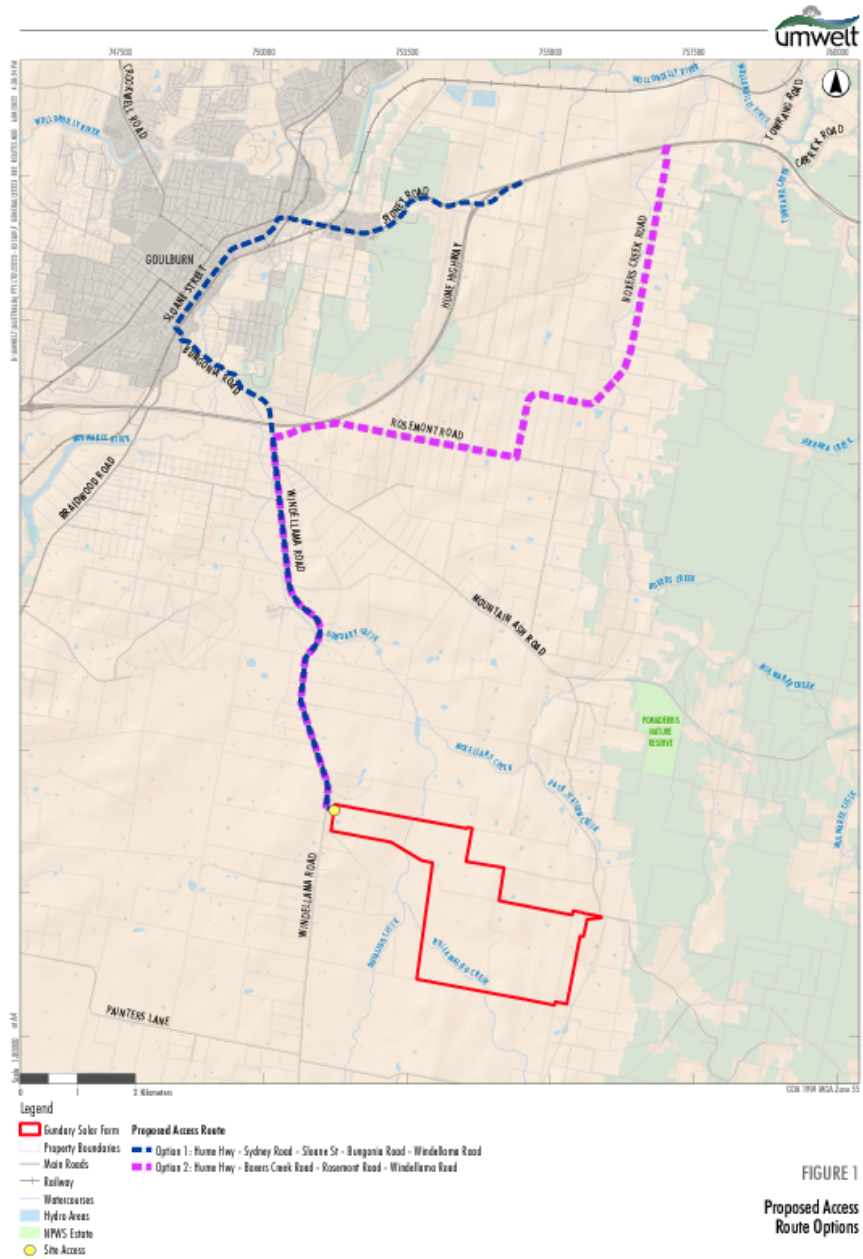
What do you see as the negative impacts of the Project and why? Are there ways in which you believe these impacts can be managed?

	Negative Impact	What this impact means for you or the community	Management Strategy
Impact 1			
Impact 2			
Impact 3			
Impact 4			
Impact 5			

Proposed Access Routes

Option 1: Blue

Option 2: Purple



How satisfied are you with the proposed access route of Option 1: Hume Hwy - Sydney Road - Sloane St - Bungonia Road - Windellama Road



Very Unsatisfied



Unsatisfied



Neutral / Don't know



Satisfied



Very Satisfied

What is the reason for your answer above? Comments/Suggestions for Access Route Option 1: Hume Hwy - Sydney Road - Sloane St - Bungonia Road - Windellama Road:

How satisfied are you with the proposed access route of Option 2: Hume Hwy - Boxers Creek Road - Rosemont Road - Windellama Road



Very Unsatisfied



Unsatisfied



Neutral / Don't know



Satisfied



Very Satisfied

What is the reason for your answer above? Comments/Suggestions for Access Route Option 2: Hume Hwy - Boxers Creek Road - Rosemont Road - Windellama Road:

Are there things Lightsource bp could do to reduce the visual impact of the solar farm or make it more visually appealing?

At this stage of the Project, on a scale of 1 to 10 how accepting are you of the proposed Gundry Solar Farm, with 1 being not at all accepting and 10 being very accepting?

12345678910

Not at all acceptingVery accepting

Are you aware of, or do you have knowledge of other renewable energy projects in the area?

On a scale of 1 to 10, how accepting are you of other renewable energy projects in the region, with 1 being not at all accepting and 10 being very accepting?

1

2

3

4

5

6

7

8

9

10

Not at all accepting

Very accepting

Do you have any concerns about the cumulative impact of having multiple renewable energy projects being developed nearby? If so, what are the cumulative social impacts that you are most concerned about based on your knowledge of these developments?

How would you describe your community?

What do you like most about living in the area? What is important to you and why?

What do you see as the key needs / requirements of the community? What would make it a better community?
For example: historical aspects, greening and beautification, local business/employment, service and infrastructure, cultural and recreation

	Key community need	Who this need relates to (e.g. youth, elderly etc.) and/or where this need is needed most (e.g., specific locality or area)	Please suggest a management and/or enhancement strategy/project that may address this community need
Community Need 1			
Community Need 2			
Community Need 3			
Community Need 4			
Community Need 5			

Would you be interested in being engaged later in the assessment process?

- ☐ Yes
- ☐ No
- ☐ Unsure

What are some of the better ways for Lightsource bp to provide information to you as part of this Project?

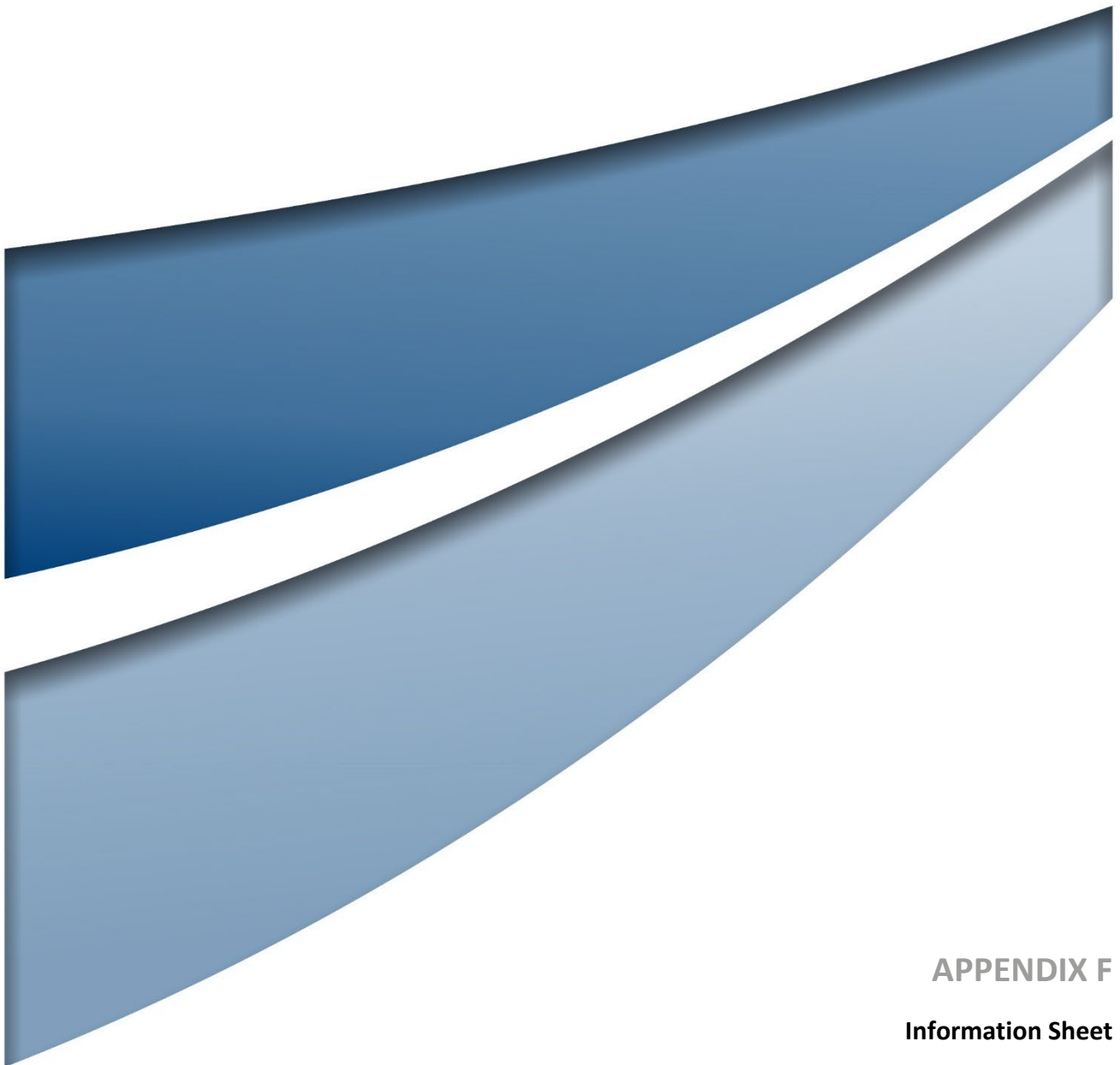
- ☐ Newsletter
- ☐ Website
- ☐ Letters
- ☐ Email
- ☐ Personal meeting
- ☐ Open day
- ☐ Community meeting
- ☐ Local newspaper
- ☐ Local radio
- ☐ I would consider joining a Community Reference Group
- ☐ Other

As we progress, we would like to engage local businesses and the local workforce in the project. Do you have any recommendations about the best ways to do that?

Is there any information that you would particularly like to receive on the project – what information would assist you in better understanding the project?

Is there anyone else you would suggest we should be talking to? If so, what are their contact details?

Do you have anything else to add or any further questions?



APPENDIX F

Information Sheet

Who are we?



Lightsource bp is a global market leader in the funding, development and long-term management of large-scale solar projects and smart energy solutions. We work closely with local businesses to deliver sustainable renewable energy projects.



Umwelt (Australia) are leading environmental and social consultants who have been engaged to prepare the Scoping Report and EIS for this project.

Community consultation program – how can I be involved?

Community consultation during the earliest stages of Project development is important to us.

It's important to us that the local community is fully informed of the Project and have the opportunity to participate in the planning process and provide feedback. In the coming months, Lightsource bp and Umwelt will be contacting a range of community members and stakeholders in proximity to, or who may have an interest in, the Project. This will include nearby residents, local businesses and service providers, community groups and government agencies.

Outcomes of the community consultation will be summarised and shared with the community in a second Community Information Sheet, which will also be available on the Project website, with further consultation planned during the EIS preparation phase from Q3 2022 to Q2 2023.

Opportunities for community participation and feedback will continue throughout each stage of the planning and assessment process. If you would like to receive further information on the Project or arrange a time to meet with the Project team, please contact us on the details below.

We look forward to your participation and involvement.

Contact us

Email: gundarysolar@lightsourcebp.com
Phone: 1300 873 575
Website: www.lightsourcebp.com/au/projects/gundary-solar-farm



t 1300 873 575
e gundarysolar@lightsourcebp.com
www.lightsourcebp.com

Community Information Sheet

Gundary Solar Farm Project, Gundary, NSW

April 2022



Key statistics

- 400 MW of solar energy with a co-located BESS on site
- \$540m estimated capital investment value (CIV)
- Expected to create up to 400 jobs during construction
- Connecting to the existing 330Kv overhead powerline available on site
- Equivalent to the energy needs of 133,000 households
- Equivalent of taking over 213,000 cars off the road
- 640,000 tonnes of carbon emissions saved
- Operational life of at least 35 years

Lightsource bp is proposing to develop the Gundary Solar Farm Project (the Project), located approximately 13km southeast of Goulburn off of Windellama Road in Gundary, NSW (see Figure 1).

The Project would consist of a 400 megawatt (MW) photovoltaic solar farm, a Battery Energy Storage System (BESS) and associated infrastructure that would connect to the existing transmission network transecting the north-west corner of the Project.

Community information sessions

We've set up a dedicated webpage for this proposed Project with further Project information and opportunities to get in touch with us to discuss the proposal. www.lightsourcebp.com/au/projects/gundary-solar-farm

There will be several opportunities to attend community information sessions over the coming months and this is the first one. We will be holding a stall at the Bungonia Country Markets in April and would love to meet you there.

Date Saturday, 30 April 2022 **Time** 9am – 1pm (AEDT) **Venue** Bungonia Community Hall, 42 King Street, Bungonia NSW
Website <https://www.goulburnaustralia.com.au/event/bungonia-heritage-celebration/all/>

We will also be holding a stall at the Goulburn Rotary Markets in May

Date Saturday, 14 May 2022 **Time** 8:30am – 1:30pm (AEDT) **Venue** Montague St, off Auburn St, next to Belmore Park, Goulburn NSW
Website <https://www.facebook.com/goulburnrotarymarkets/about>

We would like to ensure that our engagement is inclusive and are aware that not everyone in the community will be available to attend this event. If you would like to receive a call back from the team to discuss the Project, or know of someone who would, we would be pleased to arrange at a convenient time.



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What assessments will be required?

The Project will be assessed under the NSW State Significant Development planning and approvals pathway, which is outlined in Figure 2. The Project is currently in its Scoping Phase (the initial planning stages), which includes preliminary environmental and social assessments. These are planned to be lodged with the NSW Department of Planning and Environment (DPE) in approximately Q2 2022. Lightsource bp is seeking feedback from the local community on the Project as part of the scoping phase for the planning and approvals process.

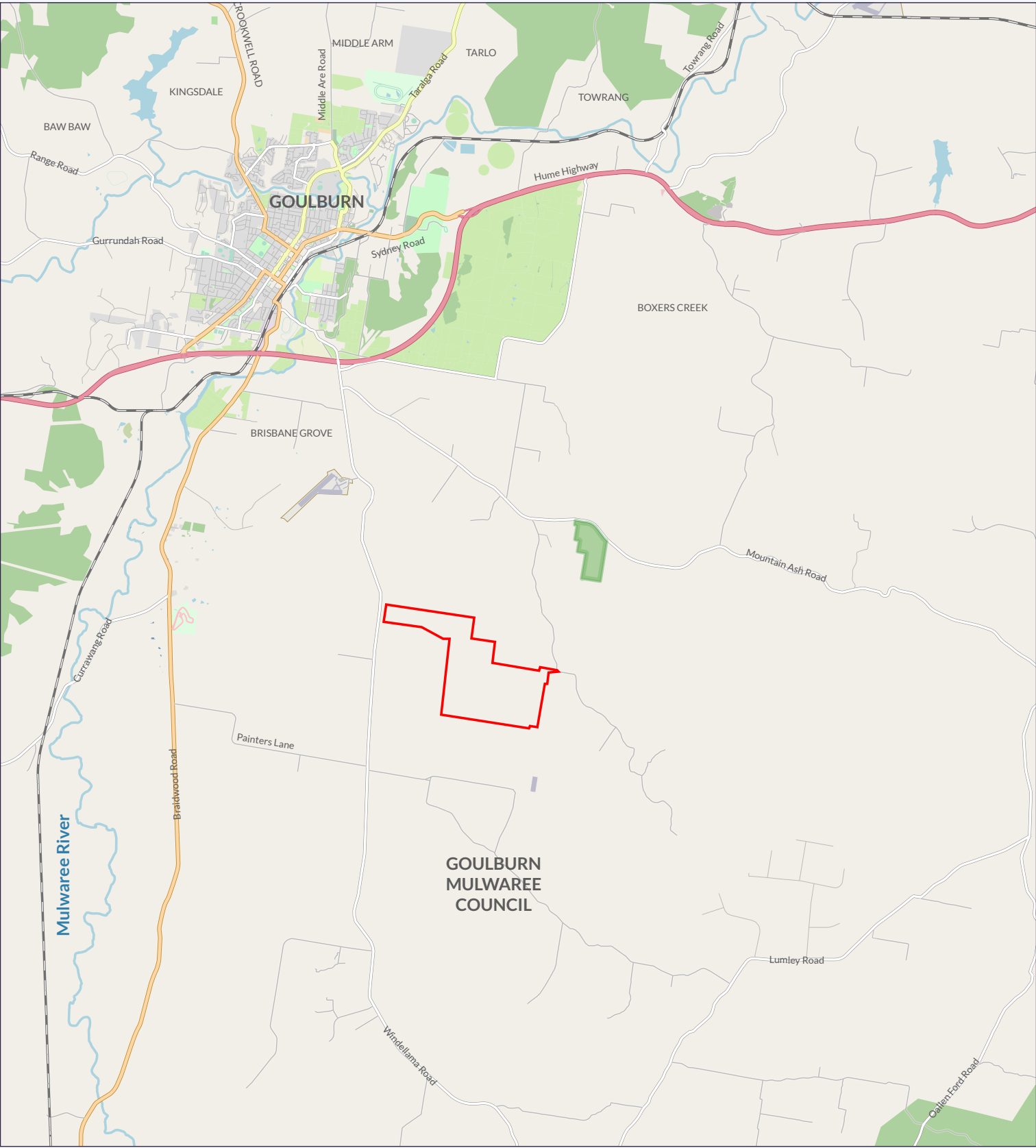
The social and environmental assessments for the Project will be prepared by Umwelt Environmental and Social Consultants and cover a range of matters, including:

- Land Use
- Visual
- Traffic
- Cumulative Effects
- Water
- Social and Community
- Noise
- Biodiversity
- Heritage
- Hazard and Risk

The Social Impact Assessment (SIA) will address matters important to the community by understanding the views, issues, interests, and concerns in relation to the Project through the Community Consultation Program, which commenced in March 2022.

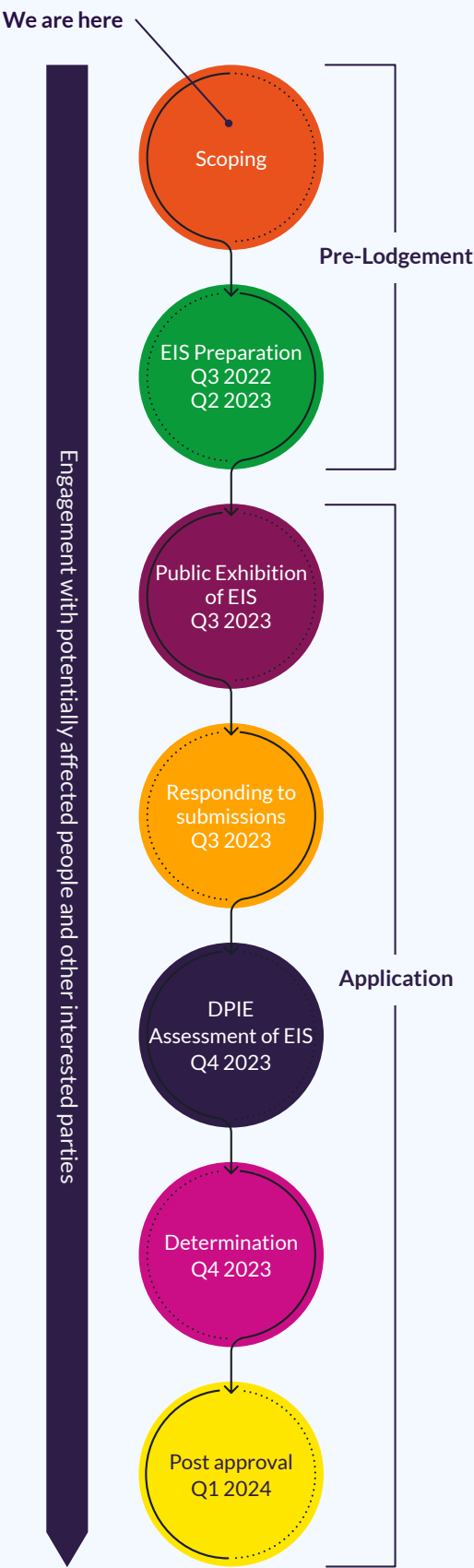


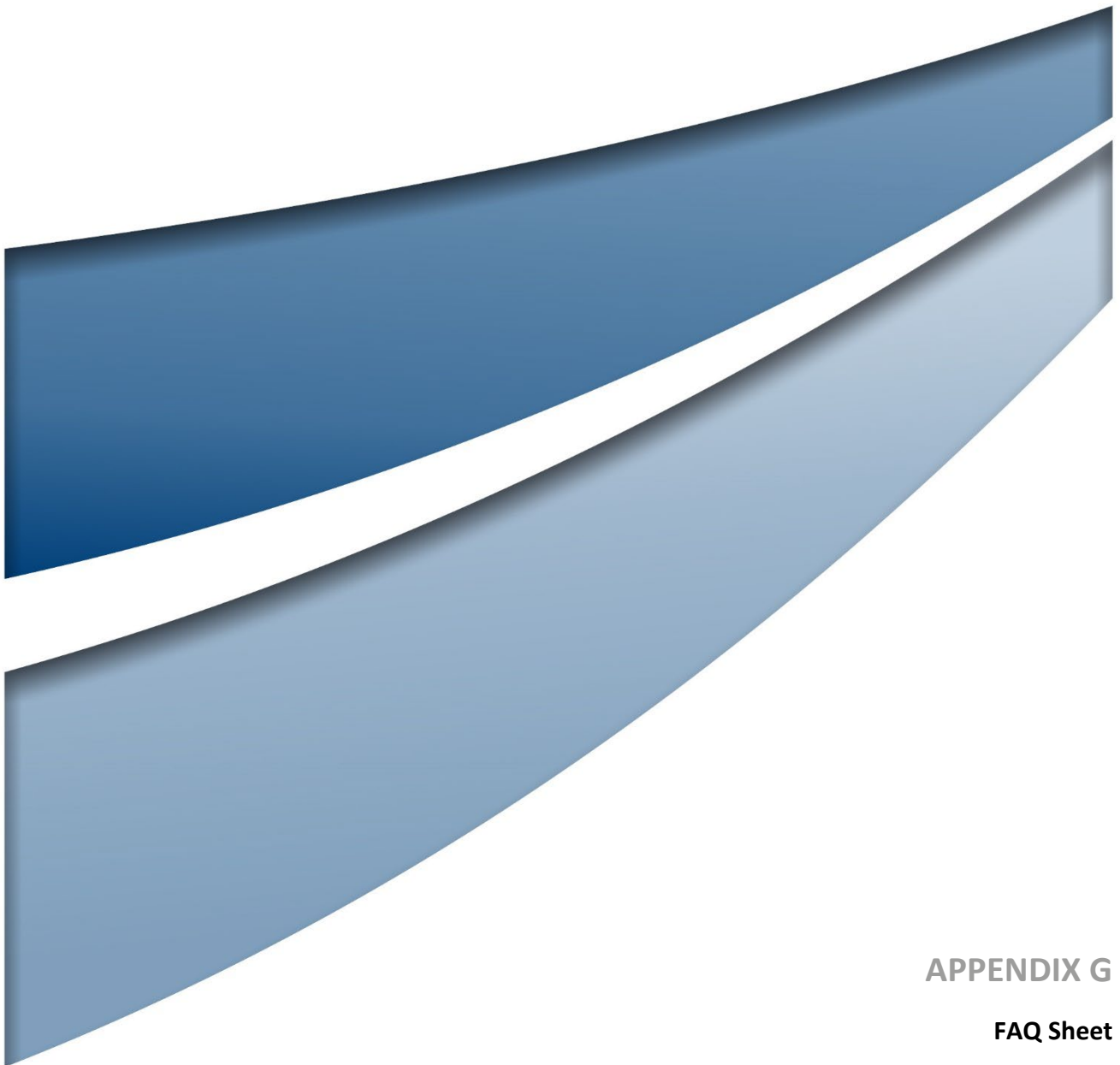
Figure 1 – Project locality



— Gundry Solar Farm Development Boundary

Figure 2 – Phases of key environmental and social impact assessment activities and outputs





APPENDIX G

FAQ Sheet

Gundary Solar Farm Project

Frequently Asked Questions

JULY 2022



General

Q: Who is Lightsource bp?

Lightsource bp is a global market leader in the development, funding, construction and long-term management of large-scale solar projects and smart energy solutions. It is a 50:50 joint venture with global energy company bp.

One thing that sets Lightsource bp apart from some other renewable energy developers in Australia is that it is an Integrated Power Producer (IPP), meaning that it owns its projects for the long term. As a long-term project owner, Lightsource bp works hard to engage with the communities it works within. We work closely with local businesses and individuals to deliver sustainable renewable energy projects in a manner that reduces impacts and increases local benefits.

Since entering the Australian market in 2018, Lightsource bp has developed a significant pipeline of large-scale solar projects across Australia. Lightsource bp currently has three projects under construction across NSW and QLD, including the Wellington, West Wyalong and Woolooga Solar Farms. Together these projects exceed over 500MWdc and, once operational, will make Lightsource bp one of the largest solar developers in Australia.

Q: Who is Umwelt?

Umwelt Australia is an independent environmental and social consultancy with over 25 years' experience providing speciality services in ecology, heritage, environmental planning, community engagement, and social impact assessment. Lightsource bp has engaged Umwelt to prepare the Environmental Impact Statement (EIS) for the Project, including the Social Impact Assessment (SIA).



Way of life, community and culture

Q: How will the local community benefit from this Project?

Lightsource bp is committed to being a responsible neighbour and engaging with the community in a proactive and effective manner. Should the Project be approved, it will be offering direct and indirect community benefits by providing local jobs, procurement, and construction contracts.

Lightsource bp is also investigating options for a Community Benefit Fund to distribute contributions to the area, including immediate neighbours and the larger community. Lightsource bp values your feedback and suggestions on priority areas in the community requiring support, as well as how the community may prefer to see such a fund administered. What the Community Benefit Fund will look like will be developed further during development of the EIS.

Further, Lightsource bp is investigating options to sell some of the power generated from the project to local organisations to enable the use of renewable energy locally.

Project location and lifecycle

Q: Why was this site chosen for the Project?

Lightsource bp considers multiple factors when choosing sites for its renewable energy projects. This includes proximity to existing transmission infrastructure, environmental constraints, consideration of social impacts, proximity to a population base with electricity consumption needs, and climatic factors including levels of irradiance (the amount energy available from the sun).

The Project site was chosen for several reasons. It has good access to existing transmission infrastructure, with a large high voltage (HV) transmission crossing the site. This means additional electricity lines will not need to be built to connect to the electricity grid. It is also close to population centres where energy is used, therefore reducing the amount of energy lost in transmission. The site has limited vegetation, and while currently used for agricultural purposes, is not classified as either Biophysical Strategic Agricultural Land (BSAL) or mapped as Class 1, 2 or 3 under the Land and Soil Capability Mapping for NSW. It is also located on a large property with less neighbours than a more densely populated location, therefore limiting the number of residents who would have views of the project. Finally, it has sufficient levels of solar irradiation – much higher than almost all of Europe and most of Victoria. The site is also relatively flat, allowing for easier construction.

Why is the Project proposed outside a Renewable Energy Zone (REZ) and is this permitted?

The REZ concept is still quite new with only NSW having formally announced REZs in 2020. Given that until recently no REZ existed, every renewable energy project constructed and approved to date in Australia, even those now geographically located in planned REZs, have been developed outside of the REZ process. Moreover, while policy makers are recommending proponents consider REZs as an option when looking to site new renewable energy projects, new projects are still allowed outside of REZs.

The Australian Energy Market Operator (AEMO), the independent organization which manages the National Energy Market (NEM) in Eastern Australia, recently released their draft **2022 Integrated Systems Plan (ISP)** setting out their 30-year plan for the development of the Australian Electrical system. In this document it stated that its most likely scenario required an additional 122GW of renewable energy generation, more than double the amount of the total generation in the NEM today, to meet Australia's growing demand for power and maintain Australia's energy security.

Development of renewable energy outside REZs is permissible and it will be essential for deployment to continue outside these zones if Australia's energy security is to be secured. Given that the Central West Orana REZ is only planned to accommodate another 3GW of new renewable energy, projects outside of the REZ are not only allowed but necessary to ensure Australia's continued energy security.

Lightsource bp locates and develops new projects based on stringent criteria, including but not limited to: proximity to power lines, local capacity and strength of the transmission network, avoidance of environmental constraints, areas of relatively low population and local irradiance levels. This includes projects both inside and out of REZ, all of which if built, will power Australia with green energy and ensure ongoing energy security for individuals, businesses and the nation.

Q: When will construction start, and how long will it take?

Subject to relevant approvals – including but not limited to development approval, grid connection and financing – construction would start in mid to late 2024. Due to the scale of the Project, the construction period is expected to take between 18 to 24 months.

Q: How long will the Project be operational and what decommissioning will take place?

Current plans propose that the Project will be operational for at least 35 years. At that time, Lightsource bp will either extend the project life using existing infrastructure, repower the site by replacing key components with new technology to improve energy generation, or decommission the Project.

When the Project is decommissioned, all infrastructure will be removed, and the land returned to its previous use. Lightsource bp has a partnership with Lotus Energy to manage the recycling of solar panels, including both at decommissioning and throughout the life of the Project, if damaged during construction or operations.

Local livelihoods and land use

Q: What opportunities are there for local job seekers, contractors, service providers and businesses to get involved in the Project?

The Project will create about 400 full time equivalent (FTE) jobs during construction and 2 to 4 ongoing FTE jobs during operation. As much as possible, Lightsource bp intends to source employment locally to maximise economic benefit for the local community.

Additionally, Lightsource bp plans to work closely with Goulburn Mulwaree Council and other key stakeholders to maximise local procurement and employment opportunities.

If you are interested in keeping up to date with opportunities, please register your interest at <https://www.lightsourcebp.com/au/projects/gundry-solar-farm/>. More details will be available as the project progresses.

Q: Where will construction materials for the Project be sourced?

Lightsource bp is focused on creating an ethical supply chain that focuses on the need for corporate social responsibility, to ensure all parts of its business are carried out in a way that treats its workers and the environment ethically.

Materials for the Project will be sourced both from Australian and international suppliers, including those located in Europe and Asia. Lightsource bp works to ensure that all its suppliers are passed through extensive checks, including investigation into our suppliers' environmental, social and governance practices before purchases are made.

Q: Will Lightsource bp be consulting with local industry groups?

As the Project planning and assessment process progresses, Lightsource bp plans to consult with a range of local stakeholders including near neighbours, landholders, industry groups, businesses, service providers, community and environmental organisations and broader community members.

Lightsource bp has already held meetings with many of these groups in recent months. As the EIS and SIA are further developed, additional consultation and feedback from local groups will be sought through a variety of mechanisms. This process will ensure that the extent of impacts and opportunities are fully understood, that local knowledge is incorporated in assessment studies, and that appropriate management and enhancement strategies are identified, where relevant, to address project impacts.

Q: Will Lightsource bp pay rates on the land as a rural land use or as a commercial land use?

Lightsource bp would pay rates as required by the Council for the use of the land as a solar farm.

Q: Will the Project put pressure on the rental market or short-term accommodation and increase property prices in Goulburn?

As construction is not likely to commence until 2024 at the earliest, impacts will be assessed as part of the Social Impact Assessment and will be based on anticipated likely future housing conditions.

Development consent would require an Employment and Workforce Accommodation Strategy to be developed to assess and respond to any accommodation pressures. This would be prepared prior to the commencement of construction so would be able to respond to the conditions at the time.

Q: How is solar panel efficiency and electricity output calculated?

The predicted efficiency and energy generation of the Project is calculated by Lightsource bp engineers using industry standard practices. The amount of energy available from solar irradiation, based on local climatic conditions, is obtained from third-party sources and on-site weather stations. Energy simulations are then run based on the design of the project and the local conditions to determine factors like efficiency and energy yield.

Q: Will this Project reduce the agricultural production of the region? What other land uses will occur on the site?

Lightsource bp currently has a 35-year lease on the land and intends to rotationally graze sheep on the site throughout operation, in line with current uses of the site. At the end of the 35-year lease, the lease may be extended, or all infrastructure will be removed and decommissioned, allowing the site to return to agricultural use.

Maintaining sheep grazing on the site through a leasing arrangement with a local sheep farmer has several benefits. It preserves the agricultural productivity of the site, and it also means grass levels are kept at levels that reduce fire risk. It also contributes to the local economy and regional food security. Lightsource bp is also exploring other agricultural land uses across sites including cropping and bee keeping.

The agricultural productivity of neighbouring and nearby properties will not be affected in any way.

Health and wellbeing

Q: Will Lightsource bp considering the potential Electric and Magnetic Fields from the project, and how this may impact near neighbours?

Electric and magnetic fields (EMFs) are created by all forms of electrical equipment that generate, transport, or use electricity, but only if it is alternating current (AC). Most of the infrastructure at solar generating facilities, including the solar panels and most cables, produce direct current (DC) electricity, which does not produce EMF.

In a solar farm, the type of equipment that produces EMF includes inverters, transformers, AC cabling and the substation. All equipment produces EMFs at rates well below Australian and International standards. Further, EMFs drop off extremely rapidly with distance from the source. For substations and transformers, the magnetic fields at distances of 5-10m away are generally indistinguishable from typical background levels in the home.¹

Based on a recent in-depth review of the scientific literature, the World Health Organisation concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields.²

Any EMF generated from the Project infrastructure will be below Australian and International guidelines. Notwithstanding, a review of potential EMF risks associated with the Project will be undertaken as part of the EIS, and suitable safeguards and mitigation measures will be proposed to reduce any potential risks.

Surroundings

Q: How will visual impacts, including glint and glare, be assessed?

Solar panels are generally designed to absorb light and are therefore not highly reflective. Compared to other materials Photovoltaic solar panels reflect a very low percentage of sunlight.

Potential glint and glare and visual impacts from the Project, as well as mitigation strategies, will be assessed as part of the Landscape and Visual Impact Assessment to be prepared during the EIS phase. Visual assessment will be undertaken in line with the Large-Scale Solar Energy Guideline.³ Mitigation strategies may include visual screening using trees and adjusting the layout by relocation of panels to avoid areas of high visual impact. Lightsource bp is already actively looking into design options to reduce or eliminate views of infrastructure from nearby residences.

Photomontages illustrating views of the Project from multiple viewpoints and residences will be made available as part of the EIS phase to allow for further feedback and design refinement.

Q: How will Lightsource bp manage the impact upon local wildlife and bushland?

Preliminary ecological surveys as part of the scoping phase for the Project have been undertaken during March 2022 in accordance with the Biodiversity Assessment Method (BAM), approved by the NSW Government. Preliminary vegetation mapping has identified some plant community types (PCTs) present within the Project Area. A detailed Biodiversity Assessment will be completed for the Project as part of the EIS to refine vegetation mapping and assess any potential impacts that the Project may have on these ecological communities. This will involve further targeted and seasonal ecological surveys and consultation with the NSW Biodiversity Conservation and Science division. The Project layout will be designed to avoid impacts to high ecological constraints, where possible, and is already being designed to avoid the few areas deemed as highly environmentally sensitive. The layout will be subject to further review and refinement based on the outcome of the detailed biodiversity assessment. In addition, Lightsource bp intends to maintain the ability for continued rotational livestock grazing across the Project Area following construction, to preserve the existing agricultural land uses. Should the Project be approved, a Biodiversity Management Plan will be prepared and implemented to manage both livestock and feral animals (including wild dogs).

Q: Will heat or toxicity from the solar panels harm local wildlife?

No, solar is a passive technology which doesn't produce any harmful by-products. All electrical equipment used meets local regulatory standards.

Q: Has Lightsource bp considered the risk of bushfires for this Project?

During the preliminary assessment, it was determined that parts of the Project are located within bush fire prone land as identified by the Goulburn Mulwaree Council Bushfire Prone Land Mapping. A bushfire threat assessment will be undertaken as part of the EIS process, informing a Bush Fire Management Plan (BFMP) that will be developed in accordance with the requirements of the Planning for Bush Fire Protection 2019. Consultation with the Rural Fire Service (RFS) and/or NSW Fire and Rescue will also be undertaken during preparation of the BFMP. As part of the BFMP, Lightsource bp will continue to undertake vegetation management for the life of the Project.

Typical bushfire management strategies include on-site water tanks, establishment of an Asset Protection Zone and perimeter roads to serve as a fire break while providing access, strategic placement of access gates along the perimeter fence line, management of grass height and 24/7 automated monitoring of panels and electrical connections. In addition, 2 to 4 operational staff will be present at the site on a full-time basis, substantially increasing the amount of local oversight and management of the property from current levels.

Q: Is there noise generated by solar farms?

During operations, the project will generate very little noise. Solar panels do not generate any noise. Noise-generating equipment is limited to the motors used to rotate the panels to track the sun's location, which produce a soft 'ticking' noise, and inverters and the substation, which produce a faint 'hum.' A detailed noise impact assessment will be undertaken as part of the EIS to identify and assess any potential noise impacts as well as identify reasonable and feasible noise management and mitigation measures.

Q: Could the solar farm leak chemicals that could contaminate my property or the Sydney Water Catchment Management Area?

No. Solar Panels do not leak chemicals while in use and any chemicals used to manage agricultural use of the land will be in keeping with safe farming practices already used on properties throughout the area. In addition, all development within the Sydney Water Catchment Management Area must demonstrate that it will have a neutral or beneficial effect on water quality. Therefore, as part of the EIS process, a Neutral or Beneficial Effect (NorBE) Assessment on Water Quality will be undertaken for the Project, in accordance with the relevant policies and guidelines.

Q: How will Lightsource bp manage flooding on and around the Project site?

Flooding and hydrology will be considered as part of a detailed Water Resources Impact Assessment to be completed as part of the EIS. Lightsource bp and Umwelt are also meeting with surrounding landholders to hear more about site-specific water and flooding concerns. Outcomes of the Water Resources Impact Assessment will be used to inform the Project's detailed design which will specifically avoid any areas where flooding may possibly occur.

Q: Will the Project impact on the nearby airport?

Impacts from solar farms on airports are usually limited. As a result, solar farms located near airports are common and many airports are considering building, or have built, their own solar installations to generate electricity. The Goulburn Airport is located approximately 4km from the Project and as such the impact of the Project on the airport will be assessed as part of the EIS through traffic, visual impact and glint and glare assessments.

Q: Will the Project lead to deterioration of local roads?

A detailed Traffic Impact Assessment will be completed as part of the EIS, in consultation with Goulburn Mulwaree Council, which would identify any road upgrades required to the proposed transport route to accommodate the Project's construction traffic. Prior to construction commencing, any required road upgrades to the local road network would be undertaken. These upgrades would be followed by a dilapidation survey being undertaken to record the condition of the roads. During construction, Lightsource bp would be responsible for maintaining the condition of the roads along the local transport route, and would be responsible for fully restoring it to the condition recorded in the dilapidation survey following construction.

Engagement and decision making

Q: How can I get in touch with Lightsource bp and learn more about the project?

Lightsource bp encourages anyone who wishes to learn more about the project or would like to discuss potential project impacts, to please get in touch by either telephone, email or by filling out its community survey. Lightsource bp acknowledges that a proposed change to neighbouring land use can cause stress and anxiety, especially when there is uncertainty involved. Lightsource bp will ensure modes of communication are open, the assessment and design processes are as transparent as possible, and timelines are communicated clearly.

Intergenerational equity

Q: Do solar farms decrease property values and will Lightsource bp compensate me if they do?

There is no systematic research in Australia on the impacts of solar farms on property values. International evidence suggests that property value impacts are minimal and highly localised. While there has been no systematic research into solar farm impacts on property prices in Australia, a study commissioned by the NSW Office of Environmental and Heritage in 2016 on the impact of wind farms on property values concluded that 'windfarms may not significantly impact rural properties used for agricultural purposes'.⁴

There is no precedent for providing compensation to neighbouring landholders of solar farms in Australia. However, Lightsource bp is considering options for neighbour benefits as part of a broader Community Benefit Fund.

Assessment process

Q: Where is the project up to and what happens next?

The Gundry Solar Farm is still an early-stage proposal which is in the scoping stage of the development process. Lightsource bp is expecting to submit the Scoping Report in Q3 2022 to the NSW Department of Planning and Environment (DPE). The Scoping Report will include preliminary environmental assessments, a preliminary Social Impact Assessment (SIA) and a summary of stakeholder engagement conducted to date.

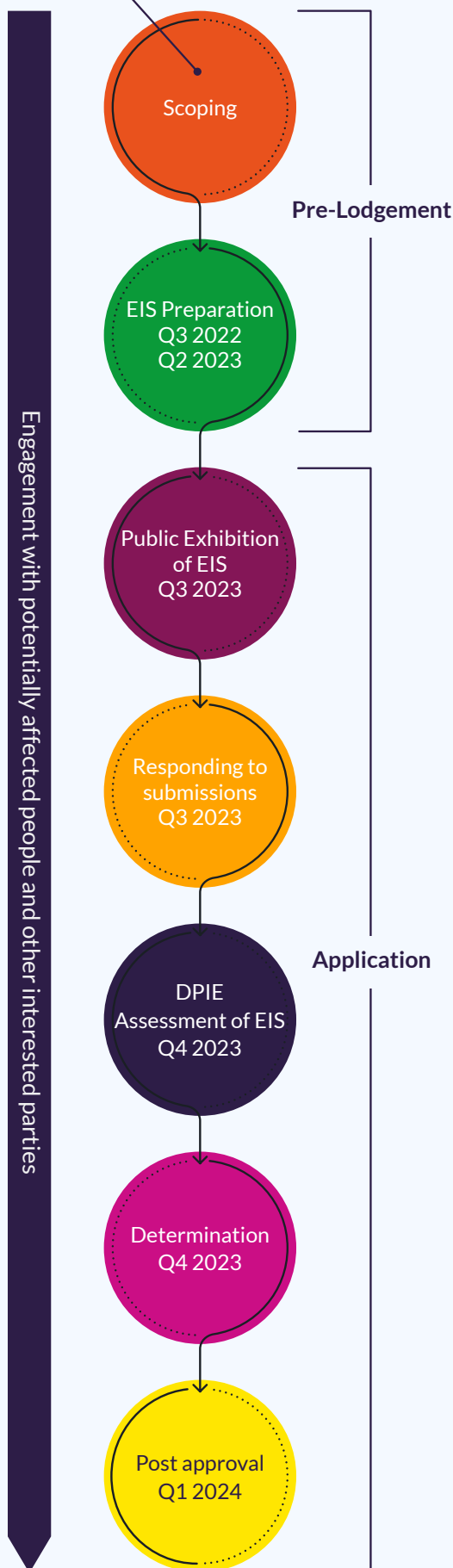
After the DPE reviews and evaluates the Scoping Report, if acceptable, the DPE will issue the Secretary Environmental Assessment Requirements (SEARs) for the Project, which set out detailed assessment requirements for the Environmental Impact Statement (EIS) phase.

Once Lightsource bp receives the SEARs, further technical assessment will be undertaken, with more detailed design and planning, and further SIA activities and stakeholder engagement, conducted.

Lightsource bp will share the findings from these technical assessments with the community prior to submitting the EIS to allow for feedback and to integrate local knowledge and suggestions into the Project design and planning. It is anticipated that the EIS would then be lodged with DPE in Q3 2023.

1. Australian Government, Australian Radiation Protection and Nuclear Safety Agency. (2022). Electricity and Health. Canberra. Available from: <https://www.arpsa.gov.au/understanding-radiation/radiation-sources/more-radiation-sources/electricity>
2. World Health Organisation. (2016). Radiation: electromagnetic fields. Available from: <https://www.who.int/news-room/questions-and-answers>
3. NSW Government. (2021). Draft Large-Scale Solar Energy Guideline. NSW Department of Planning and Environment. Available from: <https://www.planning.nsw.gov.au/Policy-and-Legislation/Renewable-Energy/Large-scale-Solar-Energy-Guideline>
4. Urbis. (2016). Review of the Impact of Wind Farms on Property Values. Urbis: Sydney. Available from: <https://www.environment.nsw.gov.au/resources/communities/wind-farm-value-impacts-report.pdf>

We are here

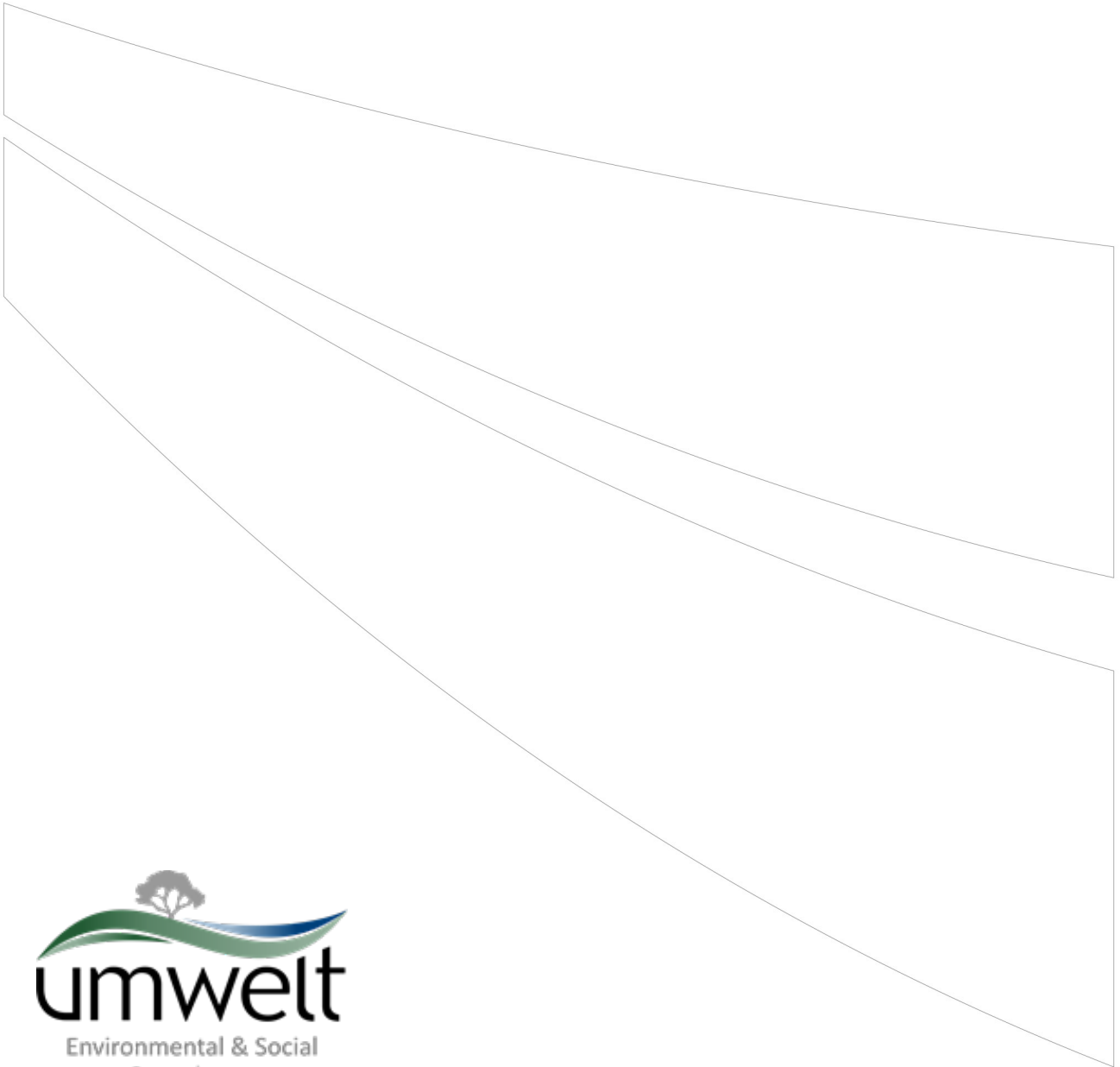


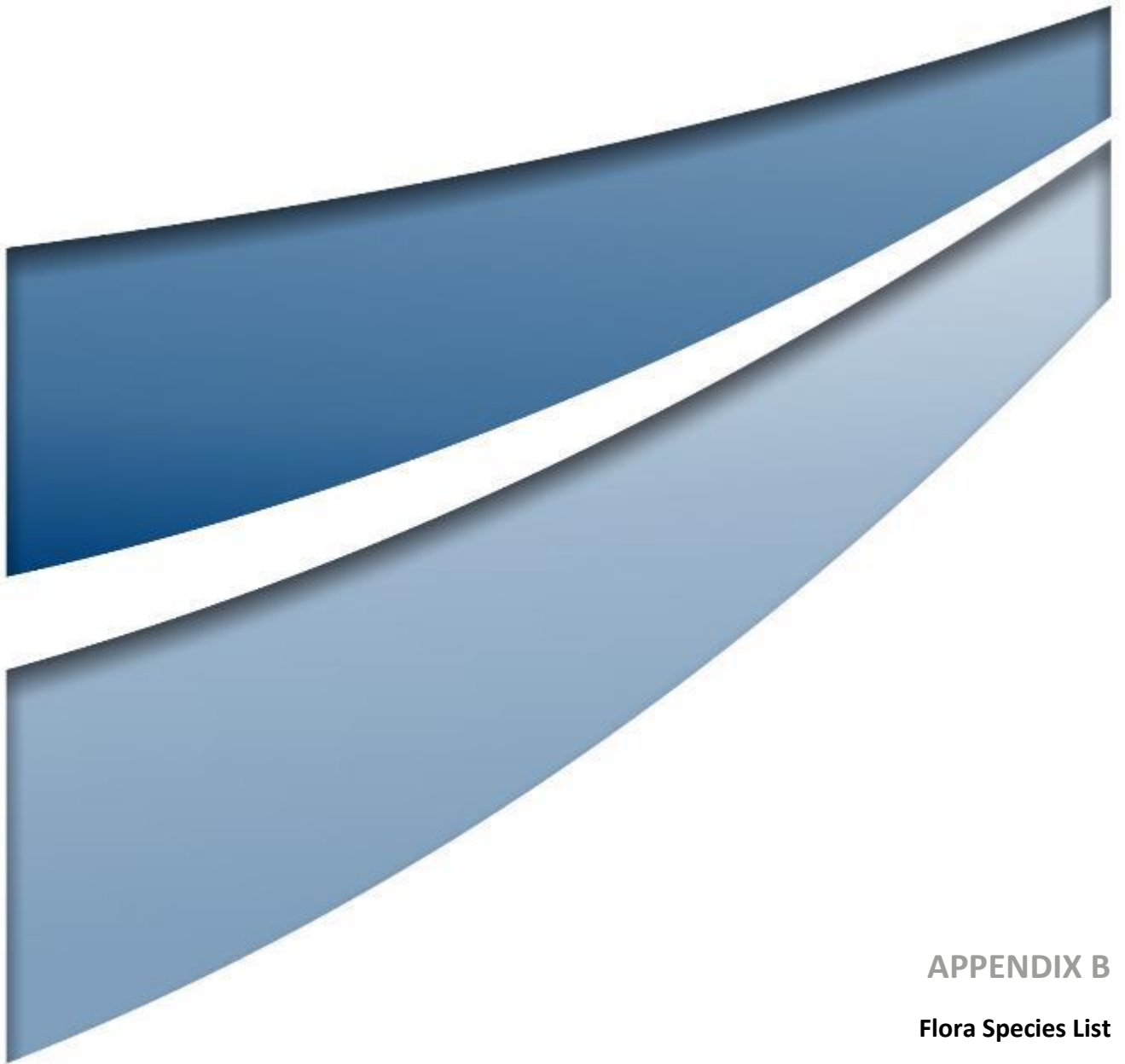


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APPENDIX B

Flora Species List

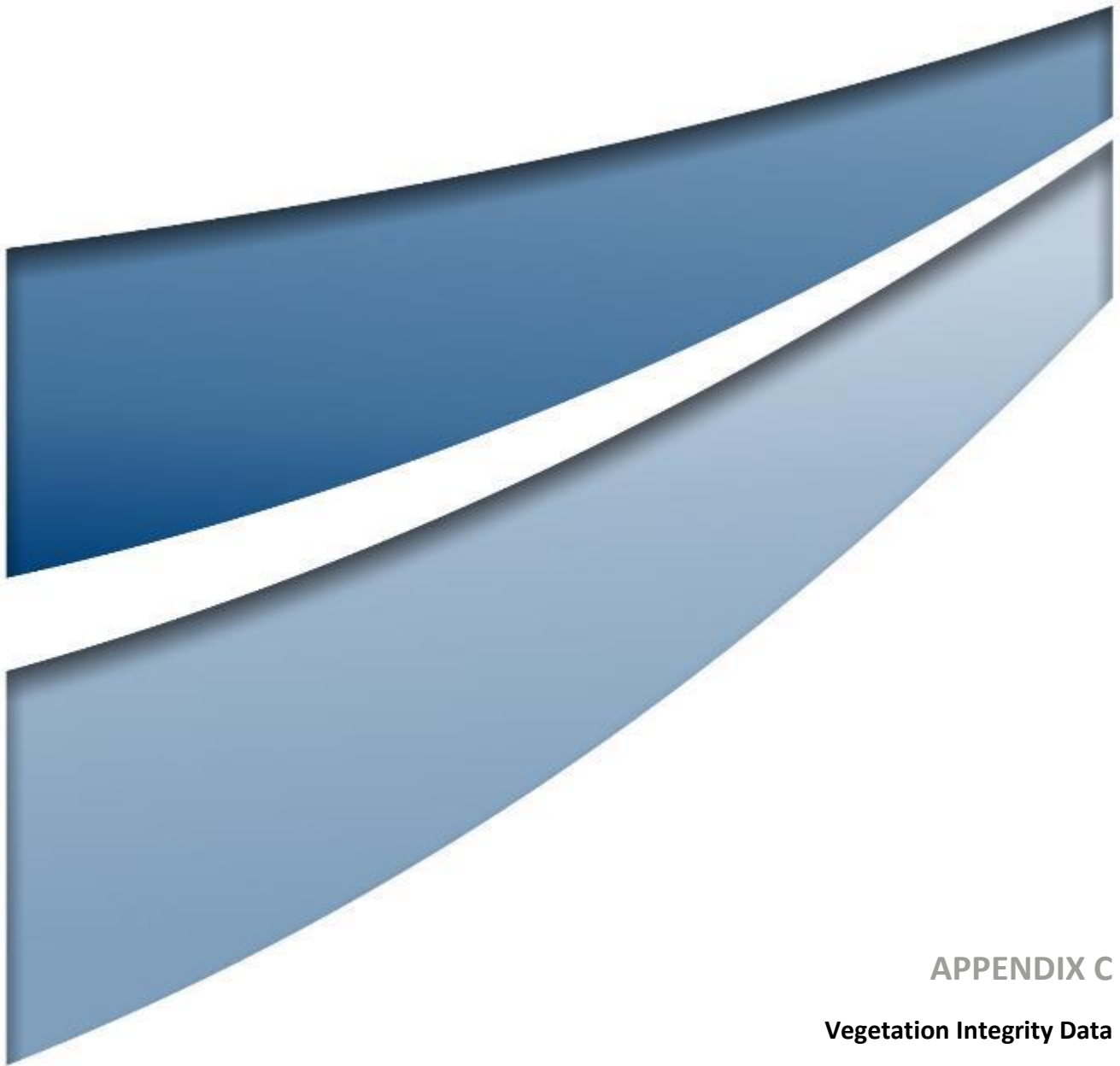
Flora Species List

Table 1 BAM Floristics

Plot	P01	P02	P03	P04	P05	P06	P07	P08
PCT and condition	1191 Paddock tree	1289 Low	1289 Low	1289 Low	1330 native pasture	1330 native pasture	1330 Paddock tree	888 Paddock tree
<i>Forb (FG)</i>	0.10%		0.10%		0.10%	0.20%	0.20%	0.10%
<i>Chrysocephalum apiculatum</i>						0.10%		
<i>Euchiton japonicus</i>			0.10%					
<i>Galium spp.</i>						0.10%		
<i>Lepidium spp.</i>							0.10%	
<i>Lythrum hyssopifolia</i>							0.10%	
<i>Oxalis spp.</i>					0.10%			
<i>Rumex brownii</i>								0.10%
<i>Sonchus spp.</i>	0.10%							
<i>Grass and Grasslike (GG)</i>	0.20%	1.00%	0.80%	15.30%	0.20%	0.10%	1.20%	0.20%
<i>Anthosachne scabra</i>				0.10%				
<i>Austrostipa bigeniculata</i>		1.00%	0.70%	15.00%				
<i>Bromus spp.</i>	0.20%				0.10%		1.00%	
<i>Carex inversa</i>								0.10%
<i>Chloris spp.</i>					0.10%			
<i>Cynodon dactylon</i>				0.10%				
<i>Festuca spp.</i>							0.10%	
<i>Isolepis spp.</i>							0.10%	
<i>Juncus spp.</i>			0.10%	0.10%				0.10%
<i>Rytidosperma spp.</i>						0.10%		
Introduced	98.60%	96.40%	82.70%	83.60%	98.60%	71.40%	93.10%	96.60%
<i>Acetosella vulgaris</i>	0.20%	0.10%	0.10%	1.00%	0.10%	0.10%	10.00%	0.20%
<i>Arctotheca calendula</i>	0.10%	0.10%			0.10%	0.10%	0.10%	
<i>Bromus catharticus</i>		0.10%						

Plot	P01	P02	P03	P04	P05	P06	P07	P08
<i>Bromus hordeaceus</i>	4.00%	1.00%	3.00%	2.00%	25.00%	45.00%	80.00%	
<i>Centaureum erythraea</i>					0.10%	0.10%		
<i>Cerastium spp.</i>	0.10%					0.10%		
<i>Cirsium vulgare</i>	0.10%	0.10%				0.10%	0.10%	0.10%
<i>Conyza bonariensis</i>								0.10%
<i>Dactylis glomerata</i>		2.00%	5.00%	0.20%	1.00%	0.50%		20.00%
<i>Echium plantagineum</i>					0.10%			
<i>Eleusine spp.</i>					0.10%	0.10%		5.00%
<i>Eleusine tristachya</i>			2.00%	1.00%				
<i>Eragrostis curvula</i>			2.00%					
<i>Festuca pratensis</i>	25.00%							
<i>Gamochaeta spp.</i>			0.10%	0.10%	1.00%	0.60%		0.10%
<i>Holcus lanatus</i>						0.10%		
<i>Hordeum leporinum</i>	0.50%	0.50%						
<i>Hypochaeris radicata</i>	0.10%		10.00%	0.20%	0.50%	0.50%		0.10%
<i>Juncus bufonius</i>	0.10%		1.00%		1.00%	0.20%		0.10%
<i>Lolium perenne</i>	35.00%	7.00%	4.00%	9.00%	35.00%	20.00%	0.20%	10.00%
<i>Lycium ferocissimum</i>	2.00%							
<i>Medicago spp.</i>					0.10%			0.10%
<i>Modiola caroliniana</i>							0.10%	
<i>Nassella trichotoma</i>			0.10%					0.10%
<i>Onopordum acanthium subsp. acanthium</i>		0.20%						
<i>Paronychia brasiliiana</i>			0.10%	0.10%			0.10%	0.10%
<i>Phalaris aquatica</i>	1.00%							5.00%
<i>Plantago coronopus</i>					0.10%		0.10%	0.30%
<i>Plantago lanceolata</i>	0.10%		0.10%				0.10%	
<i>Romulea rosea var. australis</i>			0.10%					
<i>Romulea spp.</i>					0.10%			

Plot	P01	P02	P03	P04	P05	P06	P07	P08
<i>Sonchus asper</i>					0.10%			
<i>Taraxacum officinale</i>	0.10%				0.10%	0.10%	0.10%	0.10%
<i>Trifolium arvense</i>					0.10%	1.00%		
<i>Trifolium dubium</i>	1.00%				4.00%	5.00%	0.20%	
<i>Trifolium glomeratum</i>		0.10%						
<i>Trifolium repens</i>	2.00%		0.10%		20.00%			
<i>Trifolium subterraneum</i>		85.00%	45.00%	15.00%		5.00%	2.00%	0.20%
<i>Vulpia spp.</i>		0.20%	10.00%	55.00%	10.00%	20.00%		55.00%
<i>Tree (TG)</i>	5.00%						8.00%	20.00%
<i>Eucalyptus amplifolia</i>							8.00%	
<i>Eucalyptus mannifera</i>								20.00%
<i>Eucalyptus pauciflora</i>	5.00%							

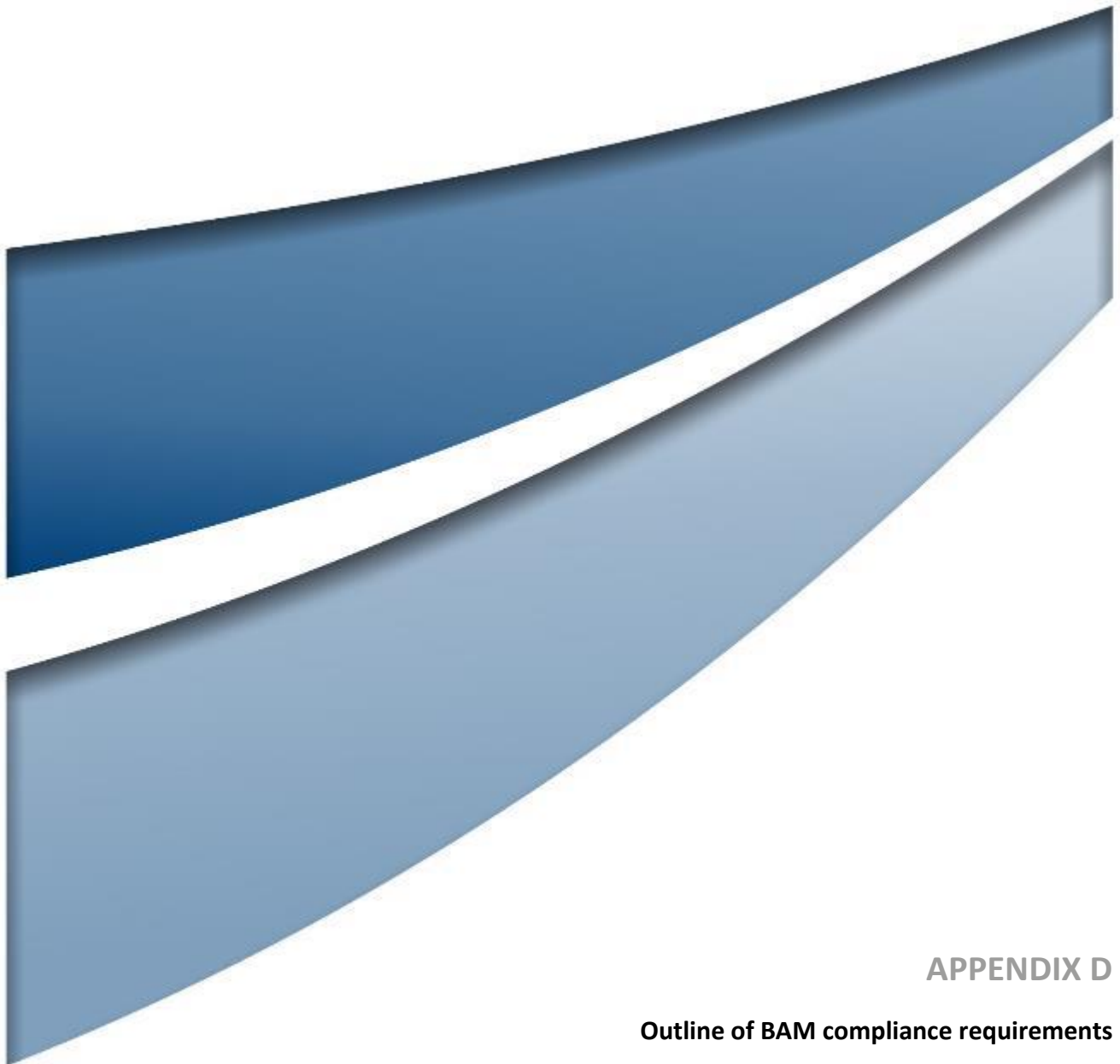


APPENDIX C

Vegetation Integrity Data

Site Information

Plot	pct	area	patch size	condition class	zone	easting	northing	bearing	comp Tree	comp Shrub	comp Grass	Comp Forbs	Comp Ferns	Comp Other	Struc Tree	Struc Shrub	Struc Grass	Struc Forbs	Struc Ferns	Struc Other	Fun Large Trees	Fun Hollow trees	Fun Litter Cover	Fun Len Fallen Logs	funTreeStem 5 to 9	funTreeStem 10 to 19	funTreeStem 20 to 29	funTreeStem 30 to 49	funTreeStem 50 to 79	Fun Tree Regen	Fun High Threat Exotic
P01	1191	0.36	1	Paddock trees	55	754049.7	6139607.65	151	1	0	1	1	0	0	5.0	0.0	0.2	0.1	0.0	0.0	1	1	12.4	0.0	0	0	1	0	0	0	2.2
P02	1289	4.75	5	Low	55	752380	6141166.7	197	0	0	1	0	0	0	0.0	0.0	1.0	0.0	0.0	0.0	0	0	1.4	0.0	0	0	0	0	0	0	0.1
P03	1289	4.75	5	Low	55	752285.2	6141327.23	167	0	0	2	1	0	0	0.0	0.0	0.8	0.1	0.0	0.0	0	0	0.6	0.0	0	0	0	0	0	0	2.3
P04	1289	4.75	5	Low	55	752196.7	6141206.35	260	0	0	4	0	0	0	0.0	0.0	15.3	0.0	0.0	0.0	0	0	2.4	0.0	0	0	0	0	0	0	1.0
P05	1330	4.64	5	Native pasture	55	753638.6	6140363.59	260	0	0	2	1	0	0	0.0	0.0	0.2	0.1	0.0	0.0	0	0	0.6	0.0	0	0	0	0	0	0	0.1
P06	1330	4.64	5	Native pasture	55	753641.7	6140087.81	260	0	0	1	2	0	0	0.0	0.0	0.1	0.2	0.0	0.0	0	0	4.4	0.0	0	0	0	0	0	0	0.1
P07	1330	1.14	2	Paddock trees	55	754579.8	6138598.73	263	1	0	3	2	0	0	8.0	0.0	1.2	0.2	0.0	0.0	0	1	0.0	5.0	0	0	0	0	1	0	10.0
P08	888	0.22	1	Paddock trees	55	754891.1	6138542.36	171	1	0	2	0	0	0	20.0	0.0	0.2	0.1	0.0	0.0	0	0	1.4	2.0	0	0	0	0	1	0	0.3



APPENDIX D

Outline of BAM compliance requirements

(DPIE 2020; Appendix K: Requirements for a Biodiversity Development Assessment Report)

Outline of BAM Compliance

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
Introduction	Chapters 2 and 3	Information	
		Introduction to the biodiversity assessment including:	–
		☒ brief description of the proposal	Section 1.1
		☒ identification of subject land boundary, including:	Section 1.1 Figure 1.1 and Figure 1.2
		☒ operational footprint	
		☒ construction footprint indicating clearing associated with temporary/ancillary construction facilities and infrastructure	
		☒ general description of the subject land	Section 1.1.3
		☒ sources of information used in the assessment, including reports and spatial data	Section 1.6. Also referenced in text and listed in the References Section.
		☒ identification and justification for entering the BOS	Section 1.2
		Maps and tables	
		☒ Map of the subject land boundary showing the final proposal footprint, including the construction footprint for any clearing associated with temporary/ancillary construction facilities and infrastructure	Figure 1.1
Landscape	Section 3.1 and Section 3.2, Appendix E	Information	
		Identification of site context components and landscape features, including:	–
		☒ general description of subject land topographic and hydrological setting, geology and soils	Section 1.1.3 Table 3.1 and Table 4.1
		☒ per cent native vegetation cover in the assessment area (as described in BAM Section 3.2)	Section 3.3 Table 3.2
		☒ IBRA bioregions and subregions (as described in BAM Subsection 3.1.3(2.))	Section 1.1.3 and Section 2.1.1 Table 1.1 and Table 3.1

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
		☒ rivers and streams classified according to stream order (as described in BAM Subsection 3.1.3(3.) and Appendix E)	Section 3.2 Table 3.1
		☒ wetlands within, adjacent to and downstream of the site (as described in BAM Subsection 3.1.3(3.))	Section 3.2 Table 3.1
		☒ connectivity of different areas of habitat (as described in BAM Subsection 3.1.3(5–6.))	Section 6.0 and Section 8.3.5 Table 3.1 Table 6.1 Table 8.8.3
		☒ karst, caves, crevices, cliffs, rocks and other geological features of significance and for vegetation clearing proposals, soil hazard features (as described in BAM Subsections 3.1.3(7.) and 3.1.3(12.))	Section 3.2 Table 3.1
		☒ areas of outstanding biodiversity value occurring on the subject land and assessment area (as described in BAM Subsection 3.1.3(8–9.))	Section 9.1 Figure 1.4
		☒ any additional landscape features identified in any SEARs for the proposal	Section 1.5 Table 1.3
		☒ NSW (Mitchell) landscape on which the subject land occurs	Section 1.1.3 Table 1.1 and Table 1.3
		☒ details of field reconnaissance undertaken to confirm the extent and condition of landscape features and native vegetation cover (as described in Operational Manual Stage 1 Section 2.4)	Section 2.1.1 and Section 3.2 Table 1.1 and Table 3.1 Figure 1.2 and Figure 1.3
		Maps and tables	
		☒ Site Map ☒ Property boundary ☒ Boundary of subject land ☒ Cadastre of subject land (including labelling of Lot and DP or section plan if relevant) ☒ Landscape features identified in BAM Subsection 3.1.3.	Figure 1.1 and Figure 1.2 Section 2.1.1 and Section 3.2 Table 3.1

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
		☒ Location Map ☒ Digital aerial photography at 1:1,000 scale or finer ☒ Boundary of subject land ☒ Assessment area (i.e. the subject land and either 1500 m buffer area or 500 m buffer for linear development) ☒ Landscape features identified in BAM Subsection 3.1.3 ☒ Additional detail (e.g. local government area boundaries) relevant at this scale	Figure 1.1, Figure 1.2 and Table 1.1 Section 2.1.1 and Section 3.1 Table 3.2 and Table 3.1
		Landscape features identified in BAM Subsection 3.1.3 and to be shown on the Site Map and/or Location Map include:	
		☒ IBRA bioregions and subregions ☒ rivers, streams and estuaries ☒ wetlands and important wetlands ☒ connectivity of different areas of habitat ☒ karst, caves, crevices, cliffs, rocks and other geological features of significance and if required, soil hazard features ☒ areas of outstanding biodiversity value occurring on the subject land and assessment area ☒ any additional landscape features identified in any SEARs for the proposal ☒ NSW (Mitchell) landscape on which the subject land occurs	Section 1.1.3 and Section 2.1.1 Table 1.1 and Table 3.1
		Data	
		☒ All report maps as separate jpeg files	–
		Individual digital shape files of:	–
		☒ subject land boundary	–
		☒ assessment area (i.e. subject land and 1500 m buffer area) boundary	–
		☒ cadastral boundary of subject land	–
		☒ areas of native vegetation cover	–
		☒ landscape features	–

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
Native vegetation	Chapter 4, Appendix A and Appendix H	Information	
		☒ Identify native vegetation extent within the subject land, including cleared areas and evidence to support differences between mapped vegetation extent and aerial imagery (as described in BAM Section 4.1(1–3.) and Subsection 4.1.1)	Section 3.3, Section 2.2.2 and Section 4.1 Figure 4.1 Table 3.2
		☒ Provide justification for all parts of the subject land that do not contain native vegetation (as described in BAM Subsection 4.1.2)	Section 1.3.1, Section 8.3.3 and Section 4.3.2 Table 6.1
		☒ Review of existing information on native vegetation including references to previous vegetation maps of the subject land and assessment area (described in BAM Section 4.1(3.) and Subsection 4.1.1)	Section 2.2.2, Section 4.1.1, Section 4.1.2 and Section 4.3.1
		☒ Describe the systematic field-based floristic vegetation survey undertaken in accordance with BAM Section 4.2	Section 1.3.1 and Section 2.3.3
		☒ Where relevant, describe the use of more appropriate local data, provide reasons that support the use of more appropriate local data and include the written confirmation from the decision-maker that they support the use of more appropriate local data (as described in BAM Subsection 1.4.2 and Appendix A)	Not applicable
		For each PCT within the subject land, describe:	–
		☒ PCT name and ID	Section 2.2 and Section 4.2 Figure 4.2 Table 4.1
		☒ vegetation class	Section 2.2.1, Section 4.2.1
		☒ extent (ha) within subject land	Section 1.1.1, Section 1.1.3

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
		☒ evidence used to identify a PCT including any analyses undertaken, references/sources, existing vegetation maps (BAM Section 4.2(1–3.))	Section 4.3.1, Section 4.2.2.4. Section 4.2.3.4 and Section 4.2.4.4 Table 4.7
		☒ plant species relied upon for identification of the PCT and relative abundance of each species	Section 4.2
		☒ if relevant, TEC status including evidence used to determine vegetation is the TEC (BAM Subsection 4.2.2(1–2.))	Section 9.1.1 and Section 10.1.1 Table 4.8
		☒ estimate of per cent cleared value of PCT (BAM Subsection 4.2.1(5.))	Section 4.2 Table 4.1, Table 4.2, Table 4.3, Table 4.4, Table 4.5
		Describe the vegetation integrity assessment of the subject land, including:	–
		☒ identification and mapping of vegetation zones (as described in BAM Subsection 4.3.1)	Section 4.5 Figure 4.2 Table 4.13
		☒ description of vegetation zones within the subject land (as described in Operational Manual Stage 1 Table 2 and Subsection 3.3.2)	Section 4.2.2
		☒ area (ha) of each vegetation zone	Section 4.2 Table 4.13
		☒ assessment of patch size (as described in BAM Subsection 4.3.2)	Table 4.13
		☒ survey effort (i.e. number of vegetation integrity survey plots) as described in BAM Subsection 4.3.4(1–2.)	Section 4.6.1
		☒ use of relevant benchmark data from BioNet Vegetation Classification (as described in BAM Subsection 4.3.3(5.))	Section 2.3.1
		Where use of more appropriate local benchmark data is proposed (as described in BAM Subsection 1.4.2, BAM Subsection 4.3.3(5.) and BAM Appendix A):	–

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
		☐ identify the PCT or vegetation class for which local benchmark data will be applied ☐ identify published sources of local benchmark data (if benchmarks obtained from published sources) ☐ describe methods of local benchmark data collection (if reference plots used to determine local benchmark data)	Not applicable
		☐ provide justification for use of local data rather than BioNet Vegetation Classification benchmark values	Not applicable
		☐ provide written confirmation from the decision-maker that they support the use of local benchmark data	Not applicable
		Maps and tables	
		☒ Map of native vegetation extent within the subject land at scale not greater than 1:10,000 including identification of all areas of native vegetation including areas that are ground cover only, cleared areas (as described in BAM Section 4.1(1–3.)) and all parts of the subject land that do not contain native vegetation (BAM Subsection 4.1.2)	Section 2.2.2 Figure 4.1
		☒ Map of PCTs within the subject land (as described in BAM Section 4.2(1.))	Figure 4.2
		☒ Map of vegetation zones within the subject land (as described in BAM Subsection 4.3.1)	Figure 4.2
		☒ Map the location of floristic vegetation survey plots and vegetation integrity survey plots relative to PCT boundaries	Figure 2.1
		☒ Map of TEC distribution on the subject land and table of TEC listing, status and area (ha)	Figure 4.3 and Table 4.8
		☒ Map of patch size locations for each native vegetation zone and table of patch size areas (as described in BAM Subsection 4.3.2)	Patch size not mapped and exceeds 100ha for all vegetation condition zones, as listed in Table 4.9(?) Table 4.13
		Table of current vegetation integrity scores for each vegetation zone within the site and including:	–
		☒ composition condition score ☒ structure condition score ☒ function condition score ☒ presence of hollow bearing trees	Table 4.6.2 Appendix C
		Data	

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
		☒ All report maps as separate jpeg files	–
		☒ Plot field data (MS Excel format)	
		☒ Plot field datasheets	Appendix D
		Digital shape files of:	–
		☒ PCT boundaries within subject land	–
		☒ TEC boundaries within subject land	–
		☒ vegetation zone boundaries within subject land	–
		☒ floristic vegetation survey and vegetation integrity plot locations	–
Threatened species	Chapter 5	Information	
		Identify ecosystem credit species likely to occur on the subject land, including:	–
		☒ list of ecosystem credit species derived from the BAM-C (as described in BAM Subsection 5.1.1 and Section 5.2(1.))	Table 5.1
		☒ justification and supporting evidence for exclusion of any ecosystem credit species based on geographic limitations, habitat constraints or vagrancy (as described in BAM Subsections 5.2.1 and 5.2.2)	Section 10.1.1 Table 10.1
		☒ justification for addition of any ecosystem credit species to the list	Table 5.1 / Justification for inclusion of additional BioNet Atlas species documented in
		Identify species credit species likely to occur on the subject land, including:	–
		☒ list of species credit species derived from the BAM-C (as described in BAM Subsection 5.1.1)	Table 5.2 and Table 5.3
		☒ justification and supporting evidence for exclusions based on geographic limitations, habitat constraints or vagrancy (as described in BAM Subsections 5.2.1 and 5.2.2)	Table 5.2 and Table 5.3
		☒ justification and supporting evidence for exclusions based on degraded habitat constraints and/or microhabitats on which the species depends (as described in BAM Subsection 5.2.2)	Table 5.2 and Table 5.3

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
		☒ justification for addition of any species credit species to the list	Table 5.2 and Table 5.3 / Justification for inclusion of additional BioNet Atlas species documented in Section 2.4.2
		From the list of candidate species credit species, identify:	–
		☒ species assumed present within the subject land (if relevant) (as described in BAM Subsection 5.2.4(2.a.)) ☒ species present within the subject land on the basis of being identified on an important habitat map for a species (as described in BAM Subsection 5.2.4(2.d.)) ☒ species for which targeted surveys are to be completed to determine species presence (BAM Subsection 5.2.4(2.b.)) ☒ species for which an expert report is to be used to determine species presence (BAM Subsection 5.2.4(2.c.))	Table 5.4 and Table 5.5
		Present the outcomes of species credit species assessments from:	–
		☒ threatened species survey (as described in BAM Section 5.2.4)	Section 5.2.1 (flora) and Section 5.2.2 (fauna)
		☐ expert reports (if relevant) including justification for presence of the species and information used to make this determination (as described in BAM Subsection 5.2.4, Section 5.3, Box 3)	Not applicable
		Where survey has been undertaken include detailed information on:	–
		☒ survey method and effort (as described in BAM Section 5.3)	Section 5.3 Figure 2.2 and 2.3
		☒ justification of survey method and effort (e.g. citation of peer-reviewed literature) if approach differs from the department's taxa-specific survey guides or where no relevant guideline has been published	Section 2.3, Section 2.4 Table 5.6
		☒ timing of survey in relation to requirements in the TBDC or the department's taxa-specific survey guides. Where survey was undertaken outside these guides include justification for the timing of surveys	Table 5.6 and Table 5.7

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
		☒ survey personnel and relevant experience	Project Team including survey personnel are listed in the preface of the report. CVs can be provided on request.
		☒ describe any limitations to surveys and how these were addressed/overcome	Section 2.6
		Where an expert report has been used in place of survey (as described in BAM Section 5.3, Box 3), include:	–
		☐ justification of the use of an expert report ☐ identify the expert, provide evidence of their expert credentials and departmental approval of expert status ☐ all requirements of Box 3 have been addressed in the expert report	Not applicable
		Where use of local data is proposed (BAM Subsection 1.4.2):	–
		☐ identify relevant species ☐ identify data to be amended ☐ identify source of information for local data, e.g. published literature, additional survey data, etc. ☐ justify use of local data in preference to VIS Classification or TBDC data	Not applicable
		☐ provide written confirmation from the decision-maker that they support the use of local data	Not applicable
		Species polygon completed for species credit species present within the subject land (assumed present or determined on the basis of survey, expert report or important habitat map) ensuring that:	–
		☒ the unit of measure for each species is documented	Section 5.3
		for species assessed by area:	–
		☒ the polygon includes the extent of suitable habitat for the target species within the subject land (as described in BAM Subsection 5.2.5)	Section 5.5
		☒ a description of, and evidence-based justification for, the habitat constraints, features or microhabitats used to map the species polygon including reference to information in the TBDC for that species and any buffers applied	Section 5.5
		for species assessed by counts of individuals:	–

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
		☒ the number of individual plants present on the subject land (as described in BAM Subsection 5.2.5(3.))	-
		☒ the method used to derive this number (i.e. threatened species survey or expert report) and evidence-based justification for the approach taken	-
		☒ the polygon includes all individuals located on the subject land with a buffer of 30 m around the individuals or groups of individuals on the subject land	-
		☒ Identify the biodiversity risk weighting for each species credit species identified as present within the subject land (as described in BAM Section 5.4)	Section 5.2 and Section 5.3
		Maps and tables	
		☒ Table showing ecosystem credit species in accordance with BAM Subsection 5.1.1, and identifying:	Table 10.1
		☒ the ecosystem credit species removed from the list	Table 10.1
		☐ the sensitivity to gain class of each species	Table 10.1
		☒ Table detailing species credit species in accordance with BAM Section 5.2 and identifying:	Table 5.2 and Table 5.3
		☒ the species credit species removed from the list of species because the species is considered vagrant, out of geographic range or the habitat or microhabitat features are not present	Table 5.5
		☒ the candidate species credit species not recorded on the subject land as determined by targeted survey, expert report or important habitat map	Table 5.4 and Table 5.5
		☒ Table detailing species credit species recorded or assumed as present within the subject land, habitat constraints or microhabitats associated with the species, counts of individuals (flora)/extent of suitable habitat (flora and fauna) (as described in BAM Subsection 5.2.6) and biodiversity risk weighting (BAM Section 5.4)	Section 5.3.2, Table 5.8 to Table 5.11
		☒ Map indicating the GPS coordinates of all individuals of each species recorded within the subject land and the species polygon for each species (as described in BAM Subsection 5.2.5)	None recorded
		Data	
		☒ Digital shape files of suitable habitat identified for survey for each candidate species credit species	–
		☒ Survey locations including GPS coordinates of any plots, transects, grids	
		☒ Digital shape files of each species polygon including GPS coordinates of located individuals	–

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
		☒ Species polygon map in jpeg format	–
		☐ Expert reports and any supporting data used to support conclusions of the expert report	Not applicable
		☒ Field datasheets detailing survey information including prevailing conditions, date, time, equipment used, etc.	Field data captured digitally
Prescribed impacts	Chapter 6	Information	
		Identify potential prescribed biodiversity impacts on threatened entities, including:	–
		☒ karst, caves, crevices, cliffs, rocks and other geological features of significance (as described in BAM Subsection 6.1.1)	Section 8.3.1
		☒ occurrences of human-made structures and non-native vegetation (as described in BAM Subsection 6.1.2)	Section 8.3.3
		☒ corridors or other areas of connectivity linking habitat for threatened entities (as described in BAM Subsection 6.1.3)	Section 8.3.5
		☒ waterbodies or any hydrological processes that sustain threatened entities (as described in BAM Subsection 6.1.4)	Section 8.3.6
		☐ protected animals that may use the proposed wind farm development site as a flyway or migration route (as described in BAM Subsection 6.1.5)	Not applicable
		☒ where the proposed development may result in vehicle strike on threatened fauna or on animals that are part of a threatened ecological community (as described in BAM Subsection 6.1.6)	Section 8.3.7
		☒ Identify a list of threatened entities that may be dependent upon or may use habitat features associated with any of the prescribed impacts	Section 6.0
		☒ Describe the importance of habitat features to the species including, where relevant, impacts on life cycle or movement patterns (e.g. Subsection 6.1.3)	Section 9.1.1 Table 9.1
		Where the proposed development is for a wind farm:	–
		☐ identify a candidate list of protected animals that may use the development site as a flyway or migration route, including: resident threatened aerial species, resident raptor species and nomadic and migratory species that are likely to fly over the proposal area (as described in BAM Subsection 6.1.5)	Not applicable
		☐ provide details of targeted survey for candidate species of wind farm developments undertaken in accordance with BAM Subsection 6.1.5(2–3.)	Not applicable

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
		☐ predict the habitual flight paths for nomadic and migratory species likely to fly over the subject land and map the likely habitat for resident threatened aerial and raptor species (BAM Subsection 6.1.5(4.))	Not applicable
		Where the proposal may result in vehicle strike:	–
		☒ identify a list of threatened fauna or protected fauna species that are part of a TEC and at risk of vehicle strike due to the proposal	-
		Maps and tables	
		☒ Map showing location of any prescribed impact features (i.e. karst, caves, crevices, cliffs, rocks, human-made structures, etc.)	-
		☒ Map showing location of potential vehicle strike locations	-
		☐ Maps of habitual flight paths for nomadic and migratory species likely to fly over the site and maps of likely habitat for threatened aerial species resident on the site (for wind farm developments only)	-
		Data	
		☒ Digital shape files of prescribed impact feature locations	–
		☒ Prescribed impact features map in jpeg format	–
Avoid and minimise impacts	Chapter 7	Information	
		Demonstration of efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the proposal location in accordance with Chapter 7, including an analysis of alternative:	–
		☒ modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology	Section 7.4 Table 7.1
		☒ routes that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed route	Section 7.1.1 Figure 7.1
		☒ alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location	Section 7.1.1 Figure 7.1
		☒ alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site	Section 7.1.1 Figure 7.1
		☒ Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design (as described in BAM Sections 7.1 and 7.2)	Section 7.4 Table 7.1

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
		☒ Identification of any other site constraints that the proponent has considered in determining the location and design of the proposal (as described in BAM Subsection 7.2.1(3.))	Section 7.1.2, Section 7.2.1 and Section 7.2.2
		☒ Detail measures or options considered but not implemented because they are not feasible and/or practical (e.g. due to site constraints)	Section 7.1.2, Section 7.2.1 and Section 7.2.2
		Maps and tables	
		☒ Table of measures to be implemented to avoid and minimise the impacts of the proposal, including action, outcome, timing and responsibility	Table 7.1
		☒ Map of alternative footprints considered to avoid or minimise impacts on biodiversity values; and of the final proposal footprint, including construction and operation	Figure 7.1
		☒ Maps demonstrating indirect impact zones where applicable	-
		Data	
		Digital shape files of:	-
		☒ alternative and final proposal footprint	-
		☒ direct and indirect impact zones	-
		☒ Maps in jpeg format	-
Assessment of impacts	Chapter 8, Sections 8.1 and 8.2	Information	
		☒ Determine the impacts on native vegetation and threatened species habitat, including a description of direct impacts of clearing of native vegetation, threatened ecological communities and threatened species habitat (as described in BAM Section 8.1)	Section 10.1.1
		Assessment of indirect impacts on vegetation and threatened species and their habitat including (as described in BAM Section 8.2):	-
		☒ description of the nature, extent, frequency, duration and timing of indirect impacts of the proposal	Section 8.2 Table 8.8.3
		☒ documenting the consequences to vegetation and threatened species and their habitat including evidence-based justifications	Section 8.2, Table 8.8.3
		☒ reporting any limitations or assumptions, etc. made during the assessment	Section 8.2, Table 8.8.3

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
		☒ identification of the threatened entities and their habitat likely to be affected	Section 8.2, Table 8.8.3
		Assessment of prescribed biodiversity impacts (as described in BAM Section 8.3) including:	–
		assessment of the nature, extent frequency, duration and timing of impacts on the habitat of threatened species or ecological communities associated with:	–
		☒ karst, caves, crevices, cliffs, rocks and other features of geological significance	Section 7.2 and Section 8.3.1
		☒ human-made structures	Table 6.1
		☒ non-native vegetation	Section 7.2 Table 6.1
		☒ connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range	Table 6.1
		☒ movement of threatened species that maintains their life cycle	Table 6.1
		☒ water quality, waterbodies and hydrological processes that sustain threatened species and threatened ecological communities	Section 8.3.6 Table 6.1
		☐ assessment of the impacts of wind turbine strikes on protected animals	Not applicable
		☒ assessment of the impacts of vehicle strikes on threatened species of animals or on animals that are part of a TEC	Section 8.3.7
		☒ evaluate the consequences of prescribed impacts	Section 8.2 Table 8.8.3
		☒ describe impacts that are uncertain	Section 8.5
		☒ document limitations to data, assumptions and predictions	Section 8.2 Table 8.8.3
		Maps and tables	
		☒ Table showing change in vegetation integrity score for each vegetation zone as a result of identified impacts	Table 4.14, Table 4.6.2 and Table 8.1.2
		Data	
		N/A	–

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
Mitigation and management of impacts	Chapter 8, Sections 8.4 and 8.5	Information	
		Identification of measures to mitigate or manage impacts in accordance with the recommendations in BAM Sections 8.4 and 8.5 including:	–
		☒ techniques, timing, frequency and responsibility ☒ identify measures for which there is risk of failure ☒ evaluate the risk and consequence of any residual impacts	Section 8.4 Table 8.4 and Table 8.5
		☒ document any adaptive management strategy proposed	Section 8.5 Table 8.5
		Identification of measures for mitigating impacts related to:	–
		☒ displacement of resident fauna (as described in BAM Subsection 8.4.1(2.))	Section 8.4
		☒ indirect impacts on native vegetation and habitat (as described in BAM Subsection 8.4.1(3.))	
		☒ mitigating prescribed biodiversity impacts (as described in BAM Subsection 8.4.2)	
		☒ Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (BAM Section 8.5)	Section 8.5 Table 8.5
		Maps and tables	
		☒ Table of measures to be implemented before, during and after construction to mitigate and manage impacts of the proposal, including action, outcome, timing and responsibility	Table 8.4, Table 8.5
Impact summary	Chapter 9	Data	
		N/A	–
		Information	
		Identification and assessment of impacts on TECs and threatened species that are at risk of a serious and irreversible impacts (SAIL, in accordance with BAM Section 9.1) including:	–
		☒ addressing all criteria in Subsection 9.1.1 for each TEC listed as at risk of an SAIL present on the subject land	Section 9.1.1
		☒ for each TEC, report the extent of the TEC in NSW	Section 9.1.1
		☒ addressing all criteria in Subsection 9.1.2 for each threatened species at risk of an SAIL present on the subject land	Section 9.1.2

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
		☒ for each threatened species, report the population size in NSW	Section 9.1.2
		☒ documenting assumptions made and/or limitations to information	Section 9.0
		☒ documenting all sources of data, information, references used or consulted	
		☒ clearly justifying why any criteria could not be addressed	
		☒ Identification of impacts requiring offset in accordance with BAM Section 9.2	Section 10.1 and Table 10.1, Section 10.2 and Table 10.2
		☒ Identification of impacts not requiring offset in accordance with BAM Subsection 9.2.1(3.)	Table 10.1
		☒ Identification of areas not requiring assessment in accordance with BAM Section 9.3	Section 10.2
		Maps and tables	
		☒ Map showing the extent of TECs at risk of an SAI within the subject land	Figure 9.1
		☒ Map showing location of threatened species at risk of an SAI within the subject land	Figure 9.1
		Map showing location of:	–
		☒ impacts requiring offset	Figure 8.1
		☒ impacts not requiring offset	Table 10.1
		☒ areas not requiring assessment	Section 10.2
		Data	
		Digital shape files of:	–
		☒ extent of TECs at risk of an SAI within the subject land	-
		☒ location of threatened species at risk of an SAI within the subject land	-
		☒ boundary of impacts requiring offset	–
		☒ boundary of impacts not requiring offset	-
		☒ boundary of areas not requiring assessment	-
		☒ Maps in jpeg format	–
Impact	Chapter 10	Information	

BDAR Section	BAM Ref.	BAM Requirement	Reference(s) in the BDAR
summary		Ecosystem credits and species credits that measure the impact of the development on biodiversity values, including:	–
		☒ future vegetation integrity score for each vegetation zone within the subject land (Equation 25 and Equation 26 in BAM Appendix H)	Table 10.1
		☒ change in vegetation integrity score (BAM Subsection 8.1.1)	
		☒ number of required ecosystem credits for the direct impacts of the proposal on each vegetation zone within the subject land (BAM Subsection 10.1.2)	
		☒ biodiversity risk weighting for each	Table 10.1
		☒ number of required species credits for each candidate threatened species that is directly impacted on by the proposal (BAM Subsection 10.1.3)	Section 10.1.2
		Maps and tables	
		☒ Table of PCTs requiring offset and the number of ecosystem credits required	Table 10.1
		☒ Table of threatened species requiring offset and the number of species credits required	Section 10.1.2
		Data	
Biodiversity credit report	Chapter 10	☒ Submitted proposal in the BAM Calculator	–
		Information	
		☒ Description of credit classes for ecosystem credits and species credits at the development or clearing site or land to be biodiversity certified (BAM Section 10.2)	Section 11
		☒ BAM credit report in pdf format	Appendix D
		Maps and tables	
		☒ Table of credit class and matching credit profile	Section 11
		Data	
		☒ BAM credit report in pdf format	Appendix D

BAM Biodiversity Credit Report (Variations)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00031315/BAAS21026/22/00031322	Gundry_BungonialBRA_SR	14/03/2024
Assessor Name	Assessor Number	BAM Data version *
Sarah Hart	BAAS21026	67
Proponent Name(s)	Report Created	BAM Case Status
	24/10/2024	Finalised
Assessment Revision	Assessment Type	Date Finalised
12	Major Projects	24/10/2024

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

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	Critically Endangered Ecological Community	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	Critically Endangered Ecological Community	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
Species		
Nil		

BAM Biodiversity Credit Report (Variations)

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT

No Changes

Predicted Threatened Species Not On Site

Name

No Changes

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
1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	0.4	0	0	0.00
1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion	Not a TEC	4.5	0	0	0.00

BAM Biodiversity Credit Report (Variations)

1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	4.8	0	0	0.00
888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion	Not a TEC	0.3	0	0	0.00

888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Southern Tableland Dry Sclerophyll Forests This includes PCT's: 299, 344, 349, 351, 352, 653, 701, 727, 728, 730, 888, 957, 1093, 1177, 3730, 3732, 3734, 3735, 3737, 3738, 3741, 3743, 3744, 3746, 3747	Southern Tableland Dry Sclerophyll Forests >=50% and <70%	888_Paddock_trees	No	0	Bungonia, Bateman, Burragarang, Crookwell, Ettrema, Kanangra, Kybeyan-Gourock, Monaro and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region
	Dry Sclerophyll Forests (Shrubby sub-formation)	Tier 3 or higher threat status	888_Paddock_trees	No	0	IBRA Region: South Eastern Highlands, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Variations)

1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions This includes PCT's: 679, 797, 802, 803, 804, 1100, 1101, 1191, 1197, 1199, 1229, 3338, 3415	-	1191_Paddock_trees	Yes	0	Bungonia,Bateman, Burragorang, Crookwell, Ettrema, Kanangra, Kybayan-Gourock, Monaro and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Temperate Montane Grasslands This includes PCT's: 586, 894, 895, 896, 1110, 1185, 1186, 1187, 1202, 1288, 1289, 1298, 3378, 3413, 3414, 3415, 3416	Temperate Montane Grasslands >=50% and <70%	1289_Low	No	0	Bungonia,Bateman, Burragorang, Crookwell, Ettrema, Kanangra, Kybayan-Gourock, Monaro and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region

BAM Biodiversity Credit Report (Variations)

	Grasslands	Tier 3 or higher threat status	1289_Low	No	0	IBRA Region: South Eastern Highlands, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654,	-	1330_Native_pasture	No	0	Bungonia,Bateman, Burragorang, Crookwell, Ettrema, Kanangra, Kybayan-Gourock, Monaro and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Variations)

	702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396, 3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150					
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437,	-	1330_Paddock_trees	Yes	0	Bungonia, Bateman, Burragorang, Crookwell, Ettrema, Kanangra, Kybayan-Gourock, Monaro and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Variations)

451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396, 3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150					
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Species Credit Summary

No Species Credit Data

Credit Retirement Options Like-for-like options



BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00031315/BAAS21026/22/00031322	Gundry_BungonialBRA_SR	14/03/2024
Assessor Name	Assessor Number	BAM Data version *
Sarah Hart	BAAS21026	67
Proponent Names	Report Created	BAM Case Status
	24/10/2024	Finalised
Assessment Revision	Assessment Type	Date Finalised
12	Major Projects	24/10/2024

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

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	Critically Endangered Ecological Community	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion



BAM Biodiversity Credit Report (Like for like)

Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions

Critically Endangered Ecological Community

1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion

Species

Nil

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT

No Changes

Predicted Threatened Species Not On Site

Name

No Changes

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

BAM Biodiversity Credit Report (Like for like)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	0.4	0	0	0
1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion	Not a TEC	4.5	0	0	0
1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	4.8	0	0	0
888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion	Not a TEC	0.3	0	0	0

888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
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BAM Biodiversity Credit Report (Like for like)

	Southern Tableland Dry Sclerophyll Forests This includes PCT's: 299, 344, 349, 351, 352, 653, 701, 727, 728, 730, 888, 957, 1093, 1177, 3730, 3732, 3734, 3735, 3737, 3738, 3741, 3743, 3744, 3746, 3747	Southern Tableland Dry Sclerophyll Forests >=50% and <70%	888_Paddock_trees	No		0 Bungonia, Bateman, Burragorang, Crookwell, Ettrema, Kanangra, Kybayan-Gourock, Monaro and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	Like-for-like credit retirement options					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions This includes PCT's: 679, 797, 802, 803, 804, 1100, 1101, 1191, 1197, 1199, 1229, 3338, 3415	-	1191_Paddock_trees	Yes	0	Bungonia, Bateman, Burragorang, Crookwell, Ettrema, Kanangra, Kybayan-Gourock, Monaro and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Like for like)

1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Temperate Montane Grasslands This includes PCT's: 586, 894, 895, 896, 1110, 1185, 1186, 1187, 1202, 1288, 1289, 1298, 3378, 3413, 3414, 3415, 3416	Temperate Montane Grasslands >=50% and <70%	1289_Low	No	0	Bungonia, Bateman, Burragorang, Crookwell, Ettrema, Kanangra, Kybayan-Gourock, Monaro and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	Like-for-like credit retirement options					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and	-	1330_Native_pasture	No	0	Bungonia, Bateman, Burragorang, Crookwell, Ettrema, Kanangra, Kybayan-Gourock, Monaro and South

BAM Biodiversity Credit Report (Like for like)

	Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383,					East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
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BAM Biodiversity Credit Report (Like for like)

	1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396, 3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150					
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492,		1330_Paddock_ trees	Yes		0 Bungonia, Bateman, Burragorang, Crookwell, Ettrema, Kanangra, Kybayan-Gourock, Monaro and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Like for like)

	496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396, 3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150					
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Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like credit retirement options

BAM Candidate Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00031315/BAAS21026/22/00031322	Gundry_BungonialBRA_SR	14/03/2024
Assessor Name	Report Created	BAM Data version *
Sarah Hart	24/10/2024	67
Assessor Number	Assessment Type	BAM Case Status
BAAS21026	Major Projects	Finalised
Assessment Revision	Date Finalised	
12	24/10/2024	

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

List of Species Requiring Survey

Name	Presence	Survey Months
<i>Acacia flocktoniae</i> Flockton Wattle	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☒ Jul ☒ Aug ☒ Sep ☒ Oct ☒ Nov ☐ Dec ☒ Survey month outside the specified months?
<i>Aprasia parapulchella</i> Pink-tailed Legless Lizard	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☒ Sep ☒ Oct ☒ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Caladenia tessellata</i> Thick Lip Spider Orchid	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☒ Sep ☒ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

BAM Candidate Species Report

<i>Commersonia prostrata</i> Dwarf Kerrawang	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☒ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Delma impar</i> Striped Legless Lizard	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☒ Sep ☒ Oct ☒ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Dillwynia glaucula</i> Michelago Parrot-pea	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☒ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Diuris aequalis</i> Buttercup Doubletail	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☒ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Eucalyptus aggregata</i> Black Gum	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☒ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Eucalyptus macarthurii</i> Paddys River Box, Camden Woollybutt	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☒ Nov ☐ Dec ☐ Survey month outside the specified months?

BAM Candidate Species Report

<i>Keyacris scurra</i> Key's Matchstick Grasshopper	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☒ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Leucochrysum albicans subsp. tricolor</i> Hoary Sunray	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☒ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Myotis macropus</i> Southern Myotis	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☒ Nov ☒ Dec ☐ Survey month outside the specified months?
<i>Phascolarctos cinereus</i> Koala	No (surveyed)	☒ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☒ Aug ☐ Sep ☐ Oct ☒ Nov ☒ Dec ☐ Survey month outside the specified months?
<i>Pultenaea pedunculata</i> Matted Bush-pea	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☒ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Swainsona sericea</i> Silky Swainson-pea	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☒ Nov ☐ Dec ☐ Survey month outside the specified months?

BAM Candidate Species Report

<i>Thesium australe</i> Austral Toadflax	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr
		☐ May ☐ Jun ☐ Jul ☐ Aug
		☐ Sep ☐ Oct ☒ Nov ☐ Dec
		☐ Survey month outside the specified months?

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Booroolong Frog	<i>Litoria booroolongensis</i>	Habitat degraded
Few-seeded Bossiaea	<i>Bossiaea oligosperma</i>	Habitat degraded
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	Habitat degraded Habitat constraints
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	Habitat constraints
Little Bent-winged Bat	<i>Miniopterus australis</i>	Habitat constraints
Mongarlowe Mallee	<i>Eucalyptus recurva</i>	Refer to BAR
Nerriga Grevillea	<i>Grevillea renwickiana</i>	Refer to BAR
Persoonia mollis subsp. revoluta	<i>Persoonia mollis</i> subsp. <i>revoluta</i>	Habitat degraded
Pygmy Cypress Pine	<i>Callitris oblonga</i>	Refer to BAR
Regent Honeyeater	<i>Anthochaera phrygia</i>	Habitat constraints
South-eastern Glossy Black-Cockatoo	<i>Calyptorhynchus lathami lathami</i>	Habitat degraded
Squirrel Glider	<i>Petaurus norfolcensis</i>	Habitat degraded
Superb Midge Orchid	<i>Genoplesium superbum</i>	Habitat degraded
Swift Parrot	<i>Lathamus discolor</i>	Habitat constraints
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	Habitat constraints

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00031315/BAAS21026/22/00031322	Gundry_BungonialBRA_SR	14/03/2024
Assessor Name	Report Created	BAM Data version *
Sarah Hart	24/10/2024	67
Assessor Number	BAM Case Status	Date Finalised
BAAS21026	Finalised	24/10/2024
Assessment Revision	Assessment Type	
12	Major Projects	

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

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

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAI	Ecosystem credits
Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion												
5	888_Paddock_trees	Not a TEC	1.1	1.1	0.29	PCT Cleared - 60%	High Sensitivity to Gain			1.75		0
											Subtotal	0

BAM Credit Summary Report

Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion												
1	1191_Pad dock_trees	Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	3.9	3.9	0.36	PCT Cleared - 95%	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	0
											Subtotal	0
Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion												
2	1289_Low	Not a TEC	2.7	2.7	4.5	PCT Cleared - 57%	High Sensitivity to Gain			1.75		0
											Subtotal	0

Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion

3	1330_Native_pasture	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	0.1	0.1	4.7	PCT Cleared - 94%	High Sensitivity to Gain	Critically Endangered Ecological Community	Critically Endangered	2.50	True	0
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BAM Credit Summary Report

4	1330_Pad dock_trees	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	2.8	2.8	0.17	PCT Cleared - 94%	High Sensitivity to Gain	Critically Endangered Ecological Community	Critically Endangered	2.50	True	0
											Subtotal	0
											Total	0

Species credits for threatened species

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

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00031315/BAAS21026/22/00031322	Gundry_BungoniaBRA_SR	14/03/2024
Assessor Name	Report Created	BAM Data version *
Sarah Hart	24/10/2024	67
Assessor Number	Assessment Type	BAM Case Status
BAAS21026	Major Projects	Finalised
Assessment Revision		Date Finalised
12		24/10/2024

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

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

Common Name	Scientific Name	Vegetation Types(s)
Black Falcon	Falco subniger	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
		1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
		888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion
Diamond Firetail	Stagonopleura guttata	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
		1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion
		1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
		888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion

BAM Predicted Species Report

Dusky Woodswallow	Artamus cyanopterus cyanopterus	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
		1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion
		1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
		888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion
Flame Robin	Petroica phoenicea	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
		1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion
		1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
		888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion
Grey-headed Flying-fox	Pteropus poliocephalus	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
Large Bent-winged Bat	Miniopterus orianae oceanensis	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
		1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion
		1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
		888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion
Little Bent-winged Bat	Miniopterus australis	1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion
Little Lorikeet	Glossopsitta pusilla	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
		1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion

BAM Predicted Species Report

Little Lorikeet	Glossopsitta pusilla	888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion
Regent Honeyeater	Anthochaera phrygia	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
		1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
		888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion
Scarlet Robin	Petroica boodang	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
		1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion
		1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
		888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion
South-eastern Hooded Robin	Melanodryas cucullata cucullata	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
		1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion
		1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
		888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion
Speckled Warbler	Chthonicola sagittata	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
		1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion
		1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion

BAM Predicted Species Report

Speckled Warbler	Chthonicola sagittata	888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion
Spotted-tailed Quoll	Dasyurus maculatus	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
		1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion
		1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
		888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion
Swift Parrot	Lathamus discolor	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
		888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion
White-bellied Sea-Eagle	Haliaeetus leucogaster	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
		1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
White-fronted Chat	Epthianura albifrons	1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion
White-throated Needletail	Hirundapus caudacutus	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
		1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion
		1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion
		888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion

Threatened species Manually Added

None added

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

BAM Predicted Species Report

Common Name	Scientific Name	Plant Community Type(s)
South-eastern Glossy Black- Cockatoo	Calyptorhynchus lathami lathami	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion
		1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion

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

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C
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BAM Vegetation Zones Report

Proposal Details

Assessment Id	Assessment name	BAM data last updated *
00031315/BAAS21026/22/00031322	Gundry_BungonialBRA_SR	14/03/2024
Assessor Name	Report Created	BAM Data version *
Sarah Hart	24/10/2024	67
Assessor Number	Assessment Type	BAM Case Status
BAAS21026	Major Projects	Finalised
Assessment Revision	Date Finalised	
12	24/10/2024	

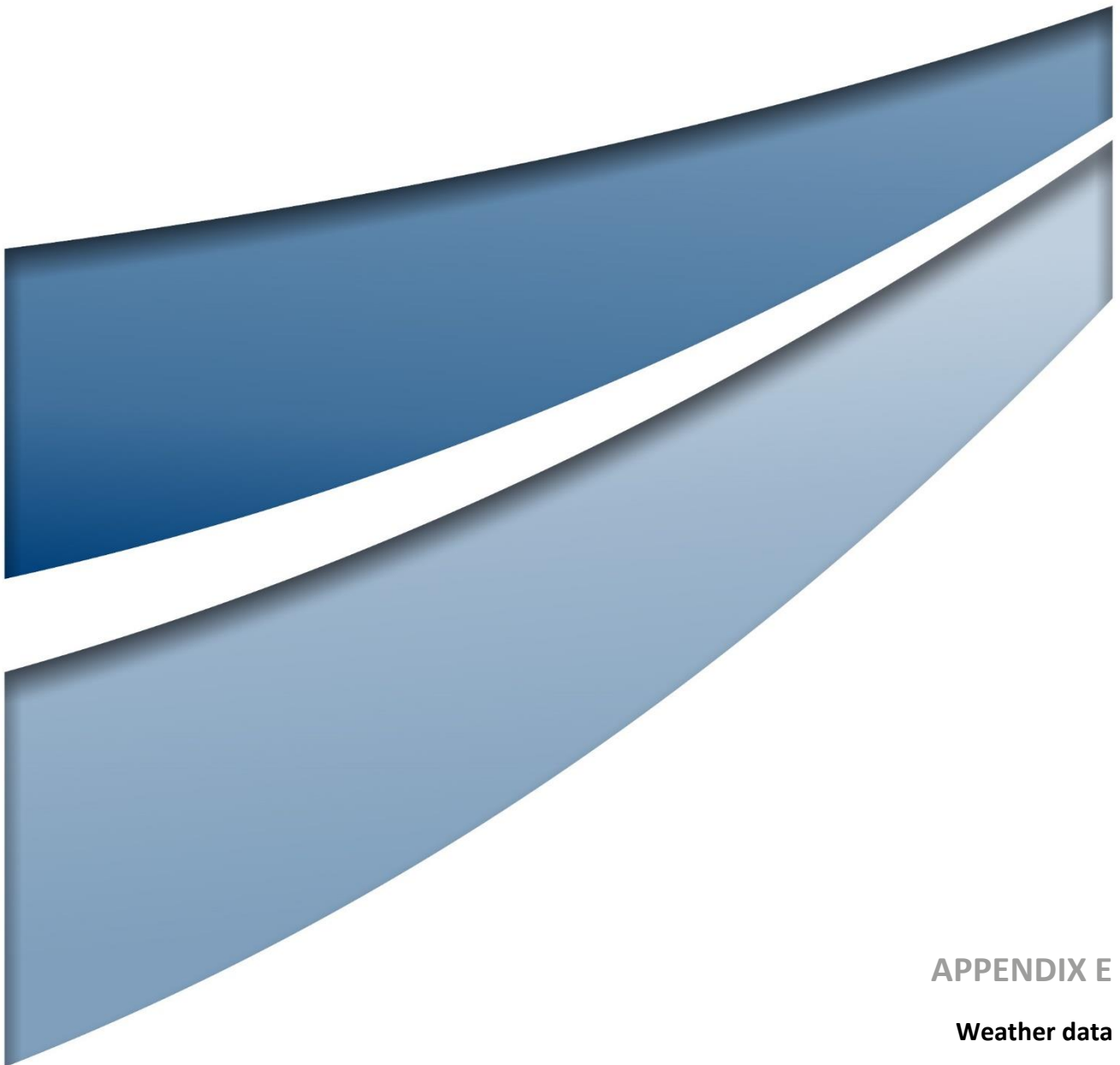
* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
1	1191_Paddock_trees	1191-Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	Paddock_trees	0.36	1	

BAM Vegetation Zones Report

2	1289_Low	1289-Wallaby Grass - Red-grass - Tall Speargrass - Kangaroo Grass dry tussock grassland of the North-western and Eastern Southern Tablelands in the South Eastern Highlands Bioregion	Low	4.49	2	
3	1330_Native_pasture	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	Native_pasture	4.67	2	
4	1330_Paddock_trees	1330-Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	Paddock_trees	0.17	1	
5	888_Paddock_trees	888-Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion	Paddock_trees	0.29	1	



APPENDIX E

Weather data

Daily Rainfall (millimetres)

GOULBURN AIRPORT AWS

Station Number: 070330 · State: NSW · Opened: 1988 · Status: Open · Latitude: 34.81°S · Longitude: 149.73°E · Elevation: 640 m

2022	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1st	0	1.2	4.2	0	0	7.8	0.2	4.4	0	2.8	38.4	0
2nd	0	0.6	6.0	0	0	0	39.2	0.2	0	0.6	7.8	0
3rd	25.0	1.0	49.2	4.4	0.2	0	1.8	0	0	0	0	0
4th	0	6.0	5.2	0.2	0	0.2	4.4	7.4	0	0.2	0	0
5th	0	0.6	1.0	0	3.4	0	0	23.4	0	0.4	0	0
6th	0.6	0.2	49.4	0	0	7.0	0.6	0.2	0	21.2	0	0.6
7th	30.6	0	1.2	9.0	0	2.6	0.2	3.8	0	0	4.6	0.2
8th	61.4	0.4	26.6	15.6	0	1.6	0	0.2	0	13.2	9.2	0
9th	0	0	9.8	5.4	0	0	0	1.8	1.2	34.0	0	0
10th	0.2	0	0.2	0	1.8	0	1.8	0	6.4	0	0	0
11th	0	12.6	0	0	1.4	0	0.2	0.2	0.8	0	0	0
12th	0	0	0	0.2	16.4	0	0	1.0	0	0	0	8.2
13th	0.2	0	0	0	13.8	0	0	2.8	0	0	5.6	8.6
14th	0.4	0	0	0	0.2	0		0.8	0	6.8	32.0	0
15th	0.6	0	0	0.2	1.4	0	0	0.8	0.8	1.8	1.2	0
16th	4.8	0.2	0	0	0.4	0	0	0	5.6	0	0.2	0.2
17th	0.2	0	0.2	0	0	0.2	0.2	1.4	0	0	0	0
18th	0.4	0	0.2	0.2	0	0	0.2	0.2	5.8	0	0	0
19th	13.8	0	0	0	0	0.2	0	0	0	0	0	0
20th	2.2	0	0	15.4	0	0.2	0	1.2	0	0	8.2	0
21st	0	0	0.2	0	0.2	0	1.4	0	0	2.4	3.0	0
22nd	0	0	0.2	0	1.4	1.2	0.6	0	1.6	0	1.0	0
23rd	0	1.2	0	0	0.4	0	2.0	0	0.2	8.6	0	9.0
24th	0	3.0	0	0	0.4	0	0	6.4	16.4	1.6	0	0.2
25th	0	3.2	0.4	0	0	0	0.2	0.6	5.0	1.0	0	0
26th	0	5.0	0	0.4	0	0	4.6	1.6	0	3.2	0	0
27th	0	5.6	0.4	0.8	0		0	0	3.0	0.2	0	0
28th	0	0	0.2	11.8	25.4	0.2	0.2	2.0	13.6	0.2	0.4	0
29th	2.0		16.4	1.8	6.2	0.2	0	0.2	6.2	0	0.2	0
30th	30.6		5.0	9.4	0	0	0	6.6	1.0	0	0	7.4
31st	16.6		0		4.6		0	0		0		11.2
Highest daily	61.4	12.6	49.4	15.6	25.4	7.8	39.2	23.4	16.4	34.0	38.4	11.2
Monthly Total	189.6	40.8	176.0	74.8	77.6	21.4	57.8	67.2	67.6	98.2	111.8	45.6

Annual total for 2022 = 1028.4mm

↓ This day is part of an accumulated total

Quality control: 12.3 Done & acceptable, 12.3 Not completed or unknown

Product code: IDCJAC0009 reference: 97068599



Australian Government
Bureau of Meteorology

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Daily Rainfall (millimetres)

GOULBURN AIRPORT AWS

Station Number: 070330 · State: NSW · Opened: 1988 · Status: Open · Latitude: 34.81°S · Longitude: 149.73°E · Elevation: 640 m

Statistics for this station calculated over all years of data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	54.8	54.9	51.1	28.0	34.1	56.4	32.6	44.3	44.9	52.4	61.3	56.4
Median	50.8	48.0	48.2	19.4	26.8	36.6	29.4	32.6	41.6	46.6	58.2	45.2
Highest daily	126.4	59.2	63.8	37.2	50.0	123.0	54.2	75.2	36.0	65.0	53.0	56.2
Date of highest daily	17th 2006	29th 2012	1st 2012	30th 2023	5th 1996	27th 1997	9th 2005	9th 2020	3rd 2016	25th 1999	5th 1996	10th 2010

1) Calculation of statistics

Summary statistics, other than the Highest and Lowest values, are only calculated if there are at least 20 years of data available.

2) Gaps and missing data

Gaps may be caused by a damaged instrument, a temporary change to the site operation, or due to the absence or illness of an observer.

3) Further information

<http://www.bom.gov.au/climate/cdo/about/about-rain-data.shtml>.

Product code: IDCJAC0009 reference: 97068599 Created on Wed 21 Jun 2023 14:56:02 PM AEST



Daily Rainfall (millimetres)

GOULBURN AIRPORT AWS

Station Number: 070330 · State: NSW · Opened: 1988 · Status: Open · Latitude: 34.81°S · Longitude: 149.73°E · Elevation: 640 m

2023	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1st	0	0	0	0	8.2							
2nd	4.8	0	0	0	0	0						
3rd	0	0	0	0	0	0.8						
4th	4.8	0	1.0	0	0.2	0						
5th	0.2	0	0		0	0						
6th	0.2	0	7.4	0.2	0.2	0						
7th	0.4	0	0	1.0	0.8	0.2						
8th	0	0.2	0	6.4	8.2	0.4						
9th	0	1.2	0	0.2	0	1.8						
10th	0	4.8	0	0	0	0						
11th	0	0	0.2	0	0	0.2						
12th	0	0	0	0	0.2	0.2						
13th	0	0	1.6	1.2	0	2.8						
14th	0	0	0.2	1.4	0.2	3.0						
15th	0	0	0.4	0.6	0	0						
16th	12.2	0	0	0.4		0						
17th	0	0	0.4	1.0		0.2						
18th	0	0.4	0	0	0	0						
19th	7.2	5.6	0	0.2	0.2	0						
20th	0.4	0.2	0	0	0	3.6						
21st	0	0	0	0	0	0						
22nd	0	1.8	0.2	0.2	0							
23rd	4.2		1.2	0.2	0.2							
24th		0	8.6	0.2	0							
25th	0.2	0	0.2	0	0							
26th	0	0	33.6	0	0.6							
27th	0.2	0	16.6	0.2	0.8							
28th	0	0	0	0	0							
29th	0		10.2	12.4	0.2							
30th	11.2		18.2	37.2	0							
31st	17.0				0							
Highest daily	17.0	5.6	33.6	37.2	8.2	3.6						
Monthly Total	63.0	14.2	100.0	63.0	20.0							

↓ This day is part of an accumulated total

Quality control: 12.3 Done & acceptable, 12.3 Not completed or unknown

Daily Rainfall (millimetres)

GOULBURN AIRPORT AWS

Station Number: 070330 · State: NSW · Opened: 1988 · Status: Open · Latitude: 34.81°S · Longitude: 149.73°E · Elevation: 640 m

Statistics for this station calculated over all years of data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	54.8	54.9	51.1	28.0	34.1	56.4	32.6	44.3	44.9	52.4	61.3	56.4
Median	50.8	48.0	48.2	19.4	26.8	36.6	29.4	32.6	41.6	46.6	58.2	45.2
Highest daily	126.4	59.2	63.8	37.2	50.0	123.0	54.2	75.2	36.0	65.0	53.0	56.2
Date of highest daily	17th 2006	29th 2012	1st 2012	30th 2023	5th 1996	27th 1997	9th 2005	9th 2020	3rd 2016	25th 1999	5th 1996	10th 2010

1) Calculation of statistics

Summary statistics, other than the Highest and Lowest values, are only calculated if there are at least 20 years of data available.

2) Gaps and missing data

Gaps may be caused by a damaged instrument, a temporary change to the site operation, or due to the absence or illness of an observer.

3) Further information

<http://www.bom.gov.au/climate/cdo/about/about-rain-data.shtml>.

Product code: IDCJAC0009 reference: 97068607 Created on Wed 21 Jun 2023 14:56:32 PM AEST



Daily Maximum Temperature (degrees Celsius)

GOULBURN AIRPORT AWS

Station Number: 070330 · State: NSW · Opened: 1988 · Status: Open · Latitude: 34.81°S · Longitude: 149.73°E · Elevation: 640 m

2022	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1st	30.1	30.0	23.3	16.5	17.7	6.4	7.5	12.4	18.4	14.0	14.5	19.9
2nd	32.2	17.2	16.7	14.4	21.3	10.1	10.0	14.5	14.3	16.9	12.5	20.3
3rd	27.1	21.6	23.2	19.4	21.2	10.7	9.6	19.0	13.1	18.7	18.0	24.8
4th	25.7	21.1	25.0	22.3	19.1	10.5	10.9	15.0	13.0	19.7	19.6	26.1
5th	24.6	20.7	27.0	23.5	17.4	11.8	9.8	16.5	15.1	11.8	20.1	28.6
6th	26.7	20.6	19.5	18.2	13.1	8.5	12.2	12.2	14.2	17.8	22.4	23.4
7th	25.2	20.7	21.1	14.7	12.4	8.6	14.6	13.3	17.3	20.0	23.9	23.6
8th	28.2	24.0	18.7	16.8	15.9	9.0	7.5	13.2	19.2	17.2	22.2	19.1
9th	23.5	27.7	21.3	20.3	15.0	7.9	11.8	12.1	16.0	14.5	23.3	20.2
10th	30.9	30.4	20.1	23.3	16.4	10.8	10.4	13.7	16.1	17.0	23.2	21.9
11th	25.6	21.8	22.2	25.5	13.8	8.3	12.6	14.7	13.8	19.1	23.0	28.2
12th	22.6	23.1	23.9	18.8	15.0	9.9	12.7	15.0	14.3	19.2	27.2	18.1
13th	24.7	24.5	23.6	18.9	22.5	10.5		13.6	12.9	17.8	25.9	19.4
14th	27.1	27.1	23.9	21.5	21.5	10.5	12.2	11.8	15.6	16.0	19.1	16.0
15th	29.2	28.5	22.5	21.6	17.7	12.3	12.1	12.1	14.0	18.3	17.1	20.4
16th	30.0	28.2	23.2	22.5	18.0	13.5	11.9	12.4	17.9	18.4	14.4	20.2
17th	29.0	29.9	25.6	22.7	13.8	14.6	14.2	13.8	14.3	14.7	18.2	19.7
18th	20.7	27.4	26.3	23.0	14.0	13.9	9.4	16.2	14.4	20.3	20.3	19.8
19th	18.4	21.2	21.0	22.3	14.5	14.5	10.7	12.9	14.6	24.5	23.1	19.6
20th	19.7	29.0	26.7	17.8	11.6	15.0	10.9	12.5	19.1	18.8	18.2	20.9
21st	22.6	28.8	24.1	19.7	15.9	12.2	12.3	14.7	16.7	23.0	14.4	24.0
22nd	22.7	18.6	28.8	16.3	15.6	12.3	12.0	15.2	17.3	24.4	14.8	19.6
23rd	23.8	24.8	26.5	18.7	14.5	13.1	13.3	12.5	19.7	17.1	19.2	27.7
24th	25.9	26.6	18.6	18.6	16.0		16.7	11.7	16.3	17.3	22.0	29.2
25th	27.6	22.5	19.6	17.4	15.0	13.6	17.1	15.1	17.3	23.5	22.9	30.4
26th	25.7	22.3	21.8	16.8	18.5	13.0	11.0	14.3	17.2	20.4	24.4	33.2
27th	27.1	24.6	22.0	15.3	18.1	11.4	12.1	15.2	19.4	20.9	27.0	31.5
28th	28.2	23.5	20.3	18.4	15.5	12.5	13.0	17.3	17.7	17.0	21.6	31.7
29th	29.7		19.3	22.5	11.6	12.5	11.9	14.7	15.6	17.7	21.8	18.7
30th	27.5		20.8	16.4	9.4	12.8	13.0	16.2	17.2	19.8	21.8	21.3
31st	30.0		19.1		9.0		12.9	16.4		21.9		25.3
Highest daily	32.2	30.4	28.8	25.5	22.5	15.0	17.1	19.0	19.7	24.5	27.2	33.2
Lowest daily	18.4	17.2	16.7	14.4	9.0	6.4	7.5	11.7	12.9	11.8	12.5	16.0
Monthly mean	26.2	24.5	22.4	19.5	15.8	11.4	11.9	14.2	16.1	18.6	20.5	23.3

Quality control: 12.3 Done & acceptable, 12.3 Not quality controlled or uncertain, 12.3 Precise date unknown

Product code: IDCJAC0010 reference: 97068609



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Daily Maximum Temperature (degrees Celsius)

GOULBURN AIRPORT AWS

Station Number: 070330 · State: NSW · Opened: 1988 · Status: Open · Latitude: 34.81°S · Longitude: 149.73°E · Elevation: 640 m

Statistics for this station calculated over all years of data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	28.1	26.4	23.7	20.0	15.9	12.4	11.8	13.4	16.6	19.9	23.0	25.9
Highest monthly mean	32.3	30.1	27.0	24.1	17.5	14.2	13.5	15.6	19.5	23.6	28.3	30.7
Lowest monthly mean	23.7	22.9	20.9	17.6	14.6	10.6	9.1	11.6	14.2	17.4	19.3	21.9
Highest daily	42.8	41.8	37.6	31.0	25.1	20.7	19.7	24.1	30.5	31.3	39.9	42.1
Date of highest daily	4th 2020	1st 2020	19th 2023	11th 2018	2nd 2019	10th 2005	5th 2018	25th 1995	23rd 2017	14th 2006	20th 2009	21st 2019
Lowest daily	15.8	14.2	12.8	9.6	5.1	4.2	4.2	5.5	8.0	8.6	9.6	11.5
Date of lowest daily	3rd 1996	2nd 2012	21st 2008	28th 2008	28th 2000	8th 2011	17th 2004	11th 2005	27th 2009	7th 2009	22nd 1996	10th 2002

1) Calculation of statistics

Summary statistics, other than the Highest and Lowest values, are only calculated if there are at least 10 years of data available.

2) Gaps and missing data

Gaps may be caused by a damaged instrument, a temporary change to the site operation, or due to the absence or illness of an observer.

3) Further information

<http://www.bom.gov.au/climate/cdo/about/about-airtemp-data.shtml>.

Product code: IDCJAC0010 reference: 97068609 Created on Wed 21 Jun 2023 14:57:01 PM AEST



Daily Maximum Temperature (degrees Celsius)

GOULBURN AIRPORT AWS

Station Number: 070330 · State: NSW · Opened: 1988 · Status: Open · Latitude: 34.81°S · Longitude: 149.73°E · Elevation: 640 m

2023	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1st	27.2	29.2	26.8	19.6	12.3	17.9						
2nd	30.8	28.2	28.9	18.6	15.9	18.9						
3rd	31.4	20.1	24.9	22.6	15.7	19.0						
4th	21.5	20.8	24.6	23.9	16.2	14.2						
5th	18.3	26.9	32.0	23.5	16.8	15.1						
6th	17.1	29.7	30.1	21.3	16.3	15.5						
7th	18.9	26.8	27.0	23.2	10.9	17.9						
8th	25.2	21.4	23.2	16.9	12.3	13.6						
9th	30.8	19.9	22.9	14.9	15.6	11.1						
10th	27.3	30.1	27.4	15.9		12.8						
11th	28.0	34.0	29.9	20.0	18.5	14.6						
12th	31.2	29.7	27.4	13.9	18.7	15.0						
13th	29.0	19.7	18.6	19.3	16.5	15.9						
14th	28.0	21.7	23.6	18.3	16.8	11.2						
15th	32.4	28.4	28.5	22.8	16.6	11.8						
16th	24.4	31.8		16.4	17.3	14.1						
17th	28.2	33.6	31.1	18.4	14.2	13.6						
18th	31.1	36.4	33.0	20.3	13.6	10.6						
19th	17.3	28.2	37.6	21.8	12.9	10.3						
20th	17.8	33.3	18.6	18.3	12.9	8.6						
21st	24.0	28.7	17.6	18.8	11.6							
22nd	20.6	18.9	20.2	21.1	15.7							
23rd	25.2	21.5	17.8	20.2	16.2							
24th	29.3	25.5	25.8	20.7	16.1							
25th	29.2	28.7	17.3	21.3	17.9							
26th	33.0	32.0	23.6	21.5	11.9							
27th	25.9	30.3	23.3	22.5	8.9							
28th	35.1	28.3	24.6	23.8	10.8							
29th	26.8		20.7	14.3	13.6							
30th	22.6			10.3	13.6							
31st	26.6		20.2		13.2							
Highest daily	35.1	36.4	37.6	23.9	18.7	19.0						
Lowest daily	17.1	18.9	17.3	10.3	8.9	8.6						
Monthly mean	26.3	27.3	25.1	19.5	14.7							

Quality control: 12.3 Done & acceptable, 12.3 Not quality controlled or uncertain, 12.3 Precise date unknown

Product code: IDCJAC0010 reference: 97068614



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Daily Maximum Temperature (degrees Celsius)

GOULBURN AIRPORT AWS

Station Number: 070330 · State: NSW · Opened: 1988 · Status: Open · Latitude: 34.81°S · Longitude: 149.73°E · Elevation: 640 m

Statistics for this station calculated over all years of data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	28.1	26.4	23.7	20.0	15.9	12.4	11.8	13.4	16.6	19.9	23.0	25.9
Highest monthly mean	32.3	30.1	27.0	24.1	17.5	14.2	13.5	15.6	19.5	23.6	28.3	30.7
Lowest monthly mean	23.7	22.9	20.9	17.6	14.6	10.6	9.1	11.6	14.2	17.4	19.3	21.9
Highest daily	42.8	41.8	37.6	31.0	25.1	20.7	19.7	24.1	30.5	31.3	39.9	42.1
Date of highest daily	4th 2020	1st 2020	19th 2023	11th 2018	2nd 2019	10th 2005	5th 2018	25th 1995	23rd 2017	14th 2006	20th 2009	21st 2019
Lowest daily	15.8	14.2	12.8	9.6	5.1	4.2	4.2	5.5	8.0	8.6	9.6	11.5
Date of lowest daily	3rd 1996	2nd 2012	21st 2008	28th 2008	28th 2000	8th 2011	17th 2004	11th 2005	27th 2009	7th 2009	22nd 1996	10th 2002

1) Calculation of statistics

Summary statistics, other than the Highest and Lowest values, are only calculated if there are at least 10 years of data available.

2) Gaps and missing data

Gaps may be caused by a damaged instrument, a temporary change to the site operation, or due to the absence or illness of an observer.

3) Further information

<http://www.bom.gov.au/climate/cdo/about/about-airtemp-data.shtml>.

Product code: IDCJAC0010 reference: 97068614 Created on Wed 21 Jun 2023 14:57:16 PM AEST



Daily Minimum Temperature (degrees Celsius)

GOULBURN AIRPORT AWS

Station Number: 070330 · State: NSW · Opened: 1988 · Status: Open · Latitude: 34.81°S · Longitude: 149.73°E · Elevation: 640 m

2022	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1st	10.4	15.0	15.7	8.1	1.1	1.4	2.1	0	2.7	6.3	8.4	6.7
2nd	11.8	17.1	14.2	8.6	-0.1	-0.8	5.1	-3.0	3.4	3.8	2.9	10.7
3rd	14.1	11.2	15.3	9.9	2.9	-2.3	7.3	0.9	0.7	1.9	4.2	7.8
4th	13.2	5.0	16.5	8.5	1.8	0.9	7.3	11.7	2.0	4.0	3.8	7.0
5th	15.1	7.1	15.5	3.3	7.2	5.7	6.0	7.3	0	8.7	5.6	8.7
6th	17.8	8.5	15.0	12.2	-1.8	0.4	5.9	5.7	-2.0	8.6	4.9	11.3
7th	16.1	9.3	16.0	11.8	1.4	3.8	7.0	5.1	3.9	5.5	8.2	5.8
8th	14.8	7.9	16.9	11.8	1.4	2.3	1.9	-0.4	8.8	10.6	5.3	7.3
9th	16.0	7.3	12.8	13.5	-0.9	2.8	2.6	-0.8	9.3	4.6	7.7	2.4
10th	17.3	9.2	10.4	11.5	7.2	5.1	2.1	-1.0	4.8	2.4	6.6	4.0
11th	18.9	14.9	6.4	7.0	9.1	4.0	0.4	0.2	4.4	8.2	7.0	4.7
12th	16.5	8.8	9.5	10.3	11.4	4.1	-4.3	4.7	2.2	7.6	8.9	12.6
13th	15.0	8.8	9.6	7.2	11.8	-0.5	-1.2	5.8	3.7	11.1	14.4	5.5
14th	16.3	8.1	9.0	8.0	9.5	-2.7	-5.1	2.3	-2.0	10.1	11.2	3.2
15th	16.8	9.4	11.3	6.0	13.5	-3.1	-6.9	5.6	5.7	3.8	10.2	1.3
16th	13.3	9.4	10.6	4.0	9.5	-0.7	-4.2	4.2	9.3	0.8	1.3	4.2
17th	15.0	8.3	11.5	4.3	4.7	7.0	-3.2	2.1	6.0	6.8	0.7	0.6
18th	17.9	12.5	12.2	3.4	4.7	-3.5	3.4	2.2	6.1	9.1	3.4	5.0
19th	12.3	13.0	14.0	6.9	-2.4	-1.3	-3.5	7.4	7.1	8.1	4.9	5.0
20th	12.4	8.4	7.1	9.7	-3.2	3.1	2.7	0.1	-3.1	11.3	12.8	4.9
21st	11.2	15.9	13.1	6.0	5.6	-0.8	5.5	2.7	4.8	14.5	7.9	5.7
22nd	8.7	14.4	9.1	5.4	8.1	0.3	2.5	1.1	10.8	9.3	3.6	8.1
23rd	9.1	14.5	12.4	6.3	2.0	2.7	5.6	4.7	8.6	10.6	7.0	10.5
24th	11.6	16.9	13.2	7.4	6.6	6.8	5.0	-3.3	8.1	12.8	5.2	8.4
25th	15.3	17.0	14.2	4.7	3.8	5.9	2.4	4.1	2.4	11.0	6.4	13.3
26th	14.4	14.6	12.3	10.5	4.7	1.5	2.1	0.2	0.7	11.3	5.2	10.6
27th	13.3	14.0	11.8	11.6	1.1	0.4	2.6	3.0	7.9	9.7	8.2	6.9
28th	13.9	15.8	14.6	9.0	8.3	-7.5	3.5	4.1	7.7	9.3	10.4	5.5
29th	17.5		14.5	8.6	4.5	-5.2	-0.1	1.6	4.6	7.7	6.0	13.8
30th	17.3		14.6	12.2	0.5	2.1	-8.1	7.2	6.7	2.9	10.0	13.8
31st	16.5		9.1		5.2		-6.0	3.7		10.6		13.5
Highest daily	18.9	17.1	16.9	13.5	13.5	7.0	7.3	11.7	10.8	14.5	14.4	13.8
Lowest daily	8.7	5.0	6.4	3.3	-3.2	-7.5	-8.1	-3.3	-3.1	0.8	0.7	0.6
Monthly mean	14.5	11.5	12.5	8.3	4.5	1.1	1.3	2.9	4.5	7.8	6.7	7.4

Quality control: 12.3 Done & acceptable, 12.3 Not quality controlled or uncertain, 12.3 Precise date unknown

Product code: IDCJAC0011 reference: 97068622



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Daily Minimum Temperature (degrees Celsius)

GOULBURN AIRPORT AWS

Station Number: 070330 · State: NSW · Opened: 1988 · Status: Open · Latitude: 34.81°S · Longitude: 149.73°E · Elevation: 640 m

Statistics for this station calculated over all years of data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	12.9	12.6	10.2	5.9	2.5	1.3	0.3	0.6	3.0	5.3	8.3	10.7
Highest monthly mean	16.8	14.5	12.7	8.3	6.8	4.4	3.6	3.7	5.5	7.8	11.1	13.2
Lowest monthly mean	9.3	9.6	7.5	3.1	-0.2	-2.2	-2.3	-2.2	0.1	3.0	5.5	7.4
Highest daily	24.6	25.2	18.3	16.5	14.1	11.6	11.3	11.7	15.0	16.7	20.4	22.4
Date of highest daily	23rd 2010	1st 2020	25th 1992	13th 2018	1st 1995	5th 2016	20th 2016	4th 2022	13th 2017	13th 2004	22nd 2006	14th 2016
Lowest daily	-0.1	0.7	-0.8	-6.3	-8.1	-10.2	-10.4	-10.9	-7.4	-5.6	-4.4	-1.2
Date of lowest daily	12th 2012	21st 2017	27th 2018	23rd 2000	15th 2011	15th 2000	2nd 2017	17th 1994	1st 2012	29th 2006	17th 2006	6th 2012

1) Calculation of statistics

Summary statistics, other than the Highest and Lowest values, are only calculated if there are at least 10 years of data available.

2) Gaps and missing data

Gaps may be caused by a damaged instrument, a temporary change to the site operation, or due to the absence or illness of an observer.

3) Further information

<http://www.bom.gov.au/climate/cdo/about/about-airtemp-data.shtml>.

Product code: IDCJAC0011 reference: 97068622 Created on Wed 21 Jun 2023 14:57:54 PM AEST



Daily Minimum Temperature (degrees Celsius)

GOULBURN AIRPORT AWS

Station Number: 070330 · State: NSW · Opened: 1988 · Status: Open · Latitude: 34.81°S · Longitude: 149.73°E · Elevation: 640 m

2023	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1st	12.3	11.5	8.8	3.0	6.8	6.2						
2nd	16.0	12.3	13.2	7.5	7.6	0.3						
3rd	12.0	9.2	13.2	10.1	6.8	4.2						
4th	15.9	7.1	13.1	10.2	1.4	7.8						
5th	11.4	6.9	8.5	6.5	-2.7	7.9						
6th	8.1	10.9	14.5	8.7	0.4	7.8						
7th	7.6	17.1	11.2	10.2	1.0	4.2						
8th	6.7	14.7	12.2	9.4	-0.1	6.0						
9th	6.8	15.9	7.7	7.6	0.1	4.9						
10th	6.0	9.7	-0.3	3.6	-4.2	-0.8						
11th	14.1	8.2	9.1	0.8	-0.1	-5.0						
12th	16.2	11.6	12.0	2.1	-2.4	-3.3						
13th	15.6	14.3	13.3	7.0	0.7	-0.6						
14th	13.3	12.4	9.5	6.9	4.1	3.0						
15th	9.6	13.5	13.5	6.8	4.6	4.9						
16th	15.3	9.3	7.9	10.1	-1.3	1.1						
17th	12.8	9.2	10.9	3.0	3.1	-4.2						
18th	11.4	12.3	4.6	3.1	-3.7	-4.8						
19th	14.2	7.0	7.2	3.3	-5.9	0.9						
20th	10.9	12.6	12.4	8.4	-3.0	-0.5						
21st	7.2	19.0	12.3	3.5	5.7	-7.4						
22nd	13.0	11.9	12.6	1.6	-4.0							
23rd	9.3	7.5	9.8	5.9	-2.5							
24th	8.6	7.7	10.3	9.1	-3.5							
25th	7.4	5.3	14.8	6.6	-1.6							
26th	7.6	9.8	13.0	3.0	4.1							
27th	15.7	12.4	15.0	3.6	-4.7							
28th	14.7	11.3	12.5	1.5	-2.3							
29th	16.6		13.5	11.3	6.3							
30th	17.8		9.5	8.6	5.5							
31st	14.0				5.2							
Highest daily	17.8	19.0	15.0	11.3	7.6	7.9						
Lowest daily	6.0	5.3	-0.3	0.8	-5.9	-7.4						
Monthly mean	11.9	11.1	10.9	6.1	0.7							

Quality control: 12.3 Done & acceptable, 12.3 Not quality controlled or uncertain, 12.3 Precise date unknown

Product code: IDCJAC0011 reference: 97068624



Australian Government
Bureau of Meteorology

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Daily Minimum Temperature (degrees Celsius)

GOULBURN AIRPORT AWS

Station Number: 070330 · State: NSW · Opened: 1988 · Status: Open · Latitude: 34.81°S · Longitude: 149.73°E · Elevation: 640 m

Statistics for this station calculated over all years of data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	12.9	12.6	10.2	5.9	2.5	1.3	0.3	0.6	3.0	5.3	8.3	10.7
Highest monthly mean	16.8	14.5	12.7	8.3	6.8	4.4	3.6	3.7	5.5	7.8	11.1	13.2
Lowest monthly mean	9.3	9.6	7.5	3.1	-0.2	-2.2	-2.3	-2.2	0.1	3.0	5.5	7.4
Highest daily	24.6	25.2	18.3	16.5	14.1	11.6	11.3	11.7	15.0	16.7	20.4	22.4
Date of highest daily	23rd 2010	1st 2020	25th 1992	13th 2018	1st 1995	5th 2016	20th 2016	4th 2022	13th 2017	13th 2004	22nd 2006	14th 2016
Lowest daily	-0.1	0.7	-0.8	-6.3	-8.1	-10.2	-10.4	-10.9	-7.4	-5.6	-4.4	-1.2
Date of lowest daily	12th 2012	21st 2017	27th 2018	23rd 2000	15th 2011	15th 2000	2nd 2017	17th 1994	1st 2012	29th 2006	17th 2006	6th 2012

1) Calculation of statistics

Summary statistics, other than the Highest and Lowest values, are only calculated if there are at least 10 years of data available.

2) Gaps and missing data

Gaps may be caused by a damaged instrument, a temporary change to the site operation, or due to the absence or illness of an observer.

3) Further information

<http://www.bom.gov.au/climate/cdo/about/about-airtemp-data.shtml>.

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