lightsource bp

bp

Gundary Solar Farm

SCOPING REPORT

October 2022

umwelt

Environmental & Social Consultants

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

Environmental & Social Consultants

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.

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 *Biodiversity Conservation Act 2016*
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 *Contaminated Land Management Act 1997*
Crown Land Act	NSW *Crown Land Management Act 2016*
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 *Environmental Planning and Assessment Act 1979*
EP&A Regulation	NSW *Environmental Planning and Assessment Regulation 2021*
EPA	Environment Protection Authority
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environment Protection Licence
FM Act	NSW *Fisheries Management Act 1994*
GW	Gigawatt
GWh	Gigawatt-hour
ha	Hectare
Heritage Act	NSW *Heritage Act 1977*
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	NSW *National Parks and Wildlife Act 1974*
NSW	New South Wales
NVIA	Noise and Vibration Impact Assessment
NVR Map	Native Vegetation Regulatory Map
OEH	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	NSW *Protection of the Environment Operations Act 1997*
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	NSW *Roads Act 1993*
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	NSW *Water Management Act 2000*
WRIA	Water Resources Impact Assessment
WSP	Water Sharing Plan

Table of Contents

Figures

Tables

Appendices

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 Gundary, 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.

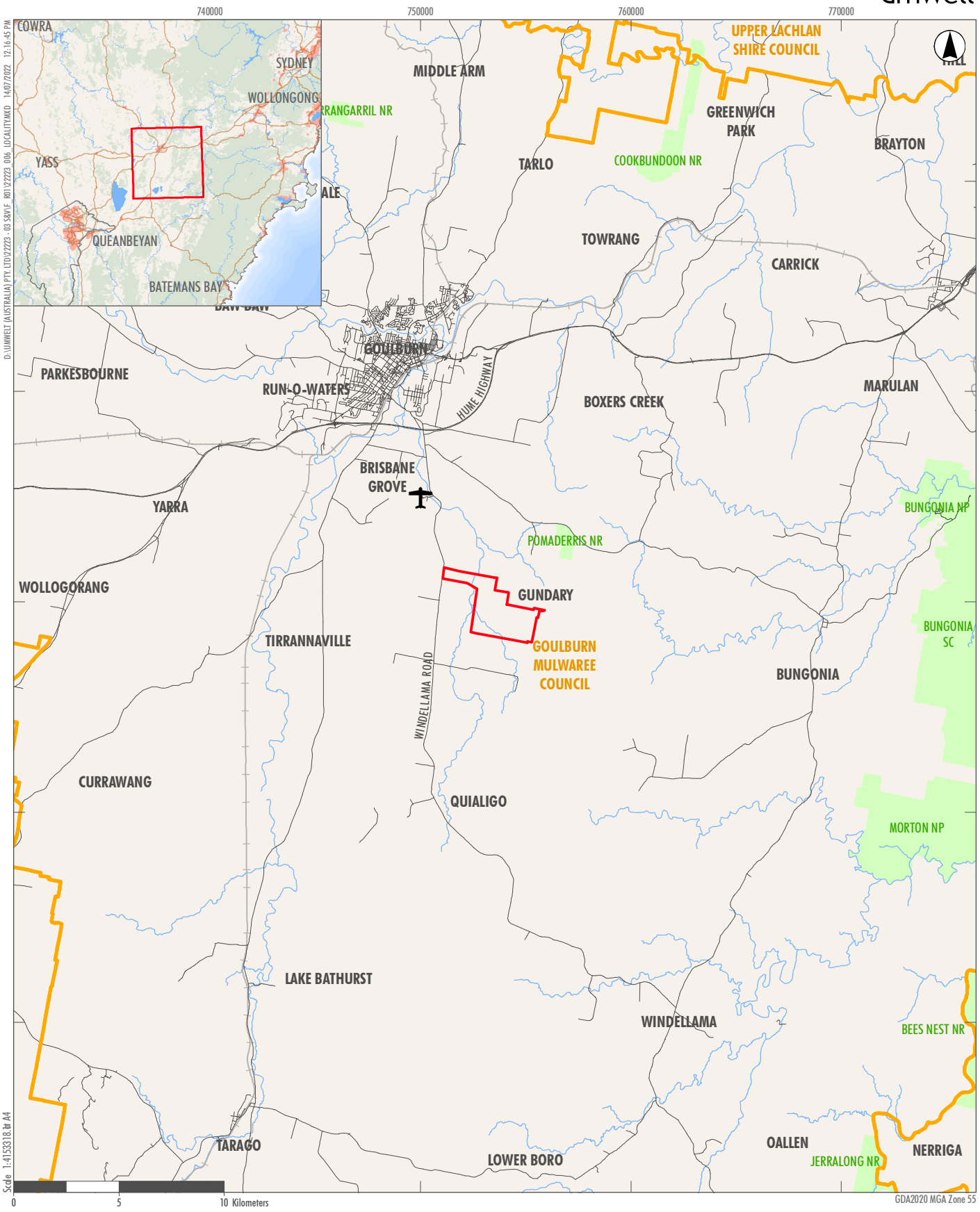
The Project would be located on land zoned RU1 – Primary Production. The area surrounding the Project is characterised predominantly by cleared agricultural lands, rural residential areas, small settlements, conservation areas, and rural tourism. Land within and adjacent to the Project has been subject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



Legend

- Project Area
- Goulburn Airport
- Local Government Area
- NPWS Estate
- Roads
- Railway
- Watercourses

FIGURE 1.1

Project Location and Regional Context

Data source: NSW DSFI (2022); Lightsource BP (2022)

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.
- 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 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

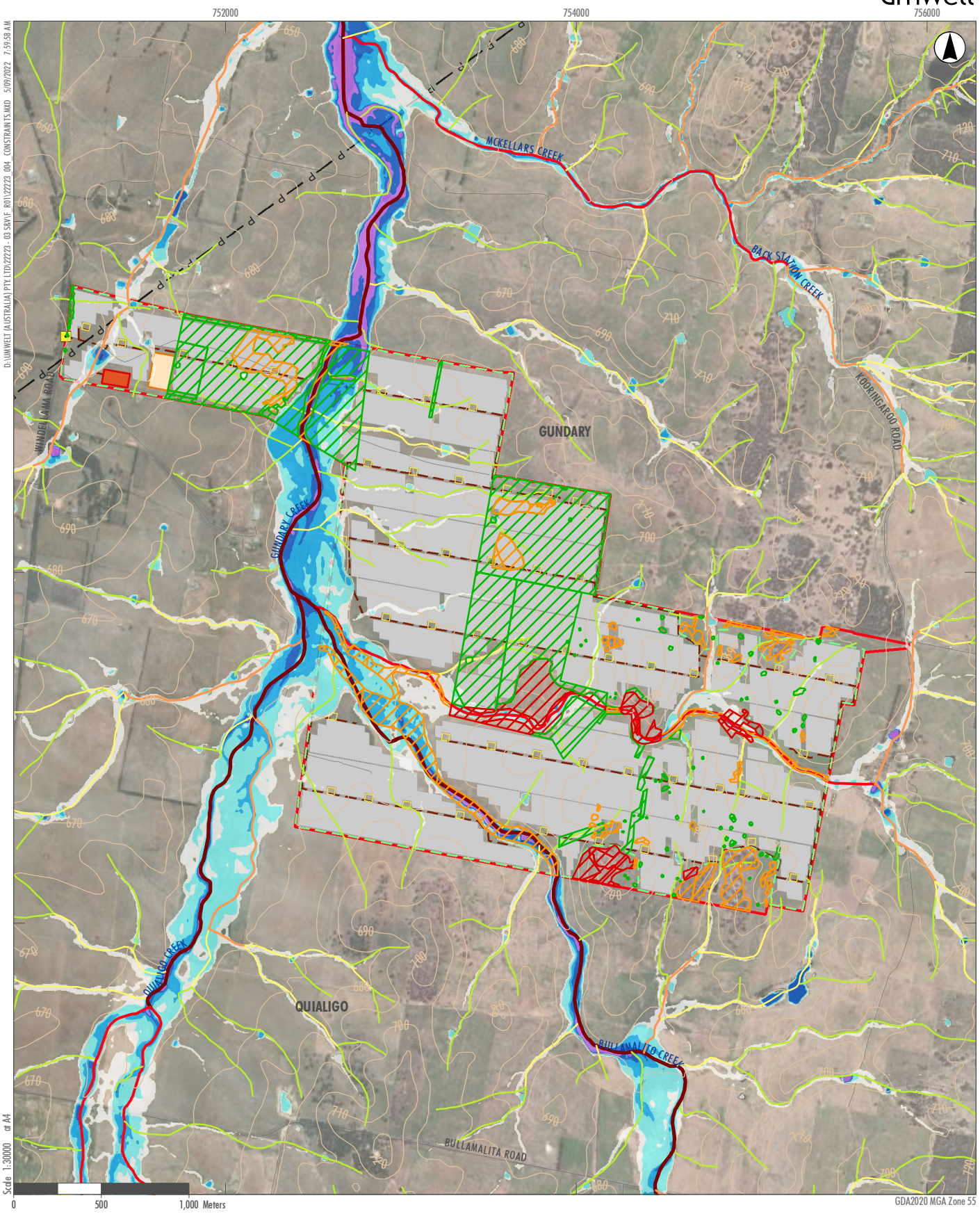
The Project will have an onsite grid connection via the which traverses the Project Area. This avoids the need to construct additional connection infrastructure offsite, such as high voltage (HV) transmission lines and substations. The Project's ability to have an onsite grid connection would result 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 Gundary 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

- Project Area
- 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
- 10m Contours

Ecological Constraints

- High
- Moderate
- Low

Depth of Predicted Flood Water (m) (1% AEP)

- < 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- > 2.0

Strahler Stream Ordering

- 1
- 2
- 3
- 4
- ≥ 5

FIGURE 1.2

Constraints Map

Image Source: ESRI Basemap (2022) Data source: NSW DFSI (2021); Lightsource BP (2022)

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 Gundary 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

UNFCC 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 though 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

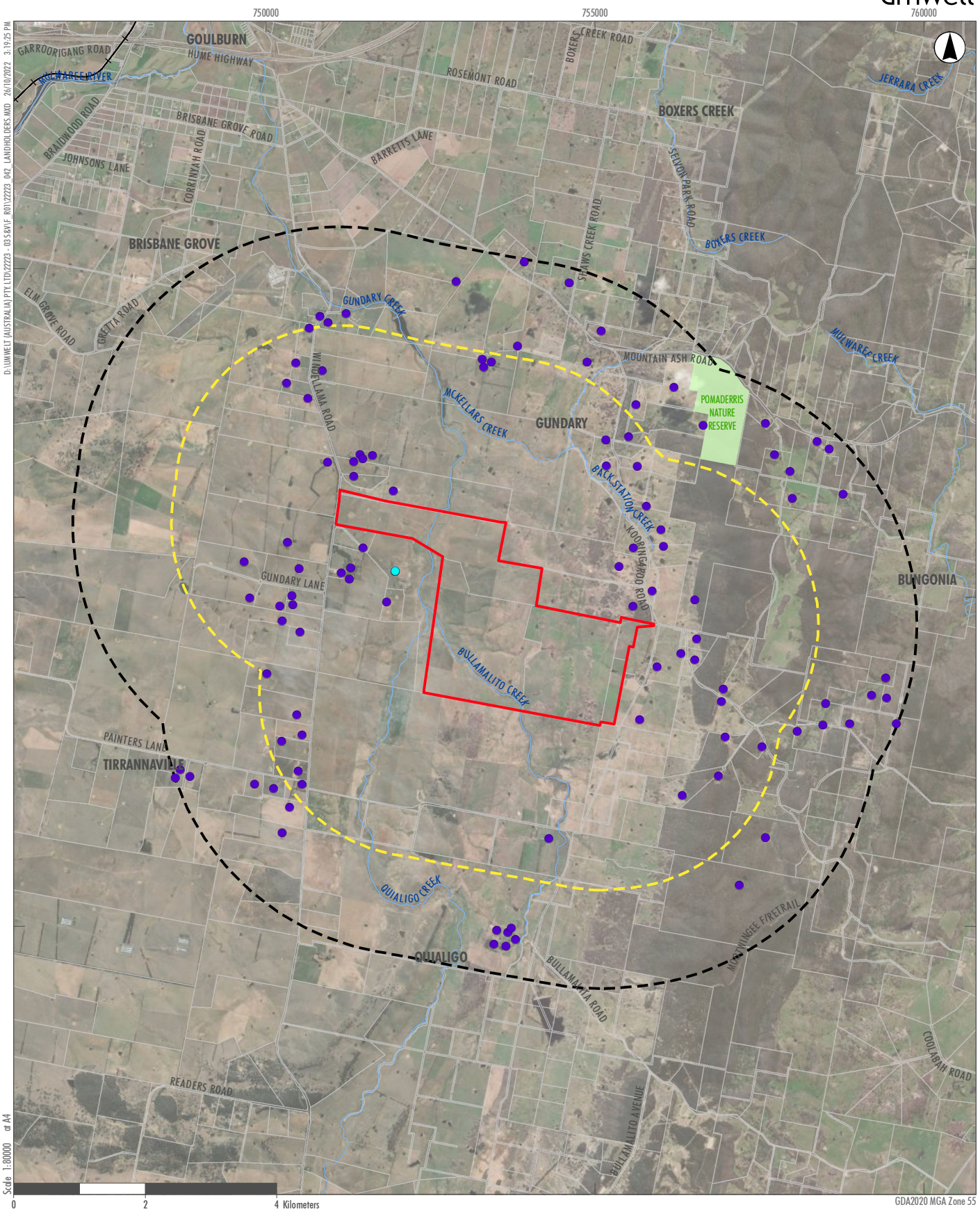
The Project is located within the small rural locality of Gundary, having a population of 270 residents of median age of 42, and 109 households (ABS, 2016), within the broader Goulburn Mulwaree LGA. Other small localities in the vicinity of the Project Area are:

- 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

Image Source: ESRI Basemap (2022) Data source: NSW DFSI (2021); Lightsource BP (2022)

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 viewpoints[1]. 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 Gundary Creek catchment. Gundary 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 Gundary 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 Gundary 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 Gundary 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

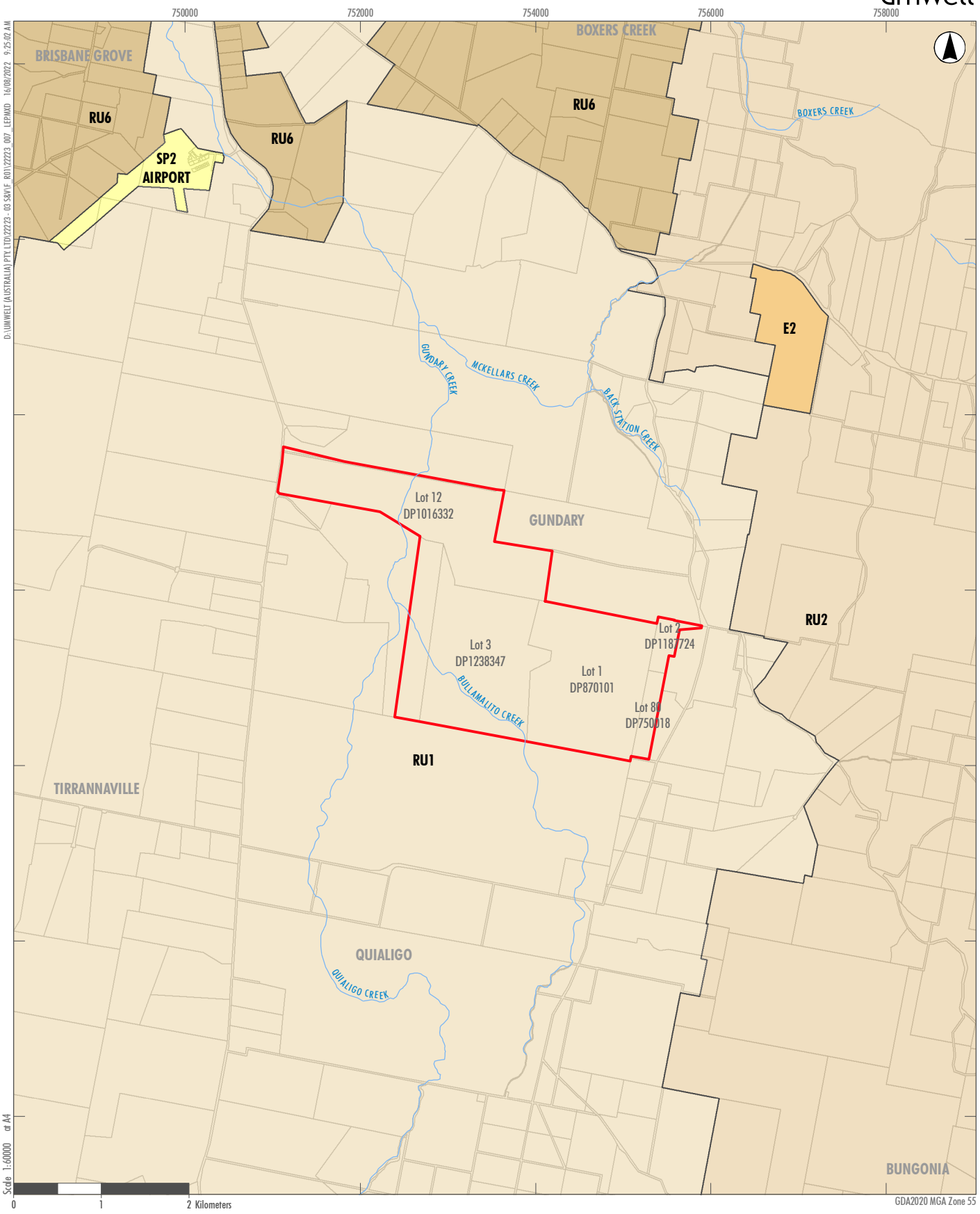
Lot	Deposited Plan (DP)	Ownership
Part of Lot 3	DP 1238347	Freehold
12	DP 1016332	Freehold
1	DP 870101	Freehold
2	DP 1187724	Freehold
80	DP 750018	Freehold

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 Kooringaroo 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

Data source: NSW DFSI (2021); Department of Planning, Industry and Environment (2021); Lightsource BP (2022)

3.2 Project Overview

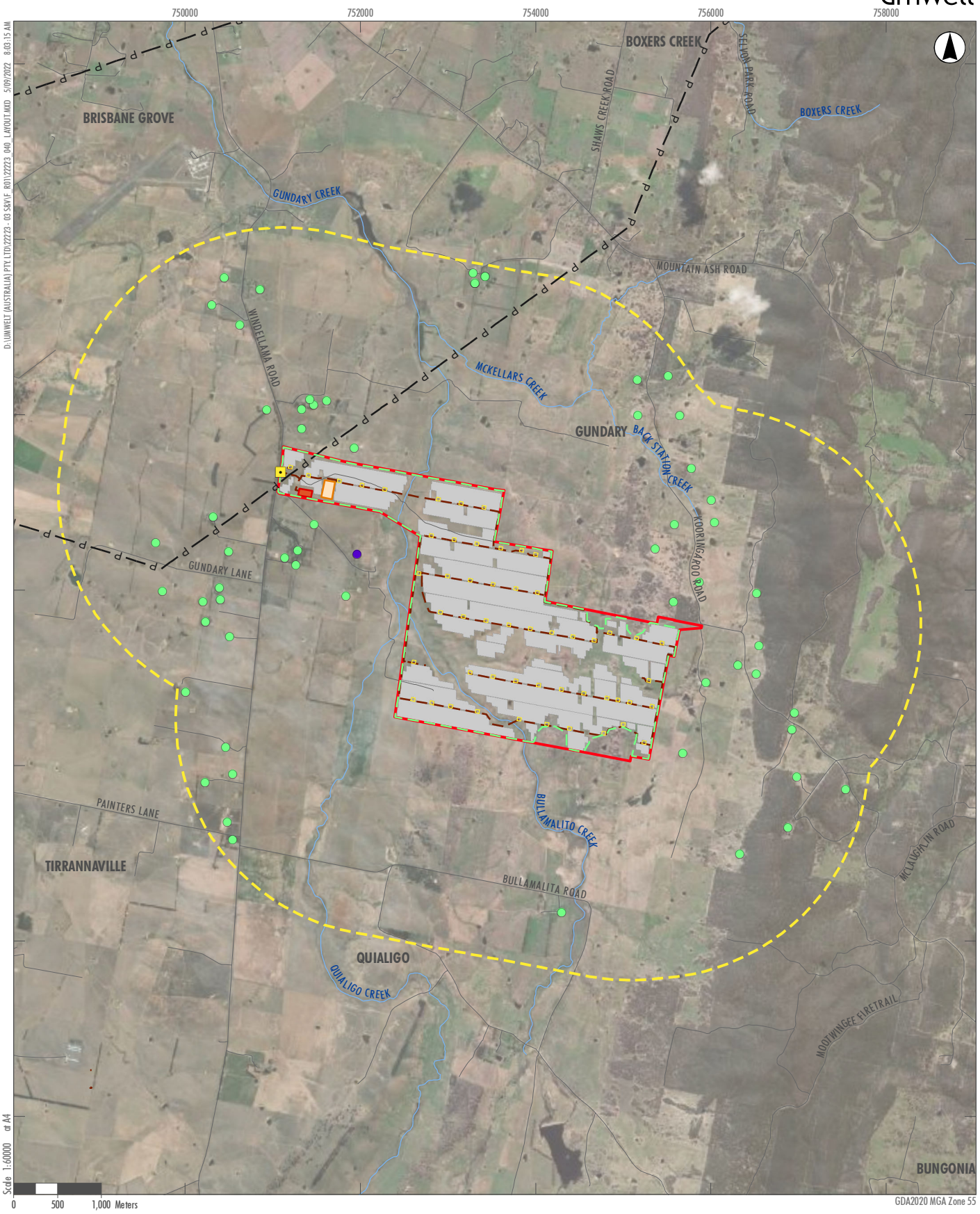
3.2.1 Key Components of the Project

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

Image Source: ESRI Basemap (2022) Data source: NSW DFSI (2021); Lightsource BP (2022)

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

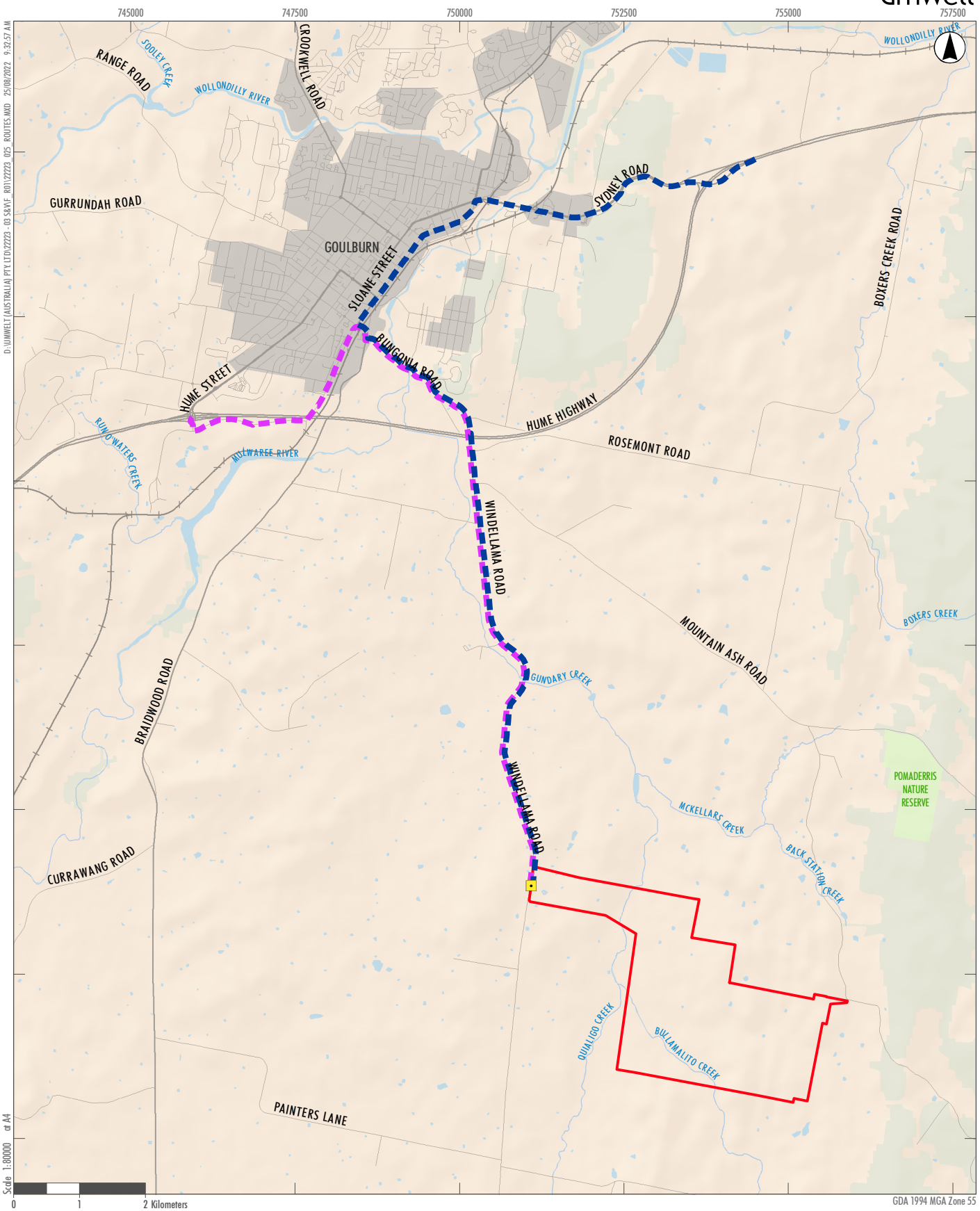
Construction and commissioning of the Project will take approximately 18 to 24 months, with a peak period of approximately 9 months towards the middle of the construction period. Site preparation and Project construction is planned to commence in late 2024 or early 2025, pending environmental approvals, 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 – Garroorigang Road – Sloane Street – Braidwood Road - Bungonia Road – Windellama Road

FIGURE 3.3

Transport Route Options

Image Source: ESRI Basemap (2022) Data source: NSW DFSI (2021)

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	*Environmental Planning and Assessment Act 1979* (EP&A Act) *State Environmental Planning Policy (Planning Systems) 2021* (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 '*State environmental planning policy may declare any development, or any class or description of development, to be State significant development*'. The Planning Systems SEPP identifies development that is SSD. Clause 2.6(1) of the Planning Systems SEPP states: *(1) Development is declared to be State significant development for the purposes of the Act if:* *(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* *(b) the development is specified in Schedule 1 and 2.* Clause 20 of Schedule 1 of the Planning Systems SEPP defines the following as SSD: *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:* *(a) has a capital investment value of more than $30 million.* 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 *State Environmental Planning Policy (Transport and Infrastructure) 2021*	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 *State Environmental Planning Policy (Transport and Infrastructure) 2021* 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	*Roads Act 1993*	Under Section 138 of the *Road Act 1993*, 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	*Environmental Protection and Biodiversity Conservation Act 1999* (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 DCCEEW 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 DCCEEW for certain developments, including SSD.
	Native Title Act 1993	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.
	Renewable Energy (Electricity) Act 2000	Solar energy is listed as an eligible renewable energy source under Section 17 of the *Renewable Energy (Electricity) Act*. 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	*Fisheries Management Act 1994*	A permit under the *Fisheries Management Act 1994* 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 *Guidelines for riparian corridors on waterfront land* (DPI, 2012a) and *Guidelines for watercourse crossings on waterfront land* (DPI, 2012b). A Water Resources Impact Assessment will be undertaken during the EIS phase as discussed in **Section 6.2.4.**
	Heritage Act 1977	An approval under Part 4, or an excavation permit under Section 139, of the *Heritage Act 1977* 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**.
	National Parks and Wildlife Act 1974	An Aboriginal heritage impact permit under Section 90 of the *National Parks and Wildlife Act 1974* 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**.
	Rural Fires Act 1997	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
	Water Management Act 2000	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	*Crown Land Management Act 2016*	Crown land may not be occupied, used, sold, leased, licensed, dedicated, reserved or otherwise dealt with unless authorised by the *Crown Land Management Act 2016*. 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.
	State Environmental Planning Policy (Biodiversity and Conservation) 2021	Under Chapter 8 of the *State Environmental Planning Policy (Biodiversity and Conservation) 2021* 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.
	State Environmental Planning Policy (Transport and Infrastructure) 2021	The Project is located near electrical infrastructure and could be subject to requirements listed under clause 2.48 of *State Environmental Planning Policy (Transport and Infrastructure) 2021*, 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: ▪ *State Environmental Planning Policy (Biodiversity and Conservation) 2021* ▪ *State Environmental Planning Policy (Resilience and Hazards) 2021* ▪ *State Environmental Planning Policy (Transport and Infrastructure) 2021* ▪ *State Environmental Planning Policy (Primary Production) 2021* ▪ *Goulburn Mulwaree LEP 2009*. 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 *State Environmental Planning Policy (Planning Systems) 2021*, 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
	Biodiversity Conservation Act 2016 (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.
	Contaminated Land Management Act 1997 (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.
	State Environmental Planning Policy (Resilience and Hazards) 2021	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 *State Environmental Planning Policy (Planning Systems) 2021*, 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:

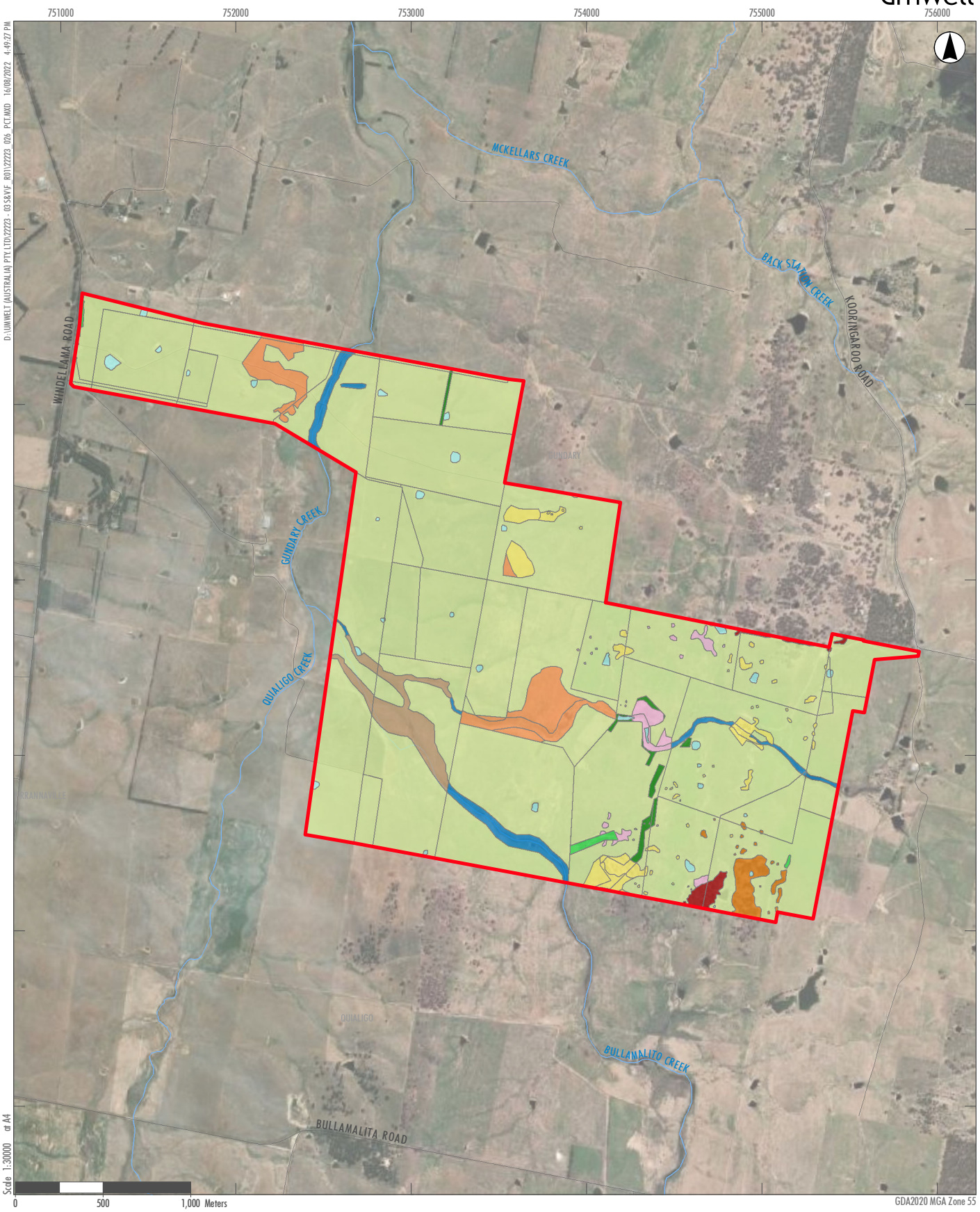
- PCT 731 - Broad-leaved Peppermint – Red Stringybark grassy open forest on undulating hills, South Eastern Highlands Bioregion.
- PCT 888 - Inland Scribbly Gum – Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion.
- PCT 1110 - River Tussock – Tall Sedge – Kangaroo 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 Act	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

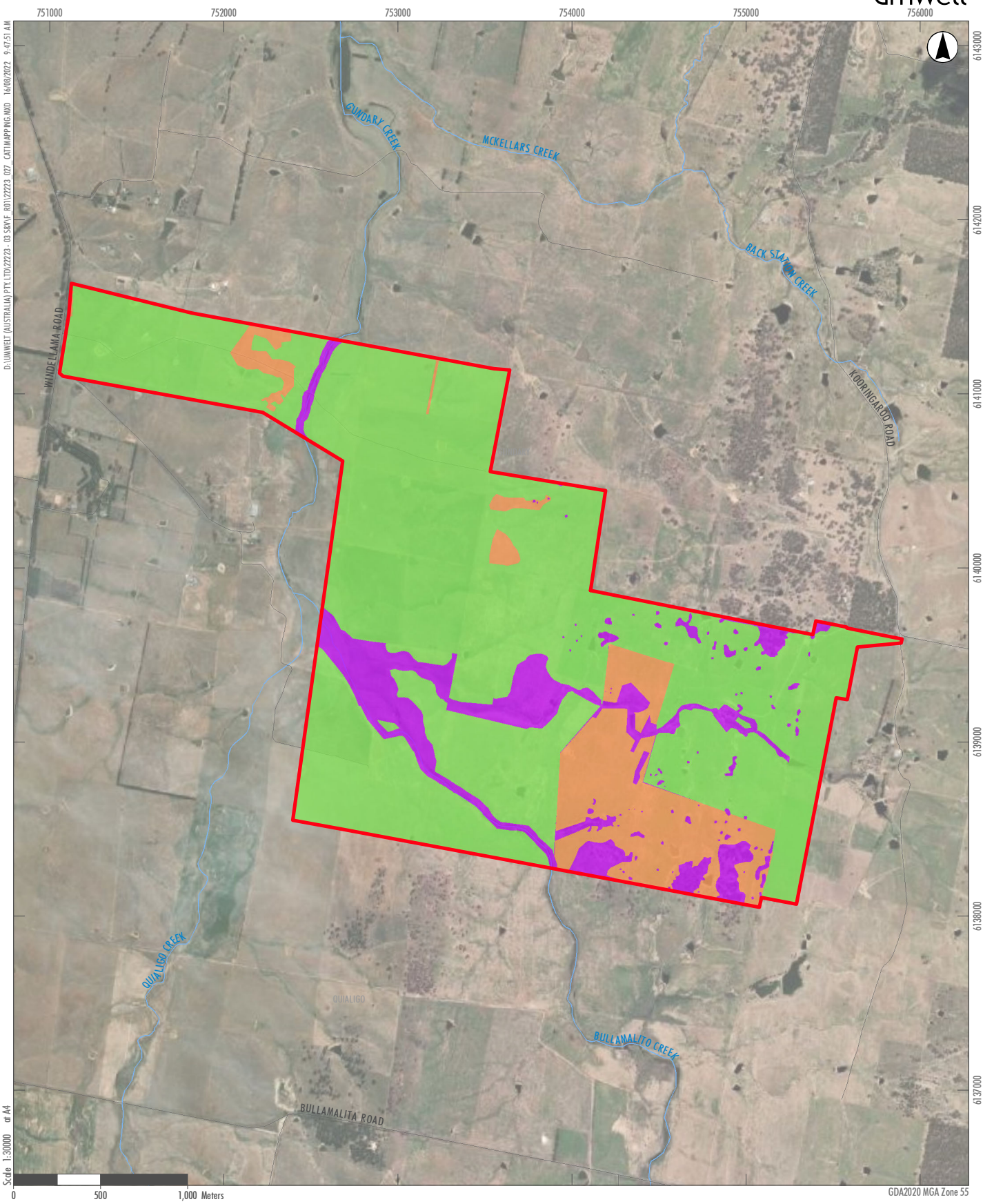
Plant Community Type

- 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

Image Source: ESRI Basemap (2022) Data source: NSW DFSI (2021)



Legend

- Project Area
- Roads
- Watercourses

Preliminary Category Mapping

- Category 1
- Category 2
- Review

FIGURE 6.2

Preliminary Land Categorisation Mapping

Image Source: ESRI Basemap (2022) Data source: NSW DFSI (2021)

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 lathami (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 glaucula	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).

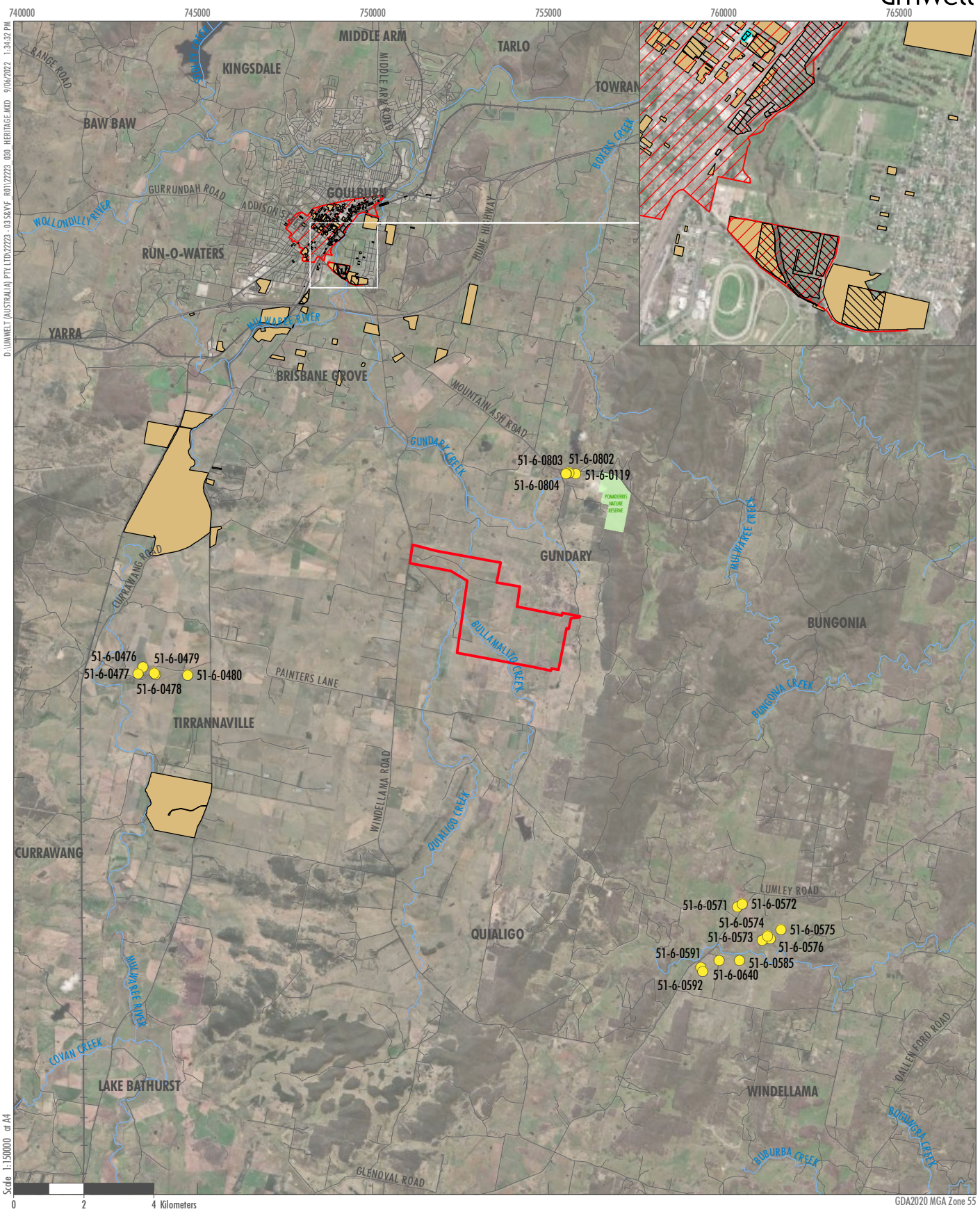
A range of management strategies may be available in relation to the Project that include varying levels of mitigation of identified sites or potential harm to Aboriginal cultural heritage. When impacts to sites or areas of archaeological potential are unavoidable, a strategy will be developed that involves 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

Image Source: ESRI Basemap (2022) Data source: NSW DFSI (2021); Lightsource BP (2022); NSW OEH (2021)

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), Kooringaroo 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 residences[3] 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 Kooringaroo 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.

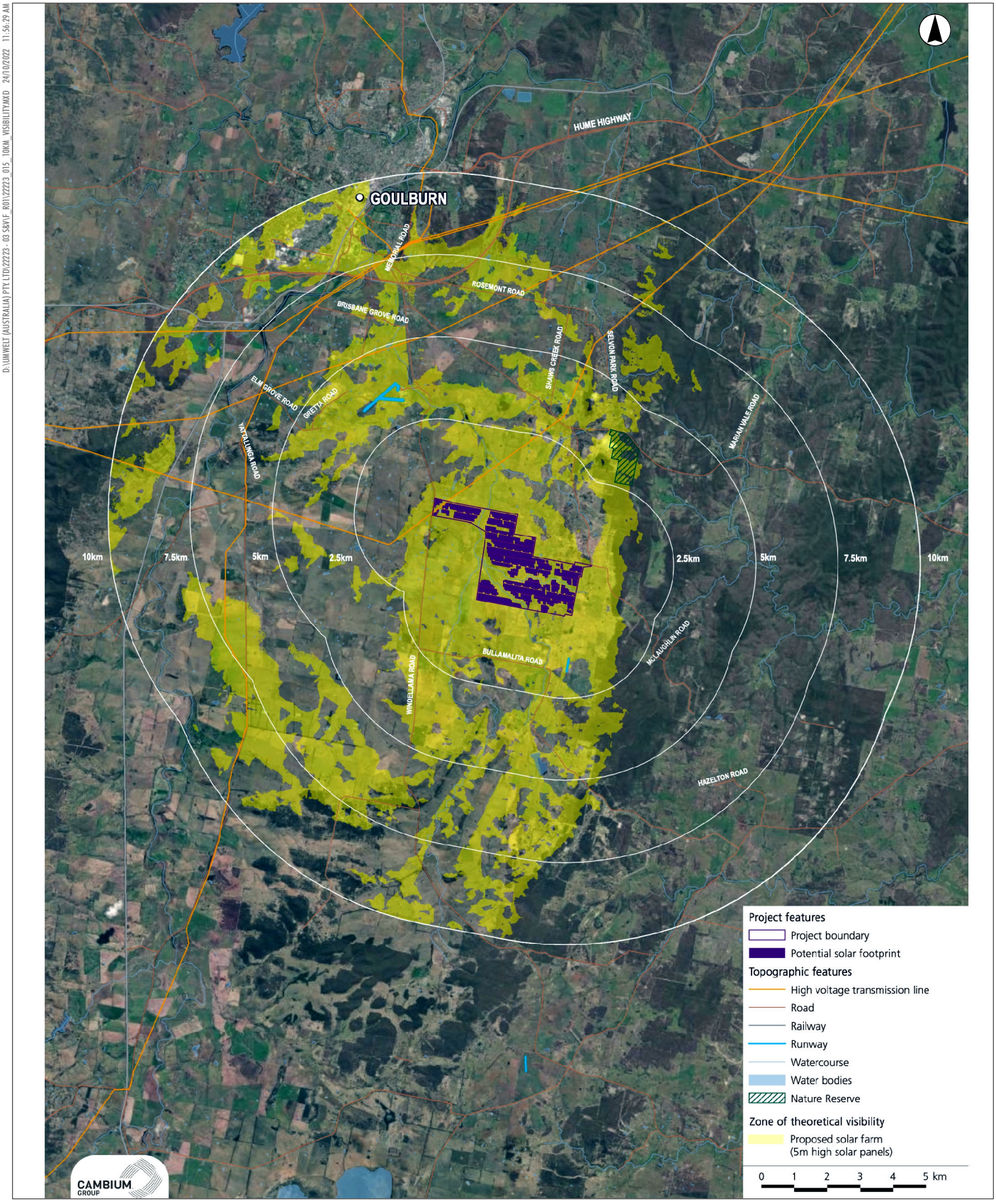
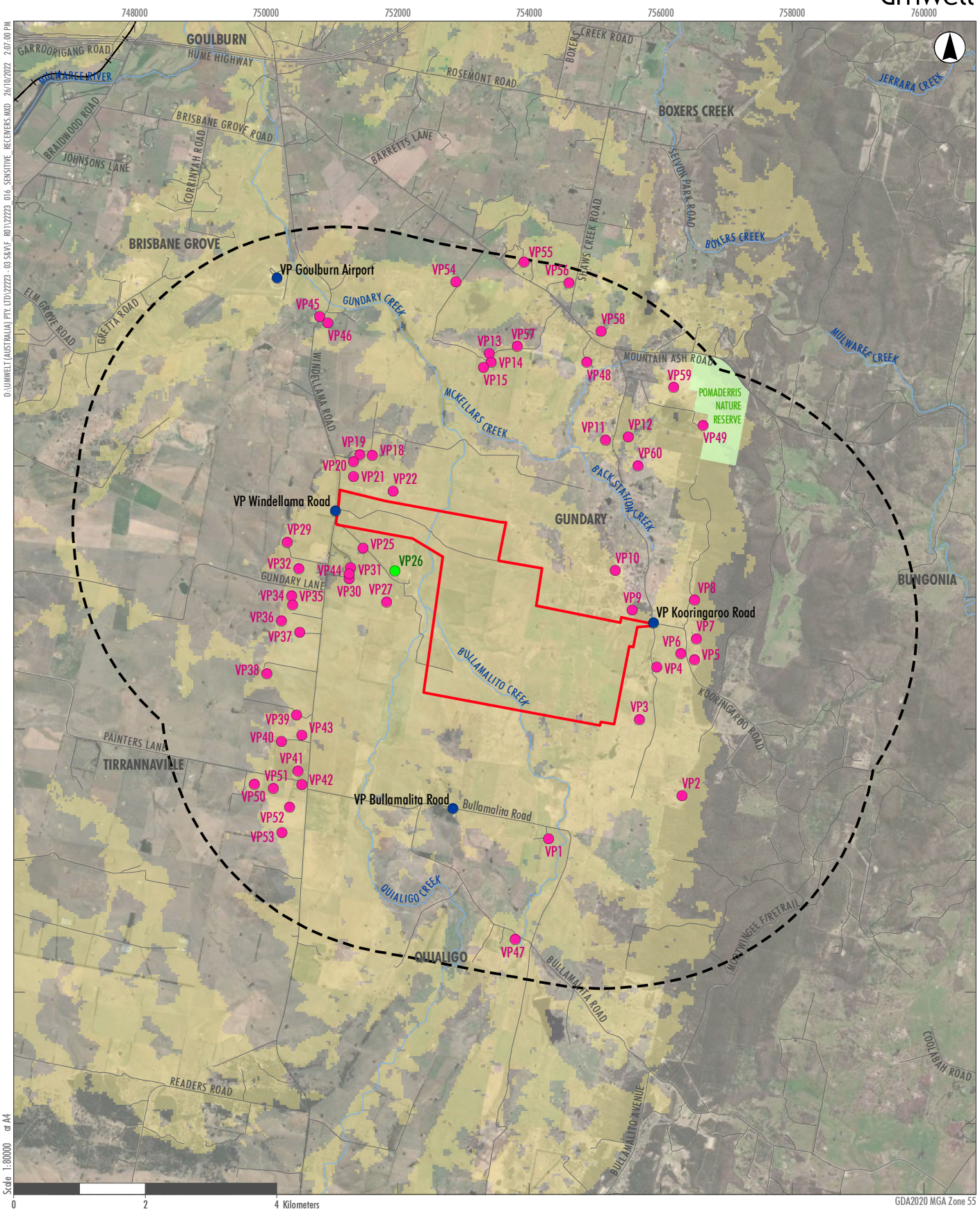


FIGURE 6.4

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

Image Source: Cambium Group (2022)



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

Image Source: ESRI Basemap (2022) Data source: NSW DFSI (2021); Lightsource BP (2022)

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 Gundary Creek catchment, covering an area of 102 km^2, extending from the southern range at elevations above 800 m Australia Height Datum (AHD). The catchment area of Gundary 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

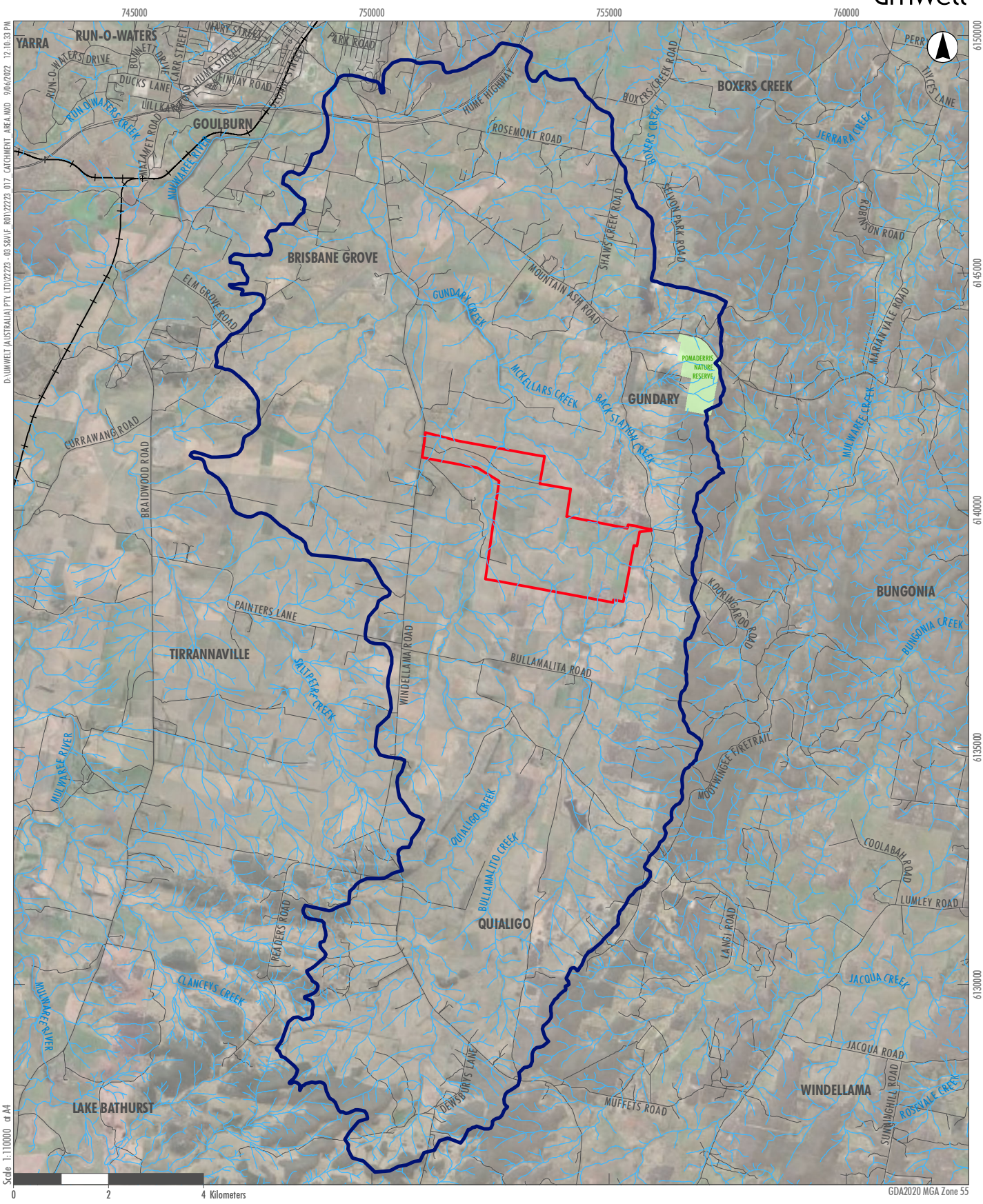
A preliminary hydrology assessment was undertaken by Umwelt to characterise the existing surface water environment, identify key hydrology constraints to be considered in the Project layout and design and identify required considerations for a detailed water resources impact assessment (WRIA) to be completed 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.**Gundary 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 Gundary 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 Gundary Creek. The general flow of the mainstream watercourses in the Gundary 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 Gundary 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.



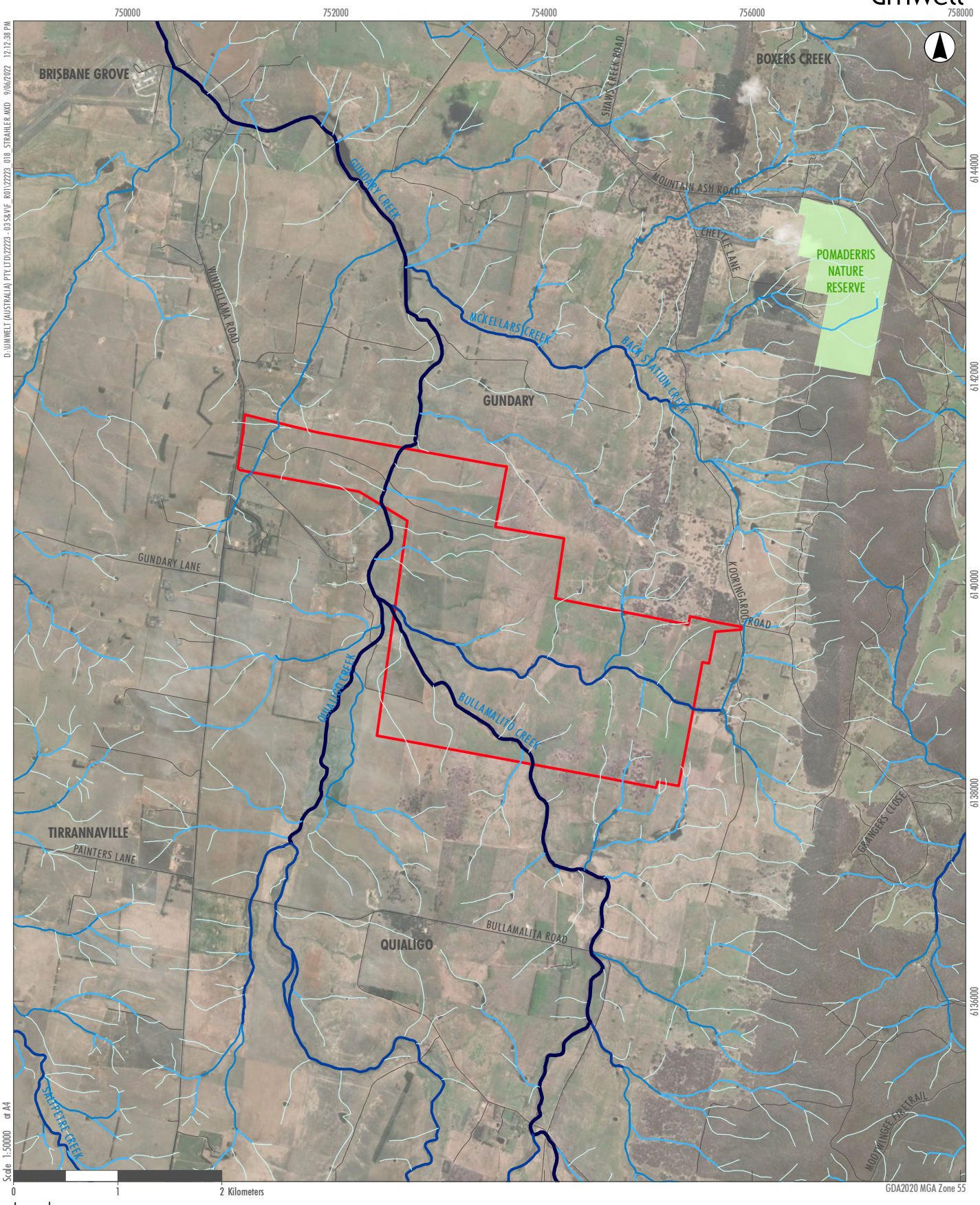
Legend

- Project Area
- Gundary Creek Catchment
- NPWS Estate
- Roads
- Railway
- Watercourses

FIGURE 6.6

Catchment Area of Gundary Creek

Image Source: ESRI Basemap (2022) Data source: NSW DFSI (2021); Lightsource BP (2022)



Legend

- Project Area
- NPWS Estate
- Roads

Strahler Stream Order

- 1
- 2
- 3
- 4
- ≥ 5

FIGURE 6.7

Mapped Watercourses and Strahler Order

Image Source: ESRI Basemap (2022) Data source: NSW DFSI (2021); Lightsource BP (2022)

Flooding

A high-level hydrology assessment was undertaken to map the watercourse features in the Project Area and develop a preliminary TUFLOW 2-dimentional (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.

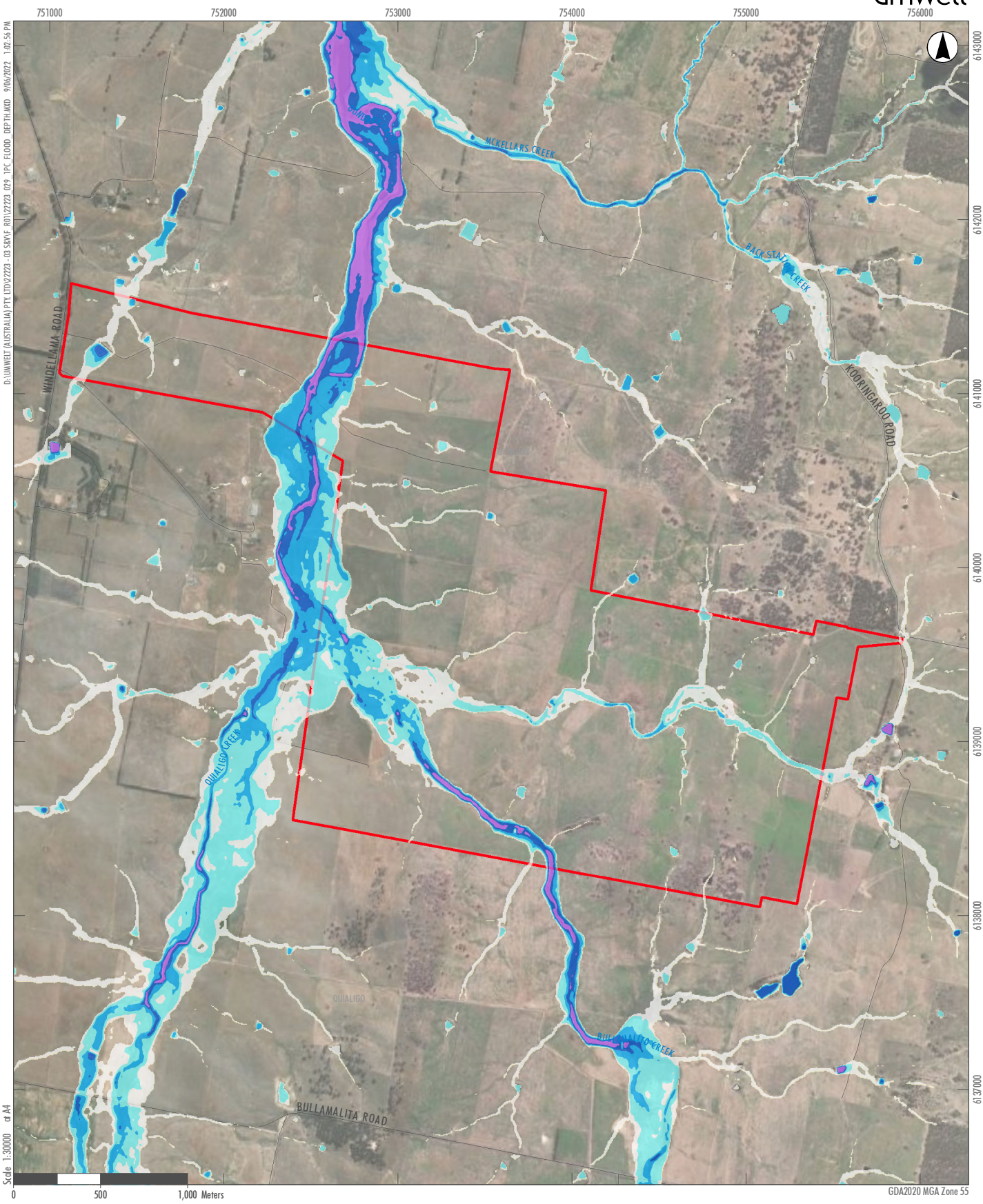
Figure 6.8 shows the principal flood extents within the Project Area are along the mainstream alignments of Bullamalito Creek and Gundary Creek. Peak flood depths of up to 3 m are simulated within the mainstream channel of Gundary Creek at the northern end of the Project Area. The flood inundation extends 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.



Legend

Project Area

Roads

Depth of Predicted Flood Water (m)

- < 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- > 2.0

FIGURE 6.8

Indicative 1% AEP Flood Inundation Extents for the Project Area

Image Source: ESRI Basemap (2022) Data source: NSW DFSI (2021)

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.

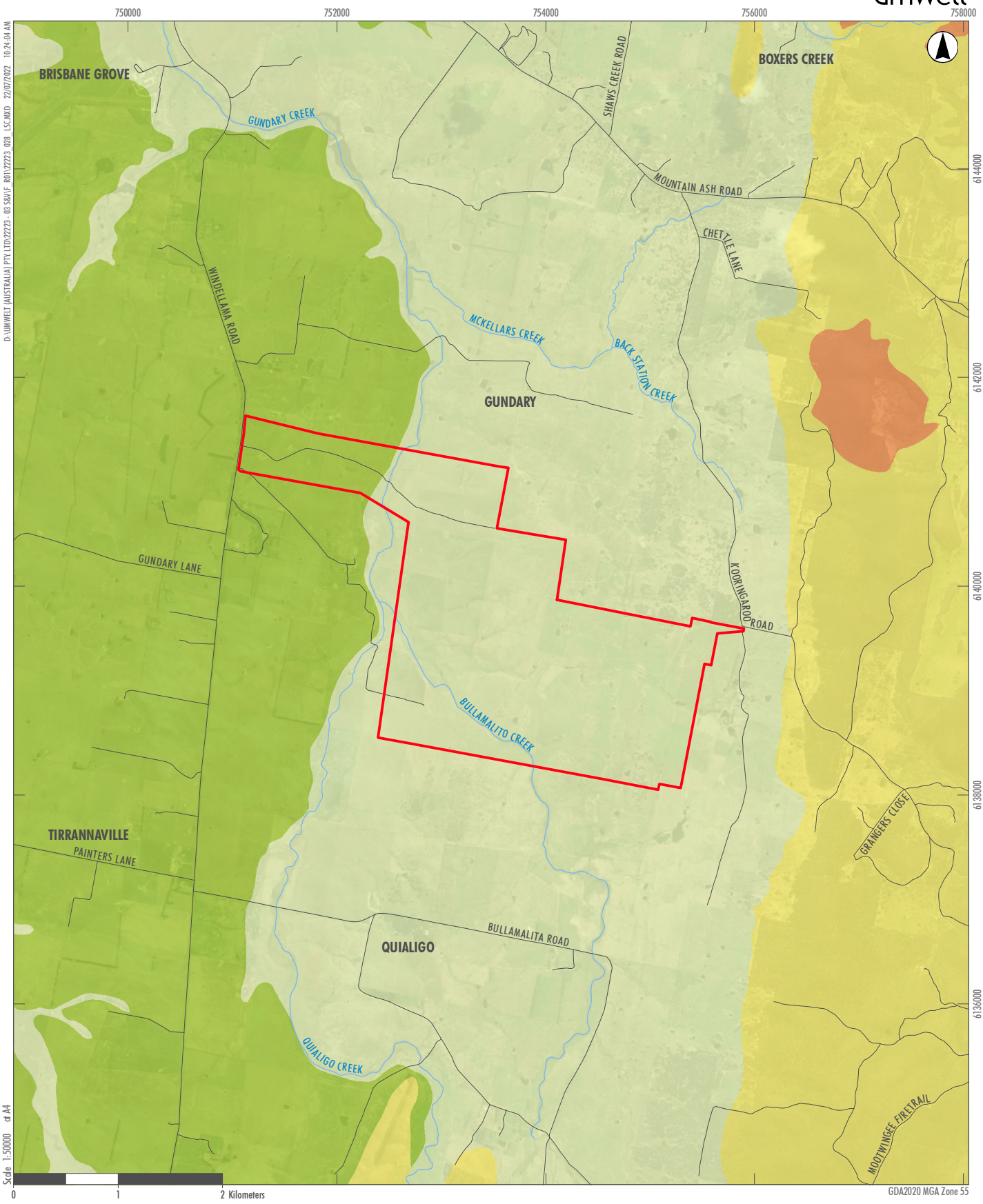
6.2.5 Land

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.



Legend

- Project Area
- Roads
- Watercourses

Land and Soil Capability

- 4
- 5
- 6
- 7

FIGURE 6.9

Land and Soil Capability Mapping

Image Source: ESRI Basemap (2022) Data source: NSW DFSI (2021); Lightsource BP (2022); NSW DPIE (2020)

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)	Gundary (SSC)	Tirrannaville (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.**

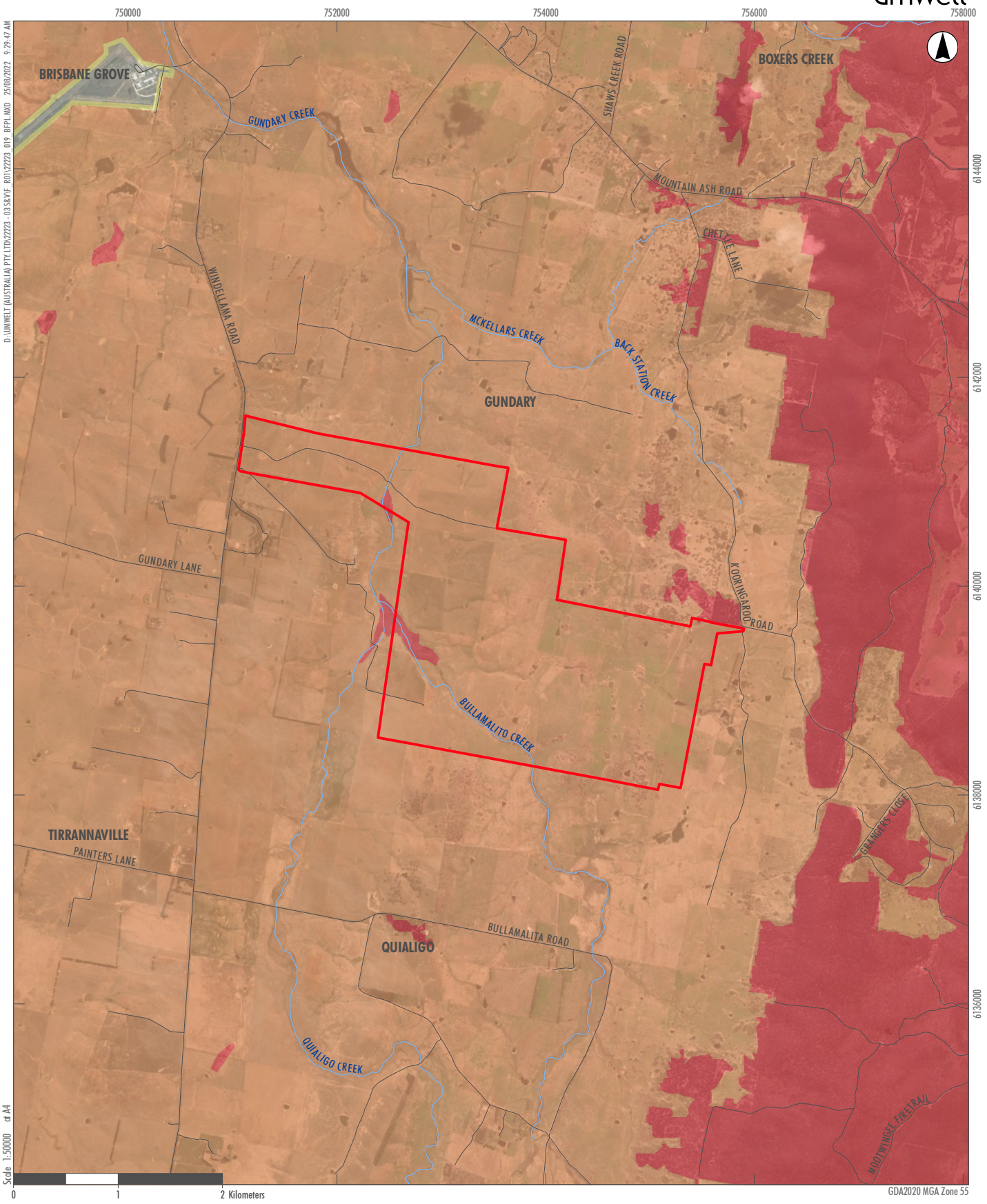
Although the Project Area has been subject to extensive cultivation associated with agricultural land use, there are areas of remnant vegetation which form a potential fuel load capable of sustaining and spreading bushfire. Areas of vegetation within the Project Area also represent a potential linkage 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.



Legend

- Project Area
- Roads
- Watercourses

Bushfire Prone Land Vegetation Category Mapping

- Vegetation Buffer (100m to Category 1 Vegetation and 30m to Category 2 Vegetation)
- Vegetation Category 1 (High Risk)
- Vegetation Category 3 (Low Risk)

FIGURE 6.10

Bushfire Prone Land

Image Source: ESRI Basemap (2022) Data source: NSW DFSI (2021); Lightsource BP (2022); NSW Rural Bushfire Service (2021)

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.

8.0 References

Australian Bureau of Statistics (ABS), 2016. 2016 Census QuickStats. Accessed 22 March 2022. Retrieved from https://www.abs.gov.au/websitedbs/D3310114.nsf/Home/2016%20QuickStats

Australia ICOMOS Incorporated, 2013. Australia ICOMOS Charter for Places of Cultural Significance.

Austroads, 2020. Guide to Traffic Management.

Austroads, 2015. Guide to Road Design.

Commonwealth Department of Industry. 2021. Australia's climate change strategies. https://www.industry.gov.au/policies-and-initiatives/australias-climate-change-strategies. Accessed on 10 May 2022.

Department of Environment and Climate Change [DECC] (NSW), 2009. *Interim Construction Noise Guideline*.

Department of Environment, Climate Change and Water [DECCW] (NSW), 2011. *NSW Road Noise Policy*.

DECCW, 2010a. Aboriginal cultural heritage consultation requirements for proponents 2010.

DECCW, 2010b. Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.

Department of Planning and Environment (DPE), 2022. Large-scale Solar Energy Guideline.

DPE, 2017. Central West and Orana Regional Plan 2036.

Environment Protection Authority (EPA), 2017. *Noise Policy for Industry*.

Goulburn Mulwaree Council. 2009. Goulburn Mulwaree Local Environment Plan 2009.

Heritage NSW. 2006. Lansdowne. State Heritage Inventory. https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=5045587 Accessed 23 March 2022.

International Commission on Non-Ionizing Radiation Protection [ICNIRP], 2010. Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz – 100 kHz).

NSW Government, 2011. NSW 2021: A plan to make NSW number one.

NSW Government, 2013. NSW Renewable Energy Action Plan.

NSW Government. 2017. South East and Tablelands Regional Plan 2036. https://www.planning.nsw.gov.au/~/media/Files/DPE/Plans-and-policies/south-east-and-tableland-regional-plan-2017-07.ashx Accessed 25 March 2022.

NSW Government, 2019. NSW Electricity Strategy

NSW Government (DPE), 2012a. Guidelines for riparian corridors on waterfront land.

NSW Government (DPE), 2012b. Guidelines for watercourse crossings on waterfront land.

NSW Government (DPIE), 2018. Large-Scale Solar Energy Guideline for State Significant Development.

NSW Government (DPIE), 2020. Australian Soil Classification Soil Type mapping. Accessed on 1 July 2022 at https://geo.seed.nsw.gov.au/Public_Viewer/index.html?viewer=Public_Viewer&locale=en-AU

NSW Government (DPIE), 2021a. Social Impact Assessment Guideline for State Significant Projects.

NSW Government (DPIE), 2021b. State Significant Development Guidelines – Preparing a Scoping Report – Appendix A.

NSW Government (DPIE), 2021c. Undertaking Engagement Guidelines for State Significant Projects.

NSW Government (DPIE), 2021d. Cumulative Impact Assessment (CIA) Guidelines for State Significant Projects.

NSW Heritage Office, 1996. *NSW Heritage Manual*.

NSW Rural Fire Service, 2019. Planning for Bush Fire Protection: A guide for councils, planners, fire authorities and developers.

Office of Environment and Heritage (OEH), 2011. Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW.

OEH, 2012. The land and soil capability assessment scheme: A general rural land evaluation system for New South Wales. Second approximation.

OEH, 2013. The Land and Soil Capability Assessment Scheme: Second Approximation.

OEH, 2016. NSW Climate Change Policy Framework.

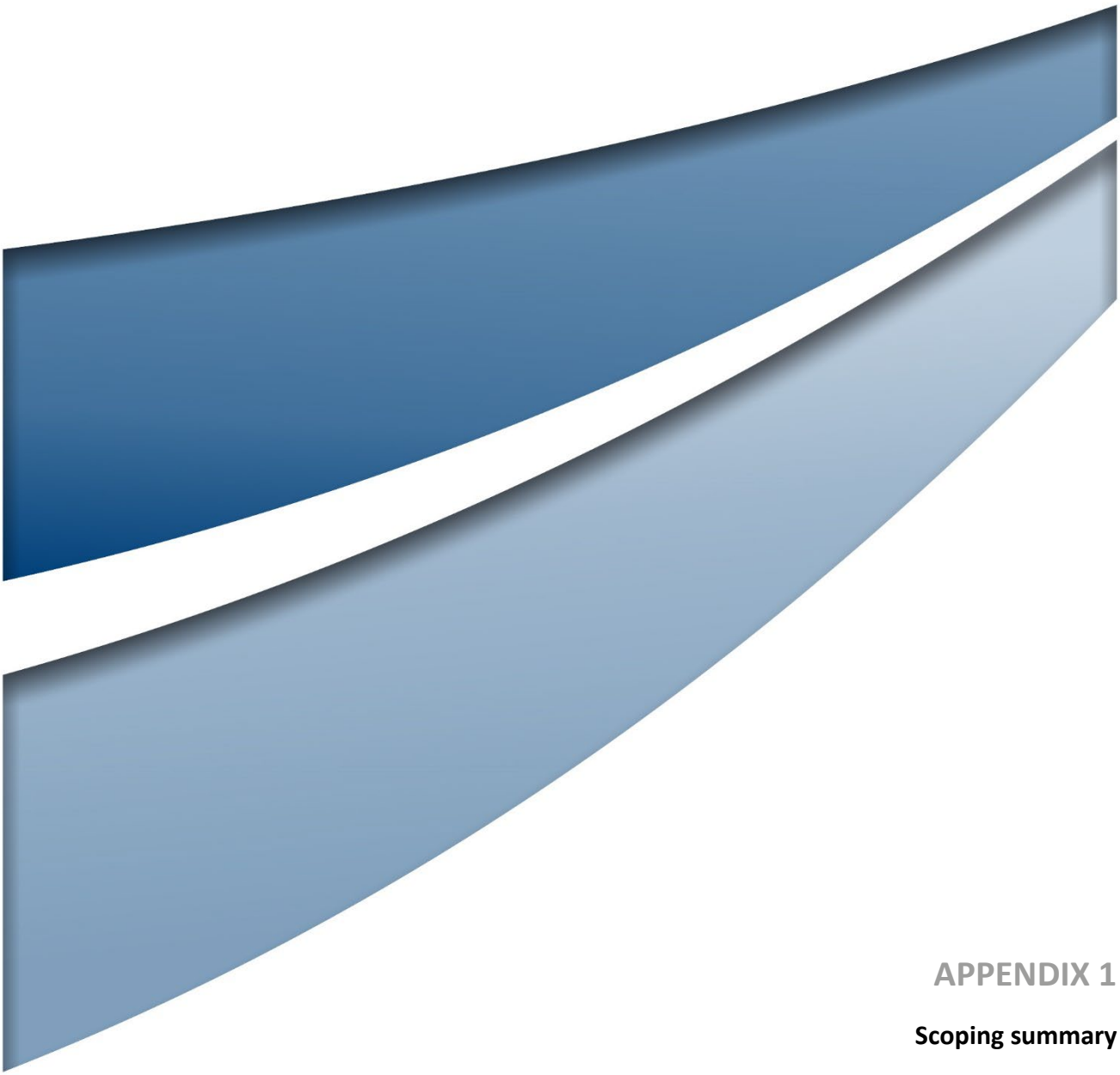
OEH, 2018. Energy Efficiency Action Plan: Achievements, success factors and future support.

Office of Water (NSW), 2012. Guidelines for riparian corridors on waterfront lane: Controlled activities on waterfront land.

Roads and Traffic Authority (NSW), 2002. *Guide to Traffic Generating Developments*.

United Nations Framework Convention on Climate Change (UNFCCC), 2015. Australia's Intended Nationally Determined Contribution to a new Climate Change Agreement. https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Australia%20First/Australias%20Intended%20Nationally%20Determined%20Contribution%20to%20a%20new%20Climate%20Change%20Agreement%20-%20August%202015.pdf Accessed 22 March 2022.

WaterNSW, 2022. Neutral or Beneficial Effect on Water Quality Assessment Guideline.



APPENDIX 1

Scoping summary

Appendix 1 - Scoping Summary Table

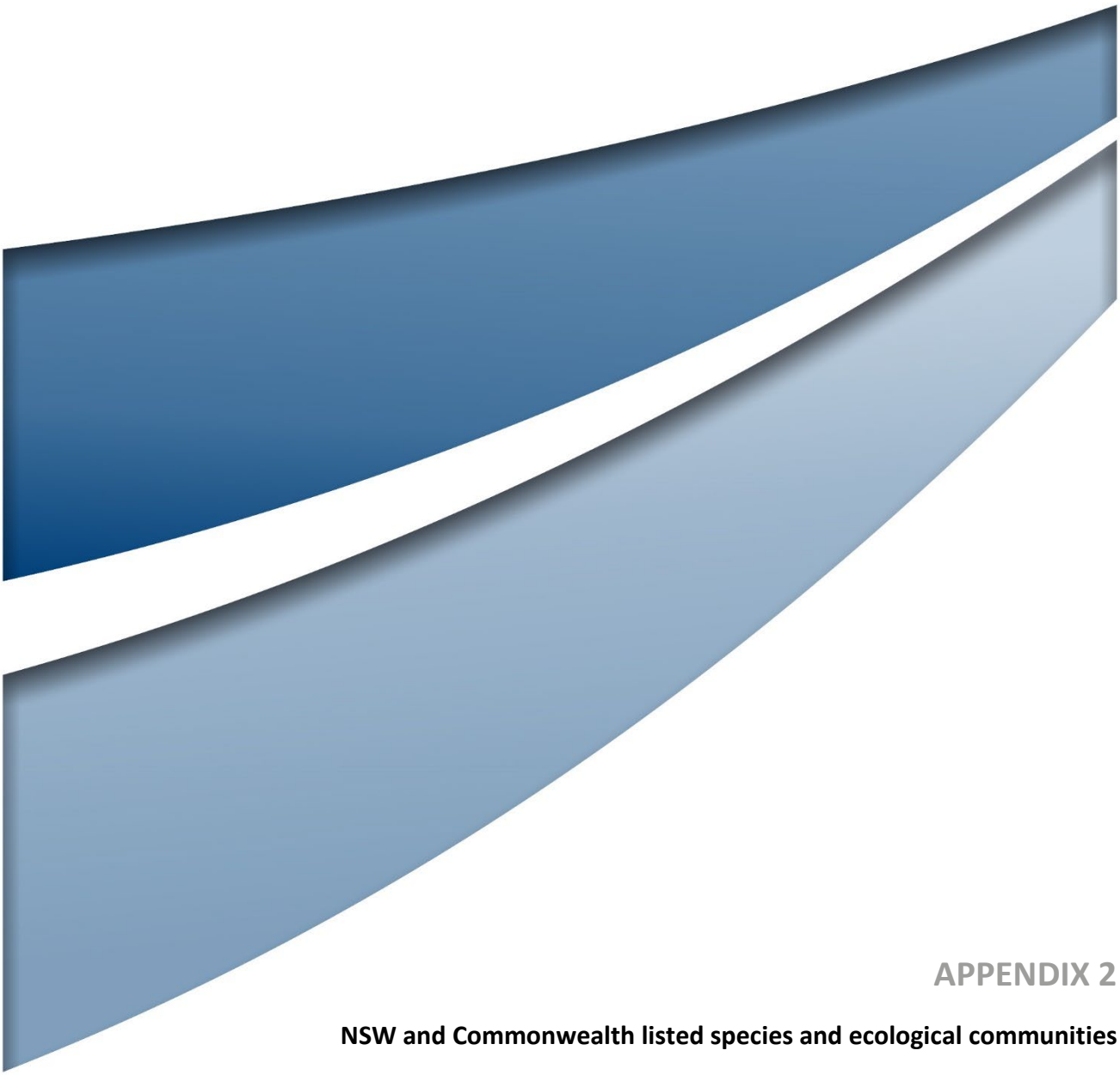
Level of Assessment	Matter	Cumulative Impacts	Engagement	Relevant government plans, policies and guidelines	Scoping report reference
Detailed	Biodiversity	Y	Specific	• Commonwealth EPBC 1.1 Significant Impact Guidelines – Matters of National Environmental Significance (Commonwealth of Australia, 2013) • 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 *State Environment Planning Policy (Resilience and Hazards)* 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

Australian Government
Department of Agriculture, Water and the Environment

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

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
Rutidosis 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]		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
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]		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 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]		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]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
[Lathamus discolor](#) Swift Parrot [744]	Critically Endangered	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

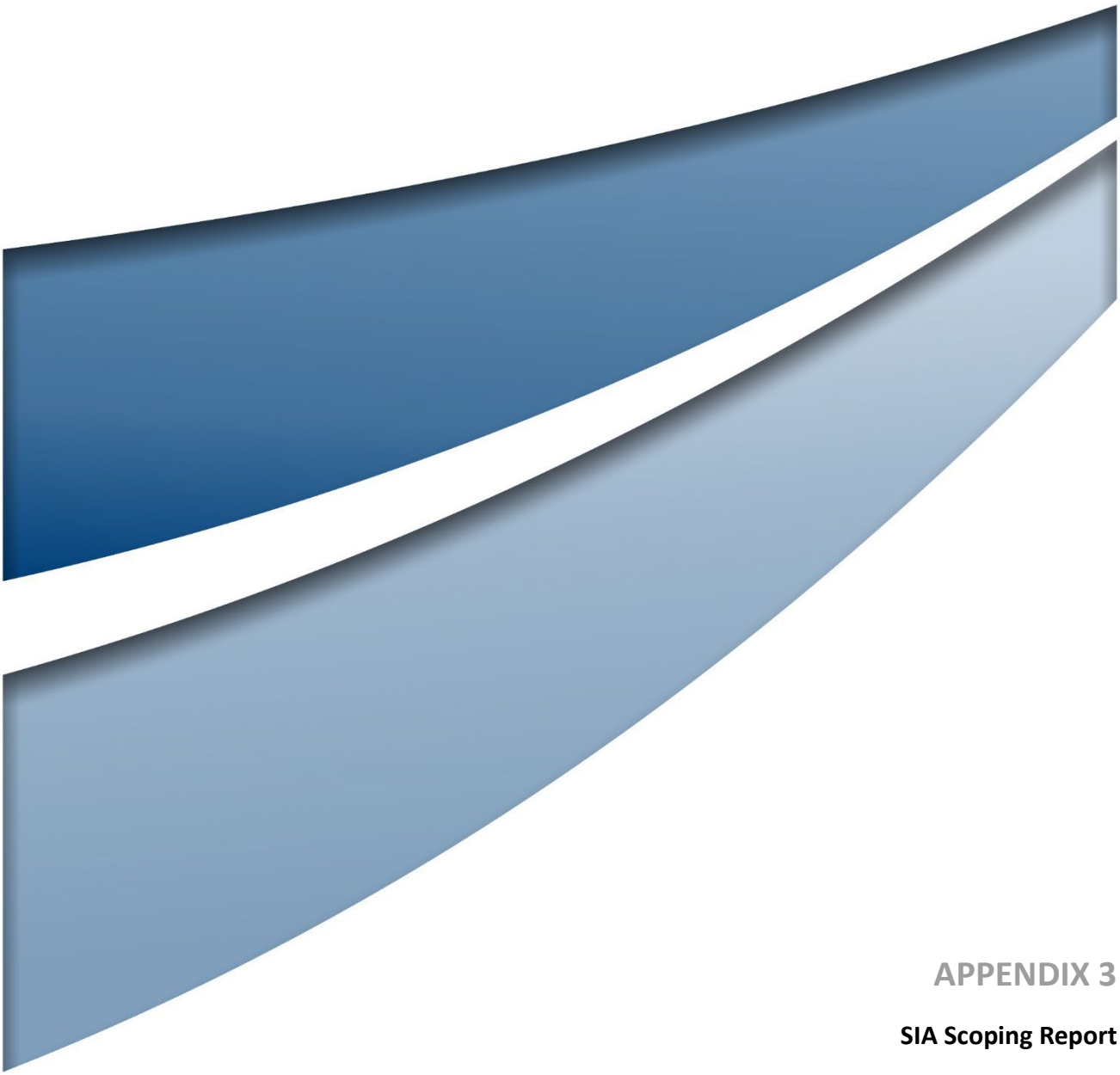
This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-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.

Department of Agriculture Water and the Environment
GPO Box 858
Canberra City ACT 2601 Australia
+61 2 6274 1111



APPENDIX 3

SIA Scoping Report

umwelt
Environmental & Social Consultants

lightsource bp

SIA SCOPING REPORT

Gundary Solar Farm

FINAL

August 2022

SIA SCOPING REPORT

Gundary 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.

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

Table of Contents

Figures

Tables

Appendices

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 Gundary 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 Gundary, 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, Gundary, 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.

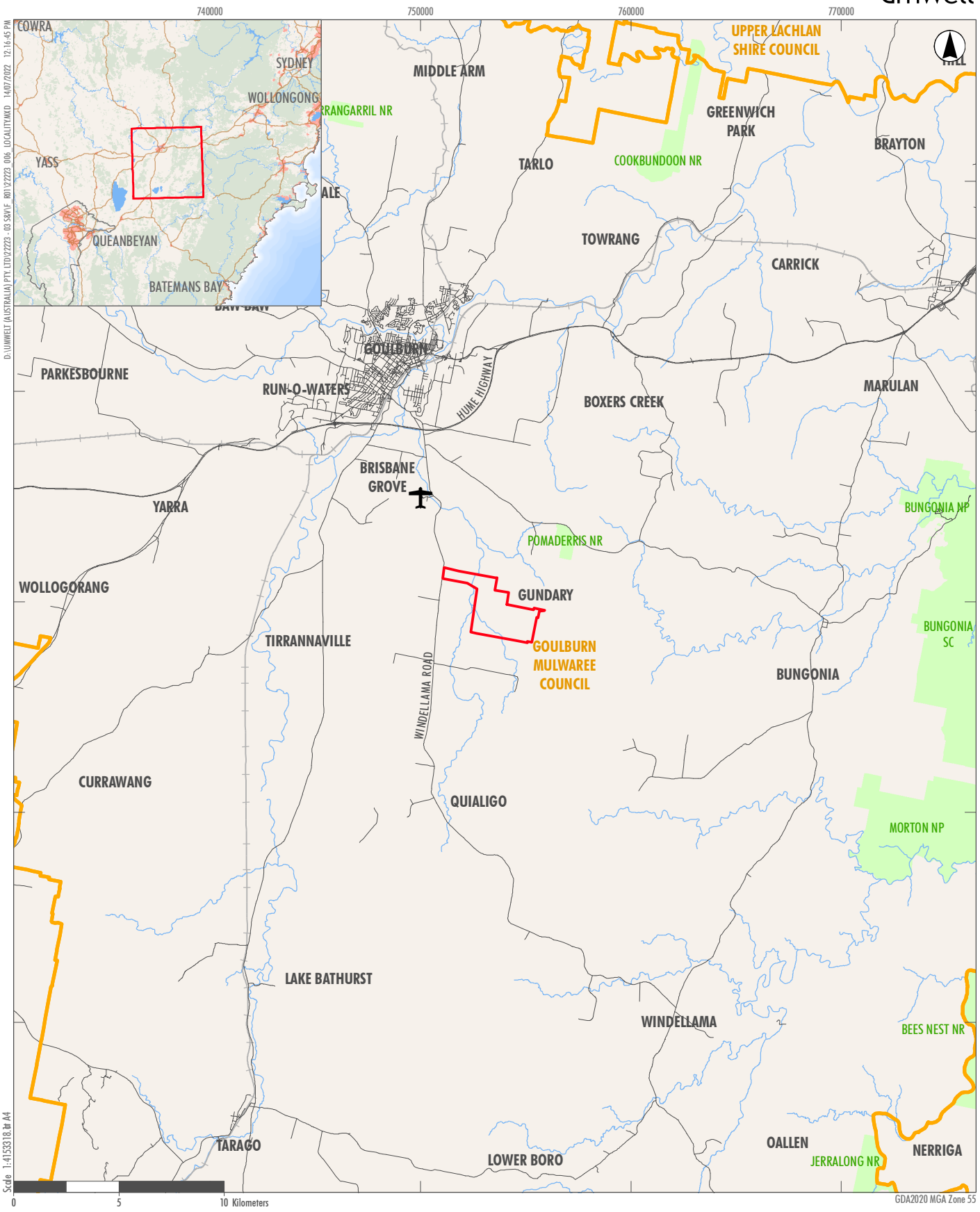
The Project will be developed across five freehold properties, covering an area of approximately 708 ha (the Project Area). These properties are primarily used for grazing activities. The Project infrastructure will cover approximately 473 ha (the development footprint) of the 708 ha. The Project layout, 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.



Legend

- Project Area
- Goulburn Airport
- Local Government Area
- NPWS Estate
- Roads
- Railway
- Watercourses

FIGURE 1.1

Project Location and Regional Context

Data source: NSW DSFI (2022); Lightsource BP (2022)

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**.

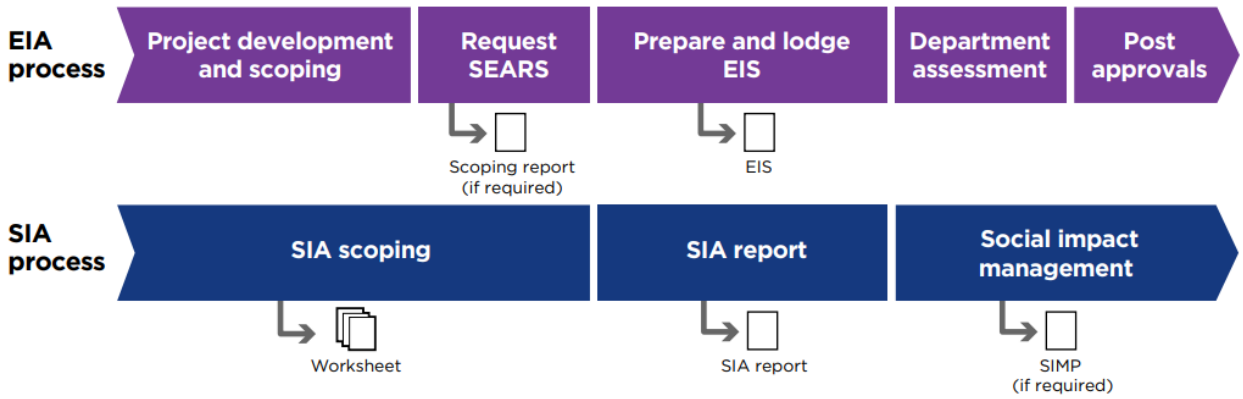


Figure 2.1 SIA and EIS process

Source: (DPIE, 2021)

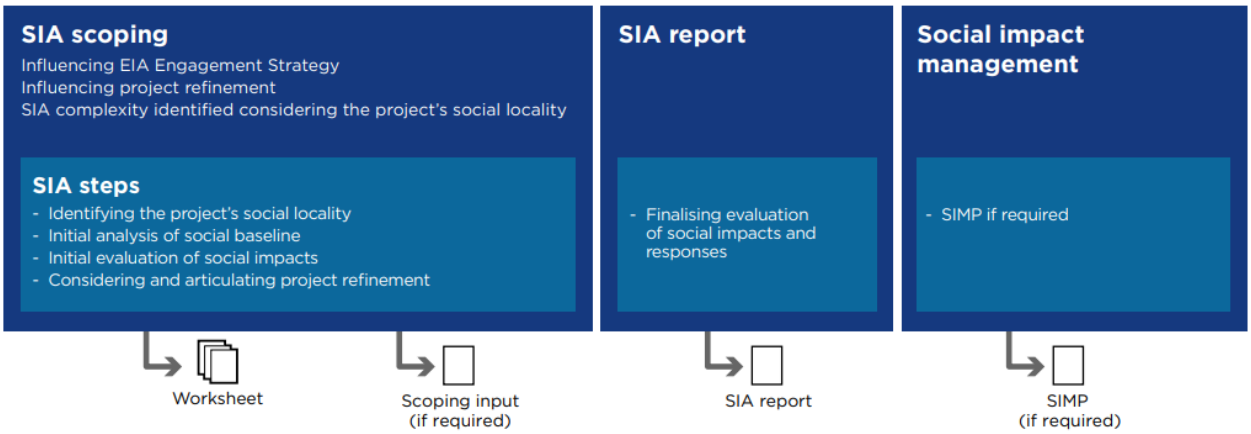


Figure 2.2 SIA steps in detail

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'.

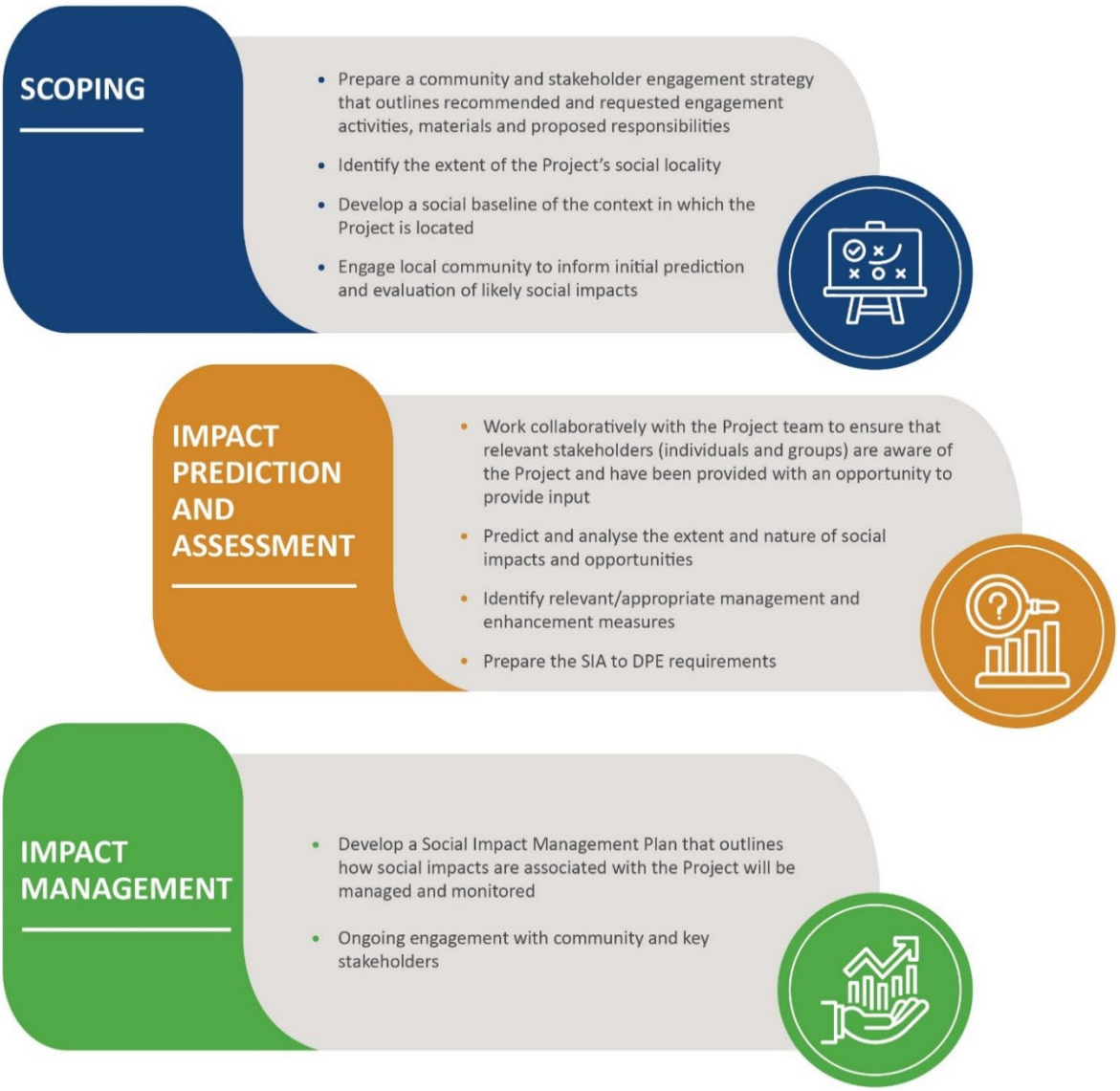


Figure 2.3 SIA Program Phases

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 Gundary 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 Gundary 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 Gundary. 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.

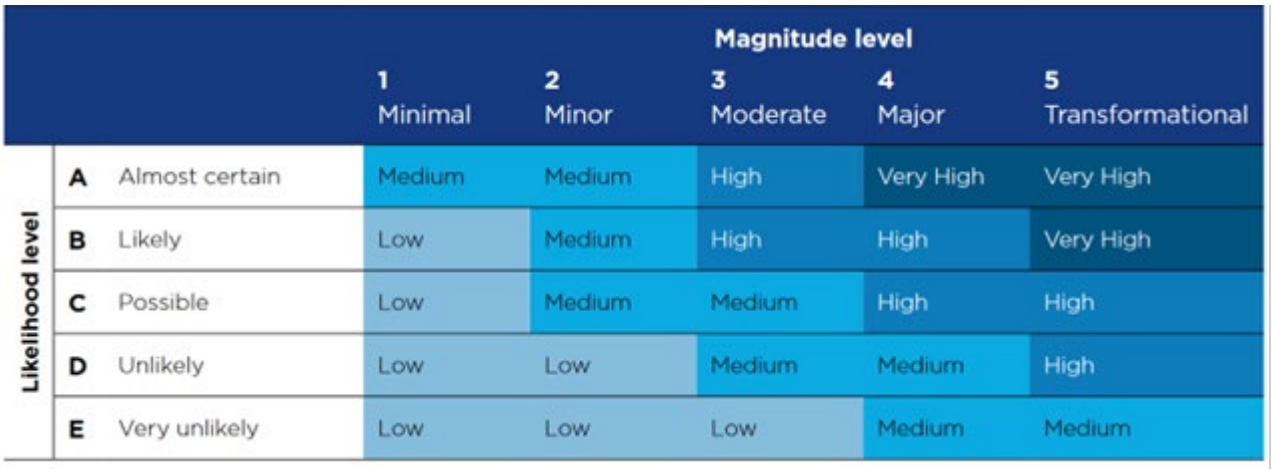
The FAQ document was developed based on questions raised during the first round of consultation and was emailed to 105 key stakeholders. This document was also distributed via mail to 12,420 residents in the Goulburn, Gundary and broader LGA area. This can be found in **Appendix G.**

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.



Likelihood level		Magnitude level 1 Minimal	2 Minor	3 Moderate	4 Major	5 Transformational
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.

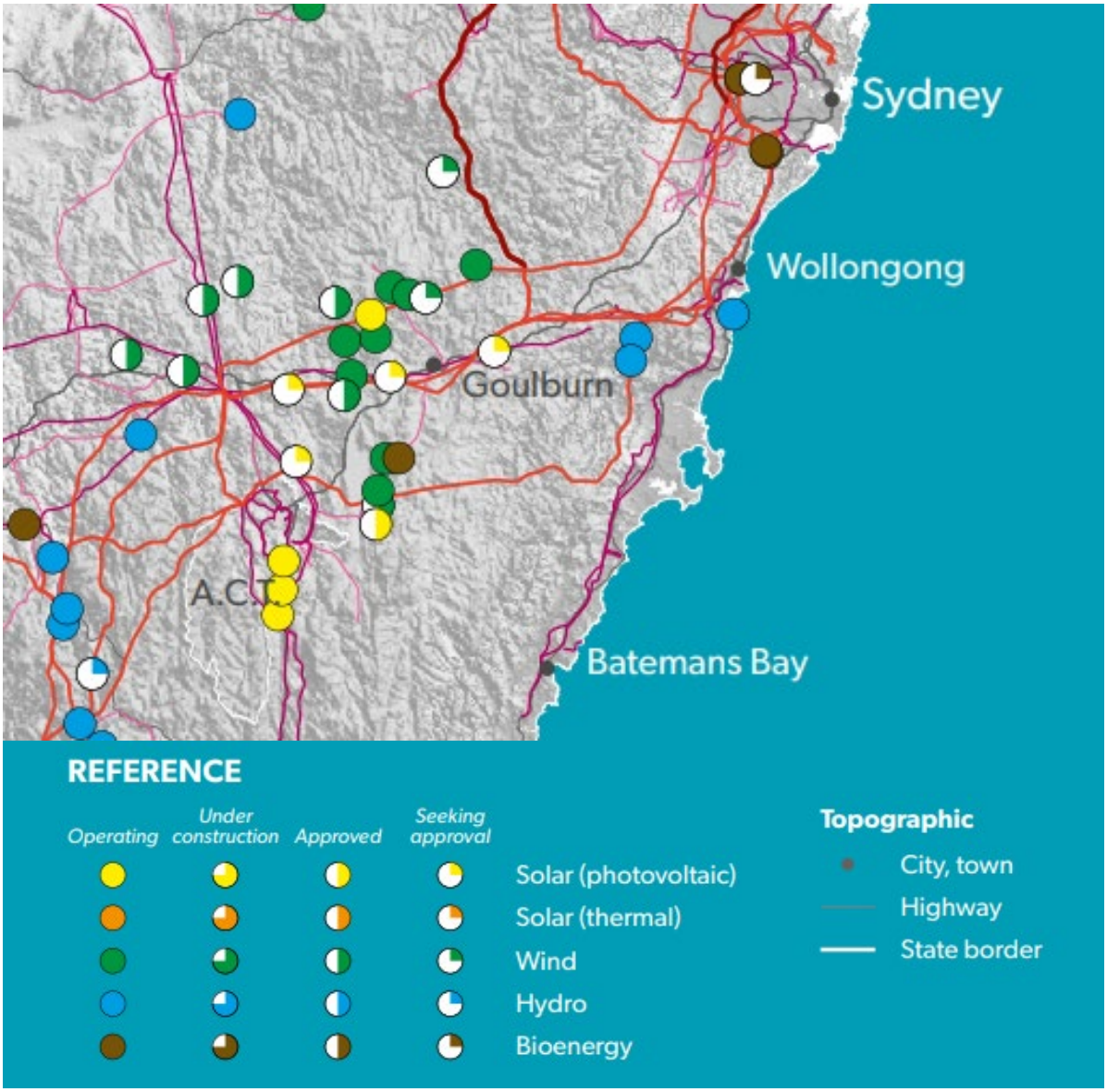


Figure 3.1 Renewable Energy Pipeline

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 Gundary 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.

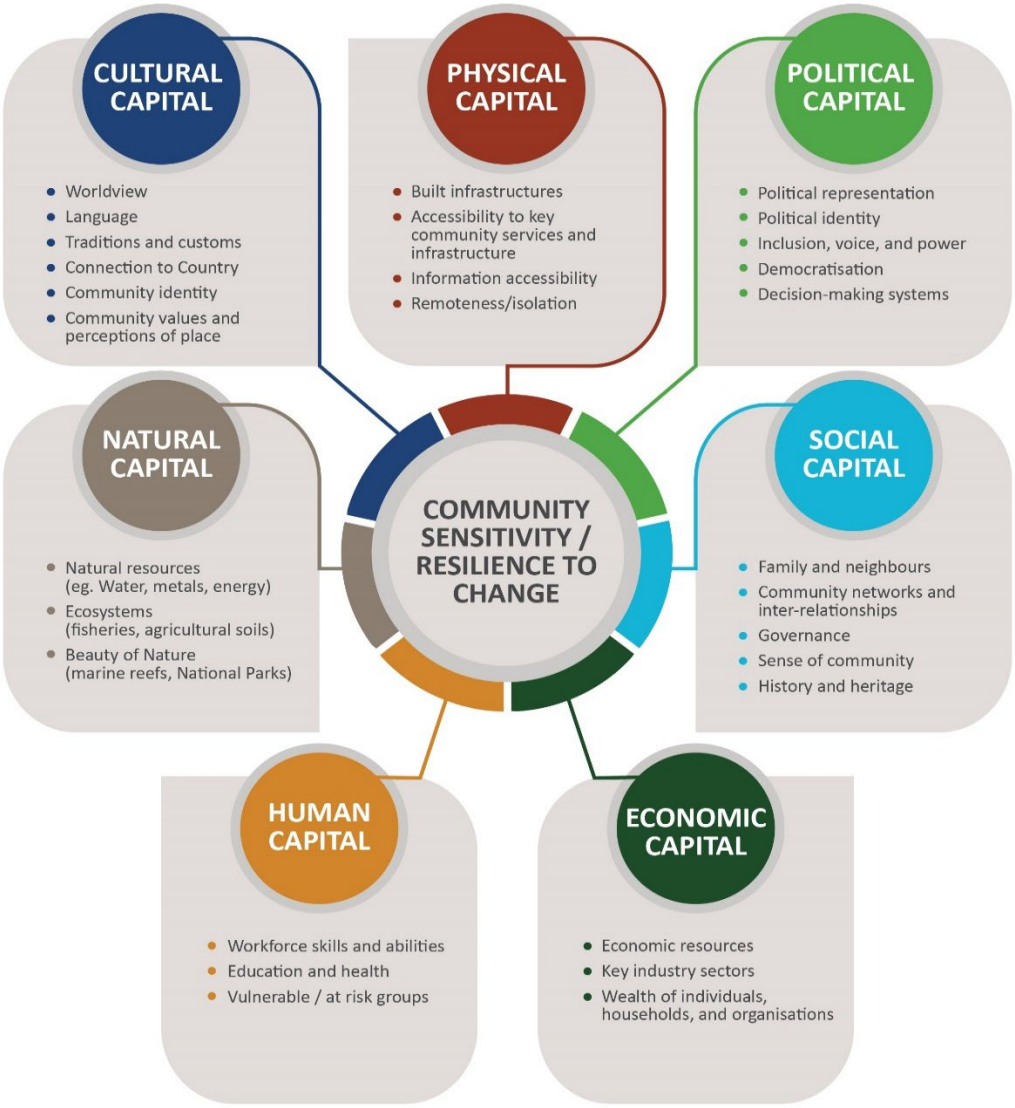


Figure 3.2 Community Capitals

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 Goulbourn 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 5th 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, Gundary 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, Gundary 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.

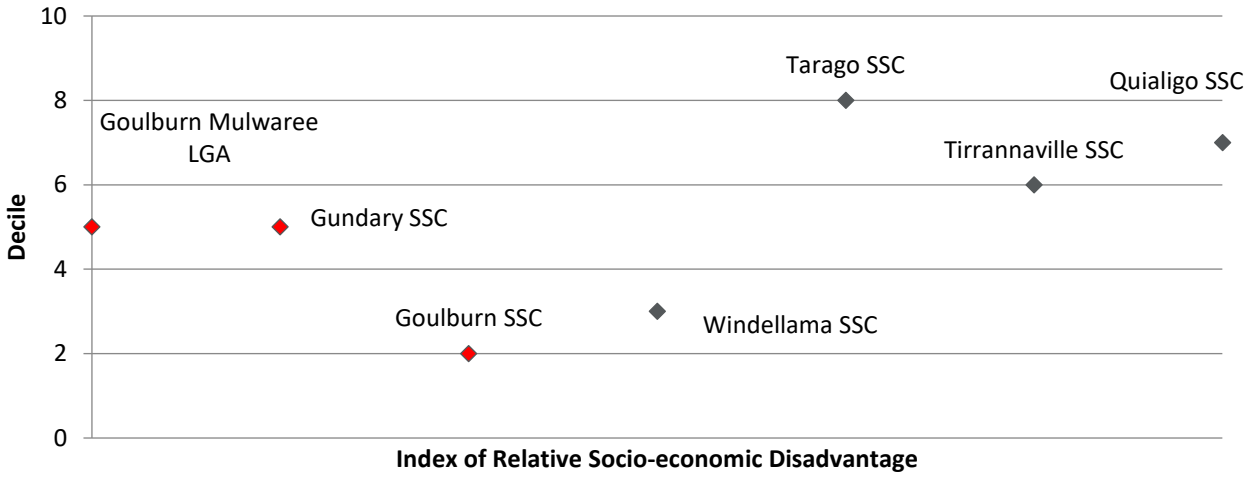


Figure 3.3 Index of Relative Socio-economic Disadvantage

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, "*it's the kind of community where you know your neighbours and say "hi" to people in the street*" (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 Gundary 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)

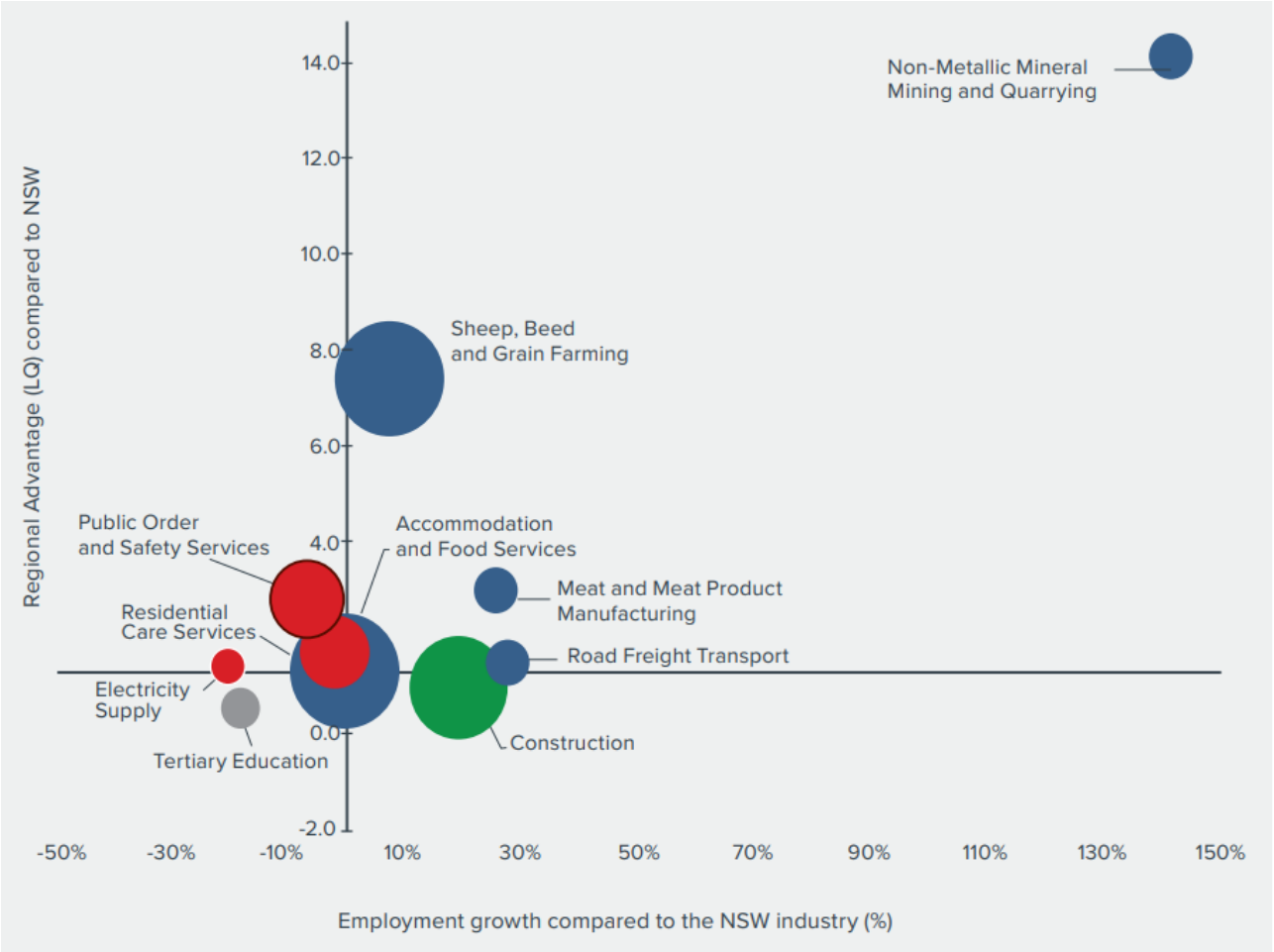


Figure 3.4 Regional Advantage and Employment Growth compared to the NSW Industry

Source: (Ag Econ Plus Consulting, 2018)

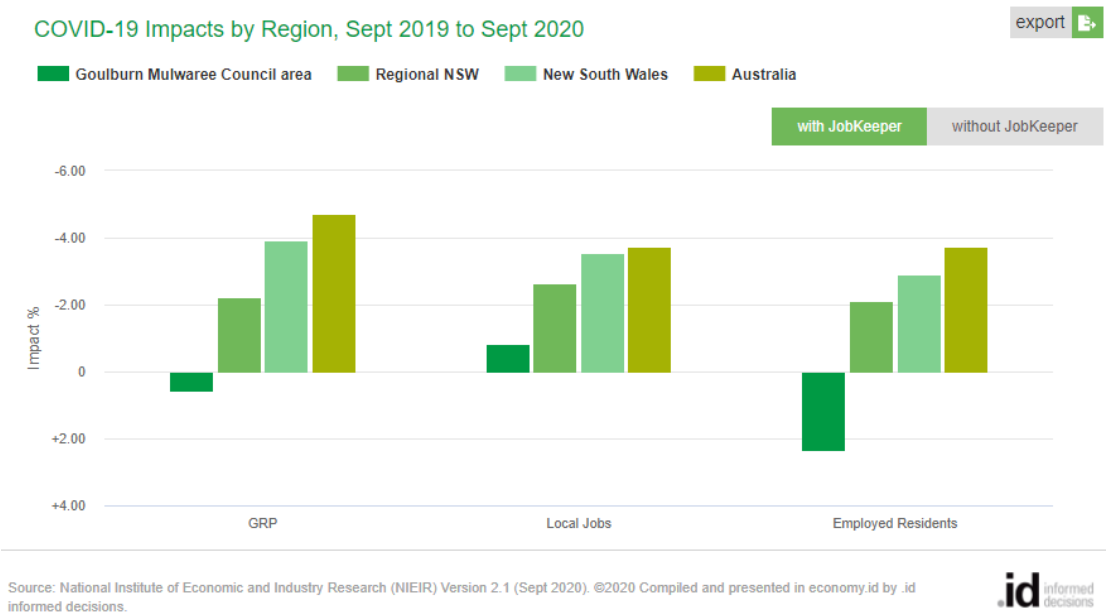


Figure 3.5 COVID-19 Impacts by Region 2019-2020

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)

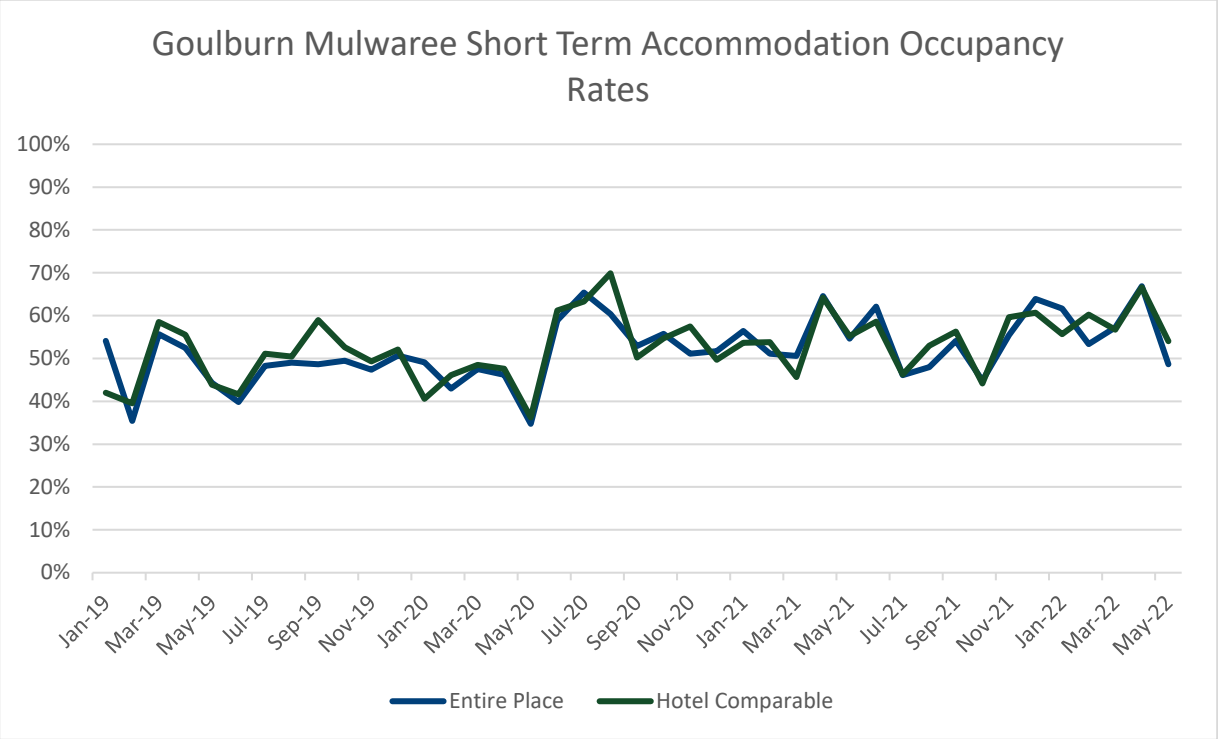


Figure 3.6 Goulburn Mulwaree Short Term Accommodation Occupancy Rates

Source: (AirDNA, 2022)

3.9 Cultural Capital

Cultural capital refers to underlying factors that provide human societies with the means and adaptions 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 '*the people of the three rivers*', 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. *"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."*
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 km^2 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 (Parliment 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 (Parliment of Australia, 2022). His length of term in the House of Representatives is 3 years.

Sources: (Goulburn Mulwaree Council, 2022) (Parliment 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.

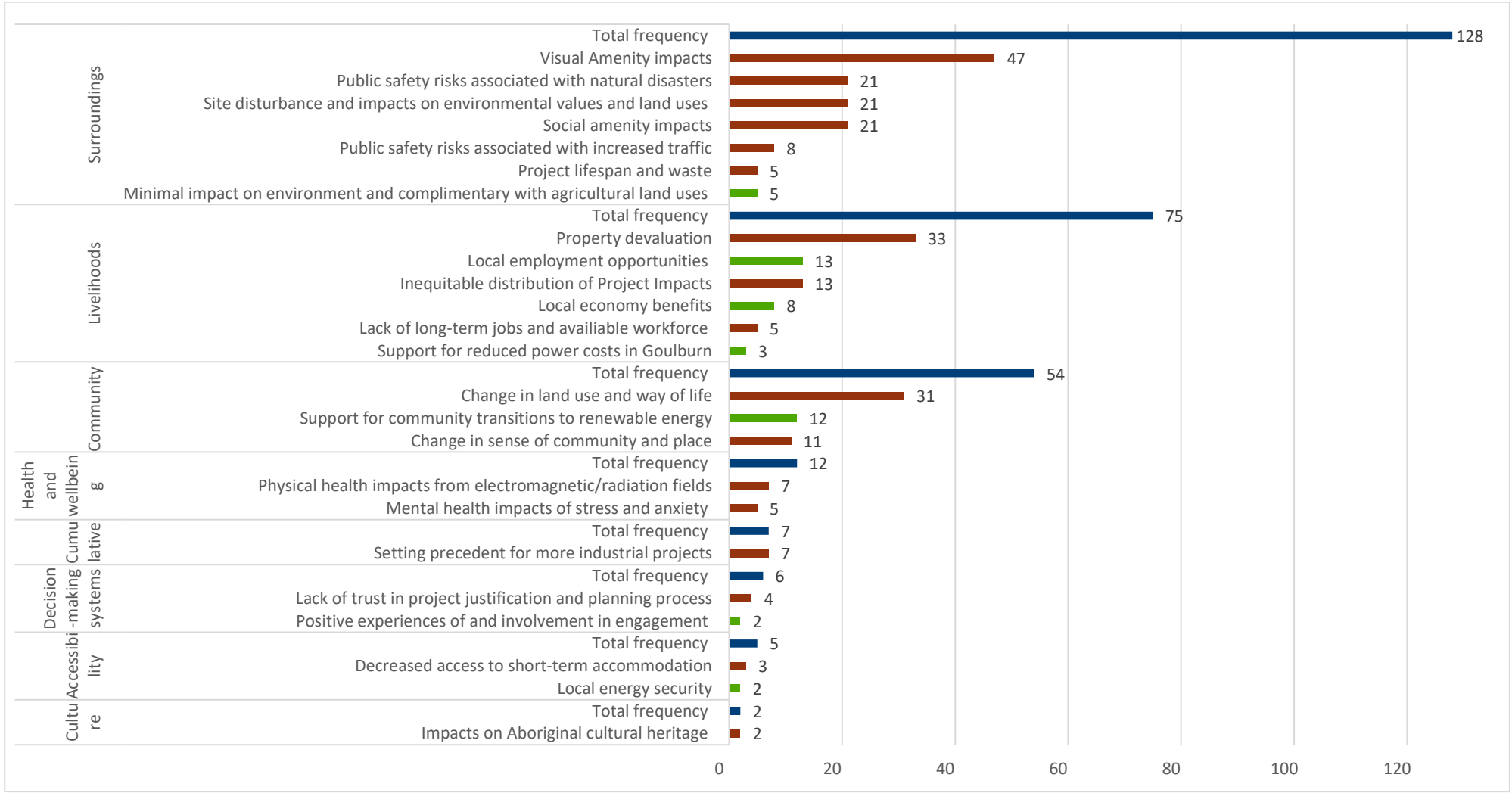


Figure 4.1 Summary of Social Impacts based on survey responses and stakeholder interviews

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 Gundary 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 Kooringaroo 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 effecting 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.

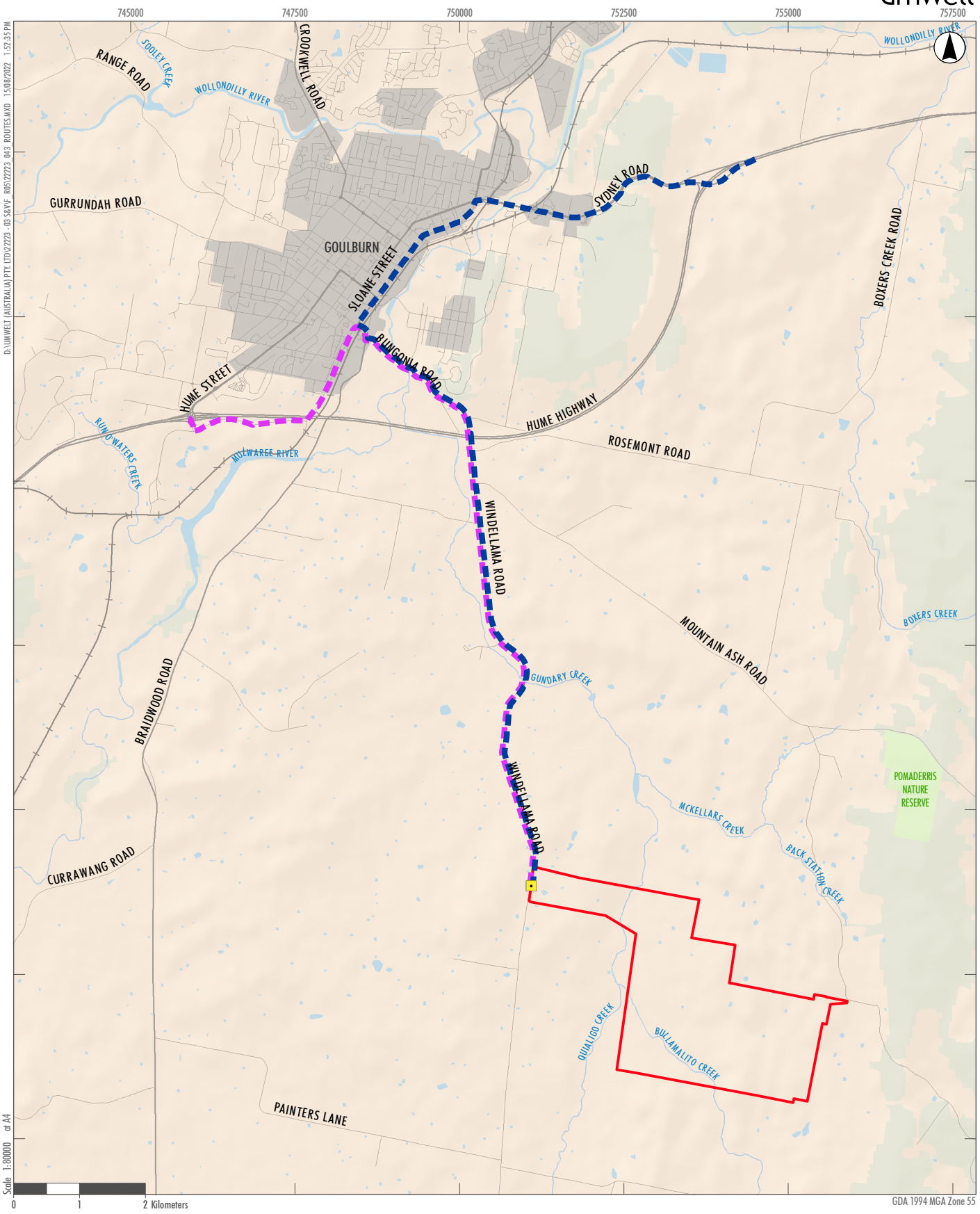
The Community has recommended consideration of the following mitigation strategies, which include:

- 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 – Garroorigang Road – Sloane Street – Braidwood Road - Bungonia Road – Windellama Road

FIGURE 4.2

Transport Route Options

Image Source: ESRI Basemap (2022) Data source: NSW DFSI (2021)

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]. W*ind 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 Gundary 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 Gundary 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 Road[9]] 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 Environmnetal 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 Gundary 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 Gundary 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).

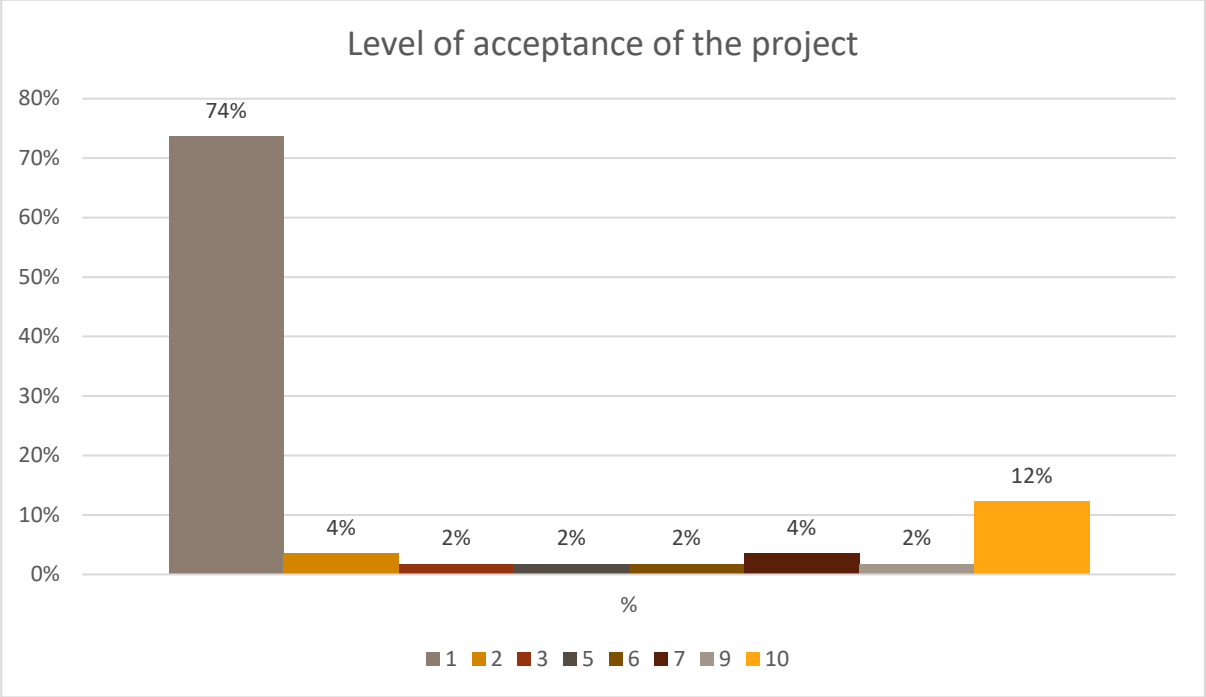


Figure 4.3 Level of acceptance of the Project

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.**

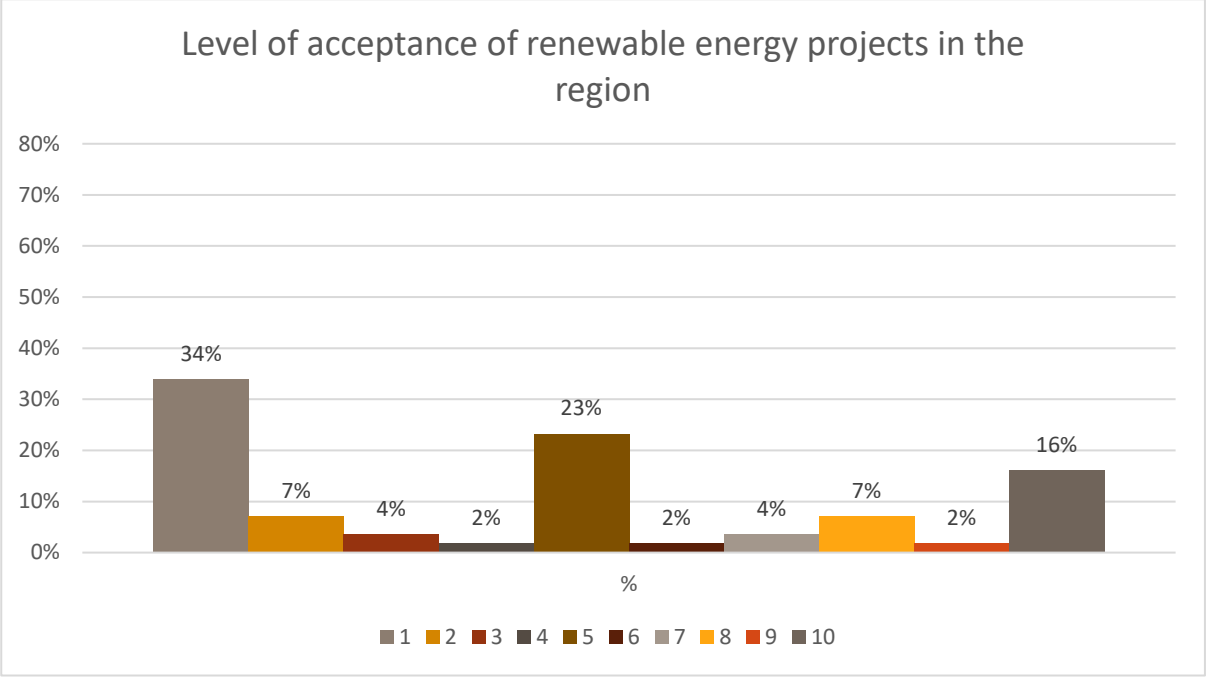


Figure 4.4 Level of acceptance of renewable energy projects in the region

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 Gundary 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= Construction & O=Operation)	+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 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
		Broader community, including users of Windellama Rd	C & O	-	Low		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= Construction & O=Operation)	+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= Construction & O=Operation)	+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= Construction & O=Operation)	+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= Construction & O=Operation)	+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= Construction & O=Operation)	+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= Construction & O=Operation)	+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= Construction & O=Operation)	+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 Gundary 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 Gundary 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.

7.0 References

ABC News. (2021). *Solar and wind farm sites may be restricted for major regional centres in NSW*. Retrieved from ABC News: https://www.abc.net.au/news/2021-10-15/solar-wind-farm-development-limits/100538634

ABC News. (2022). *Solar farm trial shows improved fleece on merino sheep grazed under panels*. Retrieved from https://www.abc.net.au/news/rural/2022-05-30/solar-farm-grazing-sheep-agriculture-renewable-energy-review/101097364

About Regional. (2021). *How long can Bungonia fly under the radar?* Retrieved from About Regional: https://aboutregional.com.au/how-long-can-bungonia-fly-under-the-radar/

ABS. (2016, June). *Australian Statistical Geography Standard* .

ABS. (2016). *Goulburn Mulwaree LGA Community Profile* . Retrieved from ABS: https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/LGA13310

ABS. (2016). *New South Wales Community Profile* . Retrieved from ABS: https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/1

ABS. (2016). *SEIFA Scores*. Retrieved from ABS: https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/2033.0.55.0012016?OpenDocument

ABS. (2021). *Goulburn Mulwaree 2021 Census All persons QuickStats*. Retrieved from https://dbr.abs.gov.au/region.html?lyr=sa3&rgn=10105

AEMO. (2022). *2022 Integrated System Plan.* Sydney: AEMO.

AEMO. (2022). *2022 Integrated System Plan.* AEMO.

Ag Econ Plus Consulting. (2018). *Southern Tablelands Regional Economic Development Strategy.* Southern Tablelands: Goulburn Mulwaree Council, Upper Lachlan Shire Council and Yass Valley Council .

AgEconPlus. (2018). *Southern Tablelands Regional Economic Development Strategy 2018-2022.* AgEconPlus Consulting.

AirDNA. (2022). *Market Report.*

Australian Labor Party. (2021). *Powering Australia.* Canberra: ALP.

Australian Museum Business Services . (2012). *Goulburn Mulwaree LGA Abriginal Heritage Study .* Australian Museum Business Services.

Australian Radiation Protection and Nuclear Safety Agency. (2022). *Australian Radiation Protection and Nuclear Safety Agency*. Retrieved from https://www.arpansa.gov.au/understanding-radiation/radiation-sources/more-radiation-sources/electricity

Barker Ryan Stewart Pty Ltd and Sue Rosen and Associates. (2018). *Heritage Study Review.* Retrieved from Barker Ryan Stewart Pty Ltd and Sue Rosen and Associates: file:///C:/Users/mbowman/Downloads/Heritage-Study-Review.pdf

Bradley, G., Deshpande, S., & Foxwell-Norton, K. (2022). *Climate Action Survey: Summary for Policy and Decision Making.* Griffith University.

Burdge, R. J. (2004). The concepts, process and methods of SIA. *The Social Ecology Press*. doi:ISBN 0-941042-35-9

Coakes, S., & Sadler, A. (2011). Utilizing a sustainable livelihoods approach to inform a social impact assessment practice. In F. Vanclay, & A. M. Esteves, *New Directions in Social Impact Assessment.* Edward Elgar.

Collector Wind Farm. (2022). *Collector Wind Farm*. Retrieved from https://www.collectorwindfarm.com.au/

Community Energy 4 Goulburn. (n.d.). *Community Energy 4 Goulburn*. Retrieved from Community Energy 4 Goulburn: http://www.ce4g.org.au/about.php

Department of Primary Industries. (2022). *Agricultural Mapping*. Retrieved from https://www.dpi.nsw.gov.au/agriculture/lup/agricultural-mapping

Department of Regional NSW. (2018). *Renewable Energy Pipeline.* Retrieved from Department of Regional NSW: https://www.regional.nsw.gov.au/__data/assets/pdf_file/0005/665528/REM2018_web_side2.pdf

Destination Southern NSW. (2020, July). *Tablelands Destination Development Plan 2020 to 2025.* Retrieved from https://www.yassvalley.nsw.gov.au/assets/2021/Council-Documents/20200713-DSNSW-Tablelands-DestinationDevelopmentPlan-Final-Web.pdf

DPIE. (2021). *Social Impact Assessment Guideline. State significant projects.* Sydney: NSW Department of Planning, Industry and Environment. Retrieved April 23, 2021, from https://shared-drupal-s3fs.s3-ap-southeast-2.amazonaws.com/master-test/fapub_pdf/00+-+Planning+Portal+Exhibitions/SIA/SIA+Publication+for+Publication+Online+20201022.pdf

DPIE. (2021). *Social Impact Assessment Guideline. State significant projects.* Sydney: NSW Department of Planning, Industry and Environment. Retrieved April 23, 2021, from https://shared-drupal-s3fs.s3-ap-southeast-2.amazonaws.com/master-test/fapub_pdf/00+-+Planning+Portal+Exhibitions/SIA/SIA+Publication+for+Publication+Online+20201022.pdf

Economy ID. (2022). *Goulburn Mulwaree Council area*. Retrieved from Economy ID: https://economy.id.com.au/goulburn/covid19-quarter-impacts

Edward River Council . (2022, February). *Edward River Council*. Retrieved from About Council : https://www.edwardriver.nsw.gov.au/Council/About-Edward-River-Council/About-Council

Edward River Council. (2020). *Local Strategic Plannign Statement February 2020.* Deniliquin: Edward River Council.

Envisage. (2022). *Preliminary visual impact ratings – Proposed Gundary solar farm .*

Gaur, V., & Lang,, C. (2020). *Property Value Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island.* University of Rhode Island Cooperative Extension.

Goulburn Community Energy Cooperative. (2022). *Info*. Retrieved from Goulburn Community Energy Cooperative: https://goulburnsolarfarm.com.au/info/

Goulburn Flight Training Academy . (2022). *Goulburn Airport*. Retrieved from Goulburn Flight Training Academy : https://gftc.com.au/goulburn-airport/

Goulburn Mulwaree Council. (2019). *Draft Social Sustainability Strategy and Action Plan 2019-2029.* Retrieved from Goulburn Mulwaree Council: file:///C:/Users/mbowman/Downloads/191126_-Draft-GMS-Social-Sustainability-Strategy-and-Action-Plan.pdf

Goulburn Mulwaree Council. (2020). *Local Strategic Planning Statement.* Goulburn: Goulburn Mulwaree Council.

Goulburn Mulwaree Council. (2022). *Councillors*. Retrieved from Goulburn Mulwaree Council: https://www.goulburn.nsw.gov.au/Council/Contact-a-Councillor

Goulburn Mulwaree Council. (2022). *Goulburn Mulwaree Council, NSW*. Retrieved from Higher than Average Growth: https://www.htag.com.au/nsw/nsw178-goulburn-mulwaree-council/

Goulburn Post . (2021). *New report reveals rental affordability forces more Goulburn families into financial hardship*. Retrieved from Goulburn Post : https://www.goulburnpost.com.au/story/7239727/new-report-reveals-rental-affordability-forces-more-goulburn-families-into-financial-hardship/

Goulburn Post . (2022, June 30). *The Goulburn Group criticises Taylor, Tuckerman over solar farm stance*. Retrieved from Goulburn Post : https://www.goulburnpost.com.au/story/7801348/accusations-fly-over-solar-farm-as-political-debate-heats-up/?cs=185

Goulburn Post. (2020, November). *Goulburn support for solar farm*. Retrieved from Goulburn Post.

Goulburn Post. (2021). *Bungonia's 'strong community' wins day against Jerrara Power plant*. Retrieved from Goulburn Post: https://www.goulburnpost.com.au/story/7427698/people-power-triumphs-in-battle-over-waste-to-energy-proposal/

Goulburn Post. (2021). *Goulburn MP takes up power projects with energy commissioner*. Retrieved from Goulburn Post: https://www.goulburnpost.com.au/story/7561926/energy-projects-take-off-in-region-as-residents-reel-from-impacts/

Goulburn Post. (2022, March). *Gundary Rural Fire Brigade Fire Station fire-shed officially opens*. Retrieved from https://www.goulburnpost.com.au/story/7636528/new-fire-shed-brings-community-together/

Goulburn Post. (2022, April 11). *Lightsource bp proposes large-scale solar farm near Goulburn*. Retrieved from Goulburn Post: https://www.goulburnpost.com.au/story/7691369/multi-million-dollar-solar-farm-will-change-gundary-plains-forever/

Grupe DW, N. J. (2013). Uncertainty and anticipation in anxiety: an integrated neurobiological and psychological perspective.

Low, S. (1992). Symbolic ties that bind: Place Attachment in the Plaza. In I. L. ltman, *Place Attachment: Human Behavior and* (pp. 165- 185). New York, NY, USA: Plenum.

Lowy Institute. (2021). *Lowy Institute Poll 2021.* Lowy Institute.

Murray Lower Darling Rivers Indigenous Nations. (n.d). *The Murray Darling Basin*. Retrieved from The Murray Darling Basin's Geography: https://www.mldrin.org.au/murray-darling-basin/

My Community Directory. (2022). *Mulwaree Aboriginal Community Inc*. Retrieved from https://www.mycommunitydirectory.com.au/New_South_Wales/Goulburn_Mulwaree/Aboriginal_Services/General_Aboriginal__Services/95351/223652/Mulwaree_Aboriginal_Community_Inc

National Institute of Environmental Health Sciences. (2022). *Electric & Magnetic Fields*. Retrieved from https://www.niehs.nih.gov/health/topics/agents/emf/index.cfm

NSW DPE . (2021). *Undertaking Engagement Guidelines for State Significant Developments.* Sydney: NSW DPE.

NSW DPE. (2020). *NSW Climate Change Policy framework.*

NSW DPIE. (2017). *Social impact assessment guideline.* Sydney: NSW Government.

NSW DPIE. (2017). *South East and Tablelands Regional Plan 2036.* Retrieved from NSW DPIE: https://www.planning.nsw.gov.au/~/media/Files/DPE/Plans-and-policies/south-east-and-tableland-regional-plan-2017-07.ashx

NSW DPIE. (2021). *Social Impact Assessment Guideline for State Significant Projects.* New South Wales Government.

NSW Government. (2021). *Renewable Energy Zones*. Retrieved from Energy NSW: https://www.energy.nsw.gov.au/renewables/renewable-energy-zones#-southwest-renewable-energy-zone-

NSW Government, Planning & Environment. (2017). *South East and Tablelands Plan 2036.* NSW Government.

NSW National Parks and Wildlife Service. (2022). *Bungonia National Park*. Retrieved from NSW National Parks and Wildlife Service: https://www.nationalparks.nsw.gov.au/visit-a-park/parks/bungonia-national-park

NSW Planning Portal . (2022). *State Significant Projects in Goulburn* . Retrieved from https://www.planningportal.nsw.gov.au/major-projects/search?combine=Goulburn&field_case_stage_value=All&field_local_council_area_value=

Goulburn+Mulwaree&field_development_value=All&field_industry_value=All&field_case_type_value=All

Office of Environment and Heritage. (2015). *Community Attitudes to Renewable Energy in NSW.* NSW Government .

Parliament of Australia. (2022, 05 10). *Mr Pat Conaghan MP*. Retrieved from Parliament of Australia: https://www.aph.gov.au/Senators_and_Members/Parliamentarian?MPID=279991

Parliment of Australia. (2022). *Hon Angus Taylor MP*. Retrieved from Parliment of Australia: https://www.aph.gov.au/Senators_and_Members/Parliamentarian?MPID=231027

Parliment of New South Wales. (2022). *The Hon. Wendy Margaret TUCKERMAN, MP*. Retrieved from https://www.parliament.nsw.gov.au/members/Pages/member-details.aspx?pk=2240

Profile ID Community. (2022). *Goulburn Mulwaree*. Retrieved from Profile ID Community: https://profile.id.com.au/goulburn

Real Estate Investar. (2022, June). *Investment Property Goulburn*. Retrieved from https://www.realestateinvestar.com.au/Property/goulburn

Real Estate Investar. (2022). *Investment Property Goulburn, NSW, 2580*. Retrieved from https://www.realestateinvestar.com.au/Property/goulburn

Regional Development Australia. (2022, February). *Regional Development Australia*. Retrieved from RDA-Riverina Region: https://rdariverina.org.au/our-region

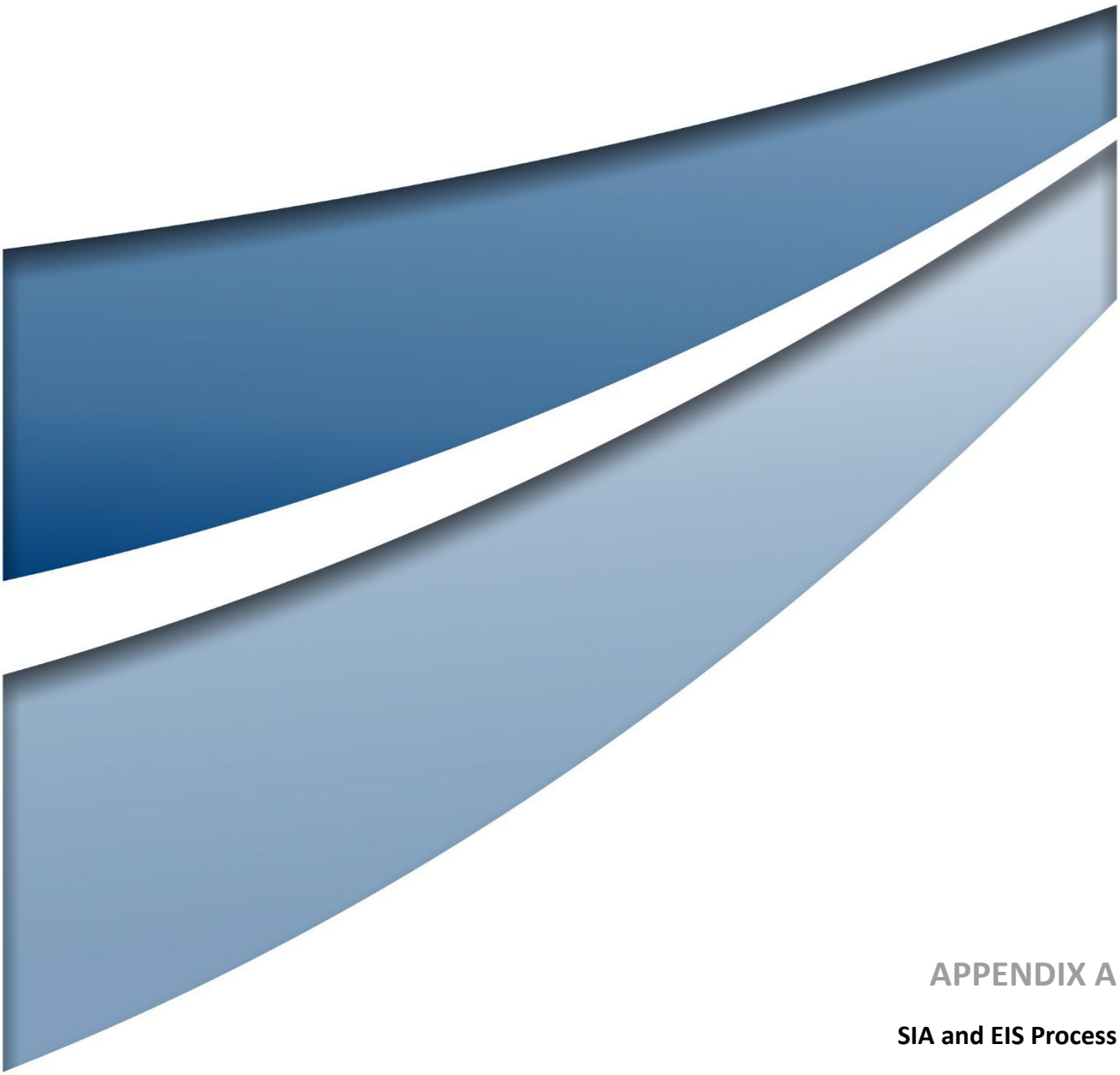
Solar Choice. (2021). *NSW flags tighter rules on where wind and solar farms can be built*. Retrieved from Solar Choice: https://www.solarchoice.net.au/blog/nsw-flags-tighter-rules-on-where-wind-and-solar-farms-can-be-built/

State of NSW and Office of Environment and Heritage. (2012). *The land and soil capability assessment scheme.* Sydney: Office of Environment and Heritage.

Tilt Renewables. (2022). *Crookwell Wind Farm*. Retrieved from https://www.tiltrenewables.com/assets-and-projects/Crookwell-Wind-Farm/

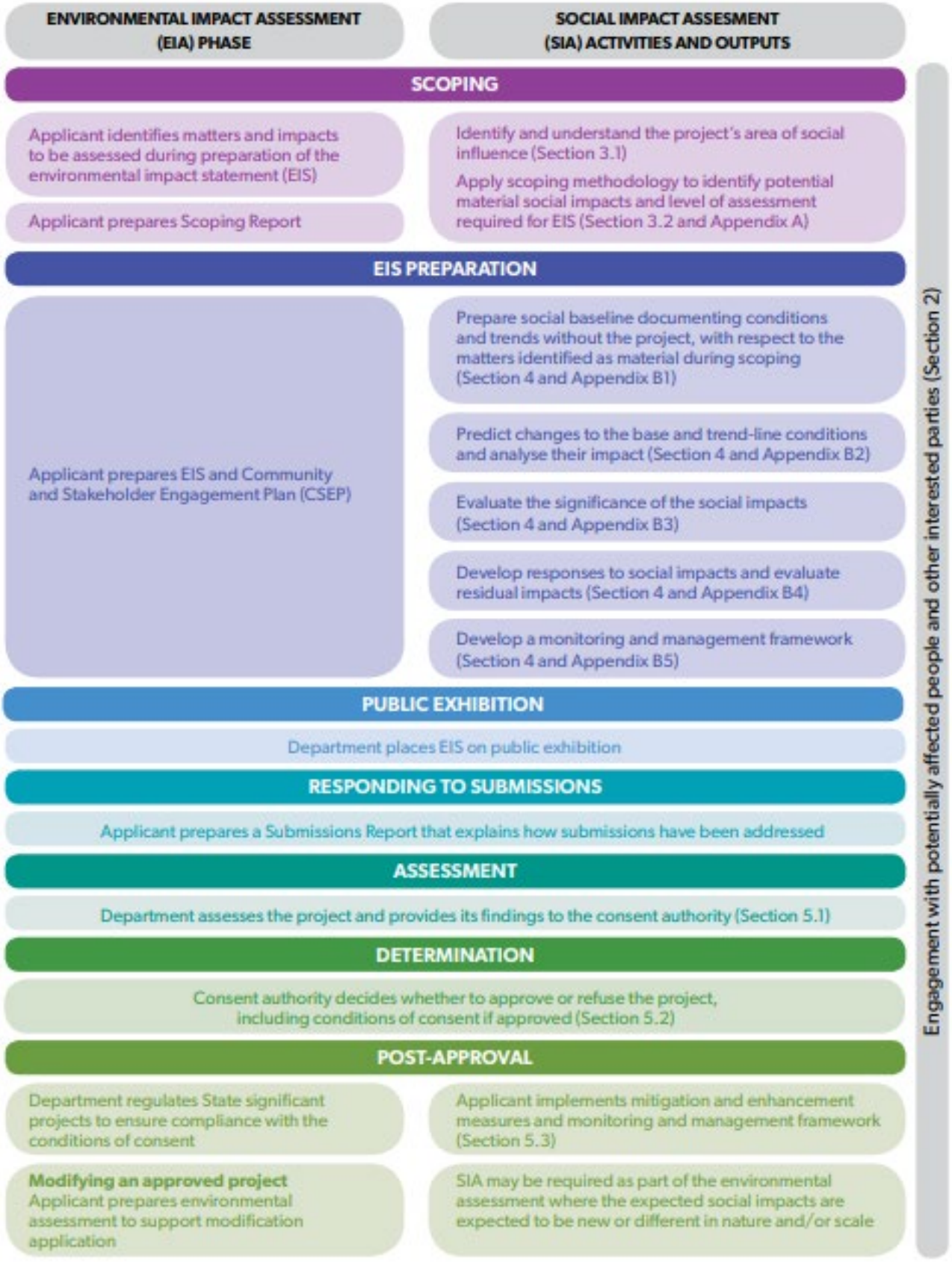
Water NSW. (2020, September). *Developments in the .* Retrieved from Water NSW: https://www.waternsw.com.au/__data/assets/pdf_file/0008/134747/CRP-Developments-in-Sydney-s-Drinking-Water-Catchments.PDF

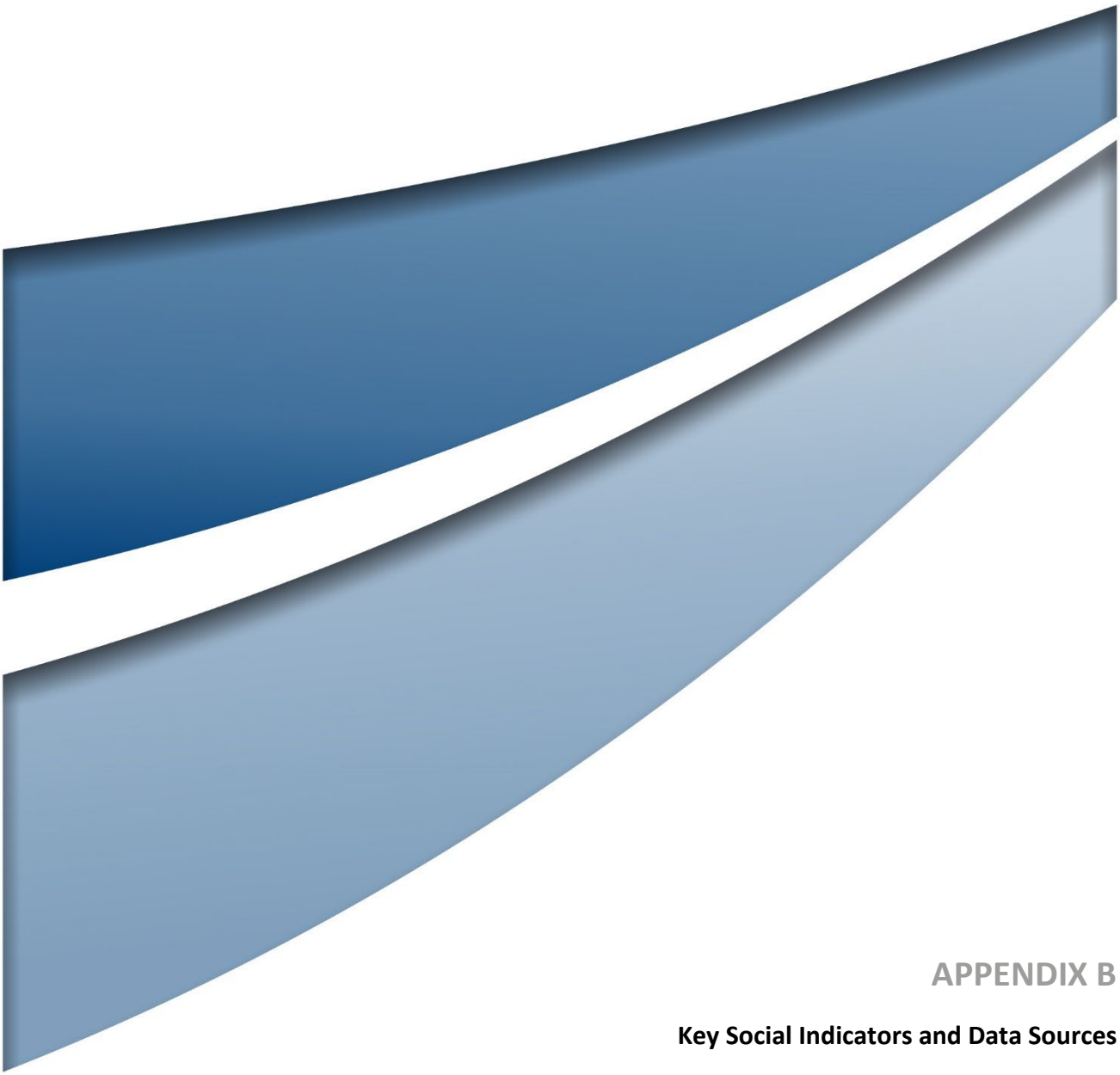
World Health Organisation . (2016). *Radiation: electromagnetic feilds*. Retrieved from https://www.who.int/news-room/questions-and-answers



APPENDIX A

SIA and EIS Process


ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PHASE
SOCIAL IMPACT ASSESMENT (SIA) ACTIVITIES AND OUTPUTS
SCOPING
Applicant identifies matters and impacts to be assessed during preparation of the environmental impact statement (EIS)
Applicant prepares Scoping Report
Identify and understand the project's area of social influence (Section 3.1)
Apply scoping methodology to identify potential material social impacts and level of assessment required for EIS (Section 3.2 and Appendix A)
EIS PREPARATION
Applicant prepares EIS and Community and Stakeholder Engagement Plan (CSEP)
Prepare social baseline documenting conditions and trends without the project, with respect to the matters identified as material during scoping (Section 4 and Appendix B1)
Predict changes to the base and trend-line conditions and analyse their impact (Section 4 and Appendix B2)
Evaluate the significance of the social impacts (Section 4 and Appendix B3)
Develop responses to social impacts and evaluate residual impacts (Section 4 and Appendix B4)
Develop a monitoring and management framework (Section 4 and Appendix B5)
PUBLIC EXHIBITION
Department places EIS on public exhibition
RESPONDING TO SUBMISSIONS
Applicant prepares a Submissions Report that explains how submissions have been addressed
ASSESSMENT
Department assesses the project and provides its findings to the consent authority (Section 5.1)
DETERMINATION
Consent authority decides whether to approve or refuse the project, including conditions of consent if approved (Section 5.2)
POST-APPROVAL
Department regulates State significant projects to ensure compliance with the conditions of consent
Applicant implements mitigation and enhancement measures and monitoring and management framework (Section 5.3)
Modifying an approved project
Applicant prepares environmental assessment to support modification application
SIA may be required as part of the environmental assessment where the expected social impacts are expected to be new or different in nature and/or scale
Engagement with potentially affected people and other interested parties (Section 2)



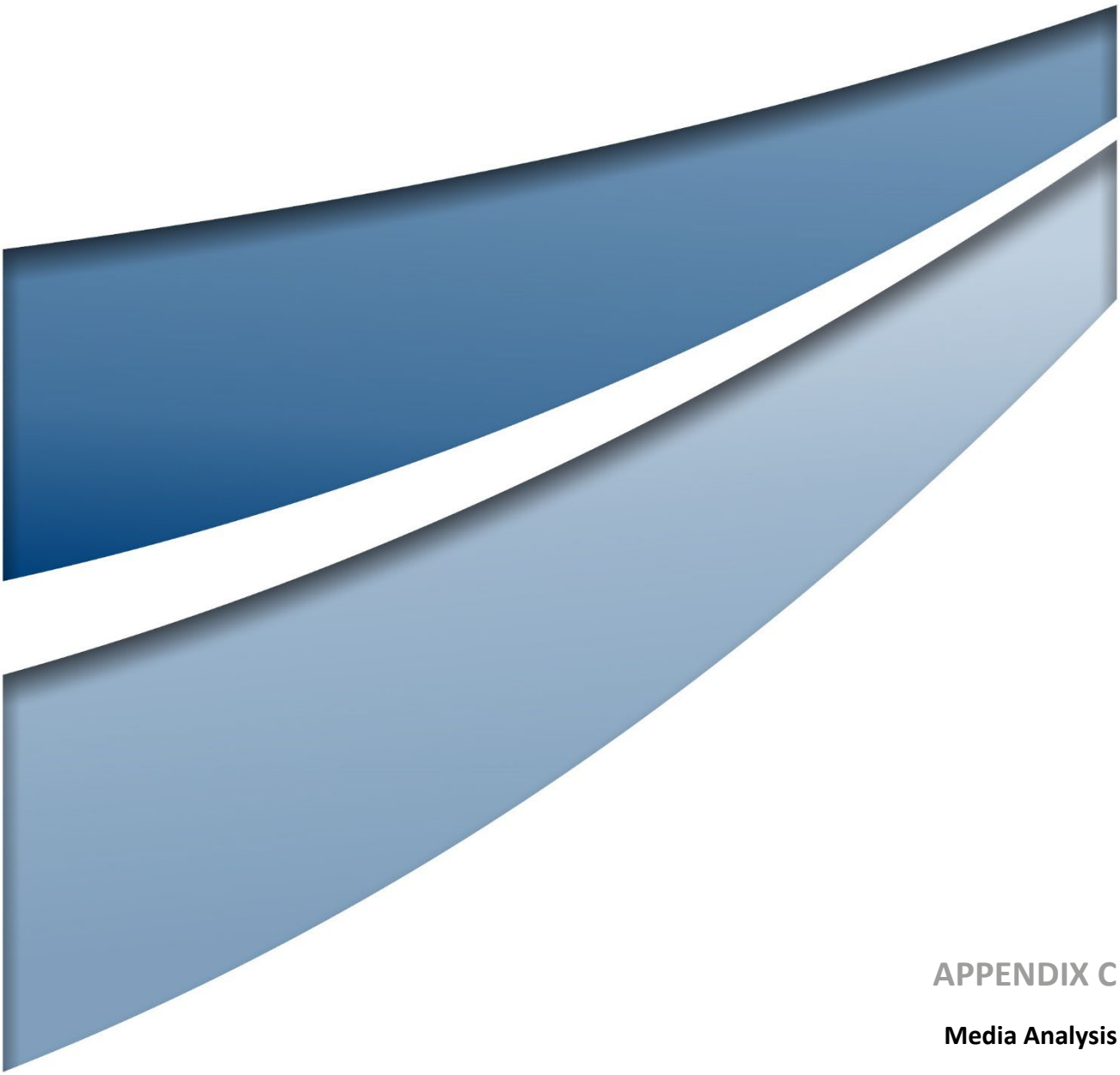
APPENDIX B

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?



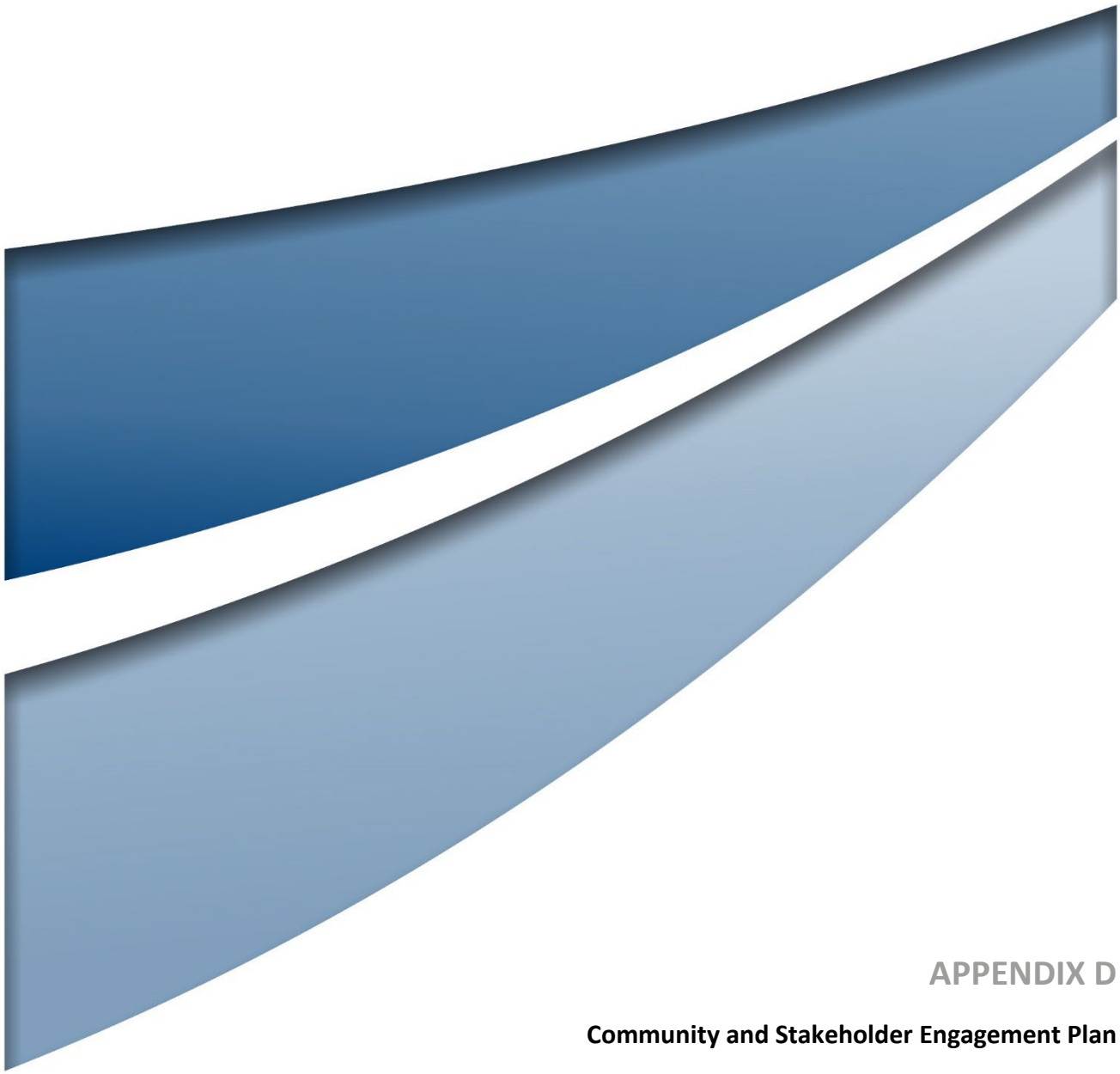
APPENDIX C

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. *Articles include:* Sun shines on Goulburn's community-owned solar farm (July 28, 2021). *Goulburn Post.* Goulburn solar farm raises $1.5 million in two weeks (November 6, 2020). *Goulburn Post.* Community solar farm receives welcome supercharge (March 12, 2020). *Goulburn Post*
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). *Articles include:* Goulburn MP takes up power projects with energy commissioner. (December 23, 2021). *Goulburn Post*

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). *Articles include:* NSW flags tighter rules on where wind and solar farms can be built (October 25, 2021). *Solar Choice*

Dates of article Sentiment of article	Key discussion points
2022 Neighbouring landholders and community groups share opposing views of the proposed Gundary 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 Gundary 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). *Articles Include:* Goulburn MP speaks out against proposed Gundary Plains solar farm as company responds to criticism. (June 23, 2022) The Goulburn Group criticises Taylor, Tuckerman over solar farm stance. (June 30, 2022). *Goulburn Post* Goulburn-based Community Voice for Hume backs Gundary Solar Farm (July 5, 2022). *Goulburn Post* Gundary solar farm near Goulburn sparks calls for planning changes. (July 8, 2022). *Goulburn Post*



APPENDIX D

Community and Stakeholder Engagement Plan

umwelt
Environmental & Social Consultants

lightsource bp

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

Project Director:	Malinda Facey
Project Manager:	Marion O'Neil
Technical Director:	Dr Sheridan Coakes
Technical Manager:	Dr Kate Raynor
Report No.	22223/R02
Date:	August 2022

Environmental & Social Consultants

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.

Document Status

Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date

Table of Contents

Figures

Tables

1.0 Introduction

The proposed Gundary 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 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 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 Gundary 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 *identified* and have enough *understanding* of the proposed project, how it may affect them, the development of the EIA, and how they can participate • collect qualitative and quantitative *data, evidence and insights* 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 *may be experienced from their perspectives* • consider the views of people in a meaningful way, and use these insights to *inform project planning* and design, mitigation and enhancement measures, and monitoring and management frameworks • provide opportunities for people to *collaborate* on project design matters and provide input into the identification and consideration of preferred solutions • *confirm* data, assumptions, findings and recommendations • ensure people know how their *input has been considered,* and what strategies will be put in place to address their concerns. • help understand how *other specialist studies* 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

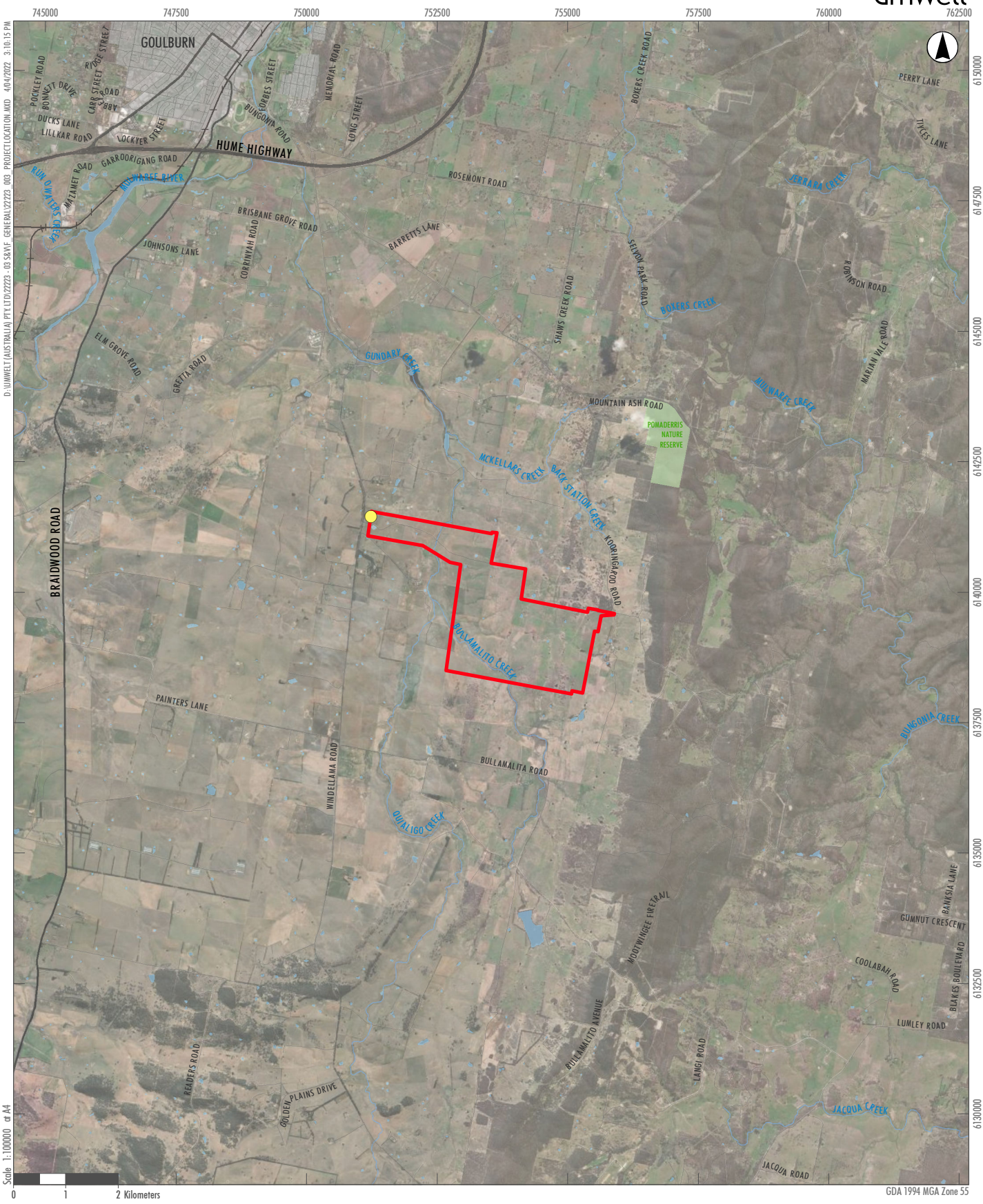
The Project will involve the construction, operation, maintenance and decommissioning of a 400 megawatt (MW) solar farm, BESS, associated infrastructure such as operation and maintenance buildings, civil works, and electrical infrastructure required to connect the Project to the electricity network. The Project will have direct access of Windellema Road.

The Project is located at 1013 Windellama Road, Gundary NSW 2580, within the Gundary 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

Image Source: ESRI Basemap (2022) Data source: NSW DFSI (2021)

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 Gundary Solar Farm.

2.3 Social Context

The Gundary Solar Farm Project site is located in the small suburb of Gundary, which has a population of approximately 270 people (approximately 109 households) with a median age of 42 years (ABS, 2016).

Gundary 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, Tirrannaville, Quialigo 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 Gundary 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 Gundary 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, Gundary is less likely to have Aboriginal and Torres Strait Islander people. The top occupation in Gundary 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).

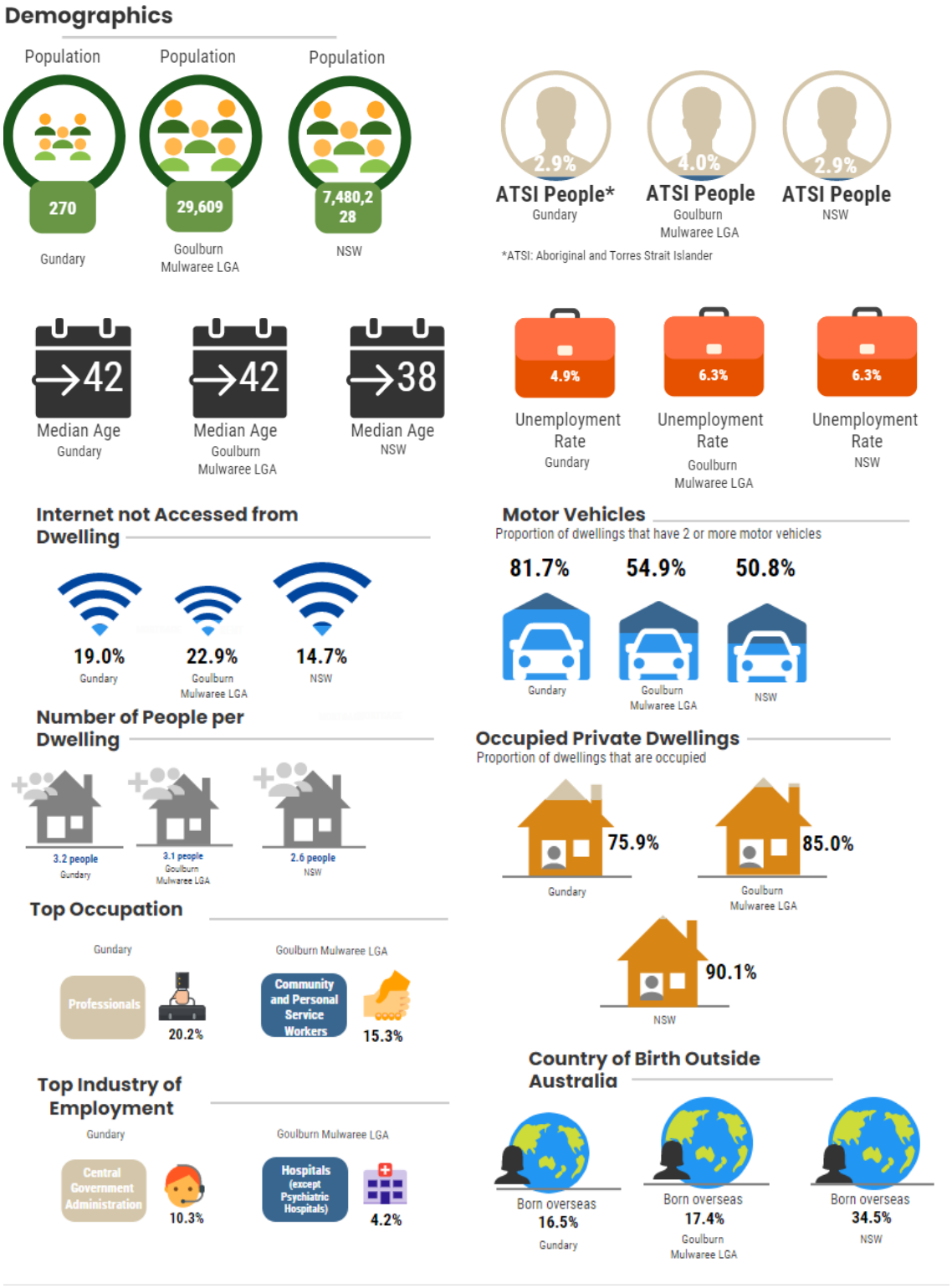


Figure 2.2 Community Demographic Snapshot

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 detraction 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.

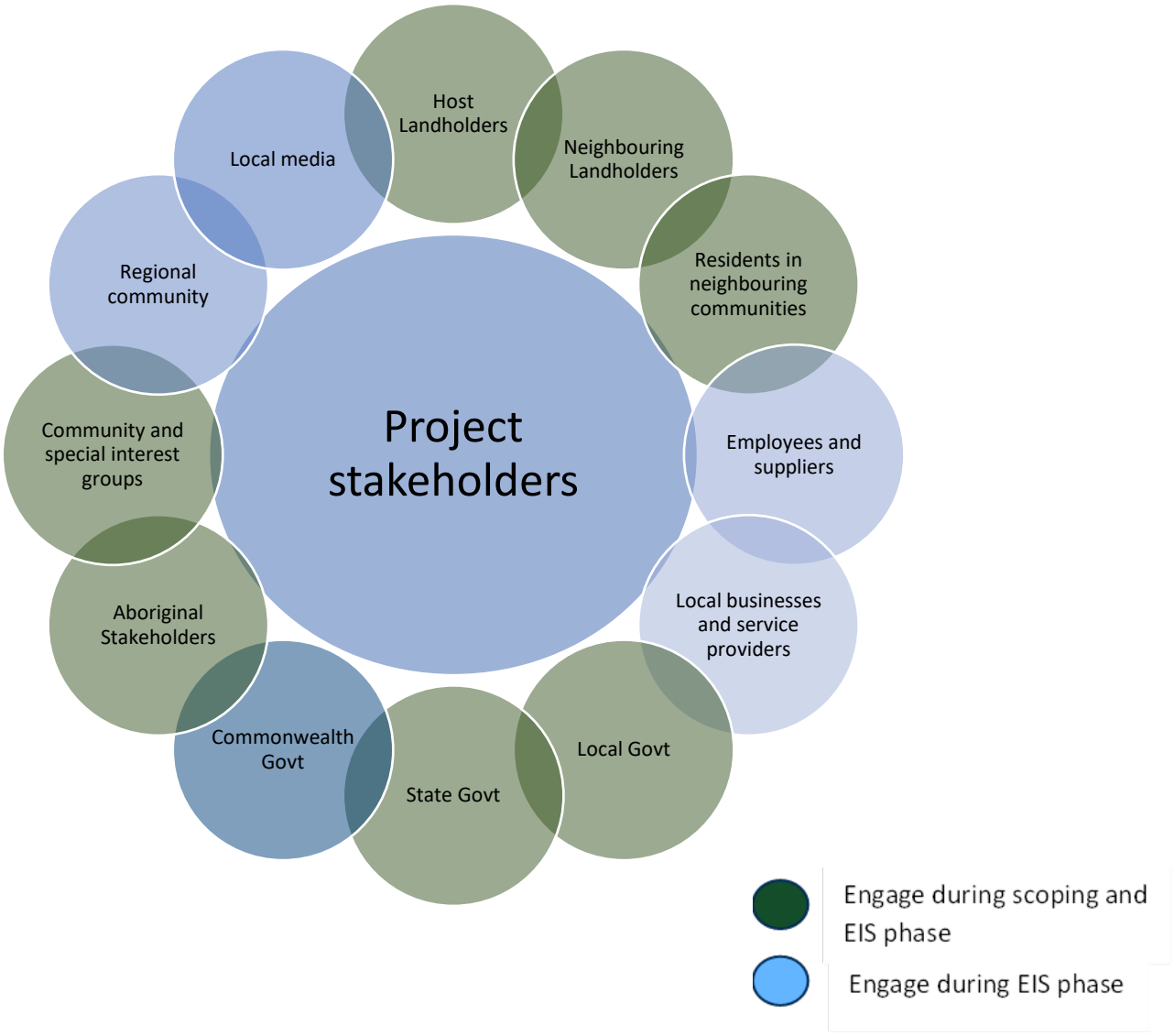


Figure 3.1 **Stakeholder groups**

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 Spectrum[1] as per **Figure 3.2.**

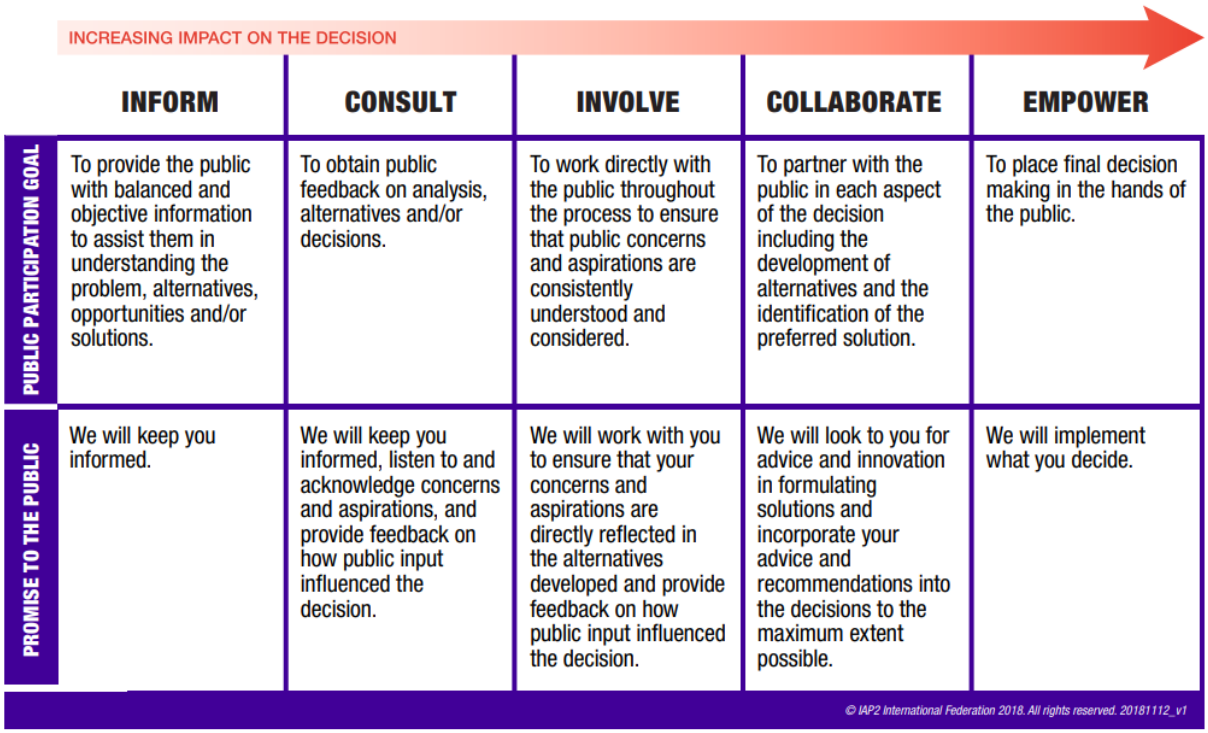


Figure 3.2 IAP2 Public Participation Spectrum

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 Gundary 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 Gundary, 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 Gundary 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 Gundary 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 Gundary 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 Gundary 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

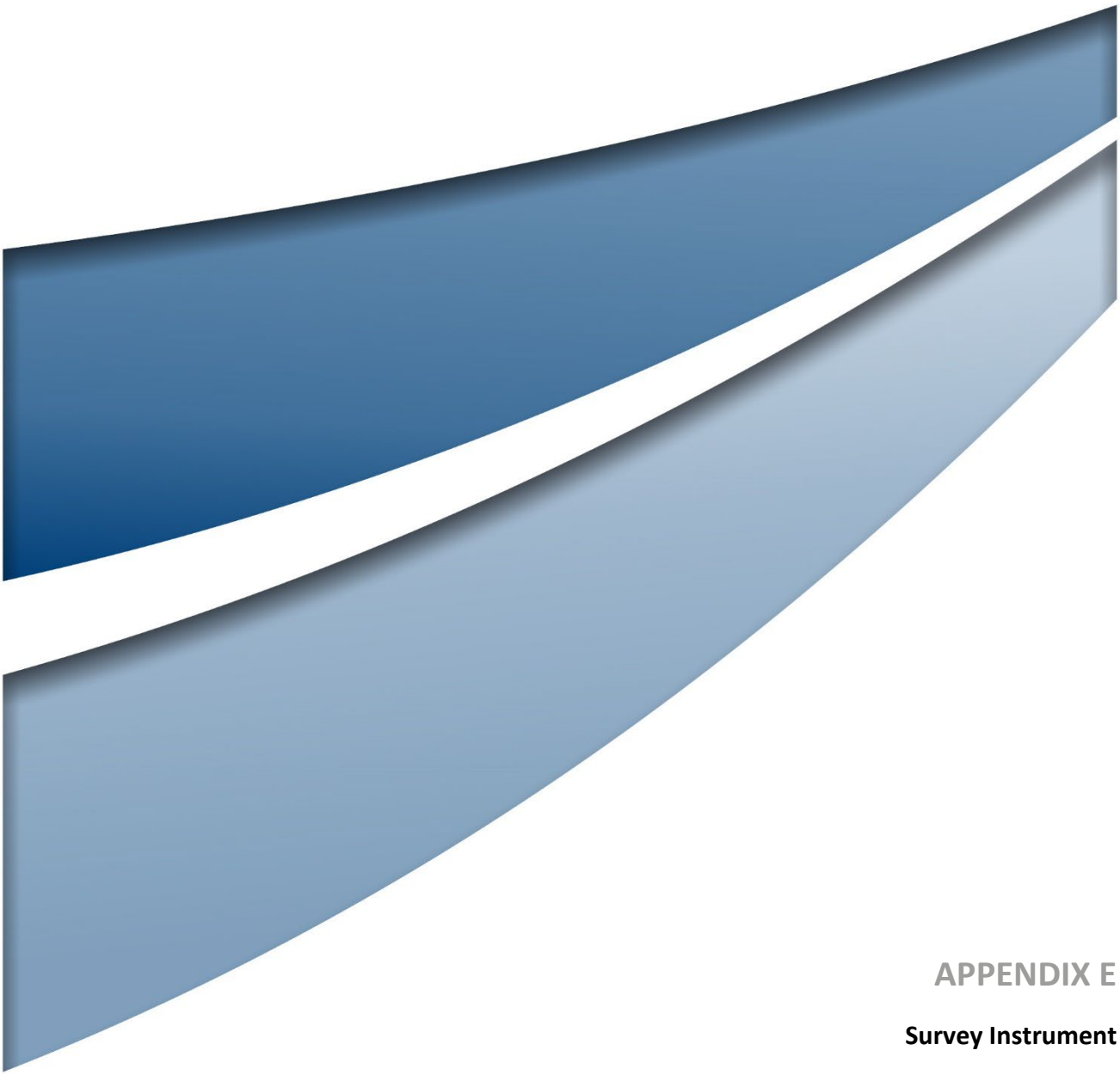
Engagement Mechanism	Detail	Alignment with Objectives (Section 1.1)	Stakeholder Group	Umwelt Responsibilities	Lightsource bp Responsibilities	Timing	Required Input
	discuss options around mitigation measures, and evaluate any specific sensitivities to be experienced by each landholder.		within 1km of 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			

umwelt
Environmental & Social Consultants

Umwelt (Australia) Pty Limited

T| 1300 793 267 E| info@umwelt.com.au www.umwelt.com.au



APPENDIX E

Survey Instrument

Gundary 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?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 Gundary 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 Gundary 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.

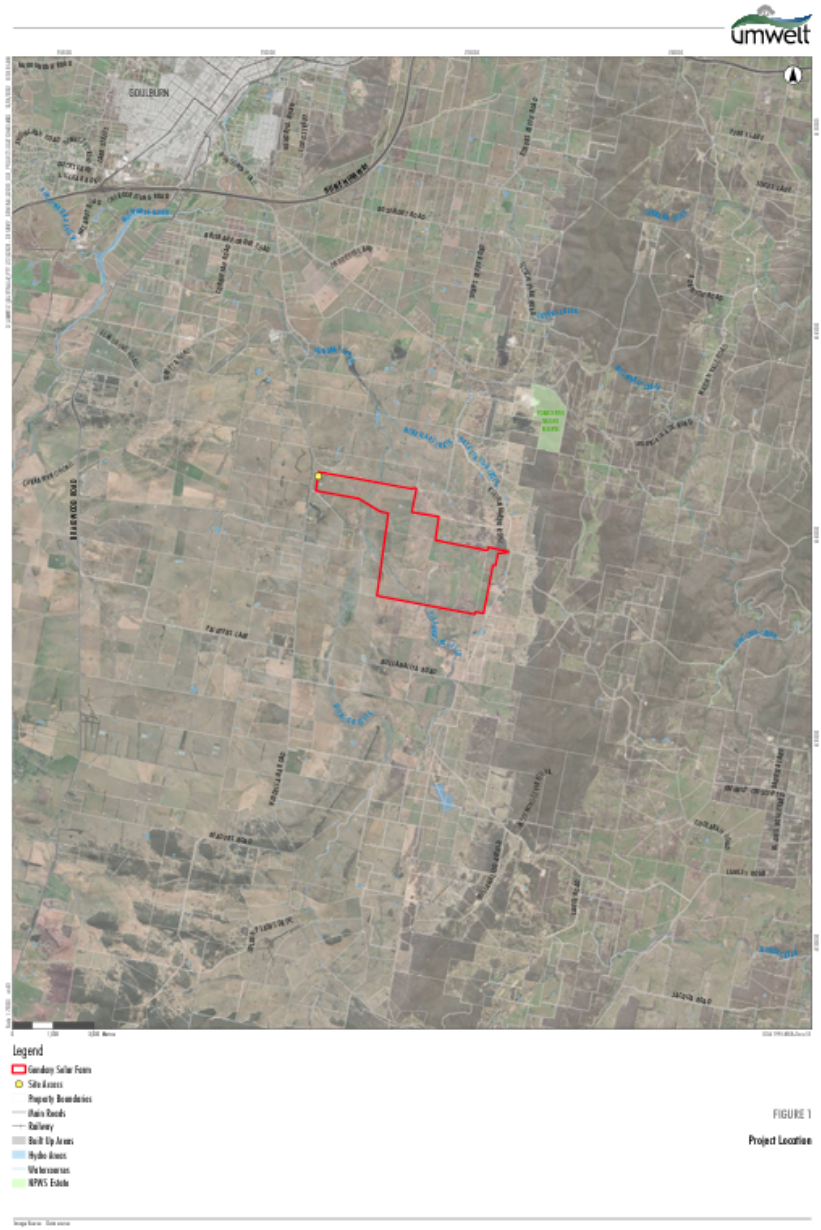
How can I remain involved?

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 Gundary 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

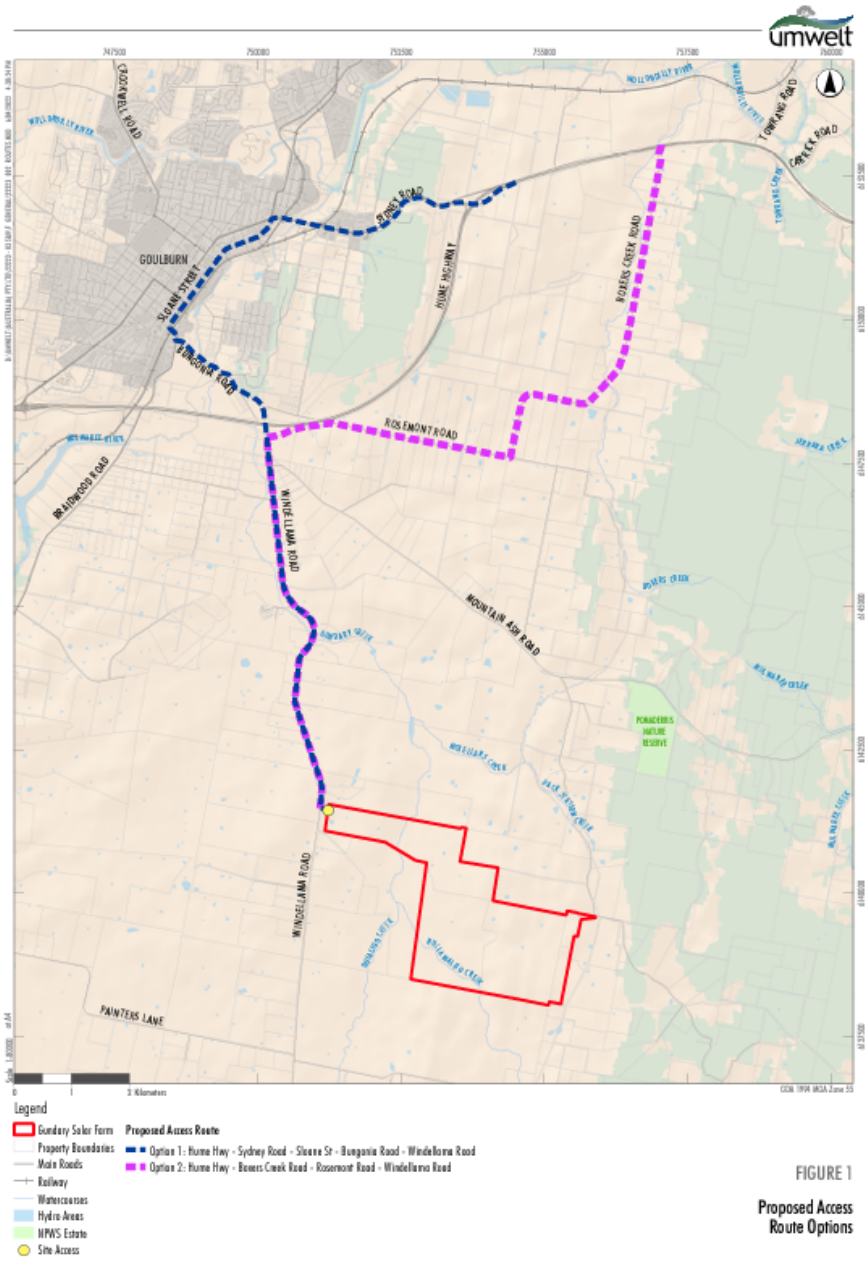


FIGURE 1

Proposed Access Route Options

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 Gundary Solar Farm, 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

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?

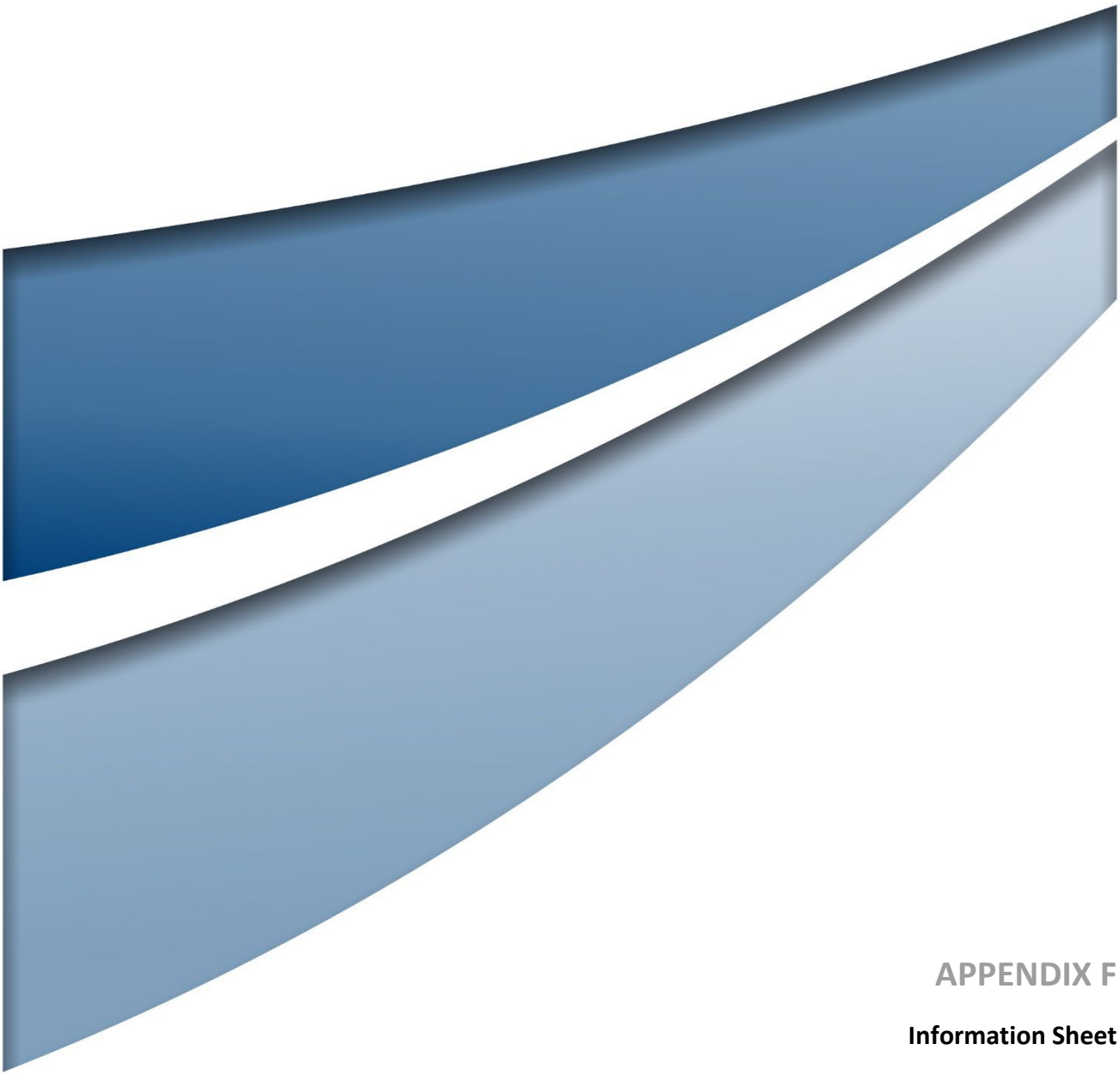
- ☐ Newsletter
- ☐ Website
- ☐ Letters
- ☐ Email
- ☐ Personal meeting
- ☐ Open day
- ☐ Community meeting
- ☐ Local newspaper
- ☐ Local radia
- ☐ I would consider joining a Community Reference Group
- ☐ Other

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

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.

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

lightsource bp

t 1300 873 575
e gundarysolar@lightsourcebp.com
www.lightsourcebp.com

About the Project

What assessments will be required?

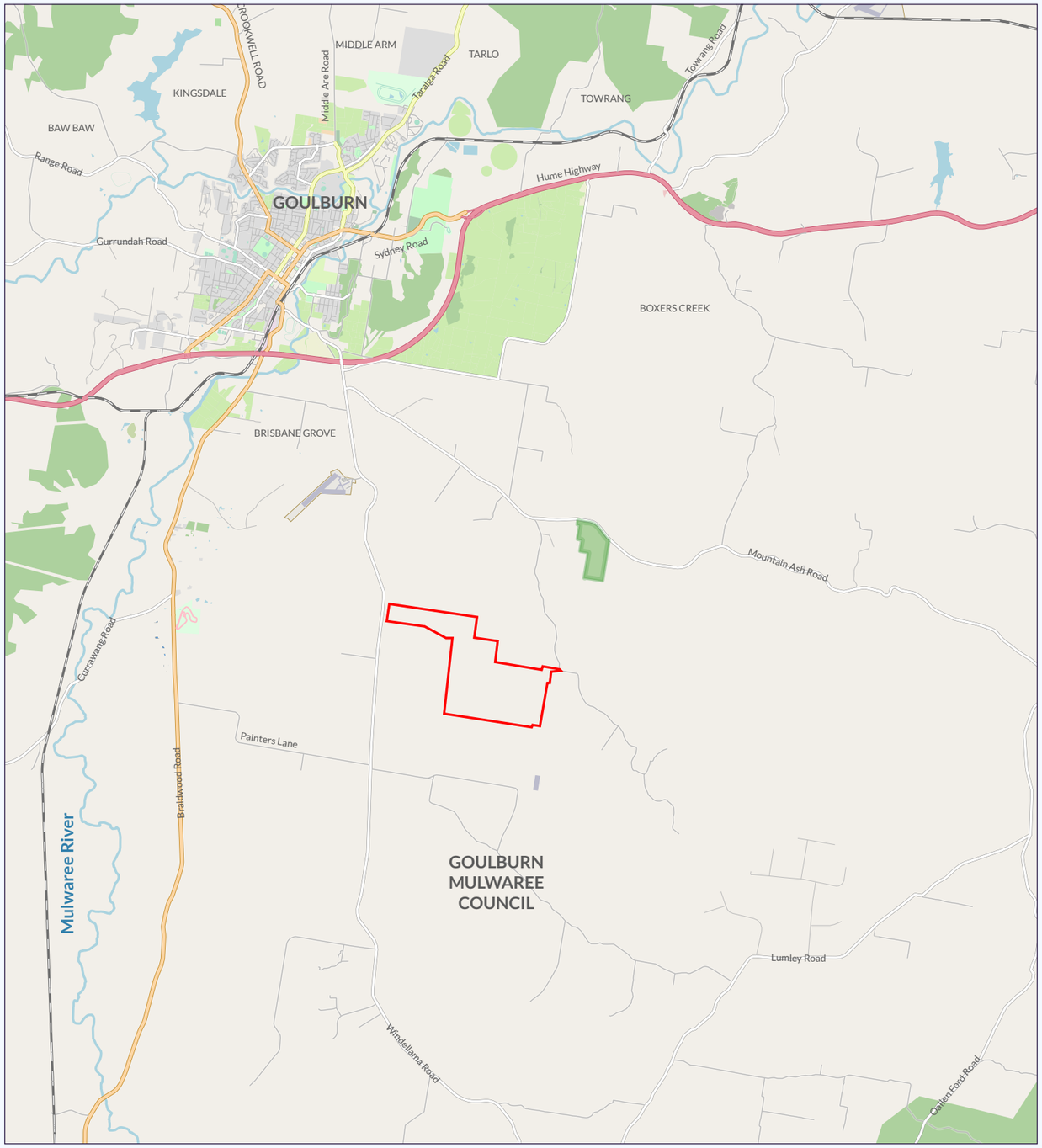
The Project will be assessed under the NSW State Significant Development planning and approvals pathway, which is outlined in Figure 2. The Project is currently in its Scoping Phase (the initial planning stages), which includes preliminary environmental and social assessments. These are planned to be 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**

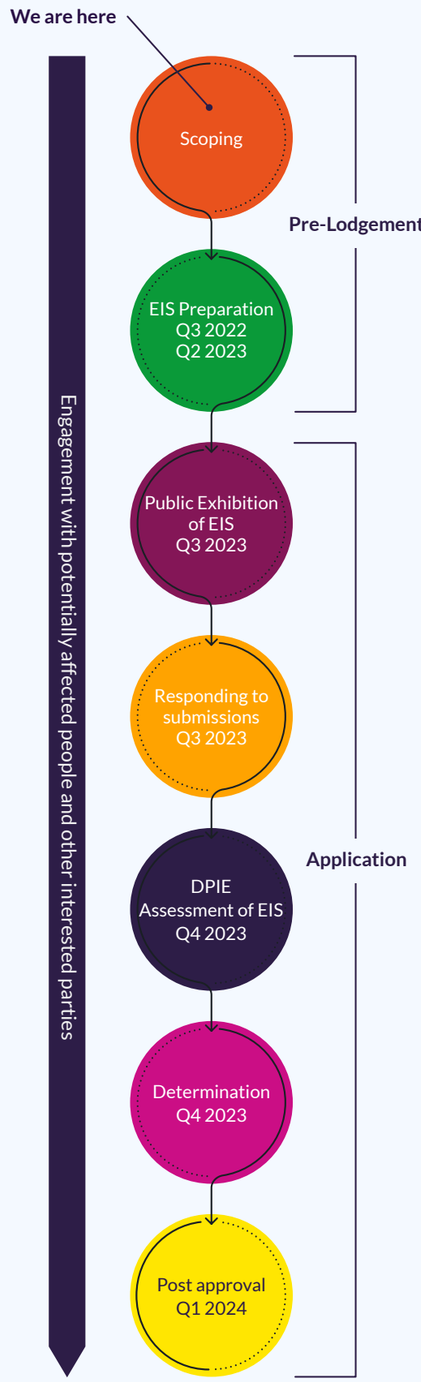
The Social Impact Assessment (SIA) will address matters important to the community by understanding the views, issues, interests, and concerns in relation to the Project through the Community Consultation Program, which commenced in March 2022.

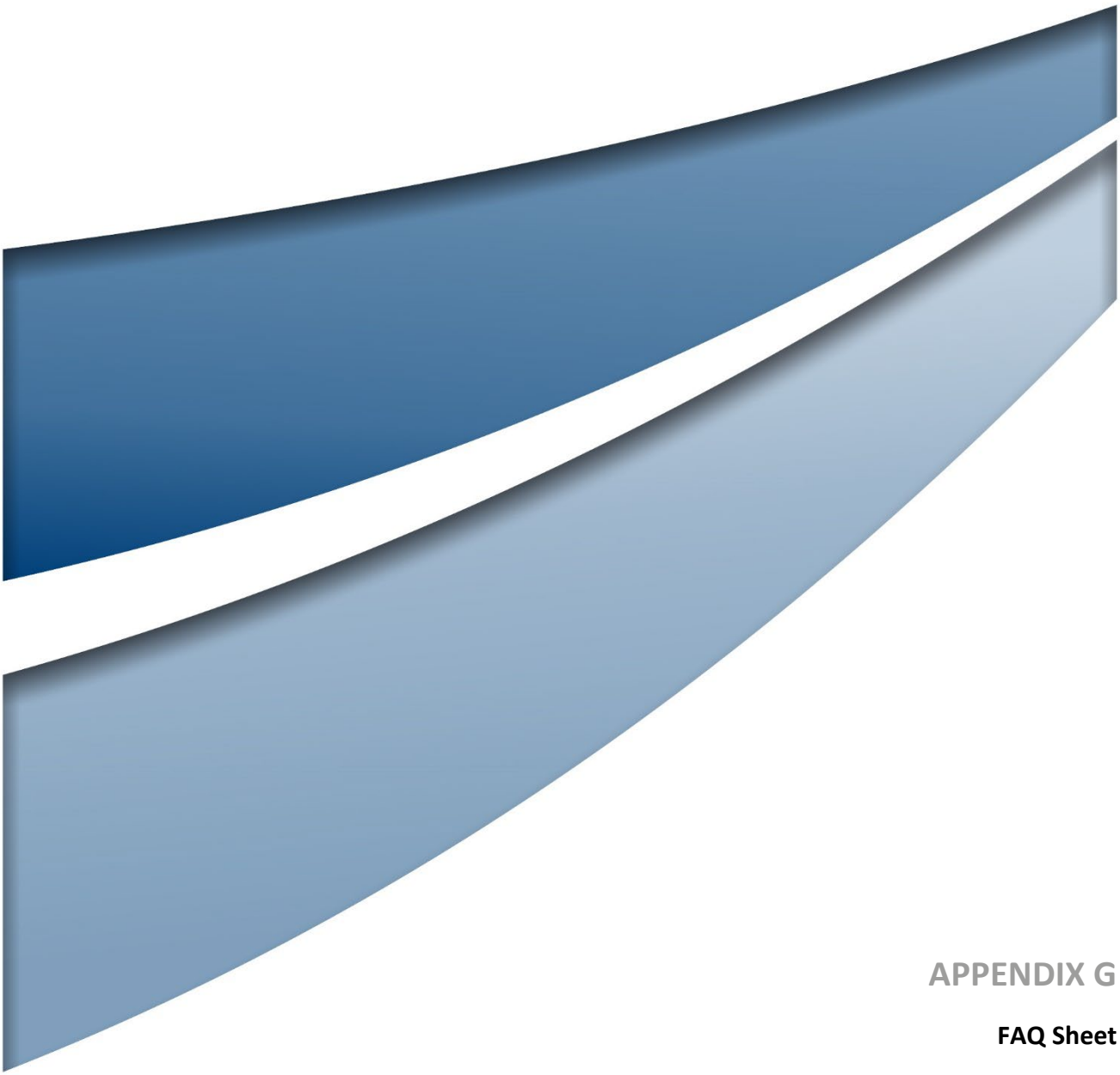
Figure 1 – *Project locality*



Gundary 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/gundary-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.

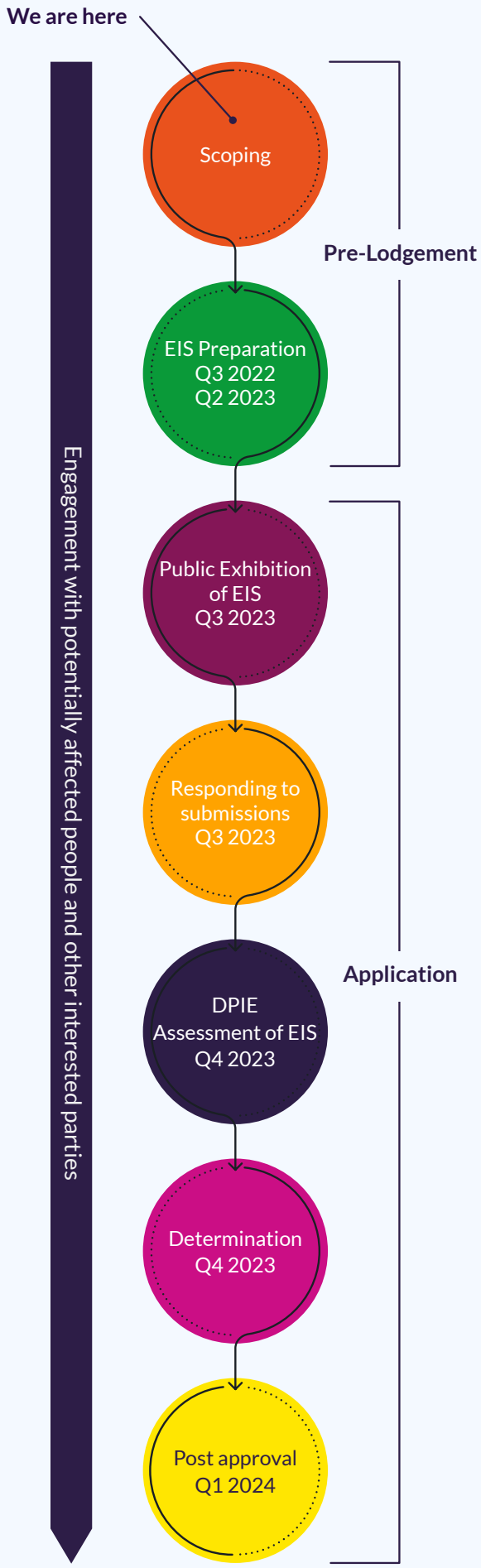
Assessment process

Q: Where is the project up to and what happens next?

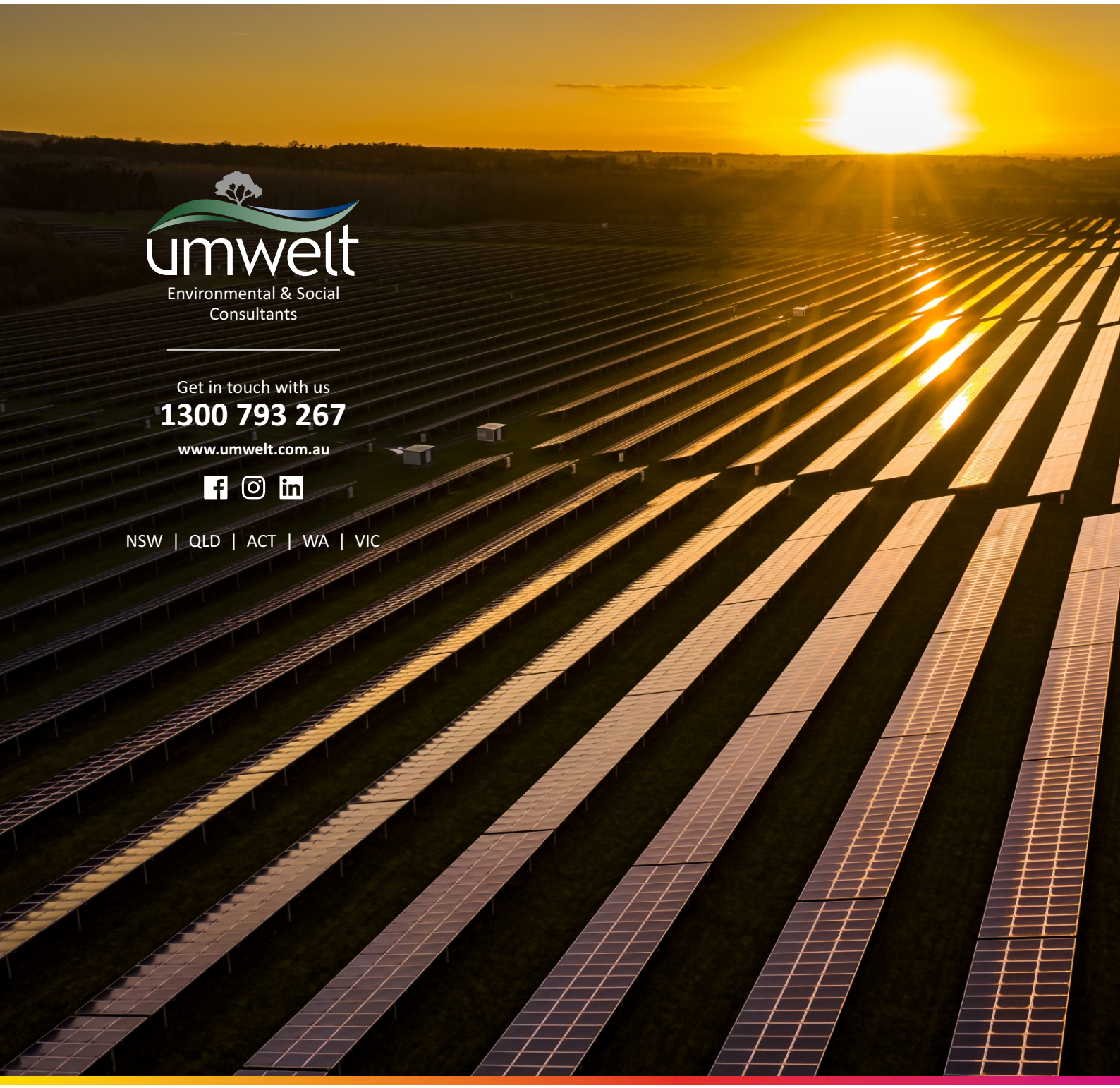
The Gundary Solar Farm is still an early-stage proposal which is in the scoping stage of the development process. Lightsource bp is expecting to submit the Scoping Report in Q3 2022 to the NSW Department of Planning and Environment (DPE). The Scoping Report will include preliminary environmental assessments, 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.arpansa.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



umwelt
Environmental & Social Consultants

Get in touch with us
1300 793 267
www.umwelt.com.au

NSW | QLD | ACT | WA | VIC