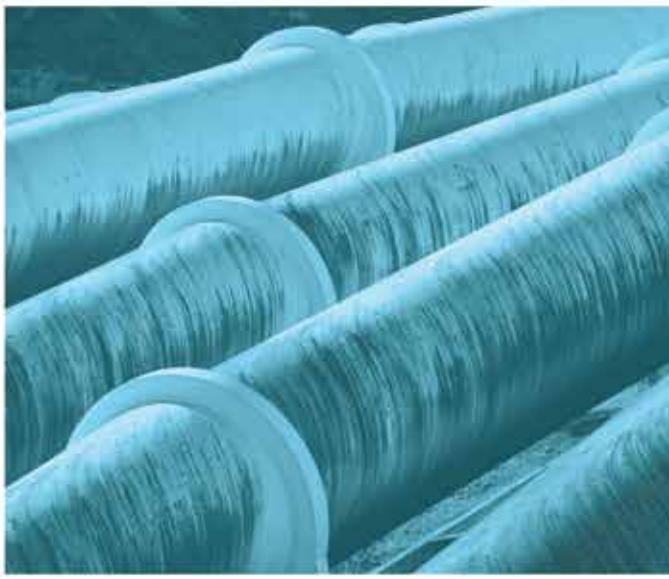



Sandy Creek Solar Farm

Scoping Report

Prepared for Lightsource bp
April 2022

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Sandy Creek Solar Farm

Scoping Report

Report Number

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Client

Lightsource bp

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Definitions and Abbreviations

Item	Definition
ABS	Australian Bureau of Statistics
AC	Alternating current
ACHA	Aboriginal cultural heritage assessment
AHIMS	Aboriginal Heritage Information Management System
BESS	Battery energy storage system
CEEC	Critically endangered ecological community
CWO	Central-West Orana
DC	Direct current
Development footprint	The boundary of the Project, which would encompass all operational components of the Project. This will likely encompass the whole Project site, with any key areas of constraint excluded, and will be refined and confirmed as the development progresses.
DPI	Department of Primary Industries
DPE	Department of Planning and Environment (formerly Department of Planning, Industry and Environment)
DPIE	Department of Planning, Industry and Environment (now Department of Planning and Environment)
EEC	Endangered ecological community
EIS	Environmental Impact Statement
EMM	EMM Consulting Pty Limited
EnergyCo	Energy Corporation of NSW
EPA	NSW Environment Protection Authority (EPA)
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ha	hectares
km	kilometres
kV	Kilovolt
LEP	Local Environmental Plan
LGA	Local government area
LSbp	Lightsource bp Renewable Energy Investments Limited
MNES	Matters of national environmental significance
MWp	Megawatts peak, the generation capacity of the Project at the source
MW AC	Megawatts AC, the generation capacity of the Project at the inverter
MVA	Mega Volt Amps, the generation capacity of the Project at the substation transformer
NSW	New South Wales
PCT	Plant community type
PMST	Commonwealth Protected Matters Search Tool

Item	Definition
Project site	Area of consideration during the scoping phase. The development footprint will likely encompass the whole project site, with any key areas of constraint excluded.
PV	Photovoltaic
REZ	Renewable Energy Zone
SEARs	Secretary's Environmental Assessment Requirements
SIA	Social impact assessment
SIA study area	Comprises the local area surrounding the Project, including the State Suburb Codes (as defined by the Australian Bureau of Statistics) of Elong Elong, Goolma, Dunedoo, Dubbo, and Gulgong
SRD SEPP	*State Environmental Planning Policy (State and Regional Development)* 2011 (now consolidated into the SEPP (Planning Systems) 2021)
SSD	State significant development
T-Link	Transmission link - NSW Energy Corporation's planned new 500/330kV transmission line, substation(s) and related infrastructure within the CWO REZ
TEC	Threatened ecological communities
The Project	Sandy Creek Solar Farm; a large scale solar photovoltaic generation facility along with battery storage and associated infrastructure

1 Introduction

1.1 Purpose of this report

Lightsource bp Renewable Energy Investments Ltd (LSbp) proposes to lodge a development application for the Sandy Creek Solar Farm, a large scale solar photovoltaic (PV) generation facility along with battery storage and associated infrastructure (the Project). The Project is located approximately 25 kilometres (km) south-west of the township of Dunedoo, in the Central West of New South Wales (NSW) within the local government areas (LGAs) of Warrumbungle Shire Council and Dubbo Regional Council and is within the Central-West Orana Renewable Energy Zone (CWO REZ) (refer to Figure 1.1).

The Project is State significant development (SSD) pursuant to the *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP) (now consolidated into the *SEPP (Planning Systems) 2021*) (refer Section 4.1), and approval for the Project is required under Part 4, Division 4.7 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). An SSD application for the Project is required to be accompanied by an Environmental Impact Statement (EIS).

This Scoping Report has been prepared by EMM Consulting Pty Limited (EMM) on behalf of LSbp to support a request to the Department of Planning and Environment (DPE) for the Secretary's Environmental Assessment Requirements (SEARs) for the Project. The SEARs will identify the matters to be assessed in the EIS and the level of assessment required.

This Scoping Report has been prepared in accordance with the recently released DPIE guidelines: *State significant development guidelines - preparing a scoping report: Appendix A to the state significant development guidelines* (DPIE 2021a) (the Scoping Report Guidelines).

1.2 The applicant

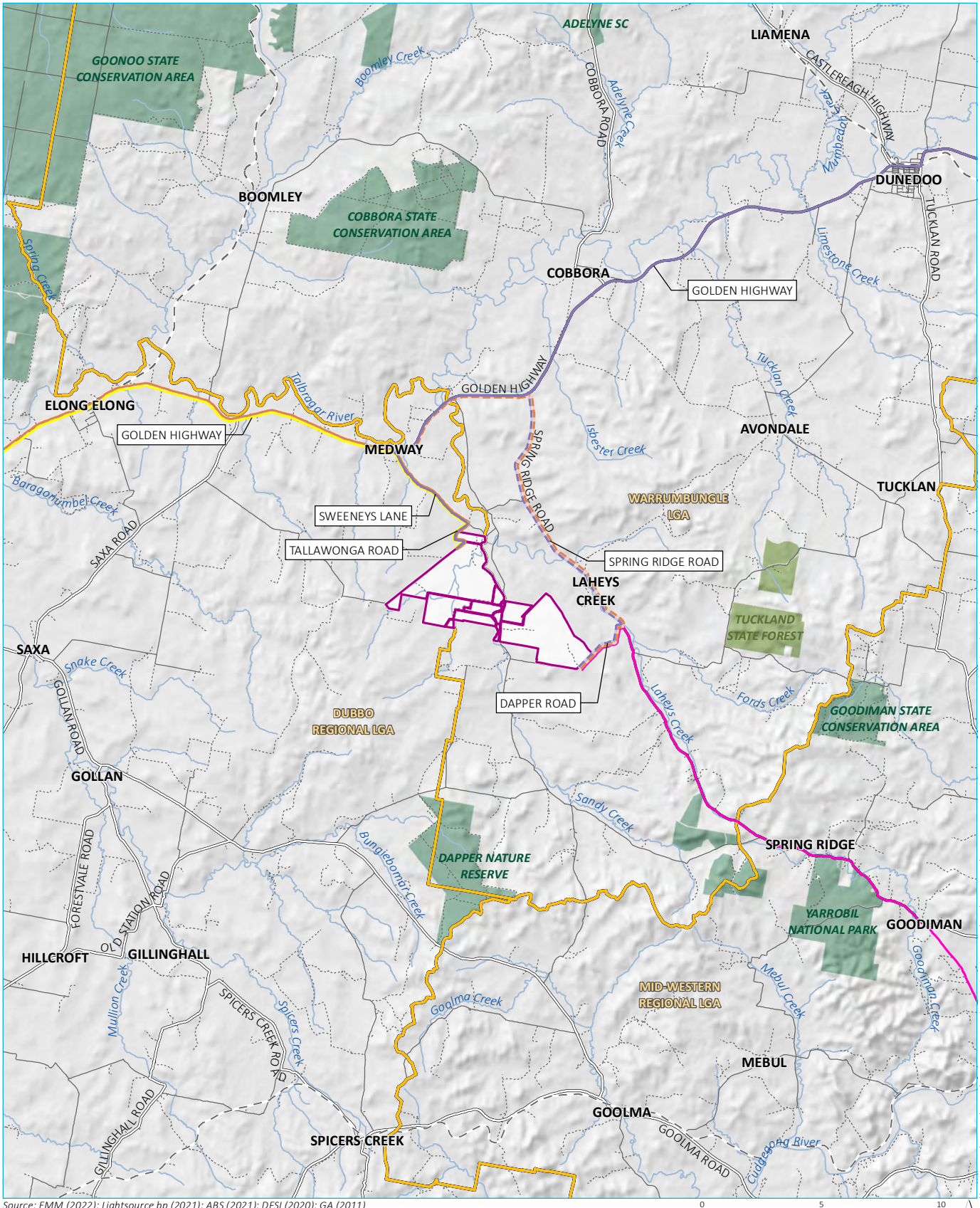
The applicant for the Project is Lightsource Development Services Australia Pty Ltd, a subsidiary of LSbp, formed in 2017 as a partnership between the European solar farm developer Lightsource and global energy company, bp. LSbp is a global leader in the development, management, and operation of solar projects and has successfully progressed projects from early-stage development through to operation. Relevant details for Lightsource Development Services Australia Pty Ltd are provided in Table 1.1.

LSbp 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. LSbp first entered the Australian market in 2018 and will shortly start commencing operation of their 200 megawatt-peak (MWp) site in Wellington, NSW. LSbp currently have other projects across Australia that are in the development and construction phases, which include:

- West Wyalong Solar Farm, NSW (108 MWp): planning approval received in November 2019. Construction underway, to be completed in mid 2022;
- Woolooga Solar Farm, QLD (210 MWp): planning approval received in March 2020. Construction underway, to be completed in mid 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 2023;
- Wungnhu Solar Farm, VIC (90 MWp): acquired by LSbp 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. Financial close expected in 2022, with construction to be completed in 2023;
- 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 assessment; and
- Goulburn River Solar Farm, NSW (520 MWp): Secretary's Environmental Assessment Requirements received February 2022. Environmental Impact Statement in preparation.

Table 1.1 Applicant details

Requirement	Detail
Applicant	Lightsource Development Services Australia Pty Ltd
ABN	26 623 301 799
Applicant address	Level 10, 420 George Street, NSW 2000
Contact	Diana Mitchell
Contact details	Diana.mitchell@lightsourcebp.com



Source: EMM (2022); Lightsource bp (2021); ABS (2021); DFSI (2020); GA (2011)

0 5 10 km

GDA 1994 MGA Zone 55

N

Project

Transport

- Heavy vehicle access route (from Dubbo), Option 1
- Heavy vehicle access route (from Dubbo), Option 2
- Heavy vehicle access route (from Dunedoo), Option 1
- Heavy vehicle access route (from Dunedoo), Option 2
- Light vehicle access route (from Dubbo)
- Light vehicle access route (from Gulgong)

Existing environment

- Rail
- Major
- Minor
- Vehicular track
- Watercourse/drainage
- Local government area
- NPWS
- State forest

INSET KEY

- Major
- Central West Orana Renewable Energy Zone
- NPWS
- State forest

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Project location

Sandy Creek Solar Farm
Scoping Report
Figure 1.1

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1.3 The project

1.3.1 Overview

The Project involves the development, construction and operation of a solar farm off Sandy Creek Road, near Dunedoo in the central west of NSW (the site). The solar farm component of the Project will have a rated power output of 840 MWp and an indicative AC capacity of around 750 megawatts (MW_{AC}). The Project will also include a centralised or a DC-coupled battery energy storage system (BESS) of up to 3,000 MWh storage capacity.

The central west region of NSW has been selected by the NSW Government for the development of the CWO REZ due to the region's significant potential for renewable energy infrastructure and regional development (NSW Government 2020). To support the development of the CWO REZ, the Energy Corporation of NSW (EnergyCo NSW) is planning a new 500/330kV transmission line and related infrastructure as well as augmentation of the existing 330kV network and Wollar 500/330kV substation (the Central-West Orana REZ transmission project). The Project design will be developed alongside and in consideration of the design process being undertaken for the network infrastructure by EnergyCo NSW over the next 12 months.

It is anticipated that construction and commissioning of the Project will take approximately 2 years, employing up to 700 personnel during the peak construction period (3–6 months) and up to 15 ongoing full time roles during operation. The capital investment value (CIV) of the Project would be approximately $800 million.

A detailed project description is provided in Chapter 3.

1.3.2 The site

The site covers an area of approximately 1,600 hectare (ha) and comprises 25 separate lots as detailed in Table 1.2 and Figure 1.2. A number of 'paper' Crown road corridors exist within the Project site (refer Figure 1.2), which are discussed further in Section 2.1.

The site is zoned RU1 Primary Production under the *Warrumbungle Local Environmental Plan 2013* (Warrumbungle LEP) and *Wellington Local Environmental Plan 2012* (Wellington LEP). It occupies land currently used for stock grazing and dry land cropping. Further details regarding the site and surrounds are provided in Section 2.1.

During the preparation of the EIS, the development footprint within the site - that is the land area to be occupied by the Project components for the solar farm, BESS, electricity substation, connection to the transmission network and access tracks – will be informed by the release of further information on the EnergyCo NSW proposed transmission line, the outcomes of community and stakeholder engagement, and the findings of the environmental, social, and economic assessments. Further details regarding each of the Project components are provided in Section 3.2.

Table 1.2 Cadastral lots intersecting with the site

Lot number	DP
25	754305
36	754305
38	754305
49	754305
54	754305
55	754305
58	754305
65	754305
66	754305
96	754305
97	754305
98	754305
99	754305
100	754305
102	754305
7	754317
8	754317
20	754317
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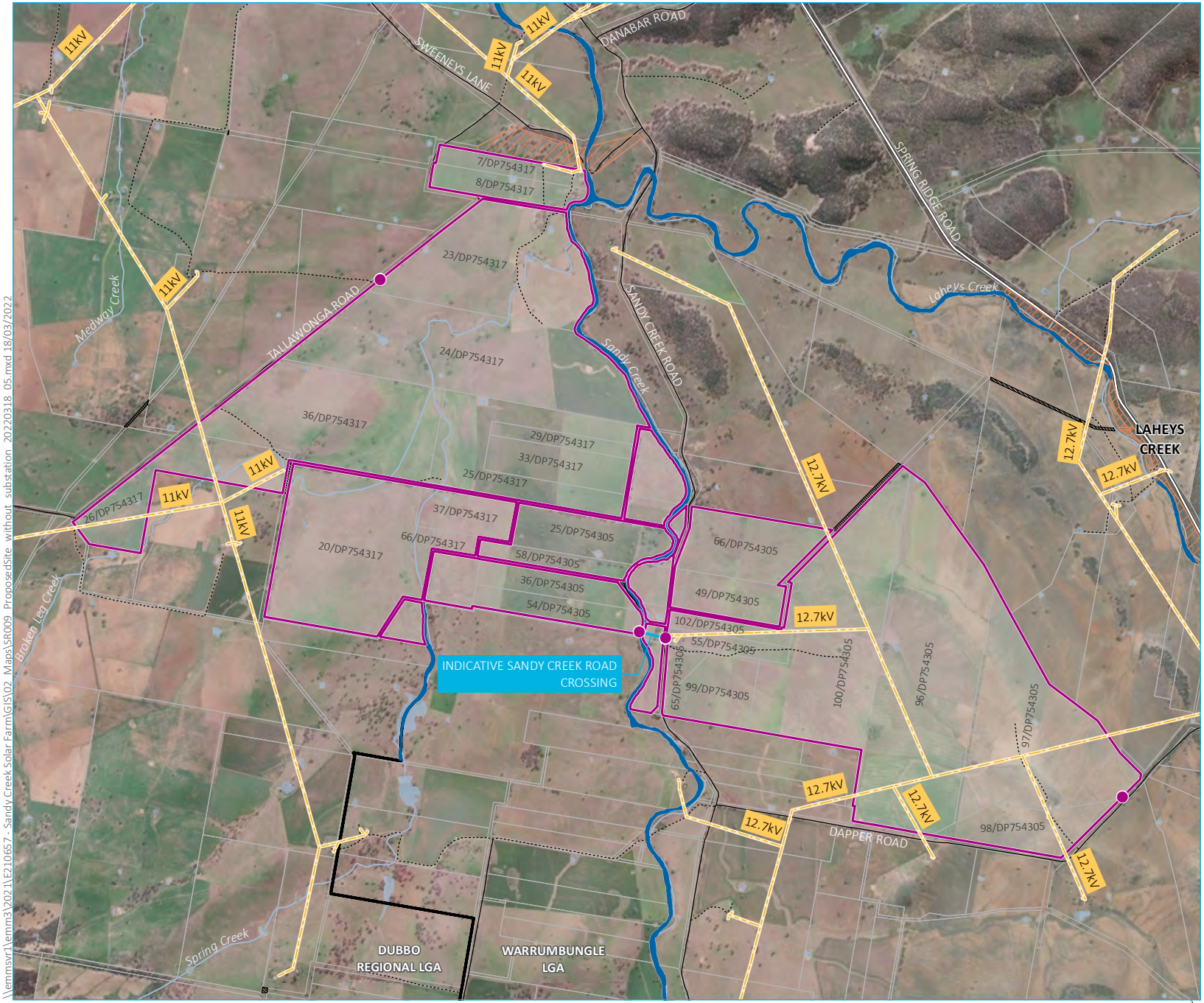
26	754317
29	754317
33	754317
36	754317



KEY

- Project site
- Indicative site access
- Crown reserve
- Crown road
- Crown waterway
- Indicative Sandy Creek Road crossing (subject to traffic and civil assessment)

Existing environment

- Existing overhead powerline
- Major road
- Minor road
- Vehicular track
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Local government area

Proposed site

Source: EMM (2022); Lightsource bp (2021); DFSI (2020, 2021); ESRI (2022); GA (2011); LUAL (2022)

0 1 2 km

GDA 1994 MGA Zone 55

N

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Sandy Creek Solar Farm
Scoping Report
Figure 1.2

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1.3.3 Project objectives

The Project's objectives are to:

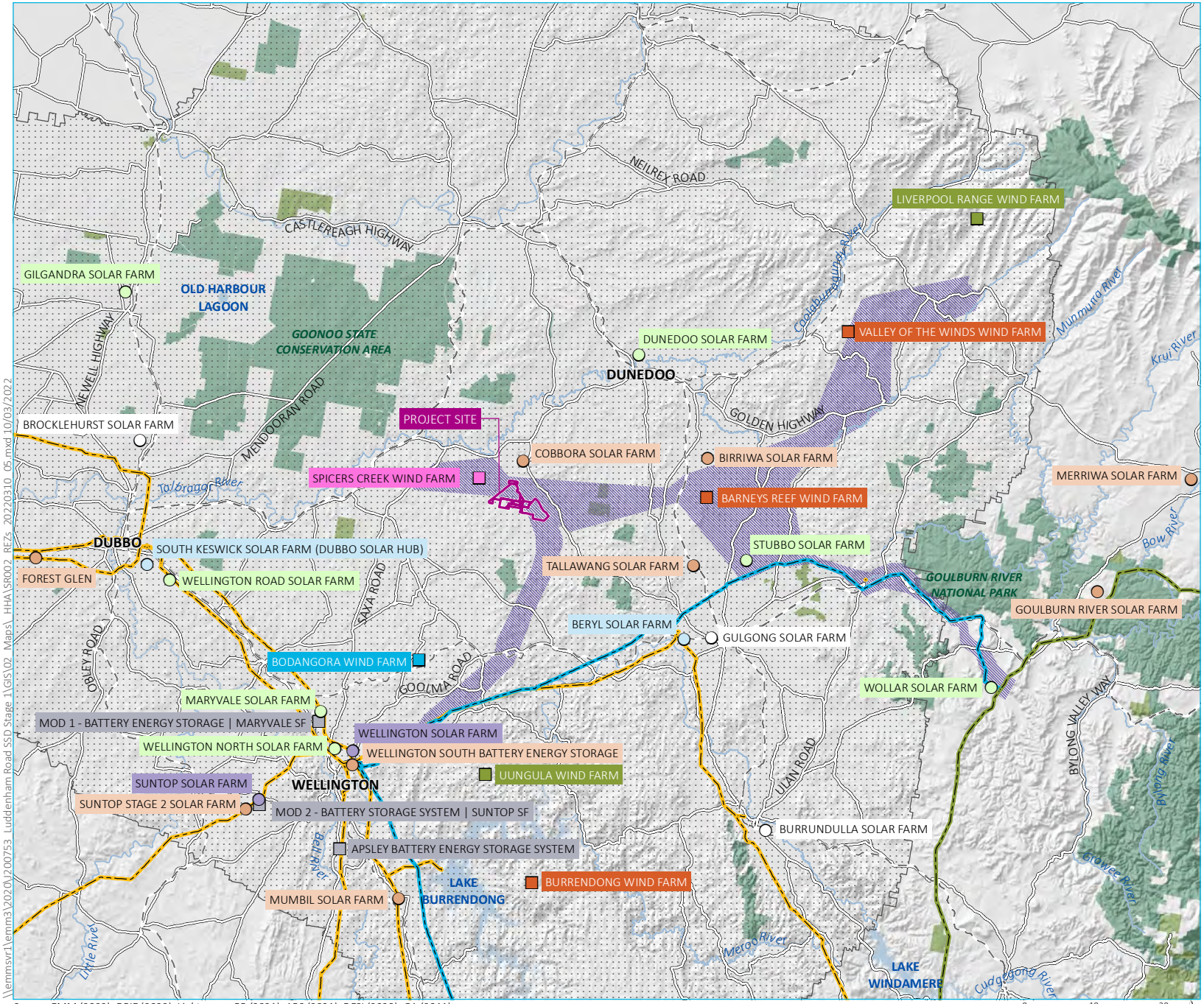
- generate electricity for approximately 253,419 homes from a clean and renewable energy source with minimal negative cultural and environmental impacts, through an energy generation facility that has been developed in a manner acceptable to the local community;
- achieve a complementary mixed use land program to continue the agricultural production alongside solar energy production in consideration of the knowledge and learnings outlined in the *Australian Guide to Agrisolar for Large-Scale Solar* (Clean Energy Council 2021);
- meet the objectives of the *NSW 2021: A Plan to Make NSW Number One* and the *NSW Renewables Energy Action Plan* (REAP);
- provide significant economic stimulus to the region through construction and operation jobs, supplier contracts, and associated flow-on benefits;
- assist in the reduction of Australia's greenhouse gas (GHG) emissions intensity in relation to the gross domestic product (GDP) and contribute to State and Commonwealth government efforts to meet climate change mitigation targets; and
- minimise environmental impacts where possible through the selection of an appropriate site within the region, and the design of the Project infrastructure including the solar farm array, site access route, and substation location.

The Project will play an important part in LSbp's network of solar projects in Australia and aligns closely with its mission statement on sustainability (LSbp 2022). The Project's objectives align with the Commonwealth and NSW Government's objectives for energy security and reliability and emissions reductions, thereby contributing to the continued growth of renewable energy generation and storage capacity in NSW.

1.3.4 Other development

Sandy Creek Road transects the Project site. There are also a number of existing electricity transmission lines that traverse the eastern portion of the site and some 'paper' Crown roads (ie cadastral corridors with no constructed roads) within the site (refer Figure 1.2). Lsbp will apply to close these Crown roads.

A number of other proposed, approved, under construction and operational renewable energy developments are within and in the vicinity of the CWO REZ, and are illustrated in Figure 1.3. Further discussion of future development and consideration of cumulative impacts is provided in Section 2.1.



KEY

- Project site
- Central West Orana Renewable Energy Zone
- Central West Orana Renewable Energy Zone transmission corridor

Operating system voltage

- 132 kV
- 330 kV
- 500 kV

Surrounding renewable development

Solar development

- Operational
- Under construction
- Approved
- In planning
- Withdrawn

Wind development

- Operational
- Approved
- In planning
- Under investigation
- Battery energy storage development

Existing environment

- Rail line
- Major road
- River
- Named waterbody
- NPWS reserve
- State forest

\\emmsvr1\emm3\2020\200753 Luddenham Road SSD Stage 1\GIS\02 Maps\ HHA\SR002 REZs 20220310 05.mxd 10/03/2022

Source: EMM (2022); DPIE (2022); Lightsource BP (2021); ABS (2021); DFSI (2020); GA (2011)

Surrounding renewable energy development

Sandy Creek Solar Farm
Scoping Report
Figure 1.3

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2 Strategic context

2.1 Project justification

The Project objectives outlined in Section 1.3.3 were developed in consideration of Australia's Commonwealth and State policies and international agreements.

2.1.1 Strategic planning framework

i Commonwealth renewable energy targets

The United Nations *Paris Agreement 2016* (the Paris Agreement) is a legally binding international treaty on climate change. Under the Paris Agreement, Australia has committed to a reduction of GHG emissions with specific targets to be reached by different milestone dates (2020, 2030 and second half of the century). Another global climate summit known as the Conference of the Parties (COP 2021) took place in November 2021 and served to update and enhance the Nationally Determined Contribution (NDC) under the Paris Agreement. Australia's NDC has subsequently been updated to include a net zero emissions by 2050 target, with the latest emissions projections being that Australia will achieve up to a 35% reduction by 2030. Australia also committed to seven new targets in the form of low emissions technology goals (ie targets through technology instead of tax strategy) (Australian Government 2021).

ii Integrated system plan

The *Integrated Systems Plan 2020* (ISP 2020) prepared by the Australia Energy Market Operator is an:

> Actionable roadmap for eastern Australia's power system to optimise consumer benefits through a transition period of great complexity and uncertainty.

REZ's are identified in the ISP 2020 as areas where "clusters of large-scale renewable energy can be developed to promote economies of scale in high quality areas and capture geographical and technological diversity in renewable resources" (Australia Energy Market Operator 2020).

iii Large-scale Renewable Energy Target

The Australian Government Clean Energy Regulator administers the Large-scale Renewable Energy Target which incentivises investment in renewable energy power stations such as wind and solar farms.

The Large-scale Renewable Energy Target of 33,000 gigawatt hours of additional renewable electricity generation was met at the end of January 2021 (*Clean Energy Regulator 2021*). The annual target will remain at 33,000 gigawatt hours until the scheme ends in 2030, notwithstanding, the Clean Energy Regulator expects large-scale renewable generation could reach up to 40,000 gigawatt hours in 2021.

iv NSW Electricity Strategy

The NSW Electricity Strategy is the NSW Government's plan for a reliable, affordable and sustainable electricity future that supports a growing economy.

With four of NSW's five remaining coal-fired generators scheduled to close by 2035, starting with Liddell Power Station in 2023 (DPIE 2019), the strategy outlines a reliable energy system which meets NSW's energy requirements and emission reduction targets.

The strategy and its enabling legislation (the NSW *Electricity Infrastructure Investment Act 2020*) supports the rolling out of REZs, commencing with the CWO REZ and the setting of a Renewable Energy Zone body, Energy Corporation of NSW, that will bring together investors and carry out early planning so benefits to local communities are maximised.

v State renewable energy targets

The current State plan, *NSW 2021: A Plan to Make NSW Number One* (NSW Government 2011), sets NSW priorities for action and guides resource allocation within the State. Goal 22 of this plan includes a specific target to increase renewable energy, which would in turn contribute to protecting the natural environment:

> We will contribute to the national renewable energy target by promoting energy security through a more diverse energy mix, reducing coal dependence, increasing energy efficiency and moving to lower emission energy sources.

Furthermore, the vision of the NSW REAP is a "secure, affordable and clean future for NSW". Goal 1 of the REAP is to attract renewable energy investment, including to "support mid-scale solar PV to enable an update of solar technologies where they are most cost effective".

In contributing for Australia to meet the above, renewable energy technologies have the capacity to provide faster results due to their shorter potential construction and commissioning times (CER 2017).

vi Large-scale solar energy guideline

The NSW Government issued the *Large-Scale Solar Energy Guideline for State Significant Development* in December 2018. This guideline provides the community, industry, applicants and regulators with general guidance on the planning framework for the assessment and determination of large-scale solar energy projects. It also makes recommendations for community engagement and site selection.

Draft revised large-scale solar energy guidelines have recently been publicly exhibited. The revised guidelines include additional guidance on assessment of visual impacts, agricultural land, glint and glare, and infrastructure contributions. The revised guidelines are not expected to be finalised until late 2022.

vii Environmental planning instruments

The *State Environmental Planning Policy (Infrastructure) 2007* (the Infrastructure SEPP) (now consolidated into the *SEPP (Transport and Infrastructure) 2021*) provides the statutory pathway for the construction of solar energy systems in NSW. This instrument currently permits solar energy systems with development consent on any land.

An amendment to the Infrastructure SEPP, exhibited from 16 August 2021 to 13 September 2021, proposes to amend the definition of solar energy systems to exclude large-scale solar farms which will fall under the definition of electricity generating works and will only be permissible in prescribed rural, industrial or special use zones. The proposed amendment is intended to protect certain areas (such as environmental zones) from inappropriate development.

A second amendment to the Infrastructure SEPP, exhibited from 13 September 2021 to 11 October 2021, proposes to include requirements for consent authorities to consider specific matters in the determination of a development application for utility-scale solar developments. These matters of consideration are aimed at ensuring certain regional cities are not impacted by utility-scale solar and wind energy development that may prevent the expansion and growth of these cities into the future and could impact on important scenic qualities of these areas.

viii Central West and Orana Regional Plan

The *Central West and Orana Regional Plan 2036* (the Regional Plan) was released by DPIE in 2017 to guide land use planning priorities and decision making in the CWO region for the next two decades.

A 5-year review of the Regional Plan has recently been completed and a draft revision to the plan is on public exhibition at the time of writing. The draft *Central West and Orana Regional Plan 2041* considers a 20-year timeframe with a focus on the next 5 years. The draft plan builds on the existing regional plan and the 19 local strategic planning statements.

ix Local strategies

Adopted in June 2020, the *Dubbo Local Strategic Planning Statement* (Dubbo Planning Statement) provides a 20-year vision for the future growth within the Dubbo Regional LGA. The Dubbo Planning Statement identifies 20 planning priorities for land use planning in the LGA over the next 20 years.

Planning Priority 3 (promote renewable energy generation); Planning Priority 18 (develop resilience to climate change); and Planning Priority 19 (create an energy, water and waste efficient city) relate to the Project.

Adopted in 2020, the *Warrumbungle Shire Local Planning Strategic Statement* (Warrumbungle Planning Statement) identifies the main priorities and aspirations for future land use within the local government area and establishes objectives and strategies to achieve those objectives.

2.1.2 Need for the project

The Project would form an important part of Australia's response to climate change and Commonwealth and NSW Government commitments in the reduction of carbon emissions in the electricity industry. The Project is located within the CWO REZ and aligns with Government objectives for energy security, reliability and emissions reductions and will contribute to the continued growth of renewable energy generation and storage capacity in the National Electricity Market (NEM).

The Project is expected to generate around 1.76 TWh per year. Assuming that generation would otherwise be generated by the average NSW energy mix with a carbon factor of 0.7233 tonnes per MWh (AEMO 2021), the Project would avoid the emission of over 1.4 million tonnes of carbon dioxide per year. Therefore, the Project aligns with Commonwealth and State led objectives related to GHG emissions and renewable energy and is consistent with the goal and intent of the NSW REAP.

The Project is permissible under the Infrastructure SEPP, as proposed to be amended, as it is within a rural zone (RU1). The specific matters to be considered in the determination of the application listed in the Infrastructure SEPP do not apply to the Project as it is not within 10 km of a regional city specified in the SEPP.

The Project will contribute to Goal 1 "to become the most diverse regional economy of NSW" and Direction 9 "increase renewable energy generation" of the *Central West and Orana Regional Plan 2036* and supports Objectives 12 and 20 of the draft *Central West and Orana Regional Plan 2041* through development of a renewable energy project that will deliver economic benefit to communities. It is consistent with the priorities and objectives of the Dubbo and Warrumbungle Planning Statements.

The Project is highly aligned with the NSW Government's strategic policy direction for the electricity sector and will provide benefits including, but not limited to:

- support and contribution to Commonwealth and State climate change commitments such as the Paris Agreement, REAP and ISP;
- development of the CWO REZ, supplying approximately 750 MW of electricity generating capacity to the national energy market, and significantly contributing to the targeted 3,000 MW for the CWO REZ as identified in the *NSW Electricity Strategy* (NES);
- support the realisation of the CWO Regional Plan's goal to diversify the local economy through direct and indirect economic benefits to local communities in the region, including employment opportunities, increased spending in local communities, community benefit programs and lease payments to landholders;
- supply approximately 250,000 homes with clean energy; and
- contribute to capacity gaps in the electricity market following the closure of 8,000–9,000 MW worth of coal-fired power generators within NSW by 2030 (Baringa, 2022), thereby enhancing reliability and security of the electricity supply in NSW.

Furthermore, the Project is consistent with the principles of Ecologically Sustainable Development, in particular in relation to climate change reduction and intergenerational equity. The Project can be seen as being in the public interest as it meets a demonstrated need and provides public benefits.

2.2 Site and surrounds

2.2.1 Site selection

The Project site was primarily selected due to the very good solar resource of the area and physical conditions for large-scale solar energy generation. The site has flat to gently undulating topography and is predominantly cleared of native vegetation, having been greatly disturbed by agricultural activities, making it highly suitable for the Project. The site is also separated from residential townships, with surrounding topography and vegetation assisting in screening views from the Golden Highway and Castlereagh Highway. The site was also selected due to the relatively low level of other environmental constraints expected, and the relatively few neighbours living within close proximity.

The land area for the Project is driven primarily by the need for a project of sufficient electricity generating capacity to achieve economies of scale in output, justifying the substantial grid connection costs and thus being able to achieve a competitive price for the electricity supplied to the NEM and ultimately households.

In summary, the Project site is considered suitable due to:

- the location of the Project being within the CWO REZ, with very good solar resource and physical conditions for large-scale solar energy generation;
- the Project's proximity to the proposed CWO REZ transmission infrastructure with capacity to export the electricity generated by the plant to the grid;
- the existing agricultural land use within and surrounding the Project site, which is compatible and will be continued with large-scale solar energy generation; and
- development of the site for the purposes of a solar farm is not anticipated to result in significant adverse biophysical, cultural, social or economic impacts.

LSbp is committed to the long-term environmental management of the land within the Project site in coordination with landholders associated with the Project.

2.2.2 Regional context

The site is within the locality of Dunedoo within the Central West Orana region of NSW. It is located approximately 25 km south-west of the township of Dunedoo and 30 km north-west of Gulgong and straddles the LGAs of Warrumbungle Shire Council and Dubbo Regional Council.

The nearest population centre is the township of Dunedoo, which has a population of 1,221 (ABS 2016). Other nearby population centres in the vicinity of the Project include Dubbo (population 38,943) approximately 61 km west; Gulgong (population 2,521) approximately 32 km south; Coolah (population 795) approximately 40 km north; and Mudgee (population 10,923) approximately 57 km south of the site (ABS 2016).

Key land uses in the local and broader region include agriculture, consisting primarily of sheep and cattle grazing and dry land cropping, with areas of mining, viticulture and production forestry located within the broader region (ie in the vicinity of Gulgong and Mudgee). Renewable energy development is a growing land use in the area, with multiple existing and proposed renewable energy projects in the vicinity of the site, as illustrated in Figure 1.3.

The nearest national parks to the site area are the Goulburn River National Park, approximately 115 km to the south-east, and the Yarrobil National Park, approximately 17 km to the south-west. The Goonoo State Conservation Area is located approximately 27 km to the west of the Project; Goodiman State Conservation Area is located approximately 10 km east; Yarrobil National Park is approximately 13 km south-east; and Dapper Nature Reserve is approximately 7 km to the south (refer Figure 1.1).

2.2.3 Local context

Land uses within proximity of the site include rural residential, agriculture, and electrical and transport infrastructure. The closest sensitive receivers are shown on Figure 1.2, incorporating 16 residences within 2 km of the Project site that are not associated with the Project, along with Dapper Union Church.

Topography within the locality is characterised by flat to gently undulating slopes ranging from approximately 365 m Australian Height Datum (AHD) to 410 m AHD.

Due to historic grazing practices, the Project site and local area more broadly is generally cleared, consisting predominantly of pasture-improved and cultivated grasslands with scattered paddock trees, vegetation along local roads, creek lines and windbreaks.

The Golden Highway is located north of the site and is the key transport route through the region from Newcastle via Dunedoo to the east of the Project site, extending to Dubbo in the west. A single heavy vehicle route to a primary access point will be adopted for access to the Project site from the Golden Highway. The route is likely to be via one of two options currently under consideration, which is contingent on the selected site access point and the location of network infrastructure currently subject to assessment and design by EnergyCo NSW. Option one would be via the Golden Highway, Sweeneys Lane and Tallawonga Road, to an access point at the northern end of the Project site. Option two would be via the Golden Highway, Spring Ridge Road and Dapper Road, to an access point at the eastern end of the Project site. Light vehicles will access the site from the north via Sweeneys Lane, or from the south via Spring Ridge Road. A secondary light vehicle access point will also be provided at the opposite end of the site to the primary access point. The heavy and light vehicle access route options currently under consideration are illustrated in Figure 2.2. The selected routes will be confirmed and considered in the EIS.

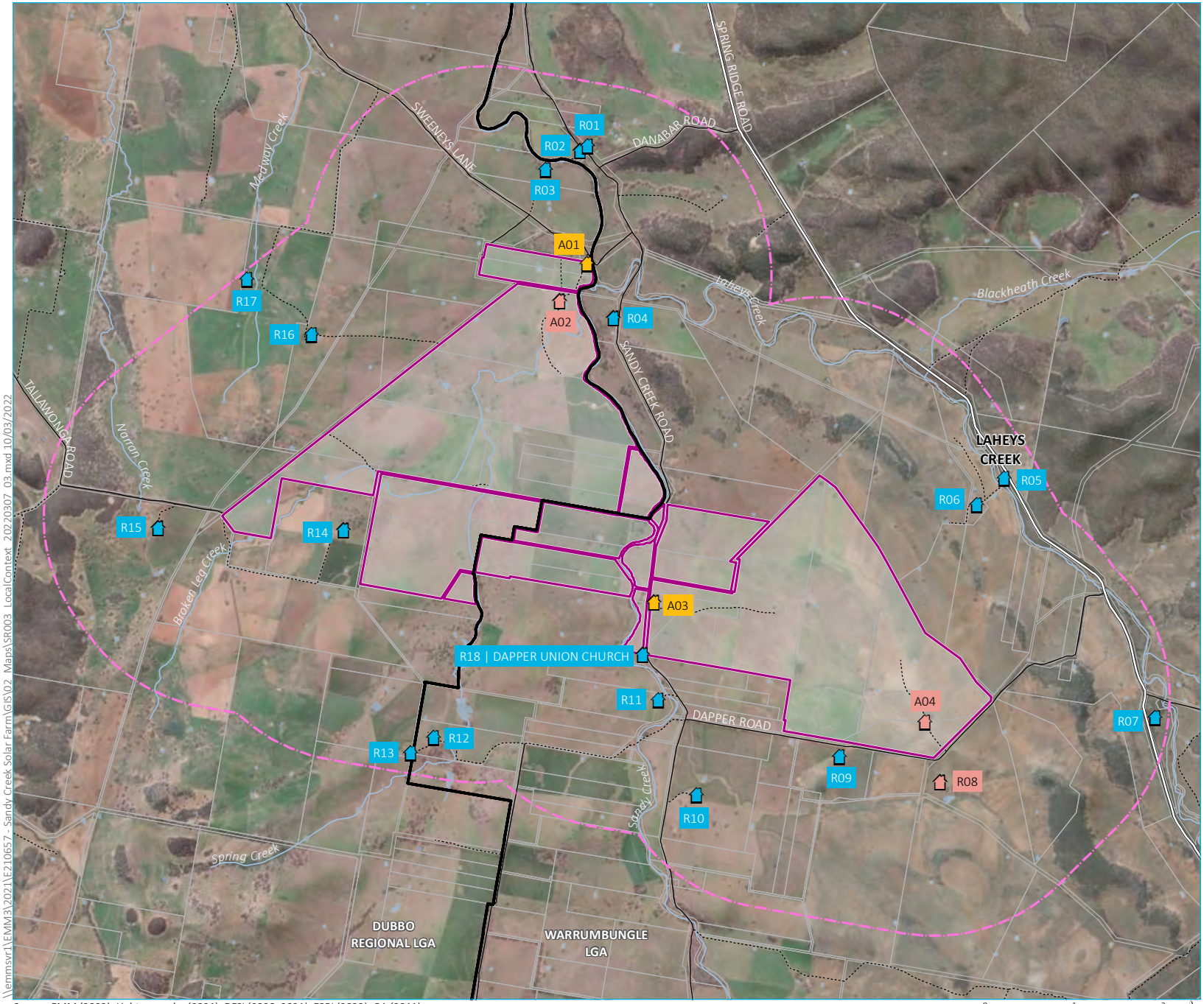
The site is intersected by Sandy Creek, a 5th order tributary that drains to the north to the Talbragar River (7th order watercourse at its confluence). Two 3rd/4th order tributaries, Broken Leg Creek and Spring Creek, traverse the western portion of the Project site, along with a number of unnamed 1st and 2nd order watercourses across the site that feed into Broken Leg and Sandy Creeks.

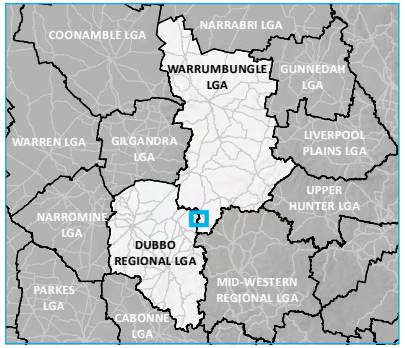
A number of existing 11 kV electricity transmission lines, owned by Essential Energy, traverse the eastern portion of the site.

There are no exploration or mineral titles over the Project site.

The Local Aboriginal Land Council for the area is Dubbo.

The Project site is illustrated in Plate 2.1 to Plate 2.3.





KEY

- Project site
- Project site - 2 km buffer
- Dwelling associated with the project
- Dwelling not associated with the project
- Unoccupied structure (shed or yard)

Existing environment

- Major road
- Minor road
- Vehicular track
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Local government area

\\emmsvr1\EMM3\2021\E210657 - Sandy Creek Solar Farm\GIS\02_Maps\SR003_LocalContext_20220307_03.mxd 10/03/2022

Source: EMM (2022); Lightsource bp (2021); DFSI (2020, 2021); ESRI (2022); GA (2011)

0 1 2 km

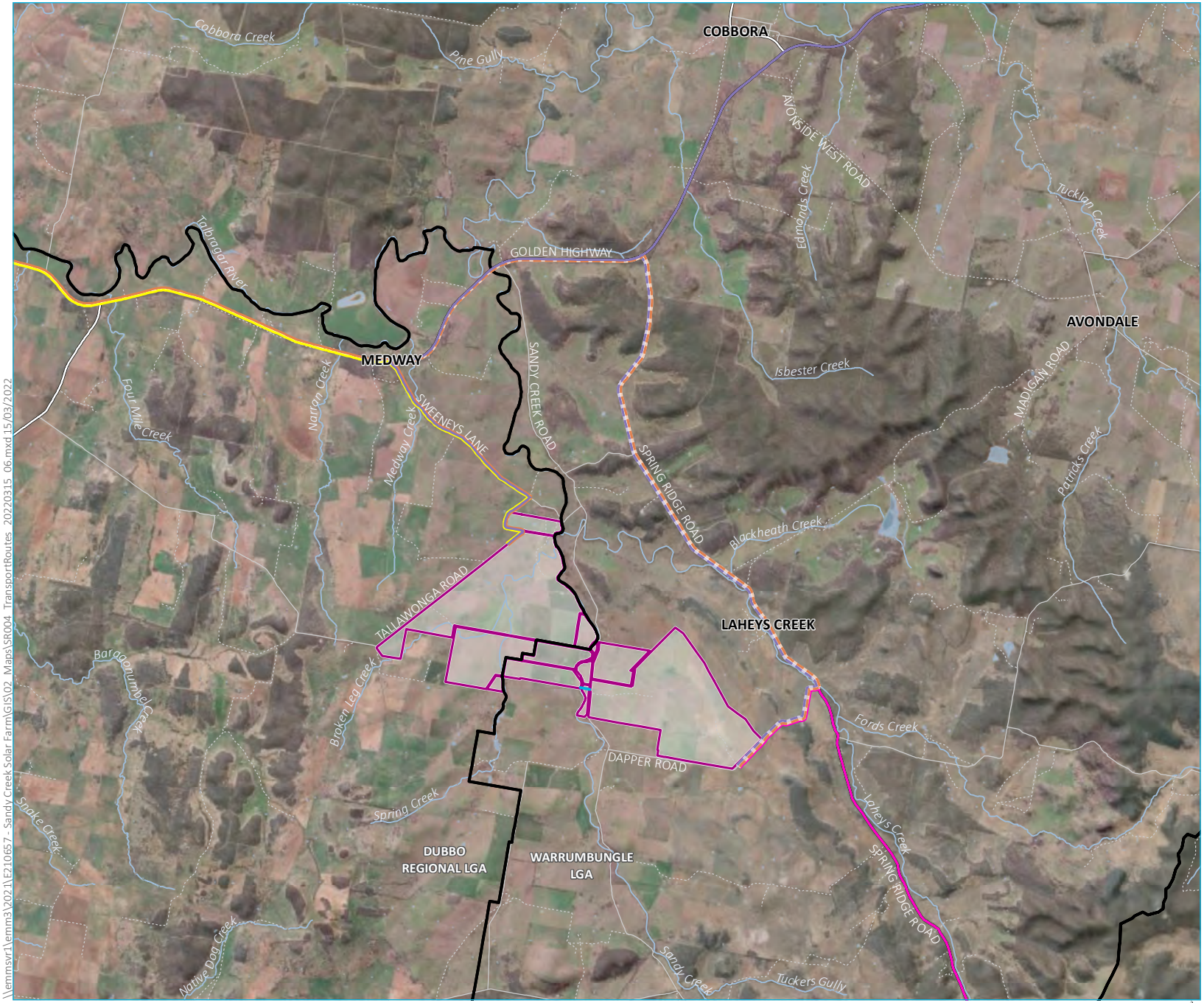
GDA 1994 MGA Zone 55

N

Local context

Sandy Creek Solar Farm
Scoping Report
Figure 2.1

EMM creating opportunities



\\emmsvr1\emm3\2021\E21065 - Sandy Creek Solar Farm\GIS\02 Maps\SR004 TransportRoutes 20220315 06.mxd 15/03/2022

Source: EMM (2022); Lightsource bp (2021); DFSI (2020); ESRI (2022); GA (2011)

Indicative transport routes

Sandy Creek Solar Farm
Scoping Report
Figure 2.2

EMM
creating opportunities

Plate 2.1 Project site (a)

Plate 2.2 Project site (b)

Plate 2.3 Project site (c)

2.2.4 Key constraints

Potential constraints for the site are illustrated in Figure 1.2 and discussed in chapter 6 and summarised below:

- There are several paper Crown roads located within the site. It is proposed to close the paper roads so their location will not constrain the solar farm layout.
- Utilities identified within the site include 11 kV overhead transmission lines owned by Essential Energy. In consultation with Essential Energy, the Project will re-route these transmission lines to avoid the Project site.
- Sandy Creek Road intersects the site and splits the site into near even east and west sections. Construction of the Project will require the transporting of plant and equipment across the road to access the western section of the site. Traffic management options will be investigated in order to minimise impacts to vehicles travelling along Sandy Creek Road during construction and operation.
- There are five plant community types (PCTs) within the site, all of which are aligned with three difference different ecological communities (TECs) listed under State legislation, two of which are also listed under Commonwealth legislation. This includes Box-Gum Woodland, which is a critically engendered ecological community and candidate for Serious and Irreversible Impacts. Further consideration of TECs is provided in Section 6.3.1.
- 71 terrestrial threatened species have the potential to occur within the site and watercourses within the site have the potential to support aquatic threatened species. Further consideration of threatened species is provided in Section 6.3.1.
- An AHIMS search for the site and surrounding areas identified nine previously registered sites within the site and six in very close proximity to the site.
- Sandy Creek, a fifth order watercourse, transects the site flowing in a northerly direction. Broken Leg Creek and Spring Creek also transect the eastern extent of the site. These creeks are mapped as “riparian land” on the Warrumbungle and Wellington LEPs. Minor unnamed first and second order watercourses also occur within the site flowing into Sandy Creek. These areas are expected to be excised from the development footprint. Further consideration of hydrology is given in Section 6.9.
- Areas of the site are mapped as ‘groundwater vulnerable’ on the Warrumbungle and Wellington LEPs Groundwater vulnerability maps and generally follow Sandy Creek and Lahey’s Creek to the east of the site. Further consideration of groundwater is given in Section 6.9.
- The site is mapped as Category 2 under NSW Rural Fire Service bushfire prone land mapping (RFS 2021). Further consideration of bushfire risk is given in Section 6.7.1.
- A portion of the site contains Biophysical Strategic Agricultural Land (BSAL). Further consideration of rural capability is given in Section 6.8.

In addition, the following is noted:

- Preliminary searches of landowner rights show that there are no Native Title Registered Applications and Indigenous Land Use Agreements on the subject land. There are no native title claims or indigenous land use agreements.
- A search of the Australian Government's Protected Matters Search Tool shows that there are no Ramsar or Nationally Important Wetlands located on the site.
- There are no known national, state or local listed heritage items identified within the site or adjacent to the site, and the site is not located within or near a Heritage Conservation Area.

2.3 Relevant future development

As required by the *Cumulative Impact Assessment Guideline for State Significant Projects* (CIA Guideline, DPIE 2021b), relevant future projects that may potentially generate cumulative impacts with the Project have been identified through a search of the NSW Planning Portal, the Regional Planning Panel website, and through engagement with DPE, Warrumbungle Shire Council and Dubbo Regional Council.

Major projects that were identified are detailed in Table 2.1 with consideration of whether they are relevant future projects requiring cumulative assessment with the Project. The locations of these projects are shown on Figure 1.3.

Table 2.1 Major projects with potential for cumulative impacts

Project	Application type	Status	Relevant future project for EIS
Cobbora Solar Farm	SSD	SEARs issued on 11 November 2021, EIS in development	Yes. Potential for cumulative impacts with project.
Spicers Creek Wind Farm	SSD	Under investigation, request for SEARs not yet lodged	Yes. Potential for cumulative impacts with project.
Birriwa Solar Farm	SSD	SEARs issued on 5 November 2021, EIS in development	Yes. Potential for cumulative impacts with project.
Tallawang Solar Farm	SSD	SEARs issued on 26 November 2021, EIS in development	Yes. Potential for cumulative impacts with project.
Dunedoo Solar Farm	SSD	Approved 2 September 2021	Yes. Potential for cumulative impacts with project.
Beryl Solar Farm	SSD	Approved 5 December 2017, operational	No
Stubbo Solar Farm	SSD	Approved 29 June 2021	No
Goulburn River Solar Farm	SSD	SEARs issued 1 February 2022, EIS in development	Yes. Potential for cumulative impacts with project.
Merriwa Solar Farm	SSD	SEARs issued on 28 January 2022, EIS in development	Yes. Potential for cumulative impacts with project.
Forest Glen Solar Farm	SSD	Response to Submissions in development	No
Mumbil Solar Farm	SSD	TBC – SEARs issued on 6 August 2019, EIS not yet lodged (now outside 2 year timeframe)	TBC
Wellington North Solar Farm	SSD	Approved 21 April 2021	Yes. Potential for cumulative impacts with project.
Wellington South BESS	SSD	SEARs issued 1 October 2021, EIS in development	Yes. Potential for cumulative impacts with project.
Uungula Wind Farm	SSD	Approved 7 May 2021, construction not yet commenced	Yes. Potential for cumulative impacts with project.
Valley of the Winds Wind Farm	SSD	SEARs issued on 9 June 2020, EIS in development	Yes. Potential for cumulative impacts with project.
Bellambi Heights Solar Farm	SSD	TBC – no details currently available on DPE Major Projects website	TBC

Searches of Dubbo Regional Council's and Warrumbungle Shire Council's development application trackers undertaken on 17 February 2022 showed that there are no proposed local developments within the vicinity of the site.

Potential cumulative impacts are discussed further in Chapter 6.

3 Project description

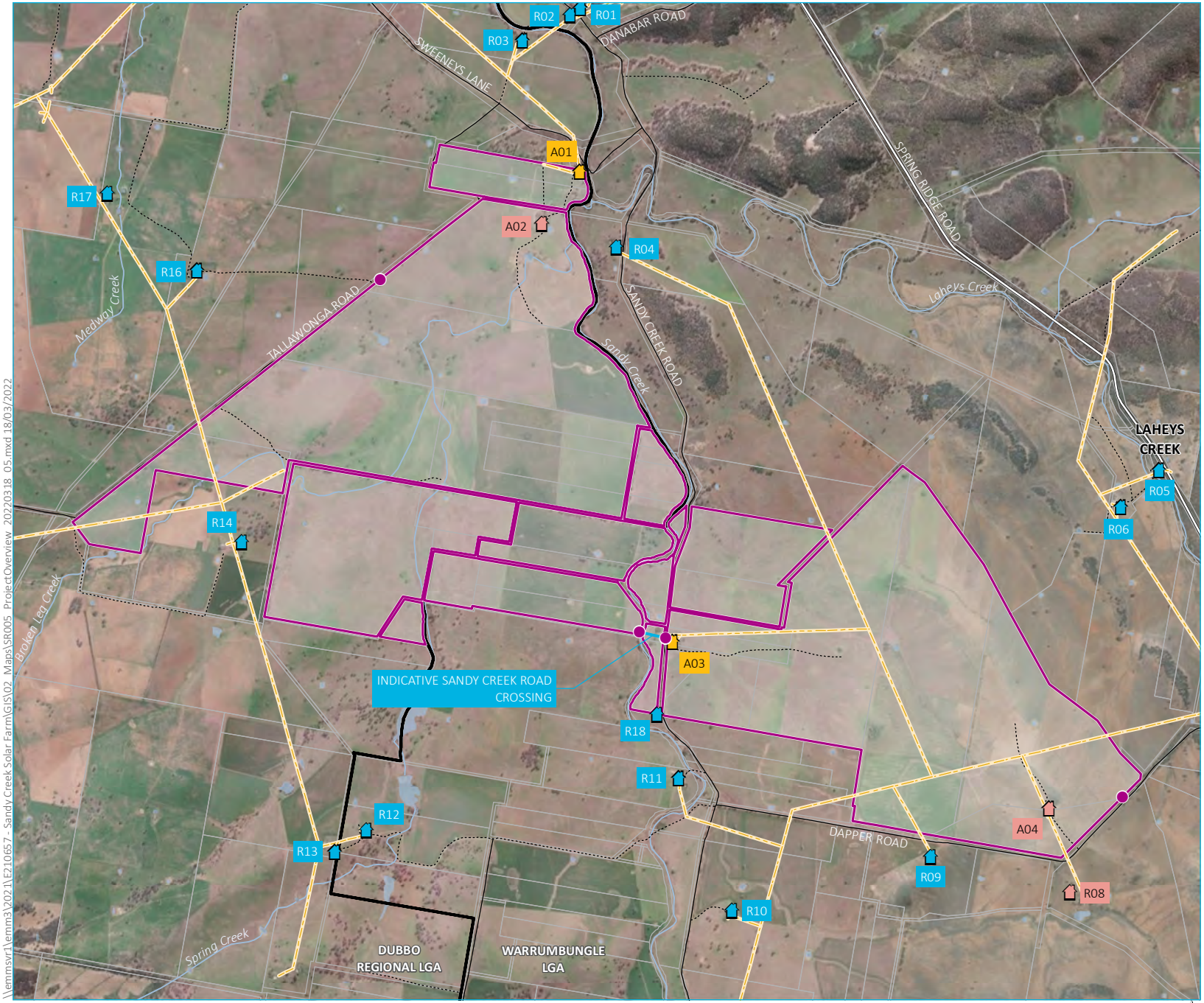
3.1 Overview

The Project involves development, construction of operation of a large-scale solar PV generation facility along with BESS, a high-voltage electricity substation and associated infrastructure required to connect the electricity generation to the transmission network, along with ancillary infrastructure and works, including operations and maintenance buildings, site access tracks, civil works and road upgrades.

The Project will have a rated power output of 840 megawatt-peak (MWp) and an indicative capacity of around 750 megawatts (MW). The BESS will include a centralised or a direct current (DC) coupled system, the location, maximum capacity and storage duration of which will be confirmed as part of ongoing design work during the preparation of the EIS.

The Project is to be developed over an area of approximately 1,700 ha (Figure 3.1). As noted in Section 1.3.2, the exact land area within the Project site to be covered by Project components (the development footprint) will be confirmed in the EIS. In particular, the final route for the proposed CWO REZ transmission line will impact where infrastructure is located across the Project site. Additionally, access to the transmission line is restricted and will be allocated by EnergyCo under an allocation process due to be run in Q4 2022. The results of the allocation process will affect the size of the Project considered in the EIS. Site designs and layouts will be refined as details regarding the transmission line become available. The design of the Project will be the result of an iterative process and will be adapted progressively as information regarding site constraints, and as the potential impacts and risks associated with the development, become available.

This chapter provides preliminary details on the Project components, proposed activities during construction, operation and decommissioning, and how the Project is likely to be delivered. A final and more detailed project description will be included in the EIS.



KEY

- Project site
- Indicative site access
- Dwelling associated with the project
- Dwelling not associated with the project
- Unoccupied structure (shed or yard)
- Indicative Sandy Creek Road crossing (subject to traffic and civil assessment)
- Existing overhead powerline

Existing environment

- Major road
- Minor road
- Vehicular track
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Local government area

\\emmsvr1\emm3\2021\E210657 - Sandy Creek Solar Farm\GIS\02_Maps\SR005_ProjectOverview_20220318_05.mxd 18/03/2022

Source: EMM (2022); Lightsource bp (2021); DFSI (2020, 2021); ESRI (2022); GA (2011); LUAL (2022)

0 1 2 km

GDA 1994 MGA Zone 55

N

Project overview

Sandy Creek Solar Farm
Scoping Report
Figure 3.1

EMM
creating opportunities

3.2 Project components

Key project components include the construction and use of:

- approximately 1.3–1.5 million solar PV panels, mounted on single axis tracking systems;
- buried and suspended electrical cables and conduits;
- inverter stations, containerised or skid mounted, distributed across the site;
- centralised (AC connected) or decentralised (DC connected) BESS with containerised battery storage units and associated inverter stations;
- electrical substation containing a high voltage (HV) transformer, associated HV switchgear, switch room, control room, and lightning protection masts;
- a new high voltage switchyard and transmission line to the proposed new 500 kv or 330 kV CWO REZ T-Link transmission line;
- a communication tower up to 35 m high;
- site office, compounds, storage shed and parking;
- internal and perimeter access tracks and perimeter fencing;
- a primary access point for heavy and light vehicles, plus a secondary access point for light vehicles at the opposite end of the site, along with a number of emergency egress points to the surrounding local road network;
- lighting, CCTV system, security fencing;
- landscaping;
- subdivision and consolidation of lots; and
- closure of existing Crown Roads within the site.

Further details about specific project components are provided below.

3.2.1 Solar arrays

The Project will involve the installation of rows of PV modules (solar panels) mounted on trackers, with multiple rows making up ‘power blocks’ or ‘arrays’ that are connected into a power conversion unit (inverter). The exact number of PV modules, inverters, arrays and the final configuration will not be determined until the detailed design stage after development approval is granted.

The final electricity generation capacity to be supplied in the transmission network will also be determined separately through access right allocations with the Australian Energy Market Operator Consumer Trustee (AEMO CT) in a competitive process, and will be subject to the capacity limits of the CWO REZ T-Link (to be set by EnergyCo) and hence is not proposed to be fixed in the EIS. Regardless, the entire development will be contained within the Project site.

The Project would involve the use of a single axis tracking system. An example of the type of PV modules mounted on a single axis tracking system that may be used is provided in Plate 3.1. The PV modules will be installed on racking frames fixed onto a horizontal tracker tube, with this mounted on top of vertical piles driven or cemented into the ground. The PV modules will be installed in rows spaced between 5 m and 7 m apart depending on the tracking system selected, spacing, the configuration of the panels on the trackers and the final design. The rows of PV modules will be aligned in a north-south direction, allowing the panels to rotate from east to west during the day, tracking the sun's movement.

The base of the PV modules will be around 1.2 m from the ground when in the horizontal position, while the lower edge of each PV module will be no less than 0.3 m from the ground at the maximum tilt angle (typically +/- 60^{o}), allowing for sheep grazing around and underneath the PV modules. Panels may be slightly more elevated in any flood prone areas, which will be considered in subsequent design and assessment processes. The maximum height of the panels above ground level at the maximum tilt angle is expected to be no more than 5 m.

Plate 3.1 Example of a PV module layout – tilt position

Plate 3.2 Example of a PV module layout – horizontal position

3.2.2 Power conversion units

The power conversion units comprise three main components: inverters, transformers and a ring main unit; and are designed to convert the DC electricity generated by the modules into AC form that is compatible with the national electricity grid. The power conversion units will also increase the voltage up to 33 kV for reticulation to the substation via medium voltage cables buried underground. The location, quantity and exact dimensions of the power conversion units will be determined during detailed design.

Plate 3.3 Example of power conversion unit

3.2.3 Battery energy storage system

The Project will include either a centralised or a DC coupled BESS. The specific technology, MW rated capacity (up to 750 MW; 3,000 MWh) and storage of the proposed BESS will be determined during the detailed design stage of the Project and will be dependent on a number of commercial and financial considerations. The sizing of the BESS is also likely to be driven by government policy given the current focus on mechanisms to ensure reliability and dispatchability of renewable energy power generation.

The major components of the BESS will comprise:

- batteries – most likely a lithium-ion technology;
- inverters – convert the DC electricity generated by the BESS Cells into AC – Lsbp is considering two options; either using the solar PV inverters as the BESS inverters, or using standalone BESS inverters;
- transformers – required for the centralised AC coupled BESS option only. The decentralised BESS option will use the spare capacity of the transformers attached to the solar PV inverters;
- DC–DC converter – used for the DC-coupled BESS only, designed to regulate the voltage between the BESS cells and the inverter;
- heating ventilation air conditioning – the heating ventilation air conditioning will maintain the batteries at a temperature to optimise their lifetime and performance using roof mounted air cooling systems; and
- fire protection – active gas-based fire protection systems will be installed within the BESS enclosure. Thermal sensors and smoke/gas detectors will be installed and connected to a fire control panel.

The EIS will assess two options for *either* a centralised BESS installed adjacent to the substation, *or* DC-coupled BESS units to be installed adjacent to solar inverters across the development footprint.

3.2.4 Connection options

At the time of lodgement of this scoping report, some details had been released regarding the proposed CWO REZ transmission infrastructure. LSbp has been investigating different options to connect to the T-Link, with the selected option to be aligned with the proposed line route and substation location, expected to be released by EnergyCo in early 2022. The Project design will be developed alongside and in consideration of the design process being undertaken for the network infrastructure by EnergyCo NSW over the next 12 months, and the proposed connection point for the Project to the grid will be considered in the EIS.

The grid connection options currently under consideration are summarised below and are based on the scenario that EnergyCo proposes a substation associated with the T-Link in close proximity to the Project site.

Option 1 – 'Connection hub' associated with the Project. In this scenario, the Project will connect into the proposed substation located within or partially within the development footprint, as part of a 'connection hub'. The connection hub assumes that EnergyCo will proceed with a substation location and design for the transmission line that facilitates this and would be assessed as part of the EIS at the time of lodgement. In this scenario, the Sandy Creek Solar Farm substation will abut the EnergyCo substation.

Option 2 – 'Connection hub' not associated with the Project. In this scenario, it is assumed EnergyCo would select a substation location outside of the Project site, but in relative proximity to the site. The Project would connect to the CWO REZ transmission line via a connection transmission line. This connection transmission line would be included and assessed as part of the EIS if this is the selected option at the time of lodgement of the EIS.

Other technical options to connect to an existing 330kV or 500 kV line in the region would be considered if EnergyCo does not proceed with the proposed CWO REZ transmission line. These options will not be assessed within the current development application process unless the NSW Government makes such an announcement during the preparation of the EIS.

3.2.5 Supporting infrastructure

In addition to the infrastructure described above, the Project will also require:

- staff office, operations and control room, meeting facilities, amenities and car parking;
- a temperature-controlled spare parts storage facility;
- supervisory control and data acquisition (SCADA) facilities;
- a workshop and associated infrastructure;
- a number of new internal access tracks to facilitate access within the Project site to allow for construction and ongoing maintenance, including a crossing of Sandy Creek Road and Sandy Creek; and
- fencing and landscaping.

The layout configuration will be informed by technical assessments performed during the preparation of the EIS and the detailed design stage of the Project, which is undertaken after development consent has been granted, prior to the commencement of construction. Project infrastructure will be positioned in accordance with the conditions of consent.

3.2.6 Road upgrades

A single heavy vehicle route to a primary access point will be adopted for access to the Project site from the Golden Highway. The route is likely to be via one of two options currently under consideration, which is contingent on the selected site access point and the location of network infrastructure currently subject to assessment and design by EnergyCo NSW. Option one would be via the Golden Highway, Sweeneys Lane and Tallawonga Road, to an access point at the northern end of the Project site. Option two would be via the Golden Highway, Spring Ridge Road and Dapper Road, to an access point at the eastern end of the Project site.

Light vehicles will access the site from the north via Sweeneys Lane, or from the south via Spring Ridge Road. A secondary light vehicle access point will also be provided at the opposite end of the site to the primary access point.

Upgrades to the local road network to be utilised by the Project will likely be required, potentially impacting on adjacent roadside vegetation. A project access options assessment will be carried out as part of the EIS to confirm the preferred options for site access and assess potential risks and impacts in consideration of the outcomes of engagement with relevant stakeholders and further project design. The assessment will also consider potential for cumulative impacts associated with other approved or proposed projects in the locality, along with outcomes of any regional/coordinated studies in support of development within the CWO REZ.

3.3 Project delivery

The construction phase of the Project is expected to take up to two and a half years, depending on scheduling of the construction works to deliver the combined solar and battery project, the timing of the CWO REZ T-Link, and the NSW Government's capacity rights auctions.

It is anticipated that the Project will be constructed in three stages:

1. Site establishment (approximately 3 months).

2. Civil, mechanical and electrical works plus delivery of construction materials and infrastructure (approximately 14 months).

3. Commissioning and testing (approximately 12 months).

There will be significant overlap of these stages, with the entire construction and commissioning program likely to take between 22 and 28 months.

The operational lifespan of the Project will be in the order 35 years, unless the solar farm is re-powered at the end of the PV modules' technical life. The decision to re-power the solar farm will depend on the economics of solar PV technology and energy market conditions at that time. Should the PV modules be replaced during operations, the lifespan of the Project may extend to up to 50 years. The BESS's operating life is likely to be 20 years, with the potential for replacing components to extend its life if the market conditions warrant this.

Once the Project reaches the end of its operational life, the Project infrastructure will be decommissioned and the Project site returned to its pre-existing land use, namely suitable for grazing of sheep and cattle and dry-land cropping, or another land use as agreed by the Project owner and the landholder at that time.

3.4 Proposed activities

3.4.1 Construction

i Site establishment

Site establishment work is expected to include:

- construction of intersections to allow safe access from the local road network (anticipated to be off Dapper Road and/or Tallawonga Road) and across Sandy Creek Road;
- construction of internal access tracks;
- temporary and permanent crossings over Sandy Creek;
- establishment of site security fencing;
- scrubbing, grading and minor cut/fill as required to prepare the site surface;
- establishment of a temporary construction site compound, including a site office, laydown areas and parking areas;
- site survey to confirm infrastructure positioning and placement; and
- additional geotechnical investigations specific to the selected foundations and tracking system as necessary.

First deliveries of construction materials and equipment may occur towards the end of the site establishment period.

As part of site establishment works, management measures will be introduced to mitigate potential impacts on the environment and sensitive receptors within close proximity of the development footprint. Where required, additional or improved drainage channels, sediment control ponds and dust control measures will be implemented. Further, laydown areas and waste handling, fuel and chemical storage areas will be strategically placed to minimise potential environmental impacts during the construction phase of the Project.

ii Mechanical and electrical works plus delivery of construction materials and infrastructure

Delivery of construction materials and infrastructure will occur throughout the construction period. Materials, including the BESS, will likely be shipped to the nearest port and then transported to the site via road.

Construction materials and infrastructure delivered to the site will include:

- PV solar panels, piles, (tracker) mounting structures and frames;
- electrical equipment and infrastructure including cabling, inverters, switchgear and the high voltage equipment for the onsite substation including transformer;
- temporary construction and permanent buildings and associated infrastructure; and
- earthworks and lifting machinery and equipment.

The mechanical and electrical works will comprise the following works:

- piles driven into the ground to support the solar panel mounting structure;
- tracker frames and solar panels assembled on top of the piles;
- low voltage cabling installed between the solar panels and the inverters;
- underground high voltage and communication cabling installed between the inverters, and the onsite substation;
- piled foundations for the inverter and BESS blocks, high voltage substation equipment and control room;
- installation of combiner boxes, inverters, the onsite substation, switchgear and BESS;
- construction of the transmission infrastructure between the Project electrical switchyard and the CWO REZ transmission line (if required);
- construction of permanent site perimeter fencing;
- construction of the operations and maintenance facility; and
- construction of livestock fencing, stockyards and irrigation infrastructure.

iii Commissioning and testing

The commissioning and testing phase will include cold commissioning, hot commissioning and testing of the power plant. This will include testing of all equipment and circuits, including inverters, cabling, tracker systems, earthing, SCADA and grid-compliance testing according to and agreed by the transmission network provider and the Australian Energy Market Operator requirements.

iv Construction hours

Construction activities will be undertaken during the standard daytime construction hours.

In general, no construction activities will occur on Sundays or public holidays. Exceptions to this may be required on limited occasions. The local council, NSW Environment Protection Authority (EPA) and surrounding landholders will be notified of any exceptions prior to any works being undertaken.

v Construction workforce

During the construction phase of the Project between 50–200 workers will generally be required. This could increase up to 700 workers during peak construction (for 3–6 months).

vi Construction haulage

The Project site is accessible via the Golden Highway and Castlereagh Highway, which are both approved B-double transport routes. B-doubles are likely to be used for the Project as more equipment can be transported at once and thereby minimise the number of heavy vehicles accessing site. Oversized vehicle movements may be required for the delivery of the 132 kV transformer and the control room.

Switchgear, PV modules, tracker and BESS components and inverters are expected to arrive into Sydney port and then travel to the site via the Castlereagh Highway, or alternatively via Newcastle port and travel via the Golden Highway. The substation heavy equipment such as the HV transformer will travel a similar route.

Upgrades will be required in support of anticipated construction vehicle movements along those local roads that are utilised. Dependent on which transport routes are selected, this may include Spring Ridge Road, Dapper Road, Sweeneys Lane and Tallawonga Road.

vii Capital investment value

The CIV for the Project is estimated at $800 million.

3.4.2 Operation

It is anticipated that the solar farm will require regular maintenance throughout its operational life. This will generally include maintaining fencing, vegetation management, maintaining drainage and internal roads. Additional activities, such as replacement of faulty PV modules and inverters, may also be required. Regular light vehicle access will be required throughout the operations phase. Heavy vehicles may be required occasionally for replacing larger components of project infrastructure including inverters, transformers or components of the BESS.

Operational maintenance activities will typically be undertaken by specialist subcontractors and/or equipment manufacturers. It is anticipated that the operation of the Project would require approximately 15 full time equivalent employees.

3.4.3 Decommissioning

LSbp has committed to panel recycling throughout the life of the Project, for those either damaged during the Project life or at decommissioning. Other components such as the tracker systems, inverters and copper cables are recycled where scrap value exceeds the decommissioning costs. At the end of the scheduled Project life LSbp would consider whether to continue operations, where infrastructure would be replaced or upgraded, or decommission the Project.

LSbp will attempt to recycle all dismantled and decommissioned infrastructure and equipment, where possible. Structures and equipment that cannot be recycled will be disposed of at an approved waste management facility.

Following decommissioning, the Project site will be returned to its pre-existing agricultural land use.

3.5 Alternatives considered

3.5.1 Alternative project type

While Australia has an abundance of renewable energy sources, alternative power generation options are economically limited from a private investment standpoint, with solar power generation, along with wind, becoming the cheapest forms of new build electricity generating capacity globally, including in Australia. There are significant constraints for the private sector to invest in other technologies (such as pumped hydro) due to their relatively higher costs and higher risks. Replacing retiring coal-fired power plants with a combination of wind farms, solar farms and BESS is the most economically viable option for the foreseeable future.

3.5.2 Alternative location

The Project site is identified as highly suitable for a solar farm and battery project development as identified in Section 2. Alternative locations for a project of this magnitude are limited due to the requirements of surface area, topography, proximity to existing and/or proposed energy infrastructure and available network capacity, as well as the need to avoid major townships or areas of high biodiversity value.

Alternatives to the proposed location were considered by LSbp as part of the site identification process, including 17 potential sites in the Central West region. A key constraint in considering locations is the distance from the proposed CWO REZ transmission line. Alternatives which are further away from the planned CWO REZ transmission line would need long transmission lines and easements to connect into the network, which would come with additional environmental and social impacts and cost. The selected project site is considered optimal for development.

4 Statutory context

4.1 Introduction

The key relevant statutory requirements for the Project having regard to the EP&A Act, other NSW and Commonwealth legislation, and environmental planning instruments are summarised in this chapter. This chapter has been set out in accordance with the Scoping Report Guidelines and *State Significant development – preparing an environmental impact statement Appendix B to the state significant development guidelines* (DPIE 2021d) (EIS Guidelines), to cover the following:

- permissibility;
- power to grant approval (ie approval pathway);
- other approvals;
- pre-conditions to exercising the power to grant approval; and
- mandatory matters for consideration.

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

During the time of writing this Scoping Report and on 2 December 2021, DPE announced the consolidation of State Environmental Planning Policies (SEPPs) to align with 9 focus areas of the NSW planning system. Forty-five existing SEPPs were consolidated into 11 new SEPPs based on the themed-based focus areas and commenced on 1 March 2022. The consolidated SEPPs referenced within this EIS include:

- *SEPP (State and Regional Development) 2011* – consolidated into the *SEPP (Planning Systems) 2021*;
- *SEPP (Infrastructure) 2007* – consolidated into the *SEPP (Transport and Infrastructure) 2021*; and
- *SEPP 33 (Hazardous and Offensive Development)* and *SEPP 55 Remediation of Land* – consolidated into *SEPP (Resilience and Hazards) 2021*.

4.2 Permissibility

The site is zoned RU1 Primary Production under the *Warrumbungle Local Environmental Plan 2013* (Warrumbungle LEP) and *Wellington Local Environmental Plan 2012* (Wellington LEP). Under both the Warrumbungle and Wellington LEPs, electricity generating works is a prohibited land use in the RU1 zone.

Notwithstanding the prohibition on this land use under the applicable LEPs, 'solar energy systems' are a permissible land use on any land with development consent pursuant to Clause 34(7) of *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP). Therefore, the Project is permissible with development consent on the Project site.

4.3 Power to grant approval

4.3.1 Approval pathway

Part 4, Division 4.7 of the EP&A Act relates to the assessment of development deemed to be significant to the State (or SSD). Clause 8(1) of the SRD SEPP identifies development that is SSD.

The Project meets the definition of SSD under Clause 8(1)(a) of the SRD SEPP as it is not permissible without development consent (as detailed above). The Project meets 8(1)(b) as it is 'electricity generating works' which have a capital investment value of more than $30 million as specified in Schedule 1 of the SRD SEPP.

Therefore, Part 4, Division 4.7 of the EP&A Act will apply to the Project.

4.3.2 Consent authority

The Minister for Planning and Public Spaces is the consent authority for the Project. However, as per Section 4.5(a) of the EP&A Act, the Independent Planning Commission (IPC) would be the consent authority for the Project if an objection is received from either Warrumbungle Shire Council or Dubbo Regional Council, or 50 or more other objections are received during public exhibition of the EIS. LSbp has made no reportable political donations.

4.4 Other approvals

This section identifies other approvals that are required to carry out the Project and explains why they are required. These approvals are outlined in Table 4.1 and have been grouped into the following categories:

- consistent approvals: which are approvals that, under Section 4.42 of the EP&A Act, cannot be refused for SSD and must be substantially consistent with the consent;
- whether approval is required under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and whether the bilateral agreement applies;
- other approvals: approvals that are not expressly integrated into the SSD assessment process; and
- approvals not required: approvals that would be required if the Project was not SSD as per Section 4.41 of the Act.

Table 4.1 Approvals and licences required

Approval	Requirement
Consistent approvals	
An approval under Section 138 of the NSW *Roads Act 1993*	Under Section 138 of the *Roads 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 Project will involve works on the local roads between the Golden Highway and the Project site, and therefore, would require approval under Section 138.
EPBC Act approval	
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	Following completion of targeted surveys across the Project site, an EPBC referral will be submitted to the Commonwealth Department of Agriculture, Water and the Environment (DAWE). This will consider if there are potentially significant impacts to Matters of National Environmental Significance, including to threatened species and communities, and therefore whether the Project is considered to be a 'controlled action'. If the Project is determined to be a Controlled Action, approval under the EPBC Act will be required.
Native Title Act 1993	The Commonwealth *Native Title Act 1993* recognises and protects native title rights in Australia. It allows a native title determination application (native title claim) to be made for land or waters where native title has not been validly extinguished, for example, extinguished by the grant of freehold title to land. Claimants whose native title claims have been registered have the right to negotiate about some future acts, including mining and granting of a mining lease over the land covered by their native title claim. Where a native title claim is not registered, a development can proceed through mediation and determination processes, though claimants will not be able to participate in future act negotiations. There are currently no native title determinations over the Project site.
Other NSW approvals	
Crown Land Management Act 2016	Approval(s) will be required from DPE-Crown Lands for closure of Crown roads within the development footprint.
Conveyancing Act 1919	The final development footprint will require a separate lease from the owners of the affected land. Lease of a solar farm site is treated as a lease of premises, regardless of whether the lease will be for more or less than 25 years. The plan defining 'premises' (being the development footprint) will not constitute a 'current plan' within the meaning of Section 7A of the *Conveyancing Act 1919* and therefore will not require subdivision consent under Section 23G Conveyancing Act. Section 23G of the Conveyancing Act may also apply if subdivision for the purpose of construction, operation and maintenance of a substation is required.
Approvals not required	
Fisheries Management Act 1994	A permit under the *Fisheries Management Act 1994* to block fish passage or dredge or carry out reclamation work on water land 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 watercourse within the Project site. These works will be undertaken in accordance with NSW DPI *Policies and Guidelines on Fish-Friendly Waterway Crossings* (undated), *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI 2013), and NSW *Guidelines for Controlled Activities*.
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.

Table 4.1 Approvals and licences required

Approval	Requirement
National Parks and Wildlife Act 1979	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. There is potential for Aboriginal sites to occur within the Project site. Any Aboriginal heritage sites identified within the Project site will be avoided as far as practicable through the design process, and any potentially impacts Aboriginal heritage values will be subject to management measures commensurate with their assessed significance.
Rural Fires Act 1997	A bushfire safety authority under Section 100B of the *Rural Fires Act 1997* will not be required pursuant to Section 4.41 of the EP&A Act. A bushfire assessment in accordance with NSW Rural Fire Service *Planning for Bushfire Protection 2019* will be carried out to inform the EIS.
Water Management Act 2000	A water use approval under Section 89, a water management work approval under Section 90 or an activity approval (other than an aquifer interference approval) under Section 91 of the *Water Management Act 2000* pursuant to Section 4.41 of the EP&A Act. The Project will involve works within 40 m of a watercourse. Therefore, a Controlled Activity Approval under Section 91 of the WM Act would have been required for the Project, if not for Section 4.41 of the EP&A Act.

4.5 Pre-conditions to approvals

Pre-conditions to exercising the power to grant approval for the Project are provided in Table 4.2. These pre-conditions will be considered further in the EIS.

Table 4.2 Pre-conditions to being able to grant approval for the project

Statutory reference	Pre-condition	Relevance
State Environmental Planning Policy (Infrastructure) 2007, Clause 45(2)	Consent authority to give written notice to relevant electricity supply authority.	Project involves works within and adjacent to easements for electricity purposes.
State Environmental Planning Policy (Infrastructure) 2007, Clause 101(2)	Consent authority is to be satisfied that the operation of a classified road will not be adversely affected.	Proposed access to the Project site via local roads off the Golden Highway, a classified road.
State Environmental Planning Policy (Infrastructure) 2007, Clause 104(3)	Consent authority must give written notice of application to Transport for NSW (TfNSW).	The Project may involve traffic generating development if it results in 50 or more vehicles per hour.

4.6 Mandatory matters for consideration

The mandatory conditions that must be satisfied before the consent authority may grant approval to the Project are listed in Table 4.3. These conditions will be addressed in the EIS.

Table 4.3 Mandatory considerations for the project

Statutory document	Section reference	Mandatory consideration
Considerations under the EP&A Act and Regulation		
Environmental Planning and Assessment Act 1979	Section 1.3	Relevant objects of the Act.
	Section 4.15(1)	The provisions of any relevant environmental planning instruments.
		The provisions of any proposed instrument(s).
		The provisions of VPA (enter details of any planning agreement that has been entered into or any draft planning agreement that a developer has offered to enter into).
		The provisions of the regulations.
		The likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality.
		The suitability of the site for the development.
		The public interest.
Considerations under environmental planning instruments		
State Environmental Planning Policy No 33—Hazardous and Offensive Development	Clause 8	Consideration must be given to current circulars or guidelines published by the Department of Planning relating to hazardous or offensive development.
State Environmental Planning Policy No 55—Remediation of Land	Clause 7(1)(a)	Whether the land is contaminated.
	Clause 7(2)	Change of land use from agriculture requires consideration of a preliminary investigation report.
State Environmental Planning Policy (Infrastructure) 2007	Clause 45(2)(b)	Any response from relevant electricity supply authority.
	Clause 104(3)(b)	• Any submission from TfNSW. • Accessibility of the site. • Any potential traffic safety, road congestion or parking implications.
Warrumbungle Local Environmental Plan 2013	Land Use Table	Objectives and land uses for RU1 zone.
	Part 4	Principal development standards.
	Part 6	Additional local provisions.
Wellington Local Environmental Plan 2012	Land Use Table	Objectives and land uses for RU1 zone.
	Part 4	Principal development standards.
	Part 6	Additional local provisions.
Considerations under other legislation		
Biodiversity Conservation Act 2016	Section 7.14	The likely impact of the proposed development on biodiversity values as assessed in the biodiversity development assessment report. The Minister for Planning may (but is not required to) further consider under that Act the likely impact of the proposed development on biodiversity values.

5 Community engagement

5.1 Overview

LSbp has been building a local presence in the region since early 2018 with the commencement of its Wellington Solar Farm project.

Following site selection and detailed land security negotiations, LSbp commenced engaging with local landholders, neighbouring property owners and the broader community.

The Project is considered likely to attract some degree of local and regional interest, especially in the context of the CWO REZ, with several renewable energy projects being developed in the region at the same time. Notwithstanding, the Project is considered unlikely to generate significant opposition from the immediate locality and community. This is primarily due to LSbp's commitment to early, open and transparent communication with stakeholders and the community, and due to the limited visibility of the Project from surrounding major roads.

LSbp is aware of other proposed projects in proximity to the Project site, including Spicers Creek Wind Farm and the Cobbora Solar Farm. The possible cumulative impacts of coinciding development of multiple projects within the locality will be considered as part of the EIS, including in the SIA.

5.2 Community engagement strategy

A communication and engagement plan has been prepared for the Project and is provided in Appendix A. The plan provides a summary of the communication context, stakeholder assessment and a communication and engagement action plan.

5.3 Engagement carried out

Stakeholder identification was undertaken as part of the scoping phase for the project. The following key stakeholder groups were identified:

- Federal and State Regulatory Authorities;
- State government departments and agencies;
- elected representatives (federal and state);
- local council;
- local Government officers;
- traditional owners;
- landowners (directly affected, adjacent, nearby and indirectly affected);
- townships;
- community and interest groups;
- service providers;
- industry associations; and
- media.

5.3.1 Project Introductory Communications

In December 2021, LSbp publicly launched the project.

A project website was published (https://www.lightsourcebp.com/au/projects/sandy-creek-solar-farm), and a dedicated project email address (sandycreeksolar@lightsourcebp.com) and project free call hotline (1300 873 575) were established as a way for interested persons to contact the project team directly.

Introductory project letters were sent to:

- elected representatives (via email and post);
- landholders within and adjacent to the proposed project site (via email and registered post);
- landholders within 2 km of the Project site boundary (via post); and
- dwellings along the main transport routes to Gulgong and Dunedoo (via post).

Briefings were also offered and held with local landowners.

In early January 2022, a project fact sheet was distributed to the above groups that provided key project facts and invited stakeholders to attend upcoming community information sessions.

Project introductory communications were distributed in the local area. Subsequent advertising in local print media was also undertaken for community information sessions, which included the surrounding townships of Dubbo and Gulgong.

i Landowner response to project introductory communications

Following an individual briefing provided to an adjacent landowner by LSbp, a letter was sent to LSbp outlining concerns from 14 signatories of landowners in the general area (and a number outside of the 2 km buffer zone). Concerns raised included: community cohesion, visual amenity, land devaluation, increased bushfire risk, biodiversity impacts, impacts to local Aboriginal heritage sites, glare and heat impacts, vegetation removal and interference with local waterways.

A response was sent via letter to each of the signatories, advising the project is in very early stages of development and that LSbp are keen to work with landowners throughout the development of the project, to obtain inputs into managing and mitigating the identified project impacts. Signatories were also encouraged to attend upcoming community information sessions.

Of the landowners contacted directly by the project team, no other direct responses were received via post, email or telephone.

ii Interest group response to project introductory communications

The Dunedoo Coolah Landcare group contacted the project team asking to register for future project updates. They also requested that LSbp attend existing local community events, including the Dunedoo Show. LSbp were able to attend the Show as requested.

iii Elected representatives and Government agencies response to project introductory communications

A summary of responses from elected representatives and government agencies is provided in Section 5.3.4.

5.3.2 Community information sessions

Community information sessions were advertised in the two weeks prior to the sessions in the Dubbo Daily Liberal and Coonabarabran Times.

One online and two face-to-face project community information sessions were held in late January/early February 2022 as follows:

- online information session – 31 January 2022;
- face-to-face information session – 5 February 2022, Dunedoo Jubilee Hall (morning); and
- face-to-face information session – 5 February 2022, Gulgong Memorial Hall (afternoon).

LSbp also made representation at the following local shows:

- Dunedoo Regional Show – 12 February 2022; and
- EnergyCo NSW community information sessions –8 March 2022, Wellington Soldiers Memorial Club and 9 March 2022, Dunedoo Jubilee Memorial Hall.

i Attendance

Of the landowners contacted in December 2021 and January 2022, 15 attended a community information session. An additional five people from the broader community also attended.

A summary of key issues raised at these events is listed in Table 5.1.

Table 5.1 Summary of community engagement activities

Stakeholder group	Engagement type	Key outcomes
Local landholders and community	Online information session 31 January 2022	• Visual impacts, local employment and traffic impacts were highlighted as key community concerns.
Local landholders and community	Community information session (3 hours) Dunedoo Jubilee Hall 5 February 2022	• Visual impacts, transport/traffic issues, lifestyle and community impacts, post project site rehabilitation, position of transmission line, invasive species and workforce/security were highlighted as key issues of concern. • The community also expressed concerned that prime agricultural land is being earmarked across the region for solar projects. • Participants also asked about local benefits.
Local landholders and community	Community information session (3 hours) Gulgong Memorial Hall 5 February 2022	• Visual impacts, post project site rehabilitation and position of transmission line were highlighted as key issues of concern. Participants also asked about the benefits of the Project to the local community. • Three participants attended seeking information about potential contracting and employment opportunities generated by the proposal.
Local landholders and community	Information stall Dunedoo Regional Show 12 February 2022	• Increased traffic and road repair, recycling/waste post project and in project land management were highlighted as key issues of concern. The community also expressed concerned that prime agricultural land is being earmarked across the region for solar projects. • The community also flagged that the Central West Cycle Trail group use Sandy Creek Rd and Spring Ridge Rd on an annual basis.
Local landholders and community	EnergyCo NSW community information sessions Wellington Soldiers Memorial Club Dunedoo Jubilee Memorial Hall 8 March 2022 (Wellington) 9 March 2022 (Dunedoo)	• Lsbp attendance as an opportunity for local community members to learn more about projects being undertaken in the locality by EnergyCo and renewable developers.

5.3.3 Government and other agencies

The stakeholder engagement process targeting government agencies commenced in August 2021 with briefing meetings held as detailed in Table 5.2.

Table 5.2 Summary of government and agency engagement activities

Stakeholder group	Engagement type	Key outcomes
Dubbo Regional Council	Virtual meeting on 5 August 2021.	LSbp and EMM provided a presentation of the proposed project, including indicative development footprint, timeframes, issues to be assessed in the EIS, and community engagement and next steps. Cumulative impacts with nearby projects was raised as a key risk for the proposed project, and in particular the potential for concurrent traffic and social impacts. LSbp committed to ongoing consultation with Dubbo Regional Council.
	Meeting on site 4 February 2022.	Lsbp met with Council representatives onsite to discuss project related issues and gain familiarisation with the project setting.
DPE	Virtual meeting on 9 September 2021 and a follow up meeting held 10 March 2022.	LSbp and EMM provided a presentation of the proposed development to DPE and enquired whether there were any specific requirements to be considered prior to lodgement of the Scoping Report. DPE noted specific items to be addressed, including the importance of cumulative impacts in relation to traffic and visual impacts. DPE requested that consultation be undertaken with the surrounding local councils and Transport for NSW (TfNSW).
Warrumbungle Shire Council	Virtual meeting on 14 January 2022.	LSbp and EMM provided a presentation of the proposed project, including indicative development footprint, timeframes, issues to be assessed in the EIS, and community engagement and next steps. Some key aspects raised by Council comprised: • use of council owned roads (Spring Ridge Road and Dapper Road); • waste; • accommodation capacity/cumulative impacts with other projects; and • community engagement. LSbp committed to ongoing consultation with Warrumbungle Regional Council.
	Meeting on site 4 February 2022.	Lsbp met with Council representatives onsite to discuss project related issues and gain familiarisation with the project setting.
TfNSW	Virtual meeting on 19 January 2022.	LSbp and EMM provided an overview of the proposed project and the proposed routes used for transport and access. The scope and method of assessment for the traffic impact assessment was discussed. LSbp committed to ongoing consultation with TfNSW as the Project develops.
Dugald Saunders – Member for Dubbo	Virtual meeting on 27 January 2022.	LSbp and EMM provided an overview of the proposed project, including indicative development footprint, timeframes and general strategy. Visual impacts and cumulative impacts were highlighted as key community concerns. LSbp committed to ongoing consultation with Mr. Saunders as the Project progresses.
BCS	Virtual meeting on 5 April 2022.	EMM met with representatives of DPE's Biodiversity Conservation and Science Directorate (BCS) to introduce the Project and discuss assessment requirements, impact avoidance and minimisation strategies and future engagement. EMM and LSbp will continue to engage with BCS as the Project proceeds.

5.3.4 Engagement outcomes

At this early planning stage, LSbp has proactively sought to engage with landowners and interested parties to introduce the project and open the lines of communication. This has been through direct mail-outs, hosting project specific information sessions and also attending existing community events. LSbp hopes that engagement will increase as the EIS progresses.

Indications show that the key issues to be addressed in the EIS phase relate to visual amenity, cumulative impacts of increased development in the area and the blending of renewable energy projects with agricultural activities.

Table 5.3 provides a summary of outcomes in the scoping phase and key matters for EIS assessment.

Table 5.3 Stakeholder engagement outcomes

Stakeholder group	Likely level of project interest	Geographical extent of project interest[1]	Community views on the project					
			Strategic context	Alternatives	Statutory issues	EIS engagement	Key matters for EIS assessment	Issues beyond the project scope
Local landholders and community	Medium/ high	Local	Changes to existing vista, sun reflection	None	None	Landowners have requested to remain informed about the Project	Visual amenity	None
Local landholders and community	Medium	Local	Impacts to roads, interruption to stock crossing activities	None	None	Landowners have requested to remain informed about the project	Construction traffic impacts	None
Local landholders and community	Medium	Local	Cumulative impacts with other proposed or existing projects in the region	None	None	As per relevant State guidelines	Sourcing a local workforce, SIA	None
Local landholders and community	Medium	Local	Placement of transmission line and sub-stations	None	None	As per nominated State authority	None	Advice will be provided by relevant authority
Local landholders and community	Medium	Local	A dedicated renewables belt located on prime agricultural land	None	None	As per nominated State authority	None	Renewables belt in place

[1] Note: local ≤ 5 km from the site, regional = 5–100 km from the site, state ≥ 100 km from the site.

Table 5.3 Stakeholder engagement outcomes

Stakeholder group	Likely level of project interest	Geographical extent of project interest[1]	Community views on the project					
			Strategic context	Alternatives	Statutory issues	EIS engagement	Key matters for EIS assessment	Issues beyond the project scope
Local landholders and community	Medium	Local	End of life plan, eg removal of infrastructure, rehabilitation of land to pre-existing, recycling of panels	None	None	Landowners have requested to remain informed about the Project	Post-project land rehabilitation and recycling	None
Local landholders and community	Low	Local	Invasive species control and management eg weeds	None	None	Landowners have requested to remain informed about the Project	In-project land management	None
Local member	Medium	Local	Visual and cumulative impacts.	None	None	Requested to remain informed about the Project	Visual amenity, SIA	None
Local government agencies	Medium	Regional	Impacts to local roads, accommodation capacity, waste, cumulative impacts with other projects in the region, social impacts	None	None	Councils requested information about the Project including future community engagement	Construction traffic impacts, sourcing a local workforce, SIA, waste management	None
DPE	Medium	State	Cumulative impacts in relation to traffic and visual impacts.	None	None	Advised to consult with local Councils and TfNSW	Visual amenity, construction traffic impacts, SIA	None
Transport for NSW (TfNSW)	Low	State	The scope and method of assessment for the traffic impact assessment	None	None	Continue ongoing consultation with TfNSW as the Project develops	Traffic impact assessment	None

5.4 Future engagement

Future engagement activities will focus on EIS preparation and project assessment outcomes. Overarching timeframes are as follows:

- EIS preparation – May 2022 to March 2023;
- EIS public exhibition – April 2023 (public comment 28 days); and
- Project assessment outcomes – late 2023.

Consultation undertaken during the preparation of the EIS will aim to:

- consult proactively with stakeholders using clear and consistent key messages;
- continue to engage with key stakeholders to identify potential issues, opportunities and impact mitigation measures;
- communicate the progress of the Project;
- enable stakeholders to have input into the preparation of the EIS and project planning; and
- implement response and feedback strategies to address stakeholder concerns and where possible use these to inform the development and refinement of the Project.

A summary of consultation methods to be used as the Project develops, and their purpose, is provided in Table 5.4, and the communication and engagement plan is provided in Appendix A.

Table 5.4 Proposed EIS consultation purpose and methods

Stakeholder	Purpose	Method
DPE including: • Environment, Energy and Science Group; and • Water Group.	• Informing DPE of project progress; • resolving of issues during EIS preparation; and • applying DPE guidelines to engagement activities.	• Face to face/videoconference meetings; • email and phone correspondence; and • briefing letters (to Environment, Energy and Science Group and Water Group).
Transport for NSW	• Informing Transport for NSW of project progress; and • discuss access options for the Project and confirm Transport for NSW requirements for potential upgrades of access route connection with Castlereagh Highway.	• Face to face/videoconference meetings; • email and phone correspondence; and • briefing letters.
Dubbo Regional Council	• Informing Council of project progress; • discuss access options for the Project and confirm Council requirements for road upgrades; • consultation to inform the social impact assessment (SIA); and • communicate outcomes of assessments.	• Face to face/videoconference meetings; • email and phone correspondence; and • briefing letters.

Table 5.4 Proposed EIS consultation purpose and methods

Stakeholder	Purpose	Method
Warrumbungle Shire Council	• Informing Council of project progress; • discuss access options for the Project and confirm Council requirements for road upgrades (should roads within this LGA be impacted by the Project); and • consultation to inform the SIA.	• Face to face/videoconference meetings; • email and phone correspondence; and • briefing letters.
TransGrid/EnergyCo	• Informing TransGrid of project progress; and • project design discussions.	• Face to face/videoconference meetings; and • email and phone correspondence.
NSW Environment Protection Authority (EPA)	• Informing EPA of project progress; and • following EPA technical assessment guidelines.	• Email and phone correspondence; and • briefing letters.
Relevant local, State and Commonwealth MPs	• Regular project updates.	• Face to face/videoconference meetings; and • briefing letters.
Landowners associated with the Project (ie that own land within the development footprint)	• Regular project updates; • identification of key environmental and social concerns; and • communication regarding how environmental and social concerns will be mitigated.	• Landowner correspondence about land access arrangements, if required; • face-to-face briefings, interviews and phone calls/video conference, online survey; • key stakeholder/landowner workshop; • newsletters and fact sheets; • community drop-in sessions; and • website feedback forms and project information line.
Neighbours not associated with the Project	• Regular project updates; • identification of key environmental and social concerns; • communication regarding how environmental and social concerns will be mitigated; and • communication regarding opportunities to lodge a submission on the Project.	• Online survey; • newsletters and fact sheets; • interviews and phone calls; • community workshop; • community drop-in sessions; and • website feedback forms and project information line.
Wider community	• Regular project updates.	• Online survey; • newsletters and fact sheets; • community workshop; • community drop-in sessions; and • website feedback forms and project information line.

Table 5.4 Proposed EIS consultation purpose and methods

Stakeholder	Purpose	Method
Aboriginal community	• Regular project updates; and • identify Aboriginal cultural heritage values of the Project site and connection to place.	• Consultation in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010); • newsletters and fact sheets; • community drop-in sessions; and • website feedback forms and project information line.
Local service providers	• Regular project updates; • identify key environmental, social and economic concerns; and • gain an understanding of the local economy and resource availability (ie availability of accommodation for the construction phase).	• Face-to-face briefings, interviews and phone calls/video conference online survey; • newsletters and fact sheets; • community drop-in sessions; and • website feedback forms and project information line.
Special interest groups	• Regular project updates; and • identify key environmental, social and economic concerns.	• Face-to-face briefings, interviews and phone calls/videoconference; • online survey; • newsletters and fact sheets; • community drop-in sessions; and • website feedback forms and project information line.

6 Proposed assessment of impacts

6.1 Introduction

A review of environmental aspects relevant to the Project has been carried out to assist in the identification of matters that will require further assessment in the EIS and the level of assessment that should be carried out for each matter. In accordance with the *Scoping Report Guidelines* (DPIE 2021a), the following factors have been considered in the identification of matters needing further assessment for the Project:

- the scale and nature of the likely impact of the Project and the sensitivity of the receiving environment;
- whether the Project is likely to generate cumulative impacts with other relevant future projects in the area; and
- the ability to avoid, minimise and/or offset the impacts of the Project, to the extent known at the scoping phase.

A summary of the levels of assessment required for each matter is provided in the EIS scoping summary table (Appendix B).

This chapter has also been prepared in accordance with:

- the *Social Impact Assessment Guideline for State Significant Projects* (SIA Guideline, DPIE 2021c) – the preliminary assessment of social impacts (Section 6.8) is supported by a Social Impact Assessment (SIA) Scoping Report and SIA scoping worksheet which are provided in Appendix D; and
- the CIA Guideline – potential for cumulative impacts with relevant future projects are considered under each matter and summarised in the CIA scoping summary table (Appendix E).

6.2 Amenity

6.2.1 Visual

i Existing environment and preliminary impact assessment

The landscape within and surrounding the site is dominated by flat to gently undulating cleared agricultural land. Other prominent features in the landscape include the telecommunications tower located in the south-eastern portion of the Project area, overhead low voltage power lines, scattered rural residences and farm structures as well as remnant roadside vegetation, vegetation associated with Sandy Creek and planted windbreaks.

The Dapper Union Church is the closest sensitive receiver to the site, located on Sandy Creek Road approximately 35 m from the site's southern boundary. The nearest rural residence (R9) is located approximately 150 m from the site's southern boundary on the southern side of Dapper Road (refer Figure 2.2). In total, 16 rural residences and Dapper Union Church are within a 2 km buffer of the Project site. The Project's infrastructure is expected to have varying levels of visibility from these residences. There is also the potential for more distant rural residences and local roads to have distant views of project infrastructure.

The gently undulating topography and remnant roadside vegetation provide varying levels of screening of the site when viewed from surrounding residences. While there are clear views of the site along stretches of Dapper Road and Sandy Creek Road, the prevailing topography and roadside vegetation generally screens views of the site from Spring Ridge Road and the Golden Highway (the latter of which is located at its closest point approximately 4 km north-west of the site).

The site also falls within the Dark Sky Region which consists of the land within a 200 kilometre radius of Siding Spring Observatory.

The eastern boundary of the Project site borders the proposed Cobbora Solar Farm development site (SSD-29491142), therefore there is the potential for the Project and the Cobbora Solar Farm to result in cumulative visual impacts should both projects proceed. Similarly, it is understood that Spicers Creek Wind Farm is currently under investigation immediately west of the Project site. SEARs for Spicers Creek Wind Farm are yet to be sought, however there is potential for cumulative visual impacts should that project also proceed.

ii Proposed assessment approach

A detailed level of visual impact assessment is proposed due to the potential for visual impact on numerous rural residential receivers and the Dapper Union Church, combined with the potential cumulative visual impacts associated with the proposed Cobbora Solar Farm, Spicers Creek Wind Farm and the Project.

The visual impact assessment will include an assessment of the likely visual and landscape impacts of the Project (including any glare, reflectivity and night lighting) on surrounding rural residences, the Dapper Union Church, scenic or significant vistas, air traffic and road corridors in the public domain.

A detailed viewshed analysis, including on-site assessments and discussions with potentially affected landholders, will be undertaken as part of the EIS to identify locations and receivers within the local setting that may experience views of project infrastructure.

Where relevant, the visual impact assessment and EIS will include mitigation measures to help reduce the Project's visual amenity impacts. Possible mitigation measures will be discussed with relevant stakeholders during the preparation of the assessment.

The assessment would be undertaken with reference to:

- the *Guidelines for Landscape and Visual Impact Assessment* (United Kingdom Landscape Institute of Environmental Management and Assessment 2013);
- *Guidance Note for Landscape and Visual Assessment* (GNLVA) (AILA 2018) prepared by the Australian Institute of Landscape Architects;
- AS4282-1997 Control of the obtrusive effects of outdoor lighting;
- the *Wind Energy: Visual Assessment (VA) Bulletin AB 01 For State Significant Wind Energy Development* (DPE 2016); and
- the *Large-Scale Solar Energy Guideline* (DPE 2018).

It is noted that the VA Bulletin specifically relates to assessment of visual impacts of wind farms in NSW; however, a number of the methods for describing visual sensitivity and landscape character are considered to be relevant to the visual assessment for the Project.

Specific community engagement is proposed with surrounding landholders and local community members in relation to visual amenity.

6.2.2 Noise and vibration

i Existing environment and preliminary impact assessment

Land use in the Project site and surrounds is predominantly agricultural. Given the Project's rural setting, background noise at nearby sensitive receptors is likely to be low and characterised by agricultural equipment and machinery associated with agricultural production activities, vehicle movements along the local roads and natural sounds (livestock, birds, insects, etc).

The construction of the Project and potential road upgrade works will generate noise from activities such as site establishment works, pile driving and on-site and off-site traffic movements. These activities have the potential to create temporary noise and vibration impacts at surrounding residences. Impacts to activities conducted at the Dapper Union Church are considered unlikely as construction will be restricted to standard construction hours.

During the operational phase of the Project, noise will be generated from sources including the BESS, substation and inverter stations. Project design will be informed by an iterative operational noise assessment and design process to ensure these project components are located with adequate separation from sensitive land uses. Further, the Project would not generate significant traffic movements during operation, and it is unlikely that operation of the Project will produce any vibration impacts.

ii Proposed assessment approach

A standard level noise and vibration impact assessment will assess impacts associated with construction and operation of the Project including construction-related road traffic noise. The assessment will be undertaken in accordance with:

- *NSW Interim Construction Noise Guideline* (DECC 2009);
- *NSW Noise Policy for Industry* (EPA 2017);
- *NSW Road Noise Policy* (DECCW 2011); and
- *Assessing Vibration: A Technical Guideline* (DECC 2006).

The potential for cumulative noise impacts with the proposed Cobbora Solar Farm will be considered as the Project design evolves and will be assessed in the EIS. Assuming that Spicers Creek Wind Farm also proceeds, there is potential for cumulative noise impacts with that project.

Specific community engagement is proposed with surrounding landholders in relation to noise and vibration.

6.3 Biodiversity

6.3.1 Existing environment

The Project site is located in the Talbragar Valley subregion of the Brigalow Belt South (BBS) Interim Biogeographic Regionalisation for Australia (IBRA) Bioregion. It is located within the Goonoo Slopes Mitchell Landscape.

The Project site is situated on a shallow valley floor within the Sandy Creek catchment and generally drains north to the Talbragar River. A largely flat site, it features a gently undulating topography ranging between 380 to 440 metres above sea level (asl), is intersected by a number of creeks (refer Section 2.2.3), with several farm dams scattered across the site.

The Project site has a pastoral history and as such is largely cleared of woody vegetation and features blocks of pasture-improved and cultivated grasslands. The remnant woody vegetation is mostly confined to roadside and fence line corridors with diffusely canopied woodland patches retained within some paddocks, although scattered remnant trees dot the landscape across some paddocks.

The remnant woody vegetation is represented by grassy box woodland community types associated with alluvial soils, including woodlands dominated by Grey Box (*Eucalyptus microcarpa*), Yellow Box (*E. melliodora*), Fuzzy Box (*E. conica*), Blakely's Red Gum (*E. blakelyi*) and Rough-barked Apple (*Angophora floribunda*).

i Terrestrial vegetation

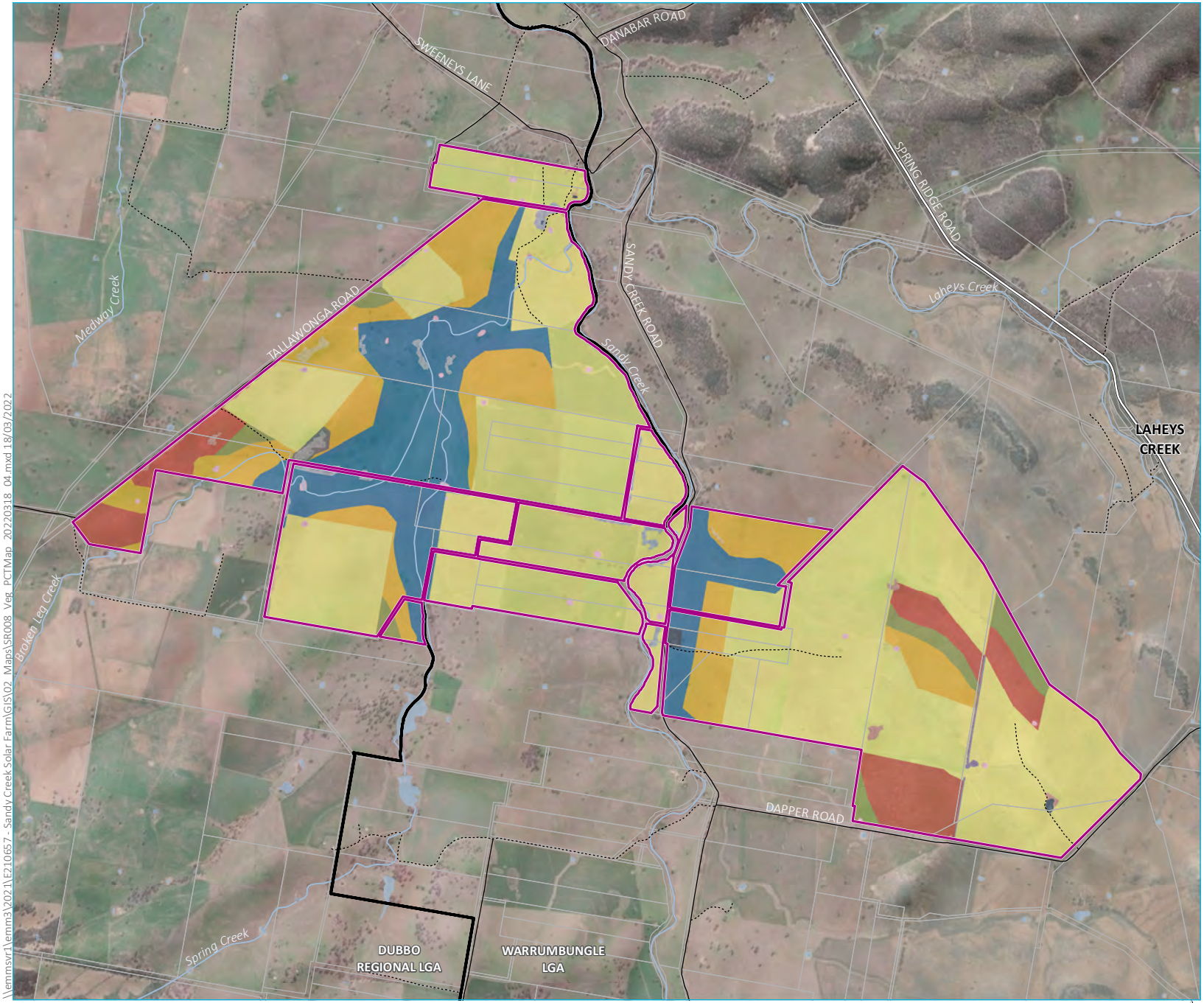
The Project site supports five different plant community types (PCTs): PCT 201, 266, 277, 281 and PCT 76. These are closely related western slopes or floodplain transition woodlands and can transition from one PCT to another in response to underlying environmental conditions such as landscape position and soil characteristics.

The PCTs are present as remnant woodland but also as native pasture that has been derived from the past clearing of the woody component of the original woodland community. These areas of native pasture are referred to generically as "derived native grasslands". Although clearly modified from its original condition, derived native grasslands can perform an important role in woodland recovery and provide habitat for native species, including threatened species that occur in grassy understorey habitats. If sufficiently species-rich and structurally complex (eg tussocky, containing interstitial microsites), derived native grasslands can still retain biodiversity value.

The vegetated components of the Project site are summarised in Table 6.1 and shown in Figure 6.1. The vegetation mapping shown in Figure 6.1 is based on ground-truthing studies undertaken by EMM of regional mapping data (DPIE 2015) and other desktop information (EMM 2012).

Table 6.1 Plant Community Types present within the Project site

Plant community type	Vegetation form	Extent within project site (ha)
PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	Woodland	2.69
	Derived native grassland	38.29
PCT 201 – Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Woodland	14.11
	Derived native grassland	252.85
PCT 266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion	Woodland	5.97
	Derived native grassland	108.74
PCT 277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	Woodland	7.06
	Derived native grassland	227.60
PCT 281 – Rough-Barked Apple – red gum – Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	Woodland	2.29
	Derived native grassland	1.92
Planted native vegetation	n/a	2.44
Exotic	n/a	996.54
Total vegetated area (ha)		**1,660.50**



KEY

Project site

Preliminary vegetation mapping

- Cleared (urban)
- Waterbody (dam)
- Exotic vegetation
- Native planted vegetation

Plant community type

76 | Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
- DNG
- Woodland

201 | Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion
- DNG
- Woodland

266 | White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
- DNG
- Woodland

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

281 | Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion
- DNG
- Woodland

Existing environment
- Major road
- Minor road
- Vehicular track
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Local government area

\\emmsvr1\emm3\2021\E21065 7 - Sandy Creek Solar Farm\GIS\02 Maps\SR008 Veg PCTMap 20220318 04.mxd 18/03/2022

Source: EMM (2022); Lightsource bp (2021); DFSI (2020, 2021); ESRI (2022); OEH (2017); GA (2011)

Preliminary vegetation mapping

Sandy Creek Solar Farm
Scoping Report
Figure 6.1

EMM
creating opportunities

a Threatened ecological communities

The grassy box woodlands of the NSW western slopes have historically been targeted for agricultural development and as such are extensively over cleared and/or degraded. For this reason, all the above PCTs recorded within the Project site are associated with threatened ecological communities (TECs) listed under the NSW *Biodiversity Conservation Act 2016* (BC Act).

The three TECs that may be relevant to the Project site are listed in Table 6.2 and are closely related to each other. Of these three TECs, two are also listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The degree to which the PCTs recorded in the Project site conform to the legal listings for these TECs will determine whether they are assessed as the TECs in future impact assessments. This will require detailed field studies to evaluate whether key diagnostics and condition thresholds are met. It is noted that the EPBC Act listing advice[2] for the TECs are prescriptive and will generally exclude examples that are in very poor condition, whereas the BC Act final determinations[3] are less prescriptive and as such will likely include a range of vegetation conditions as being part of the TECs.

The listing advice and final determinations for all relevant TECs include derived native grassland as part of the TECs if condition thresholds are met.

Box-Gum Woodland is also a threatened entity that has potential to be at risk of a Serious and Irreversible Impact (SAII) as defined under the BC Act. The determination of an SAII entity is to be made by the approval authority in accordance with the principles set by Section 6.7 of the *Biodiversity Conservation Regulation 2017*. For a development assessed as state significant, the approval authority can approve a proposal which is likely to have a serious and irreversible impact on an SAII entity but must take those impacts into consideration and determine whether there are any additional and appropriate measures that will minimise those impacts if approval is to be granted.

[2] Advice given to the environment minister from the Threatened Species Scientific Committee (TSSC) to list a threatened entity under the provisions of Part 13, Division 1 of the EPBC Act.

[3] Determinations made by the Scientific Committee established under the BC Act to list a threatened entity under the provisions of Part 2 of Schedule 1 of the BC Act.

Table 6.2 Threatened ecological communities associated with the Project site

Plant community type	Listing under BC Act	Listing under EPBC Act	Short name	Extent within Project site (ha)
PCT 76	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions **Endangered**	Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia **Endangered**	Grey Box Woodland	40.98
PCT 201	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions **Endangered**	Not listed	Fuzzy Box Woodland	266.95
PCT 266	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 **Critically endangered**	Box-Gum Woodland	114.72
PCT 277	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 **Critically endangered**	Box-Gum Woodland	234.65
PCT 281	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 **Critically endangered**	Box-Gum Woodland	4.21

ii Threatened terrestrial species

Desktop searches were conducted for threatened species that have the potential to occur in the Project site, which included a review of the following:

- any species associated with the five PCTs identified during field surveys;
- any Matters of National Environmental Significance (MNES) generated from the Protected Matters Search Tool (PMST) (DAWE 2022); and
- atlas records from a BioNet search (BCD 2021).

The desktop searches returned 71 threatened species listed under the BC Act comprising, one frog, 34 bird, 10 mammal, two reptile species and 14 plant species. Of these species, 35 species are also listed as threatened under the EPBC Act.

There are an additional eight threatened species listed under the EPBC Act that are not listed under the BC Act; these species comprise four fish species (refer to Section 6.3.1iii and 6.3.1ivb), two bird and two plant species. The desktop searches also returned a further ten species listed as migratory under the EPBC Act.

Several of the species returned by the desktop searches are initially assessed as having at least a moderate likelihood of occurring within the Project site (see Appendix C). Detailed studies would be required comprising comprehensive habitat assessment and targeted surveys to refine this assessment and to assess the likely impacts from future development.

a Assessment requirements for terrestrial threatened species

Under the Biodiversity Assessment Method (DPIE 2020), 'ecosystem credit' species are considered to be reliably predicted using vegetation types as surrogates and as such do not require targeted surveys to determine presence. In contrast, 'species credits' species cannot be confidently predicted by vegetation surrogates and must be subject to targeted survey. Several species are dual credit species, whereby they are assessed as ecosystem credit species and are assessed as a species credit species for a specific habitat or stage of their lifecycle.

Many of the threatened species referenced in Appendix C are ecosystem credit species and if likely to occur, will not require targeted survey. A number of the species assessed as having at least a moderate likelihood of occurring within the Project site are candidate or dual credit species and may require targeted survey.

To understand the likely targeted survey requirements for threatened species, a list of the species credit and dual credit species that have potential to occur is provided and includes the seasonal survey timing requirements for each species (Table 6.3). There are 19 preliminary candidate species identified using this approach.

The Project site does not contain land mapped as important areas for two species, Regent Honeyeater and Swift Parrot and as such, these species would not require targeted survey. One of the candidate species, Leafless Indigo (*Indigofera efoliata*) is listed as being a candidate SAII entity.

It is anticipated that the candidate species list will be able to be reduced after further field surveys and it is possible that many of the habitat requirements for the threatened species will be absent or degraded, allowing exclusion on this basis.

Table 6.3 Seasonal survey requirements[1] for potential candidate species

Scientific name	Common name	Species type	SAII	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Acacia ausfeldii	Ausfeld's Wattle	Species	No	No	No	No	No	No	No	No	Yes	Yes	Yes	No	No
Aprasia parapulchella	Pink-tailed Legless Lizard	Species	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	No
Burhinus grallarius	Bush Stone-curlew	Species	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calyptorhynchus lathami	Glossy Black-Cockatoo	Species/Ecosystem	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No	No	No
Commersonia procumbens	-	Species	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
Crinia sloanei	Sloane's Froglet	Species	No	No	No	No	No	No	No	Yes	Yes	No	No	No	No
Dichanthium setosum	Bluegrass	Species	No	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes
Diuris tricolor	Pine Donkey Orchid	Species	No	No	No	No	No	No	No	No	No	Yes	Yes	No	No
Hieraaetus morphnoides	Little Eagle	Species/Ecosystem	No	No	No	No	No	No	No	No	Yes	Yes	Yes	No	No
Homoranthus darwinioides	Fairy Bells	Species	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Indigofera efoliata	Leafless Indigo	Species	Yes	No	No	No	No	No	No	No	No	Yes	Yes	No	No
Lophochroa leadbeateri	Major Mitchell's Cockatoo	Species/Ecosystem	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Ninox connivens	Barking Owl	Species/Ecosystem	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ninox strenua	Powerful Owl	Species/Ecosystem	No	No	No	No	No	Yes	Yes	Yes	Yes	No	No	No	No
Polytelis swainsonii	Superb Parrot	Species/Ecosystem	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	No
Swainsona sericea	Silky Swainson-pea	Species	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	No
Tylophora linearis	-	Species	No	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes
Tyto novaehollandiae	Masked Owl	Species/Ecosystem	No	No	No	No	No	Yes	Yes	Yes	Yes	No	No	No	No
Zieria ingramii	Keith's Zieria	Species	No	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Yes

1. Correct as of February 2022.

iii Aquatic values

The Project site is intersected by Sandy Creek (fifth order), Broken Leg Creek (fourth order) and Spring Creek (third order). These creeks contained water at the time of inspection but was characterised by low flows, shallow beds and little over-water shading, although open grassy woodland was recorded along sections. Several online dams were observed with fringing rushes.

Three creeks (Sandy Creek, Broken Leg Creek and Spring Creek) within the Project site are mapped as Key Fish Habitat (DPI 2022). Sandy Creek is order 5, Broken Leg Creek is order 4, and Spring Creek is order 3. Sandy Creek has a Freshwater Fish Community Health Status of 'very poor' as derived from fish sampling records from 2009-2011 with metrics applied for Expectedness, Nativeness and Recruitment (DPI 2016).

The Project site is not within the mapped distribution for any threatened aquatic ecological community listed under the *Fisheries Management Act 1994* (FM Act).

Five threatened fish species have the potential to occur in the area based on the PMST report and NSW DPI modelled Threatened Fish Distribution mapping (DPI 2021) (see Table 6.4).

Table 6.4 Threatened fish species predicted to occur in the Project site

Species	Scientific name	FM Act status	EPBC Act status
Trout Cod	*Maccullochella macquariensis*	Endangered	Endangered
Murray Cod	*Maccullochella peelii*	Not listed	Vulnerable
Flathead Galaxias	*Galaxias rostratus*	Critically endangered	Critically endangered
Macquarie Perch	*Macquaria australasica*	Endangered	Endangered
Southern Purple Spotted Gudgeon	*Morgunda adspersa*	Endangered	Not listed

Sandy Creek is mapped within the distribution for the threatened Southern Purple Spotted Gudgeon (*Mogurnda adspersa*).

If future development has potential to impact these watercourses, a habitat assessment and targeted fish survey may be required. If waterway crossings are required, the Project will also be required to consider an appropriate design in accordance with *the Policy and Guidelines for Fish Friendly Waterway Crossings* (DPI 2003).

iv Matters of national environmental significance (MNES)

a Threatened ecological communities

Preliminary vegetation PCT mapping indicates that two threatened ecological communities occur within the Project site. These are:

- Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia (Endangered); and
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Critically endangered).

As discussed in Section 6.3.1i, the degree to which the PCTs recorded in the Project site conform to the legal listings for these TECs will need to be assessed as part of any future impact assessment via detailed field studies.

b Threatened species

A total of 35 threatened species listed under the EPBC Act were considered (see Appendix B), comprising one frog, 11 bird, four mammal, two reptile, 13 plant and four fish species.

Of these species, 17 are considered to have at least a moderate likelihood of occurring within the Project site, comprising of Sloane's Froglet (*Crinia sloanei*) which may utilise the dams and connecting grassland habitats, woodland birds which may utilise the trees on site, fish species which may utilise the creeks on site, and several plant species.

c Migratory species

Ten migratory species were identified, comprising mostly wetland and terrestrial bird species. Shorebird species are associated with muddy lake margins or mudflats, mangroves or freshwater wetlands. The terrestrial migratory birds typically inhabit wet sclerophyll forests with a dense shrubby understorey or fly over drier woodlands and open forests on migration. White-throated Needletail was recently recorded within the locality, and hence is considered likely to occur as a flyover species.

There are no existing records of any other migratory species within the locality of the Project site and considering the limited availability of wooded habitats within the Project site, their likely occurrence is considered to be low.

d RAMSAR wetlands

There are four wetlands of national importance (ie Ramsar wetlands) present upstream of the Project site; these include:

- Banrock station wetland complex (800–900 km upstream);
- Riverland (700–800 km upstream);
- The Coorong, and Lakes Alexandrina and Albert wetland (900–1,000 km upstream); and
- The Macquarie Marshes (150–200 km upstream).

Due to their distance upstream of the Project site, none of the above Ramsar wetlands are considered likely to be affected by any future development of the Project site.

6.3.2 Assessment approach

The potential biodiversity impacts of the Project will be assessed in accordance with the *Biodiversity Assessment Method (*DPIE, 2020) but will need to also have regard for matters assessed under both the EPBC Act and the FM Act. The key considerations for the Project are expected to be:

- the value and extent of derived native grasslands captured within a future development footprint, as derived native grasslands can generate a credit liability if they meet minimum condition thresholds; and
- survey requirements for candidate threatened species, as it can influence the Project program.

If the Project is likely to significantly affect MNES and requires Commonwealth approval, the Project is expected to come under the provisions of the Assessment Bilateral Agreement between the Australian Government and the State of New South Wales. As such, the state assessment documents would be used by the Commonwealth Minister for the Environment to determine whether an approval is granted.

If future development has potential to impact watercourses and aquatic values, a habitat assessment and targeted fish survey may be required. An aquatic impact assessment would need to be prepared in accordance with the *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI 2013). If waterway crossings are required, the Project will also be required to consider an appropriate design in accordance with the *Policy and Guidelines for Fish Friendly Waterway Crossings* (DPI 2003).

As part of a future biodiversity assessment of the Project site, the scope of work is expected to include, but may not be limited to, the following:

- Detailed vegetation mapping in the field to refine vegetation stratification of identified PCTs into broad condition states (vegetation zones). A key focus will be on the areas mapped as non-native/cleared, given that they occupy the vast majority of the Project site, and consideration given as to whether any derived native grassland occur, thus requiring offsetting.

- Vegetation plots will be undertaken to measure vegetation integrity scores of different vegetation zones. Any vegetation above the vegetation integrity threshold that requires offsetting will be avoided through the design process or offset in accordance with the Biodiversity Offset Scheme (BOS).

- A review of biodiversity constraints present, to inform the detailed design process and avoidance of areas of high biodiversity constraint where possible, including native vegetation (including derived native grassland) and threatened species habitats. Priority will be given to TECs and candidates for Serious and Irreversible Impacts.

- Habitat mapping with a focus on assessing habitat constraints for candidate species, which will allow several species to be excluded from requiring further assessment if features are absent or degraded.

- Development of a refined list of candidate species requiring survey based on the outcomes of the habitat assessment.

- A survey plan for candidate species, detailing methods and timing. While the majority of the Project site is cleared, it is vital that threatened species are adequately assessed in accordance with NSW and Commonwealth survey guidelines and the *Biodiversity Assessment Method*. In the event of uncertainty regarding effort or approach DPE/DAWE will be contacted.

- Consideration of any impacts to key fish habitat and threatened aquatic species.

- Consideration of impacts to any MNES, including TECs and whether referral to the Commonwealth is required.

- Preparation of a Biodiversity Development Assessment Report (BDAR) in accordance with the *Biodiversity Assessment Method* (DPIE 2020). The BDAR will include assessment of biodiversity values, consideration of prescribed impacts (those not quantified by ecosystem or species credits), presentation of mitigation and avoidance measures, quantification of the offsetting requirements and will present a strategy for offset delivery if required.

6.4 Heritage

6.4.1 Aboriginal cultural heritage

i Existing environment and preliminary impact assessment

An Aboriginal Heritage Information Management System (AHIMS) search was undertaken by EMM on 15 November 2021. Due to the size of the area, three separate searches were undertaken targeting the northern, south-eastern, and south-western portions of the proposed project site and the surrounding region. The search identified 203 previously registered sites. All sites are still listed as 'valid'. The number of registrations on AHIMS is considered a product of the level of prior assessment carried out for the now discontinued Cobbora Coal Project (this former project's application area includes around two-thirds of the site). The AHIMS data is presented in Figure 6.2 and Table 6.5 below. Of the 203 previously registered sites, nine are completely within the Project site and a further six located in very close proximity.

Artefact sites are the predominant site type identified within the proposed project site, with almost all sites being within close proximity to Sandy Creek. The high level of land clearance and modification due to agricultural land uses will have direct implications on archaeological preservation. The assessment previously undertaken for the Cobbora Coal Project and the number of sites identified has provided a good indication of the type and location of Aboriginal sites that occur in the area. This baseline information on the existing environment will be used a guide for this project.

Table 6.5 Summary of AHIMS site types within the search area

Site type	Number of sites	% of total
Artefact	102	50%
Artefact w/ Potential Archaeological Deposit (PAD)	27	13%
PAD	7	3%
Modified tree (carved or scarred)	22	11%
Grinding groove	17	8%
Hearth	15	7%
Habitation structure	9	5%
Hearth w/ Artefact and PAD	3	2%
Restricted site[4]	1	1%
TOTAL	**203**	**100%**

[4] AHIMS was contacted on 16 December 2021 to confirm the location of the restricted site relative to the proposed project area. Response from AHIMS pending.

ii Proposed assessment approach

A standard Aboriginal cultural heritage assessment (ACHA) will be prepared for the Project in accordance with relevant regulations and guidelines, including:

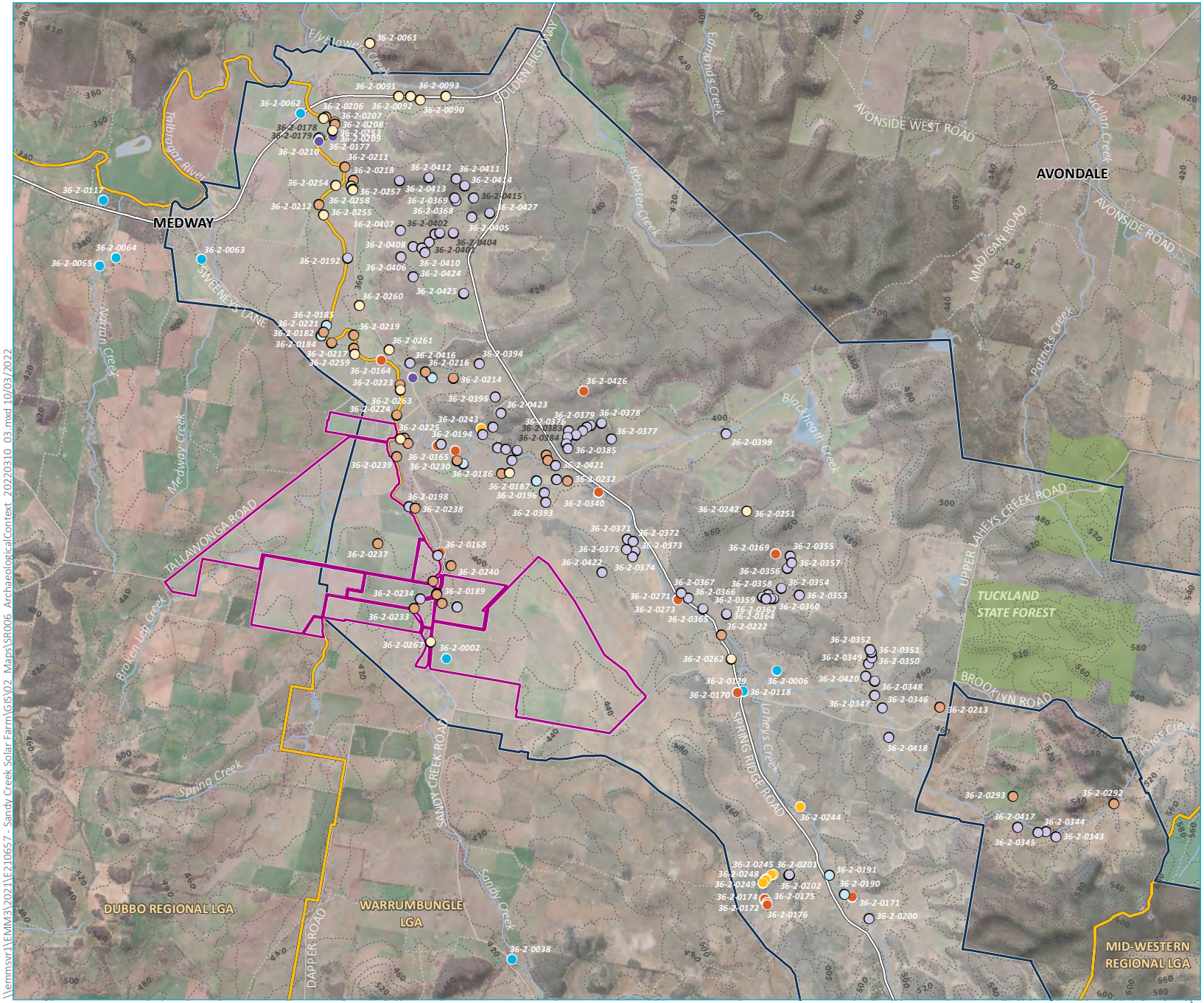
- *Guide to investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011);
- *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010a); and
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b).

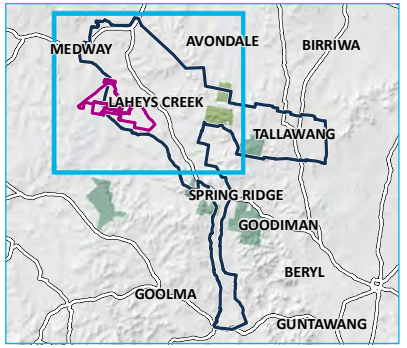
The ACHA will include the following key components:

- Identification of Aboriginal cultural heritage values relevant to the Project site through background research (including review of the findings of the ACHA carried out to inform the Cobbora Coal Project's EIS), predictive modelling, Aboriginal consultation and archaeological field investigations. Archaeological survey will be undertaken by archaeologists and representatives of the local Aboriginal community. Potential project constraints identified during the survey will inform potential refinement of the Project development footprint to minimise impacts to Aboriginal heritage values. Measures will be developed to avoid and mitigate potential impacts for Aboriginal cultural heritage, as required. The findings of background research and the survey will inform the need for further archaeological assessment (such as test excavation).
- Assessment of the significance of Aboriginal objects, sites and locations identified in the course of the archaeological investigations and through Aboriginal community consultation.
- Assessment of the impact of the Project on identified Aboriginal cultural heritage values.
- Provision of appropriate management measures for potentially impacted Aboriginal cultural heritage values in response to their assessed significance.

a Consultation

Consultation with the Aboriginal community is a requisite component of Aboriginal assessment in NSW in instances where Aboriginal objects or places are identified in an area and have the potential to be harmed. Aboriginal people that express an interest in being involved with the Project then become registered and are referred to as registered Aboriginal parties. Consultation for the Project commenced with the Aboriginal community in January 2022 in accordance with the guidelines.





KEY

Project site

Previous heritage investigation area - Cobbora Coal project application area (discontinued)

AHIMS site type

- Artefact site
- Artefact, hearth and PAD
- Grinding groove
- Habitation structure
- Hearth
- Isolated artefact
- Isolated artefact and PAD
- Modified tree

Existing environment

- Major road
- Minor road
- Vehicular track
- Topographical contour (10 m)
- Watercourse/drainage line
- Waterbody
- NPWS reserve
- State forest
- Local government area

Source: EMM (2022); Lightsource bp (2021); OEH (2021); DFSI (2020); ESRI (2022); GA (2011)

0 2.5 5 km

GDA 1994 MGA Zone 55

N

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Archaeological context

Sandy Creek Solar Farm
Scoping Report
Figure 6.2

EMM
creating opportunities

6.4.2 Historical heritage

i Existing environment

A search of the available historical heritage inventories was carried out including:

- Dubbo LEP;
- Warrumbungle LEP;
- National Heritage List;
- Commonwealth Heritage List; and
- NSW State Heritage Register.

There are no national, state or local listed heritage items identified within the Project site.

In 2012 EMM compiled the historical heritage assessment for Cobbora Holding Company Pty Ltd, for the Cobbora Coal Project (EMM Consulting Pty Ltd 2012). During this study, 13 items of local historical significance were identified in the landscape. These items have not yet been added to Schedule 5 of the Warrumbungle LEP, but will be considered in future updates of the LEP.

While there will be no direct impacts on this listed items, there may be potential indirect impacts and accordingly an assessment of the potential for indirect impacts will be carried out. There is potential for previously unreported heritage items to be located within the Project site associated with historical agricultural land use.

ii Assessment approach

The following key tasks will be undertaken as part of a Historical Heritage Impact Assessment to assess the potential impacts on historical heritage associated with the Project:

- a review of the NSW State Heritage Inventory, the relevant LEPs and the Australian Heritage Database to determine if there is any additional information on places of heritage significance in or near to the Project;
- a site assessment will be carried out with the aim of assessing the potential impact of the Project upon any previously unidentified heritage values and assessing the significance of any potential historical heritage items identified; and
- mapping of identified registered historical heritage items and additional historical heritage items (if found during site assessment) identified from these reviews.

6.5 Social

6.5.1 Existing environment

i Social impact assessment study area

The social impact assessment (SIA) study area, which identifies surrounding stakeholders who would potentially be directly or indirectly affected by the Project, is illustrated in Figure 6.3 and incorporates the following local communities within proximity to the Project site and their related local government areas:

- Local area:
  - Elong Elong;
  - Goolma;
  - Dunedoo; and
  - Dubbo.
- Regional area:
  - Gulgong (Mid-Western Regional LGA);
  - Warrumbungle LGA; and
  - Dubbo Regional LGA (formerly named Western Plains Regional).

Each of the locations are mapped to their ABS data categories shown in Table 6.6 and will be used to develop the community profile and social baseline.

Table 6.6 Locations within the SIA study area mapped to ABS category

Location	ABS category	SIA study area
Dubbo	Dubbo State Suburb Code (SSC)	Local area
Elong Elong	Elong Elong SSC	
Goolma	Goolma SSC	
Dunedoo	Dunedoo SSC	
Gulgong	Gulgong SSC	Regional area
Warrumbungle LGA	Warrumbungle Shire LGA	
Dubbo Regional LGA	Dubbo Regional LGA	

Notes: SSC - State Suburb Code as defined by the Australian Bureau of Statistics

The suburbs of Elong Elong, Goolma, and Dunedoo, are nearest to the project and are likely to be the communities with potential to be directly impacted by the project. In addition, Dubbo is anticipated to be the main hub for community gathering, access to services, and business activity closest to the project and will therefore be included as an impacted community.

More broadly, Gulgong and the Warrumbungle and Dubbo Regional LGAs may also experience some direct and indirect impacts, with these likely to be limited and mostly related to local procurement opportunities and employment.

Potentially directly impacted people include:

- residents of Elong Elong, Goolma, and Dunedoo;
- residents and service providers in Dubbo and Gulgong;
- residents of Warrumbungle LGA and Dubbo Regional LGA;
- Aboriginal community members;
- landholders and nearby neighbours, including businesses;
- local business community; and
- employees of the Sandy Creek Solar Farm.

ii Community profile summary

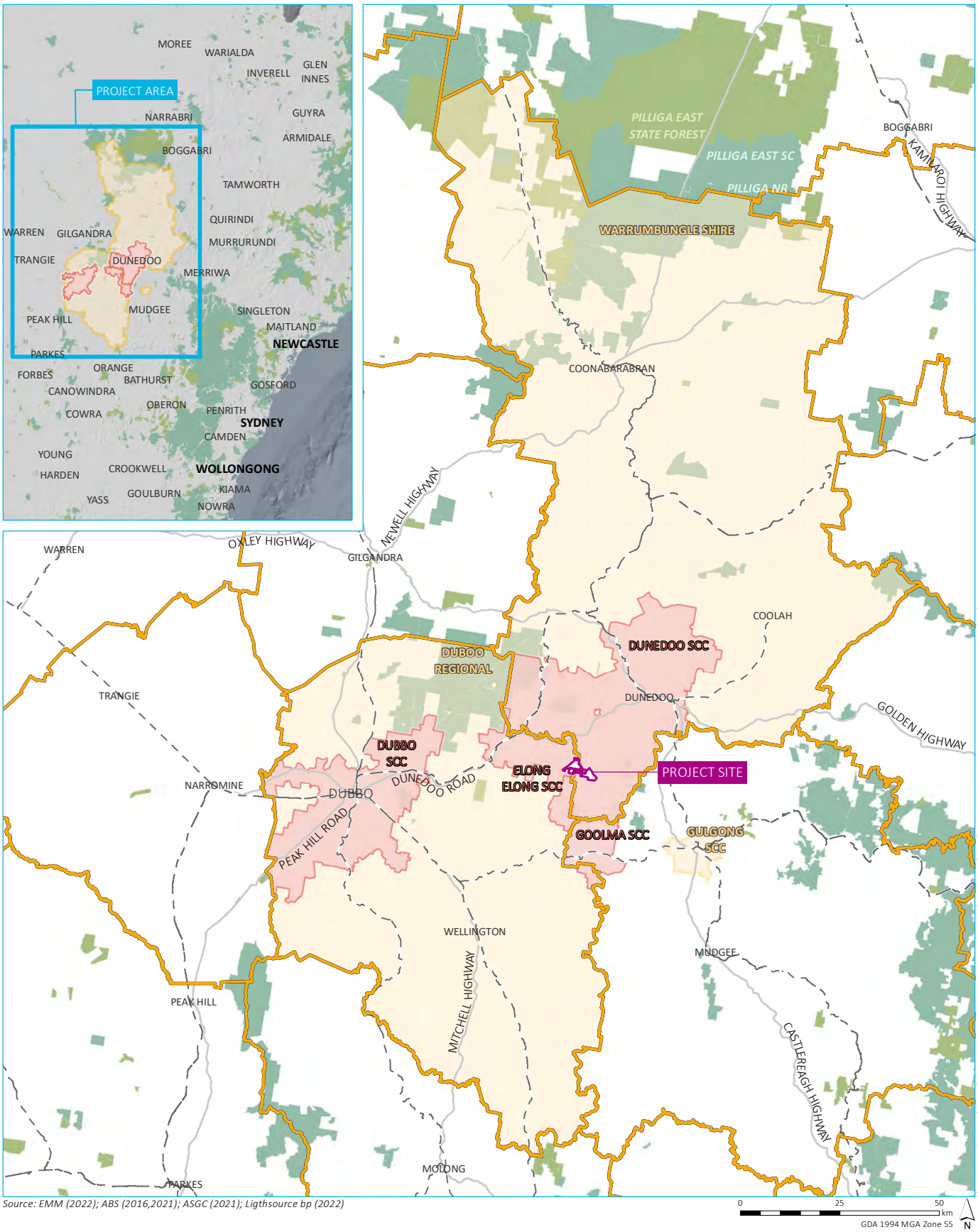
The social conditions within the SIA study area are described in detail in Appendix D and summarised below.

The SIA study area is comprised of a local area (Elong Elong SSC, Goolma SSC, Dunedoo SSC, Dubbo SSC, Dulgong SSC) with a population of 42,902 people, as well as the regional area (Warrumbungle LGA and Dubbo Regional LGA) with a total population of 59,902. The median age across the SIA study area (higher than the NSW average) – combined with the higher proportion of people aged over 65 years-old – indicates that the area is home to an older population. The SIA study area also hosts a larger proportion of Aboriginal and/or Torres Strait islander peoples than the average across the NSW state (2.9%), with some areas including up to 15.5% (Dubbo Regional LGA).

The workforce participation rates varied across the SIA study area, with some featuring low levels of unemployment and youth unemployment (such as Dubbo SSC), and others experiencing levels of unemployment higher than NSW (6.3%), such as Dunedoo SSC and Gulgong SSC, both at 8.6%. For the population engaged in the workforce, the top industry of employment was agriculture, forestry and fishing (highest employer in Elong Elong SSC, Goolma SSC, Dunedoo SSC, Warrumbungle LGA).

This disparity was also reflected by the variation showcased by the Socio-Economic Indexes for Areas indexes for socio-economic advantage and disadvantage, with some areas ranking in the top 20% of suburbs on the *Index of Education and Occupation* (Elong Elong SSC) and the *Index of Economic Resources* (Goolma SSC), while others ranked in the bottom 20% across multiple indices (including Dunedoo SSC, Gulgong SSC, and Warrumbungle Shire LGA). Despite this, the rates of homelessness (per 10,000 people) were significantly lower in the study area than across NSW (50.4 per 10,000), with the regional area averaging at 33.6 per 10,000.

NSW Healthstats data revealed that the SIA study area – located within the Western Local Health District – had higher rates of health-related indicators than across NSW. This data included indicators relating to alcohol consumption, smoking, obesity, asthma, and psychological distress. However, the proportion of the population who identified as having a need for assistance remained relatively consistent across the SIA study area, and within a 2% margin from the NSW proportion (5.4%).



Source: EMM (2022); ABS (2016,2021); ASGC (2021); Ligthsource bp (2022)

0 25 50 km

GDA 1994 MGA Zone 55

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KEY

- Project site
- Local area
- Regional area
- Local government area
- Rail line
- Major road
- NPWS reserve
- State forest

SIA study area

Sandy Creek Solar Farm
Social impact assessment
Figure 6.3

EMM creating opportunities

6.5.2 Assessment approach

i Scoping phase

An SIA scoping report has been prepared (Appendix D) to:

- identify potentially affected people;
- identify and understand the SIA study area of influence;
- identify the potential negative and positive, social impacts for further investigation; and
- determine the level of assessment required for each potential social impact.

The scoping phase engagement program incorporated consultation with the local community, adopting COVID-19 safe environment practices, and included the following activities:

- scoping meeting with DPE;
- briefing meetings with Dubbo Regional Council and Warrumbungle Shire Council representatives;
- in-depth interviews (via videoconference/teleconference) with landholders and nearby neighbours;
- community information sessions;
- distribution of information sheets; and
- an online survey.

Engagement activities were undertaken during January to March 2022. Further details on consultation activities undertaken are provided in Appendix D.

The community and stakeholder consultation undertaken to date has identified a range of issues of concern as summarised in Table 6.7.

Table 6.7 Community stakeholder identified issues by engagement type

Issues	Dubbo Regional Council	Warrumbungle Shire Council	In-depth interviews	Community survey	Community information sessions
Air quality					
Aboriginal cultural heritage				✓	✓
Access to housing				✓	
Access to short-term accommodation		✓		✓	
Access to services				✓	
Access to social infrastructure				✓	
Agriculture			✓	✓	✓
Climate change					
Employment			✓	✓	✓
Groundwater				✓	
Surface water				✓	
Health				✓	
Noise				✓	
Odour					
Land use			✓	✓	✓
Property prices			✓	✓	✓
Local business				✓	
Traffic	✓	✓	✓	✓	✓
Visual amenity			✓	✓	✓
Waste management		✓		✓	
Cumulative impacts	✓	✓			

A preliminary set of potential impacts and benefits of the project has been identified based on the scoping assessment, including the outcomes of the community survey, community and stakeholder engagement and completion of the SIA scoping worksheet including consideration of previous relevant SIAs and EMM Social Scientist's professional judgement. The purpose of identifying potential impacts and benefits at this preliminary stage is to ensure the EIS preparation focuses on:

- the potential social impacts identified by, and of greatest concern, to the community; and
- an appropriate range of stakeholders, and that affected groups or individuals are included in the SIA field study activities.

Potential negative impacts that have been identified requiring further assessment and likelihood of potential positive social impacts is detailed in Table 6.8. Additional details are provided in the SIA scoping worksheet in Appendix D.

Table 6.8 Identified potential social impact mapped to matters, positive and negative

Potential social impacts	Issue – negative related to:	Issue - positive related to:
Surroundings	• Visual amenity may be impacted by the placement of the solar panels (eg concern about glare). • Concern for local biodiversity (proximity to Dapper Reserve). • Impacts to the 'quiet' character of the area (amenity).	
Way of life	• Conflict over 'land use' due to area's value as farming land. • Potential for weeds, need for land rehabilitation plan.	
Livelihood	• Impact to future farming activity (eg unable to expand farms into that area). • Impacts to productivity of existing farm activity. • Impacts to land value and sale rate. • Spreading of weeds and inability to maintain land. • Impacts to businesses operating along the haulage route and adjacent to site during construction.	• Increased employment opportunities. • Increased business for local accommodation (workforce housing). • Potential for 'co-existence' of grazing and solar in the area.
Access	• Concern about access to land in event of a bushfire. • Concern that increased traffic (during construction) will degrade roads further. • Stress on local accommodation providers to house project workforce – in particular cumulative impacts associated with concurrent projects.	• Availability of electricity, benefit to nearby landholders. • Potential development of roads, improved access to properties and services.

Table 6.8 Identified potential social impact mapped to matters, positive and negative

Potential social impacts	Issue – negative related to:	Issue - positive related to:
Community	• Possibility of conflict between neighbours due to differing opinions (community cohesion). • Local unrest due to lack of information and communication. • Concern that new workforce may impact safety and security. • Influx of new workers may change the composition of the local population, and cause impacts to community identity/character.	• Financial support to community enhancement fund, and/or local fire brigade.
Health and wellbeing	• Impact to wellbeing (eg levels of uncertainty, sense of control over their futures). • Increased traffic may impact public safety (in current conditions).	
Culture	• Potential disruption to existing heritage sites.	

ii EIS phase

An SIA will be prepared to accompany the EIS for the Project. The SIA will be led by a suitably qualified Social Scientist who will adopt the methodology illustrated in Figure 6.4 and will use social science methods and tools for the collection of qualitative and quantitative data.

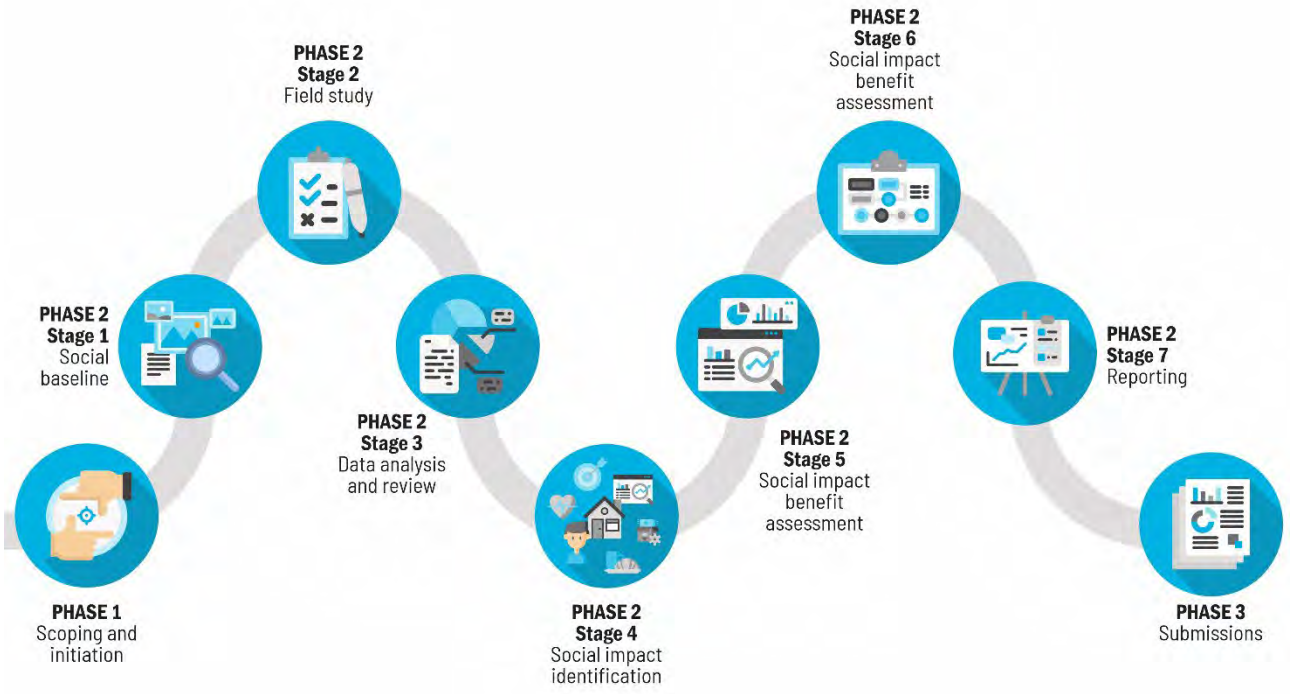


Figure 6.4 SIA Methodology

The identification of social impacts will be informed by community and stakeholder engagement activities as well as SIA field study activities and will be conducted in an integrated manner to ensure consistency, reduce duplication, and allow for management of consultation fatigue. In addition, findings from the technical assessments will be considered to understand the consequences to the community and existing research and previous SIAs will inform the identification of the social impacts.

Potential social impacts and benefits will then be assessed according to the requirements of the *Social Impact Assessment Guideline for State Significant Projects* (DPIE 2021e).

6.6 Access

6.6.1 Preliminary impact assessment

i Existing environment

The Project site is accessible via the Golden Highway via Spring Ridge Road, Sandy Creek Road or Sweeneys Lane. The Golden Highway is an approved B-double transport route. Spring Ridge Road is a sealed Council owned local road. Other local roads are unsealed Council-owned roads with minimal through traffic and are used primarily to access the agricultural landholdings and scattered rural residences in the locality.

ii Traffic generation

The Project will generate significant levels of traffic during the construction phase related to the movement of construction workers and the delivery of materials, plant and equipment.

It is anticipated that construction materials and infrastructure will largely be transported to the Project site via road from Newcastle or Sydney. Construction deliveries from Newcastle would use the New England Highway, John Renshaw Drive, Hunter Expressway and the Golden Highway, while Sydney deliveries would use the M1 Motorway to the Hunter Expressway, and then use the same route as deliveries from Newcastle. A single heavy vehicle route to a primary access point will be adopted for access to the Project site from the Golden Highway. The route is likely to be via one of two options currently under consideration, which is contingent on the selected site access point and the location of network infrastructure currently subject to assessment and design by EnergyCo NSW. Option one would be via the Golden Highway, Sweeneys Lane and Tallawonga Road, to an access point at the northern end of the Project site. Option two would be via the Golden Highway, Spring Ridge Road and Dapper Road, to an access point at the eastern end of the Project site. Light vehicles will access the site from the north via Sweeneys Lane, or from the south via Spring Ridge Road. A secondary light vehicle access point will also be provided at the opposite end of the site to the primary access point. The heavy and light vehicle access route options currently under consideration are illustrated in Figure 2.2. The selected routes will be confirmed and considered in the EIS.

iii Predicted impacts

The key traffic impacts during the construction phase will be:

- a temporary disruption to traffic on Dapper Road and Tallawonga Road during construction of a primary and a secondary site access intersection; and
- an increase in local traffic, including an increase in heavy vehicles.

No significant traffic impacts are anticipated during operation.

The adjacent Cobbora Solar Farm project is identified as a relevant future project with potential for cumulative traffic impacts with the Project should construction periods for the two solar farms overlap. Similarly, it is understood that Spicers Creek Wind Farm is currently under investigation immediately west of the Project site. SEARs for Spicers Creek Wind Farm are yet to be sought, however there is potential for cumulative traffic impacts should that project also proceed.

The preferred access option(s) will be presented in the EIS in consideration of all potential environmental constraints including biodiversity and heritage.

6.6.2 Proposed assessment approach

A project access options assessment will be carried out to confirm the preferred options for site access. This assessment will be carried out in consultation with Dubbo Regional Council and Warrumbungle Shire Council, Transport for NSW, the local community and nearby landholders. It will also be informed by the outcomes of relevant technical studies such as the biodiversity assessment.

A detailed level of assessment consisting of a traffic impact assessment will be prepared as part of the EIS and will include:

- characterisation of the existing road network, including the existing road widths and the condition of the road surface, existing road capacity (or 'level of service'), daily and peak traffic volumes (considering the peak holiday period and at other times of the year), and the proportion of light and heavy vehicle traffic movements;
- review of key intersection performance on designated construction access routes and document relevant accident history and safety requirements;
- expected traffic movements during the relevant project stages, including the maximum and average light and heavy vehicle traffic movements travelling to the Project site; and
- recommended management measures to mitigate identified potential impacts of the Project.

The assessment of traffic and access impacts would be prepared using the following the appropriate guidelines, policies and design requirements, as follows:

- NSW Roads and Traffic Authority (now TfNSW) *Guide to Traffic Generating Developments 2002*;
- *Austroads Guides to Road Design* (various publications);
- *Austroads Guides to Traffic Management* (various publications);
- Australian Standard AS 2890 Parts 1 and 2; and
- *Australian Code for Dangerous Goods Transport*.

Specific engagement is proposed with TfNSW, Warrumbungle Shire Council and Dubbo Regional Council in relation to access.

Cumulative impacts with the Cobbora Solar Farm Project (and Spicers Creek Wind Farm, assuming it proceeds) would be considered within the traffic impact assessment using publicly available information, or data able to be sourced from the proponent, in accordance with the CIA guideline.

6.7 Hazards and risks

6.7.1 Bushfire

i Preliminary impact assessment

The Project site has been subject to extensive clearing and remnant vegetation is mapped as Category 2 under NSW Rural Fire Service (RFS) bushfire prone land mapping (RFS 2022). Vegetation classed as Category 2 is considered to be a lower bushfire risk than Category 1 and Category 3.

ii Proposed assessment approach

As the site is mapped as Category 2 bushfire prone land, bushfire risks associated with the Project must be assessed in accordance with the NSW Rural Fire Service (NSW RFS) *Planning for Bushfire Protection 2019* (PBP) (RFS 2019).

A standard Bushfire Hazard Assessment will be undertaken in accordance with PBP, Chapter 8 (Other Development), Section 8.3.5 (Wind and Solar Farms). The Bushfire Hazard Assessment will:

- characterise the regional fire weather, vegetation present and slope characteristics of the site and surrounds; and
- identify suitable bushfire protection measures (BPMs) for the Project, in accordance with the applicable requirements of PBP.

Engagement with the NSW RFS will be undertaken during the preparation of the EIS.

6.7.2 Hazardous and offensive development

SEPP 33 applies to hazardous or offensive industry including storage establishments. In determining whether a development is potentially hazardous or offensive, consideration is to be given to current relevant circulars or guidelines published by DPE, namely the guideline *Applying SEPP 33* (Department of Planning 2011a). Supplementary guidance is also provided in *Multi-Level Risk Assessment* (MLRA) (Department of Planning 2011b).

Electricity generating works are not an 'industry', nor are they listed in Appendix 3 of *Applying SEPP 33* or IAEA Table II of the MLRA. Regardless, the amounts of dangerous goods that would be stored or transported on the site during construction and operation would be minimal and unlikely to exceed relevant thresholds in *Applying SEPP 33* for it to meet the definition of potentially hazardous. Potential emissions resulting from the Project are unlikely to be considered offensive and an EPL is not required for the solar farm. Therefore, the Project would also not meet the definition of potentially offensive.

The *Large-Scale Solar Energy Guidelines* (DPIE 2018) requires a preliminary risk screening of BESS in accordance with SEPP 33. A preliminary risk screening of BESS against *Applying SEPP 33* determines that there is no storage screening threshold for the category of dangerous goods stored within BESS (ie Class 9). Class 9 goods would be delivered in a number of loads that would be well below the movement's threshold (>60 weekly, >1,000 annually) with no quantity per load screening threshold. Therefore, consideration of the BESS as potentially hazardous development requires assessment against the other risk factors specified in Appendix 2 of *Applying SEPP 33*.

Potential hazards during the operational and decommissioning stages include:

- leaks of pollutant material from the BESS or substation;
- thermal runaway in the battery or electrical faults that can result in fire hazards fire, explosion and generation of toxic gases which have the potential for injury, property damage; and propagation to surrounding vegetation; and
- external event (such as bushfire) impacts to the BESS itself.

Construction phase hazards are similar to those of other construction activities including injury of workers, accidental environmental damage, or impacting above or underground services.

A number of hazard assessments of proposed BESS in NSW solar farm projects have previously been undertaken. These assessments are generally consistent in their findings that potential hazards presented by BESS can be managed. For example, the Preliminary Hazard Assessment (PHA) for the Maryvale Solar Farm BESS concluded the below.

> Provided the battery is designed such that a battery fire will not propagate to other battery enclosures and that sufficient separation distances are established between the Project infrastructure and the surrounding land, including through the establishment and maintenance of the APZ ..., the risk of a major BESS fire involving more than one enclosure is low and can be managed ALARP[1].

Further, the hazards and risk assessment for the New England Solar Farm, which included a BESS component concluded the below.

> The majority of the Medium risk events relate to fire events resulting from a variety of causes (eg release of flammable materials, battery thermal runaway, transformer fire, bushfire, etc). The study identified proposed prevention controls to reduce the likelihood of these fire events and mitigation controls to contain the fires to minimise potential for escalated events (eg fire management plan). Based on the identified controls, the highest likelihood for these events were rated as Very Unlikely (ie heard of in the industry, but not expected to occur).
>
> Based on the (1) size of the development footprint, (2) proposed location for project infrastructure within the development footprint, (3) proposed controls and (4) separation distance to neighbouring land uses (including neighbouring properties and agricultural operations), the study noted that the exposure to fire events will primarily be to the Project's construction and operations workforce and offsite impacts will be minimal[5].

The Project has similar features to these projects, with a large footprint and sufficient separation distances to neighbouring land uses to reduce the risk of offsite impacts, therefore similar assessment outcomes are anticipated.

Notwithstanding, a PHA will be prepared and the following considered in the EIS:

- assessment of bushfire hazards (see Section 6.7.1);
- assessment of dangerous goods (see Section 6.7.5); and
- management measures to mitigate potential hazards.

[1] Preliminary Hazard Analysis for Maryvale Solar Farm Battery Energy Storage System, NSW, prepared for WIRSOL Energy by Planager Risk Management Consulting 19 January 2022, pg 27

5 Hazards and Risks Assessment, New England Solar Farm, prepared for EMM Consulting by Sherpa Consulting 16 November 2018 pg. 43

6.7.3 Land contamination

i Preliminary impact assessment

A search of the NSW Environment Protection Authority's (EPA's) contaminated land public record of notice and list of sites notified to the EPA under Section 60 of the NSW *Contaminated Land Management Act 1997* (CLM Act) on 17 February 2022 indicated no record of site contamination.

The site has historically been, and is currently, used for agricultural activities. The *Managing Land Contamination Planning Guidelines: SEPP 55 – Remediation of Land* (Department of Urban Affairs and Planning 1998) lists agricultural/horticultural activities as an activity which potentially causes contamination.

Land contamination is not likely to be a significant risk given any soil disturbance during construction would be shallow. If contamination was identified, standard management measures would be able to be implemented.

ii Proposed assessment approach

Clause 7(2) of SEPP 55 requires consideration of a preliminary investigation of the land where there is a proposed change in land use from certain development (including agriculture) has been known to be carried out. Therefore, a standard preliminary site investigation (PSI) is proposed. Subject to the findings of the PSI, further investigation such as sampling may be required where there is a suspected source of contamination or contaminating activity identified.

The PSI would be prepared in accordance with *Consultants Reporting on Contaminated Land: Contaminated Land Guidelines* (EPA 2020).

6.7.4 Waste

i Preliminary impact assessment

The Project will produce a number of waste streams during the construction period. Minor quantities of waste will also continue to be generated by the day-to-day operation of the Project. Waste will also be generated as part of decommissioning at the end of the Project's operational life.

Waste streams likely to be generated during the construction and ongoing operation of the Project include:

- cardboard packaging, plastic wrapping, plastic ties, cable drums, wood pallets and other timber offcuts (eg woodseparators to prevent damage to PV modules) for PV modules and tracker components;
- general waste from the operations and maintenance (O&M) buildings;
- co-mingled recycling;
- oily rags, filters and drums (primarily during construction); and
- batteries.

ii Proposed assessment approach

As part of the preparation of the EIS, consideration will be made as to how the Project's waste will be managed in accordance with relevant guidelines and policies. The EIS will include a waste management plan that identifies, quantifies and classifies the likely waste streams to be generated during different phases of the Project, and will describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste.

6.7.5 Dangerous goods

The Project may involve the storage and transport of small quantities of dangerous goods during construction and operation, including fuels, aerosols, engine and hydraulic oils and herbicides. These are unlikely to pose a significant environmental or safety risk and can be easily managed with appropriate storage and transport methods in accordance with the *Australian Dangerous Goods Code* and relevant National standards and codes of practice.

The EIS will detail the types and quantities of dangerous goods and other chemicals proposed to be stored and transported and the proposed management measures to mitigate environmental or safety risks.

6.8 Land

6.8.1 Preliminary impact assessment

A summary of the site's soil landscape, Great Soil Group (GSG), Australian Soil Classification (ASC), inherent soil fertility and land and soil capability mapping data available from eSPADE (DPIE 2020b) is presented in Table 6.9.

Table 6.9 Regional soil mapping summary

Soil landscapes	GSG	Australian Soil Classification	Inherent soil fertility	Land and Soil Capability (LSC) classes
Ballimore (bm)	Red-Brown Earths (RBE)	Chromosols	Moderate	3
Mebul (me)	Chocolate Soils I	Dermosols	Moderately high	3
Mitchell Creek (mi)	Solodic Soils (SC)	Sodosols	Moderately low	5
Lahey's Creek (lc)	Soloths (SH)	Kurosols (natric)	Moderately low	5

The Project area is predominantly located on the Ballimore and Mebul soil landscapes. Both of these soils landscapes are noted to present high erosion hazard and the occurrence of sodic, tunnelling and gully susceptible soils. These soils will need to be carefully managed during construction and ground-disturbing activities associated with the Project, with soil landscapes noting the requirement for construction of soil conservation earthworks and/or the adoption of conservation farming practices to prevent erosion. The soil erosion hazards of the Lahey's Creek soils are consistent with those of Ballimore and Mebul, though the soils of the Mitchell Creek soil landscape are highly variable and related to the soils of the adjacent and/or upstream soil landscapes. Streambank and gully erosion and salinity are noted problems for most of the Mitchell Creek soils.

The rural land capability of the Project area is predominantly mapped as LSC class 3, high capability land, suitable for cropping on the Ballimore and Mebul soil landscapes, provided soil conservation measures are taken to prevent erosion. Areas of lower capability are associated with slopes (>7%), flow lines, rocky ridges and hills. Soil chemical fertility is variable across the two primary soil landscapes, ranging from low to high, while the Ballimore and Laheys Creek lighter textured topsoils are susceptible to structure degradation. There is approximately 56 ha of mapped BSAL present in the Project area (representing approximately 3.5% of the Project area), associated with the Mebul soil landscape.

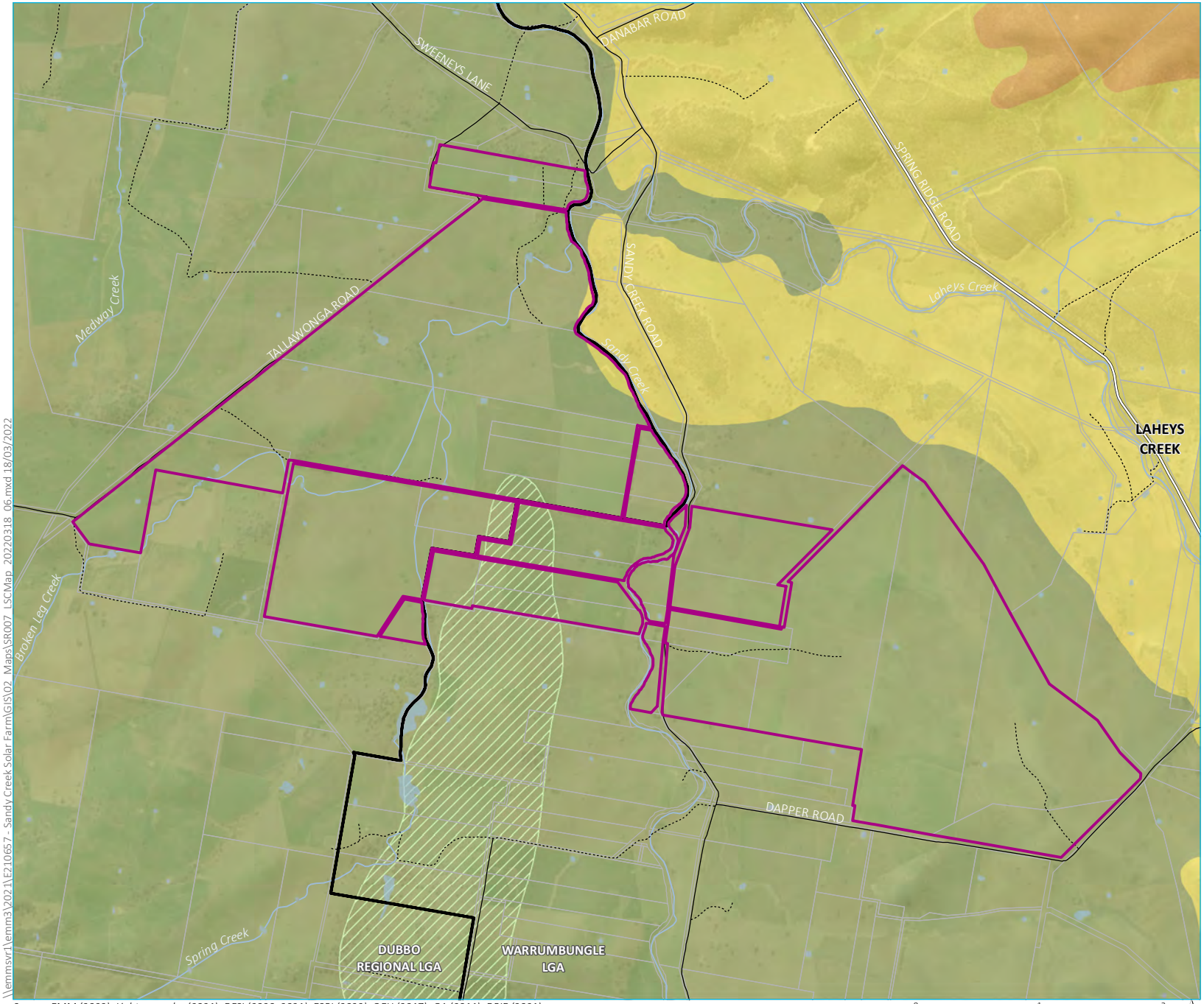
Review of the *NSW Acid Sulphate Soils Risk Map* (OEH 2018) identified that there are no acid sulfate soils (ASS) or potential acid sulphate soils in the site, in accordance with the *Guidelines for the Use of Acid Sulfate Soil Risk Maps* (DLWC 2000).

There is the potential for the Project to result in cumulative impacts on agricultural resources with the Cobbora Solar Farm and other renewable developments in the CWO REZ. It is noted that agricultural land use will continue within the site with sheep grazing accommodated under the solar panels. The applicant is also looking into opportunities to sustain other agricultural enterprises such as cropping and beekeeping within the site.

6.8.2 Proposed assessment approach

It is proposed to prepare a detailed land, soil and erosion assessment (LSEA) with the EIS which will include:

- a description of relevant environmental constraints (eg rainfall, topography, land use and vegetation, waterways and floodplains and existing soil types);
- a description of the biophysical environment including climate, topography, geology, hydrology, existing land use and site condition as context for erosion potential;
- an overview of LSC classes for the site, soil landscapes and soil types likely to be present on-site and commentary on their constraints relevant to erosion risk;
- soil survey to classify and map soil types present in the Project site and their associated characteristics, limitations and capability;
- assessment of potential impacts to agricultural land, including assessment of land use, productivity and economics;
- a detailed erosion hazard analysis including:
    - findings of the erosion site hazard inspection and soil analysis (laboratory characterisation);
    - an erosion risk assessment based on the Revised Universal Soil Loss Equation (RUSLE) methodology and applicable soil erodibility (K-Factor) and monthly rainfall erosivity (R-Factor);
    - description of best-practice procedures and strategies to mitigate erosion and sediment risk;
    - conceptual design standards for drainage, erosion and sediment controls consistent with IECA BPESC Guideline (IECA 2008);
    - recommended control measures for specific site locations and likely forms of ground disturbance (eg trenching, cuts and fills, roads, hard-stands and office areas); and
    - a summary strategy ('plan') for site decommissioning and rehabilitation back to agriculture, informed by the soil and erosion assessment above and other relevant technical EIS studies (eg ecology/biodiversity and surface water).



KEY

- Project site
- Biophysical SAL

Land and soil capability

- Class 3
- Class 5
- Class 6

Existing environment

- Major road
- Minor road
- Vehicular track
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Local government area

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Source: EMM (2022); Lightsource bp (2021); DFSI (2020, 2021); ESRI (2022); OEH (2017); GA (2011); DPIE (2021)

0 1 2 km

GDA 1994 MGA Zone 55

N

Land and soil capability class

Sandy Creek Solar Farm
Scoping Report
Figure 6.5

EMM
creating opportunities

6.9 Water resources

6.9.1 Preliminary impact assessment

i Climate and topography

A temperate climate with hot summers dominates the region. Based on nearby long-term climate records (Dunedoo Post Office), mean annual rainfall is approximately 615 mm whilst mean daily solar exposure is 18.5 megajoules per square metre (MJ/m^2)

Topography within the site is flat to undulating and ranges from around 360 m Australian Height Datum (AHD) to 450 AHD.

ii Regional hydrology

The site is within the Macquarie-Bogan River Catchment. The catchment covers an area of more than 74,000 km^2 within the Murray-Darling Basin.

iii Local hydrology

Sandy Creek, a fifth order watercourse, transects the site following in a northerly direction before joining the Talbragar River, approximately 4.5 km to the north of the site (refer to Figure 2.1). Tributaries of Sandy Creek also intersect the site including named watercourses: Broken Leg Creek and Spring Creek. Broken Leg Creek is a fourth and third order watercourse which flows from the south-western extent of the site before joining Sandy Creek on the north-eastern site boundary. Spring Creek is a third order creek which flows through the western portion of the site, before joining Broken Leg Creek. Minor unnamed first and second order watercourse also occur within the site flowing into Sandy Creek and its tributaries.

iv Flooding

The site is not located within a flood planning area as identified by the relevant LEPs. However, this is likely due to lack of any previous flooding investigations or modelling, rather than an absence of flood risk.

The site is anticipated to be subject to minor overland flooding, as well as more concentrated flows along Sandy Creek, Broken Leg Creek, Spring Creek and smaller unnamed drainage lines that traverse the site.

v Sensitive receptors

Existing watercourses and drainage lines are potentially sensitive to development and any associated reduction in water quality.

Areas of the site are identified as ‘groundwater vulnerable’ on the Warrumbungle and Wellington LEPs Groundwater vulnerability map. Clause 6.4 of the LEPs requires the consent authority to consider the likelihood of groundwater contamination from a development and potential impacts on groundwater dependent ecosystems prior to determining a development application.

vi Potential impacts

The Project's construction stage could result in the following water impact in the absence of suitable controls:

- ground disturbance during bulk earthworks and other site activities leading to exposure of soils and potential erosion and mobilisation of sediment into receiving watercourses;
- demand for water during construction;
- contamination of surface waters or groundwater as a result of accidental spillage of materials such as fuel, lubricants, herbicides and other chemicals used to support construction activities;
- disturbance of watercourses (eg through construction of creek crossings) and associated riparian zones to support construction activities including clearing, bulk earthworks and civil works, installation of infrastructure and site establishment; and
- partial blockage or redirection of floodwaters and downstream impacts if construction activities are poorly considered, fencing or storage/stockpile areas.

The Project's operation stage may result in the following water impacts in the absence of suitable controls:

- demand for water for land management purposes;
- potential ongoing erosion of soils and mobilisation of sediment into receiving watercourses;
- contamination of surface water or groundwater as a result of accidental spillage of materials such as fuel, lubricants, herbicides and other chemicals used to support site activities, or through poor site and vegetation management practices; and
- partial blockage or redirection of floodwaters and downstream impacts as a result of poorly considered permanent facilities.

It is anticipated that design refinement will enable the Project to avoid the most significant watercourses, riparian corridors and other sensitive receptors where regulations and guidelines do not allow or recommend specific infrastructure. Specific design considerations and mitigation measures may be recommended to minimise potential impacts within and along drainage lines. Roads and services that require watercourse crossings will be designed and constructed in accordance with relevant regulations and best practice design and construction methods.

The Project is not likely to impact groundwater during construction or operation due to the limited amount of subsurface disturbance activities and associated shallow depths of construction.

Overall, predicted residual impacts are anticipated to be minor and manageable through considered design and application of appropriate mitigation measures.

Significant cumulative water-related impacts with other relevant future projects are unlikely to occur.

6.9.2 Assessment approach

The water resources impact assessment will comprise a qualitative, standard level of assessment and include:

- characterisation of the existing surface water and groundwater environment relevant to the Project, expanding on the description presented herein to the extent necessary to support the assessment;
- review and synthesis of relevant legislation, regulation and guidelines;
- description of the potential surface water and groundwater resource modifications and impacts, with a focus on sensitive receptors;
- description of erosion and sediment control principles and management measures in accordance with *Managing Urban Stormwater: Soils & Construction (*Landcom 2004) to be implemented during both project construction and operation, to be developed in conjunction with the Project erosion hazard assessment which will be a component of the LSEA;
- flood risk assessment based on consideration of the site layout against flood modelling to be undertaken to define existing flooding conditions;
- high level assessment of potential impacts to groundwater resources and quality;
- estimates of water use and proposed source(s) of supply during construction and operation; and
- proposed management and mitigation measures to minimise impacts to surface water and groundwater resources.

6.10 Air quality

6.10.1 Preliminary impact assessment

Land use within the Project site and surrounds is primarily agricultural, which is likely to influence local and regional air quality. Existing sources of air pollution within a local setting are limited and typically comprise dust and vehicle and machinery exhaust emissions associated with agricultural production and local roads. Wood smoke from bushfires and rural residences can also be a source of particulates. Sensitive receivers include the Dapper Union Church and 16 non-project related residences within 2 km of the site (refer Figure 2.1). The closest receivers are the Dapper Union Church located on Sandy Creek Road and a rural residence (R9) located approximately 150 m from the site's southern boundary on the southern side of Dapper Road.

The Project is not anticipated to generate significant air quality impacts during construction. Dust generation may result during construction due to increase in exposed areas following site preparation works and from construction traffic movements on unsealed roads. This dust generation is expected to be localised, unlikely to have significant impacts at nearby receivers, and able to be easily mitigated through implementation of standard management measures.

No significant dust generation is expected during operation given exposed areas and roads will have been sealed or rehabilitated.

Minor levels of dust may be generated during decommissioning as a result of structures being removed, areas being temporarily exposed and rehabilitation works. This would only occur for a short duration before rehabilitation of exposed areas has been established.

Dust generation from the construction of the Project and construction of the proposed Cobbora Solar Farm has the potential to result in localised cumulative air quality impacts if the construction of the two developments occurs concurrently. Similarly, it is understood that Spicers Creek Wind Farm is currently under investigation immediately west of the Project site. SEARs for Spicers Creek Wind Farm are yet to be sought, however there is potential for cumulative air quality impacts should that project also proceed.

6.10.2 Proposed assessment approach

A quantitative air quality assessment with dispersion modelling is not considered to be warranted given risk of air quality impacts is expected to be low and will not extend beyond the construction phase of the Project.

The impacts to neighbouring sensitive receptors (human and ecological) from construction dust emissions (including the potential for cumulative emissions due to the possible concurrent construction of the Project with the Cobbora Solar Farm and Spicers Creek Wind Farm) will be assessed using a qualitative impact assessment approach. While no specific methodology for such an assessment is available in Australia, the United Kingdom based Institute of Air Quality Management (IAQM) has prepared the *Guidance on the Assessment of Dust from Demolition and Construction* (GADDC).

The GADDC has been applied for construction projects in NSW and accepted by the EPA air technical policy department as a progressive approach to assess the particulate matter impact risk associated with short-term construction and demolition projects. The approach reviews the sensitivity of the local environment and identifies residual risks to dust impacts. Recommendations on dust mitigation measures are then provided.

Specific engagement is proposed with Dubbo Regional Council, Warrumbungle Shire Council and the local community in relation to air.

6.11 Cumulative impacts

The Project will contribute to the overall development of the CWO REZ. Other proposed, approved, under construction and operational renewable energy developments within and in the vicinity of the CWO REZ are shown in Figure 1.3. As shown, there are multiple renewable energy generation projects (proposed and approved) in the vicinity of the Project site.

The Project may generate cumulative impacts in conjunction with surrounding projects during both construction and operation. These impacts may include cumulative traffic, construction noise, visual, social (including workforce and accommodation capacity) and biodiversity impacts. However, there may also be a cumulative benefit to local communities from the Project and other developments in the region through the generation of jobs during construction and ongoing operation, particularly within the CWO REZ, and contribution to local economies associated with the purchase of local goods and services.

The EIS will carry out a cumulative assessment in accordance with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE 2021c).

6.12 Matters requiring no further assessment

Consideration of matters listed in Appendix B of the Scoping Report guidelines that do not require further assessment in the EIS are listed in Table 6.10.

Table 6.10 Matters requiring no further assessment in EIS

Matter	Relevance
Access – rail, port and airport facilities	The site does not contain rail, port and airport facilities. No interactions with such facilities are proposed under the Project other than deliveries of plant to the site.
Air – atmospheric emissions and gases	Vehicles associated with the Project's construction activities would generate atmospheric emissions and gases. These emissions would be minimal compared to existing emissions from traffic travelling on the Golden Highway and will also be temporary.
Amenity – odour	The Project would not generate any odorous emissions.
Built environment	The Project would have no impacts on built environment. All works will be undertaken within the site or within existing road reserves.
Biodiversity – aquatic flora and fauna	No impacts to aquatic ecology are expected as potential aquatic habitats with the site (Sandy Creek and its associated tributaries) will be substantially avoided. Potential water quality impacts to riparian areas along Sandy Creek and areas of groundwater vulnerability will be assessed in the water resources assessment.
Biodiversity – conservation areas	There are no conservation areas within the site.
Hazards and risks – biosecurity	The Project will have low risk to biosecurity. Potential introduction of weeds to or from the site will be limited to vehicle movements. These risks can be easily mitigated through the implementation of standard management measures.
Hazards and risks – dams safety	There are no existing dams within the site or within surrounding land that would pose a safety risk. No dams are proposed to be constructed under the Project.
Hazards and risks – coastal hazards	The site is not within a coastal zone.
Hazards and risks – environmental hazards	Environmental hazards relevant to the site are incorporated in other proposed assessments.

Table 6.10 Matters requiring no further assessment in EIS

Matter	Relevance
Hazards and risks – groundwater contamination	The Project is unlikely to have potential for groundwater contamination. The Project will involve piling to a depth of approximately 3 m and is not anticipated to interact with any aquifer. Impacts to groundwater will be assessed in the water resources assessment.
Hazards and risks - land movement	The site is not within a landslide risk area. Erosion risks will be considered in the LSEA.
Heritage – natural	The site does not contain any identified natural heritage significance.
Land – stability	The site is not within a landslide risk area. Erosion risks will be considered in the LSEA.
Land – soil chemistry	The Project would not involve any processes that would alter the soil chemistry of the site.
Land – topography	The Project would not significantly alter the topography of the site.
Social – decision-making systems	The Project will be in accordance with relevant decision-making systems but has no impact on those systems.
Water – water availability	The Project will require water during construction for dust suppression and during operation for landscaping maintenance. Water for construction will be sourced under existing landowner access rights to groundwater if appropriate, or via town water supply or trucked into site. No water will be taken from water sources such as creeks or streams. Impacts to water availability will be assessed in the water resources assessment.

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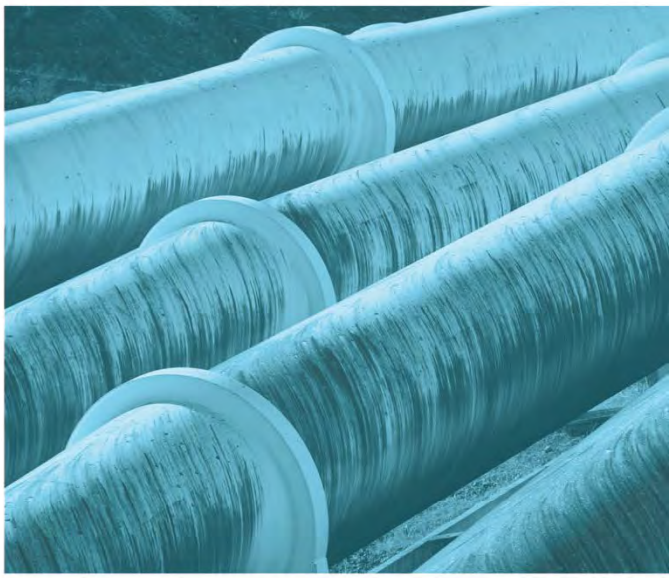
Appendix A

Community engagement strategy


Community Engagement Strategy

Sandy Creek Solar Farm

Prepared for Lightsource bp
April 2022

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Community Engagement Strategy

Sandy Creek Solar Farm

Report Number

E210657 RP#3

Client

Lightsource bp

Date

12 April 2022

Version

Final V2

Prepared by

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12 April 2022

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12 April 2022

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1 Introduction

Lightsource bp Renewable Energy Investments Ltd (LSbp) proposes to lodge a development application for the Sandy Creek Solar Farm, a large scale solar photovoltaic (PV) generation facility along with battery storage and associated infrastructure (the Project). The Project is located approximately 25 kilometres (km) south-west of the township of Dunedoo, in the Central West of New South Wales (NSW) within the local government areas (LGAs) of Warrumbungle Shire Council and Dubbo Regional Council and is within the Central-West Orana Renewable Energy Zone (CWO REZ).

Lightsource Development Services Australia Pty Ltd, a subsidiary of LSbp, formed in 2017 as a partnership between the European solar farm developer Lightsource and global energy company, bp. LSbp is a global leader in the development, management, and operation of solar projects and has successfully progressed projects from early-stage development through to operation. LSbp 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.

1.1 Purpose and objectives

This Community Engagement Strategy (CES) has been prepared to identify the objectives, approach, activities, and schedule for LSbp's proposed project at Sandy Creek.

The CEP has been prepared to guide engagement during the scoping phase of the Project (as part of the Request for Secretary's Environmental Assessment Requirements (SEARS)) and the Environmental Impact Statement (EIS), as part of the Project's State Significant Development (SSD) application to be lodged with the NSW Department of Planning and Environment (DPE).

This CES also supports the requirements of the Social Impact Assessment (SIA) process, one of the key technical studies of the EIS, which relies heavily on community participation and input.

Communication Action Plans (CAP) will be developed for specific activities (eg key stakeholder briefings and community information sessions) and as part of managing identified and emerging communication issues.

The objectives of this CES are to:

- ensure that information about the Project, the EIS technical studies and approvals pathway for the Project are understood by those who will be potentially affected and/or interested in the Project;
- ensure that those potentially affected and/or interested in the Project have the opportunity to provide their local knowledge and feedback during the preparation of the EIS;
- report that feedback to the Project team and ensure that all feedback is considered, particularly in relation to impact identification, mitigation and management, demonstrating how feedback has been considered;
- minimise properly made EIS submissions objecting to the Project; and
- protect and enhance LSbp's corporate and community reputation, as a trusted global leader in the development and management of solar energy projects.

1.2 Project snapshot

Lsbp are proposing the development of the Sandy Creek Solar Farm, which will involve the planning, construction, operation, maintenance and decommissioning of the solar farm and associated ancillary infrastructure.

Table 1.1 provides an overview of the key aspects of the Project.

Table 1.1 Project Overview

Aspect	Description
Project location	The Project is located approximately 25 km south-west of the township of Dunedoo, in the Central West of NSW within the LGAs of Warrumbungle Shire Council and Dubbo Regional Council and is within the CWO REZ.
Project inclusions	• Rated power output of 840 megawatt-peak (MWp) and an indicative AC capacity of around 750 megawatts (MW_{AC}); • a centralised or decentralised battery energy storage system (BESS) up to 750 megawatts (MW) and 3,000 megawatt-hours (MWh); • an electrical substation; • a new high-voltage switchyard and transmission line to the proposed new 550 kv or 330 kV CWO REZ "T-link" transmission line; • supporting infrastructure (eg a communication tower, site office, site access and internal roads, lighting, landscaping, security fencing); and • aubdivision and consolidation of lots and closure of Crown Roads within the site.
Project duration	Construction of the Project is expected to take up to two and a half years, depending on the scheduling of construction works, thee timing of the CWO REZ T-Link, and the NSW Government's capacity rights auctions. The operational lifespan of the Project will be in the order 35 years, unless the solar farm is re-powered at the end of the PV modules' technical life. Should the PV modules be replaced during operations, the lifespan of the Project may extend to up to 50 years. The BESS's operating life is likely to be 20 years.
The site	The Project is to be developed over an area of up to 1,600 hectares (ha). The site is currently used for stock grazing and dry land cropping. The site is zoned RU1 Primary Production.
Key site constraints	• Sandy Creek Soar intersects the site and splits the site into near even east and west sections; • Sandy Creek, Broken Leg, and Spring Creek transect the extent of the site; • there are five plant community types within the site, aligning with three different threatened ecological communities; • 71 terrestrial threatened species have the potential to occur within the site and watercourses within the site have the potential to support aquatic threatened species; • nine previously registered Aboriignal heritage sites were identified within the site and six were identified in very close proximity to the site; • areas of the site are mapped as "groundwater vulnerable"; • areas of the site are mapped as Category 2 under NSW Rural Fire Service bushfire prone land mapping; and • a portion of the site contains Biophysical Strategic Agricultural Land.
Site access	A number of different site access options are still under investigation, and is subject to the location of new high-voltage switchyard and transmission line to the proposed new 550 kv or 330 kV CWO REZ "T-link" transmission line. Heavy vehicles are likely to either access the site via Dapper Road and/or via Sweeneys Lane and Tallawonga Road. Light vehicles are anticipated to use a variety of local roads to access the site.

1.2.1 Delivery timeframes

Project timeframes are listed in Table 1.2. The anticipated project timeframes listed are indicative and subject to change, pending the results of Energy Co's CWO REZ allocation process, the timing for the construction of the transmission line, and construction workforce/equipment availability.

Table 1.2 Delivery timeframes

Project Phase	Timing
Preliminary environmental investigations and preparation of Scoping Report	November 2021 March 2022
Communication issues and risk workshop	26 November 2021
Acceptance of CEP	10 December 2021
Commence notification of project to public	7 December 2021 (letters go out)
Phase 1, Stakeholder and Community Engagement (incl. agency meetings, letterbox drop, website and community information sessions)	23 November 2021 – 10 March 2022 • Online information session: 31 January 2022. • In-person information session: 5 February 2022.
Preliminary investigations	6 December 2021 – end February 2022
Submission of Scoping Report to DPE	March 2022
Scoping Report exhibition	April 2022
Issuance of SEARs	May 2022
Phase 2, Stakeholder and Community Engagement	May 2022 onwards
EIS preparation, including early works and submission	March 2022 – March 2023
Draft EIS Public Exhibition Period (28 days)	May 2023
Response to Submissions, DPE Assessment and Determination	July 2023
Construction	~Q1 2024
Operation	~Q3 2026

1.3 Approach

The strategic communication approach is cognisent of the following guidelines and principles:

- DPE's *Rapid Assessment Framework (RAF) for SSD and SSI* (DPIE 2021a);
- DPE's *Undertaking Engagement Guidelines for State Significant Projects* (DPIE 2021b);
- DPE's *Social Impact Assessment Guideline* (DPIE 2021c);
- DPE's *Draft Large-Scale Solar Energy Guideline* (DPIE 2021d); and
- the International Assocation of Public Participation (IAP2) Core Values and Public Participation Spectrum (referenced below in Figure 1.1).

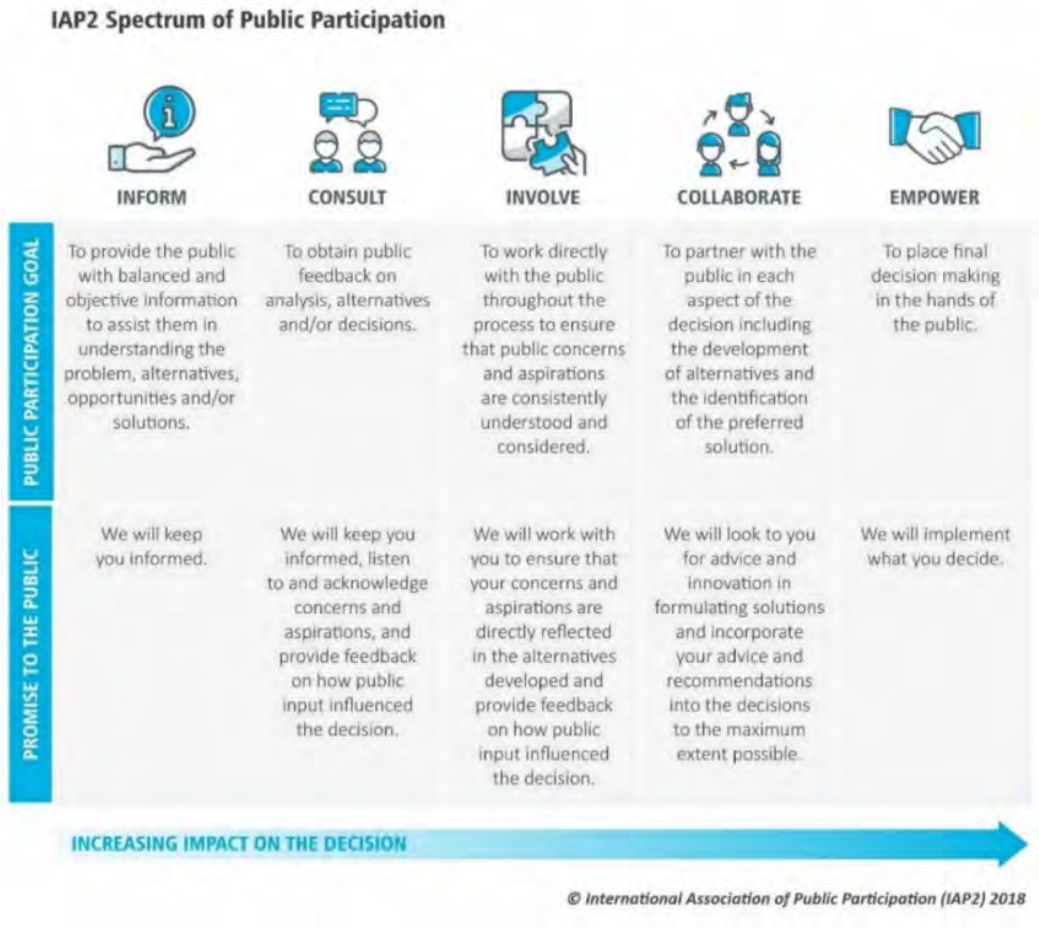


Figure 1.1 IAP2 Spectrum of Public Participation

The approach is to:

- seek to engage as early as possible and communicate proactively as the Project progresses;
- be open and transparent when informing and engaging with all stakeholders;
- provide as much information as possible to enable meaningful dialogue to occur about the Project and its potential impacts;
- ensure a variety of communication channels are maintained so that project information is accessible to those who want to find information or provide feedback; and
- to actively listen to concerns raised and demonstrate how concerns have been addressed.

There are two phases of engagement proposed:

1.3.1 Phase One – Scoping Report

During Phase One, project communications will be established and launched. Information about the Project will be made available, as well as details about the approvals process. The project team will establish contact with key stakeholders, including elected representatives as well as directly and indirectly affected property owners. Community information sessions will also be held (face to face and online).

All input and feedback garnered at this time will not only inform this phase of work, but help the Project team to tailor any forward planned engagement activities, aligning to any preferences noted by the stakeholders. A summary of outcomes will be provided within the scoping report.

1.3.2 Phase Two – EIS

Phase two communication and engagement will support the delivey of the EIS. This will include:

- keeping stakeholders informed of overall project progress;
- providing updates on technical investigations and opportunities to provide feedback and comment; and
- validating proposed management and mitigation measures for potential impacts with affected/interested parties to ensure the best possible outcome is achieved.

Communication and engagement outcomes will be circulated with the team for their consideration into their technical investigations and also formally reported in the draft EIS.

It is noted that an EIS public exhibition phase will follow the draft EIS submission, as well as some ongoing engagement to communicate project assessment outcomes.

2 Policy context

2.1 NSW Government Strategic Policy – Renewable Energy

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 Road Map* (2020) which is enabled by the *Electricity Infrastructure Investment Act* (2020). This policy context is relevant to inform the public positioning and key messaging for the planning and development of the Sandy Creek Solar Farm.

The shift to renewables in regional Australia is accelerating in line with the federal government's commitment to deliver net zero emissions by 2050. This shift of energy source from coal to wind and solar energy is bringing with it the establishment of Renewable Energy Zones (REZs) which include wind and solar farms within their footprint.

The Electricity Infrastructure Road Map (2020) outlines five planned Renewable Energy Zones (REZ) in the Central West Orana, Illawarra, New England, South-West and Hunter-Central Coast regions of NSW. On 11 November 2021, the NSW Government formally declared the Central-West Orana zone.

2.2 Central West Orana Renewable Energy Zone (REZ)

The project site lies within the NSW Government's recently declared Central-West Orana REZ. The NSW Government has announced $40 million investment to support development of this REZ and has chosen this region for Australia's first REZ because of its significant potential for energy infrastructure and regional development.

The Central-West Orana REZ is the first REZ to be rolled out under the NSW Government's *Electricity Strategy* and *Electricity Infrastructure Roadmap*, and will play a vital role in delivering affordable energy to help replace the State's existing power stations as they retire over the next 15 years (NSW Government 2020). A number of renewable energy projects are in various stages of development within the Central-West Orana REZ.

There are a number of major projects (some of which are to be developed within the CWO REZ) with potential to have cumulative impacts with the Project. These projects are identified in Table 2.1.

Table 2.1 Major projects with potential for cumulative impacts

Project	Application type	Status	Relevant future project for EIS
Cobbora Solar Farm	SSD	SEARs issued on 11 November 2021, EIS in development	Yes. Potential for cumulative impacts with project.
Spicers Creek Wind Farm	SSD	Under investigation, request for SEARs not yet lodged	Yes. Potential for cumulative impacts with project.
Birriwa Solar Farm	SSD	SEARs issued on 5 November 2021, EIS in development	Yes. Potential for cumulative impacts with project.
Tallawang Solar Farm	SSD	SEARs issued on 26 November 2021, EIS in development	Yes. Potential for cumulative impacts with project.
Dunedoo Solar Farm	SSD	Approved 2 September 2021	Yes. Potential for cumulative impacts with project.
Beryl Solar Farm	SSD	Approved 5 December 2017, operational	No
Stubbo Solar Farm	SSD	Approved 29 June 2021	No
Goulburn River Solar Farm	SSD	SEARs issued 1 February 2022, EIS in development	Yes. Potential for cumulative impacts with project.
Merriwa Solar Farm	SSD	SEARs issued on 28 January 2022, EIS in development	Yes. Potential for cumulative impacts with project.
Forest Glen Solar Farm	SSD	Response to Submissions in development	No
Mumbil Solar Farm	SSD	TBC – SEARs issued on 6 August 2019, EIS not yet lodged (now outside 2 year timeframe)	TBC
Wellington North Solar Farm	SSD	Approved 21 April 2021	Yes. Potential for cumulative impacts with project.
Wellington South BESS	SSD	SEARs issued 1 October 2021, EIS in development	Yes. Potential for cumulative impacts with project.
Uungula Wind Farm	SSD	Approved 7 May 2021, construction not yet commenced	Yes. Potential for cumulative impacts with project.
Valley of the Winds Wind Farm	SSD	SEARs issued on 9 June 2020, EIS in development	Yes. Potential for cumulative impacts with project.
Bellambi Heights Solar Farm	SSD	TBC – no details currently available on DPE Major Projects website	TBC

2.3 Current policy issue – energy transmission

More broadly lies the issue of grid connectivity and how the generated energy is then transmitted from established solar farms.

Australia's existing energy transmission grid was built to support the energy produced by the coal industry and is not necessarily suitable for the new renewable energy industry. There is currently debate at the state and federal government level regarding a potential overhaul of the grid network.

There is some community opposition to the current transmission lines being proposed in central NSW, as well as the proposed "Hume Link" that will connect the new Snowy 2.0 Project. Some key contributing factors include:

- the mix of land use (transmission and agriculture);
- visual amenity;
- compensation regulations (for directly affected landowners) imposed on transmission companies differ from energy producing companies and do not allow for the same level of compensation agreements to be drawn up/do not allow for a source of income for landholders from the infrastructure put in place; and
- the proposed alignment of the Central-West Orana REZ transmission line which may intercept this project's area. Transgrid is currently engaging with the community and will continue to do so in 2022.

2.4 Current policy issue – solar panel manufacturing

Some concerns have been raised within parts of the community that the production hub for a key ingredient needed to manufacture solar panels can be linked to forced labour/human rights abuses of local workers. As a result, some Australian senators and human rights lawyers are currently pushing for more oversight of the solar production industry.

There is also government support for the expansion of Australia's domestic manufacturing capability in the solar sector.

While these issue are indirect, it will be important to outline Lsbp's commitment to meeting Clean Energy Council and industry standards for the purchase of solar panels.

3 Social context

The project communication and engagement program will be tailored and respond to the communication needs and preferences of the Project's key stakeholders, directly impacted community members and the broader communities of interest. It is important to understand the Project communication environment, as part of contextualising and tailoring the communication and engagement approach and delivery.

3.1 About the region and most impacted communities

The project site is located in the Central West region of NSW, approximately 25 km south west of the township of Dunedoo, and 30 km north west of Gulgong. Smaller towns nearby include Beryl and Elong Elong.

It is land historically occupied by the Wiradjuri peoples.

Towns and centres surrounding the Project site have relatively small populations of mostly English-speaking residents. The median age is lowest in Dubbo (36 years) and highest in Elong Elong (55 years). There are fairly high levels of internet access from the home, the lowest rate is in Dunedoo at 65.2%. From a communications perspective a belend of online and printed communication materials and face to face meetings are likely to be accessible to most residents who will be impacted and/or interested in the Project.

There is an agricultural focus in Dunedoo and Beryl, with specialised beef cattle and sheep farming. Gulgong was a 19th century gold rush town which has retained much of its character from that time. Its close proximity to the Yarrobil National Park adds to the appeal for tourists. It is thought that the workforce base for this project will be drawn from Gulgong.

3.1.1 Demographic overview

Table 3.1 provides a demographic overview of the area around the Project site (Australian Bureau of Statistics, 2016).

Table 3.1 Demographic profile

Suburb	Population	No. of private dwellings	No. of family households	Median age	Aboriginal/ Torres Strait Islander people	Most common occupations	Dwelling internet connection	Languages other than English spoken at home
Beryl	132	59	2.8	44	3 (2.3%)	Technicians/trade (26.2%) Professionals (16.7%) Machinery operators and drivers (16.7%)	28 (84.8%)	Nil recorded
Dubbo	38,943	16,379	2.5	36	5,682 (14.6%)	Professionals (18.2%) Technicians/trade (14.5%) Clerical (13.5%)	10,710 (77.7%)	Nepali (0.5%) Mandarin (0.4%) Malayalam (0.3%)
Dunedoo	1,221	649	2.2	49	94 (7.7%)	Managers (29.4%) Labourers (16.8%) Professional (11.1%)	191 (65.2%)	Greek (0.2%) Czech (0.2%) Malayalam (0.2%)
Elong Elong	115	58	1.2	55	7 (6%)	Managers (44.4%) Labourers (17.8%) Clerical (13.3%)	38 (70.4%)	Nil recorded
Gulgong	2,521	1,135	2.4	41	194 (7.7%)	Technicians/trade (19%) Machinery operators and drivers (17%) Labourers (13.5%)	661 (72.6%)	Maltese (0.2%) Arabic (0.2%) Hindi (0.2%)

3.2 Adjacent landowners

There are 2 directly impacted landowners, 11 identified landowners who own properties adjacent to site, and a further five within a 2 km zone of the site. A register will be developed and maintained throughout project delivery.

3.3 Community sentiment – renewable energy sector

Consultation fatigue is already presenting within NSW communities. As a result of this, the Renewable Energy Alliance (of which Lsbp is a round table member) are looking to embed dedicated community engagement resources to better align communications across all developers. This is both a social and policy issue that affects the Project.

The project team will need to be congisent of the operating environment and ensure project communications are concise and coordinated.

3.4 Previous communication and engagement

Prior to commencement of the Scoping Report Lsbp made initial contact with key stakeholders to the west of the site. This had built engagement undertaken in July 2021 for other LSbp projects:

Lsbp met with the following stakeholders, to introduce the company and provide a general briefing about Lsbp's NSW projects:

- Tenterfield Shire Council, including:
  - Cr Peter Petty, Mayor, Cr Greg Sauer, Deputy Mayor, and Councillors: Gary Verri, Bronwyn Petrie, Brian Murray, Tom Peters, Don Forbes, Bob Rogan, Michael Petrie;
  - Daryl Buckingham, CEO;
  - Tamai Davidson, Manager, Planning and Development; and
  - Elizabeth (Libby) Melling, Executive Assistant.
- Meetings were also held with State and Federal Member representatives:
  - Janelle Saffin, NSW State MP for Lismore;
  - Chris Gulaptis, NSW State MP for Clarence; and
  - Electoral office of Barnaby Joyce, Federal Member for New England.

Examples of communication and engagement material sent-out to date concerning the Project is provided in Appendix A.

4 Stakeholder identification

A stakeholder analysis has been completed and the following stakeholder groups identified:

Table 4.1 Identified stakeholders – preliminary list

Stakeholder group	Stakeholders	Level of engagement	Potential interest
Federal and State Regulatory Authorities	• Department of Agriculture, Water and the Environment (DAWE)	Inform, consult, involve	Planning and assessment process adherence.
State government departments and agencies	• DPE • DPE Biodiversity Conservation and Science Directorate (BCS) • DPE Water and Natural Resources Access Regulator • NSW Environmental Protection Authority (EPA) • Heritage NSW • Department of Premier and Cabinet • Energy NSW • Energy Corporation of NSW (Energy Co) • Transport for NSW • NSW Rural Fire Service • Fire and Rescue NSW • NSW State Emergency Services • Water NSW	Inform, consult, involve	Compliance to regulations and legislation. Planning and assessment process adherence. Achievement of government strategies.
Elected representatives (federal and state)	• Hon Mark Coulton MP, Member for Parkes (Nationals) Federal • Dugald Saunders MP, Member for Dubbo (Nationals) State • Rob Stokes MP, Minister for Infrastructure, the Minister for Cities, and the Minister for Active Transport (Liberal), State • Sam Farraway MP, Minister for Regional Transport and Roads (Leader of the Nationals), State	Inform, consult	Planning and assessment process adherence. Achievement of government strategies. Clear community outcomes.

Table 4.1 Identified stakeholders – preliminary list

Stakeholder group	Stakeholders	Level of engagement	Potential interest
Local Councils	• Dubbo Regional Council (direct) • Councilor Mathew Dickerson, Mayor, Dubbo Regional Council • Councillor Richard Ivey, Deputy Mayor, Dubbo Regional Council • Warrumbungle Shire Council (direct) • Councillor Ambrose Doolan, Mayor, Warrumbungle Shire Council • Councillor Aniello Iannuzzi, Deputy Mayor, Warrumbungle Shire Council • Mid Western Regional Council, • Councilor Des Kennedy, Mayor, Mid-Western Regional Council • Councilor Sam Paine, Deputy Mayor, Mid-Western Regional Council	Collaborate	Cumulative impacts from multiple projects. Infrastructure upgrades Community support measures/loss of connection/sense of place for community/severance. Transport routes. Regional benefit.
Local Government Officers		Involve	Cumulative impacts from multiple projects. Infrastructure upgrades. Community support measures/loss of connection/sense of place for community/severance. Transport routes. Regional benefit.
Traditional Owners		Involve	Impact to country and connection . Cultural heritage. Environmental values. Community support .
Landowners	• Directly affected landowners • Adjacent landowners • Nearby neighbouring landowners and businesses • Indirectly affected	Consult	Land use conflict. Visual amenity and glare. Cumulative impacts from multiple projects. Environmental values. Transport routes. Transmission routes. Sense of place. Local benefit.
Townships	• Beryl • Dunedoo • Elong Elong • Gulgong	Inform/consult	Cumulative impacts from multiple projects. Land use conflict. Economic benefits. Infrastructure and community fund provision.

Table 4.1 Identified stakeholders – preliminary list

Stakeholder group	Stakeholders	Level of engagement	Potential interest
Community	• Community Groups • Dunedoo Fire and Rescue • Gulgong Fire and Rescue • Wider community	Inform/consult	Land use conflict. Environmental values. Cumulative impact from multiple projects and REZ's. Local infrastructure and service provision.
Interest Groups	• Community Consultative Committee • Local business interest groups • Anti-renewable energy groups • Environmental interest groups • Agricultural interest groups • Transport user groups • Unions	Inform/consult	Lifestyle protection. Community values. Environmental values. Land use conflict. Infrastructure provision. Worker safety. Economic opportunities.
Service Providers	• Transgrid	Involve	Delivery and planning.
Industry Associations	• Renewable Energy Alliance	Inform/consult	Regional impact and benefits.
Media	• Dunedoo District Diary • The National Tribune • Panscott Media • Midwest Times	Inform	Cumulative impacts from multiple projects. Regional impact and benefits.

5 Communication issues and risks

Table 5.1 provides a summary of potential communication issues and risks and proposed mitigation measures, for the Project. The likelihood and severity levels included, assume that the proposed management measures are implemented.

Table 5.1 Communication issues and risks

#	Issues	Risks	Likelihood	Severity	Proposed management measures
			High/ Med/ Low		
1	**Engagement timing for Scoping Introduction is limited/runs over the Christmas period.**	• Reputation damage to the Project • Perception that the engagement program is not genuine • Stakeholders distrust of the process	H	L	• Swift establishment of communication channels. • Bring forward targeted project introduction letter to affected landowners and other key stakeholders, prior to broader communication. • Targeted key stakeholder briefings (ie Council add elected representatives) set up and in diaries before Christmas and held in January 2022. • Consult DPE regarding this risk and seek feedback.
2	**High volume of existing developers operating/planning to operate in the area:** • Any community opposition to their operations may impact this project/engagement outcomes.	• Legacy issues created by other organisations affect Project operations • Indirect reputation damage to the Project • Stakeholders distrust of the process	H	L	• Active monitoring and issues management/escalation. • Clear communications about the Project and LSbp. • Be known as a responsible developer – transparent processes, honesty, community benefits.
3	**Complexity of the renewable energy sector/overarching political and economic environment may lead to opposition of the Project due to indirect issues:** • Opposition to declaration of Renewable Energy Zones in NSW. • Opposition to the proposed transmission easements. • Concerns regarding the cumulative impact of so many, diverse projects happening in the region at once.	• Inaccurate information concerning the Project in the public domain • Early issues escalation to elected representatives and the media • Reputation damage to the Project • LSbp caught up in broader, unresolved industry-wide issues in the media	H	L	• Active media monitoring and issues management/escalation. • Targeted project introduction letter to affected landowners and other key stakeholders, prior to broader communication. • Targeted key stakeholder briefings (ie Council and elected representatives). • Proactive affected landowner briefings/meetings, and on request. • Project overview fact sheet about the Project and EIS process. • Frequently Asked Question (FAQ) responses. • Establish two-way communication channels to manage project enquiries and adequately resource (ie Project 1800 number, email and website).

Table 5.1 Communication issues and risks

#	Issues	Risks	Likelihood	Severity	Proposed management measures
			High/ Med/ Low		
4	**Cut through of the communication and engagement program is compromised by the 'noise' from so many other projects underway in the region.**	• Communication materials/attempts to contact people go largely ignored leading to a low understanding of the Project • Communication and engagement effectiveness reduced • Potentially higher dissatisfaction with the Project • Reputation damage to the Project	M	L	• Be proactive in the identification of communication channels that are tailored to this community. • Maintain proactive communication and evidence in reporting of all attempts made. • Develop specific messaging to acknowledge the current flood of information. • Be mindful of other activities in the region and their messaging. • Ensure all field team members maintain a high standard of engagement and showcase LSbp as a leader in this area.
5	**Stakeholders do not engage or disengage due to consultation fatigue:** • Low participation rates from stakeholders will reduce effectiveness of project communications, as well as levels of understanding and support levels for the Project.	• Inaccurate information concerning the Project in the public domain • Communication and engagement effectiveness reduced • Potentially higher dissatisfaction with the Project • Reputation damage to the Project	M	L	• Be proactive in the identification of communication channels that are tailored to this community. • Maintain proactive communication and evidence in reporting of all attempts made. • Develop specific messaging to acknowledge the current flood of information. • Be mindful of other activities in the region and their messaging. • Ensure all field team members maintain a high standard of engagement and showcase LSbp as a leader in this area.
6	**Community awareness and understanding of this Project:** • Low levels of awareness and understanding about the Project, including scope, purpose, benefits and assessment and approval process.	• Inaccurate information concerning the Project in the public domain • Early issues escalation to elected representatives and the media • Reputation damage to the Project	M	L	• Targeted project introduction letter to affected landowners and other key stakeholders, prior to broader communication. • Targeted key stakeholder briefings (ie Council and elected representatives). • Proactive affected landowner briefings/meetings, and on request. • Project overview fact sheet about the Project and EIS process. • Frequently Asked Question (FAQ) responses. • Establish two-way communication channels to manage project enquiries and adequately resource (ie Project 1800 number, email and website). • As part of the Scoping Phase, identify potential future project Community Consultative Committee (CCC) members.

Table 5.1 Communication issues and risks

#	Issues	Risks	Likelihood	Severity	Proposed management measures
			High/ Med/ Low		
7	**Legacy issues – known from other LSbp operations:** • Cost of accommodation and community services rise. • Noise associated with piling. • Link to BP.	• That the cost and availability of accommodation and community services are affected by Project operations • Opposition to the Project due to the piling required during construction and the noise impact. • That the link to BP can be seen as a positive and a negative.	H	L	• Link to the Wellington Solar Farm Workforce Plan. • Ensure the link to BP is understood and that it means the Project has global backing.
8	**Key stakeholder and community concerns about construction impacts:** • Local traffic disruptions, changed conditions, delays and safety. • Noise, vibration and dust. • Workforce accommodation arrangements and impacts on other local services (eg health, emergency services). • Inappropriate workforce behaviour. • Reduced number of tourists/ visitors to the area, resulting in loss of income for some businesses.	• Issues escalation to elected representatives and the media • Reputation damage to the Project	H	L	• Look to host site visits to the Wellington Solar Farm. • Issues-specific key messaging and (FAQ) responses. • Key stakeholder briefings (ie Council and elected representatives). • Proactive affected landowner briefings/meetings, and on request. • Broader project communication (ie website, letterbox dropped project overview factsheet, community information sessions). • Two-way communication channels to manage project enquiries and adequately resource (ie Project 1800 number, email and website. • Regular CCC meetings, to build local understanding about the Project.
9	**COVID-19 precludes face to face engagement.**	• Low levels and/ or unrepresentative key stakeholder and community awareness about the Project and, participation in the communication and engagement program • Reputation damage to the Project	M	L	• Online engagement (ie information sessions). • Establish two-way communication channels to manage project enquiries and adequately resource. • Establish and maintain project website.

6 Engagement methods and materials

6.1 Engagement methods

The following engagement methods will be applied to this project, noting existing LSbp communication channels and the stakeholder groups.

Some materials will be used to inform stakeholders about the Project; some will facilitate two way discussion/feedback provision.

Table 6.1 Engagement methods

Stakeholder Group	Website	Community Hotline	Project Email	Letterbox Drops/Mail outs	Information Sessions	Meetings/ Briefings	Social Media	Media Releases
Federal and State Regulatory Authorities								
State government departments and agencies								
Elected representatives								
Local Councils								
Local Government Officers								
Traditional Owners								
Landowners								
Townships								
Community								
Interest Groups								
Service Providers								
Industry Associations								
Media								

6.2 Engagement Materials

Materials will be developed in conjunction with LSbp, and will include dedicated project website content, project fact sheet, information session site maps and landowner/stakeholder letters.

Key messages and frequently asked questions have been written to support the development of all project materials and communication about the Project.

7 Implementation Plan

The Communication and Engagement program will focus on and support the two key phases of engagement: Scoping and EIS preparation. Overarching timeframes are as follows:

Table 7.1 Indicative project delivery and engagement timeframes

Planning	Scoping phase	EIS preparation	EIS public exhibition	Project assessment outcomes
November 2021	**November 2021 – March 2022**	**March 2022 – March 2023**	**May 2023 (public comment 28 days)**	**Late 2023**
Prepare CEP and all project materials	Launch project, distribute letters to key stakeholders, live website, key stakeholder briefings, native title holder engagement (Spinifex led) and ACHA (EMM led). Social Impact Assessment – Survey 1 and letterbox drop, in depth interviews.	Targetted engagement – SEARs. Letters, Community Update 1, Community Information Session 1 and Community Consultative Committee (CCC), proactive stakeholder briefings, land access for field studies. Social Impact Assessment – Attendance at Community Information Session, Online Survey 2, in depth interviews.	Targetted engagement – Draft EIS. Community Update 2, Community Information Session 2, proactive stakeholder briefings, CCC meetings, website update, display materials and consultation summary report.	Website update, response to submissions.

Activities and responsibilities for the Planning, Scoping and EIS preparation are listed below.

Table 7.2 Communication and engagement activities – scoping phase

Scoping phase

Task/communication method	Description	Alignment with CES objectives	EMM responsibilities	LSbp role and responsibility	Indicative timing
Communication Risk and FAQ workshop	A workshop with key EMM and LSbp staff to assess potential risks and work through FAQs for the Project.	1,5	Draft content and host workshop	Provide input into workshop	November 2021
Finalise Community Engagement Plan	The CEP will drive all protocols, messaging and scheduling for the community and engagement program. It will incorporate discussions from the Communication Risk and FAQ workshop.	1,2,3,4,5	Draft content	Review and approve	November 2021
Communication Action Plan	Draft a Communication Action Plan for online and elected representative briefings.	1,2	Draft content and schedule	Review and approve.	November 2021
Project Webpage	Create a project specific webpage that outlines the Project and approvals process and contact details for the Project team. It will also outline how to get involved in the SIA.	1,2,4,5	Draft content	Review, approve and publish content on the LSbp website	November 2021
Project Factsheet	Create a fact sheet that outlines the Project, approvals process and contact details for the project team. It will also outline how to get involved in the SIA.	1,2,4,5	Draft content	Review, approve and layout according to corporate style guides	November 2021
Establish project email	Establish a project specific email address to receive project enquires.	1, 2,4	Link to existing LSbp systems.	Provide EMM with email address and protocols for use.	November 2021

Table 7.2 Communication and engagement activities – scoping phase

Scoping phase

Task/communication method	Description	Alignment with CES objectives	EMM responsibilities	LSbp role and responsibility	Indicative timing
Establish community 1800 line	Establish a 1800 community line to receive project enquires.	1, 2,4	Link to existing 1800 number manned by LSbp. Provide contact point within EMM for all messages to be sent to by LSbp.	Provide 1800 number details.	November 2021
Establish Simply Stakeholders Database	This system will be used to capture and report on all communication and engagement activities for the Project.	3	Establish key criteria and accurately record and report all stakeholder interactions.	Review and approve	November 2021
Draft letters for key stakeholder groups	Letters of introduction to be sent to key stakeholder groups advising of the Project and how they can provide feedback and offer breifngs.	1,2,3,5	Draft content	Review and approve for distribution	December 2021
Send project introduction and invitation letters	Landowners (registered post). Neighbouring property owners and those along vehicle routes. Native title notification.	1,2,5	Draft content	Review and approve for distribution	December 2021
Send briefing offers	Elected representatives (federal, state, local).	1,2,5	Draft content	Review and approve for distribution	December 2021
Host briefing sessions	Landowners, Elected representatives (federal, state, local x2 and on request).	1,2,3,5	Host sessions	Attend as required	January 2022
Community Update #1	Circulate the first community update about the Project the pending community information sessions.	1,2,3	Draft and distribute	Review and approve	March 2022 – March 2023

Table 7.2 Communication and engagement activities – scoping phase

Scoping phase

Task/communication method	Description	Alignment with CES objectives	EMM responsibilities	LSbp role and responsibility	Indicative timing
Community Information Session #1	Advertise and host a community information session to provide and opportunity for people to meet the project team, ask questions and provide feedback about the Project.	1,2,3,4,5	Host sessions	Attend as required	February 2022
AHCA advertisement	AHCA advertisements placed.	1,2,3	Draft and arrange	Review and approve	January 2022
Supoort SIA development	Prepare a letter and mailout with details of SIA survey #1.	1,2,3,4	Draft and distribute	Review and approve	January 2022
	SIA team to conduct indepth interviews via telephone/video conference and neighbouring landowner/special interest stakeholder briefings.	1,2,3,4	Assist with recording information as required.		January 2022
Stakeholder Engagement Report	Provide a report on all stakeholder and engagement activities and outcomes.	3,5	Draft content	Review and approve	February 2022

Table 7.3 Communication and engagement activities – EIS phase

EIS preparation

Task/communication method	Description	Alignment with CES objectives	EMM responsibilities	LSbp role and responsibility	Indicative timing
Targetted engagement _SEARS					
Landowner letters (direct mail/letterbox drop) about the SEARS requirements	Provide a letter to landowners that provides an update and advises the specific SEARs requirements.	1,2,3	Draft and distribute	Review and approve	March 2022 – March 2023
Host elected representative briefing sessions	Invite local and state elected representatives to project briefings and host as required.	1,2,3	Draft presentation content and attend.	Attend as required.	March 2022 – March 2023
Website update	Update all project website content to reflect SEARs requirements.	1,2,3	Draft	Review, approve and upload	March 2022 – March 2023
Community Update #2	Circulate the second community update about the Project with a focus on SEARs requirements and advertising the pending community information sessions.	1,2,3	Draft and distribute	Review and approve	March 2022 – March 2023
Community Information Session #2	Advertise and host a community information session to provide and opportunity for people to meet the project team, ask questions and provide feedback about the Project.	1,2,3,4,5	Host sessions	Attend as required	March 2022 – March 2023
Display materials	Develop key materials to support the above community information sessions.	1,2,3	Draft and print	Review and approve	March 2022 – March 2023

Table 7.3 Communication and engagement activities – EIS phase

EIS preparation

Task/communication method	Description	Alignment with CES objectives	EMM responsibilities	LSbp role and responsibility	Indicative timing
Support SIA development	Prepare a letter and mailout with details of SIA survey #2.	1,2,3,4	Draft and distribute	Review and approve	March 2022 – March 2023
	SIA team to conduct indepth interviews via telephone/video conference and neighbouring landowner/special interest stakeholder briefings.	1,2,3,4	Assist with recording information as required.		March 2022 – March 2023
	SIA team to conduct two community and two key stakeholder workshops.	1,2,3,4	Assist with recording information as required		March 2022 – March 2023
Land access letters as required	Assist technical teams with land access as required throughout the EIS.	1,5	Draft and distribute	Review and approve	Ongoing as required
Engagement Summary Report	Draft an engagement summary report that outlines all activities and outcomes.	1,2,3,4,5	Draft	Review and approve	March 2023
Once the draft EIS is finalised, a formal public exhibition period of 28 days will take place. This key activity will be supported by this engagement program via: provision of briefings, a second community update and information session to explain the contents of the draft EIS.					

8 Evaluation and reporting

The key evaluation criteria for assessing this communication and engagement program, includes:

- few public submissions are received opposing the Project;
- any key stakeholder or community public submissions received, are based on accurate information;
- all key stakeholder or community enquiries are closed out, within the required timeframes (ie within two working days of receipt); and
- all key stakeholder and community interactions are adequately documented in the stakeholder database, in a timely manner, as part of supporting internal reporting requirement.

Appendix A

Communication and engagement material

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.

EMM Consulting Pty Limited (EMM) is a leading Australian planning and environmental consultancy who has 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 an opportunity to participate in the planning process and provide feedback. In the coming months, Lightsource bp and EMM 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 in late 2022.

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.

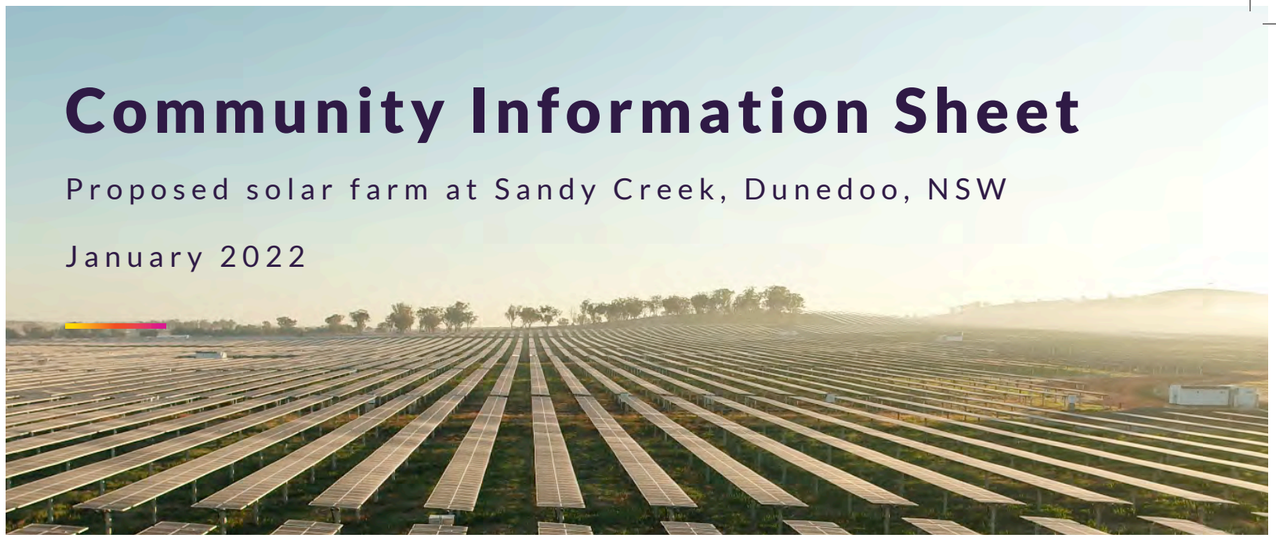
Contact us

Email: sandycreeksolar@lightsourcebp.com
Phone: 1300 873 575
Website: www.lightsourcebp.com/au/projects/sandy-creek-solar-farm

Community Information Sheet

Proposed solar farm at Sandy Creek, Dunedoo, NSW

January 2022



Lightsource bp is proposing to develop the Sandy Creek Solar Farm Project (the Project). The site is located approximately 25km south-west of Dunedoo and 30km north-west of Gulgong, NSW. It borders the Dubbo Regional Council and Warrumbungle Shire Council Local Government Areas (see **Figure 1**).

The Project would consist of a 840-megawatt (MWp) solar farm and battery energy storage system (BESS) as well as associated infrastructure. The Project will connect to the proposed Central West Orana Renewable Energy Zone transmission line, scheduled to be installed and operational around 2024.

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/sandy-creek-solar-farm

We are holding three community information sessions, one online and two in person:

Date Monday, 31 January 2022 **Time** 1pm – 2pm (AEDT)
Venue Online

Date Saturday, 5 February 2022 **Time** 8am – 11am (AEDT)
Venue Dunedoo Jubilee Memorial Hall, 154 Bolaro Street, Dunedoo

Date Saturday, 5 February 2022 **Time** 2pm – 5pm (AEDT)
Venue Gulgong Memorial Hall, 112 Herbert Street, Gulgong

If you would like to attend the online session, please register your interest by entering your contact details here: https://form.jotform.com/213469520792865 or by scanning the QR code, and we will send you the session log in details.

We would like to ensure that our engagement is inclusive, and are aware that not everyone in the community will be available at these times or may not have access to the online platform. 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.

Key statistics

- **840 MWp** solar farm with co-located BESS on site
- Proposed development on a **1,600-ha** site
- **1.4 million** solar panels to be installed
- Meets **6%** of the average NSW energy demand
- Equivalent to the energy needs of **253,419** households
- **931,298** EV powered per year
- **1,405,970** tonnes of carbon emissions saved
- Operational life of at least **35** years with an expected **10** full time operational jobs created

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www.lightsourcebp.com

About the Project

What assessments will be required?

The Project will be assessed under the NSW State Significant Development planning process, 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, Industry and Environment (DPIE) in early to mid-2022. Lightsource bp is seeking feedback from the local community on the Project as part of the planning and development process.

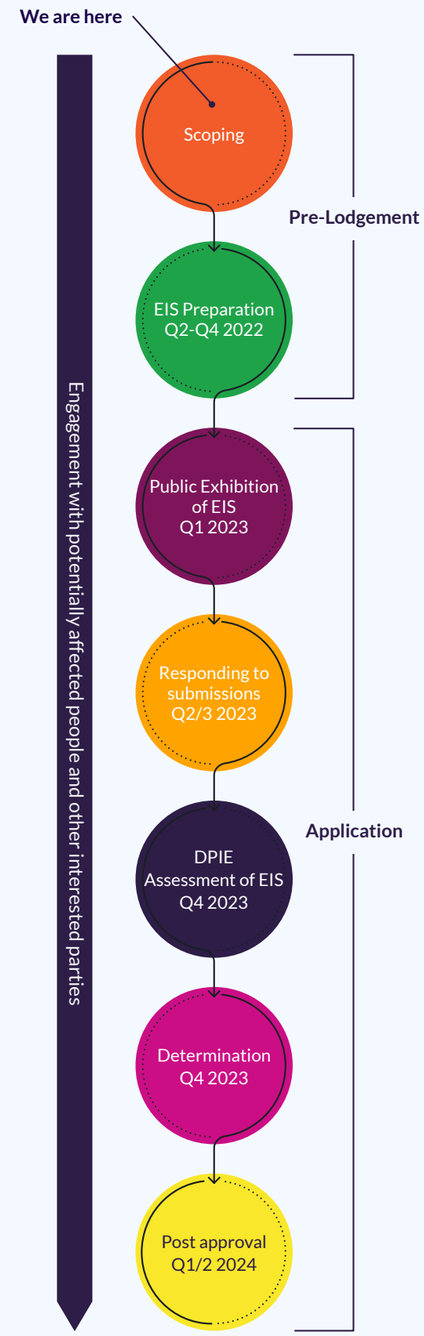
The social and environmental assessments for the Project will be prepared by EMM and cover a range of matters, including:

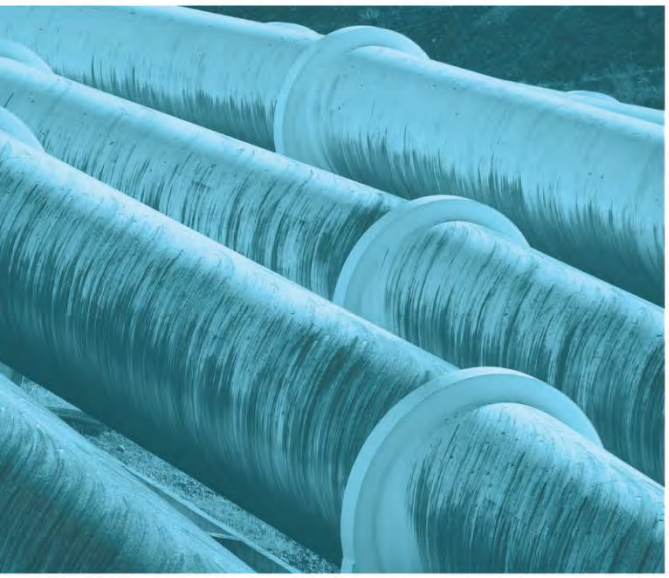
- **Land Use**
- **Visual**
- **Traffic**
- **Cumulative Effects**
- **Water**
- **Social and Community**
- **Noise**
- **Biodiversity**
- **Heritage**
- **Hazard and Risk**

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 December 2021.

Figure 1 – *Project locality*

Figure 2 – *Phases of key environmental and social impact assessment activities and outputs*





Appendix B

EIS Scoping summary table

B.1 Scoping summary table

Level of assessment	Matter	Cumulative Impact Assessment	Engagement	Relevant policies and guidelines	Scoping report reference
Detailed	Amenity - Visual	Yes	Specific	• *Guidelines for Landscape and Visual Impact Assessment* (United Kingdom Landscape Institute of Environmental Management and Assessment 2013); • *Wind Energy: Visual Assessment Bulletin AB 01 For State Significant Wind Energy Development* (DPE 2016); and • *Guidance Note for Landscape and Visual Assessment* (Australian Institute of Landscape Architects 2018).	Section 6.2.1
	Biodiversity	Yes	General	• Biodiversity Assessment Method (DPIE 2020b); • 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); and • Commonwealth Department of the Environment – *Survey Guidelines for Nationally Threatened Species* (various).	Section 6.3
	Access	Yes	Specific	• Guide to Traffic Management – Part 3 Traffic Studies and Analysis (Austroads, 2013).	Section 6.6
	Social	Yes	Specific	• Social Impact Assessment Guideline for State Significant Projects 2021 (DPIE 2021).	Section 6.5
Standard	Amenity – Noise and vibration	Yes	General	• NSW Interim Construction Noise Guideline (DECC 2009); • NSW Noise Policy for Industry (EPA 2017); • NSW Road Noise Policy (DECCW 2011); and • Assessing Vibration: A Technical Guideline (DECC 2006).	Section 6.2.2

Level of assessment	Matter	Cumulative Impact Assessment	Engagement	Relevant policies and guidelines	Scoping report reference
	Heritage – Aboriginal	Yes	Specific	• *Guide to investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011); • *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010); and • *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010);	Section 6.4.1
	Heritage - Historical	Yes	General	• *Historical Archaeology Code of Practice* (Heritage Council 2006).	Section 6.4.2
	Hazards and risks	Yes	Specific	• *Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis* (DoP, 2011a); • *Multi-Level Risk Assessment* (DoP, 2011b); • *Hazardous and Offensive Development Application Guidelines: Applying SEPP 33* (DoP 2011); and • *Planning for Bushfire Protection 2019* (RFS 2019)	Section 6.7
	Land resources	Yes	General	• *Land Use Conflict Risk Assessment Guideline* (DPI 2011); and • *Managing Land Contamination: Planning Guidelines State Environmental Planning Policy No 55 Remediation of land* (Department of Urban Affairs and Planning and Environment Protection Authority, 1998).	Section 6.8

Level of assessment	Matter	Cumulative Impact Assessment	Engagement	Relevant policies and guidelines	Scoping report reference
	Water resources	No	General	• *Managing Urban Stormwater: Soils and Construction Volume 1* (Landcom, 2004) ; • *Managing Urban Stormwater: Soils and Construction Volume 2* (Department of Environment and Climate Change, 2008); • *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC / ARMCANZ, 2000); • *Guidelines for instream works on waterfront land* (NOW 2012); • *Guidelines for riparian corridors on waterfront land* (NOW 2012); and • *Guidelines for watercourse crossings on waterfront land* (NOW 2012).	Section 6.9
	Air quality	Yes	General	• *Guidance on the Assessment of Dust from Demolition and Construction* (IAQM).	Section 6.10

Appendix C

Likelihood of occurrence assessment

Likelihood of occurrence assessment of threatened and migratory species

Class	Scientific name	Common name	FM Act listing	BC Act listing	EPBC Act listing	Habitat association	Bionet (2021)	PMST (DAWE 2021)	PCT Association	Likelihood of occurrence	Justification
Amphibia	*Crinia sloanei*	Sloane's Froglet	-	V	E	Sloane's Froglet has been recorded from widely scattered sites in the floodplains of the Murray-Darling Basin, with the majority of records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. The species is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats.	-	-	Y	Moderate	Not recorded within locality. However, potential habitat occurs within the study area. Associated with PCT 76.
Aves	*Burhinus grallarius*	Bush Stone-curlew	-	E	-	The Bush Stone-curlew has previously been recorded in all but the most arid parts of mainland Australia. Today the species is scarce or largely absent in many parts of its former range south and east of the Great Dividing Range. It inhabits open forests and woodlands with a sparse grassy ground layer and fallen timber. The curlew likes to roost and nest in grassy woodlands of Bull Oak, gum or box with low, sparse grassy or herb understorey. Nests are usually beside a fallen log, which probably makes it harder for foxes to find. Curlews prefer a sparse understorey so they can see predators while foraging for insects (OEH 2018).	-	-	Y	Moderate	Not recorded within the locality. However, the open woodlands with sparse grassy ground cover and fallen timber provides suitable habitat for the species.
Aves	*Calyptorhynchus lathami*	Glossy Black-Cockatoo	-	V	-	The Glossy Black Cockatoo inhabits open forest and woodlands of the coast and the Great Dividing Range up to 1000 m in which stands of She-oak species, particularly Black She-oak (Allocasuarina littoralis), Forest She-oak (A. torulosa) or Drooping She-oak (A. verticillata) occur.	Y	-	Y	High	Recently recorded within the locality. The open woodlands on the development site may provide hollows for the species and foraging sites.
Aves	*Epthianura albifrons*	White-fronted Chat	-	V	-	The White-fronted Chat is found across the southern half of Australia, from southernmost Queensland to southern Tasmania, and across to Western Australia as far north as Carnarvon. Found mostly in temperate to arid climates and very rarely sub-tropical areas, it occupies foothills and lowlands up to 1000 m above sea level. In NSW, it occurs mostly in the southern half of the state, in damp open habitats along the coast, and near waterways in the western part of the state. Along the coastline, it is found predominantly in saltmarsh vegetation but also in open grasslands and sometimes in low shrubs bordering wetland areas. It is a gregarious species, usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground. They have been observed breeding from late July through to early March, with 'open-cup' nests built in low vegetation. They nest in the Sydney region have also been seen in low isolated mangroves.	Y	-	-	Low	Recently recorded within the locality. However, the development site not provide wetlands, and the existing waterways are highly disturbed.
Aves	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	-	V	-	The White-bellied Sea-Eagle is found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands. The habitats occupied by the sea-eagle are characterised by the presence of large areas of open water (larger rivers, swamps, lakes and the sea).	-	-	Y	Low	Not recorded within the locality. However, the development site does have multiple creeks (the highest is Strahler stream order 5).
Aves	*Hieraaetus morphnoides*	Little Eagle	-	V	-	The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. This species occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used.	Y	-	Y	Moderate	Recently recorded within the locality. However, the woodlands on the development site are highly degraded and fragmented, which does not provide suitable intact vegetation for the species.
Aves	*Lophochroa leadbeateri*	Major Mitchell's Cockatoo	-	V	-	Found across the arid and semi-arid inland, from south-western Queensland south to north-west Victoria, through most of South Australia, north into the south-west Northern Territory and across to the west coast between Shark Bay and about Jurien. In NSW it is found regularly as far east as about Bourke and Griffith, and sporadically further east than that. Inhabits a wide range of treed and treeless inland habitats, always within easy reach of water. Feeds mostly on the ground, especially on the seeds of native and exotic melons and on the seeds of species of saltbush, wattles and cypress pines. Nesting, in tree hollows, occurs throughout the second half of the year; nests are at least 1 km apart, with no more than one pair every 30 square kilometres.	-	-	Y	Moderate	Not recorded within locality. However, the open and degraded woodlands may provide hollows for nesting. The grassy understory also provides forgaging habitat.
Aves	*Lophoictinia isura*	Square-tailed Kite	-	V	-	Within NSW the Square-tailed Kite is a regular resident in the north, north-east and along major flowing river systems and migrates to the south-east for breeding. The species is found in a variety of timbered habitats including dry woodlands and open forests, showing a particular preference for timbered watercourses. The species is a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy, picking most prey items from the outer foliage The species appears to occupy large hunting ranges of more than 100km2. Nest sites are generally located along or near watercourses, in a fork or on large horizontal limbs (OEH 2018).	-	-	Y	Low	Not recorded within the locality. Creeks within the development footprint may provide suitable nesting sites, despite being degraded.
Aves	*Ninox connivens*	Barking Owl	-	V	-	The Barking Owl inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. This species roosts in shaded portions of tree canopies, including tall midstorey trees with dense foliage such as Acacia and Casuarina species.	Y	-	Y	High	Recently recorded within the locality. The fragmented woodlands on the development site provide suitable habitat and potential roosting sites for the species.
Aves	*Ninox strenua*	Powerful Owl	-	V	-	In NSW, the Powerful Owl is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered, mostly historical records on the western slopes and plains. This species roosts by day in dense vegetation comprising species such as Turpentine (Syncarpia glomulifera), Black She-oak (Allocasuarina littoralis), Blackwood (Acacia melanoxylon), Rough-barked Apple (Angophora floribunda), Cherry Ballart (Exocarpus cupressiformis) and a number of eucalypt species.	Y	-	Y	Moderate	Recently recorded within the locality. However, the Eucalyptus woodlands on the development site are highly degraded and fragmented,which does not provide suitable intact vegetation for the species.
Aves	*Pachycephala inornata*	Gilbert's Whistler	-	V	-	The Gilbert's Whistler is sparsely distributed over much of arid and semi-arid NSW, though some populations may have gone extinct. The species occurs in a range of habitats within NSW, though the shared feature appears to be a dense shrub layer. It is widely recorded in mallee shrublands, but also occurs in box-ironbark woodlands, Cypress Pine and Belah woodlands and River Red Gum forests, though at this stage it is only known to use this habitat along the Murray, Edwards and Wakool Rivers. Within the mallee the species is often found in association with an understorey of spinifex and low shrubs including wattles, hakeas, sennas and hop-bushes. In woodland habitats, the understorey comprises dense patches of shrubs, particularly thickets of regrowth Callitris pine. Parasitic 'cherries' (Exocarpus species) appear to be an important habitat component in Belah and Red Gum communities, though in the latter case other dense shrubs, such as Lignum and wattles, are also utilised.	Y	-	-	Low	Has only been recorded once in the locality, in 2007. The species is not associated with the vegetaion on site.
Aves	*Tyto novaehollandiae*	Masked Owl	-	V	-	Extends from the coast where it is most abundant to the western plains. Overall records for this species fall within approximately 90% of NSW, excluding the most arid north-western corner. There is no seasonal variation in its distribution. Lives in dry eucalypt forests and woodlands from sea level to 1100 m. Often hunts along the edges of forests, including roadsides. Pairs have a large home-range of 500 to 1000 hectares. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.	-	-	Y	Low	Not recorded within locality. The Eucalyptus woodlands on the development site are highly degraded and fragmented,which does not provide suitable intact vegetation for the species.

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Aves	*Artamus cyanopterus cyanopterus*	Dusky Woodswallow	-	V	-	The species occurs throughout most of NSW, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range. The most common habitat for this species is in woodlands and dry open sclerophyll forests, usually dominated by eucalyptus, including mallee associations. The species has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests; very occasionally in moist forests or rainforests. Understorey is typically open with sparse Eucalyptus saplings, Acacia and other shrubs, including heath. The ground cover may consist of grasses, sedges or open ground, often with coarse woody debris (OEH 2018).	Y	-	Y	Moderate	Recently recorded within the locality. However, the woodlands on the development site are highly degraded and fragmented, which does not provide suitable intact vegetation for the species.
Aves	*Chthonicola sagittata*	Speckled Warbler	-	V	-	Lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. The Speckled Warbler has a patchy distribution throughout south-eastern Queensland, the eastern half of NSW and into Victoria, as far west as the Grampians. The species is most frequently reported from the hills and tablelands of the Great Dividing Range, and rarely from the coast.	Y	-	Y	High	Recently recorded within the locality. Sparse grasslands and the open canopy on the development site provide suitable habitat for the species. Also associated with all 5 PCTs in the development site.
Aves	*Circus assimilis*	Spotted Harrier	-	V	-	The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands.	Y	-	-	High	Recent records within the locality. The grassy open woodland on the development site provide suitable habitat for the species.
Aves	*Climacteris picumnus victoriae*	Brown Treecreeper (eastern subspecies)	-	V	-	The eastern subspecies lives in eastern NSW in eucalypt woodlands through central NSW and in coastal areas with drier open woodlands such as the Snowy River Valley, Cumberland Plains, Hunter Valley and parts of the Richmond and Clarence Valleys. Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (Eucalyptus camaldulensis) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains.	Y	-	Y	High	Recently recorded within the locality. Eucalyptus woodland with an open grassy understorey provides suitable habitat occurs on development site.
Aves	*Daphoenositta chrysoptera*	Varied Sittella	-	V	-	The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. The Varied Sittella's population size in NSW is uncertain but is believed to have undergone a Moderate (associated PCT)reduction over the past several decades. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	Y	-	Y	Low	Recently recorded within the locality. However, the woodlands on the development site are highly degraded and fragmented, which does not provide suitable intact vegetation for the species.
Aves	*Falco subniger*	Black Falcon	-	V	-	The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. Some reports of 'Black Falcons' on the tablelands and coast of New South Wales are likely to be referable to the Brown Falcon. In New South Wales there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile, commonly travelling hundreds of kilometres (Marchant & Higgins 1993). The Black Falcon occurs as solitary individuals, in pairs, or in family groups of parents and offspring.	Y	-	Y	Moderate	Recently recorded within the locality. The grassy open woodland on the development site provides suitable habitat for the species.
Aves	*Glossopsitta pusilla*	Little Lorikeet	-	V	-	The Little Lorikeet is distributed widely across the coastal and Great Divide regions of eastern Australia from Cape York to South Australia. NSW provides a large portion of the species' core habitat, with lorikeets found westward as far as Dubbo and Albury. Nomadic movements are common, influenced by season and food availability, although some areas retain residents for much of the year and 'locally nomadic' movements are suspected of breeding pairs. Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity.	Y	-	Y	Moderate	Recently recorded within the locality. However, the woodlands on the development site are highly degraded and fragmented, which does not provide suitable intact vegetation for the species.
Aves	*Melanodryas cucullata cucullata*	Hooded Robin (south-eastern form)	-	V	-	The Hooded Robin is widespread, found across Australia, except for the driest deserts and the wetter coastal areas - northern and eastern coastal Queensland and Tasmania. However, it is common in few places, and rarely found on the coast. It is considered a sedentary species, but local seasonal movements are possible. The south-eastern form (subspecies *cucullata*) is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies *picata* . Two other subspecies occur outside NSW. Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.	Y	-	Y	Moderate	Recently recorded within the locality. However, the woodlands on the development site are highly degraded and fragmented,which does not provide suitable intact vegetation for the species.
Aves	*Melithreptus gularis gularis*	Black-chinned Honeyeater (eastern subspecies)	-	V	-	The Black-chinned Honeyeater is widespread within NSW ranging from the tablelands and western slopes of the Great Dividing Range to the north-west and central-west plains and the Riverina. The species is found in the upper levels of open eucalypt forests and woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark, White Box, Inland Grey Box, Yellow Box, Blakely's Red Gum and Forest Red Gum (E. tereticornis). It is also commonly found along waterways, especially in arid and semi-arid areas; as well as occasionally seen in gardens and street trees. The species moves quickly from tree to tree, foraging rapidly along outer twigs, underside of branches and trunks, probing for insects. Nectar is taken from flowers, and honeydew is gleaned from foliage (OEH 2018).	Y	-	Y	Moderate	Only recorded once in the locality, in 1987. The waterways in the development site may provide habitat for the species. The woodlands on site, however, are highly degraded and fragmented.
Aves	*Neophema pulchella*	Turquoise Parrot	-	V	-	Inhabiting the steep, rocky ridges and gullies, hills, river-flats, valleys and nearby plains of the Great Dividing Range, the Turquoise Parrot is found in open forest and eucalyptus woodlands with a low shrub understorey and grassy ground-cover. Generally, distribution of the species is patchy, determinined by areas of suitable habitat and ranges from north-eastern Victoria through NSW to south-eastern Queensland. Individuals generally breed from August to January, usually nesting less than two metres above the ground. Nests may be located in hollows of small trees, dead eucalyptus or in holes or stumps, fence posts or even logs lying on the ground.	Y	-	Y	Moderate	Recently recorded within locality.However, the topography of the development site is flat, within no rocky ridges or hills. T he woodland habitat is also degraded and fragmented. No suitable habitat for this species.
Aves	*Petroica boodang*	Scarlet Robin	-	V	-	In NSW, the Scarlet Robin occurs from the coast to the inland slopes. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat.	Y	-	Y	Moderate	Recently recorded within the locality. However, the Eucalyptus woodlands on the development site are highly degraded and fragmented,which does not provide suitable abundant logs and fallen timber for the species.

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Aves	*Petroica phoenicea*	Flame Robin	-	V	-	Within NSW the Flame Robin breeds in upland areas and during winter many birds move to the inland slopes and plains. The species breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. In winter, birds migrate to drier more open habitats in the lowlands (i.e. valleys below the ranges, and to the western slopes and plains). Here, the species lives in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees (OEH 2018).	-	-	Y	Low	No recent records within the locality. However the grassy woodlands of the development site provides suitable habitat for the species.
Aves	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler (eastern subspecies)	-	V	-	The Grey-crowned Babbler has two distinctive subspecies that intergrade to the south of the Gulf of Carpentaria. West of here the subspecies *rubeculus* , formerly considered a separate species (Red-breasted Babbler) is still widespread and common. The eastern subspecies (*temporalis* occurs from Cape York south through Queensland, NSW and Victoria and formerly to the south east of South Australia. This subspecies also occurs in the Trans-Fly Region in southern New Guinea. In NSW, the eastern sub-species occurs on the western slopes of the Great Dividing Range, and on the western plains reaching as far as Louth and Balranald. It also occurs in woodlands in the Hunter Valley and in several locations on the north coast of NSW. It may be extinct in the southern, central and New England tablelands. Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions.	Y	-	Y	Moderate	A high number of records (almost 200) within the locality, most recently in 2021. However, the Eucalyptus woodlands on the development site are highly degraded and fragmented,which does not provide suitable intact vegetation for the species.
Aves	*Stagonopleura guttata*	Diamond Firetail	-	V	-	The Diamond Firetail is endemic to south-eastern Australia and widely distributed in NSW. This species is found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum (Eucalyptus pauciflora) Woodlands. Also occurring in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. The species are often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland. The species feeds exclusively on the ground, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects (especially in the breeding season). Nests are globular structures built either in the shrubby understorey, or higher up, especially under hawk's or raven's nests (OEH 2018).	Y	-	Y	High	Recently recorded within locality and the grassy woodlands of the development site provides suitable habitat for the species.
Aves	*Anthochaera phrygia*	Regent Honeyeater	-	CE	CE	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. These birds are also found in drier coastal woodlands and forests in some years. Every few years non-breeding flocks are seen foraging in flowering coastal Swamp Mahogany (Eucalyptus robusta) and Spotted Gum (Corymbia maculata) forests, particularly on the central coast and occasionally on the upper north coast. Birds are occasionally seen on the south coast.	Y	Y	Y	Moderate	Recorded within the locality in 2012 and 2001. Associated with 4 of the PCTs. However, the woodlands on the development site are highly degraded and fragmented, which does not provide suitable intact vegetation for the species.
Aves	*Lathamus discolor*	Swift Parrot	-	E	CE	This species migrates in the autumn and winter months to south-eastern Australia. In NSW, it mostly occurs on the coast and south-west slopes in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations (OEH 2018). Favoured feed trees include winter flowering species such as Swamp Mahogany, Spotted Gum, Red Bloodwood (C. gummifera), Mugga Ironbark and White Box. Commonly used lerp infested trees include Inland Grey Box, Grey Box (E. moluccana) and Blackbutt (E. pilularis).	-	Y	Y	Moderate	Not recorded within locality. However, there is potential foraging habitat within the development site and the species could occur from year to year.
Aves	*Calidris ferruginea*	Curlew Sandpiper	-	E	CE, Mi	Mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters.	-	Y	-	Low	No recent records within locality. The development site does have multiple creeks (the highest is Strahler stream order 5). However, the banks are eroded and have minimal vegetative cover. The habitat is degraded and fragment.
Aves	*Numenius madagascariensis*	Eastern Curlew	-	-	CE; Mi	During non-breeding this species is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. The birds are often recorded among saltmarsh and on mudflats fringed by mangroves, and sometimes within the mangroves. The birds are also found in coastal saltworks and sewage farms.	-	Y	-	Low	Not recorded within locality. The development site does have multiple creeks (the highest is strahler stream order 5). However, the banks are eroded and have minimal vegetative cover. The habitat is degraded and fragment.
Aves	*Botaurus poiciloptilus*	Australasian Bittern	-	E	E	The Australasian Bittern is widespread and found over most of NSW except for far north-west. Preferred habitat is comprised of wetlands with tall dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water. It favours permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and reeds or cutting grass (Gahnia sp.) growing over a muddy or peaty substrate (OEH 2018).	-	Y	-	Low	No recent records within the locality. The development site does have multiple creeks (the highest is Strahler stream order 5). However, the banks are eroded and have minimal vegetative cover. The habitat is degraded and fragment.
Aves	*Rostratula australis*	Australian Painted Snipe	-	E	E	The Australian Painted Snipe generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. The species also uses inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains (OEH 2018).	-	Y	-	Low	Not recorded within locality. However, the development site does have multiple creeks (the highest is strahler stream order 5).
Aves	*Falco hypoleucos*	Grey Falcon	-	E	V	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. The species is usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey (OEH 2018).	-	Y	-	Moderate	No recent records within locality. However, the grassy open woodland on the development site provides suitable habitat for the species.
Aves	*Grantiella picta*	Painted Honeyeater	-	V	V	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits Boree/ Weeping Myall (Acacia pendula), Brigalow (A. harpophylla) and Box-Gum Woodlands and Box-Ironbark Forests.	-	Y	Y	Low	Not recorded within the locality. The woodlands on the development site are highly degraded and fragmented, which does not provide suitable intact vegetation for the species.
Aves	*Leipoa ocellata*	Malleefowl	-	E	V	Malleefowl predominantly inhabit mallee communities, preferring the tall, dense and floristically-rich mallee found in higher rainfall (300 – 450 mm mean annual rainfall) areas. The species utilises mallee with a spinifex understorey, but usually at lower densities than in areas with a shrub understorey. The species is less frequently found in other eucalypt woodlands, such as Inland Grey Box, Ironbark or Bimble Box Woodlands with thick understorey. Prefers areas of light sandy to sandy loam soils and habitats with a dense but discontinuous canopy and dense and diverse shrub and herb layers (OEH 2018).	Y	Y	-	Moderate	Recently recorded within the locality. However, the understory of the development site does not provide ideal vegetation cover for the species.
Aves	*Polytelis swainsonii*	Superb Parrot	-	V	V	The Superb Parrot is found throughout eastern inland NSW. This species inhabits forests and woodlands dominated by eucalypts, especially River Red Gums and box eucalypts such as Yellow Box or Inland Grey Box. Superb Parrots breed in either River Red Gum forests and woodlands or box woodlands (DoEE 2018).	Y	Y	Y	Moderate	A high number of records (over 300) within the locality, most recently in 2021. However, the Eucalyptus woodlands on the development site are highly degraded and fragmented,which does not provide suitable intact vegetation for the species.

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Aves	*Hirundapus caudacutus*	White-throated Needletail	-	-	V, Mi	The White-throated Needletail is widespread in eastern and south-eastern Australia. In NSW this species extends inland to the western slopes of the Great Divide and occasionally onto the adjacent inland plains. In Australia, the White-throated Needletail is almost exclusively aerial, recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland (DoEE 2018).	-	Y	Y	Low	Not recorded within the locality. May utilise the development site to fly over as the species is almost excusively aerial.
Fish	*Maccullochella macquariensis*	Trout Cod	E	-	E	Widespread throughout NSW (also found in parts of ACT and VIC) and inhabit rapidly flowing streams with rocky or gravel bottoms, and pools with woody instream debris such as logs and snags.	-	Y	-	Moderate	No records within locality, however potential habitat does occur on site with Sandy Creek connecting to Talbragar River 7km from site. Potential habitat within study area.
Fish	*Maccullochella peelii*	Murray Cod	-	-	V	Clear rocky streams of the upper western slopes of NSW (including ACT), to slow flowing, turbid lowland rivers and billabongs.	-	Y	-	Moderate	No records within locality, however potential habitat does occur on site with Sandy Creek connecting to Talbragar River 7km from site. Potential habitat within study area.
Fish	*Galaxias rostratus*	Flathead Galaxias, Beaked Minnow, Flat-headed	CE	-	CE	Flathead Galaxias is known from the southern part of the Murray Darling Basin. They have been recorded in the Macquarie, Lachlan, Murrumbidgee and Murray Rivers in NSW. Despite extensive scientific sampling over the past 15 years there have been very few recorded sightings of Flathead Galaxias. They have not been recorded and are considered locally extinct in the lower Murray, Murrumbidgee, Macquarie and Lachlan Rivers. The species is now only known from the upper Murray River near Tintaldra and wetland areas near Howlong. Flathead Galaxias are found in still or slow moving water bodies such as wetlands and lowland streams.	-	Y	-	Moderate	No records within locality, however potential habitat does occur on site with Sandy Creek connecting to Talbragar River 7km from site. Potential habitat within study area.
Fish	*Macquaria australasica*	Macquarie Perch	E	-	E	Macquarie Perch have declined considerably from their historical distribution within NSW and they are now considered isolated to the upper reaches of the Lachlan and Murrumbidgee Rivers in southern NSW. It is also found in low numbers in the Mongarlowe River, where the population is considered likely to be the result of a translocation from the Murray-Darling Basin. Other populations exist in Cataract Dam in the Nepean River catchment, as well as a 2008 record from Georges River near Campbelltown, the first record from the river since 1894. It persists in the Burrinjuck, Cotter (Murrumbidgee) and Wyangala impoundments. A breeding population in the Queanbeyan River upstream of the Googong Reservoir exists solely due to a translocation of individuals from the reservoir past a natural barrier. The Googong reservoir population is believed to be effectively extinct. Macquarie perch may occasionally become displaced downstream from the Queanbeyan River into Googong, but they do not form a population in the reservoir. The Macquarie Perch is a riverine, schooling species. It prefers clear water and deep, rocky holes with lots of cover. As well as aquatic vegetation, additional cover may comprise of large boulders, debris and overhanging banks. Spawning occurs just above riffles (shallow running water). Populations may survive in impoundments if able to access suitable spawning sites	-	Y	-	Low	No records within locality, however unsuitable habitat on development site due to limited vegetation on banks of creeks.
Flora	*Acacia ausfeldii*	Ausfeld's Wattle	-	V	-	Found to the east of Dubbo in the Mudgee-Ulan-Gulgong area of the NSW South Western Slopes bioregion, with some records in the adjoining Brigalow Belt South, South Eastern Highlands and the Sydney Basin bioregions. Populations are recorded from Yarrobil National Park, Goodiman State Conservation Area and there is a 1963 record from Munghorn Gap Nature Reserve. A large population is also known from Tuckland State Forest to the northwest of Gulgong. Associated species include Eucalyptus albens, E. blakelyi and Callitris spp., with an understorey dominated by Cassinia spp. and grasses.	Y	-	Y	High	Recently recorded within locality. Also associated with PCT 201, 266, 277 and 281.
Flora	*Diuris tricolor*	Pine Donkey Orchid	-	V	-	Sporadically distributed on the western slopes of NSW, extending from south of Narrandera all the way to the north of NSW. Localities in the south include Red Hill north of Narrandera, Coolamon, and several sites west of Wagga Wagga. Condobolin-Nymagee road, Wattamondara towards Cowra, Eugowra, Girilambone, Dubbo and Cooyal, in the Central West. Pilliga SCA, Pilliga National Park and Bibblewindi State Forest in the north (and extending into Queensland) and Muswellbrook in the east. The Pine Donkey Orchid grows in sclerophyll forest among grass, often with native Cypress Pine (Callitris spp.). It is found in sandy soils, either on flats or small rises. Also recorded from a red earth soil in a Bimble Box community in western NSW. Associated species include Callitris glaucophylla, Eucalyptus populnea, Eucalyptus intertexta, Ironbark and Acacia shrubland. The understorey is often grassy with herbaceous plants such as Bulbine species.	Y	-	Y	Moderate	No recent records within the locality. However, suboptimal habitat occurs within study area.
Flora	*Swainsona sericea*	Silky Swainson-pea	-	V	-	The Silky Swainson-pea is a prostrate or erect perennial, growing to 10 cm tall. Silky Swainson-pea has been recorded from the Northern Tablelands to the Southern Tablelands and further inland on the slopes and plains. Found in Natural Temperate Grassland and Snow Gum Eucalyptus pauciflora Woodland on the Monaro. The species is found in Box-Gum Woodland in the Southern Tablelands and South West Slopes. Sometimes it is found in association with cypress-pines Callitris spp. Its habitat on plains unknown. The species regenerates from seed after fire.	-	-	Y	Medium	No records within the locality. However, it is associated with all PCTs within the development site.
Flora	*Euphrasia arguta*	-	-	CE	CE	Euphrasia arguta was rediscovered in the Nundle area of the NSW north western slopes and tablelands in 2008. Prior to this, it had not been collected for 100 years. Historically, Euphrasia arguta has only been recorded from relatively few places within an area extending from Sydney to Bathurst and north to Walcha. The Royal Botanic Gardens Specimen Register records an additional location reported and vouchered in 2002 from near the Hastings River; and Euphrasia arguta was also recorded from the Barrington Tops in 2012. Historic records of the species noted the following habitats: 'in the open forest country around Bathurst in sub humid places', 'on the grassy country near Bathurst', and 'in meadows near rivers'. Plants from the Nundle area have been reported from eucalypt forest with a mixed grass and shrub understorey; here, plants were most dense in an open disturbed area and along the roadside, indicating the species had regenerated following disturbance.	-	Y	-	Low	Not recorded within the locality. Not associated with any of the PCTs on site.
Flora	*Prasophyllum sp. Wybong*	-	-	-	CE	Endemic to NSW, it is known from near Ilford, Premer, Muswellbrook, Wybong, Yeoval, Inverell, Tenterfield, Currabubula and the Pilliga area. Most populations are small, although the Wybong population contains by far the largest number of individuals. A perennial orchid, appearing as a single leaf over winter and spring. Flowers in spring and dies back to a dormant tuber over summer and autumn. Known to occur in open eucalypt woodland and grassland.	-	Y	-	Low	No records within locality and no PCT associations.

Class	Scientific name	Common name	FM Act listing	BC Act listing	EPBC Act listing	Habitat association	Bionet (2021)	PMST (DAWE 2021)	PCT Association	Likelihood of occurrence	Justification
Flora	*Indigofera efoliata*	Leafless Indigo	-	E	E	Very rare and possibly now extinct, known only from a few collections in the Dubbo area. Mr E.F. Biddiscombe is the only person alive to have seen Indigofera efoliata in the wild, in August 1955. Sites were located along the Dubbo to Minore railway line and road, on Wallaringa and Geurie properties and in Goonoo State Forest. It almost certainly dies back to a substantial underground rootstock in unfavourable seasons and it is possible that aerial parts do not appear at all unless there is significant rainfall. Associated species include Allocasuarina luehmannii, Exocarpos cupressiformis, Alectryon oleifolius, Geijera parviflora, Eucalyptus melliodora, Acacia deanei, Acacia buxifolia, Acacia hakeoides, Acacia spectabilis, Acacia lineata, Acacia oswaldii, Eremophila mitchellii, Myoporum platycarpum, Hakea leucoptera, Dodonaea viscosa, Apophyllum anomalum, Cassinia aculeata and Lissanthe strigosa.	-	-	Y	Moderate	No records within locality. Associated with PCT 76. However, found just north of Wellington last year.
Flora	*Lepidium monoplocoides*	Winged Pepper-cress	-	E	E	Widespread in the semi-arid western plains regions of NSW. Collected from widely scattered localities, with large numbers of historical records but few recent collections. There is a single collection from Broken Hill and only two collections since 1915, the most recent being 1950. Also previously recorded from Bourke, Cobar, Urana, Lake Cargelligo, Balranald, Wanganella and Deniliquin. Recorded more recently from the Hay Plain, south-eastern Riverina, and from near Pooncarie.Occurs on seasonally moist to waterlogged sites, on heavy fertile soils, with a mean annual rainfall of around 300-500 mm. Predominant vegetation is usually an open woodland dominated by Allocasuarina luehmannii (Bulloak) and/or eucalypts, particularly Eucalyptus largiflorens (Black Box) or Eucalyptus populnea (Poplar Box). The field layer of the surrounding woodland is dominated by tussock grasses.	-	Y	-	Low	No records within the locality, and no PCT associations.
Flora	*Prasophyllum petilum*	Tarengo Leek Orchid	-	E	E	Natural populations are known from a total of five sites in NSW. These are near Boorowa, Queanbeyan area, Ilford, Delegate and a newly recognised population c.10 km west of Muswellbrook. It also occurs at Hall in the Australian Capital Territory. This species has also been recorded at Bowning Cemetery where it was experimentally introduced, though it is not known whether this population has persisted. Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River Tussock (Poa labillardieri), Black Gum (Eucalyptus aggregata) and tea-trees LeptospEMMum spp. near Queanbeyan and within the grassy groundlayer dominated by Kanagroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT). Apparently highly susceptible to grazing, being retained only at little-grazed travelling stock reserves (Boorowa & Delegate) and in cemeteries (near Queanbeyan, Ilford and Hall).	-	Y	-	Low	No records within locality and no PCT associations.
Flora	*Swainsona recta*	Small Purple-pea	-	E	E	Small Purple-pea was recorded historically from places such as Carcoar, Culcairn and Wagga Wagga where it is probably now extinct. Populations still exist in the Queanbeyan and Wellington-Mudgee areas. Over 80% of the southern population grows on a railway easement. It is also known from the ACT and a single population of four plants near Chiltern in Victoria. Before European settlement Small Purple-pea occurred in the grassy understorey of woodlands and open-forests dominated by Blakely's Red Gum (Eucalyptus blakelyi), Yellow Box (E. melliodora), Candlebark Gum (E. rubida) and Long-leaf Box (E. goniocalyx). Grows in association with understorey dominants that include Kangaroo Grass (Themeda australis), poa tussocks Poa spp. and spear-grasses Austrostipa spp.	-	Y	-	Low	No records within locality and no PCT associations.
Flora	*Tylophora linearis*	-	-	V	E	The majority of records of this species occur in the central western region. Records are from Goonoo, Pillaga West, Pillaga East, Bibblewindi, Cumbil and Eura State Forests, Coolbaggie NR, Goobang NP and Beni SCA. The species grows in dry scrub and open forest. It has been recorded from low-altitude sedimentary flats in dry woodlands of Red Ironbark (Eucalyptus fibrosa), Mugga Ironbark, White Box, Black Cypress Pine (Callitris endlicheri), White Cypress Pine and Bull Oak.	-	Y	-	Moderate	No PCT associations or records within locality. However was sighted by EMM in 2012 near Cobbora in the central west of NSW on the boundary between the Warrumbungle, Wellington and Mid-Western Regional local government areas (LGAs). The woodlands of the development site are highly degraded and fragmented. Habitat for the species is suboptimal.
Flora	*Zieria ingramii*	Keith's Zieria	-	E	E	Known predominately from Goonoo and Cobbora SCA, about 40 km north-east of Dubbo. Also known to occur west of Tuckland State Forest. An old record exists from a locality east of Mogriguy on the Mendooran Road, however searches of the area have not relocated the species. One record also occurs within Kings Plains National Park, 48 km south of Inverell. Grows in dry sclerophyll forest on light sandy soils. All known populations have been recorded in Eucalyptus-Callitris woodland or open forest with a shrubby to heathy understorey. Eucalyptus dwyeri appears to be a key predictor of Z. ingramii distribution. Mostly from gentle slopes in red-brown and yellow-brown sandy loams, often with a rocky surface. Associated and understorey species include Eucalyptus crebra, E. fibrosa, E. dwyeri, E. beyeriana, E. microcarpa, Callitris endlicheri, Allocasuarina diminuta and more.	Y	Y	N	Moderate	Recently recorded within locality. Potential habitat in development site. However, the topography of the development site is flat and the woodlands of the development site are highly degraded and fragmented. Habitat for the species is suboptimal.
Flora	*Commersonia procumbens*	-	-	V	V	This species is endemic to NSW and mainly confined to the Dubbo-Mendooran-Gilgandra region, but also in the Pilliga and Nymagee areas. The species grows in sandy sites, often along roadsides. It has been recorded in Eucalyptus dealbata and Eucalyptus sideroxylon communities, Broombush (Melaleuca uncinata) scrub, under mallee eucalypts with a Calytrix tetragona understorey, and in a recently burnt Ironbark and Callitris area. Other associated species include Acacia triptera, Callitris endlicheri, Yellow Box, Allocasuarina diminuta, Philotheca salsolifolia, Xanthorrhoea species, Exocarpos cupressiformis, Leptospermum parvifolium and Kunzea parvifolia (OEH 2018).	Y	-	-	High	Recently recorded within locality. Potential habitat in development site.
Flora	*Dichanthium setosum*	Bluegrass	-	V	V	Bluegrass occurs on the New England Tablelands, North West Slopes and Plains and the Central Western Slopes of NSW, extending to northern Queensland. It occurs widely on private property, including in the Inverell, Guyra, Armidale and Glen Innes areas. Associated with heavy basaltic black soils and red-brown loams with clay subsoil. Often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture. Associated species include Eucalyptus albens, Eucalyptus melanophloia, Eucalyptus melliodora, Eucalyptus viminalis, Myoporum debile, Aristida ramosa, Themeda triandra, Poa sieberiana, Bothriochloa ambigua, Medicago minima, Leptorhynchos squamatus, Lomandra aff. longifolia, Ajuga australis, Calotis hispidula and Austrodanthonia, Dichopogon, Brachyscome, Vittadinia, Wahlenbergia and Psoralea species.	Y	Y	Y	High	Recently recorded within locality. Potential habitat occurs within study area. Is also associated with PCT 201 and 281.

Class	Scientific name	Common name	FM Act listing	BC Act listing	EPBC Act listing	Habitat association	Bionet (2021)	PMST (DAWE 2021)	PCT Association	Likelihood of occurrence	Justification
Flora	*Homoranthus darwinioides*	Fairy Bells	-	V	V	Rare in the central tablelands and western slopes of NSW, occurring from Putty to the Dubbo district. It is found west of Muswellbrook between Merriwa and Bylong, and north of Muswellbrook to Goonoo SCA. The species has been collected from Lee's Pinch, but not relocated at its original locality north of Mt Coricudgy above the headwaters of Widden Brook. Grows in in various woodland habitats with shrubby understoreys, usually in gravely sandy soils. Landforms the species has been recorded growing on include flat sunny ridge tops with scrubby woodland, sloping ridges, gentle south-facing slopes, and a slight depression on a roadside with loamy sand. Associated species include Callitris endlicheri, Eucalyptus crebra, E. fibrosa, C. trachyphloia, E. beyeri subsp. illaquens, E. dwyeri, E. rossii, Leptospermum divaricatum, Melaleuca uncinata, Calytrix tetragona, Allocasuarina spp. and Micromyrtus spp.	Y	Y	-	High	Recently recorded within locality. Potential habitat in development site.
Flora	*Lepidium aschersonii*	Spiny Pepper-cress	-	V	V	Not widespread, occurring in the marginal central-western slopes and north-western plains regions of NSW (and potentially the south western plains). In the north of the State recent surveys have recorded a number of new sites including Brigalow Nature Reserve, Brigalow State Conservation Area, Leard State Conservation Area and Bobbiwaa State Conservation Area. Also known from the West Wyalong in the south of the State. Records from Barmedman and Temora areas are likely to be no longer present. Found on ridges of gilgai clays dominated by Brigalow (Acacia harpophylla), Belah (Casuarina cristata), Buloke (Allocasuarina luehmanii) and Grey Box (Eucalyptus microcarpa). In the south has been recorded growing in Bull Mallee (Eucalyptus behriana). Often the understorey is dominated by introduced plants. The species grows as a a component of the ground flora, in grey loamy clays. Vegetation structure varies from open to dense, with sparse grassy understorey and occasional heavy litter.	-	Y	-	Low	No records within locality.Subsequently, there is no PCT association.
Flora	*Androcalva procumbens*	-	-	-	V	This species is endemic to NSW and mainly confined to the Dubbo-Mendooran-Gilgandra region, but also in the Pilliga and Nymagee areas. The species grows in sandy sites, often along roadsides. It has been recorded in Eucalyptus dealbata and Eucalyptus sideroxylon communities, Broombush (Melaleuca uncinata) scrub, under mallee eucalypts with a Calytrix tetragona understorey, and in a recently burnt Ironbark and Callitris area. Other associated species include Acacia triptera, Callitris endlicheri, Yellow Box, Allocasuarina diminuta, Philotheca salsolifolia, Xanthorrhoea species, Exocarpos cupressiformis, Leptospermum parvifolium and Kunzea parvifolia (OEH 2018).	-	Y	-	Low	No records within the locality. No Eucalyptus dealbata or Eucalyptus sideroxylon occurs within disturbance footprint. Although, there is Yellow Box present within the development site. No records of species within the development site.
Mammalia	*Cercartetus nanus*	Eastern Pygmy-possum	-	V	-	The Eastern Pygmy-possum is found in south-eastern Australia, from southern Queensland to eastern South Australia and in Tasmania. In NSW it extents from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. They are found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest. They may occupy small patches of vegetation in fragmented landscapes and although the species prefers habitat with a rich shrub understory, they are known to occur in grassy woodlands and the presence of Eucalypts alone is sufficient to support populations in low densities. They feed largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes, as well as insects. They shelter in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests, Ringtail Possum (Pseudocheirus peregrinus) dreys or thickets of vegetation, (e.g. grass-tree skirts). Males have a non-exclusive home-ranges of about 0.68 hectares and females about 0.35 hectares.	Y	-	-	Low	The species has only been recorded five times in the locality, most recently in 1996. It is not assocaited with the vegetation on site.
Mammalia	*Miniopterus orianae oceanensis*	Large Bent-winged Bat	-	V	-	Eastern Bentwing-bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. Maternity caves have very specific temperature and humidity regimes. At other times of the year, populations disperse within about 300 km range of maternity caves. Breeding or roosting colonies can number from 100 to 150,000 individuals. Hunt in forested areas.	Y	-	Y	Low	6 recent records within locality. No roosting sites avaliable on development site. Habitat on development site is highly disturbed and fragmented which does not provide suitable vegetation for the species. Minimal woodland for hunting.
Mammalia	*Petaurus norfolcensis*	Squirrel Glider	-	V	-	Inhabits dry sclerophyll forest and woodland where it is absent from the dense coastal ranges. Forages on pollen and nectar and the gum that acacias produce. Also eats sap from gums and the green seeds of the Golden Wattle. Associated with dry hardwood forest and woodlands. Habitats typically include gum-barked and high nectar-producing species, including winter flower specie. The presence of hollow-bearing eucalypts is a critical habitat value. The Squirrel Glider is sparsely distributed along the east coast and immediate inland districts from western Victoria to north Queensland.	-	-	Y	Low	Not recorded in locality. However, habitat on development site is highly disturbed and fragmented which does not provide suitable vegetation for the species.
Mammalia	*Chalinolobus dwyeri*	Large-eared Pied Bat	-	V	V	In NSW this species has been recorded from a large range of vegetation types including: dry and wet sclerophyll forest; Cyprus Pine (Callitris glauca) dominated forest; tall open eucalypt forest with a rainforest sub-canopy; sub-alpine woodland; and sandstone outcrop country. The species requires a combination of sandstone cliff/escarpment to provide roosting habitat that is adjacent to higher fertility sites, particularly box gum woodlands or river/rainforest corridors which are used for foraging. Roosting has also been observed in disused mine shafts, caves, overhangs and disused Fairy Martin (Hirundo ariel) nests, also possibly roosts in the hollows of trees.	Y	Y	Y	Low	The species has only been recorded twice in the locality. However, habitat on development site is highly disturbed and fragmented which does not provide suitable intact vegetation for the species.
Mammalia	*Phascolarctos cinereus*	Koala	-	V	V	The Koala inhabits eucalypt woodlands and forests and feeds on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species (OEH 2018). Large populations of koalas occur on the western slopes and plains, in particular the Pilliga region (Kavanagh and Barrott 2001) and in Gunnedah (Smith 1992) and Walgett LGAs (J. Callaghan, Australian Koala Foundation, pers. comm.). Primary feed trees within the Western Slopes and Plains Koala Management Area (KMA) are River Red Gum (E. camalduensis) and Coolabah (E. coolabah). These do not occur within the study area. White box (E. albens) which occurs within the woodland to the north and north-east of the existing DWD is listed as secondary feed tree within the Western Slopes and Plains KMA.	Y	Y	Y	Low	Recently recorded within locality. However no primary feed species are available within the development footprint and habitat on development site is highly disturbed and fragmented which does not provide suitable vegetation for the species. No woodland connectivity.
Mammalia	*Pteropus poliocephalus*	Grey-headed Flying-fox	-	V	V	Grey-headed Flying foxes occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	-	Y	Y	Low	No previous records in locality. Habitat on development site is highly disturbed and fragmented which does not provide suitable vegetation for the species.
Mammalia	*Dasyurus maculatus*	Spotted-tailed Quoll	-	E	-	The range of the Spotted-tailed Quoll has contracted considerably since European settlement. It is now found in eastern NSW, eastern Victoria, south-east and north-eastern Queensland, and Tasmania. Only in Tasmania is it still considered relatively common. Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline.	-	Y	Y	Low	1 historic record in locality. Habitat on development site is highly disturbed and fragmented which does not provide suitable intact vegetation for the species.

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Mammalia	*Chalinolobus picatus*	Little Pied Bat	-	V	-	Occurs in dry open forest, open woodland, mulga woodlands, chenopod shrublands, cypress pine forest and mallee and Bimbil box woodlands. Found in inland Queensland and NSW (including Western Plains and slopes) extending slightly into South Australia and Victoria. Roosts in caves, rock outcrops, mine shafts, tunnels, tree hollows and buildings.	Y	-	Y	Low	Recently recorded within locality, however habitat on development site is highly disturbed and fragmented which does not provide suitable vegetation for the species.
Mammalia	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	-	V	-	The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia. In the most southerly part of its range - most of Victoria, south-western NSW and adjacent South Australia - it is a rare visitor in late summer and autumn. There are scattered records of this species across the New England Tablelands and North West Slopes.Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows.	Y	-	Y	Moderate	Recently recorded in locality and by EMM in 2012 near Cobbora in the central west of NSW on the boundary between the Warrumbungle, Wellington and Mid-Western Regional local government areas (LGAs). However, habitat on the development is highly disturbed. Though this species has been known to utilse mammal burrows when trees are limited for roosting sites. It is also associated with all 5 PCTs within the site.
Mammalia	*Nyctophilus corbeni*	Corben's Long-eared Bat	-	V	V	Overall, the distribution of the south eastern form coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for this species. Inhabits a variety of vegetation types, including mallee, bulloke Allocasuarina leuhmanni and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland.	-	Y	Y	Low	Not recorded in locality. Habitat on development site is highly disturbed and fragmented which does not provide suitable vegetation for the species.
Migratory Aves	Actitis hypoleucos	Common Sandpiper	-	-	Mi	Found along all coastlines of Australia and in many areas inland, the Common Sandpiper is widespread in small numbers. The population when in Australia is concentrated in northern and western Australia. The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow, and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags. Generally the species forages in shallow water and on bare soft mud at the edges of wetlands; often where obstacles project from substrate, e.g. rocks or mangrove roots. Birds sometimes venture into grassy areas adjoining wetlands. Roost sites are typically on rocks or in roots or branches of vegetation, especially mangroves. The species is known to perch on posts, jetties, moored boats and other artificial structures, and to sometimes rest on mud or 'loaf' on rocks.	-	Y	-	Low	Not recorded within locality. The development site does have multiple creeks (the highest is Strahler stream order 5). However, the banks are eroded and have minimal vegetative cover. The habitat is degraded and fragment.
Migratory Aves	*Calidris melanotos*	Pectoral Sandpiper	-	-	Mi	In New South Wales (NSW), the Pectoral Sandpiper is widespread, but scattered. Records exist east of the Great Divide, from Casino and Ballina, south to Ulladulla. West of the Great Divide, the species is widespread in the Riverina and Lower Western regions. In Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. They forage in shallow water or soft mud at the edge of wetlands.	-	Y	-	Low	Not recorded within locality. The development site does have multiple creeks (the highest is Strahler stream order 5). However, the banks are eroded and have minimal vegetative cover. The habitat is degraded and fragment.
Migratory Aves	*Gallinago hardwickii*	Latham's Snipe	-	-	Mi	Latham's Snipe is a non-breeding visitor to south-eastern Australia, and is a passage migrant through northern Australia. The range extends inland over the eastern tablelands in south-eastern Queensland (and occasionally from Rockhampton in the north), and to west of the Great Dividing Range in New South Wales. In Australia, Latham's Snipe occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies). However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity	-	Y	-	Low	Not recorded within locality. The development site does have multiple creeks (the highest is Strahler stream order 5). However, the banks are eroded and have minimal vegetative cover. The habitat is degraded and fragment.
Migratory Aves	*Hirundapus caudacutus*	White-throated Needletail	-	-	Mi	White-throated Needletail is a non-breeding visitor to Australia between October and April. It is most often seen in eastern Australia before storms, low pressure troughs and approaching cold fronts and occasionally bushfire. These conditions are often used by insects to swarm (eg termites and ants) or tend to lift insects away from the surface which favours sighting of White-throated Needletails as they feed. It is more common in coastal areas, less so inland.	Y	-	-	Moderate	Recently recorded within locality. Potential habitat in development site.
Migratory Aves	*Motacilla flava*	Yellow Wagtail	-	-	Mi	This species occupies a range of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs to damp steppe and grassy tundra (Birdlife International 2017).	-	Y	-	Low	Not recorded within the locality. The development site does have multiple creeks (the highest is strahler stream order 5). However, the banks are eroded and have minimal vegetative cover. The habitat is degraded and fragment.
Migratory Aves	*Myiagra cyanoleuca*	Satin Flycatcher	-	-	Mi	The Satin Flycatcher is widespread in eastern Australia and vagrant to New Zealand (Blakers et al. 1984; Coates 1990). Satin Flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests.	-	Y	-	Low	Not recorded within the locality. Woodland habitat is degraded and fragmented. It is also not located within gully habitat is unsuitable for this species.
Migratory Aves	*Rhipidura rufifrons*	Rufous Fantail	-	-	Mi	In east and south-east Australia, the Rufous Fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts such as Tallow-wood (Eucalyptus microcorys), Mountain Grey Gum (E. cypellocarpa), Narrow-leaved Peppermint (E. radiata), Mountain Ash (E. regnans), Alpine Ash (E. delegatensis), Blackbutt (E. pilularis) or Red Mahogany (E. resinifera); usually with a dense shrubby understorey often including ferns.	-	-	-	Low	Not recorded within locality. The flat topography of the development site is unsuitable for the species and has no PCT assocaitions.
Migratory Aves	*Apus pacificus*	Fork-tailed Swift	-	-	Mi	In NSW, the Fork-tailed Swift is recorded in all regions. Many records occur east of the Great Divide, however, a few populations have been found west of the Great Divide. These are widespread but scattered further west of the line joining Bourke and Dareton. Sightings have been recorded at Milparinka, the Bulloo River and Thurloo Downs. The Fork-tailed Swift is almost exclusively aerial, flying from less then 1 m to at least 300 m above ground and probably much higher. In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea. They also occur over settled areas, including towns, urban areas and cities. They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. They are also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes. The sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines. They forage aerially, up to hundreds of metres above ground, but also less then 1 m above open areas or over water. They often occur in areas of updraughts, especially around cliffs.	-	Y	-	Low	Not recorded within the locality (most recent record was 1996). Species associated with PCT 266. However, the habitat on the site is highly degraded and fragmented.

Class	Scientific name	Common name	FM Act listing	BC Act listing	EPBC Act listing	Habitat association	Bionet (2021)	PMST (DAWE 2021)	PCT Association	Likelihood of occurrence	Justification
Migratory Aves	*Apus pacificus*	Fork-tailed Swift	-	-	Mi	In NSW, the Fork-tailed Swift is recorded in all regions. Many records occur east of the Great Divide, however, a few populations have been found west of the Great Divide. These are widespread but scattered further west of the line joining Bourke and Dareton. Sightings have been recorded at Milparinka, the Bulloo River and Thurloo Downs. The Fork-tailed Swift is almost exclusively aerial, flying from less then 1 m to at least 300 m above ground and probably much higher. In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea. They also occur over settled areas, including towns, urban areas and cities. They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. They are also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes. The sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines. They forage aerially, up to hundreds of metres above ground, but also less then 1 m above open areas or over water. They often occur in areas of updraughts, especially around cliffs.	-	Y	-	Low	Not recorded within the locality. Species associated with PCT 266. However, the habitat on the site is highly degraded and fragmented.
Migratory Aves	*Calidris acuminata*	Sharp-tailed Sandpiper	-	-	Mi	The Sharp-tailed Sandpiper spends the non-breeding season in Australia with small numbers occurring regularly in New Zealand. Most of the population migrates to Australia, mostly to the south-east and are widespread in both inland and coastal locations and in both freshwater and saline habitats. Many inland records are of birds on passage. In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves.	-	Y	-	Low	Not recorded within locality. The development site does have multiple creeks (the highest is Strahler stream order 5). However, the banks are eroded and have minimal vegetative cover. The habitat is degraded and fragment.
Reptilia	*Aprasia parapulchella*	Pink-tailed Legless Lizard	-	V	V	The Pink-tailed Legless Lizard is only known from the Central and Southern Tablelands, and the South Western Slopes. The species inhabits sloping, open woodland areas with predominantly native grassy ground layers, particularly those dominated by Kangaroo Grass (Themeda australis). The species occurs in woodland with sandstone outcrops preferring ridges, buffs and slopes with a north west aspect. Thermally suitable microhabitat may be a limiting resource for the species (DoEE 2018). Sites are typically well-drained, with rocky sandstone outcrops or scattered, partially-buried rocks. The species is commonly found beneath small, partially-embedded rocks and appear to spend considerable time in burrows below these rocks; the burrows have been constructed by and are often still inhabited by small black ants and termites (OEH 2018). The species has not been recorded within the locality.	-	Y	Y	Moderate	Not recorded within the locality. However is associated with PCTs 266, 277 and 288 with potential habitat within development site.
Reptilia	*Delma impar*	Striped Legless Lizard	-	V	V	The Striped Legless Lizard occurs in the Southern Tablelands, the South West Slopes, the Upper Hunter and possibly on the Riverina. Populations are known in the Goulburn, Yass, Queanbeyan, Cooma, Muswellbrook and Tumut areas. Also occurs in the ACT, Victoria and south-eastern South Australia. Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass (Themeda australis), spear-grasses (Austrostipa spp.) and poa tussocks (Poa spp.), and occasionally wallaby grasses (Austrodanthonia spp.). Sometimes present in modified grasslands with a significant content of exotic grasses. Sometimes found in grasslands with significant amounts of surface rocks, which are used for shelter. Sometimes utilises dried cowpats for shelter.	-	Y	-	Low	Not recorded within the locality. Not associated with any of the PCTs on site.

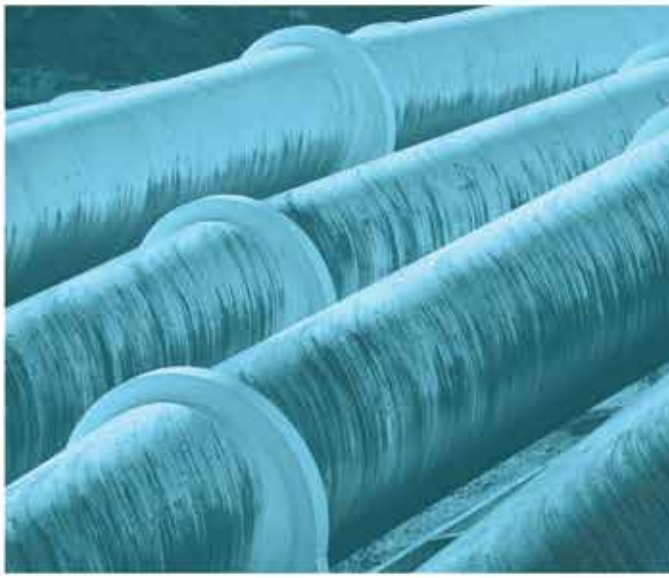
Appendix D

SIA scoping report


Sandy Creek Solar Farm

Social Impact Assessment Scoping Report

Prepared for Lightsource bp
March 2022

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Sandy Creek Solar Farm

Social Impact Assessment Scoping Report

Report Number

E210657 RP#2

Client

Lightsource bp

Date

15 March 2022

Version

v2.0 Final

Prepared by

Tate Crofts
Social Planner
15 March 2022

Approved by

Andrea Kanaris
Associate, Social Impact Assessment National Technical Leader
15 March 2022

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Appendices

Tables

Figures

Definitions and Abbreviations

Item	Definition
ABS	Australian Bureau of Statistic
BESS	battery energy storage system
CIV	capital investment value
CWO REZ	Central-West Orana Renewable Energy Zone
DC	direct current
DPE	Department of Planning and Environment (formerly Department of Planning, Industry and Environment)
DPIE	Department of Planning, Industry and the Environment (now Department of Planning and Environment)
EIS	Environmental Impact Statement
EMM	EMM Consulting Pty Limited
EnergyCo NSW	Energy Corporation of NSW
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
GW	gigawatts
IEO	Index of Education and Occupation
IER	Index of Economic Resources
IRSAD	Index of Relative Socio-Economic Advantage and Disadvantage
IRSD	Index of Relative Socio-Economic Disadvantage
LGA	local government area
LHD	Local Health District
Lightsource Australia	Lightsource Development Services Australia Pty Ltd
LSbp	Lightsource bp
megawatts	MW
MWdc	megawatt direct current
MWp	megawatt-peak
PV	photovoltaic
SEARs	Secretary's Environmental Assessment Requirements
SIA	social impact assessment
SEIFA	Socio-Economic Indexes for Areas
SRD SEPP	*State Environmental Planning Policy (State and Regional Development) 2011*
SSC	State Suburb Code
SSD	State significant development
The project	Sandy Creek Solar Farm

1 Introduction

1.1 Project overview

Lightsource bp (LSbp) proposes to lodge a development application for the Sandy Creek Solar Farm (the project), a large scale solar photovoltaic (PV) generation facility along with battery storage and associated infrastructure. The project is located approximately 25 kilometres (km) south-west of the township of Dunedoo, in the Central West of New South Wales (NSW) within the local government areas (LGAs) of Warrumbungle Shire Council and Dubbo Regional Council and is within the Central-West Orana Renewable Energy Zone (CWO REZ).

The project is State significant development (SSD) pursuant to the *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP), and approval for the project is required under Part 4, Division 4.7 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). An SSD application for the project is required to be accompanied by an Environmental Impact Statement (EIS).

1.2 The applicant

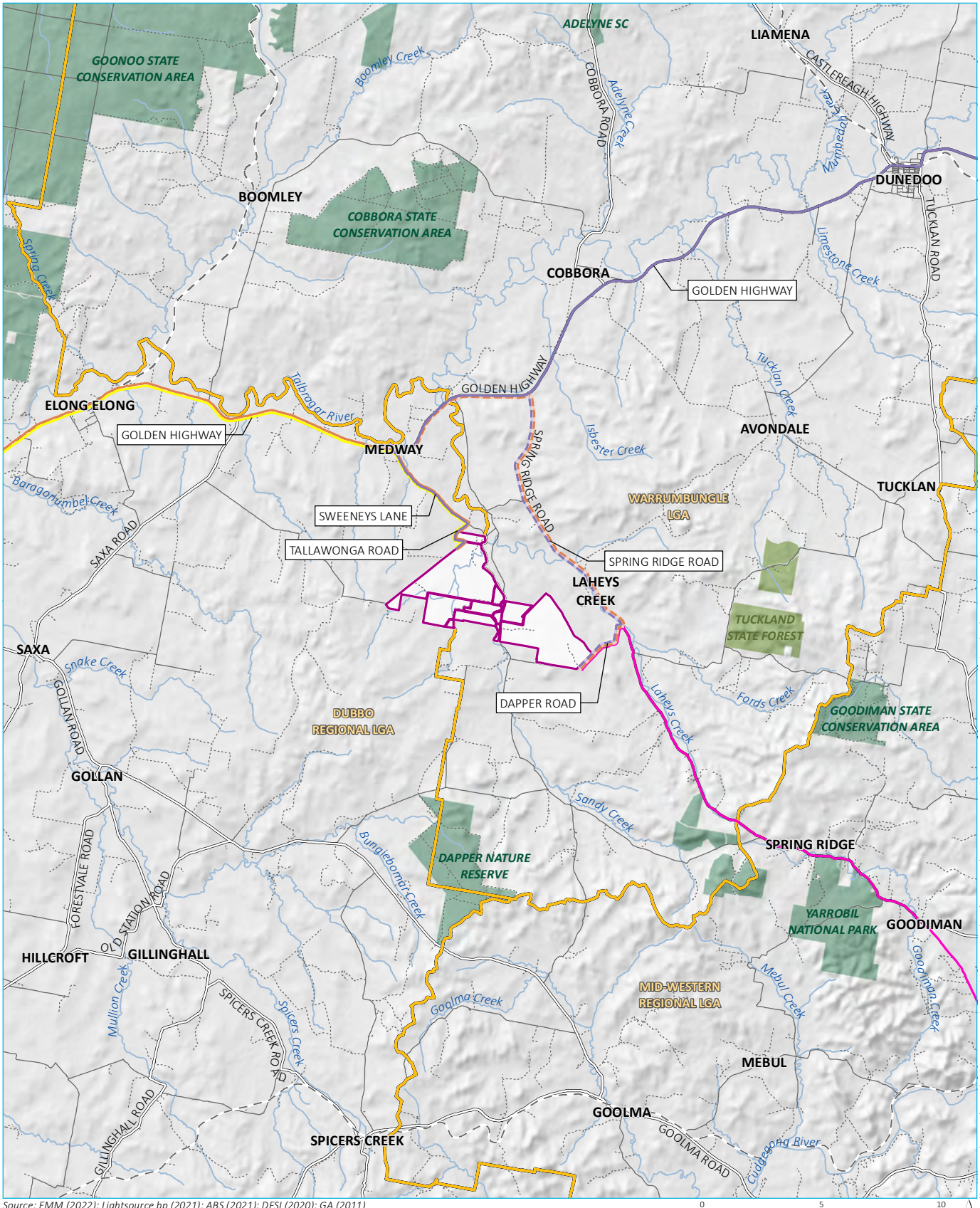
The applicant for the project is Lightsource Development Services Australia Pty Ltd, a subsidiary of LSbp, formed in 2017 as a partnership between the European solar farm developer Lightsource and global energy company, bp. LSbp is a global leader in the development, management, and operation of solar projects and has successfully progressed projects from early-stage development through to operation. Relevant details for Lightsource Development Services Australia Pty Ltd are provided in Table 2.1.

LSbp 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. LSbp first entered the Australian market in 2018 and will shortly start commencing operation of their 200 megawatt-peak (MWp) site in Wellington, NSW. LSbp currently have other projects across Australia that are in the development and construction phases, which include:

- West Wyalong Solar Farm, NSW (108 MWp): Planning approval received in November 2019. Construction underway, to be completed in mid-2022.
- Woolooga Solar Farm, Queensland (210 MWp): Planning approval received in March 2020. Construction underway, to be completed in mid-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 2023.
- Wungnhu Solar Farm, VIC (90 MWp): Acquired by LSbp 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. Financial close expected in 2022, with construction to be completed in 2023.
- 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 assessment.
- Goulburn River Solar Farm, NSW (520 MWp): Secretary's Environmental Assessment Requirements received February 2022. Environmental Impact Statement in preparation.

Table 1.1 Applicant details

Requirement	Detail
Applicant	Lightsource Development Services Australia Pty Ltd
ABN	26 623 301 799
Applicant address	Level 10, 420 George Street, NSW 2000
Contact	Diana Mitchell
Contact details	Diana.mitchell@lightsourcebp.com



Source: EMM (2022); Lightsource bp (2021); ABS (2021); DFSI (2020); GA (2011)

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GDA 1994 MGA Zone 55

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Proposed

Transport

- Heavy vehicle access route (from Dubbo), Option 1
- Heavy vehicle access route (from Dubbo), Option 2
- Heavy vehicle access route (from Dunedoo), Option 1
- Heavy vehicle access route (from Dunedoo), Option 2
- Light vehicle access route (from Dubbo)
- Light vehicle access route (from Gulgong)

Existing environment

- Rail
- Major road
- Minor road
- Vehicular
- Watercourse/drainage
- Local government
- NPWS
- State forest

INSET

- Major road
- Central West Orana Renewable Energy Zone
- NPWS
- State forest

Project location

Sandy Creek Solar Farm
Scoping Report
Figure 1.1

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1.3 Project description

The Project involves the development, construction and operation of a solar farm off Sandy Creek Road, near Dunedoo in the central west of NSW (the site). The solar farm component of the Project will have a rated power output of 840 MWp and an indicative AC capacity of around 750 megawatts (MW_{AC}). The Project will also include a centralised or a DC-coupled battery energy storage system (BESS) of up to 3,000 MWh storage capacity.

The central west region of NSW has been selected by the NSW Government for the development of the CWO REZ due to the region's significant potential for renewable energy infrastructure and regional development (NSW Government 2020). To support the development of the CWO REZ, the Energy Corporation of NSW (EnergyCo NSW) is planning a new 500/330 kV transmission line and related infrastructure as well as augmentation of the existing 330 kV network and Wollar 500/330 kV substation (the Central-West Orana REZ transmission project). The Project design will be developed alongside and in consideration of the design process being undertaken for the network infrastructure by EnergyCo NSW over the next 12 months.

It is anticipated that construction and commissioning of the Project will take approximately 2 years, employing up to 700 personnel during the peak construction period (3–6 months) and up to 15 ongoing full time roles during operation. The capital investment value (CIV) of the Project would be approximately $800 million.

1.4 Purpose of the social impact assessment scoping report

The purpose of this social impact assessment (SIA) scoping report is to:

- identifying potentially affected people;
- identifying and understanding the SIA study area influence;
- identifying the potential, negative and positive, social impacts for further investigation; and
- determining the level of assessment required for each potential social impact.

The SIA Scoping Report will accompany the main Scoping Report that requests and informs the content of the Secretary's Environmental Assessment Requirements (SEARs) for the project.

The SEARs will identify the requirements and level of environmental assessment required to accompany the SSD applications for the project and associated EIS.

This report has been prepared by EMM Consulting Pty Limited (EMM) on behalf of Lightsource bp in accordance with the *Social Impact Assessment Guideline for State Significant Projects* (DPIE 2021a).

2 Scoping methodology

2.1 Baseline review

The project description and its proximity to and interaction with, residents, businesses, and services, along with Australian Bureau of Statistic (ABS) demographic and economic data was used to inform the project SIA study area, and to identify potentially affected communities and key stakeholders.

2.2 Identification of the study area

The SIA study area was mapped to identify surrounding stakeholders who could potentially be directly or indirectly affected by the project. This includes identifying landholders, businesses and social services who may be impacted by and/or have an interest in the project.

2.3 Stakeholder engagement and SIA field study activities

The local community was consulted as part of the scoping phase of the project. COVID-19 safe environment practices were employed during the engagement program, which included the following activities:

- scoping meeting with NSW Department of Planning and Environment (DPE; formerly Department of Planning, Industry and Environment (DPIE));
- in-depth interviews (via videoconference/teleconference) with landholders and nearby neighbours;
- community information sessions;
- distribution of information sheets; and
- online survey.

Engagement activities were undertaken during January through to February 2022 in Warrumbungle Shire and Dubbo Regional local government areas (LGAs) with a range of stakeholders as summarised in Table 2.1.

LSbp and EMM representatives met with Dubbo Regional Council and Warrumbungle Shire Council representatives on 5 August 2021 and 14 January 2022, respectively, to advise of the project and seek feedback on issues and concerns for consideration.

Additional interviews took place between stakeholders listed in Table 2.1 and an EMM representative who provided:

- a project briefing;
- an overview of the EIS and SIA processes; and
- identified stakeholder concerns regarding the project.

A community survey (Appendix A) was also administered, which posed questions to identify:

- awareness of and previous interactions with LSbp;
- previous matters raised and satisfaction with LSbp response;
- current awareness of the project; and
- potential impacts and concerns related to the project.

Further to the activities outlined above, three information sessions were held across the 31 January 2022 (online) and 5 February 2022 (Dunedoo and Gulgong). An information booth was also set-up at the Dunedoo Show (12 February 2022).

A summary of consultation activities undertaken relevant to the SIA are summarised in Table 2.1.

Table 2.1 Consultation activities undertaken relevant to the SIA

Activity	Format	Timeframe	Participation
DPE scoping meetings	Videoconference	9 September 2021 and 10 March 2022	DPE
Briefing meetings	Videoconference On site meeting	5 August 2021 4 February 2022	Dubbo Regional Council (officers)
Briefing meetings	Videoconference On site meeting	14 January 2022 4 February 2022	Warrumbungle Shire Council (officers)
Briefing meeting	Videoconference	27 January 2022	Dugald Saunders - Member for Dubbo
In-depth interviews	Teleconference	25 January 2022 – 11 February 2022	3 x landholders and nearby neighbours
SIA scoping survey	Online		2 x local residents
Community information sessions	Online, face to face	31 January 2022 (online) 5 February 2022 (Dunedoo) 5 February 2022 (Gulgong)	19 x landholders and local residents
Information stall	Face to face	12 February 2022	15 x local residents
EnergyCo NSW Community information sessions	Face to face	8 March 2022 (Wellington) 9 March 2022 (Dunedoo)	~60 x landholders and local residents

3 SIA study area

3.1 Identification of the SIA study area

The SIA study area was mapped (refer to Figure 3.1) to identify surrounding stakeholders who would potentially be directly or indirectly affected by the project. This includes identifying landholders, businesses and social services who may have an interest in the project and who would potentially be impacted.

The SIA study area includes the following local communities within proximity to the project site and their related local government areas.

- local area:
  - Elong Elong;
  - Goolma;
  - Dunedoo; and
  - Dubbo.
- regional area:
  - Gulgong (Mid-Western Regional LGA);
  - Warrumbungle LGA; and
  - Dubbo Regional LGA (formally named Western Plains Regional[1]).

Each of the locations are mapped to their ABS data categories shown in Table 3.1 and will be used to develop the community profile and social baseline.

Table 3.1 Locations within the SIA study area mapped to ABS category

Location	ABS Category	SIA study area
Dubbo	Dubbo State Suburb Code (SSC)	Local area
Elong Elong	Elong Elong SSC	
Goolma	Goolma SSC	
Dunedoo	Dunedoo SSC	
Gulgong	Gulgong SSC	Regional area
Warrumbungle LGA	Warrumbungle Shire LGA	
Dubbo Regional LGA	Dubbo Regional LGA	

Notes: SSC - State Suburb Code as defined by the Australian Bureau of Statistics

[1] Name changed from 'Western Plains Regional' to 'Dubbo Regional' on 7 September 2016

3.2 Geographical

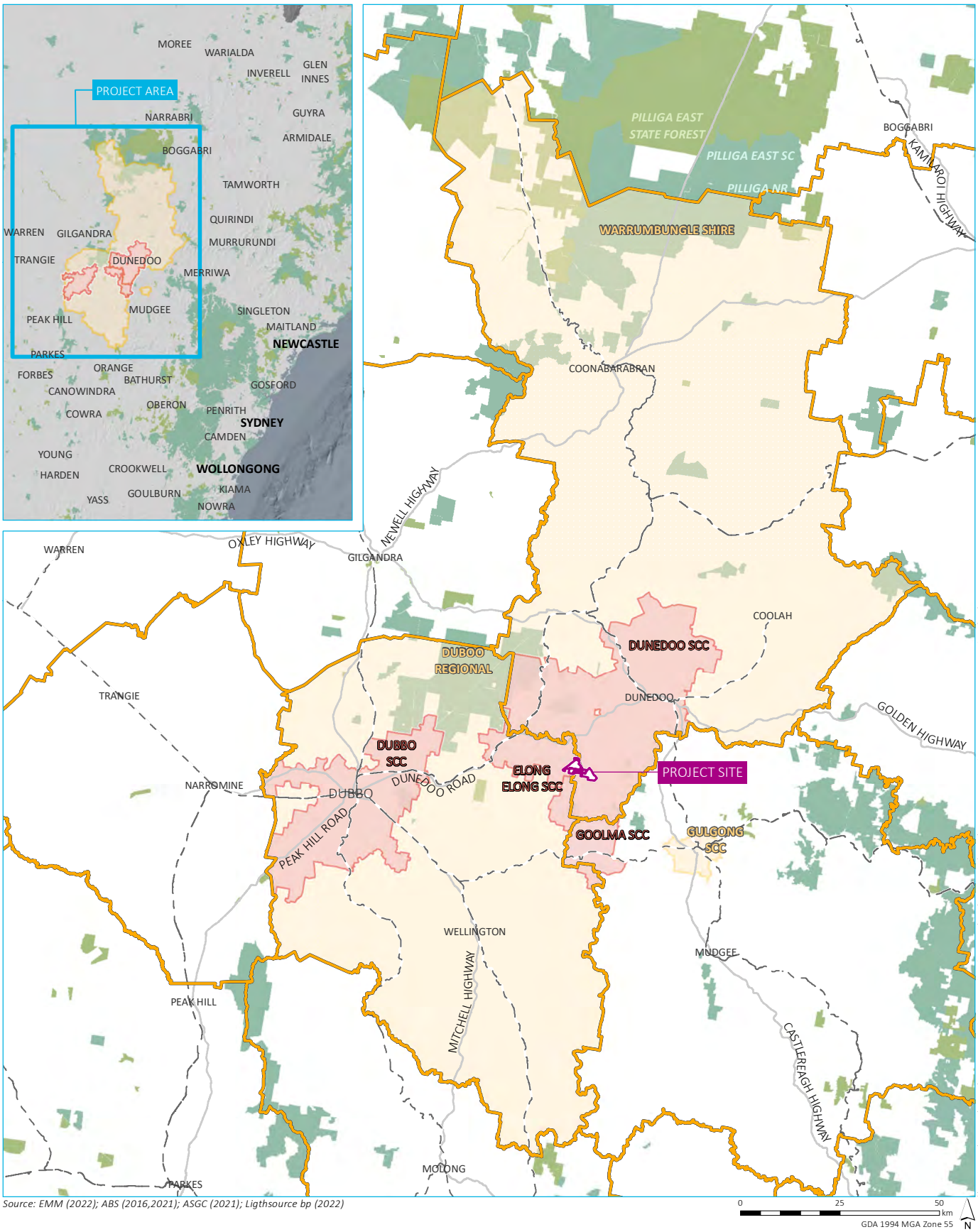
The suburbs of Elong Elong, Goolma, and Dunedoo, are nearest to the project and are likely to be the communities with potential to be directly impacted by the project. In addition, Dubbo is anticipated to be the main hub for community gathering, access to services, and business activity closest to the project and will therefore be included as an impacted community.

More broadly, Gulgong and the Warrumbungle and Dubbo Regional LGAs may also experience some direct and indirect impacts, with these likely to be limited and mostly related to local procurement opportunities and employment.

3.3 Potentially directly affected people

Potentially directly impacted people include:

- residents of Elong Elong, Goolma, and Dunedoo;
- residents and service providers in Dubbo and Gulgong;
- residents of Warrumbungle LGA and Dubbo Regional LGA;
- Aboriginal community members;
- landholders and nearby neighbours, including businesses;
- local business community; and
- employees of the Sandy Creek Solar Farm.



Source: EMM (2022); ABS (2016,2021); ASGC (2021); Ligthsource bp (2022)

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GDA 1994 MGA Zone 55

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KEY

- Project site
- Local area
- Regional area
- Local government area
- Rail line
- Major road
- NPWS reserve
- State forest

SIA study area

Sandy Creek Solar Farm
Social impact assessment
Figure 3.1

EMM creating opportunities

4 Community profile

4.1 Overview

This section provides a brief snapshot of the social conditions of the suburbs and broader region in which the project will operate. The study area for the project has been identified as the SSCs of Dubbo, Elong Elong, Goolma, and Dunedoo locally, and Gulgong SSC, Warrumbungle and Dubbo Regional (formerly Western Plains Regional) LGAs regionally, as shown in Table 4.1 and Figure 3.1.

4.2 Demographic profile

At the time of the ABS 2016 Census of Population and Housing, Dubbo SSC had a total population of 38,943 people, Elong Elong SSC had a population of 115 people, Goolma SSC had a population of 102 people, and Dunedoo SSC had a population of 1,221 people. These comprise a total population of 40,381 in the local area (Table 4.1). Gulgong SSC had a population of 2,521 people, Warrumbungle LGA had a population of 9,384, and Dubbo Regional LGA had a population of 50,077, with the combined regional area total population of 61,982 according to ABS 2016 data. The majority of this population resides in Dubbo Regional LGA, with 50,077 people.

Table 4.1 Population, 2016

Area	Population	Male (%)	Female (%)	Median age
		Local area		
Elong Elong SSC	115	50.4%	52.2%	55
Goolma SSC	102	52.9%	46.1%	47
Dunedoo SSC	1,221	49.5%	50.2%	49
Dubbo SSC	38,943	48.1%	51.9%	36
Local area total	40,381	48.2%	51.8%	NA
		Regional area		
Gulgong SSC	2,521	49.4%	50.5%	41
Warrumbungle LGA	9,384	50%	50%	49
Dubbo Regional LGA	50,077	49.1%	50.9%	37
Regional area total	61,982	49.2%	50.8%	NA
NSW	**7,480,228**	**49.3%**	**50.7%**	**38**

Source: ABS 2016a, Census of Population and Housing: General Community Profiles

The majority of suburbs comprising the study area have a median age that is higher than the NSW median age (38), including Elong Elong SSC (55), Goolma SSC (47), Dunedoo SSC (49), and Gulgong SSC (41). This may be the result of a shrinking younger population, a trend reflected by the regional standard age, as the median age in Warrumbungle Shire LGA (49) is well above the NSW average. However, the median ages in both Dubbo SSC and Dubbo Regional LGA are slightly below, at 36 (Dubbo SSC) and 37 (Dubbo Regional LGA). The gendered proportion across the local area is consistently close to the averages of NSW, being 49.3% males and 50.7% females, with only Goolma SSC moving above 50% with 52.9% males and 46.1% females, a possible effect of its smaller population (102 people).

Due to these smaller populations, there is substantial variation across the age distributions in both the local and regional areas. Elong Elong SSC has 0.0% of 20–24 year-olds, and Goolma SSC has only 2.9% of 20–24 year-olds, with both proportions significantly smaller than the NSW proportion of 6.5%. Correspondingly, these two suburbs have much higher proportions of older age distributions, with Elong Elong SSC consisting of 24.3% of 55–65 year-olds, and Goolma SSC with 18.6% of 55–65 year-olds, both proportions significantly higher than the NSW percentage of 55–65 year-old's, 11.9%. A breakdown of the aged group distribution is presented in Table 4.2.

Table 4.2 Age group distribution, 2016

Area	0–4 years	5–14 years	15–19 years	20–24 years	25–34 years	35–44 years	45–54 years	55–64 years	65–74 years	75–84 years	85 years and older
Local area											
Elong Elong	5.2%	7.8%	5.2%	0.0%	6.1%	7.8%	12.2%	24.3%	19.1%	2.6%	0.0%
Goolma	5.9%	5.9%	7.8%	2.9%	4.9%	5.9%	17.6%	18.6%	8.8%	0.0%	0.0%
Dunedoo	5.2%	11.8%	4.8%	6.0%	7.0%	8.3%	13.3%	11.0%	15.3%	11.2%	4.0%
Dubbo	7.4%	14.2%	6.3%	6.4%	14.0%	12.1%	12.5%	11.8%	8.5%	5.2%	2.2%
Local area total	7.3%	13.8%	6.3%	6.4%	13.7%	11.9%	12.5%	11.8%	8.7%	5.3%	2.2%
Regional area											
Gulgong	7.9%	13.3%	5.6%	4.5%	10.4%	11.4%	11.6%	13.8%	11.3%	6.3%	1.9%
Warrumbungle LGA	5.0%	12.6%	5.2%	4.1%	8.1%	9.6%	13.5%	15.5%	14.4%	8.5%	3.3%
Dubbo Regional LGA	7.1%	14.1%	6.2%	6.2%	13.4%	11.8%	12.7%	12.4%	9.1%	5.3%	2.1%
Regional area total	6.8%	13.5%	6.1%	5.9%	12.5%	11.4%	12.8%	12.9%	10.0%	5.8%	2.3%
NSW	**3.3%**	**12.3%**	**6.0%**	**6.5%**	**14.3%**	**13.4%**	**13.1%**	**11.9%**	**9.1%**	**5.0%**	**2.2%**

Source: ABS 2016a, Census of Population and Housing: General Community Profiles

4.2.1 Aboriginal and/or Torres Strait Islander peoples

There is significant variation throughout the study area in the proportion of persons who identify as Aboriginal and/or Torres Strait Islander. All areas within the local and regional areas have proportions equal or above the NSW proportion of people who identify as Aboriginal and/or Torres Strait Islander (2.9%), including Dubbo SSC (14.6%), Elong Elong SSC (6.1%), Dunedoo SSC (7.7%), Gulgong SSC (7.7%), Warrumbungle LGA (9.8%) and Dubbo Regional LGA (15.5%) with higher proportions, and with Goolma SSC equalling NSW at 2.9%. These distributions are exhibited below (Table 4.3).

The median age of the Aboriginal and/or Torres Strait Islander population is between 18–22 (except in Elong Elong SSC at 52), which is comparable with the NSW median Aboriginal and/or Torres Strait Islander population age of 22. However, this may also indicate a smaller proportion of the population (both males and females) living beyond 65 years, aligning with the lower life expectancy among Indigenous Australians nationally.

Table 4.3 Summary Aboriginal and/or Torres Strait Islander status

Area	Aboriginal and/or Torres Strait Islander population	Aboriginal and/or Torres Strait Islander population % total	Male (%)	Female (%)	Median age
Local area					
Elong Elong SSC	7	6.1%	30.0%	70.0%	52
Goolma SSC	3	2.9%	NA	NA	NA
Dunedoo SSC	94	7.7%	48.9%	51.1%	18
Dubbo SSC	5,682	14.6%	48.4%	51.6%	21
Local area total	**5,786**	**14.3%**	**48.4%**	**51.6%**	**NA**
Regional area					
Gulgong SSC	194	7.7%	55.4%	44.6%	22
Warrumbungle LGA	917	9.8%	48.5%	50.7%	22
Dubbo Regional LGA	7,739	15.5%	51.2%	49.3%	22
Regional area total	**8,850**	**14.3%**	**50.0%**	**49.4%**	**NA**
NSW	**216,176**	**2.9%**	**49.7%**	**50.3%**	**22**

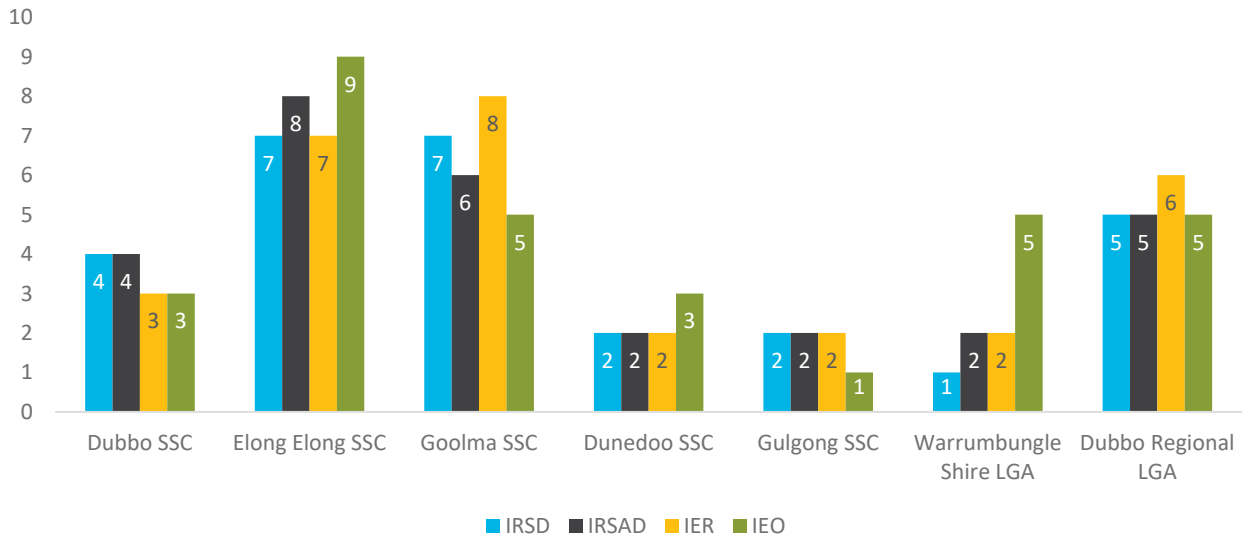
Source: ABS 2016a, Census of Population and Housing: General Community Profiles

4.2.2 Socio-Economic Indexes for Areas

The level of disadvantage or advantage in the population is indicated in the *Socio-Economic Indexes for Areas* (SEIFA), which focuses on low-income earners, relatively lower education attainment, high unemployment and dwellings without motor vehicles. SEIFA is a suite of four summary measures created from Census data, including:

- the Index of Relative Socio-Economic Disadvantage (IRSD);
- the Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD);
- the Index of Education and Occupation (IEO); and
- the Index of Economic Resources (IER).

The rankings of the communities within the study area for each of the four summary measures are demonstrated in Figure 4.1.



Source: ABS 2016b, 2033.0.55.001 – Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA)
Each index is a summary of a different subset of Census variables and focuses on a different aspect of socio-economic advantage and disadvantage. Low rankings are deemed most disadvantaged and high rankings least disadvantaged within a decile ranking system where the lowest 10% of areas are given a decile number of 1 and the highest 10% of areas are given a decile number of 10.

Figure 4.1 SEIFA deciles in the SIA study area, 2016

According to the 2016 SEIFA, Gulgong SSC experiences the highest levels of disadvantage in the study area, with all of its indexes ranking at 2 or below, indicating that it is in the bottom 20% of suburbs included in the index. Dunedoo SSC has similar rankings, with all of its indexes at 3 or below. Dubbo SSC, while higher than Gulgong SSC and Dunedoo SSC, also ranks in the bottom 50% of suburbs (rank 5), with two 4s and two 3s. These areas with lower indicators of socio-economic advantage and disadvantage reflect the broader indices of Warrumbungle Shire LGA, with its highest ranking a 5 in the Index of Education and Occupation.

Other areas however rank much higher, such as Elong Elong SSC which has an IEO ranking of 9, indicating a higher education and occupation status of its population, as well as two 7s and an 8. Goolma SSC is similar, with its highest indicator (8) in the Index of Economic Resources, meaning that it is in the top 20% of suburbs with greater access to economic resources (such as households with high incomes or home ownership). Dubbo Regional LGA is on par with the NSW averages, ranking at three 5s and a 6 in the Index of Economic Resources.

4.2.3 Employment

There is notable variation between the workforce participation rates in the study area. Dubbo SSC (62.4%), Goolma (56.0%), Gulgong (52.4%), and Dubbo Regional LGA (59.3%) are all comparable to the NSW rate of 59.2%. However, some are significantly lower, including Elong Elong SSC (50.5%), Dunedoo SSC (44.7%) and Warrumbungle LGA (47.0%). This suggests an overall lower level of the population's involvement in the workforce in these areas.

Many of these areas with lower workforce participation rates also have higher rates of youth unemployment than in NSW (13.6%), including Dunedoo SSC (17.9%), Gulgong SSC (19.8%), and Warrumbungle LGA (19.8%). Dunedoo SSC and Gulgong SSC also have a general unemployment rate of 8.6%, which is notably higher than the state average (6.3%). The unemployment and labour force participation rates are presented in Table 4.4.

Table 4.4 Unemployment and labour force participation rates, 2016

Area	Unemployment rate	Youth unemployment rate	Labour force participation rate (15 years and older)
Local area			
Elong Elong SSC	6.0%	0.0%	50.5%
Goolma SSC	0.0%	0.0%	56.0%
Dunedoo SSC	8.6%	17.9%	44.7%
Dubbo SSC	5.5%	12.0%	62.4%
Local area total	**5.5%**	**12.1%**	**61.8%**
Regional area			
Gulgong SSC	8.6%	19.9%	52.4%
Warrumbungle LGA	7.9%	19.8%	47.0%
Dubbo Regional LGA	5.9%	12.3%	59.3%
Regional area total	**6.2%**	**13.2%**	**57.1%**
NSW	**6.3%**	**13.6%**	**59.2%**

Source: ABS 2016a, Census of Population and Housing: General Community Profiles

The most common industries of employment across the local and regional areas are agriculture, forestry and fishing (the top industry in Elong Elong SSC at 37.5%, Goolma SSC at 46.7%, Dunedoo SSC at 34.0%, and Warrumbungle LGA at 26.6%), Health care and social assistance (the highest employer in Dubbo SSC with 15.7% and Dubbo Regional LGA at 15.4%), and Mining (comprising 19.6% of Gulgong's employment).

Education and training is also a top industry, ranking the second highest industry of employment in Goolma SSC (13.3%) and Dunedoo SSC (14.0%), and ranking third in Dubbo SSC (9.4%), Elong Elong SSC (8.3%), Warrumbungle LGA (11.5%), and Dubbo Regional LGA (9.3%). The top industries of employment in the study area are summarised in Table 4.5.

Table 4.5 Top three industries of employment 2016

	Top Industries					
	First		**Second**		**Third**	
Local area						
Elong Elong SSC	Agriculture, forestry and fishing	37.5%	Health care and social assistance	20.8%	Education and training	8.3%
Goolma SSC	Agriculture, forestry and fishing	46.7%	Education and training	13.3%	Retail trade, Accommodation and food services, Public administration and safety	8.9%
Dunedoo SSC	Agriculture, forestry and fishing	34.0%	Education and training	14.0%	Health care and social assistance	10.3%
Dubbo SSC	Health care and social assistance	15.7%	Retail trade	11.4%	Education and training	9.4%
Local area total	**Health care and social assistance**	**15.6%**	**Retail trade**	**11.3%**	**Education and training**	**9.5%**
Regional area						
Gulgong SSC	Mining	19.6%	Health care and social assistance	11.4%	Accommodation and food services	9.4%
Warrumbungle LGA	Agriculture, forestry and fishing	27.6%	Health care and social assistance	12.1%	Education and training	11.5%
Dubbo Regional LGA	Health care and social assistance	15.4%	Retail trade	10.9%	Education and training	9.3%
Regional area total	**Health care and social assistance**	**14.8%**	**Retail trade**	**10.5%**	**Education and training**	**9.5%**
NSW	**Health care and social assistance**	**11.7%**	**Retail trade**	**9.1%**	**Education and training**	**7.8%**

Source: ABS 2016a, Census of Population and Housing: General Community Profiles

Notes: In Goolma SSC, the third top industry of employment was a three-way tie at 8.9%

4.2.4 Local business

In 2020, there were 1,227 registered businesses in Warrumbungle Shire LGA, and 5,183 registered businesses in Dubbo Regional LGA. Of these, 823 businesses in Warrumbungle LGA (67.1%), and 3,222 businesses in Dubbo Regional LGA (62.2%) were non-employing, with a further 389 (31.7%) in Warrumbungle LGA and 1,836 (35.4%) in Dubbo Regional LGA employing fewer than 20 people. Only nine businesses in Warrumbungle LGA (0.7%), and 118 businesses in Dubbo Regional LGA (2.3%) employed between 20–199 people.

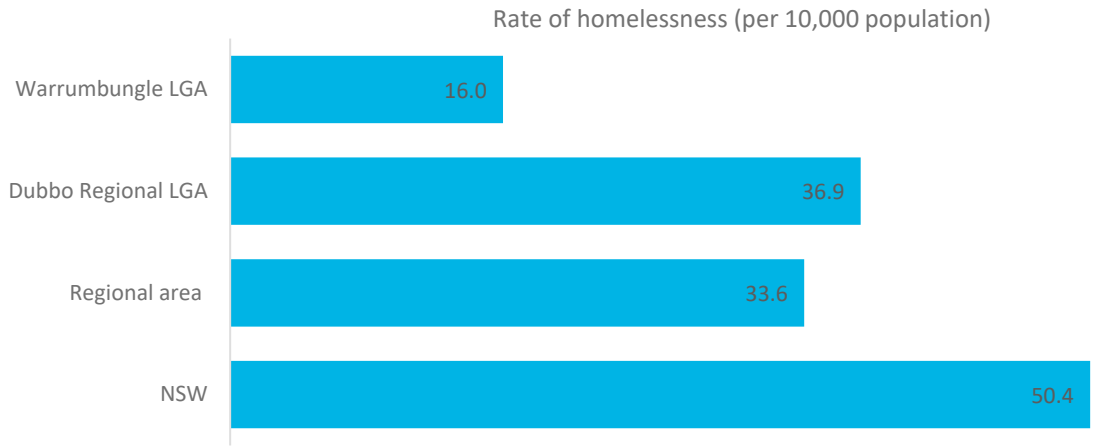
The largest percentage of registered businesses in Warrumbungle LGA was in agriculture, forestry and fishing (56.5%), which also held the highest percentage of registered businesses in Dubbo Regional LGA (21.6%). The second highest percentage of registered businesses in both Warrumbungle LGA (7.8%) and Dubbo Regional LGA (18.3%) was in construction.

4.2.5 Vulnerable groups

Potential vulnerable groups in the study area can be inferred by considering the rates of homelessness, and persons with a disability in the study area.

i Homelessness

Rates of homelessness according to the 2016 Census are not available at the SSC level but are available at the LGA level (Warrumbungle LGA and Dubbo Regional LGA). Homelessness rates (per 10,000 persons) in the regional area and NSW are presented in Figure 4.2. ABS data indicates a small homeless population present in the regional area, with a homelessness rate of 16 per 10,000 people in Warrumbungle LGA and 36.9 per 10,000 people in Dubbo Regional LGA. Both of these proportions are much lower than the NSW rate of 50.4 per 10,000 people, leaving the rate of the regional area at 33.6 per 10,000.



Source: ABS 2016c, 2049.0 – Census of Population and Housing: Estimating Homelessness

Figure 4.2 Rates of homelessness per 10,000 persons, 2016

ii Disability

Within the local study area, there is a similar proportion of the population who identify as having a need for assistance compared to the NSW average of 5.4%, including Dubbo (5.8%), Dunedoo (5.0%), Gulgong (5.3%), and Dubbo Regional LGA (5.7%). However, some have much higher proportions of people identified as needing assistance, including Elong Elong (7.0%), Goolma (6.9%), and Warrumbungle LGA (7.3%).

4.2.6 Health

Warrumbungle Shire LGA and Dubbo Regional LGA are serviced by the Western Local Health District (LHD). From 2019–2020, alcohol drinking as a long-term risk in adults was comparable between Western NSW LHD (35.8%) and NSW (32.5%). The daily smoking in adults proportion in Western NSW LHD (11.2%) was slightly higher than NSW (9.25%), as were the proportions for overweight and obesity in adults (71.2% compared with NSW at 56.8%), and asthma prevalence in adults (19.3% compared with NSW at 11.5%). However, the proportion of adults in Western NSW LHD with high or very high psychological distress was 14.4%, lower than the NSW proportion of 17.7%. The rates of various health indicators per 100,000 people in the regional area are presented in Table 4.6.

Table 4.6 Health indicators summary, rate per 100,000 persons, 2019 – 2020

	Western NSW LHD	NSW
Alcohol drinking, long-term risk in adults	35.8%	32.5%
Daily smoking in adults	11.2%	9.2%
Overweight and obesity in adults	71.2%	56.8%
Asthma prevalence in adults	19.3%	11.5%
High or very high psychological distress in adults	14.4%	16.7%

Source: NSW Health 2021, *HealthStats NSW*

4.3 Community profile summary

The study area for this project is comprised of a local area (Elong Elong SSC, Goolma SSC, Dunedoo SSC, Dubbo SSC, Dulgong SSC) with a population of 42,902 people, as well as the regional area (Warrumbungle LGA and Dubbo Regional LGA) with a total population of 59,902. The median age across the study area (higher than the NSW average) – combined with the higher proportion of people aged over 65 years-old – indicates that the area is home to an older population. The study area also hosts a larger proportion of Aboriginal and/or Torres Strait islander peoples than the average across the NSW state (2.9%), with some areas including up to 15.5% (Dubbo Regional LGA).

The workforce participation rates varied across the study area, with some featuring low levels of unemployment and youth unemployment (such as Dubbo SSC), and others experiencing levels of unemployment higher than NSW (6.3%), such as Dunedoo SSC and Gulgong SSC, both at 8.6%. For the population engaged in the workforce, the top industry of employment was agriculture, forestry and fishing (highest employer in Elong Elong SSC, Goolma SSC, Dunedoo SSC, Warrumbungle LGA).

This disparity was also reflected by the variation showcased by the SEIFA indexes for socio-economic advantage and disadvantage, with some areas ranking in the top 20% of suburbs on the Index of Education and Occupation (Elong Elong SSC) and the Index of Economic Resources (Goolma SSC), while others ranked in the bottom 20% across multiple indices (including Dunedoo SSC, Gulgong SSC, and Warrumbungle Shire LGA). Despite this, the rates of homelessness (per 10,000 people) were significantly lower in the study area than across NSW (50.4 per 10,000), with the regional area averaging at 33.6 per 10,000.

NSW Healthstats data revealed that the study area – located within the Western Local Health District – had higher rates of health-related indicators than across NSW. This data included indicators relating to alcohol consumption, smoking, obesity, asthma, and psychological distress. However, the proportion of the population who identified as having a need for assistance remained relatively consistent across the study area, and within a 2% margin from the NSW proportion (5.4%).

5 Outcomes of SIA field study and issue identification

This section summarises the findings of the SIA scoping field study and engagement activities. The consultation had two objectives:

1. provision of information about:
    - the project;
    - the EIS process; and
    - opportunities for the community/stakeholders to provide feedback on the project and the EIS.
2. identification of community and stakeholder concerns for the project.

The findings summarised below are based on a small sample of residents and groups. Participants opted-in to the SIA and the sampling method and small size means the findings cannot be assumed to be representative of the broader local and regional community.

5.1 Summary of SIA scoping field study

The identified community and stakeholders identified a range of issues that are summarised in Table 5.1.

Table 5.1 Community stakeholder identified issues by engagement type

Issues	Dubbo Regional Council	Warrumbungle Shire Council	In-depth interviews	Community survey	Community information sessions
Air quality					
Aboriginal cultural heritage				✓	✓
Access to housing				✓	✓
Access to short-term accommodation		✓		✓	✓
Access to services				✓	✓
Access to social infrastructure				✓	✓
Agriculture			✓	✓	✓
Climate change					
Employment			✓	✓	✓
Groundwater				✓	
Surface water				✓	✓
Health				✓	
Noise				✓	
Odour					
Land use			✓	✓	✓
Property prices			✓	✓	✓
Local business				✓	✓
Traffic	✓	✓	✓	✓	✓
Visual amenity			✓	✓	✓
Waste management		✓		✓	
Cumulative impacts	✓	✓			✓

Source: EMM 2022

5.1.1 Project briefings with Councils

LSbp met with Dubbo Regional Council and Warrumbungle Regional Council, a summary of the meetings is provided below.

An invited was extended to, and declined by, Mid-Western Regional Council. LSbp are committed to ongoing consultation with Mid-Western Regional Council.

i Dubbo Regional Council

LSbp and EMM provided a project briefing, including indicative development footprint, timeframes, issues to be assessed in the EIS, community engagement, and next steps. Cumulative impacts with nearby projects were raised as a key risk for the proposed project, and in particular the potential for concurrent traffic and social impacts. LSbp committed to ongoing consultation with Dubbo Regional Council. Council representatives attended a site visit.

ii Warrumbungle Regional Council

LSbp and EMM provided a project briefing, including indicative development footprint, timeframes, issues to be assessed in the EIS, and community engagement and next steps. Some key aspects raised by Warrumbungle Regional Council included:

- use of council owned roads (Spring Ridge Road and Dapper Road);
- waste;
- demand for workers accommodation;
- the potential for cumulative impacts with other projects; and
- community engagement.

Council representatives attended a site visit. LSbp committed to ongoing consultation with Warrumbungle Regional Council.

5.1.2 Stakeholder interviews

In-depth interviews were conducted with stakeholders including nearby landholders and neighbours. These interviews provided a briefing of the project, an overview of the EIS and SIA processes, and identified stakeholder concerns regarding the project. EMM was able to contact and conduct interviews with 3 of these landholders.

During these interviews, local residents noted strong concerns relating to the impacts on the visual amenity of the area, such as during its construction phase and the possibility of glare during operation. This also translated into concern that the solar farm was planned on unsuitable land, as residents expressed how it was their view it would cease any existing or future use of valuable farming land. Tensions over this competing land use was expressed by multiple interviewees. Another key concern expressed by residents was the uncertainty of the project's impacts, as well as how it may impact their future livelihoods.

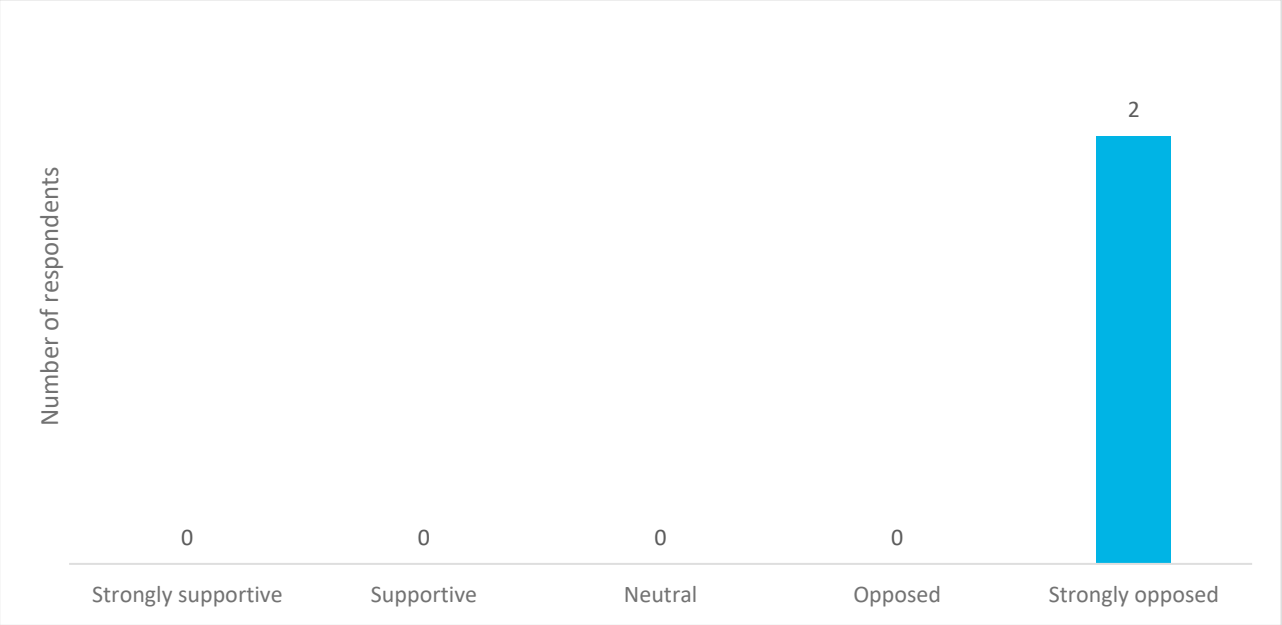
Residents also noted the potential for benefits to the local area, including updates to road infrastructure and an increase in local employment opportunities. One resident felt that there were 'no negatives' as the agricultural land can become 'dual-purpose' by both hosting solar panels while allowing grazing space for animals.

5.1.3 Community survey

The details of a community survey were advertised in both the *Daily Liberal* and *Mudgee Guardian & Gulgong Advertiser* on 28 January 2022 and were also supplied directly to the identified nearby neighbours. Despite the attempt at spreading the survey across the local area, the survey received only two responses. For a summary of the survey results see Appendix B.

This survey was intended to gauge the attitudes of relevant stakeholders and identify their concerns regarding the project. It also gathered general demographic data about its respondents, including their level of awareness about the project, and their level of support towards it.

Of the two respondents, both reported that they were 'strongly opposed' to the proposed project (Figure 5.1). The explanations for these responses included concerns about the location of the project and the impact it will have on their community, as one survey respondent claimed, "it stands to affect our community and us personally in a very big way socially, visually, environmentally, and as far as agricultural land use goes". The sample is too small to make any determination or inference about the sentiments of the broader community in relation to the project and its potential impacts.



Source: EMM 2022

Figure 5.1 Survey respondents' support for the project

Other concerns can be identified across a range of themes commonly impacted by solar farms. The figure below (Figure 5.2) shows the proportion of responses (out of two) on a scale from 'very positive' to 'very negative'.

Other concerns raised in the survey pertained to security, as one respondent suggested that an influx of people to the area may affect their personal safety or the wellbeing of their livestock. The influx of traffic was also mentioned, as increased traffic on local roads "is a threat to children, families and farm and farming vehicles". The sample is too small to make any determination or inference about the sentiments of the broader community in relation to the project and its potential impacts.

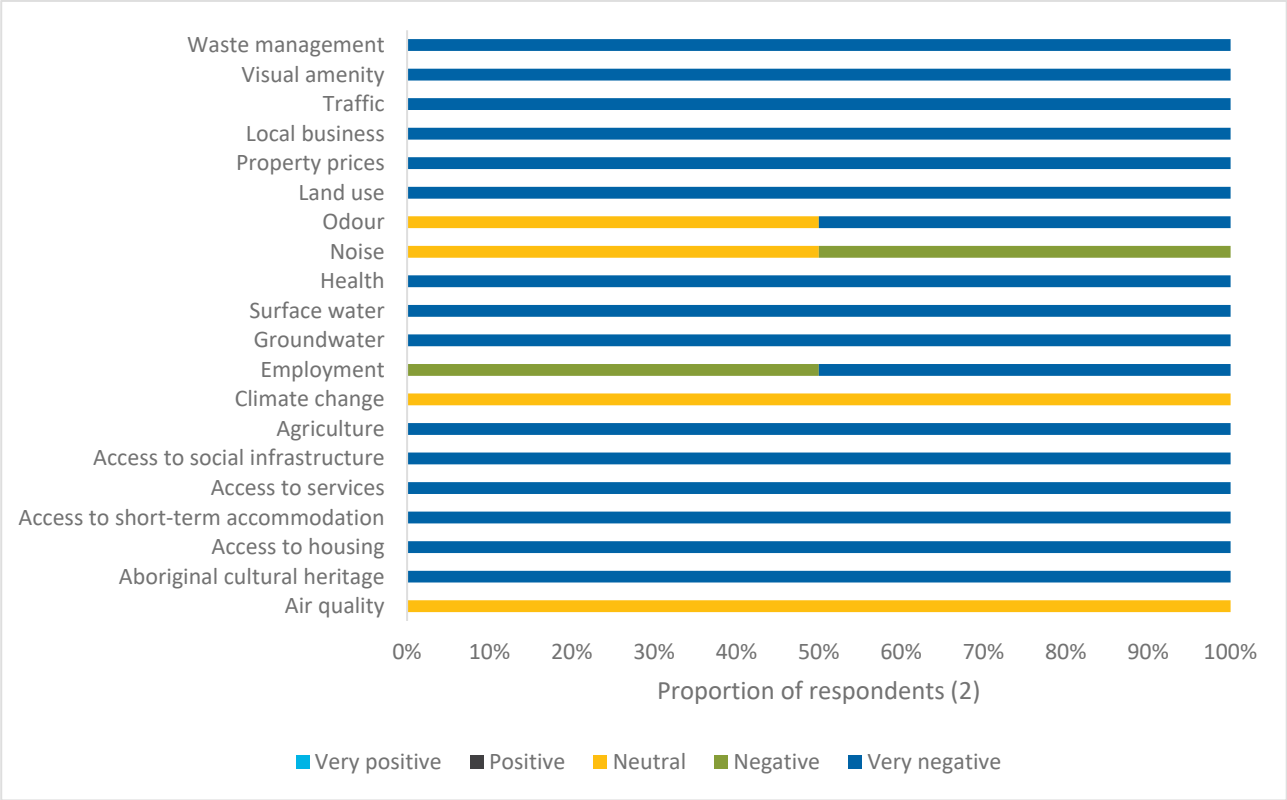


Figure 5.2 List of potential impacts and benefits

5.1.4 Community information sessions

Three information sessions were held in early 2022, and were intended to:

- introduce the Sandy Creek Solar Farm to potentially affected community members, key stakeholders and the wider community, and
- provide both an online (31 January 2022) and face-to-face (5 February 2022) opportunity to proactively share project information and answer questions.

A main concern raised in both the online and face-to-face sessions was the impacts to visual amenity, including the placement and reflection of solar panels, as well as the cumulative impacts across the community. There was also questions raised about the location and placement of the proposed CWO REZ transmission line and associated sub-stations.

Another key concern pertained to road safety, given the current road conditions and potential increase in truck movements and general traffic. For instance, some landowners explained that roads are often used to transport stock which would be at risk if traffic increased. In response, there was some discussion about road and transport infrastructure upgrades, and a request for additional information about the timeline of construction (allowing farmers to better plan the movement of their stocks).

Some local residents reported community divides occurring as a result of the project, due to mixed responses and agreements about the solar farm. This may be further aggravated by the unequal distribution of economic benefits across the community (depending on who had agreed and who had not), as well as the potential effect on property prices. In addition, there was a sense of 'consultation fatigue' from neighbours who have been involved and concerned with multiple projects in the area, resulting in a cumulative impact.

There was also general confusion as to the allocation of that land by the NSW Government as a REZ, given its use as valuable farmland. This raises the conflicting land use tensions also expressed in interviews and survey responses. For instance, there was discussion about the increased possibility of dual-use land when inhabited by windfarms, rather than solar farms. The prominence of weeds across surrounding solar farms was also a concern, both for the potential spread into neighbouring paddocks, but also for the future land rehabilitation and farming use. These aspects can be addressed with land rehabilitation and weed management plans. Further, the protection of the area's history and land's heritage were brought up as concerns, and something which local residents would like preserved.

There were some attendees who expressed interest in the project's employment benefits, including labouring opportunities. LSbp also raised the potential for TAFE training courses in renewables. Other benefits raised in conversation include financial support to the local fire brigade, and the establishment of a community fund.

LSbp attended the Dunedoo Regional Show those who were engaged were provided a briefing and raised the following issues:

- increased traffic and road repair;
- recycling/waste post project;
- in project land management;
- prime agricultural land earmarked for solar projects; and
- the Central West Cycle Trail group use of Sandy Creek Rd and Spring Ridge Rd annually.

6 Proposed SIA scope

This section proposes the scope of the SIA as part of the EIS for the project.

6.1 Potential social impacts

A preliminary set of potential impacts and benefits of the project has been identified based on the scoping assessment, including the outcomes of the community survey, community and stakeholder engagement and completion of the SIA scoping worksheet including consideration of previous relevant SIAs and EMM Social Scientist's professional judgement. The purpose of identifying potential impacts and benefits at this preliminary stage is to ensure the EIS preparation focuses on:

- the potential social impacts identified by, and of greatest concern, to the community; and
- an appropriate range of stakeholders, and that affected groups or individuals are included in the SIA field study activities.

Potential negative impacts that have been identified requiring further assessment and likelihood of potential positive social impacts is detailed in Table 6.1. Additional details are provided in the SIA scoping worksheet in Appendix C.

Table 6.1 Identified potential social impact mapped to matters, positive and negative

Potential social impacts	Issue - negative related to:	Issue - positive related to:
Surroundings	Visual amenity may be impacted by the placement of the solar panels (eg concern about glare). Concern for local biodiversity (proximity to Dapper Reserve). Impacts to the 'quiet' character of the area (amenity).	
Way of life	Conflict over 'land use' due to area's value as farming land. Potential for weeds, need for land rehabilitation plan.	
Livelihood	Impact to future farming activity (eg unable to expand farms into that area). Impacts to productivity of existing farm activity. Impacts to land value and sale rate. Spreading of weeds and inability to maintain land. Impacts to businesses operating along the haulage route and adjacent to site during construction.	Increased employment opportunities. Increased business for local accommodation (workforce housing) and other local businesses (restaurants, shops). Potential for 'co-existence' of grazing and solar in the area.
Access	Concern about access to land in event of a bushfire. Concern that increased traffic (during construction) will degrade roads further. Stress on local accommodation providers to house project workforce – in particular cumulative impacts associated with concurrent projects.	Availability of electricity, benefit to nearby landholders. Potential development of roads, improved access to properties and services.
Community	Possibility of conflict between neighbours due to differing opinions (community cohesion). Local unrest due to lack of information and communication. Concern that new workforce may impact safety and security. Influx of new workers may change the composition of the local population, and cause impacts to community identity/character.	Financial support to community enhancement fund, and/or local fire brigade.
Health and wellbeing	Impact to wellbeing (eg levels of uncertainty, sense of control over their futures). Increased traffic may impact public safety (in current conditions).	
Culture	Potential disruption to existing heritage sites.	

Main concerns include potential impacts to the visual amenity of the area, as well as the competing land uses (as both farming and solar). Stakeholders expressed that this area is valuable farming land, thus the project may inhibit the future expansion and existing operation of farms nearby. There is also uncertainty regarding the availability of information and communication with the project and its progress, impacting local community tensions and sense of control of their lives.

Potential benefits include updates to road infrastructure (thus access to properties and services), funds to local community enhancement funds or the fire brigade, and use of the electricity produced. There are several mitigation measures which can be put in place to minimise the negative impacts (eg landscape screening, upgrading road networks), and to improve communication between stakeholders.

6.2 Proposed methodology

The SIA will be led by a suitably qualified Social Scientist who will adopt the methodology illustrated in Figure 6.1 and will use social science methods and tools for the collection of qualitative and quantitative data.

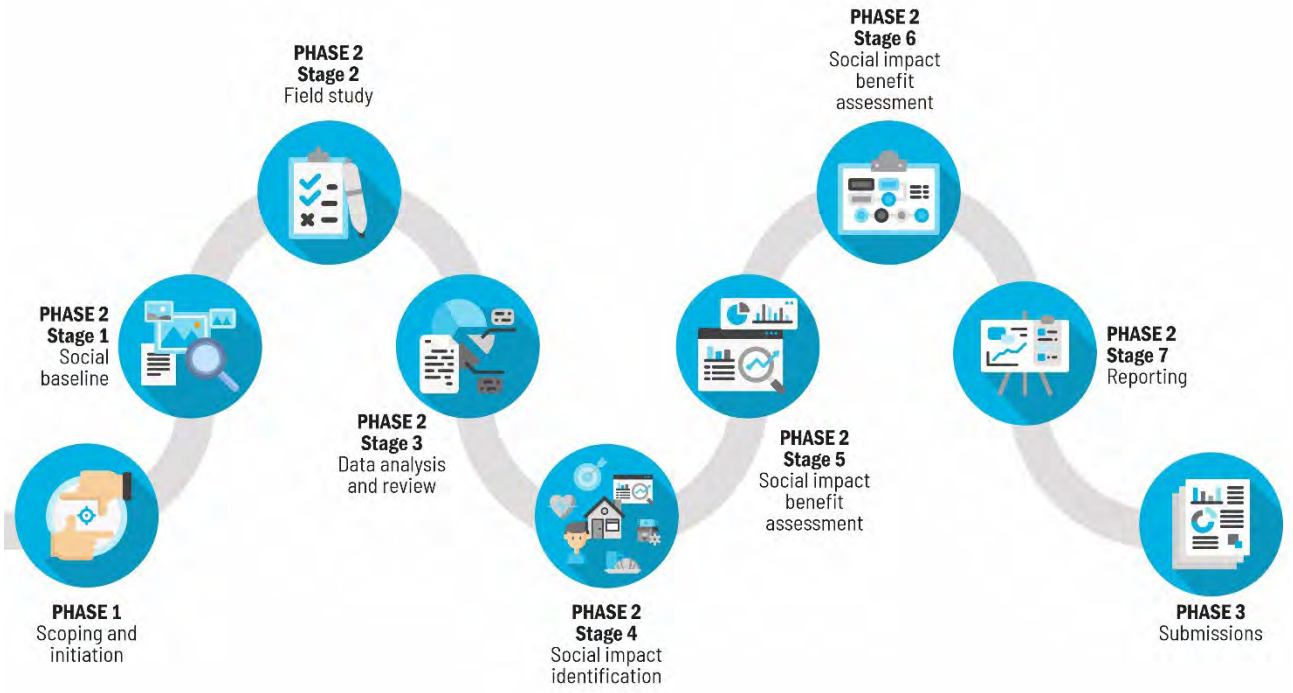


Figure 6.1 SIA Methodology

The identification of social impacts will be informed by community and stakeholder engagement activities as well as SIA field study activities and will be conducted in an integrated manner to ensure consistency, reduce duplication, and allow for management of consultation fatigue. In addition, findings from the technical assessments will be considered to understand the consequences to the community and existing research and previous SIAs will inform the identification of the social impacts.

Potential social impacts and benefits will then be assessed according to the requirements of the *Social Impact Assessment Guideline for State Significant Projects* (DPIE 2021a) and will use the risk matrix presented in the *Technical Supplement* (DPIE 2021b) (see Figure 6.2).

		Magnitude level				
		1	2	3	4	5
Likelihood level		Minimal	Minor	Moderate	Major	Transformational
A	Almost certain	Low	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

Source: DPIE 2021b

Figure 6.2 Social impact significance matrix

7 References

ABS 2016a, *Census of Population and Housing: General Community Profiles*, Australian Bureau of Statistics.

ABS 2016b, Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2016, Australian Bureau of Statistics.

ABS 2016c, Census of Population and Housing: Estimating homelessness, 2016, Australian Bureau of Statistics.

DPIE 2021a, *Social Impact Assessment Guideline for State Significant Projects*, NSW Department of Planning, Industry and Environment.

2021b, *Technical Supplement: Social Impact Assessment Guideline for State Significant Projects*, NSW Department of Planning, Industry and Environment.

NSW Government 2020, *An Australian first, Central-West Orana Pilot Renewable Energy Zone, Community Newsletter - December 2020*.

NSW Health 2021, *HealthStats NSW*, NSW Ministry of Health, http://www.healthstats.nsw.gov.au/.

Appendix A

Community survey

Sandy Creek Solar Farm Social Impact Survey

Introduction

Lightsource bp is proposing to develop the Sandy Creek Solar Farm Project (the Project). The site is located approximately 25 km south-west of Dunedoo and 30 km north-west of Gulgong, NSW. It borders the Dubbo Regional Council and Warrumbungle Shire Council Local Government Areas.

What is the Sandy Creek Solar Farm Project?

The Project would consist of a 840-megawatt (MWp) solar farm and battery energy storage system (BESS), and associated infrastructure. The project is proposed to be developed on a 1,600-ha site, with 1.4 million solar panels to be installed. The Project will connect to the proposed Central West Orana Renewable Energy Zone transmission line, scheduled to be installed and operational around 2024.

This Project is anticipated to have the capacity to generate 840 MWp of clean electricity each year; enough to meet 6% of the annual average NSW energy demand, or enough to power 253,419 homes each year.

The Project is classified as State significant development, which means it will be assessed under the NSW State Significant Development Planning process. This involves preparing an Environmental Impact Statement (EIS), including a Social Impact Assessment, to identify potential environmental and social impacts, over the life of the project. The Social Impact Assessment will address matters important to the community by understanding the views, issues, interests and concerns in relation to the Project.

For more information, please visit the dedicated Project webpage: www/lightsourcebp.com/au/projects/sandy-creek-solar-farm

Survey Purpose

EMM Consulting Pty Ltd (EMM Consulting) has been engaged by Lightsource bp to prepare an Environmental Impact Statement for the Project, including a Social Impact Assessment. The Project is currently in its Scoping Phase (the initial planning stages) which includes preliminary identification of environmental and social constraints.

As part of the Social Impact Assessment scoping phase, EMM Consulting have designed a survey to get community input into the identification of potential social impacts and benefits related to the Sandy Creek Solar Farm Project for further investigation during the Environmental Impact Statement delivery phase.

The results will be presented in the Scoping Report that will inform the Secretary Environmental Assessment Requirements issued by the Department of Planning, Industry and Environment to ensure that community identified potential social impacts are investigated during the Environmental Impact Statement.

Please complete the survey by 11 February 2022. If you have any further questions about the Project please contact the Lightsource bp team on 1300 837 575 or email: sandycreeksolar@lightsourcebp.com

Please note your responses to this survey are voluntary. EMM Consulting is collecting your information on behalf of Lightsource bp, as part of the providing information and seeking feedback on the Sandy Creek Solar Farm Project. This information will not be disclosed to a third party without your consent, or unless authorised or required by law.

1. Have you had any previous communications with Lightsource bp?

- ☐ Yes
- ☐ No

2. If yes, what was the topic of discussion?

3. How would you rate your awareness of the proposed Sandy Creek Solar Farm?

Very good	Good	Fair	Poor	Very poor
○	○	○	○	○

4. How do you feel about the proposed Sandy Creek Solar Farm?

Strongly supportive	Supportive	Neutral	Opposed	Strongly opposed
◯	◯	◯	◯	◯

Why do you feel this way?

5. Below is a list of potential impacts and benefits that are commonly associated with solar farm projects.

Consider how the Sandy Creek Solar Farm may affect the local community and select the appropriate ranking for each potential impact and benefit using the buttons provided.

	Very positive	Positive	Neutral	Negative	Very negative
Air quality	◯	◯	◯	◯	◯
Aboriginal cultural heritage	◯	◯	◯	◯	◯
Access to housing	◯	◯	◯	◯	◯
Access to short-term accommodation	◯	◯	◯	◯	◯
Access to services	◯	◯	◯	◯	◯
Access to social infrastructure	◯	◯	◯	◯	◯
Agriculture	◯	◯	◯	◯	◯
Climate change	◯	◯	◯	◯	◯
Employment	◯	◯	◯	◯	◯
Groundwater	◯	◯	◯	◯	◯
Surface water	◯	◯	◯	◯	◯
Health	◯	◯	◯	◯	◯
Noise	◯	◯	◯	◯	◯

	Very positive	Positive	Neutral	Negative	Very negative
Odour	◯	◯	◯	◯	◯
Land use	◯	◯	◯	◯	◯
Property prices	◯	◯	◯	◯	◯
Local business	◯	◯	◯	◯	◯
Traffic	◯	◯	◯	◯	◯
Visual amenity	◯	◯	◯	◯	◯
Waste management	◯	◯	◯	◯	◯

Any other potential impacts or benefits not listed above:

6. Do you have any other comments?

7. What is your **suburb**?

8. What is your **postcode**?

9. Which of the following **age brackets** do you fall into? (optional)

- ◯ Under 18
- ◯ 18 - 24
- ◯ 25 - 34
- ◯ 35 - 44
- ◯ 45 - 54
- ◯ 55 - 64
- ◯ 65+

10. Which of the following do you identify as? (optional)
Please select all that apply to you.

- [ ] Male
- [ ] Female
- [ ] Non-binary
- [ ] Aboriginal
- [ ] Torres Strait Islander
- [ ] I speak a language other than English at home
- [ ] I have a disability and/or special need

11. Which of the following best describes you?
Please select all that apply to you

- [ ] Business owner
- [ ] Landholder
- [ ] Lightsource bp Employee/Contractor
- [ ] Local resident

12. Would you like additional information on the proposed Sandy Creek Solar Farm?

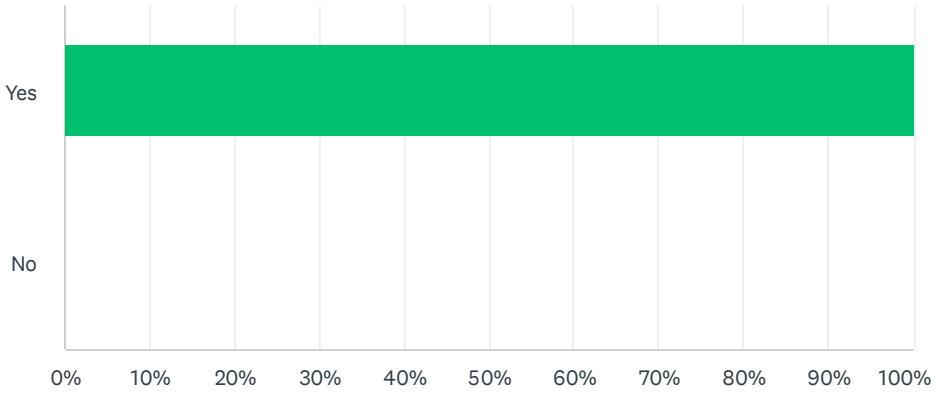
- [ ] Yes (please contact the Project team via email: sandycreeksolar@lightsourcebp.com)
- [ ] No

Appendix B

Community survey results

Q1 Have you had any previous communications with Lightsource bp?

Answered: 2 Skipped: 0



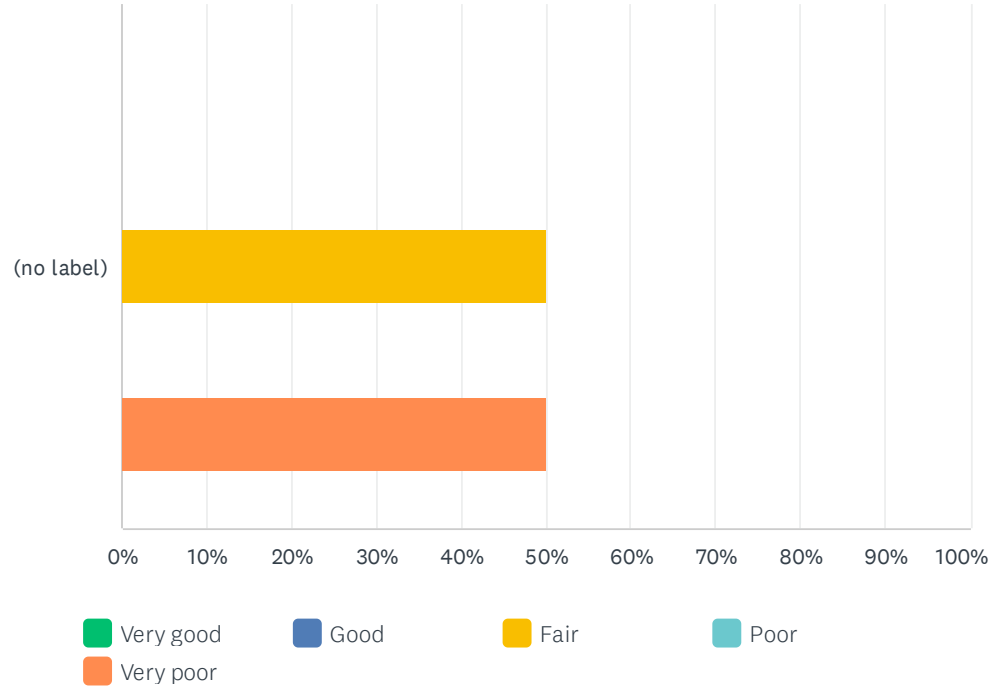
ANSWER CHOICES	RESPONSES	
Yes	100.00%	2
No	0.00%	0
Total Respondents: 2		

Q2 If yes, what was the topic of discussion?

Answered: 2 Skipped: 0

Q3 How would you rate your awareness of the proposed Sandy Creek Solar Farm?

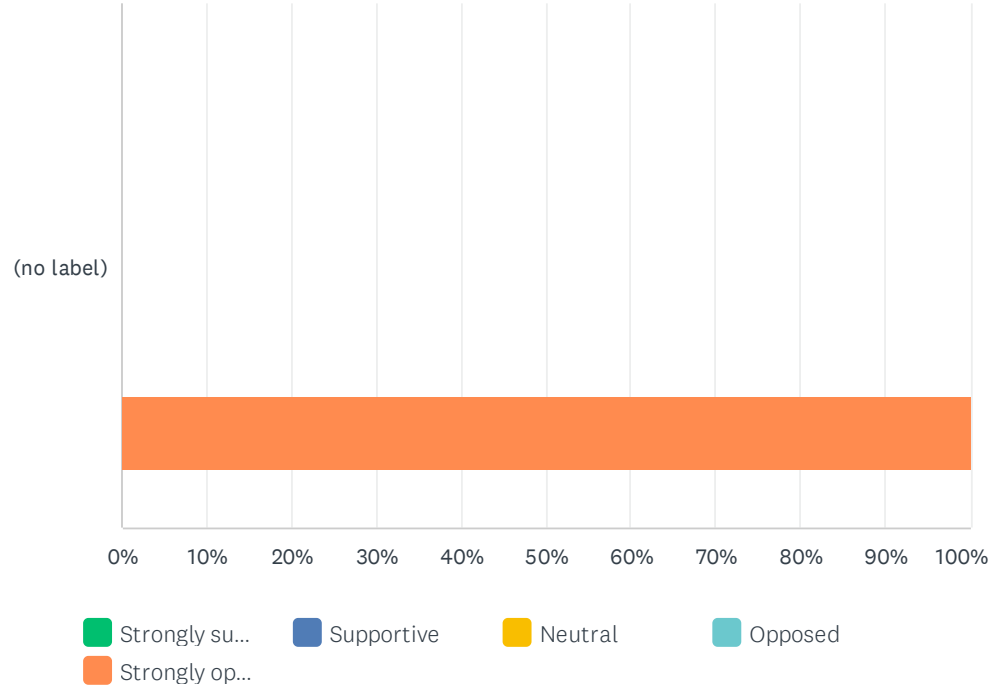
Answered: 2 Skipped: 0



	VERY GOOD	GOOD	FAIR	POOR	VERY POOR	TOTAL	WEIGHTED AVERAGE
(no label)	0.00% 0	0.00% 0	50.00% 1	0.00% 0	50.00% 1	2	4.00

Q4 How do you feel about the proposed Sandy Creek Solar Farm?

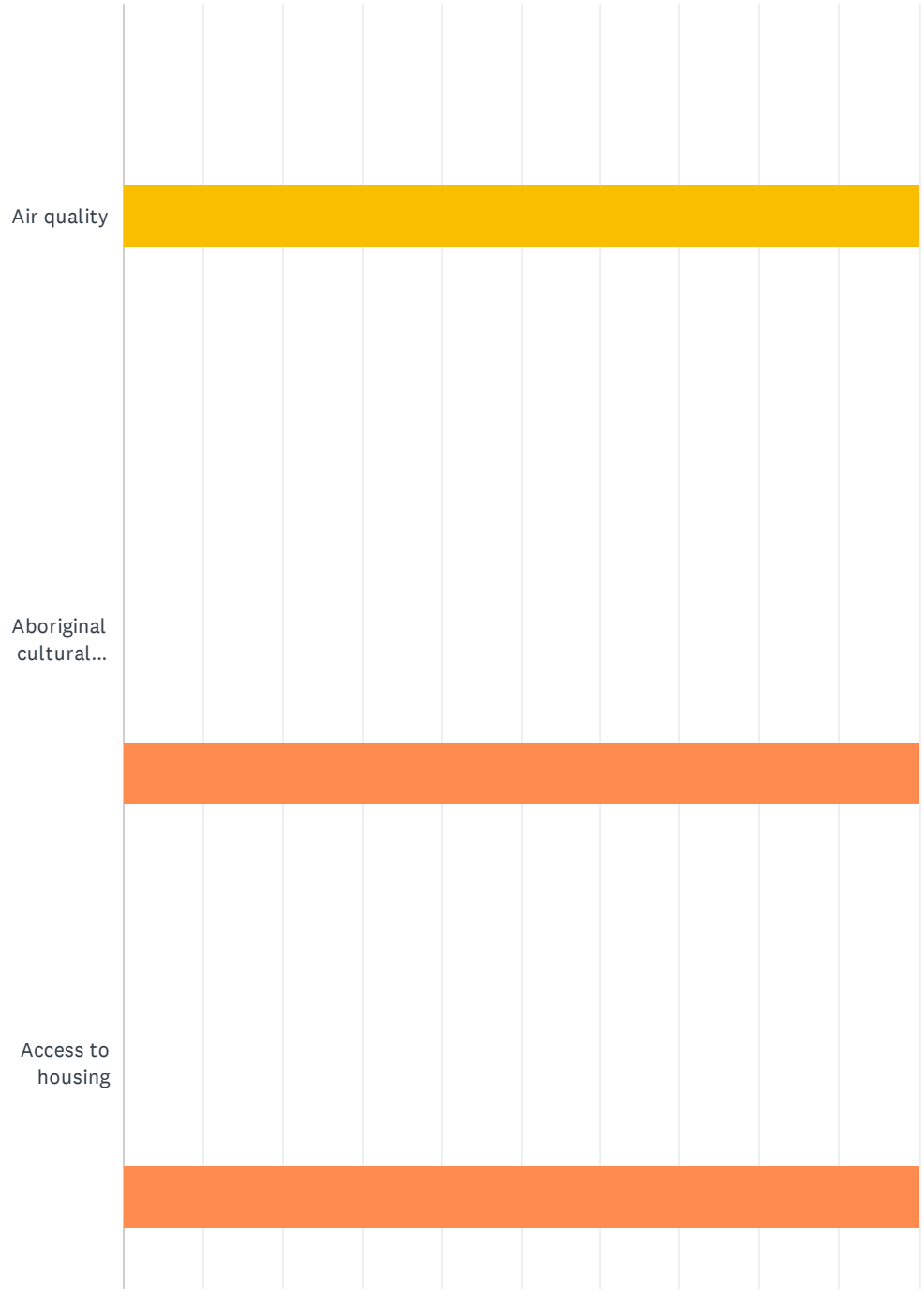
Answered: 2 Skipped: 0

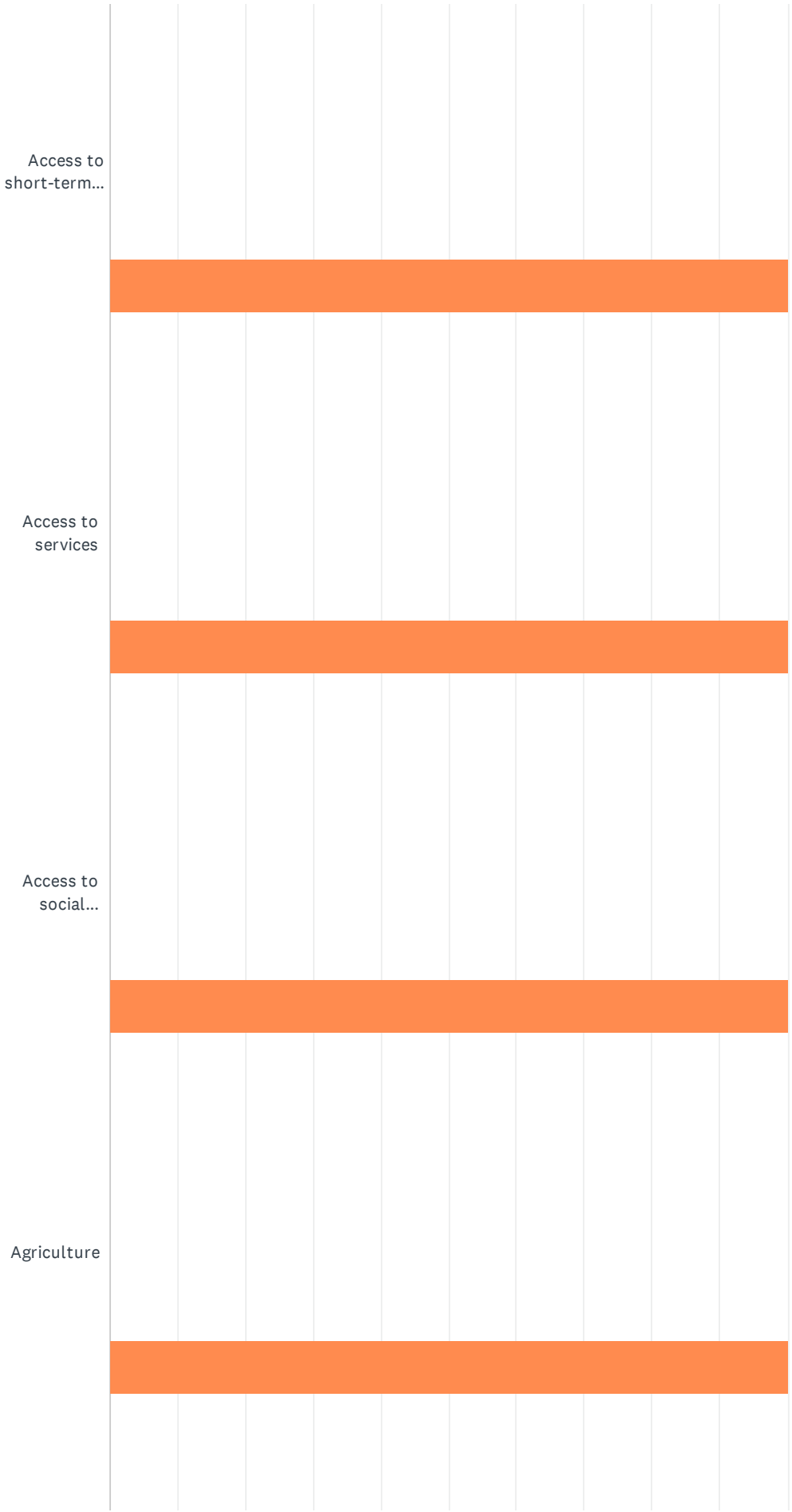


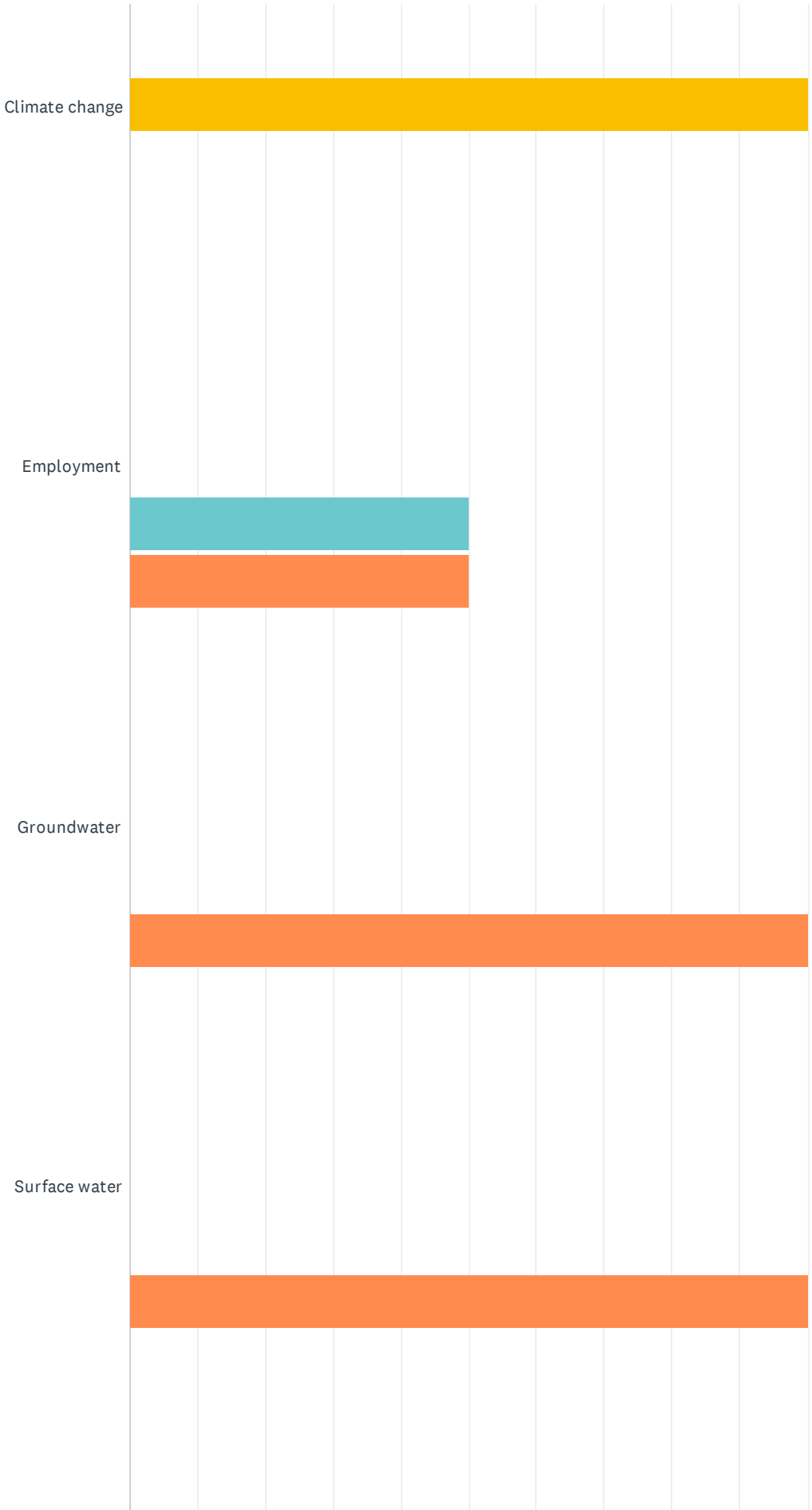
	STRONGLY SUPPORTIVE	SUPPORTIVE	NEUTRAL	OPPOSED	STRONGLY OPPOSED	TOTAL	WEIGHTED AVERAGE
(no label)	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00

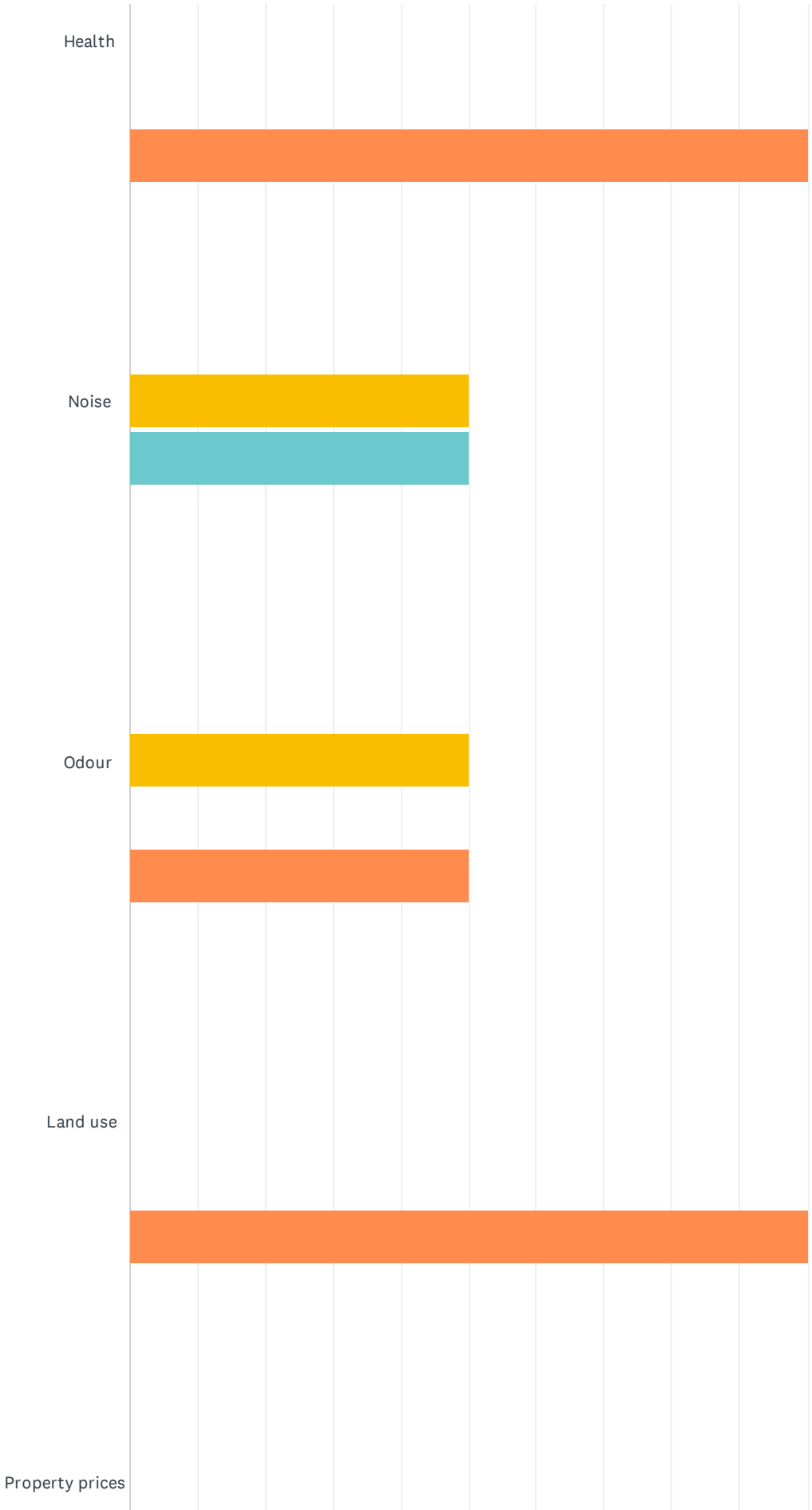
Q5 Below is a list of potential impacts and benefits that are commonly associated with solar farm projects.Consider how the Sandy Creek Solar Farm may affect the local community and select the appropriate ranking for each potential impact and benefit using the buttons provided.

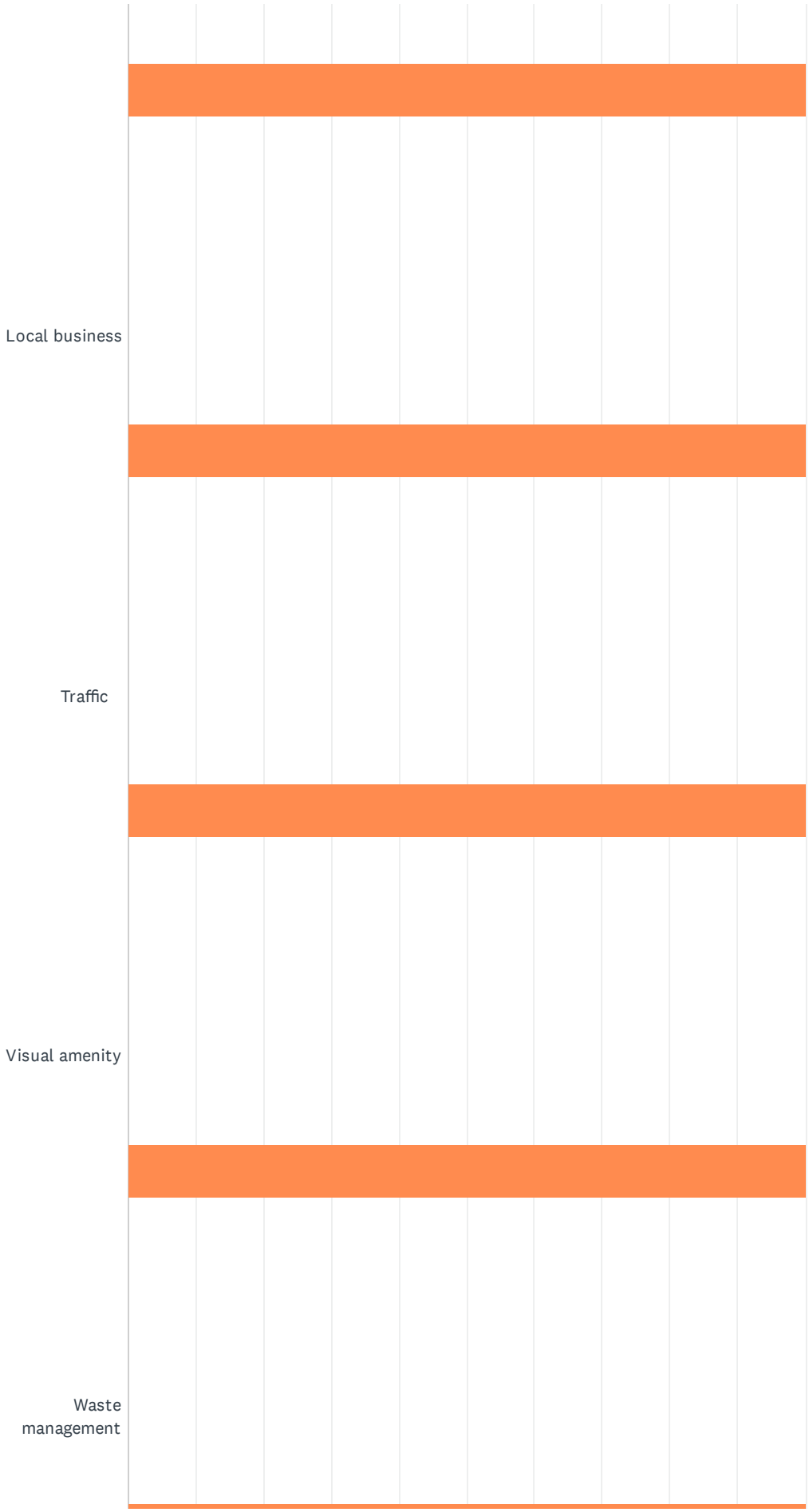
Answered: 2 Skipped: 0

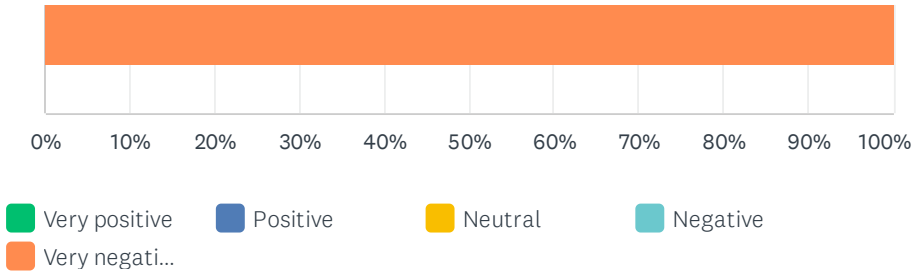



Access to short-term...
Access to services
Access to social...
Agriculture


Climate change
Employment
Groundwater
Surface water


Health
Noise
Odour
Land use
Property prices


Local business
Traffic
Visual amenity
Waste management


0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Very positive
Positive
Neutral
Negative
Very negati...

	VERY POSITIVE	POSITIVE	NEUTRAL	NEGATIVE	VERY NEGATIVE	TOTAL	WEIGHTED AVERAGE
Air quality	0.00% 0	0.00% 0	100.00% 2	0.00% 0	0.00% 0	2	3.00
Aboriginal cultural heritage	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00
Access to housing	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00
Access to short-term accommodation	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00
Access to services	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00
Access to social infrastructure	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00
Agriculture	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00
Climate change	0.00% 0	0.00% 0	100.00% 2	0.00% 0	0.00% 0	2	3.00
Employment	0.00% 0	0.00% 0	0.00% 0	50.00% 1	50.00% 1	2	4.50
Groundwater	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00
Surface water	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00
Health	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00
Noise	0.00% 0	0.00% 0	50.00% 1	50.00% 1	0.00% 0	2	3.50
Odour	0.00% 0	0.00% 0	50.00% 1	0.00% 0	50.00% 1	2	4.00
Land use	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00
Property prices	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00
Local business	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00
Traffic	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00
Visual amenity	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00
Waste management	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 2	2	5.00

Q6 Do you have any other comments?

Answered: 1 Skipped: 1

Q7 What is your suburb?

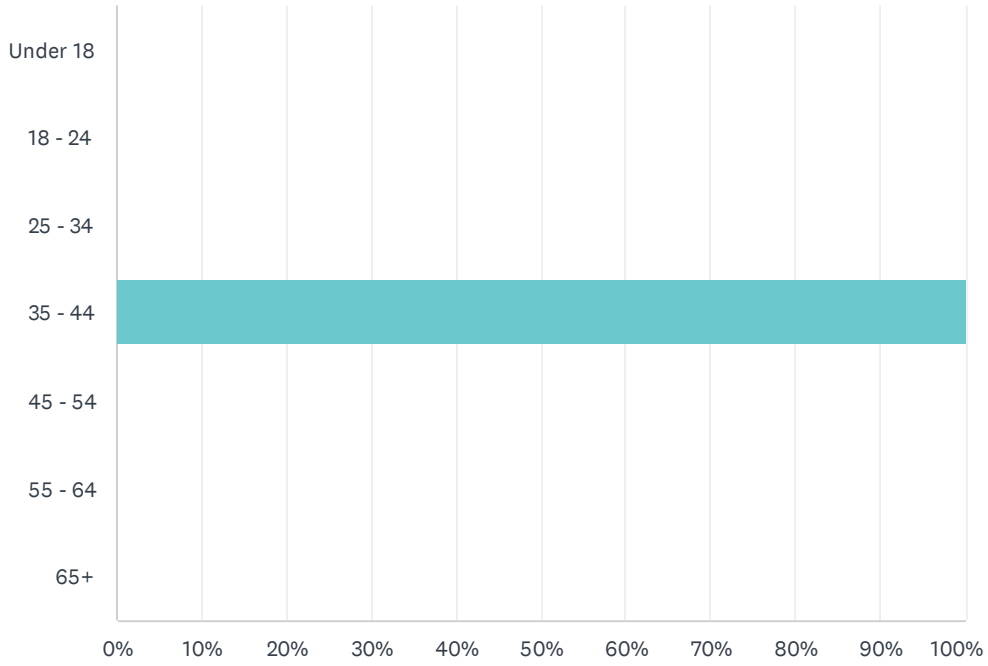
Answered: 2 Skipped: 0

Q8 What is your postcode?

Answered: 2 Skipped: 0

Q9 Which of the following age brackets do you fall into? (optional)

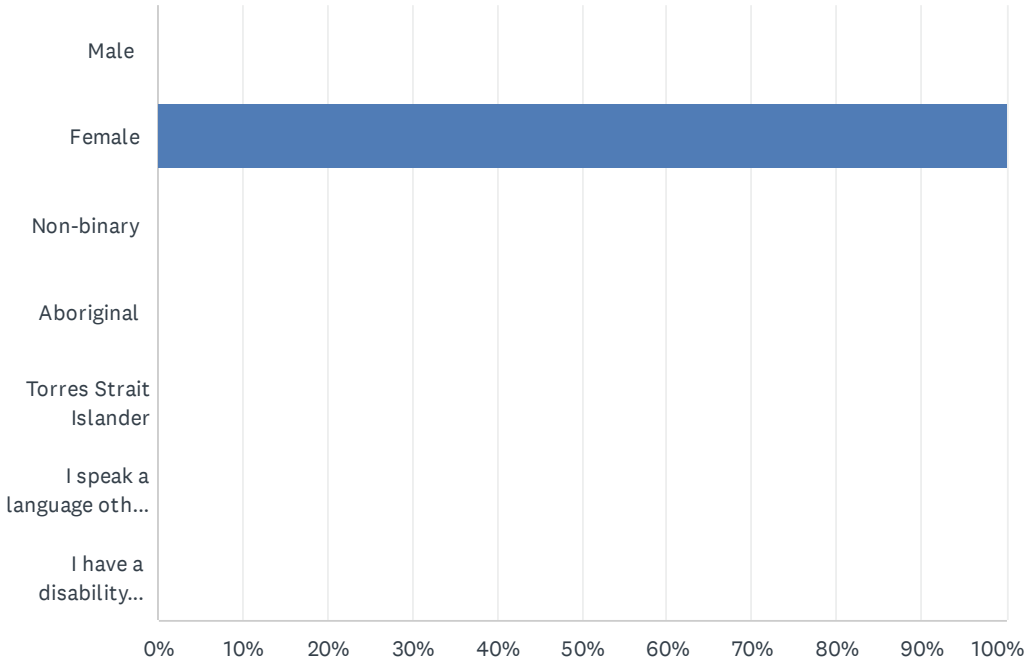
Answered: 2 Skipped: 0



ANSWER CHOICES	RESPONSES	
Under 18	0.00%	0
18 - 24	0.00%	0
25 - 34	0.00%	0
35 - 44	100.00%	2
45 - 54	0.00%	0
55 - 64	0.00%	0
65+	0.00%	0
TOTAL		2

Q10 Which of the following do you identify as? (optional)Please select all that apply to you.

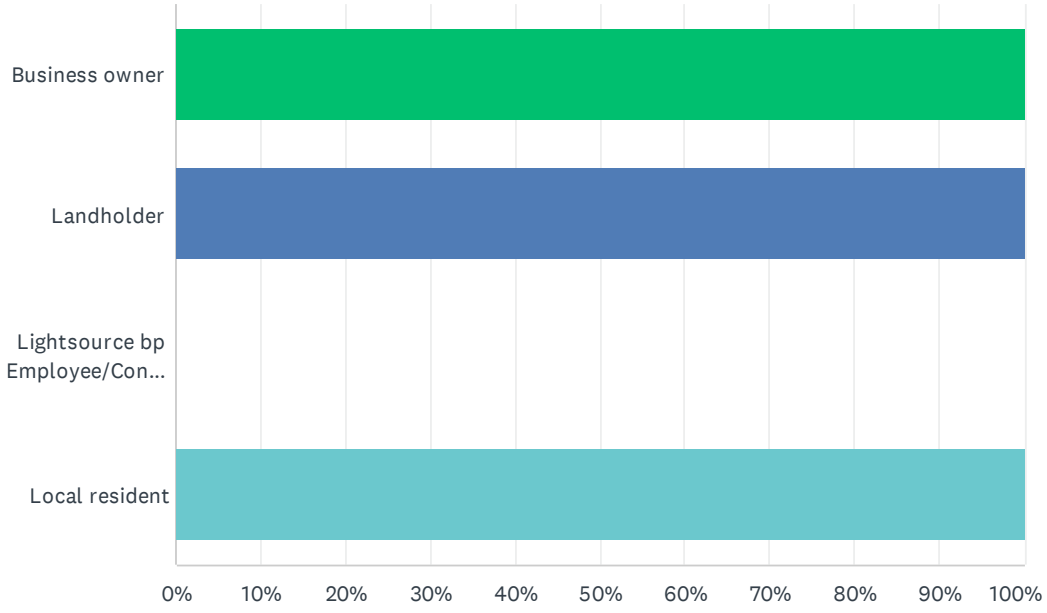
Answered: 2 Skipped: 0



ANSWER CHOICES	RESPONSES	
Male	0.00%	0
Female	100.00%	2
Non-binary	0.00%	0
Aboriginal	0.00%	0
Torres Strait Islander	0.00%	0
I speak a language other than English at home	0.00%	0
I have a disability and/or special need	0.00%	0
Total Respondents: 2		

Q11 Which of the following best describes you? Please select all that apply to you

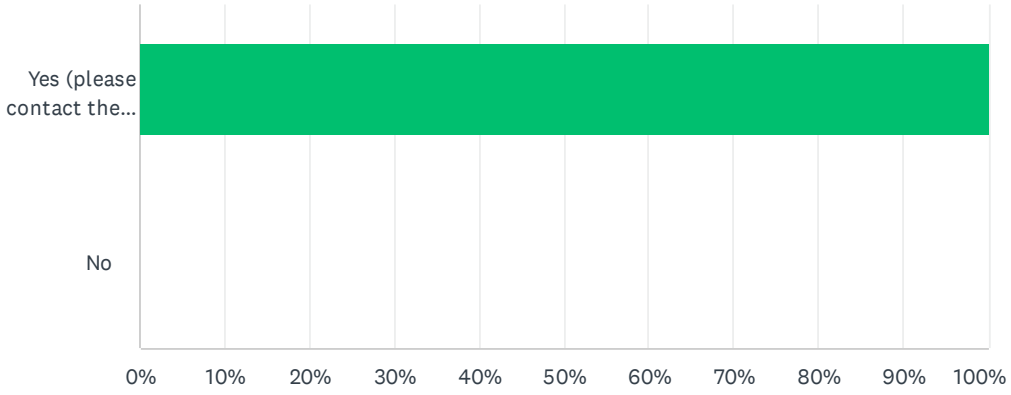
Answered: 2 Skipped: 0



ANSWER CHOICES	RESPONSES	
Business owner	100.00%	2
Landholder	100.00%	2
Lightsource bp Employee/Contractor	0.00%	0
Local resident	100.00%	2
Total Respondents: 2		

Q12 Would you like additional information on the proposed Sandy Creek Solar Farm?

Answered: 1 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes (please contact the Project team via email: sandycreeksolar@lightsourcebp.com)	100.00%	1
No	0.00%	0
Total Respondents: 1		

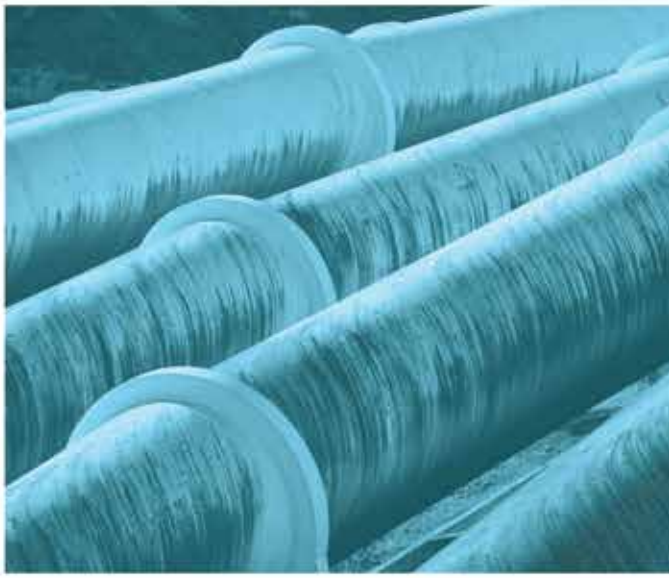
Appendix C

SIA scoping worksheet

Social Impact Assessment (SIA) Worksheet | Project name: Sandy Creek Solar Farm | Date: 25 February 2022

CATEGORIES OF SOCIAL IMPACTS	POTENTIAL IMPACTS ON PEOPLE		PREVIOUS INVESTIGATION OF IMPACT		CUMULATIVE IMPACTS		ELEMENTS OF IMPACTS - Based on preliminary investigation					ASSESSMENT LEVEL FOR EACH IMPACT				PROJECT REFINEMENT	MITIGATION / ENHANCEMENT MEASURES
what **social impact categories** could be affected by the project activities	What impacts are likely, and what concerns/aspirations have people expressed about the impact? Summarise how each relevant stakeholder group might experience the impact. NB. Where there are multiple stakeholder groups affected differently by an impact, or more than one impact from the activity, please add an additional row.	Is the impact expected to be **positive or negative**	Has this impact previously been investigated (on this or other project/s)?	If "yes - this project," briefly describe the previous investigation. If "yes - other project," identify the other project and investigation	Will this impact combine with others from this project (think about when and where), and/or with impacts from other projects (cumulative)?	If yes, identify which other impacts and/or projects	Will the project activity (without mitigation or enhancement) cause a material social impact in terms of its: You can also consider the various magnitudes of these characteristics					Level of assessment for each social impact	What methods and data sources will be used to investigate this impact?			Has the project been refined in response to preliminary impact evaluation or stakeholder feedback?	What **mitigation / enhancement measures** are being considered?
							extent i.e. number of people potentially affected?	**duration** of expected impacts? (i.e. construction vs operational phase)	**intensity** of expected impacts i.e. scale or degree of change?	**sensitivity** or vulnerability of people potentially affected?	**level of concern/interest** of people potentially affected?		Secondary data	Primary Data - Consultation	Primary Data - Research		
Categories in SIA guideline	Free text	Positive Negative	Yes - this project, Yes - other project, No	Free text	Combined Cumulative Combined and Cumulative No Unknown N/A		Yes No Unknown	Yes No Unknown	Yes No Unknown	Yes No Unknown	Yes No Unknown	Detailed, Standard, Minor, Nothing further on this impact	Free Text			Yes No	Free Text
livelihoods	inceased opportunity for local employment	Positive	Yes - other project	Tallawang Solar, Stubbo Solar Farm, Hillston Sun Farm	Yes	surrounding solar farms (eg Beryl Solar Farm, Wellington solar Farm)	Unknown	Yes	Unknown	Unknown	Yes	standard	required	broad consultation	not required	No	Use of local labour force and supplies when possible
health and wellbeing	increased noise (during construction)	Negative	Yes - other project	Wellington Solar Farm	Yes	surrounding solar farms (eg Beryl Solar Farm, Wellington solar Farm)	Unknown	Unknown	Unknown	Unknown	No	minor	required	broad consultation	targeted research	No	Noise management measures will be determined during the noise impact assessment of the EIS. Construction will take place during standard consturction hours (relevant to state/regional guideline)
livelihoods	(any) disruption to farming activity could lead to lowered productivity	Negative	Yes - other project	Wellington Solar Farm	Yes	way of life, community cohesion	Yes	Yes	Yes	Unknown	Yes	detailed	required	broad consultation	targeted research	No	Investigation area identified based on landholders willing to be involved with the project.
way of life	Arising land use tensions could impact agricultural and farming practices	Negative	Yes - other project	Wellington Solar Farm	Yes	surrounding solar farms (eg Beryl Solar Farm, Wellington solar Farm)	Unknown	Yes	Yes	Yes	Yes	detailed	required	broad consultation	potentially targeted research	No	Investigation area identified based on landholders willing to be involved with the project.
livelihoods	Diversification of local economy through direct and indirect economic benefits (including local spending and/or community benefit programs)	Positive	Yes - other project	Wellington Solar Farm	Unknown		Unknown	Unknown	No	No	Unknown	detailed	required	limited, if required	targeted research	No	Use of local labour force and supplies when possible
access	increased traffic may require upgrades to local roads, which would also benefit local users	Positive	Yes - other project	Wellington Solar Farm	No		Yes	Yes	Unknown	No	Yes	standard	required	broad consultation	targeted research	NA	traffic managmenet measures will be developed during the traffic impact assessment.
health and wellbeing	increaded traffic may also cause percieved road safety risks	Negative	Yes - other project	Wellington Solar Farm	Unknown		Yes	No	No	No	Yes	standard	required	broad consultation	targeted research	NA	traffic managmenet measures will be developed during the traffic impact assessment.
surroundings	changes to landscape and visual amenity	negative	Yes - other project	Wellington Solar Farm	Yes	surrounding solar farms (eg Beryl Solar Farm, Wellington solar Farm)	Yes	Yes	Unknown	Unknown	Yes	detailed	required	broad consultation	targeted research	No	visibility was considered during the site selection process, and will be a factor of discussion during community consultation with key stakeholders
way of life	reduction in land available for agricultural production (in project area)	negative	Yes - other project	Wellington Solar Farm	Unknown		Yes	Yes	Yes	Unknown	Yes	detailed	required	broad consultation	not required	No	Infrastructure will be designed so that agricultural practices (such as grazing) can continue in conjunction with project infrastructure.
livelihoods	impacts to the future operations and economic of existing farmers	Negative	Yes - other project	Wellington Solar Farm	Yes	way of life, health and wellbeing	Yes	Yes	Yes	Yes	Yes	detailed	required	broad consultation	targeted research		
livelihoods	increased long-term employment	Positive	Yes - other project	Wellington Solar Farm	No		Unknown	Unknown	No	Yes	No	minor	required	limited, if required	not required	NA	Use of local labour force and supplies when possible
culture	impacts to the protection of heritage sites	Negative	Yes - other project	Wellington Solar Farm	Unknown		Unknown	Yes	Unknown	Yes	Yes	minor	required	limited, if required	targeted research	NA	to be determined during the heritage impact assessment
access	concern about access to land in the event of an emergency (eg bushfire)	Negative	Yes - this project	Wellington Solar Farm	Unknown		Yes	Yes	Yes	Unknown	Yes	detailed	required	limited, if required	potentially targeted research		
access	Increased pressure on social infrastructure (such as housing and accomodation)	Negative	Yes - other project	Wellington Solar Farm	Unknown		Unknown	Unknown	Unknown	Yes	Unknown	detailed	required	limited, if required	potentially targeted research	NA	Will be considered during the social impact assessment. During this, may consider an accomodation strategy for construction workers.
surroundings	changed sense of place (character) due to changed visual amenity	Negative	Yes - other project	Wellington Solar Farm	Unknown		Yes	Yes	Unknown	Unknown	Yes	detailed	required	broad consultation	targeted research	NA	To be considered during social impact assessment.
community	influx of new workers may change the composition of the local population, and cause impacts to community identity/character	Negative	Yes - other project	Wellington Solar Farm	Yes	surrounding solar farms (eg Beryl Solar Farm, Wellington solar Farm)	Unknown	Unknown	Unknown	Unknown	Unknown	detailed	required	broad consultation	targeted research	NA	to be determined during assessment
community	community cohesion related to tensions between neighbours with solar panels and those without	Negative	Yes - other project	Wellington Solar Farm	Yes	surrounding solar farms (eg Beryl Solar Farm, Wellington solar Farm)	Yes	Unknown	Unknown	Unknown	Yes	detailed	required	broad consultation	targeted research	NA	to be determined during the assessment

INSERT NEW ROWS ABOVE THIS ROW



Appendix E

CIA scoping summary table

E.1 CIA scoping summary table

Relevant future projects	Approximate distance to project	Project status	Potential overlap between impact of project on assessment matter and impact of other project on the same assessment matter								
			Access	Air	Amenity	Biodiversity	Hazards and risks	Heritage	Land	Socio economic	Water
Cobbora Solar Farm	Adjacent to eastern boundary (Figure 1.3)	• SEARs have been issued • EIS currently being prepared • Potential construction and operations overlap									
Project site:			• Adjacent to the site. • Site access via Spring Ridge Road. • The same heavy vehicle transport route. • The same light vehicle/ construction workforce transport route.	• Adjacent to the site.	• Adjacent to the site.	• Adjacent to the site. • Bioregion.	• Adjacent to the site.	• Adjacent to the site. • Central West region. • Locality of Dunedoo.	• Adjacent to the site.	• Adjacent to the site. • Central West region. • Locality of Dunedoo.	• Adjacent to the site. • Macquarie-Bogan River catchment. • Sandy Creek catchment.
Spicers Creek Wind Farm	Adjacent to western boundary (Figure 1.3)	• Currently under investigation, request for SEARs yet to be lodged. • Potential construction and operations overlap.									
Project site:			• Adjacent to the site. • The same heavy vehicle transport route. • The same light vehicle/ construction workforce transport route.	• Adjacent to the site.	• Adjacent to the site.	• Adjacent to the site. • Bioregion.	• Adjacent to the site.	• Adjacent to the site. • Central West region. • Locality of Dunedoo.	• Adjacent to the site.	• Adjacent to the site. • Central West region. • Locality of Dunedoo.	• Adjacent to the site. • Macquarie-Bogan River catchment. • Sandy Creek catchment.

Birriwa Solar Farm	25 km north-east (Figure 1.3)	• SEARs have been issued. • EIS currently being prepared. • Potential construction and operations overlap.									
Project site:			• Similar heavy vehicle transport route. • Similar light vehicle/ construction workforce transport route.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Bioregion.	• Projects have sufficient separation distance.	• Central West region. • Locality of Dunedoo.	• Central West region. • Locality of Dunedoo.	• Central West region. • Locality of Dunedoo.	• Macquarie-Bogan River catchment.
Tallawang Solar Farm	22 km south-east (Figure 1.3)	• SEARs have been issued. • EIS currently being prepared. • Potential construction and operations overlap.									
Project site:			• Similar heavy vehicle transport route (from Newcastle port). • Similar light vehicle/ construction workforce transport route.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Bioregion.	• Projects have sufficient separation distance.	• Central West region. • Locality of Dunedoo.	• Central West region. • Locality of Dunedoo.	• Central West region. • Locality of Dunedoo.	• Macquarie-Bogan River catchment.
Dunedoo Solar Farm	25 km north-east (Figure 1.3)	• Approved • Potential construction and operations overlap									
Project site:			• Similar heavy vehicle transport route (from Newcastle port). • Similar light vehicle/ construction workforce transport route.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Bioregion.	• Projects have sufficient separation distance.	• Central West region. • Locality of Dunedoo.	• Central West region. • Locality of Dunedoo.	• Central West region. • Locality of Dunedoo .	• Macquarie-Bogan River catchment.
Goulburn River Solar Farm	>75 km east (Figure 1.3)	• SEARs have been issued • EIS currently being prepared • Potential construction and operations overlap									
Project site:			• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Central West region.	• Projects have sufficient separation distance.

Merriwa Solar Farm	>90 km east (Figure 1.3)	• SEARs have been issued. • EIS currently being prepared. • Potential construction and operations overlap.								
Project site:			• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Central West region.	• Projects have sufficient separation distance.
Wellington North Solar Farm	40 km south west (Figure 1.3)	• Approved. • Potential construction and operations overlap.								
Project site:			• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Central West region.	• Projects have sufficient separation distance.
Wellington South BESS	40 km south west (Figure 1.3)	• SEARs have been issued. • EIS currently being prepared. • Potential construction and operations overlap.								
Project site:			• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Central West region.	• Projects have sufficient separation distance.
Uungular Wind Farm	>35 km south (Figure 1.3)	• Approved. • Potential construction and operations overlap.								
Project site:			• Projects have sufficient separation distance	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Central West region.	• Projects have sufficient separation distance.
Barneys Reef Wind Farm	25 km east (Figure 1.3)	• In planning. • Potential construction and operations overlap.								
Project site:			• Similar heavy vehicle transport route. • Similar light vehicle/ construction workforce transport route.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Central West region.	• Projects have sufficient separation distance.

Valley of the Winds Wind Farm	50 km north east (Figure 1.3)	• In planning. • Potential construction and operations overlap.									
		Project site:	• Similar heavy vehicle transport route. • Similar light vehicle/construction workforce transport route.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Projects have sufficient separation distance.	• Central West region.	• Projects have sufficient separation distance.

Key

Detailed assessment	The Project may result in significant impacts on the matter, including cumulative impacts. Detailed assessment is characterised by: Potential overlap in impacts between a future project and the proposed project Potential for significant cumulative impacts as a result of the overlap, requiring detailed technical studies to assess the impacts Sufficient data is available on the future project to allow a detailed assessment of cumulative impacts with the proposed project for the relevant matter Uncertainties exist with respect to data, mitigation, assessment methods and criteria
Standard assessment	The Project is unlikely to result in significant impacts on the matter, including cumulative impacts. Standard assessments are characterised by: Impacts are well understood Impacts are relatively easy to predict using standard methods Impacts are capable of being mitigated to comply with relevant standards or performance measures the assessment is unlikely to involve any significant uncertainties or require any detailed cumulative impact assessment
N/A	No potential overlap in impacts between a future project and the proposed project that would warrant any consideration in the cumulative impact assessment