Birriwa Solar Farm

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BIRRIWA SOLAR FARM AND BATTERY PROJECT

Scoping Report

Prepared for UPC\AC Renewables Australia

October 2021

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Birriwa Solar Farm and Battery Project

Scoping Report

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Client

UPC\AC Renewables Australia

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Executive Summary

UPC Renewables Australia Pty Ltd, operating as UPC\AC Renewables Australia (UPC\AC) proposes to develop the Birriwa Solar Farm and Battery Project; a large scale solar photovoltaic generation facility along with battery storage and associated infrastructure (the project). The project will have an indicative capacity of around 600 megawatts and include a centralised or a DC-coupled battery energy storage system of up to 1,000 megawatts.

The project is in the locality of Birriwa, approximately 15 kilometres (km) south-west of the township of Dunedoo, in the Central West of New South Wales (NSW). The project is within the Mid-Western Regional Council local government area and is within the Central-West Orana (CWO) Renewable Energy Zone (REZ). To support the development of the CWO REZ, the Energy Corporation of NSW is planning a new 500/330kV transmission line and related infrastructure as well as augmentation of the existing 330kV network. UPC\AC are investigating different options to connect to the proposed CWO REZ transmission link (T-Link). Connection could be via a substation to be located either within or outside of the development footprint, depending on the location of the proposed T-Link infrastructure. Other technical options to connect to the existing network would be envisaged if NSW Energy Corporation does not proceed with the proposed T-Link, but these options will not be assessed within the current development application process.

The project will be developed within a study area of approximately 1,250 hectares (the study area). The exact land area to be covered by the project components (the development footprint) and connection to the CWO REZ proposed T-Link will be refined as the development progresses and will be informed by the release of further information on the proposed T-Link, the outcomes of community and stakeholder engagement and the findings of the environmental, social and economic assessments.

The site of the project has been selected in consideration of several alternatives to ensure the project is viable as a solar and storage development and that it will result in maximum benefits for the locality and region in the long term, while minimising impacts to the environment. The proposed site was primarily selected due to it being close to the existing 500kV and 330kV networks, with very good solar resource and physical conditions for large-scale solar energy generation, the relatively low level of environmental constraints presented by the study area, the relatively few neighbours living within close proximity of the study area, the limited visibility from surrounding roads and the willingness of the landholders to be involved. Its location very near to the route of the proposed T-Link within the CWO REZ makes this an ideal site for a utility scale grid-connected solar and battery project.

The project is State significant development pursuant to Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011*. Accordingly, approval for the project is required under Part 4 of the NSW *Environmental Planning and Assessment Act 1979*.

This Scoping Report has been prepared to support a request for the Secretary's Environmental Assessment Requirements for the project. A preliminary environmental assessment has been carried out and is documented in this report to assist in the identification of matters that will require further assessment in the Environmental Impact Statement (EIS), and the level of assessment that should be carried out for each matter.

This Scoping Report has been prepared in accordance with the recently released Department of Planning, Industry and Environment (DPIE) guidelines: *State significant development guidelines - preparing a scoping report: Appendix A to the State significant development guidelines* (DPIE 2021a). The aspects identified as requiring detailed assessment in the EIS include visual, biodiversity, traffic, heritage and hazards. Aspects requiring standard assessment include noise and vibration, land resources, social and air quality.

The project will play an important role in achieving the objectives of the CWO REZ. It will also provide significant economic stimulus to the region through construction jobs and associated flow-on benefits.

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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 study area, with any key areas of constraint excluded, and will be refined and confirmed as the development progresses.
DPI	Department of Primary Industries
DPIE	Department of Planning, Industry 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
MNES	Matters of national environmental significance
MW	Megawatts
NSW	New South Wales
PCT	Plant community type
PMST	Commonwealth Protected Matters Search Tool
PV	Photovoltaic
REZ	Renewable Energy Zone
SEARs	Secretary's Environmental Assessment Requirements
SIA	Social impact assessment
SRD SEPP	*State Environmental Planning Policy (State and Regional Development) 2011*

Item	Definition
SSD	State significant development
Study area	Area of consideration during the scoping phase. The development footprint will likely encompass the whole study area, with any key areas of constraint excluded.
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
T-Link	The proposed CWO REZ transmission link
The Project	Birriwa Solar Farm and Battery Project; a large scale solar photovoltaic generation facility along with battery storage and associated infrastructure
UPC	UPC Renewables Australia Pty Ltd
UPC\AC	UPC\AC Renewables Australia - a joint venture between the UPC Renewables Group (UPC) and AC Energy (AC)

1 Introduction

1.1 Project overview

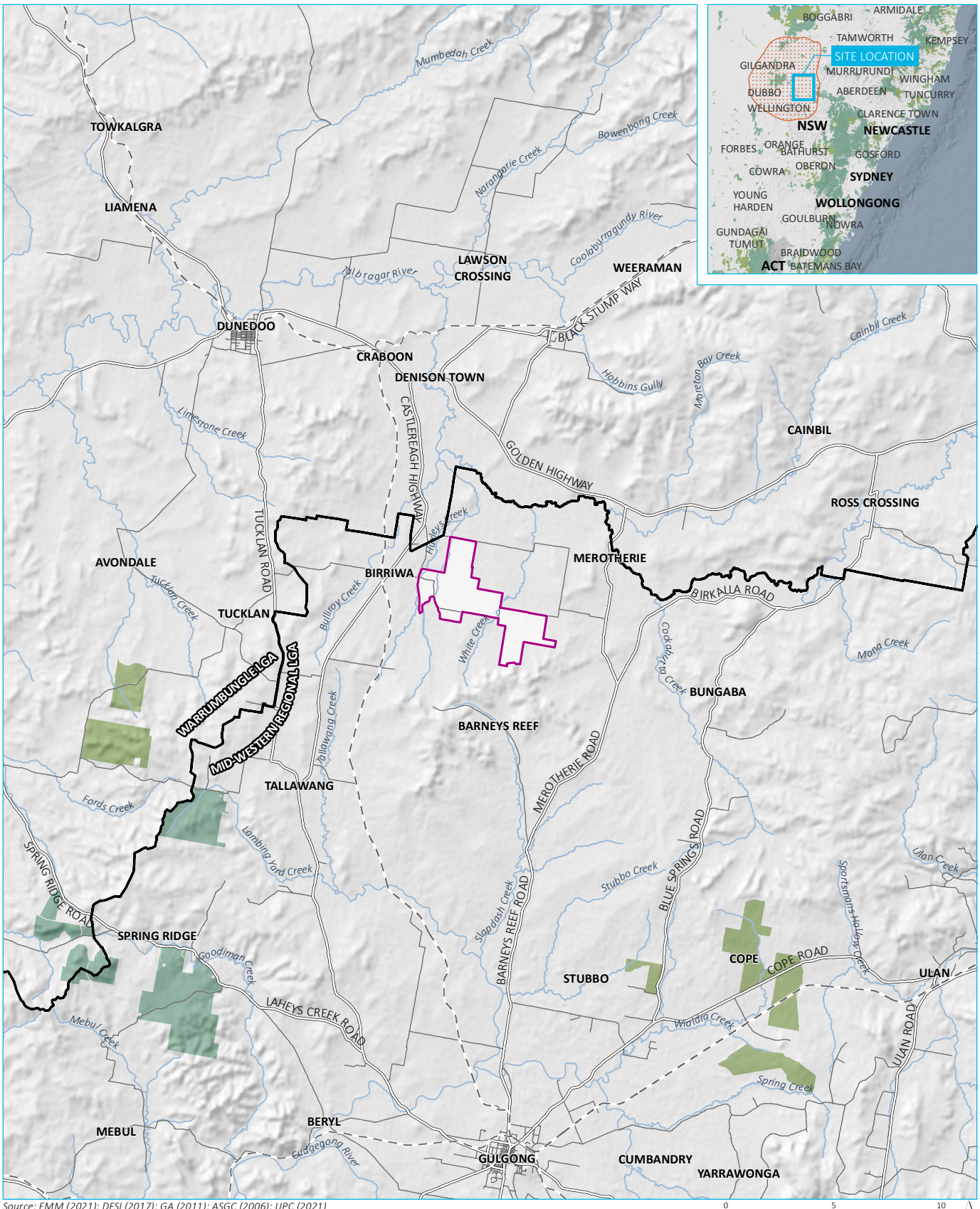
UPC Renewables Australia Pty Ltd, operating as UPC\AC Renewables Australia (UPC\AC) proposes to develop the Birriwa Solar Farm and Battery Project; a large scale solar photovoltaic (PV) generation facility along with battery storage and associated infrastructure (the project). The solar farm component of the project will have an indicative capacity of around 600 megawatts (MW) and include either a centralised or a direct current (DC)-coupled battery energy storage system (BESS) of up to 1,000 MW.

The project is in the locality of Birriwa, approximately 15 kilometres (km) south-west of the township of Dunedoo, in the Central West of New South Wales (NSW) (Figure 1.1). The project is within the Mid-Western Regional Council local government area (LGA) and is within the Central-West Orana (CWO) Renewable Energy Zone (REZ). 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), with an initial target of 3,000 MW of new transmission capacity to be developed in the region by the mid-2020s. To support the development of the CWO REZ, the Energy Corporation of NSW (EnergyCo) is planning a new 500/330kV transmission line and related infrastructure as well as augmentation of the existing 330kV network.

UPC\AC are investigating different options to connect to the proposed CWO REZ transmission link (T-Link). The selected connection option will be aligned with the proposed design for the T-Link expected to be released later in 2021 or in 2022. Connection could be via a substation to be located either within or outside of the development footprint, depending on the location of the proposed T-Link infrastructure Other technical options to connect to the existing network would be envisaged if NSW Energy Corporation does not proceed with the proposed T-Link, but these options will not be assessed within the current development application process.

The project will be developed within a study area of approximately 1,250 hectares (ha) (the study area, Figure 1.1). The exact land area to be covered by the project components (the development footprint) and connection to the CWO REZ proposed T-Link will be refined as the development progresses and will be informed by the release of further information on the proposed T-Link, the outcomes of community and stakeholder engagement and the findings of the environmental, social and economic assessments. The study area covers five separate rural landholdings over 17 land parcels. The development footprint is likely to encompass the full study area, with any areas of constraint identified during the EIS phase excluded.

The project will play an important part in achieving the objectives of the CWO REZ. It will also provide significant economic stimulus to the region through construction jobs and associated flow-on benefits.



Source: EMM (2021); DFSI (2017); GA (2011); ASGC (2006); UPC (2021)

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KEY

- Study area
- Rail line
- Major road
- Minor road
- Named watercourse
- Named waterbody
- Central West Orana Renewable Energy Zone (see inset)
- Local government area
- NPWS reserve
- State forest

Regional context

Birriwa Solar Farm
Scoping Report
Figure 1.1

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1.2 The applicant

The applicant, UPC\AC, is a joint venture between the UPC Renewables Group (UPC) and AC Energy (AC).

UPC is a leading renewable energy development company that has been operating globally since the 1990s. UPC has developed more than 4,500 MW of operating wind and solar projects with an estimated investment value of over $6 billion across five continents. After successfully pioneering markets in the United States, Canada and Europe, UPC is now focused on the clean renewable transition in Asia and Australia. UPC has operated in Australia since 2016 and is managing the delivery of numerous renewable energy projects. In NSW this includes the New England Solar Farm, stage one of which is now in construction, the recently approved Stubbo Solar Farm and the Valley of the Winds wind farm; as well as Axedale Solar Farm in Victoria, Robbins Island and Jim's Plain Wind Farms in Tasmania and Baroota Pumped Hydro in South Australia.

AC Energy is the energy platform of the Ayala Group, one of the largest business groups in the Philippines. AC Energy aspires to be the largest listed renewables platform in South-East Asia, with a goal of reaching 5,000 MW of renewables capacity by 2025.

The UPC\AC joint venture was established in 2018 for the development, construction and operations of renewable energy projects in Australia. UPC\AC has an owner/operator business model, which means UPC\AC aims to be involved in the entire project lifecycle, including from early stage development through to construction, operations and decommissioning.

UPC\AC is a signatory to the Clean Energy Council's *Best Practice Charter for Renewable Developments,* and as such is committed to:

- engaging respectfully with the communities in which it plans and operates projects;
- being sensitive to the environment and cultural values in developing projects; and
- making positive contributions to the local and broader communities and regions in which UPC\AC operates.

The Australian Business Number of UPC\AC is 27 616 856 672 and address is Suite 2, Level 2, 15 Castray Esplanade, Battery Point, Tasmania 7004.

1.3 Purpose of this report

The project is State significant development (SSD) pursuant to Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP), as discussed in Section 4.1. Accordingly, approval for the project is required under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This Scoping Report has been prepared to support a request for the Secretary's Environmental Assessment Requirements (SEARs) for the project. The SEARs will identify the level of environmental assessment required to be carried out as part of the Environmental Impact Statement (EIS) for submission to the Department of Planning, Industry and Environment (DPIE) as part of a development application under Division 4.1 Part 4 of the EP&A Act.

This Scoping Report has been prepared by EMM Consulting Pty Limited (EMM) on behalf of UPC\AC 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) (Scoping Report Guidelines).

2 Strategic context

2.1 Site and surrounds

2.1.1 Regional context

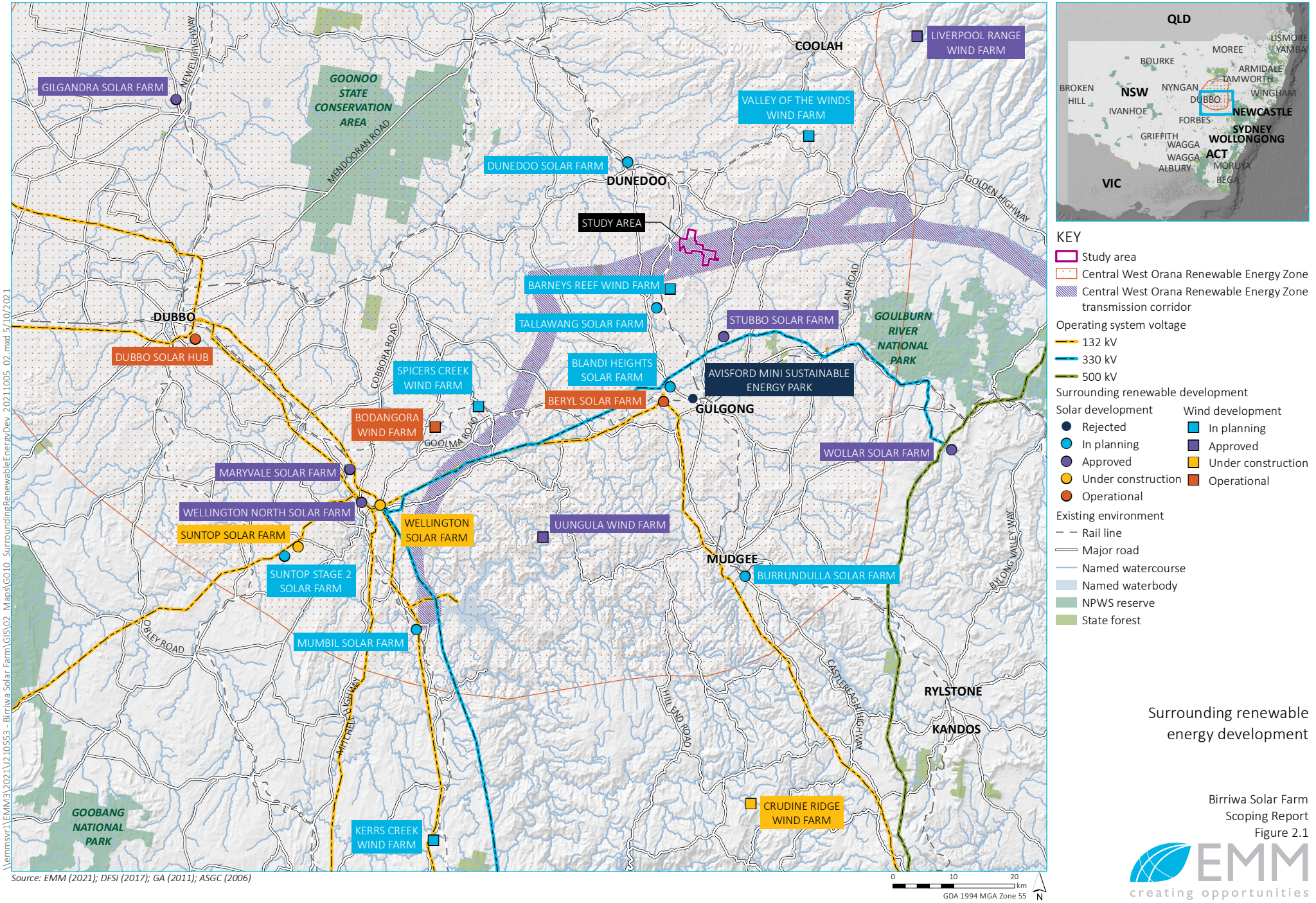
The study area is within the locality of Birriwa in the north-western corner of the Mid-Western Regional LGA, bordering the Warrumbungle Shire LGA, in the Central West Region of NSW.

The nearest population centre to the project is the township of Dunedoo, approximately 15 km north-west of the study area. Dunedoo is in the Warrumbungle Shire LGA and has a population of 1,221 (ABS 2016). Other nearby population centres in the vicinity of the project include Gulgong (population 2,521), approximately 20 km south; Coolah (population 795), approximately 40 km north; Mudgee (population 10,923), approximately 60 km south; and Merriwa (population 1,761), approximately 100 km east of the study area (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 (i.e. in the vicinity of Gulgong and Mudgee). Renewable energy development is a growing land use in the area, with multiple renewable energy projects located in the vicinity of the study area.

The nearest national parks to the study area are the Goulburn River National Park, approximately 30 km to the south-east, and the Yarrobil National Park, approximately 20 km to the south-west. Other areas of environmental conservation associated with state conservation areas are located to the west of the Castlereagh Highway. More locally, Barneys Reef Ridge to the south of the study area comprises a rocky ridgeline with native vegetation and is zoned E3 Environmental Management under the Mid-Western Regional Local Environmental Plan (Mid-Western Regional LEP).

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 2.1.



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Source: EMM (2021); DFSI (2017); GA (2011); ASGC (2006)

Surrounding renewable energy development

Birriwa Solar Farm
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Figure 2.1

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2.1.2 Local context

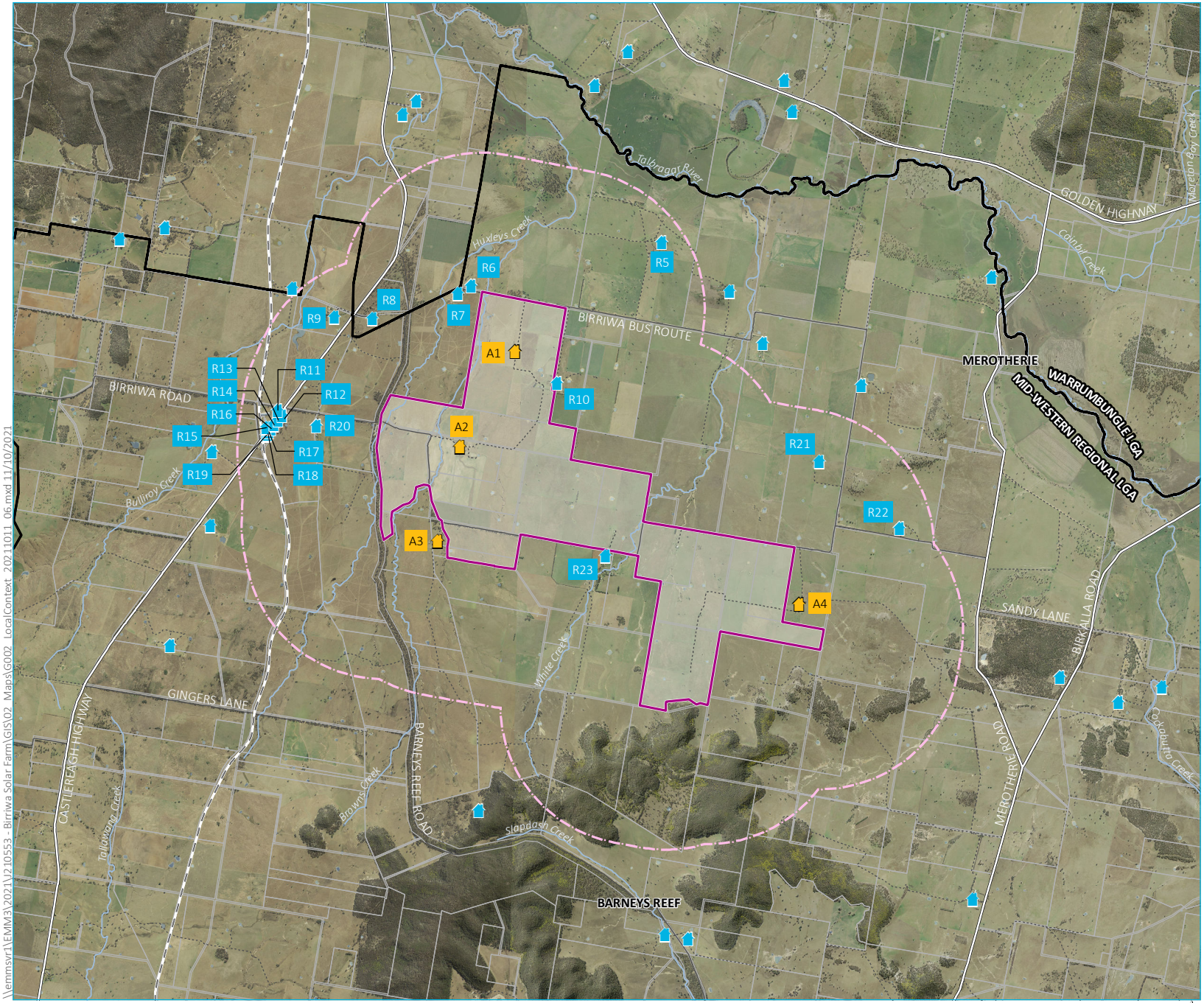
Land surrounding the study area is characterised by flat to gently undulating cleared land used primarily for sheep and cattle grazing or dry land cropping with scattered rural residences and agricultural buildings and infrastructure (ie silos and livestock yards). Areas of native vegetation occur within and surrounding the study area in the form of scattered paddock trees, vegetation along local roads, creek lines and windbreaks.

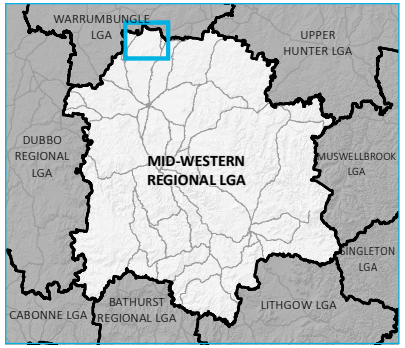
The locality of Birriwa has a population of 49 (ABS 2016), including a small cluster of residences and rural infrastructure on the Castlereagh Highway approximately 1.4 km west of the study area. There are four residences associated with the project that are located within or in close proximity to the study area. There are 19residences not associated with the project within 2 km of the study area (Table 2.1) and an additional 18 within 5 km (Figure 2.2).

The Gwabegar railway line crosses the Castlereagh Highway at Birriwa and travels in a south-south-easterly direction towards Gulgong. This railway no longer provides a passenger service; however, it is understood the Australian Rail Track Corporation uses the railway for freight services.

Table 2.1 Residences within 2 km of the study area

Receiver identification	Associated with the project?	Distance from the study area (m)
A1	Yes	Within the study area
A2	Yes	Within the study area
A3	Yes	151
A4	Yes	200
R5	No	1,680
R6	No	176
R7	No	332
R8	No	1,129
R9	No	1,379
R10	No	63
R11	No	1,480
R12	No	1,409
R13	No	1,452
R14	No	1,503
R15	No	1,601
R16	No	1,536
R17	No	1,560
R18	No	1,573
R19	No	1,589
R20	No	898
R21	No	1,283
R22	No	1,533
R23	No	81





KEY

- Study area
- Study area buffer (2 km)
- Dwelling associated with the project
- Dwelling not associated with the project
- Rail line
- Major road
- Minor road
- Vehicular track
- Named watercourse
- Cadastral boundary
- Waterbody
- Local government area

Source: EMM (2021); DFSI (2017); GA (2011); UPC (2021)

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Local context

Birriwa Solar Farm
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Figure 2.2

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2.1.3 The site

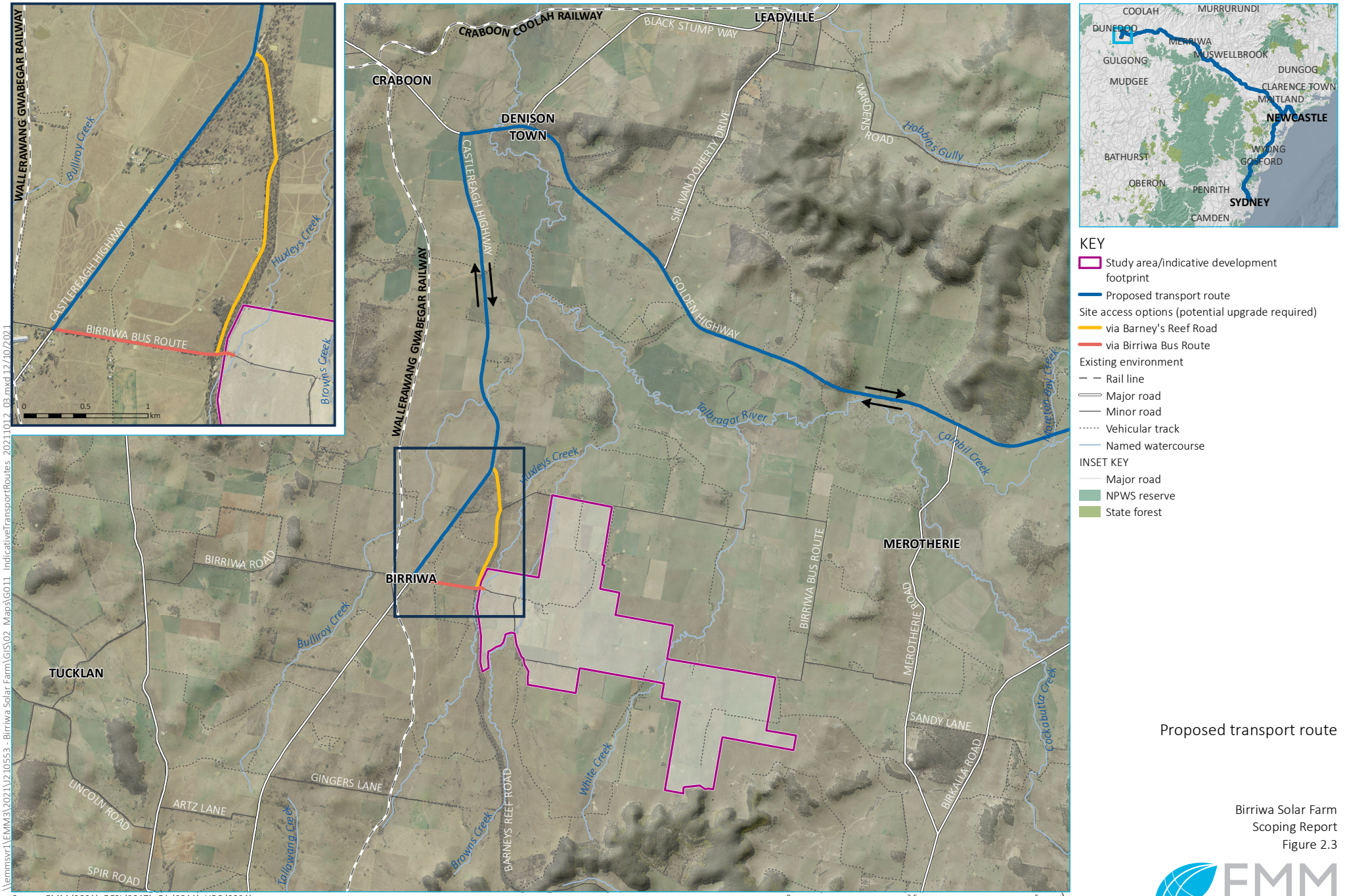
As outlined in Section 1.1, the study area is around 1,250 ha and extends over 17 land parcels. A schedule of lands for the study area is contained in Appendix A. During the preparation of the EIS, the development footprint within the study area will be refined based on further stakeholder engagement, environmental assessment and constraints identification.

The study area is zoned RU1 Primary production in its entirety under the Mid-Western Regional LEP and is predominantly freehold land, except for a small section of the Birriwa Bus Route South (a local unsealed road) and small sections of Crown roads. There are no exploration or mineral titles over the study area. The land tenure of the study area and surrounding land is shown in Figure 2.2.

Several nonperennial tributaries of the Talbragar River flow through the study area in a generally northerly direction, including the named Huxley Creek, Browns Creek and White Creek (Figure 2.2). There are also multiple farm dams within the study area.

The study area may be accessed by both the Castlereagh Highway (via Birriwa Bus Route South or Barneys Reef Road) and the Golden Highway (via Merotherie Road and Birriwa Bus Route South) (Figure 2.3).

The study area is illustrated in Plates 2.1 to 2.7.



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Source: EMM (2021); DFSI (2017); GA (2011); UPC (2021)

Proposed transport route

Birriwa Solar Farm
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Figure 2.3

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Plate 2.1 View of study area towards the south-west from Birriwa Bus Route North

Plate 2.2 View of study area towards the south from Birriwa Bus Route South

Plate 2.3 View of study area towards the north from Birriwa Bus Route South

Plate 2.4 View of study area towards the east from Birriwa Bus Route South

Plate 2.5 View of study area towards the south from Birriwa Bus Route North

Plate 2.6 View west towards the study area from Birriwa Bus Route South

Plate 2.7 View towards the south-eastern extent of the study area from Birriwa Bus Route South

2.2 Strategic planning framework

An overview of relevant key policies, plans and strategies, and how the project aligns with these, is provided in Table 2.1.

Table 2.2 Alignment with key strategic planning frameworks

Plan, policy or strategy	Description	Alignment with strategic framework
International context		
The Paris Agreement	The Paris Agreement is a legally binding international treaty on climate change adopted by 196 parties in 2015. As a signatory to the agreement, the Australian Government has committed to reduce greenhouse gas emissions by 26-28 percent on 2005 levels by 2030.	The project will contribute to meeting Australia's commitments under the Paris Agreement though estimated annual greenhouse gas emissions reductions in the order of 1 million tonnes per annum.
National context		
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 of large-scale renewable generation could reach up to 40,000 gigawatt hours in 2021.	Once operational, the project will generate up to approximately 1,500 gigawatt hours of electricity annually, which will make significant contributions towards meeting the Large-scale Renewable Energy Target in future years.
Integrated System Plan 2020	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)	The CWO REZ is identified within the ISP 2020 with the CWO REZ transmission link, to which the project will connect, identified as an "actionable ISP project", critical to address cost, security and reliability issues.

Table 2.2 Alignment with key strategic planning frameworks

Plan, policy or strategy	Description	Alignment with strategic framework
State context		
NSW Electricity Strategy 2019	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 are 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 *Electricity Infrastructure Investment Act (2020) NSW* 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.	The project will contribute to the development of the CWO REZ and assist in meeting NSW's energy generation and storage requirements, as well as the NSW Government's emissions reduction targets.
Net Zero Plan Stage 1: 2020-2030	The Net Zero Plan Stage 1 2020-2030 (DPIE 2020) outlines the NSW Government's plan to grow the economy and create jobs while helping the state to deliver a 35% cut in emissions compared to 2005 levels.	The project contributes to Priority 1 of the Plan: "Drive uptake of proven emissions reduction technologies that grow the economy, create new jobs or reduce the cost of living." The CWO REZ is also identified in the Plan as critical in replacing retiring coal fired generators in NSW.
Local and regional context		
Central West and Orana Regional Plan 2036	Central West and Orana Regional Plan 2036 (the Regional Plan) was released by the DPIE (2017) to guide land use planning priorities and decision making in the CWO region for the next two decades.	The project directly contributes to Goal 1 of the Regional Plan (ie "to become the most diverse regional economy of NSW"). It also contributes to Direction 9 (ie "increase renewable energy generation").
Our Place 2040 Mid-Western Regional Local Strategic Planning Statement	The Mid-Western Regional Local Strategic Planning Statement sets out the 20 year vision for land use planning in the Mid-Western Council LGA. Planning Priority 7 of the Local Strategic Planning Statement is to "support the attraction of a diverse range of business and industries". To support this planning priority the Local Strategic Planning Statement contains a land use action to "consider renewable energy development in appropriate areas that avoids impacts on the scenic rural landscape and preserves valuable agricultural land."	The project will contribute to Planning Priority 7 of the Local Strategic Planning Statement and has been sited to minimise impacts on productive agricultural land and visual amenity, where practicable.

2.3 Project justification

2.3.1 Project benefits

The project aligns with the NSW and Commonwealth Government's objectives for energy security and reliability and emissions reductions and will contribute to the continued growth of renewable energy generation and storage capacity in the CWO REZ. The CWO REZ was announced as the "pilot REZ" by the NSW Government in late 2019 and a draft declaration establishing the CWO REZ in the legislative context was out for public comment at the time of lodgement of this report. The project is therefore highly aligned with the NSW Government's strategic policy direction for the electricity sector. In addition, it will result in a number of benefits including:

- support and contribution to Commonwealth and State climate change commitments such as the Paris Agreement, RET Scheme, 2020 ISP and NSW Net Zero Plan Stage 1: 2020-2030;
- development of the CWO REZ, supplying approximately 600 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);
- contribute to capacity gaps in the electricity market following the closure of 7,000 – 8,000 MW worth of coal-fired power generators within NSW by 2035 (NES 2019), thereby enhancing reliability and security of electricity supply in NSW; and
- 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.

2.3.2 Site suitability

Prior to the announcement of the CWO REZ development by the NSW government, the study area was initially identified as suitable for a solar farm due to its relative proximity to the existing TransGrid 500kV network (located approximately 70km to the east) and the existing 330kV network located around 15km to the southeast. The suitability of the study area has significantly heightened since becoming part of the CWO REZ, and the announcement of the proposed study corridor for the CWO REZ T-Link, which traverses the study area.

The study area was primarily selected due to the very good solar resource of the area and physical conditions for large-scale solar energy generation. The study area's flat to gently undulating topography and its predominantly cleared, agricultural land use make it highly suitable for the project. The study area is also separated from residential townships, with surrounding topography and vegetation assisting in screening views from the Golden Highway and Castlereagh Highway. The study area was also selected due to the absence of bio-strategic agricultural land and relatively low level of other environmental constraints expected in the study area and the relatively few neighbours living within close proximity.

The required 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 National Electricity Market and ultimately households.

In summary, the study area 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 T-Link with capacity to export the electricity generated by the plant to the grid;
- the existing agricultural land use within and surrounding the study area, which is compatible 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.

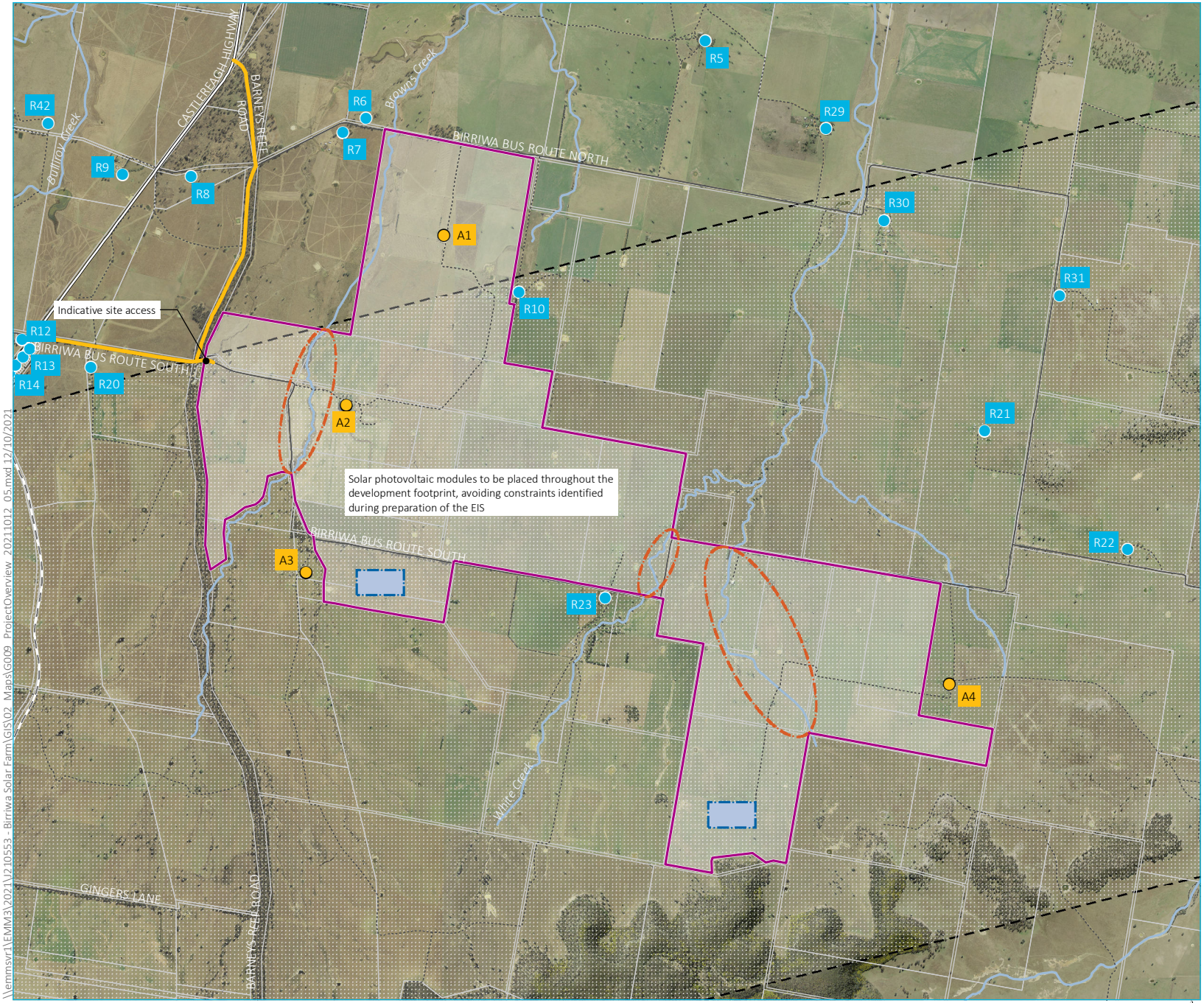
UPC\AC is committed to the long-term environmental management of the land within the study area in coordination with landholders associated with the project. At the end of the project's investment and operational life, the study area will be returned to its pre-existing agricultural land use.

3 Project description

3.1 Overview

The project comprises a large-scale solar PV generation facility along with battery storage and associated infrastructure. The project is to be developed within the study area, an area of approximately 1,250 ha (Figure 3.1). The project will have an indicative capacity of approximately 600 MW alternating current (AC) and will include either a centralised or a DC coupled BESS of up to 1,000 MW (with an energy storage duration of up to four hours; the maximum capacity and storage duration will be confirmed during the preparation of the EIS for the project based on market needs). UPC\AC is investigating different options to connect to the proposed CWO REZ T-Link. The exact land area (the 'development footprint') to be covered by the PV modules, BESS, and the connection arrangement into the proposed T-Link will be refined as the development progresses and will be confirmed in the EIS.

Details on the project components, construction, operation and alternatives considered are provided in the following sub-sections.



KEY

- Study area/indicative development footprint
- Dwelling associated with the project
- Dwelling not associated with the project
- Project access options
- Substation, ancillary infrastructure (including car park) and centralised BESS option may be located anywhere within the study area - two example locations are shown
- Areas of specific design considerations and/or potential setback along waterways – to be assessed in EIS
- Indicative T-Link corridor - the project would ideally connect to the T-Link within study area
- Rail line
- Major road
- Minor road
- Vehicular track
- Watercourse (Strahler 3rd order and above)
- Cadastral boundary

Design considerations

If DC-coupled BESS units are installed, these units will be adjacent to the solar inverters throughout the solar array. Exact location will be dependent on the location of the solar inverters, to be determined at detailed design phase.

Should a connection to the T-Link within the study area not be possible, then a transmission line would be required outside of study area. This will be assessed as part of the EIS

Source: EMM (2021); DFSI (2017); GA (2011); UPC (2021)

0 1 2 km

GDA 1994 MGA Zone 55

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Project overview

Birriwa Solar Farm
Scoping Report
Figure 3.1

EMM
creating opportunities

3.2 Project components

3.2.1 Solar arrays, PV modules, medium voltage cable network and inverters

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. The exact number of PV modules 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 formal consultation with TransGrid/EnergyCo and the Australian Energy Market Operator in a distinct connection study process, 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 study area.

The project involves 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 screwed into the ground. The PV modules will be installed in rows spaced between 5 m and 12 m apart depending on the tracking system selected, 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 PV modules will be up to 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 + / - 60o), allowing for sheep grazing around and underneath the PV modules. The maximum height of the panels to the higher edge from ground level at the maximum tilt angle is expected to be 4.5 m, which is assuming a “2 in portrait” (2P) configuration (ie worst case). Examples of “1 in portrait’ (1P) and 2P configurations are shown in Plate 3.1 and Plate 3.2.

Plate 3.1 Example of a PV module layout (2 in portrait configuration)

Plate 3.2 Example of a PV module layout (1 in portrait configuration)

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 of the electricity from 11kV, generated by the PV modules, to 33kV for transmission 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.

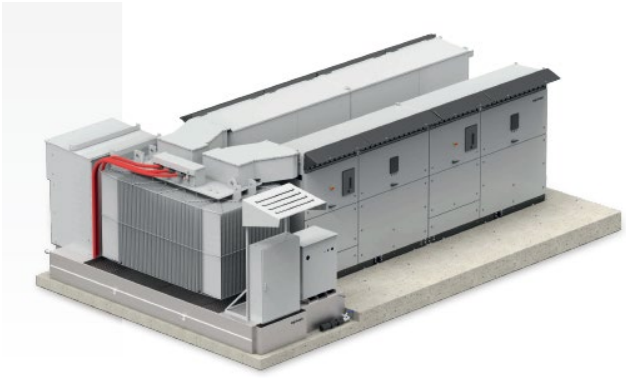


Plate 3.3 Example of power conversion unit

3.2.3 Battery energy storage system

The project includes either a centralised or a DC coupled BESS of up to 1,000 MW. The specific technology, MW rated capacity 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 PV modules into AC – UPC\AC is considering the use of grid-forming inverters, which would enable the project to enhance the stability of the transmission grid;
- transformers – required for the centralised AC coupled BESS option only. The decentralised BESS option does not require any additional transformers;
- heating ventilation air conditioning – the heating ventilation air conditioning will maintain the batteries at a temperature to optimise their lifetime and performance; 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 or a DC-coupled BESS unit to be installed adjacent to solar inverters within the development footprint. The location and type of the BESS within the study area will be confirmed in the EIS.

The diagram below shows an indicative layout of a DC-coupled BESS and solar power conditioning unit within a PV power block, within the development footprint.

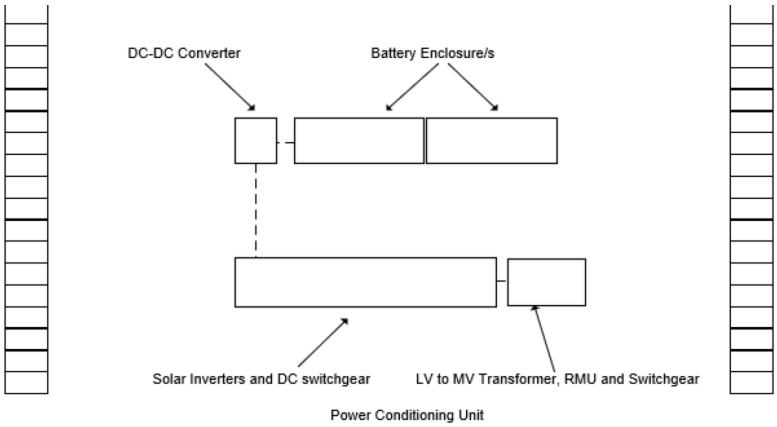


Plate 3.4 Indicative layout of a DC-coupled BESS and solar power conditioning unit within a PV array

3.2.4 Connection options

At the time of lodgement of this scoping report, few details are available on the proposed CWO REZ T-Link. UPC\AC 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 later in 2021 or in early 2022.

The grid connection options currently under consideration are summarised below. Options 1 and 2 below are based on the scenario that EnergyCo proposes a substation associated with the T-Link in the Birriwa area. Option 3 below assumes that EnergyCo will not propose a substation associated with T-Link in the Birriwa area (within approx. 5km of the study area).

- Option 1 – "Connection hub" associated with the project. In this scenario, the project will connect into the proposed T-Link substation located 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 T-Link which facilitates this and would be assessed as part of the EIS at the time of lodgement.

- Option 2 – "Connection hub" non associated with the project. In this scenario, it is assumed EnergyCo would select a substation location outside of the study area, but in relative proximity to the site. The project would connect to the T-Link via a new private transmission line (see Section 3.2.2) and would require an easement. This 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.

- Option 3 – "Stand-alone connection to the proposed T-Link". This option assumes that UPC\AC would establish a new "cut-in" substation on the T-Link at a location to be determined in time for preparation of the EIS. The substation and its associated infrastructure would be included and assessed in 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 500kV line in the region would be considered if NSW Energy Corporation does not proceed with the proposed CWO REZ T-Link. 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 Transmission line (if Option 2 is selected)

If Option 2 above is the selected option, an up to 500kV transmission line will be installed from the development footprint to the T-Link substation or switching station. An easement would be required for the proposed transmission line connection, which would be developed in consultation with relevant local landholders and stakeholders including Transgrid and EnergyCo. The route would be selected to avoid environmental constraints and would be negotiated between UPC\AC and relevant landholders. If Option 2 is selected, the easement would be included in the development footprint and any environmental or social impacts would be assessed as part of the EIS. It is noted that an easement is not currently part of the study area as shown on Figure 3.1.

3.2.6 Supporting infrastructure

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

- staff office, operations and control room, meeting facilities, amenities and carparking;

- a temperature-controlled spare parts storage facility;

- supervisory control and data acquisition facilities;

- a workshop and associated infrastructure;

- a number of new internal roads to facilitate access within the study area to allow for construction and ongoing maintenance; 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, at the start of construction. Project infrastructure will be positioned in accordance with the conditions of consent.

3.2.7 Road upgrades

The project will be accessed via the Castlereagh Highway, with at least two possible options for the dedicated site access currently under consideration:

- via the Castlereagh Highway/Barneys Reef Road intersection to Barneys Reef Road and on to the Birriwa Bus Route South into the study area; or
- via the Castlereagh Highway/Birriwa Bus Route South intersection and Birriwa Bus Route South into the study area.

Both options may require upgrades to the local road network, potentially impacting on adjacent roadside vegetation. These upgrades may involve upgrades to the Castlereagh Highway intersection with Birriwa Bus Route and/or Barneys Reef Road, and possible widening of portions of these two roads. The outcomes of technical studies to be undertaken for the EIS (particularly traffic and biodiversity) will be used to determine the most appropriate site access for the project, as well as the outcomes of consultation which will be carried out with Mid-Western Regional Council, Warrumbungle Shire Council, Transport for NSW, the local community and nearby landholders. The site access options are shown in Figure 3.1.

The EIS will assess other access options if neither of the above options are deemed to be feasible based on the outcomes of engagement with relevant stakeholders and further project design and assessment.

3.3 Construction

The construction phase of the project is expected to take up to three years, depending on scheduling of the construction works to deliver the combined solar and battery project, the timing of the T-Link and the NSW Government's capacity rights auctions. Construction activities will be undertaken during standard day time construction hours. Temporary infrastructure required during the construction phase of the project will include laydown and storage areas and a site compound.

Civil works will be required to prepare the site by installing fencing, internal access tracks and minor earthworks. Some heavier earth moving activities will be required for certain project infrastructure where a level pad is necessary (ie substation and a centralised BESS).

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.

3.3.1 Construction workforce

During the construction phase of the project a peak workforce in the order of around 500 full time employees will be required, which could increase to a maximum of 600 if the battery construction occurs at the same time. Consultation will be carried out with Mid-Western Regional Council, Warrumbungle Shire Council, business owners and key stakeholders throughout the development and assessment phases of the project regarding managing potential impacts and opportunities associated with the construction workforce and accommodation capacity.

The construction workforce will be sourced from the local area as far as practicable with UPC\AC considering options to provide training for local hires. Where possible, UPC\AC will also consider the construction schedules of other renewable and transmission projects in the CWO REZ in the scheduling of the project's construction to minimise the impact on the local community.

Accommodation required for non-local hires is anticipated to be sourced through the use of available rental and motel accommodation in surrounding townships and regional centres (i.e. Dunedoo, Gulgong, Merriwa, Coolah and Mudgee, or potentially as far away as Dubbo if necessary). Potential cumulative impacts will be considered in the EIS as part of the social impact assessment. Should the assessment of suitable workers' accommodation determine that there is insufficient local and regional accommodation for the project, UPC\AC will consider additional options such as temporary on-site workers' accommodation.

3.4 Operation

The operational lifespan of the project will be in the order 30 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.

It is anticipated that the solar farm will require regular maintenance throughout its operational life. This will generally include maintaining fencing, vegetation management, upgrading drainage channels and maintaining 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.

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

3.5 Decommissioning

At the end of the project's investment and operational life, UPC\AC 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 study area will be returned to its pre-existing agricultural land use.

3.6 Alternatives considered

3.6.1 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, battery storage systems and pumped hydro is the most economically viable option for the foreseeable future.

3.6.2 Alternative location

The study area is identified as highly suitable for a solar farm and battery project development as identified in Section 2.3.2. 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 UPC\AC as part of the site identification process, including other potential sites in NSW and further west in the Central West region. The primary constraint in considering locations further to the west is the increasing distance from the transmission network – both existing and planned. Alternatives which are further away from the planned T-Link would need long transmission lines and easements to connect into the network, which would come with additional environmental and social impacts. As such, the selected study area is considered optimal for development of the project.

3.6.3 Project refinement

The detailed project components including the final PV plant layout, its final power generating capacity, the energy storage duration of the BESS and the specific selection of equipment for both the PV plant and the BESS will be progressed during the EIS process but is ultimately only determined in the detailed design stage, which will take place post development consent. On the other hand, the grid connection and road access option will be selected during development of the project as part of the preparation of the EIS, as described in Section 3.2. Any refinements of the development footprint will also take place during the preparation of the EIS. Environmental and social constraints will be a key consideration during the refinement of the project, which will be conducted in consultation with key stakeholders, including landholders, as relevant.

4 Statutory context

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 Table 4.1. This table 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:

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

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

Table 4.1 Statutory context

Approval	Requirement
Power to grant approval	
EP&A Act and SRD SEPP	Part 4 of the EP&A Act relates to development assessment and consent; Part 4, Division 4.7 relates to the assessment of development deemed to be significant to the State (or SSD). Section 4.36(2) of the EP&A Act states that a: *...State environmental planning policy may declare any development, or any class or description of development, to be State significant development.* The SRD SEPP identifies development that is SSD. Clause 8 of the SRD SEPP states: *(1) Development is declared to be State significant development for the purposes of the Act if:* *(a) the development on the land concerned is, by the operation of an environmental planning instrument, not permissible without development consent under Part 4 of the Act, and* *(b) the development is specified in Schedule 1 and 2.* The project meets both these requirements; it requires development consent, and is a development specified in Schedule 1 of the SRD SEPP. Schedule 1 of the SRD SEPP defines the following as SSD: *Electricity generating works and heat or co-generation* *Development for the purpose of electricity generating works or heat or their co-generation (using any energy source, including gas, coal, biofuel, waste, hydro, wave, solar or wind power) that:* *(a) has a capital investment value of more than $30 million.* The project is development for the purpose of electricity generation and will have a capital investment value of more than $30 million. Consequently, the project is SSD.

Table 4.1 Statutory context

Approval	Requirement
Permissibility	
State Environmental Planning Policy (Infrastructure) 2007	Clause 34 (7) of *State Environmental Planning Policy (Infrastructure) 2007* states that: *...development for the purpose of a solar energy system may be carried out by any person with consent on any land.* Therefore, development for the purpose of a solar energy system may be carried out within the study area with development consent.
Electricity Infrastructure Investment Act (2020)	The study area is within a declared REZ under Section 23 of the *Electricity Infrastructure Investment Act (2020).* The CWO REZ has an intended network capacity of 3 gigawatts.
Consistent approvals	
Overview	Section 4.42 of the EP&A Act outlines that the approvals listed below cannot be refused if necessary for carrying out an approved SSD and are to be consistent with the terms of the development consent for the SSD.
An environment protection licence under Part 3 of the NSW *Protection of the Environment Operations Act 1997*	Section 48 of the *Protection of the Environment Operations Act 1997* requires an environment protection licence to undertake scheduled activities at any premises. Scheduled activities are defined in Schedule 1 of the *Protection of the Environment Operations Act 1997* and include the following premise-based activities that apply to the project: *17 Electricity generation* *(1) ...general electricity works, meaning the generation of electricity by means of electricity plant that, wherever situated, is based on, or uses, any energy source other than wind power or solar power.* *(2) Each activity referred to in Column 1 of the Table to this clause is declared to be a scheduled activity if it meets the criteria set out in Column 2 of that Table.* The table referred to in Schedule 1, Clause 17 specifies 'general electricity works' with 'capacity to generate more than 30 megawatts of electrical power'. The project will have a capacity that is greater than 30 MW and will therefore require an environment protection licence.
An approval under Section 138 of the NSW *Roads Act 1993*	Under Section 138 or Part 9, Division 3 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 interaction of the project with the local and regional road network will be addressed in the EIS.
Commonwealth approvals	
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The EPBC Act aims to protect matters of national environmental significance (MNES). If an action will, or is likely to, have a significant impact on any MNES, it is deemed to be a 'controlled action' and requires approval from the Commonwealth Environment Minister or the Minister's delegate. A search of the Commonwealth Protected Matters Search Tool indicates that there are no World Heritage Properties or National heritage places within the vicinity of the site (refer Appendix B). The preliminary biodiversity assessment indicates there is limited potential for listed threatened species and listed migratory species to occur within the study area and along road access options. Field surveys will be undertaken to determine whether the PCTs identified are representative of threatened ecological communities (TECs) listed under the EPBC Act, and therefore whether a referral to the Commonwealth Department of Agriculture, Water and the Environment is required.

Table 4.1 Statutory context

Approval	Requirement
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 study area. A native title claim relevant to the study area was registered on 20 December 2011 on behalf of the Gomeroi People (NC2011/006).
Approvals not required	
Overview	Section 4.41 of the EP&A outlines the following approvals, permits etc are not required for an approved SSD.
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 study area. 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. Notwithstanding, there are no listed heritage items within the study area.
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 study area, primarily associated with White Creek and Browns Creek. Any Aboriginal heritage sites identified within the study area will be avoided as far as practicable through the design process.
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. Construction work near or within watercourses within the study area may be required. These works will be carried out in accordance with DPIE's various guidelines for controlled activities.
Other NSW approvals	
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.

Table 4.1 Statutory context

Approval	Requirement
Mandatory considerations - Considerations under EP&A Act and EP&A Regulation	
Section 1.3 of the EP&A Act	Relevant objectives of the EP&A Act are: *(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,* *(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,* *(c) to promote the orderly and economic use and development of land,* *(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,* *(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),* *(g) to promote good design and amenity of the built environment,* *(j) to provide increased opportunity for community participation in environmental planning and assessment.*
Section 4.15 of the EP&A Act	Pursuant to Section 4.15 of the EP&A Act the consent authority must consider the following relevant matters for consideration: • Relevant environmental planning instruments for the project including: – *State Environmental Planning Policy No. 33 Hazardous and Offensive Development*; – *State Environmental Planning Policy No 55 Remediation of land*; – *State Environmental Planning Policy (Infrastructure) 2007* – *State Environmental Planning Policy (Koala Habitat Protection) 2020*; – *Mid-Western Regional Local Environmental Plan 2012* (Mid-Western Region LEP); and – *Warrumbungle Local Environmental Plan 2013* (Warrumbungle LEP); • Relevant development control plans for the project including: – *Mid-Western Regional Council development control plan 2013*; and – *Warrumbungle development control plan 2017*. • 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; and • the public interest. The above will all be considered in the EIS.
Mandatory considerations - Considerations under other legislation	
Biodiversity Conservation Act 2016	The likely impact of the project on biodiversity values as assessed in the biodiversity development assessment report. The Minister for Planning and Public Spaces may (but is not required to) further consider under that Act the likely impact of the project on biodiversity values.
Mandatory considerations - Environmental planning instruments	
State Environmental Planning Policy No 55 – Remediation of Land, Clause 7	As the development will involve a change of use on land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines (agriculture) is being, or is known to have been, carried out, a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the Managing Land Contamination Planning Guidelines (DUAP 1998).

Table 4.1 Statutory context

Approval	Requirement
State Environmental Planning Policy No 33 – Hazardous and Offensive Development, Clause 8	The EIS will consider the following relevant departmental guidelines: • Applying *State Environmental Planning Policy No. 33 Hazardous and Offensive Development* • HIPAP No. 3 – Risk Assessment • HIPAP No. 12 – Hazards
Mid-Western Regional LEP	The EIS will consider: • the relevant objectives and land uses for RU1 zone • Clause 4.1E Subdivision of land in Zone RU1 for non-agricultural land uses • Clause 6.3 Earthworks • Clause 6.4 Groundwater vulnerability
Warrumbungle LEP	The EIS will consider the following: • Objectives and land uses for RU1 zone • Clause 6.1 Earthworks • Clause 6.4 Groundwater vulnerability
Mandatory considerations Development control plans	
Mid-Western Regional Council development control plan 2013	The EIS will consider the following: • Part 5 Development standards • Part 6 Development in Rural Areas • Part 6.5 Solar Farms
Warrumbungle development control plan 2017	The EIS will consider the following: • Part 5 Rural Development Controls • Part 9 Other Development Controls

5 Engagement

5.1 Overview

UPC\AC has been building a local presence in the region since early 2018. This has involved a large number of one-on-one meetings with local landholders at the stage of assessing the potential for a solar farm site in the area, including landowners associated with the project and neighbouring property owners. It also involved a group meeting with broad landholder participation prior to commencing detailed land security negotiations. In 2021, engagement with neighbouring landholders has intensified in the lead up to preparation of this Scoping Report. In addition, there has been targeted engagement with Mid-Western Regional Council, Warrumbungle Shire Council, community groups and local service providers over the past three years. UPC\AC's engagement principles of adopting a model of consulting early and often, with a view of minimising surprises for the community and stakeholders, aligns with the recently finalised *Undertaking Engagement Guidelines for State Significant Project* (DPIE 2021b).

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. Notwithstanding, the project is considered unlikely to generate significant opposition from the immediate locality and community. This is primarily due to UPC\AC's commitment to open and transparent communication with stakeholders and the community, the fact that UPC\AC representatives have discussed the project widely in the community, combined with the relatively few neighbours living within close proximity of the study area and limited visibility from surrounding roads.

UPC\AC is aware of other projects in the area in proximity to the study area, including UPC\AC's Stubbo Solar Farm (SSD-10452), which was granted development consent in June 2021. The possible impact of multiple projects within the Birriwa/Stubbo/Gulgong/Dunedoo locality will be considered as part of the EIS, including in the SIA.

It is noted that while approximately 10 km from each other, the Birriwa and Stubbo Solar Farms are not within visual aspect of each other, nor are there shared landholders. Topography, road assets and differences in the nearest proximity townships also create a natural delineation between the two sites.

5.2 Community and stakeholder engagement strategy

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

5.3 Scoping study phase consultation

Stakeholder identification has been undertaken as part of the scoping phase for the project. The following key stakeholders for the scoping phase have been identified:

- landholders associated with the project (i.e. those that own land within the development footprint);
- immediate neighbours (non-associated with the project);
- directly impacted neighbours; and
- indirectly impacted neighbours.

UPC\AC has led consultation with landholders associated with the project, immediate neighbours and potentially directly impacted neighbours through face-to-face consultation, letters, emails and phone calls. Directly impacted neighbours are those within a 2km buffer of the site.

5.3.1 Community engagement

As noted above, engagement with the community has intensified in the lead up to preparation of this Scoping Report. In September 2021, UPC\AC published a project website (www.birriwasolarfarm.com.au), Facebook page, dedicated email address (info@birriwasolarfarm.com.au) and project hotline (1800 290 995). UPC\AC also made targeted phone calls and posted a letter and project fact sheet to the following sensitive receptors:

- All landholders within 2 km of the study area boundary; and
- All dwellings within 5 km of the study area boundary.

The letters identified the likely impacts as assessed by UPC\AC, including the indicative proximity to the site and whether or not a visual impact was likely to occur. The Fact Sheet provided key project facts and directed stakeholders to the project website. Further, the letters were signed by a UPC\AC representative and contained their mobile number and email address and encouraged people to get in touch.

The responses received to date from the community engagement are summarised as follows:

- Two neighbouring landowners have expressed concern over the change to the landscape, the visual impact and the cumulative effect of multiple projects in the area.
- One neighbouring landowner enquired about decommissioning, the connection to T-Link and UPC\AC's ownership structure and intentions to sell the project. Concerns regarding visual impact and property devaluation were also flagged. UPC\AC noted the challenges associated with the connection and provided further information to the community member on the UPC\AC joint venture and a Fact Sheet on the project.
- Two members of the Birriwa community indicated their support for the project.
- Dugald Saunders – Member of Parliament for Dubbo noted that there are many projects in the area and enquired whether UPC\AC would be considering a Voluntary Planning Agreement or similar mechanism.

Community engagement will continue to be carried out as described in the communication and engagement plan (Appendix C). Concerns raised during the community engagement will be addressed during ongoing consultation and responses will be summarised in the EIS.

5.3.2 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 5.1 Summary of stakeholder engagement activities

Stakeholder group	Engagement type	Key outcomes
Mid-Western Regional Council	Virtual meeting on 5 August 2021	UPC\AC provided a presentation of the proposed project, including indicative development footprint, timeframes and general strategy. No specific issues were raised at this time. UPC\AC committed to ongoing consultation with Council.
DPIE	Virtual meeting on 9 September 2021 and a follow up virtual meeting on 13 September 2021	UPC\AC and EMM provided a presentation of the proposed development to DPIE and enquired whether there were any specific requirements to be considered prior to lodgement of the Scoping Report. DPIE noted specific items to be addressed, including the importance of cumulative impacts in relation to traffic and other elements, visual and landscape impacts. DPIE requested that consultation with the Biodiversity Conservation Division of DPIE and Warrumbungle Council should occur prior to lodgement of the Scoping Report.
Warrumbungle Shire Council	Virtual meeting on 15 September 2021	• UPC\AC provided a general project presentation, including project schedule, issues to be assessed in the EIS, access via Warrumbungle public roads, community engagement and next steps. Some key aspects raised by Council comprised: Access via Barneys Reef Road (800 metres within Warrumbungle Shire Council) • Accommodation capacity / cumulative impacts with other projects • Community engagement. UPC\AC provided a commitment to on-going consultation with Council, especially in relation to access route and community engagement.
DPIE – Biodiversity Conservation Division	Virtual meeting on 17 September 2021 and follow up email	UPC\AC and EMM provided an overview of the proposed project. The method of assessment for the biodiversity study was discussed, particularly in relation to Category 1 land, the timing of surveys, potential for an EPBC referral and flood assessment approach. The Biodiversity Conservation Division noted that ongoing discussions with them is the preferred approach to confirming methodology for the EIS where there is any uncertainty.

5.4 EIS phase consultation

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 and opportunities;
- 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 5.2, while the communication and engagement plan is provided in Appendix C.

Table 5.2 Proposed EIS consultation purpose and methods

Stakeholder	Purpose	Method
DPIE including: • Environment, Energy and Science Group • Water Group	• informing DPIE of project progress • resolving of issues during EIS preparation • applying DPIE guidelines to engagement activities	• face to face/videoconference meetings; • email and phone correspondence • briefing letters (to Environment, Energy and Science Group and Water Group)
Transport for NSW	• informing Transport for NSW of project progress • 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 • briefing letters
Mid-Western 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) • communicate outcomes of assessments	• face to face/videoconference meetings; • email and phone correspondence • briefing letters
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) • Consultation to inform the SIA	• Face to face/videoconference meetings; • Email and phone correspondence • Briefing letters
TransGrid/EnergyCo	• Informing TransGrid of project progress • Project design discussions	• Face to face/videoconference meetings; • Email and phone correspondence
NSW Environment Protection Authority (EPA)	• Informing EPA of project progress • Following EPA technical assessment guidelines	• Email and phone correspondence • Briefing letters
Relevant local, State and Commonwealth MPs	• Regular project updates	• Face to face/videoconference meetings • Briefing letters
Landholders associated with the project (ie that own land within the development footprint)	• Regular project updates • Identification of key environmental and social concerns • 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 • Newsletters and fact sheets • Community drop-in sessions • Website feedback forms and project information line.

Table 5.2 Proposed EIS consultation purpose and methods

Stakeholder	Purpose	Method
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 • Communication regarding opportunities to lodge a submission on the project	• Newsletters and fact sheets • Interviews and phone calls • Community drop-in sessions • Website feedback forms and project information line.
Wider community	• Regular project updates	• Newsletters and fact sheets • Community drop-in sessions • Website feedback forms and project information line
Aboriginal community	• Regular project updates • Identify Aboriginal cultural heritage values of the study area 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 • Website feedback forms and project information line
Local service providers	• Regular project updates • Identify key environmental, social and economic concerns • 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 • Newsletters and fact sheets • Community drop-in sessions • Website feedback forms and project information line.
Special interest groups	• Regular project updates • Identify key environmental, social and economic concerns	• Face-to-face briefings, interviews and phone calls • Newsletters and fact sheets • Community drop-in sessions • Website feedback forms and project information line.

6 Proposed assessment of impacts

6.1 Introduction

A preliminary environmental assessment 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.

The following sections of this chapter present the identified matters requiring further assessment and the proposed approach to the respective assessments. Matters have been categorised as per the categories identified in the Scoping Report Guidelines (DPIE 2021a). A scoping summary table in accordance with the Scoping Report Guideline is included in Appendix D. Also in accordance with the Scoping Report Guideline, the level of assessment identified for each aspect is as follows:

- Detailed:
  - Visual
  - Biodiversity
  - Traffic
  - Aboriginal heritage
  - Hazards
- Standard:
  - Noise
  - Land resources
  - Water resources
  - Air quality
  - Social
  - Historical heritage.

6.2 Amenity

6.2.1 Visual

i Existing environment

The prevailing flat to gently undulating topography of the study area and surrounding areas, together with remnant roadside vegetation and planted windbreaks, serve to provide a degree of screening of the study area when viewed from surrounding residences, local roads, the Castlereagh Highway, Golden Highway and adjacent agricultural land.

Preliminary viewshed analysis carried out from the respective viewpoints of the scattered rural residences in the vicinity of the study area indicate that it has varying levels of visibility from these residences. Several adjacent or nearby elevated residences are likely to experience significant viewsheds over the project site, but this will be assessed in greater detail to confirm the veracity of the preliminary viewshed assessments. The study area is also visible from generally discrete viewpoints along the Castlereagh Highway and Golden Highway.

There are five nearby residences not associated with the project with the potential to have a higher degree of impact from the project, comprising:

- a property located on Birriwa Bus Route South on the southern boundary of the study area. The prevailing topography of the study area may assist in screening views of parts of the site from this residence, however there will likely be views to the south-east portion of the study area from this residence;
- a property located adjacent to the north-eastern boundary of the site has a dwelling which borders the study area and will have views from the residence over the northern portion of the site;
- a dwelling located immediately opposite the northern boundary of the study area, on the other side of the Birriwa Bus Route North; and
- two dwellings located near the north-western corner of the study area.

A detailed viewshed assessment, including on-site assessments and discussions with affected landholders, will be undertaken as part of the EIS methodology.

ii Assessment approach

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 residences, scenic or significant vistas, air traffic and road corridors in the public domain. A comprehensive viewshed analysis utilising light detection and ranging data, aerial imagery and results from site inspections and stakeholder engagement will be performed to identify locations within a local setting (including public viewpoints) 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 impacts on visual amenity. The potential for any visual or landscape impacts to cumulate from other proposed, approved, under construction and operational renewable energy developments will also be considered. Cumulative impact assessment is described further in Section 6.11.

6.2.2 Noise and vibration

i Existing environment

Land use in the study area 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 and vehicle movements along the local and regional road, along with some intermittent noise from the rail network.

ii Assessment approach

The construction of the project and its access roads have potential to create noise and vibration impacts for surrounding landholders within and adjacent to the study area. Noise generated by the project will include construction noise, and noise generated by increased traffic along the local road network.

During the operational phase of the project, noise generated is anticipated to be minimal, consisting of noise associated with vehicle movements within the study area and electrical infrastructure such as transformers, power conversion units, the BESS and substation. It is unlikely that the operation of the solar farm will produce any vibration impacts.

Noise and vibration will be assessed in the EIS in accordance with the:

- *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).

A road traffic noise assessment will also be included in the EIS to assess noise impacts associated with project-related vehicle movements along the local road network during the construction phase of the project.

6.3 Biodiversity

6.3.1 Existing environment

The study area is in the NSW South Western Slopes Interim Biogeographic Regionalisation for Australia Bioregion and the Inland Slopes subregion. The Talbragar - Upper Macquarie Terrace Sands and Gravels Mitchell Landscape dominates the study area with a small portion of Cope Hill Granite mapped in the south-west corner.

i Plant Community Types and Threatened Ecological Communities

Review of the State Vegetation Type Mapping, Central West/Lachlan Region (OEH 2015) indicates that a large majority (over 90% of the study area) is mapped as non-native and considered cleared. This is supported by recent and historical aerial imagery showing widespread evidence of agriculture including plough lines, farm dams and cropping. The State Vegetation Type Mapping also indicates that there are small patches of native vegetation, with seven Plant Community Types (PCTs) mapped (refer to Table 6.1 and Figure 6.1).

Five of the PCTs are aligned with two different threatened ecological communities (TECs) (Table 6.1):

- The Endangered Ecological Community (EEC) Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions (referred to as Inland Grey Box EEC); and,

- The Critically Endangered Ecological Community (CEEC) White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions (also referred to as Box-Gum CEEC).

Both TECs are listed under the NSW BC Act 2016 and the Commonwealth EPBC Act, albeit with different determinations. A key example is the specific condition requirements for woodland and derived native grassland to meet the Box Gum Woodland under the EPBC Act listing. In contrast, the BC Act list has few condition requirements to meet the listing. Derived grassland are grasslands where the canopy (trees) has been cleared; however, native groundcover species remain.

The Box-Gum CEEC is also a candidate for Serious and Irreversible Impacts. While the approval authority can approve a proposal which is likely to have serious and irreversible impacts, they 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.

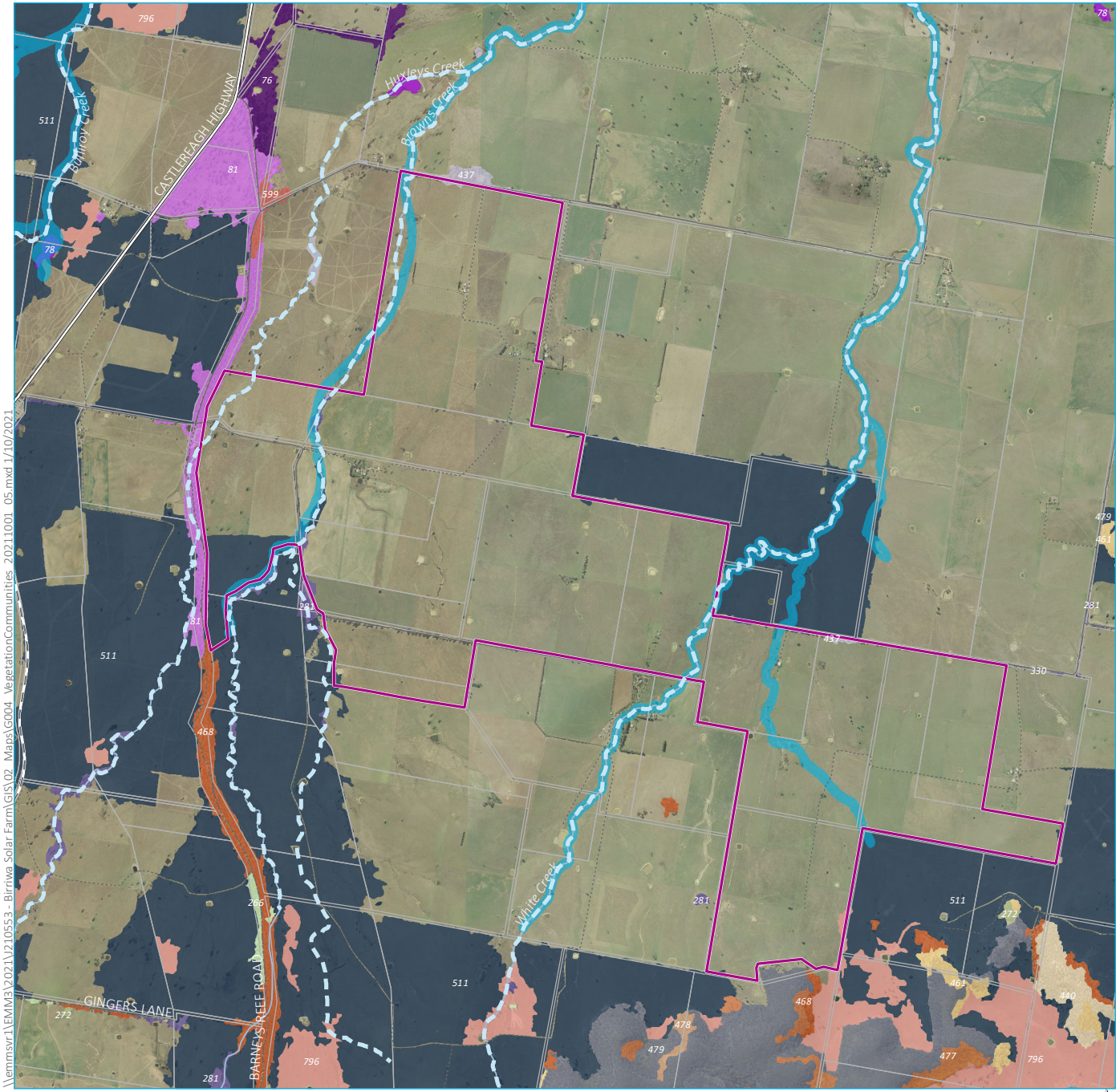
In addition to these TECs, Weeping Myall Woodlands were identified using the Commonwealth Protected Matters Search Tool (PMST) as having potential to occur in the Study Area. No PCTs aligned with this community have been identified by the State Vegetation Type Mapping.

Table 6.1 Plant Community Types and Threatened Ecological Communities mapped by the State Vegetation Type Mapping within the study area

Plant Community Type	Area (ha)	BC Act	EPBC Act
81 - Western Grey Box - cypress pine shrub grass shrub tall woodland in the Brigalow Belt South Bioregion	2.5	Inland Grey Box EEC*	Inland Grey Box EEC*
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	4.7	Box Gum CEEC#	Box Gum CEEC#
437 - Yellow Box grassy woodland on lower hillslopes and valley flats in the southern NSW Brigalow Belt South Bioregion	1.6	Box Gum CEEC#	Box Gum CEEC#
468 - Narrow-leaved Ironbark - Black Cypress Pine / Blakely's Red Gum shrubby open forest on sandstone low hills in the southern Brigalow Belt South Bioregion (including Goonoo)	0.2	Not listed	Not listed
511 - Queensland Bluegrass - Redleg Grass - Rats Tail Grass - spear grass - panic grass derived grassland of the Nandewar Bioregion and Brigalow Belt South Bioregion	30.3	Box Gum CEEC#	Box Gum CEEC#
796 - Derived grassland of the NSW South Western Slopes	1.3	Box Gum CEEC#	Box Gum CEEC#
Cleared	1,201.4		
Total	1,242		

*Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions

#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



KEY

- Study area
- Rail line
- Major road
- Minor road
- Vehicular track
- Named watercourse
- Cadastral boundary
- Purple-spotted Gudgeon suitable habitat
- Key fish habitat

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
- 78 | River Red Gum riparian tall woodland/open forest wetland in the Nandewar Bioregion and Brigalow Belt South Bioregion
- 81 | Western Grey Box - cypress pine shrub grass shrub tall woodland in the Brigalow Belt South Bioregion
- 266 | White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
- 272 | White Box - Black Cypress Pine - red gum +/- Mugga Ironbark shrubby woodland in hills of the NSW central western slopes
- 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
- 330 | Mugga Ironbark - Black Cypress Pine - Red Stringybark - Blakelys Red Gum - Red Ironbark woodland on hillslopes and in valleys on ranges in the NSW central western slopes
- 437 | Yellow Box grassy woodland on lower hillslopes and valley flats in the southern NSW Brigalow Belt South Bioregion
- 440 | Red Stringybark - Narrow-leaved Ironbark - Black Cypress Pine - hill red gum sandstone woodland of southern NSW Brigalow Belt South Bioregion
- 461 | Tumbledown Gum woodland on hills in the northern NSW South Western Slopes Bioregion and southern Brigalow Belt South Bioregion
- 468 | Narrow-leaved Ironbark - Black Cypress Pine +/- Blakelys Red Gum shrubby open forest on sandstone low hills in the southern Brigalow Belt South Bioregion (including Goonoo)
- 477 | Inland Scribbly Gum - Red Stringybark - Black Cypress Pine - Red Ironbark open forest on sandstone hills in the southern Brigalow Belt South Bioregion and northern NSW South Western Slopes Bioregion
- 478 | Red Ironbark - Black Cypress Pine - stringybark +/- Narrow-leaved Wattle shrubby open forest on sandstone in the Gulgong - Mendooran region, southern Brigalow Belt South Bioregion
- 479 | Narrow-leaved Ironbark- Black Cypress Pine - stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bioregion
- 511 | Queensland Bluegrass - Redleg Grass - Rats Tail Grass - spear grass - panic grass derived grassland of the Nandewar Bioregion and Brigalow Belt South Bioregion
- 599 | Blakelys Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion
- 796 | Derived grassland of the NSW South Western Slopes

\\emmsvr1\EMM3\2021\P210553 - Birriwa Solar Farm\GIS\02_Maps\G004_VegetationCommunities_20211001_05.mxd 1/10/2021

Source: EMM (2021); DFSI (2017); GA (2011); DPE (2017); UPC (2021)

0 1 2 km

GDA 1994 MGA Zone 55

N

Regional vegetation mapping

Birriwa Solar Farm
Scoping Report
Figure 6.1

EMM
creating opportunities

ii Threatened species

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

- any species associated with the seven PCTs identified in the State Vegetation Type Mapping;
- MNES report generated from the Commonwealth PMST (refer to Appendix B);
- habitat distribution maps for aquatic species (DPI 2016-2020); and
- atlas records from a Bionet search (10 km buffer of the study area).

A threatened species list was compiled from the above sources. The list includes 78 terrestrial threatened species comprising 2 amphibians, 37 birds, 21 flora, 13 mammals and 4 reptiles.

Interrogation of the Department of Primary Industries mapping for key fish habitat and threatened species distributions (DPI 2016-2020) revealed that three creeks (White Creek, Brown's Creek and an unnamed creek) within the study area are mapped as key fish habitat (refer to Figure 6.1). Each of these are Strahler Order 3 watercourses.

Further, three watercourses (White Creek, Huxley's Creek and an unnamed creek) are within the mapped distribution for the threatened Southern Purple Spotted Gudgeon (*Mogurnda adspersa*).

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

a Assessment of 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.

To understand the likely targeted survey requirements for threatened species, a preliminary candidate species list has been compiled from the 78 threatened species listed above. This is limited to species credit and dual credit species (refer to Table 6.2). This includes the seasonal survey timing requirements for each species. There are 49 preliminary candidate species identified using this approach. Five of these species credit species are also listed as candidates for Serious and Irreversible Impacts.

It is anticipated that the candidate species list will be able to be reduced after field surveys. Given the highly cleared nature of the study area it is likely that many of the habitat requirements for the threatened species will be absent or degraded, allowing exclusion on this basis. The field surveys may also identify different PCTs or find less PCTs than the State Vegetation Type Mapping, which will in turn affect the threatened species generated by vegetation associations.

Table 6.2 Preliminary candidate species for targeted survey consideration

Scientific name	Common name	Credit class	BC Act	EPBC Act	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Amphibians																
Crinia sloanei	Sloane's Froglet	S	V	E	No	No	No	No	No	No	Yes	Yes	No	No	No	No
Litoria booroolongensis	Booroolong Frog	S	E	E	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
Birds																
Anthochaera phrygia	Regent Honeyeater	S/E	CE	CE	No	No	No	No	No	No	No	No	No	No	No	No
Burhinus grallarius	Bush Stone-curlew	S	E	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calidris ferruginea	Curlew Sandpiper	S/E	E	CE	No	No	No	No	No	No	No	No	No	No	No	No
Callocephalon fimbriatum	Gang-gang Cockatoo	S/E	V	-	Yes	No	No	No	No	No	No	No	No	Yes	Yes	Yes
Calyptorhynchus lathami	Glossy Black-Cockatoo	S/E	V	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Haliaeetus leucogaster	White-bellied Sea-Eagle	S/E	V	-	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Hieraaetus morphnoides	Little Eagle	S/E	V	-	No	No	No	No	No	No	No	Yes	Yes	Yes	No	No
Lathamus discolor	Swift Parrot	S/E	E	CE	No	No	No	No	No	No	No	No	No	No	No	No
Lophochroa leadbeateri	Major Mitchell's Cockatoo	S/E	V	-	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Lophoictinia isura	Square-tailed Kite	S/E	V	-	Yes	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Ninox connivens	Barking Owl	S/E	V	-	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ninox strenua	Powerful Owl	S/E	V	-	No	No	No	No	Yes	Yes	Yes	Yes	No	No	No	No

Table 6.2 Preliminary candidate species for targeted survey consideration

Scientific name	Common name	Credit class	BC Act	EPBC Act	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Numenius madagascariensis	Eastern Curlew	S/E	-	CE	No	No	No	No	No	No	No	No	No	No	No	No
Polytelis swainsonii	Superb Parrot	S/E	V	V	No	No	No	No	No	No	No	No	Yes	Yes	Yes	No
Tyto novaehollandiae	Masked Owl	S/E	V	-	No	No	No	No	Yes	Yes	Yes	Yes	No	No	No	No
Flora																
Acacia ausfeldii	Ausfeld's Wattle	S	V	-	No	No	No	No	No	No	No	Yes	Yes	Yes	No	No
Austrostipa wakoolica	A spear-grass	S	E	E	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
Dichanthium setosum	Bluegrass	S	V	V	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes
Diuris tricolor	Pine Donkey Orchid	S	V	-	No	No	No	No	No	No	No	No	Yes	Yes	No	No
*Eucalyptus alligatrix subsp. Alligatrix**	-	S	V	V	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
*Euphrasia arguta**	-	S	CE	CE	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes	Yes
Homoranthus darwinioides	Fairy Bells	S	V	V	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
*Indigofera efoliata**	Leafless Indigo	S	E	E	No	No	No	No	No	No	No	Yes	Yes	Yes	No	No
Leucochrysum albicans var. tricolor	Hoary Sunray	S	-	E	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes
Persoonia marginata	Clandulla Geebung	S	V	V	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No
Pomaderris queenslandica	Scant Pomaderris	S	E	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prasophyllum petilum	Tarengo Leek Orchid	S	E	E	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes

Table 6.2 Preliminary candidate species for targeted survey consideration

Scientific name	Common name	Credit class	BC Act	EPBC Act	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
*Prasophyllum sp. Wybong**	-	S	-	CE	No	No	No	No	No	No	No	No	Yes	Yes	No	No
Swainsona recta	Small Purple-pea	S	E	E	No	No	No	No	No	No	No	No	Yes	Yes	Yes	No
Swainsona sericea	Silky Swainson-pea	S	V	-	No	No	No	No	No	No	No	No	Yes	Yes	Yes	No
Thesium australe	Austral Toadflax	S	V	V	Yes	Yes	No	No	No	No	No	No	No	No	Yes	Yes
Tylophora linearis	-	S	V	E	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes
Zieria ingramii	Keith's Zieria	S	E	E	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Mammals																
Cercartetus nanus	Eastern Pygmy-possum	S	V	-	Yes	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Yes
*Chalinolobus dwyeri**	Large-eared Pied Bat	S	V	V	Yes	No	No	No	No	No	No	No	No	No	Yes	Yes
*Miniopterus orianae oceanensis**	Large Bent-winged Bat	S/E	V	-	Yes	Yes	No	No	No	No	No	No	No	No	No	Yes
Petaurus norfolcensis	Squirrel Glider	S	V	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Petrogale penicillata	Brush-tailed Rock-wallaby	S	E	V	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Phascogale tapoatafa	Brush-tailed Phascogale	S	V	-	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes
Phascolarctos cinereus	Koala	S/E	V	V	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reptiles		S/E	V	V	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
Aprasia parapulchella	Pink-tailed Legless Lizard															

Table 6.2 Preliminary candidate species for targeted survey consideration

Scientific name	Common name	Credit class	BC Act	EPBC Act	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Delma impar	Striped Legless Lizard	S	V	V	No	No	No	No	No	No	No	No	Yes	Yes	Yes	No
Hoplocephalus bitorquatus	Pale-headed Snake	S	V	V	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes

1. Credit class: S = species credit, S/E = dual species/ecosystem credit
2. EPBC and BC act Status: V = Vulnerable, E = Endangered and CE = Critically Endangered.
3. *indicates candidate for Serious and Irreversible Impacts.

iii Potential matters of national environmental significance

A preliminary desktop assessment was completed on 14/07/2021 using the EPBC Act PMST (Department of Agriculture, Water and the Environment 2021) to identify potential MNES in the vicinity of the study area. A search radius of 10 km was applied to a central point location.

The PMST indicated three listed ecological community types as likely to occur; the Grey Box Grassy Woodlands and Derived Native Grasslands of South-eastern Australia, White Box-Yellow Box Blakely's Red Gum Grassy Woodland Derived Native Grassland and the Weeping Myall Woodlands.

The PMST identified 33 listed threated species as potentially occurring within the investigation areas.

Regional vegetation mapping identified both Box Gum Woodland and Grey Box Grassy Woodlands as small patches within the study area and mapped along road verges. No Weeping Myall Woodlands were recorded within the regional mapping.

6.3.2 Assessment approach

The potential biodiversity impacts of the project will be assessed in accordance with the Biodiversity Assessment Method (DPIE, 2020). This assessment will include, but not limited to, the following:

- detailed vegetation mapping in the field to map PCT and stratify these PCTs into broad condition states (vegetation zones). The State Vegetation Type Mapping has not been ground truthed, and whilst a good starting point, it requires field verification. A key focus will be on the areas mapped as non-native/cleared, given that they occupy the vast majority of the study area, and consideration given as to whether any derived native grassland occur, thus requiring offsetting;

- 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 study area 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 DPIE/DAWE will be contacted;

- 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;

- 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; and

- preparation of a Biodiversity Development Assessment Report in accordance with the Biodiversity Assessment Method. The Biodiversity Development Assessment Report 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

An Aboriginal Heritage Information Management System (AHIMS) search over a 10 km^2 area centred on the study area was carried out. There are no AHIMS registrations within the study area. The nearest registration is an artefact scatter (AHIMS ID 36-2-0515/Ulan ID #1675 MC417) approximately 1.4 km south-east of the nearest study area boundary (Lot 32 DP750755), as shown in Figure 6.2. However, the absence of registrations on AHIMS is most accurately considered a product of the level of prior assessment, as opposed to the absence of Aboriginal cultural values. It is considered that there is high potential for Aboriginal sites to occur in the area, primarily associated with White Creek and Browns Creek. Given the high level of land clearance, unobtrusive site types are most likely to be identified, such as isolated finds and artefact scatters. However, scarred trees are possible amongst mature vegetation, most commonly associated with roadside vegetation along potential access routes, as well as grinding groove sites which have been documented in the locality and may occur on-site if suitable outcropping is present.

An inspection of the study area confirmed a high level of land clearance and modification due to agricultural land uses, which will have direct implications on archaeological preservation.

ii Assessment approach

Without appropriate Aboriginal cultural heritage assessment and implementation of avoidance measures, the project has the potential to impact on Aboriginal cultural heritage through the disturbance or destruction of Aboriginal heritage sites potentially present within the study area.

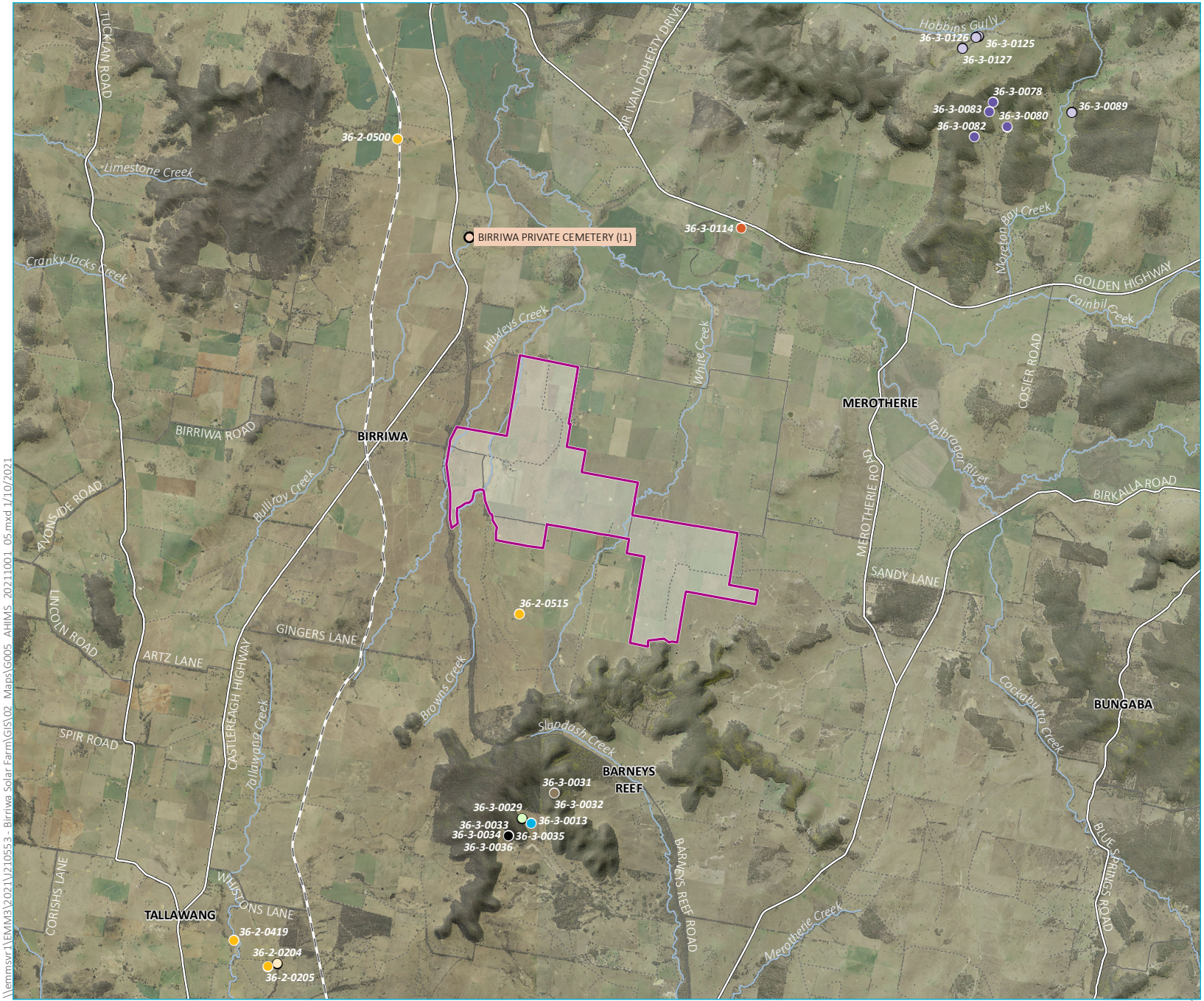
An Aboriginal cultural heritage assessment (ACHA) will be prepared for the project in accordance with relevant regulations and guidelines, including:

- *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 approach to the ACHA is summarised below.

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.



\\emmsvr1\EMM3\2021\210553 - Birriwa Solar Farm\GIS\02 Maps\G005 AHIMS 20211001 05.mxd 1/10/2021

Source: EMM (2021); DFSI (2017); GA (2011); OEH (2021); DPE (2017); UPC (2021)

AHIMS and listed historical heritage sites

Birriwa Solar Farm
Scoping Report
Figure 6.2

EMM
creating opportunities

Consultation must be in accordance with the consultation guidelines with the following stages:

- **Stage 1:** Notification and registration of Aboriginal parties (approximately one month to complete). This stage also requires that a media notice be placed in a local newspaper to advertise for interested Aboriginal groups (note that this stage has been completed at the time of preparing the Scoping Report).

- **Stage 2:** Presentation of the project and assessment methods (mandatory minimum 28-day review period).

- **Stage 3:** Gathering information about Aboriginal cultural heritage (from registered Aboriginal parties). This stage initiated upfront with Stage 2 so that it may guide the archaeological survey. Cultural information will also be welcomed throughout the ACHA phase.

- **Stage 4:** Aboriginal community review of draft ACHA (mandatory minimum 28 day review period). Depending on the complexity of the results and proposed management measures, a consultation meeting may be necessary during this stage, however it has not been costed for at this stage. Stage 4 also includes the additional task of responding to RAP comments/submissions in the final report.

Aboriginal consultation includes keeping a consultation register that records all relevant communication with registered Aboriginal parties and the outcomes of that communication. The consultation log is an essential part of the ACHA.

b Desktop assessment and predictive model

A desktop assessment will be carried out comprising:

- review of existing environment: the landscape context of the proposed area will be reviewed to identify the likelihood of Aboriginal objects to have been deposited and the likelihood of their preservation in light of historical and natural site disturbance processes; and

- literature review: relevant previous archaeological investigations and ethnographical records will be reviewed to determine if Aboriginal objects have been recorded on similar landscapes in the local area.

A predictive model of Aboriginal site locations will be prepared with the aid of GIS analysis and mapping. The results of the predictive model will form the basis of the archaeological survey. This information will be used to:

- target the survey towards areas of higher archaeological sensitivity;

- allow the inspection of specific cultural areas, if identified by the Aboriginal community; and

- gather a representative sample of areas of lower archaeological sensitivity to verify predictions and characterise the nature of archaeological record.

c Archaeological survey

An archaeological survey is required to meet the requirements of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010). Survey will be undertaken once registered Aboriginal parties have been identified and provided with the opportunity to comment on the proposed assessment methods. The archaeological survey will aim to:

- identify previously unrecorded Aboriginal sites or identify Aboriginal places of cultural with the aid of local Aboriginal knowledge holders; and

- identify areas with subsurface archaeological potential.

Potential project constraints identified during the survey will inform refinement of the project development footprint (where possible) to minimise impacts to Aboriginal heritage values.

6.4.2 Historical heritage

i Existing environment

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

- Mid-Western Regional LEP;
- Warrumbungle Shire LEP;
- Australian Heritage Database; and
- NSW State Heritage Branch.

There are no National, State or Local listed heritage items identified within the study area. The closest heritage item to the study area is the Birriwa Private Cemetery adjacent to the Castlereagh Highway listed under the Warrumbungle Shire LEP, approximately 2 km north-north-west of the study area (refer to Figure 6.2).

While there will be no direct impacts on this listed item, 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 study area 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 place 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

The study area is within the Mid-Western Regional LGA on the boundary of the Warrumbungle Shire LGA.

The population of the Mid-Western Regional LGA in 2020 was 25,367 with a median age of 43 years. The largest employer in the LGA is mining which employs 6.24% of the labour force; followed by retail trade which employs 3.59% of the labour force; with agriculture, forestry and fishing employing 3.34% of the local labour force. Unemployment in the LGA was at 4.7% in December 2020 which is lower than the NSW unemployment rate of 6.2% (REMPLAN 2020a).

The population of the Warrumbungle Shire LGA in 2020 was 9,209, with a median age of 50 years. The largest employer in the LGA is agriculture, forestry and fishing employing 9.51% of the labour force, followed by retail trade which employs 2.29% of the labour force. The unemployment rate in the LGA was 2.68% (REMPLAN 2020b)

The project is within the locality of Birriwa which has a population of 49 (ABS 2016). The township of Dunedoo NSW in the Warrumbungle Shire LGA, approximately 15 km north-west of the study area is the nearest population centre to the project with a population of 1,221 (ABS 2016). Other nearby population centres in the vicinity of the project include Gulgong population 2521, approximately 20 km south; Coolah population 795, approximately 40 km north; Mudgee population 10,923, approximately 60 km south; and Merriwa population 1761, approximately 100 km east of the study area (ABS 2016).

6.5.2 Assessment approach

DPIE has recently finalised the new *Social Impact Assessment Guideline for State Significant Projects 2021* (SIA Guideline 2021). The SIA Guideline will officially commence on 1 October 2021, meaning reference to the guideline will be included in the SEARs issued for all SSD projects from that time.

An SIA will be prepared for the project in accordance with the SIA Guideline. The SIA will be proportional with the scale, complexity and likely impacts and benefits of the project. The SIA will consider the following aspects, which are as per the SIA Guideline technical supplement recommendation for large-scale solar farms with battery storage and transmission infrastructure within 5 km of residential areas:

- How might the project affect the values/character that people associate with the community?
- Will the project materially change how people experience the landscape and nature values through perceived industrialisation?
- Will the project affect people's ability to sustain themselves through employment or business opportunities?
- Will the economic benefits and impacts be equally distributed, i.e., between local and regional communities?
- Will Aboriginal people have the ability to gain sustenance (spiritual or otherwise) from the land?
- Can affected people make informed decisions or feel they can influence project decisions, including elements of project design?

An SIA scoping worksheet has been prepared in accordance with the SIA Guideline 2021 and is provided in Appendix E. The SIA will involve completion of the following stages of assessment.

i Stage 1 - social baseline study

A social baseline study will be prepared, including the following aspects of the local and extended area of social influence:

- the demography of the area of social influence;
- analysis of the community characteristics (community culture and values, community history, community well-being, land/property ownership and utilisation of natural resources);
- identification of vulnerable groups and the capacity of potentially affected community members to participate in the community and stakeholder engagement;
- an overview of land use and key industries in the region, and relevant local and state government plans;

- identification of the capacity and accessibility of infrastructure, facilities, and services, including education, health, and emergency services;
- analysis of the existing housing and accommodation market in the local area and in the Central West region, including availability, capacity, and affordability;
- a profile of the local and regional labour market, including an assessment of available workforce with relevant skills to service the project; and
- a summary of other resource and infrastructure projects in the area of social influence, both planned and currently operating, based on publicly accessible information.

The social baseline will provide a comprehensive understanding of the communities that will be potentially directly and indirectly impacted by the project.

ii Stage 2 - field study

Social research methods will be utilised to collect qualitative and quantitative data, which may include a combination of online surveys and in-depth interviews with key stakeholders. Information collected during community and stakeholder consultation and engagement activities will assist in the validation of data collected during the Stage 1 social baseline survey and will assist in determining the community and stakeholder perceptions of social impacts.

iii Stage 3 - social impact identification

The identification of potential social impacts and benefits from the project will be completed through triangulation of the findings from:

- social baseline study;
- SIA field study;
- EIS technical studies, i.e. noise, land and soil, heritage, biodiversity, traffic, and water;
- other similar projects and available literature to identify potential impacts; and
- community consultation conducted by the project engagement team.

This analysis will inform the socioeconomic risk assessment outlined in Stage 4.

iv Stage 4 - social risk assessment

Each of the potential social impacts identified will be assessed to predict the nature and scale of potential impacts for the life of the project and post closure. A social risk and benefit approach will be adopted to assess the consequence and likelihood of potential negative social impacts without mitigation. If impacts are assessed as significant, a significance assessment will be undertaken to determine the residual risk (i.e. once mitigation measures are applied).

The results from the social risk assessment will be used to inform priorities for the implementation of impact mitigation and benefit enhancement measures (Stage 5).

v Stage 5 - social impact management and monitoring

The social impact management and monitoring for the identified social impacts will consider:

- impact mitigation measures for construction and operations if required;
- potential benefit enhancement strategies for project construction and operations;
- workforce strategies such as strategic hiring and training;
- monitoring of accommodation capacity in the local area and the broader Central West region, especially in the context of cumulative impacts of construction of other renewable energy projects in the CWO REZ; and
- community investment programs to meet needs and aspirations of communities in the areas of social influence.

The EIS will use the findings from Stages 1 – Stage 4 to inform the development of the social impact management plan to form part of the SIA Report.

6.6 Traffic

6.6.1 Existing environment

The study area is accessible via both the Castlereagh Highway via Birriwa Bus Route South or Barneys Reef Road and via the Golden Highway via Merotherie Road and Birriwa Bus Route South. The Golden Highway and Castlereagh Highway are both approved B-double transport routes.

The local roads are unsealed Council-owned roads with minimal or no through traffic and are used primarily to access the agricultural landholdings and scattered rural residences. Barneys Reef Road in vicinity of the study area is a forest track with limited access, even via four-wheeled drive.

The Central West Cycle Trail, a 400 km cycle route through the back roads of the Central West of NSW, also traverses a portion of the study area and Birriwa Bus Route South which forms part of the southern boundary of the study area.

6.6.2 Assessment approach

i Site access

It is anticipated that construction materials and infrastructure will largely be transported to the study area via road from Newcastle or Sydney. Construction deliveries from Newcastle would use the New England Highway, John Renshaw Drive, Hunter Expressway, Golden Highway and Castlereagh Highway, while Sydney deliveries would use the M1 Motorway to the Hunter Expressway, and then use the same route as deliveries from Newcastle.

As describe in Chapter 3, there are two possible options for the dedicated site access currently under consideration:

- via the Castlereagh Highway/Barneys Reef Road intersection and Barneys Reef Road to the study area; or
- via the Castlereagh Highway/Birriwa Bus Route South intersection and Birriwa Bus Route South to the study area.

Both options may require upgrades to the local road network, potentially impacting on adjacent roadside vegetation.

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

ii Traffic impact assessment

A traffic impact assessment will be carried out to investigate potential impacts associated with the project. The traffic impact assessment will include the following key elements:

- projections of traffic volumes (both light and heavy vehicles) and transport routes during construction and operation;
- assessment of the potential traffic impacts of the project on road network function, including intersection performance, site access arrangements and road safety, including school bus routes and cyclist safety;
- assessment of the capacity and condition of the existing road network to accommodate the type and volume of traffic generated by the project (including over size vehicles, cover mass vehicles and escorted deliveries) during construction and operation, with any potential cumulative impacts from other projects in the area being taken into account; and
- provide details of measures to manage potential impacts, including a schedule of required road upgrades, road maintenance contributions, and other traffic control measures, developed in consultation with the relevant road authority.

6.7 Hazards and risks

Potential hazardous scenarios and risks associated with the project include bushfires, dangerous goods and hazardous substances and exposure to electromagnetic fields. Accordingly, the EIS will include the following:

- an assessment of potential hazards and risks, including but not limited to, bushfires and electromagnetic fields for the proposed grid connection infrastructure. The project will be assessed against the International Commission on Non-Ionizing Radiation Protection *Guidelines for limiting exposure to Time-varying Electric, Magnetic and Electromagnetic Fields.*
- a Preliminary Hazard Analysis prepared in accordance with *Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis* (Department of Planning 2011a) and *Multi-Level Risk Assessment* (Department of Planning 2011b).

There is no established evidence that the exposure to electromagnetic fields generated by powerlines, substations and other electrical sources can cause adverse health effects (ARPANSA 2018). Generally, distances beyond 50 metres from a high voltage powerline are not expected to have higher than typical magnetic fields and for substations, magnetic field levels at distances of 5-10 metres away are no higher than background levels in a typical home. Electromagnetic fields that are anticipated to be generated by the project are not expected to exceed guidelines for public exposure and will not cause adverse impacts for human health. The electromagnetic field levels of the project including substation, BESS, power conversion units and transmission line (if included in the project) will be assessed as part of the EIS but are not anticipated to increase electromagnetic field levels in a material way above existing background environmental levels.

6.8 Land resources

6.8.1 Existing environment

Soils across the study area are mapped as sodosols under the Australian Soil Classification system. Sodosols have a strong texture contrast between surface horizons and subsoil horizons. Generally, sodosols have low agricultural potential, high erodibility, poor structure and low permeability (Grey and Murphy 2002). A review of the eSpade database confirmed there is no mapped Biophysical Strategic Agricultural Land in the study area.

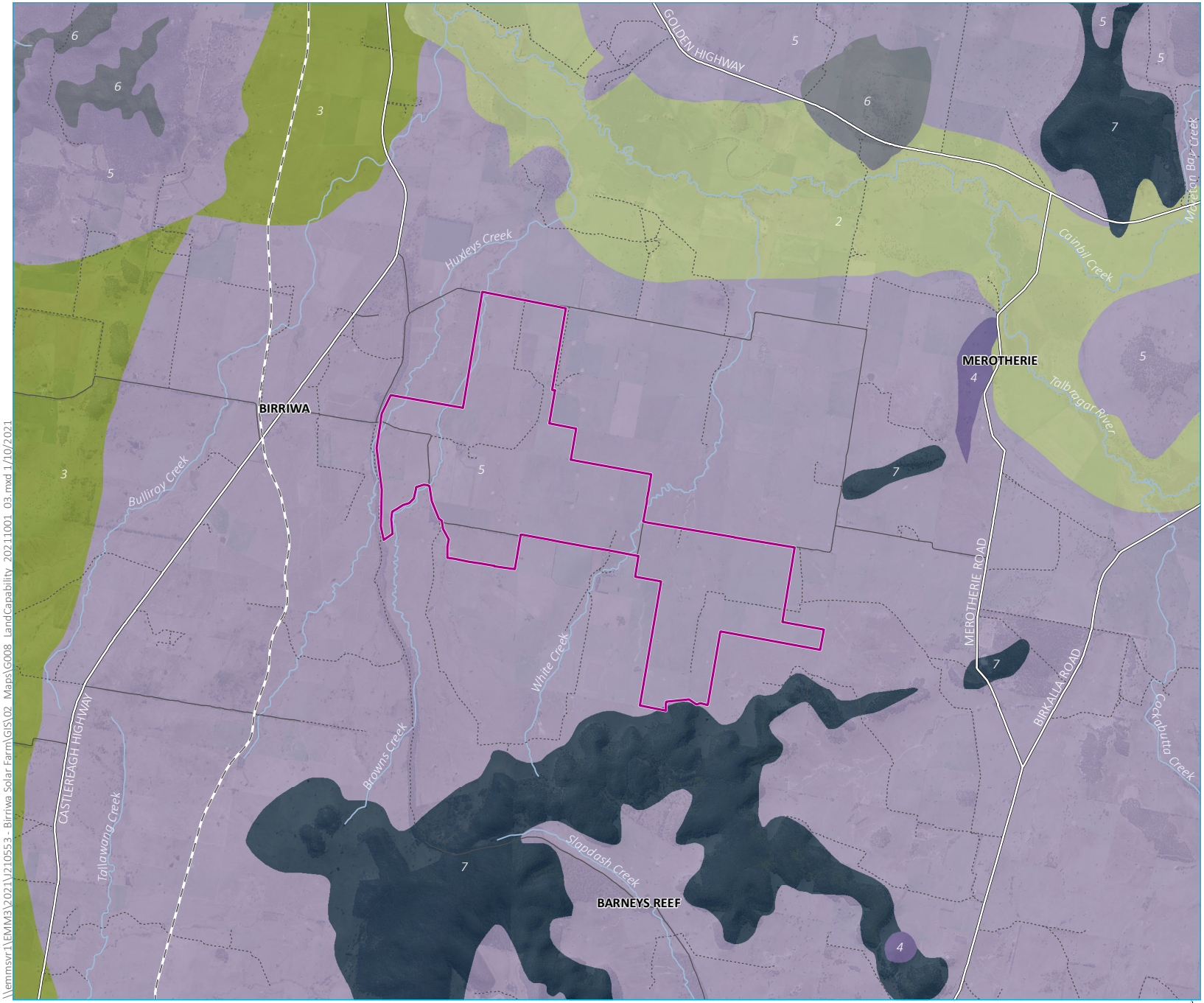
There are significant areas of gully and creek erosion within the study area, with a review of eSPADE database indicating the study area is mapped as having low to moderate erosion risk.

As noted in Section 2.1, the study area is currently used for the purposes of sheep and cattle grazing as well as low intensity dry land cropping. The study area is mapped as Class 5 under the land and soil capability assessment scheme, as shown in Figure 6.3. Class 5 is characterised as moderate to low capability land. Class 5 land has high limitations for high-impact land uses. These limitations will largely restrict land use to grazing, some horticulture, forestry and nature conservation (OEH 2012). The limitations need to be carefully managed to prevent long-term degradation.

6.8.2 Assessment approach

As part of the EIS, a land use conflict risk assessment will be undertaken in accordance with DPI's (2011) *Land Use Conflict Risk Assessment Guideline* and in consultation with neighbouring landholders. The land use conflict risk assessment will assess the project's potential impacts on neighbouring agricultural operations. Should they be required, land management practices will be implemented to avoid or minimise potential impacts on neighbouring agricultural operations.

Consideration of impacts to soils and the potential for erosion and sedimentation issues will be included in the EIS. The soil assessment will focus on soil disturbance during construction and rehabilitation where required. Geotechnical investigations will take place at a later stage of the project development prior to construction commencing.



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Source: EMM (2021); DFSI (2017); GA (2011); DIPNR (2004); UPC (2021)

Land and soil capability class

Birriwa Solar Farm
Scoping Report
Figure 6.3

EMM
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6.9 Water resources

6.9.1 Existing environment

The study area is located within the Macquarie-Bogan River Catchment. The catchment covers an area of more than 74,000 km^2 within the Murray-Darling Basin. Several non-perennial tributaries of the Talbragar River, including the named watercourses Huxleys Creek, Browns Creek and White Creek, flow through the study area in a generally northerly direction before joining the Talbragar River, approximately 3 km to the north of the study area (refer to Figure 1.2). The tributaries comprise first-, second- and third-stream order watercourses under the Strahler system. A review of LEP flood planning maps did not identify any flood planning areas in or in the vicinity of the study area. There are multiple farm dams within the study area.

Areas of the study area are identified as 'groundwater vulnerable' on the Mid-Western Region LEP Groundwater vulnerability map. Clause 6.4 of the Mid-Western LEP 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.

6.9.2 Assessment approach

The project will avoid the most significant watercourses and riparian corridors within the study area where regulations and guidelines do not allow or recommend specific infrastructure. Within and along other minor waterways to be identified in the EIS, specific design considerations and mitigation measures may be carried out while minimising potential impacts. In addition, roads and services that require watercourse crossings will be designed and constructed in accordance with relevant regulations and best practice design and construction methods.

Potential impacts to water resources from the project are expected to include demand for water during the construction of the project, as well as for land management during operations. The project is not likely to impact groundwater during construction, operation or decommissioning due to the limited amount of subsurface disturbance activities required during the installation and decommissioning of project infrastructure. Unless water can be opportunistically sourced from dams or treated wastewater from a nearby facility, tanked water is typically brought in where needed. If surface water or groundwater extraction is required to meet the project's demand for water, an assessment of impacts for these water sources will be included in the EIS. Impacts of the traffic associated with water trucks will be assessed in the EIS in accordance with Section 6.6.

The surface water assessment will include a review of the existing surface water environment, an assessment of the surface water impacts and a description of any proposed mitigation and management measures. Key surface water issues to be explored will include:

- flood risk assessment to identify flood extents and potential flooding characteristics;
- water management during construction and operation; and
- impacts to receiving waters.

6.10 Air quality

6.10.1 Existing environment

Land use within the study area 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 consist primarily of dust and vehicle and machinery exhaust emissions associated with agricultural production and freight transport along the Golden Highway and Castlereagh Highway. There are a number of mining operations near Ulan, which is approximately 20 km southeast of the study area.

There are three residences not associated with the project within 200 m of the study area boundary, with the nearest residence located approximately 50 m from the study area's southern boundary.

6.10.2 Assessment approach

The project is not anticipated to generate significant air quality impacts during construction or operations. Project-related traffic on unsealed roads within the study area may contribute to localised dust generation primarily during the construction phase of the project. Mitigation measures will be implemented to address these impacts. These measures will be discussed with Council and surrounding landholders as part of ongoing stakeholder engagement. The implementation of these mitigation measures will ensure that the project will not generate significant air quality impacts during construction, operation or decommissioning.

A detailed air quality assessment is not considered to be required as part of the EIS as potential impacts will be temporary in nature and will not extend beyond the construction or decommissioning phase of the project.

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 Section 2.1. As shown, there are multiple renewable energy generation projects (proposed and approved) in the vicinity of the study area.

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 under 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).

7 References

Australian Bureau of Statistics 2016, *2016 Census QuickStats-Birriwa* https://www.abs.gov.au/websitedbs/D3310114.nsf/Home/2016%20QuickStats, accessed 19 July 2021

Australian Energy Market Operator 2020, *Integrated Systems Plan 2020*

Australian Radiation and Protection and Nuclear Safety Agency 2018, https://www.arpansa.gov.au/understanding-radiation/radiation-sources/more-radiation-sources/electricity

Clean Energy Regulator 2021, *2020 Annual Statement - Large-scale renewable energy target met*

Department of Planning 2011a, *Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis*

Department of Planning 2011b, *Multi-Level Risk Assessment*

Department of Primary Industries 2013, *Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management (2013 update)*

Department of Planning, Industry and Environment 2017, *Central West and Orana Regional Plan 2036*

Department of Planning, Industry and Environment 2019, *NSW Electricity Strategy*

Department of Planning, Industry and Environment 2020, The Net Zero Plan Stage 1 2020-2030

Department of Planning, Industry and Environment 2021a*, State significant development guidelines - preparing a scoping report: Appendix A to the state significant development guidelines.*

- 2021b, *Undertaking Engagement Guidelines for State Significant Projects*
- 2021c, *Cumulative Impact Assessment Guidelines for State Significant Projects*
- 2021d, *State significant development guidelines - preparing an environmental impact statement: Appendix B to the state significant development guidelines*

Environment Protection Authority 2017, *NSW Noise Policy for Industry*

Grey and Murphy 2002, *Predicting soil distribution*. Joint NSW Government and Soil science Australia Technical Poster, Sydney

Mid-Western Regional Council 2020, *Our Place 2040 Mid-Western Regional Local Strategic Planning Statement*

NSW Government 2012, *NSW Guidelines for Controlled activities*

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

NSW Government 2021, *Renewable Energy Zones* https://www.energy.nsw.gov.au/sites/default/files/2020-12/REZ%20Map_CWO_20201113.pdf accessed 22/7/2021

NSW DECCW 2010a, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*

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

OEH 2011, *Guide to investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW*

OEH 2012, *The land and soil capability assessment scheme*. Second approximation.

OEH 2015, State Vegetation Type Map: Central West / Lachlan Region Version 1.4. VIS_ID 4468

REMPLAN 2020a, *Mid-Western Council: Our Place Our Community,* https://app.remplan.com.au/midwestern/community

- 2020b, *Warrumbungle Shire Council: Our Place Our Community* https://app.remplan.com.au/warrumbungle/community

Appendix A

Schedule of lands

A.1 Schedule of lands

Lot number	DP
45	DP750755
32	DP750755
70	DP750755
90	DP750755
35	DP750755
1	DP1004819
43	DP750755
34	DP750755
12	DP750755
39	DP750755
37	DP750755
30	DP750755
31	DP750755
16	DP750755
36	DP750755
47	DP750755
82	DP750755

Appendix B

Commonwealth Protected Matters Search Tool report

Australian Government

Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

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

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

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

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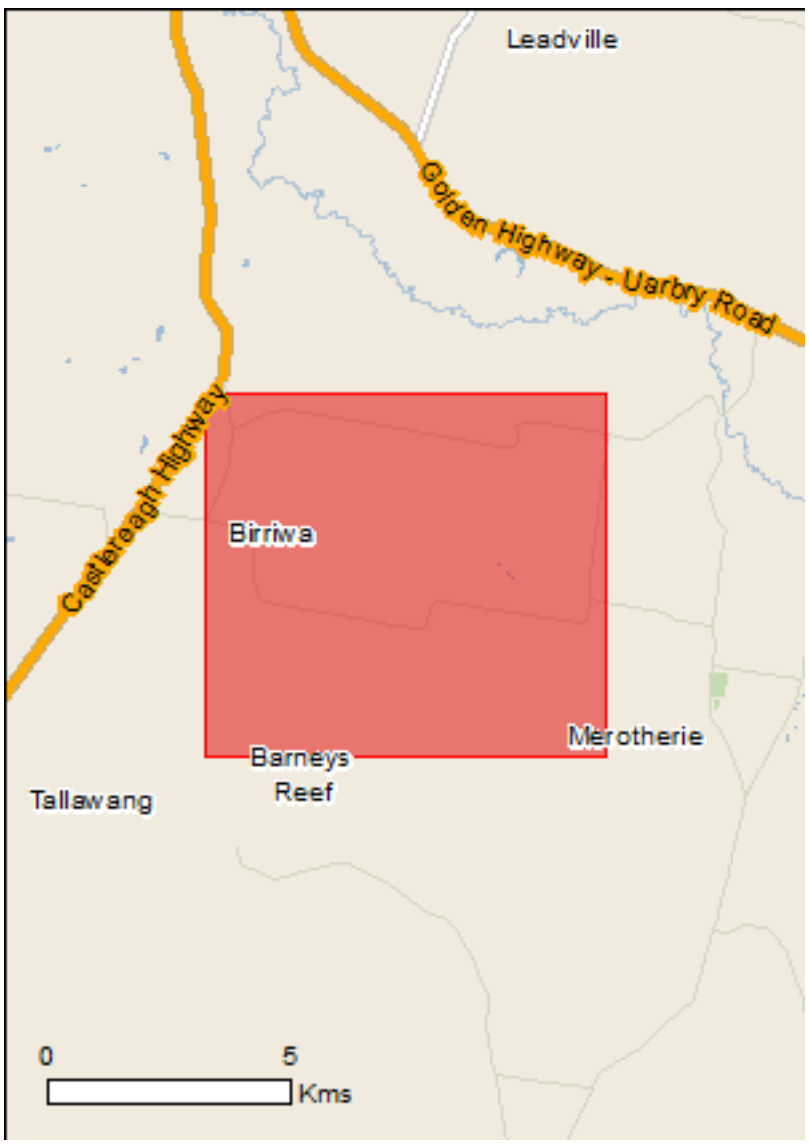

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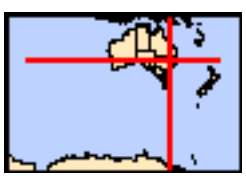

Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	28
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

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

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

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

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

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	28
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar) [Resource Information]

Name	Proximity
Banrock station wetland complex	800 - 900km upstream
Riverland	800 - 900km upstream
The coorong, and lakes alexandrina and albert wetland	900 - 1000km upstream
The macquarie marshes	200 - 300km upstream

Listed Threatened Ecological Communities [Resource Information]

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

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

Listed Threatened Species [Resource Information]

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

Name	Status	Type of Presence
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
[Polytelis swainsonii](#) Superb Parrot [738]	Vulnerable	Species or species habitat likely to occur within area
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
[Galaxias rostratus](#) Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat may occur within area
[Macquaria australasica](#) Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Mammals		
[Chalinolobus dwyeri](#) Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
[Dasyurus maculatus maculatus (SE mainland population)](#) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
[Nyctophilus corbeni](#) Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area
[Petrogale penicillata](#) Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area
[Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)](#) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat likely to occur within area
[Pteropus poliocephalus](#) Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Plants		
[Dichanthium setosum](#) bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area
[Euphrasia arguta](#) [4325]	Critically Endangered	Species or species habitat may occur within area
[Prasophyllum petilum](#) Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area
[Prasophyllum sp. Wybong (C.Phelps ORG 5269)](#) a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area
[Swainsona recta](#) Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area
[Thesium australe](#) Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
[Tylophora linearis](#) [55231]	Endangered	Species or species

Name	Status	Type of Presence
		habitat may occur within area
Reptiles		
Aprasia parapulchella		
Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area
Delma impar		
Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

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

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus		
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca		
Satin Flycatcher [612]		Species or species habitat likely to occur within area
Rhipidura rufifrons		
Rufous Fantail [592]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [Resource Information]		
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within

Name	Threatened	Type of Presence area
Rostratula benghalensis (sensu lato)		
Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area

Extra Information

Invasive Species [Resource Information]

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

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk,		Species or species

Name	Status	Type of Presence
Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		habitat likely to occur within area

Caveat

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

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-32.10006 149.48182,-32.10006 149.55563,-32.15646 149.55563,-32.15646 149.48182,-32.10006 149.48182

Acknowledgements

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

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

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

Please feel free to provide feedback via the Contact Us page.

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Appendix C

Communication and Engagement Plan

Birriwa Solar Farm and Battery Project

Communication and Engagement Plan

Prepared for UPC\AC Renewables Australia
October 2021

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Birriwa Solar Farm and Battery Project

Communication and Engagement Plan

Report Number

J210533 RP5

Client

UPC\AC Renewables Australia

Date

6 October 2021

Version

v2 Final

Prepared by

Sharon Suzor

Associate Communication & Engagement National Technical Leader

6 October 2021

Approved by

Nicole Armit

Director

6 October 2021

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Annexures

Tables

Figures

1 Purpose

1.1 Overview

This Communication and Engagement Plan (CEP) provides an overview of how communications and engagement will be undertaken between UPC Renewables Australia Pty Ltd, operating as UPC\AC Renewables Australia (UPC\AC) and the community and stakeholders during the planning and development phase of the proposed Birriwa Solar Farm and Battery Project (the project).

The CEP has been prepared by EMM Consulting Pty Ltd (EMM), and provides the following:

- the purpose and objectives of the CEP;
- the strategic approach to communication;
- an overview of the project, approval pathway and key messages;
- an overview of the communication context relevant to the study area;
- a detailed stakeholder list and analysis, based on anticipated levels of interest and influence on the project and process;
- anticipated communication issues and risks, and proposed management measures;
- project key messaging;
- a schedule of proposed communication and engagement activities;
- internal project team roles and responsibilities for the communication and engagement program;
- communication process and protocols (ie branding, key stakeholder and media enquiry management, internal approvals for communication materials); and
- evaluation criteria and measures.

1.2 Communication objectives

The objectives of the CEP are to:

- build key stakeholder and community awareness, understanding and acceptance of the project, including location, purpose, local and regional benefits, scope (ie technical field studies to be undertaken) and delivery timeframes;
- build key stakeholder and community awareness and participation in the environmental and social impact assessment (ie technical field studies to be undertaken) and approval process, as part of collecting representative feedback and local knowledge;
- ensure consistent and coordinated communication about the project and the assessment process, in the public domain;
- facilitate two-way communication, to ensure feedback and enquiries are received directly by UPC\AC and are responded to punctually and accurately;
- ensure key stakeholder and community feedback is adequately documented and considered;
- minimise objections to the project; and

- protect and enhance UPC\AC's reputation as a trusted renewable energy and storage system developer, owner and operator.

1.3 Strategic communication and engagement approach

The strategic approach to communication and engagement is underpinned by a proactive issues-management approach, open and transparent two-way communication processes, and responsiveness to the communication needs and expectations of key stakeholders and the broader community.

The CEP has been developed in collaboration with EMM's multi-disciplinary project team and UPC\AC, via a communication-specific issues and risks workshop. Key outcomes of the workshop include:

- team alignment and clarity about the communication issues and risks and management measures to be implemented;
- key project messaging and communication-specific roles and responsibilities; and
- consistent, coordinated and timely communication and engagement.

The strategic communication approach is informed by the recently released NSW Government document *Undertaking Engagement Guidelines for State Significant Projects* (2021) (the Guidelines). The Guidelines require upfront and ongoing engagement on State significant projects, to:

- provide a better understanding of potential issues;
- be able to consider responses to issues as a part of development and delivery of the project; and
- help ensure engagement is undertaken at appropriate times throughout the life cycle of a project, including scoping, planning, assessment and delivery of projects.

1.3.1 International association of public participation

As required by the Guidelines, the strategic communication and engagement approach considers the International Association of Public Participations' (IAP2) core values and public participation spectrum of engagement (ie inform, consult, involve, collaborate) as part of categorising identified project stakeholders based on their level of influence on, and interest in, project outcomes and selecting tailored, site-specific communicate and engagement tools and activities.

The (IAP2) core values and spectrum of engagement is shown in Figure 1.1.

A list of stakeholder groups and proposed levels of engagement to be implemented is provided in Section 4.

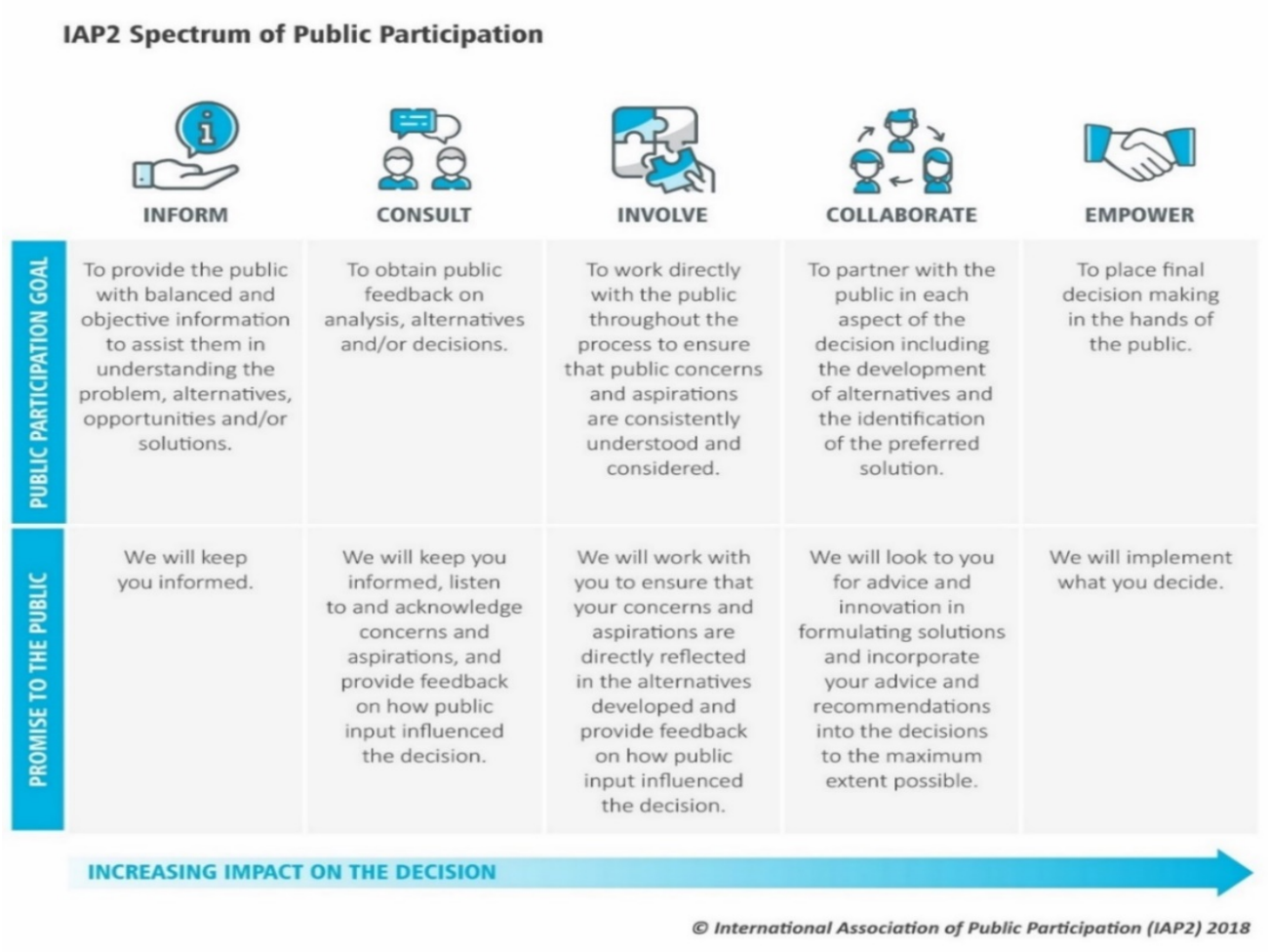


Figure 1.1 IAP2 Spectrum of Engagement

2 About the project

2.1 Overview

UPC\AC proposes to develop the Birriwa Solar Farm and Battery Project; a large scale solar photovoltaic generation facility along with battery storage and associated infrastructure (the project). The solar farm component of the project will have an indicative capacity of around 600 megawatts and include either a centralised or a DC-coupled battery energy storage system of up to 1,000 megawatts.

The project is in the locality of Birriwa, approximately 15 kilometres (km) south-west of the township of Dunedoo, in the Central West of New South Wales (NSW). The project is within the Mid-Western Regional Council local government area (LGA) and is within the Central-West Orana (CWO) Renewable Energy Zone (REZ). To support the development of the CWO REZ, the Energy Corporation of NSW is planning a new 500/330 kilovolt transmission line and related infrastructure as well as augmentation of the existing 330 kilovolt network.

UPC\AC are investigating different options to connect to the proposed CWO REZ transmission link (T-Link). The selected connection option will be aligned with the proposed design for the T-Link expected to be released later in 2021 or in 2022. Connection could be via a substation to be located either within or outside of the project area, depending on the location of the proposed T-Link infrastructure Other technical options to connect to the existing network would be envisaged if NSW Energy Corporation does not proceed with the proposed T-Link, but these options will not be assessed within the current development application process.

The project will be developed within a study area of approximately 1,250 hectares (the study area). The exact land area to be covered by the project components and connection to the CWO REZ proposed T-Link will be refined as the development progresses and will be informed by the release of further information on the proposed T-Link, the outcomes of community and stakeholder engagement and the findings of the environmental, social and economic assessments. The study area covers five separate rural landholdings over approximately 17 land parcels.

It is estimated the project will generate enough energy to power about 240,000 homes in NSW, with a life span of around 30 years. At the end of its life, the solar farm and battery equipment can be safety removed and the land returned to its original farming use.

Key project components will include the following:

- the development of separate arrays of photovoltaic modules (solar panels) within the study area;
- power conversion units comprising of three main components including inverters, transformers and a ring main unit;
- a centralised or a DC coupled battery energy storage system of up to 1000 Megawatts, which will comprise of batteries, inverters, transformers, heating ventilation air conditioning and fire protection;
- a connection hub to the proposed Central West Orana REZ transmission link;
- up to 500 kilovolt transmission line to be installed from the development footprint to the proposed Energy Corporation of NSW transmission line substation or switching station, if the substation is located outside of the study area;
- supporting infrastructure including:
    - staff office, operations and control room, meeting facilities, amenities and carparking;
    - a temperature-controlled spare parts storage facility;
    - supervisory control and data acquisition facilities;

- a workshop and associated infrastructure;
- a number of new internal roads to facilitate access within the study area to allow for construction and ongoing maintenance; and
- fencing and landscaping; and

- safe construction and operation access via designated routes on the local road network.

It is anticipated construction of the project will take about two years, employing over 500 people during construction and generating a number of ongoing full time roles during operation. UPC\AC will also seek to enhance opportunities for local and regional business participation through goods and services associated with the project.

The project will play an important part in achieving the objectives of the Central-West Orana REZ. It will also provide significant economic stimulus to the region through construction jobs and associated flow-on-benefits.

2.2 Assessment and approvals

The project is State significant development pursuant to Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011*, as discussed further in section 4.1. Accordingly, approval for the project is required under Part 4 of the NSW *Environmental Planning and Assessment Act 1979*.

An Environmental Impact Statement (EIS) and accompanying technical assessments will be prepared to support the development application for the project, which will be a publicly available document, providing information about the environmental, social and economic impact assessments, and proposed mitigation measures.

2.3 Project key messages

A fact sheet for the project has been developed by UPC\AC (Annexure A) to provide project key messages including information about the following:

- project overview;
- site selection;
- UPC\AC Renewables Australia;
- planning and consultation; and
- registration about project updates.

The project fact sheet forms the basis for all communication materials, to ensure consistency in messaging across different means of community and stakeholder engagement.

3 Communication context

3.1 Overview

The study area is within the locality of Birriwa in the north-western corner of the Mid-Western Regional LGA, bordering the Warrumbungle Shire LGA, in the Central West Local Land Services Region (Central West Region) of NSW. The nearest population centre to the project is the township of Dunedoo, approximately 15 km north-west of the study area. Other nearby population centres in the vicinity of the project include Gulgong, Mudgee and Merriwa.

The study area is zoned RU1 Primary production under the Mid-Western Regional Local Environmental Plan 2012 (Mid-Western Regional LEP). The locality of Birriwa has a population of 49 residents (ABS 2016), including a small cluster of residences and rural infrastructure on the Castlereagh Highway approximately 1.4 km west of the study area. There are approximately 37 dwellings not associated with the project within 5 km of the study area. The nearest dwelling not associated with the project is located on Birriwa Bus Route South on the southern boundary of the study area. The site is ideally situated away from towns but is still readily accessible by road.

The site has been selected due to its suitable features for a solar farm – mostly flat or gently undulating land relative free of vegetation due to historical clearing for agriculture. Land surrounding the study area is characterised by flat to gently undulating cleared land used primarily for sheep and cattle grazing or dry land cropping with scattered rural residences and agricultural buildings and infrastructure (ie silos and livestock yards).

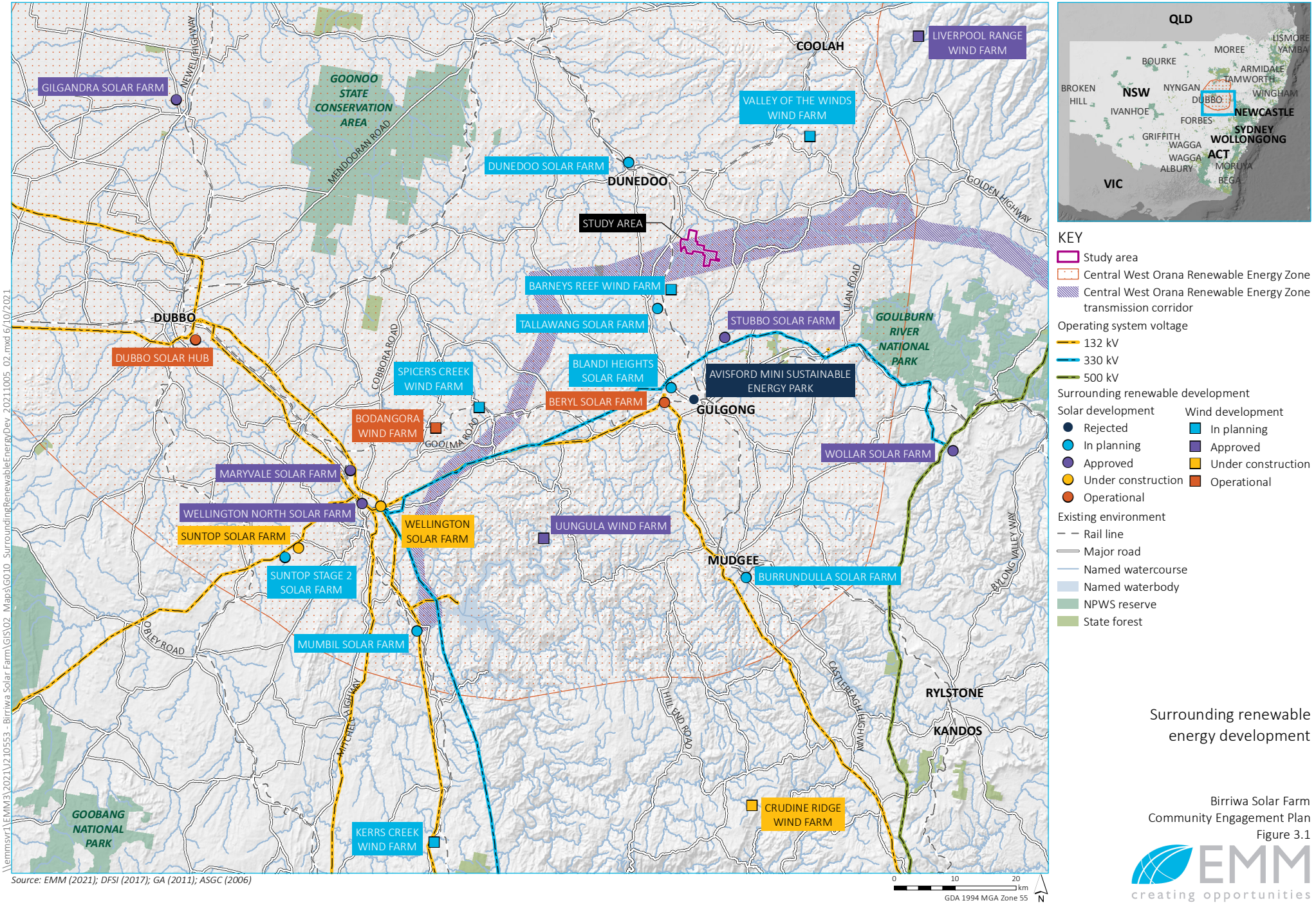
3.2 Central-West Orana region Renewable Energy Zone

The study area lies within the NSW Government's planned 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 will be 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, as listed in Table 3.1 and shown in Figure 3.1.

Table 3.1 Renewable energy projects within the Central-West Orana REZ

Project	Proponent	Stage
Tallawang Solar Farm	RES	SEARs issued 14 September 2021
Barneys Reef Wind Farm	RES	SEARs issued 14 September 2021
Stubbo Solar Farm	UPC\AC	Approved June 2021
Wellington North Solar Farm	Lightsource bp	Project approved April 2021, construction starting mid-2022
Uungulua Wind Farm	CWP Renewables	Project approved May 2021, construction starting late 2021
Wellington South Solar Farm	Lightsource bp	Under construction
Peak Hill Solar Farm	Tranex Solar	Under construction
Suntop Solar Farm	Canadian Solar	Under construction
Bodangora Wind Farm	Iberdrola Australia, operated by Infingen Energy	Operational
Wellington Substation	TransGrid	Operational
Beryl Solar Farm	New Energy Solar	Operational
South Keswick Solar Farm	Neoen	Operational



KEY

- Study area
- 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

- Rejected
- In planning
- Approved
- Under construction
- Operational

Wind development

- In planning
- Approved
- Under construction
- Operational

Existing environment

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

Source: EMM (2021); DFSI (2017); GA (2011); ASGC (2006)

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Surrounding renewable energy development

Birriwa Solar Farm
Community Engagement Plan
Figure 3.1

EMM
creating opportunities

3.3 Demographic overview

Table 3.2 provides a demographic overview of Birriwa and other nearby population centres to the project site (ABS 2016). The closest major activity centres to the site are:

- Dubbo, approximately 108 km by road to the west of the site, with a population of 38,943;
- Orange, approximately 204 km by road to the south of the site, with a population of 38,097; and
- Newcastle, approximately 292 km by road to the south-east of the site, with a population of 322,278.

Table 3.2 Demographic profile (ABS 2016)

Suburb	Population	Number of private dwellings	Number of family households	Median age	Aboriginal / Torres Strait Islander people	Most common occupation	Dwelling internet connection	Languages other than English spoken at home
Birriwa	49	22	11	54	3	Managers (11)	*	0
Dunedoo	1,221	649	294	49	94 (7.7%)	Managers (29.4%)	65.5%	3.2%
Gulgong	2,521	1,135	608	41	194 (7.7%)	Technicians and Trades Workers (19.0%)	72.6%	3.5%
Mudgee	10,923	4,946	2,723	37	673 (6.2%)	Technicians and Trades Workers (18.2%)	75.4%	4.8%
Merriwa	1,761	864	445	44	135 (7.6%)	Managers (21.5%)	69.6%	2.7%

*Due to the small population of this area, there is no information on internet connection in the ABS census data

The demographic profile for nearby population centres indicates a relatively small population. It is noted that there are varying levels of home internet access, which increases the importance of providing hard copy project communication materials (ie mail/ letterbox drop) and ensuring key stakeholders and community leaders are proactively briefed on the project to support accurate information being disseminated in the public domain (ie via word-of-mouth). There is a significant indigenous population within the area. It will be important to identify early the likely levels of interest these stakeholders will have in the project as part of planning the communication program and preparing the communication materials.

3.4 Previous communication and engagement

UPC\AC has been building a local presence in the region since early 2018. This has involved a large number of one-on-one meetings with local landholders at the stage of assessing the potential for a solar farm site in the area, including landowners associated with the project and neighbouring property owners. It also involved a group meeting with broad landholder participation prior to commencing detailed land security negotiations. In 2021, engagement with neighbouring landholders has intensified in the lead up to preparation of this Scoping Report. In addition, there has been targeted engagement with Mid-Western Regional Council, Warrumbungle Shire Council, community groups and local service providers over the past three years. UPC\AC's engagement principles of adopting a model of consulting early and often, with a view of minimising surprises for the community and stakeholders, aligns with the recently finalised *Undertaking Engagement Guidelines for State Significant Project* (DPIE 2021b).

In September 2021, UPC\AC published a project website (www.birriwasolarfarm.com.au), Facebook page, dedicated email address (info@birriwasolarfarm.com.au) and project hotline (1800 290 995).

UPC\AC also made targeted phone calls and posted a letter and project fact sheet to the following sensitive receptors:

- All landholders within 2 km of the study area boundary; and
- All dwellings within 5 km of the study area boundary.

The letters identified the likely impacts as assessed by UPC\AC, including the proximity to the site and whether or not a visual impact was likely to occur. The Fact Sheet provided key project facts and directed stakeholders to the project website. Further, the letters were signed by a UPC\AC representative and contained their mobile number and email address and encouraged people to get in touch. Over the coming weeks and months, and when Covid-related travel restrictions allow, UPC\AC representatives plan to engage in face-to-face meetings with as many of the nearby sensitive receptors as possible, to provide project information and receive feedback on the proposed development at a very early stage.

UPC\AC also intends to host a virtual community engagement session in mid-October 2021, after lodgement of the Scoping Report. Further information on the communication and engagement plan going forward is provided in Section 5.

4 Stakeholder assessment and classification

Identified project stakeholders have been assessed and classified according to the anticipated levels of project impacts and their levels of interest and potential influence on project delivery outcomes. Table 4.1 outlines the assessment criteria and categories, while a summary of the project-specific stakeholder group classifications is provided in Table 4.2.

Table 4.1 Stakeholder assessment and classification criteria and levels

Details	Level 1	Level 2	Level 3	Level 4
Project impacts on the stakeholder	High impact	Low impact	High impact	Low impact
Stakeholder levels of interest/influence on project decision-making/ outcomes	High interest/ influence	High interest/ influence	Low/ medium interest/ influence	Low interest/ influence

Table 4.2 Project stakeholder group classification summary

Stakeholder Classifications	Stakeholder Group
1	• Federal and State regulatory authorities • Local Government and elected representatives – Mid-Western Regional Council • State government elected representatives • Landowners associated with the project • Non-associated landowners/ businesses with potential to be directly impacted by the project • TransGrid / Energy Corporation of NSW
2	• State Government Departments and Agencies • Federal government elected representatives • Local aboriginal groups/ people • Local agricultural groups • Utility providers • Other renewable energy proponents and operators • Industry associations • Media
3	• Indirectly affected landowner/ businesses • Community services
4	• Neighbouring Local Government Areas • Broader community and businesses • Local environment interest groups • Transport user groups

Table 4.3 provides a detailed overview of the stakeholder classifications. It includes proposed levels of engagement, based on the International Association of Public Participation Spectrum.

Table 4.3 Project stakeholder list, analysis and engagement levels

Stakeholder group/ classification	Stakeholder Groups	Details	IAP2 Spectrum Level of Engagement
Government Departments and Agencies			
1	Federal regulatory authorities	• Department of Agriculture, Water and the Environment (DAWE) • Australian Renewable Energy Agency (ARENA)	Inform Consult
1	State regulatory authorities	• Department of Planning, Industry and the Environment (DPIE) • DPIE Biodiversity and Conservation Division (BCD) • Transport for NSW • Heritage NSW	Inform Consult
2	State and local Government Departments and Agencies	• Energy Corporation of NSW • NSW Rural Fire Service • Fire and Rescue NSW • WaterNSW • Local Land Services • DPIE Water and Natural Resources Access Regulator (NRAR) • NSW Environment Protection Authority • NSW Department of Primary Industries (DPI) • Crown Lands • Central West Local Land Services	Inform Consult
1	Local Government	• Mid-Western Regional Council • Warrumbungle Shire Council	Inform Consult
Elected representatives			
2	Federal	• Hon Andrew Gee MP, Member for Calare, NSW • Hon Mark Coulton MP, Member for Parkes, NSW • Hon Barnaby Joyce, Minister for Infrastructure, Transport and Regional Development (Australia)	Inform
3	State	• Mr Dugald Saunders, MP Member for Dubbo • Mr Roy Butler, MP Member for Barwon	Inform
3	Local	• Cr Des Kennedy, Mayor Mid-Western Regional Council • Mayor Ambrose Doolan, Warrumbungle Shire Council	Inform

Table 4.3 Project stakeholder list, analysis and engagement levels

Stakeholder group/ classification	Stakeholder Groups	Details	IAP2 Spectrum Level of Engagement
Landowners and businesses			
1	Landowners associated with the project	• Study area landowners.	Inform Consult Collaborate
1	Landowners/ businesses not associated with the project, but potentially directly impacted	• Approximately 37 non-associated dwellings within 5 km of the study area • Residents of Birriwa	Inform Consult Collaborate
3	Landowners/ businesses not associated with the project, but potentially indirectly impacted	• Residents of Dunedoo • Residents of Leadville • Residents of Tallawang • Residents of Gulgong • Road users of Castlereagh Highway/ Birriwa Bus Route South/ Barneys Reef Road • Road users of Golden Highway/ Merotherie Road/ Birriwa Bus Route South	Inform
Community			
2	Local Aboriginal groups / people	• Local Aboriginal Land Council • Registered Aboriginal Parties	Inform Consult Collaborate
4	Broader Community and businesses	Dunedoo and Gulgong Information and Community Services	Inform
3	Community services	• Dunedoo Memorial Health Service (Hospital) • TAFE Dunedoo • Gulgong District Hospital • TAFE Mudgee • Mudgee Health Service	Inform Consult
Interest groups			
4	Local environmental groups	• Central West Environment Council • Save Our Surroundings Central West NSW • Community Power Agency • Central West Environment & Waterways Alliance	Inform

Table 4.3 Project stakeholder list, analysis and engagement levels

Stakeholder group/ classification	Stakeholder Groups	Details		IAP2 Spectrum Level of Engagement
4	Transport user groups	• Ogden Coaches • Eastend Bus Service Road Freight NSW		Inform Consult
2	Local agricultural groups	• Central West Farming Systems • Regional Development Australia, Central West	• NSW Farmers Association – Dunedoo Branch	Inform Consult
Service providers				
1	Utility Providers	• TransGrid / Energy Corporation of NSW		Inform Consult
2	Utility Providers	• Water NSW • NBN Providers • National Broadband Network		Inform Consult
Other renewable energy proponents and operators				
2		• Dunedoo Solar Farm (ib vogt) • Barneys Reef Wind Farm (RES Group) • Tallawang Solar Farm (RES Group)	• Beryl Solar Farm (New Energy Solar) • Burrendong Wind Farm (Epuron)	Inform
Industry Associations				
2		• Clean Energy Council • Australian Energy Storage Alliance		Inform

5 Communication and engagement action plan

Table 5.1 provides an overview of the communication and engagement action plan for the project. It is noted that during the planned delivery timeframes, public health orders associated with the recent spike in COVID-19 cases could preclude the ability to undertake face-to-face engagement. Notwithstanding this, alternative forms of engagement can and will be increased to account for this inability to engage in person.

Communication and engagement activities will involve providing information via traditional hard copy communication materials and the project webpage. Two-way communication will be facilitated via the project 1800 number, email and webpage, which includes an enquiries form, and online video meetings (eg Teams/ Zoom).

Table 5.1 Communication and engagement action plan

Planning	Project introduction	Scoping Report lodged / SEARs Issued	EIS Preparation	EIS Submission	EIS public exhibition and assessment period
September 2021	**September/October 2021**	**October/November 2021**	**November 2021 – April 2022**	**April 2022**	**May 2022 onwards**
Develop Communication and Engagement Plan. • Key messages; • Frequently Asked Question responses; • Communication action plan and schedule; and • Project communication channels (ie project website, 1800 number and email).	**Early and targeted engagement.** **Communication materials:** • Project introduction letter and factsheet #1 (project overview); and • Website update. **Proactive key stakeholder briefings including, but not limited to:** • Mid-Western Regional Council; • Warrumbungle Shire Council; • Elected Representatives; • DPIE Assessments (scoping meeting); • DPIE Biodiversity and Conservation Division; and • Phone calls to project landholders and near neighbours. **Request for registration from Aboriginal participants, as part of the Aboriginal Cultural Heritage Assessment, will take place via letter and newspaper advertising.**	**Ongoing communication and engagement.** **Communication materials:** • Project factsheet #2 (EIS scope/ process and timeframes; SEARs); • Website update; and • Landowner correspondence about land access arrangements, if required. **Key stakeholder briefings:** • SEARs and EIS requirements/ scope; • Meetings with Government agencies to clarify SEARs, if required; and • Key stakeholder briefings and meetings, on request. **Online community information session (October 2021)**	**Ongoing communication and engagement.** **Communication materials:** • Social Impact Assessment stakeholder correspondence, interviews/survey; and • Landowner correspondence about land access arrangements, if required. **Proactive key stakeholder briefings:** • Government agency briefings on the outcomes of technical assessments, including councils; • Briefings with relevant landholders on the outcomes of technical assessments and proposed mitigation measures, (eg visual screening, traffic controls etc.); • Energy Corporation of NSW; • Elected representatives; and • Others on request. **Second community information session to communicate key findings of the EIS.**	**Ongoing communication and engagement.** **Communication materials:** • Project factsheet #3 (EIS key findings); • Landowner project update letter regarding key EIS outcomes; where to view; how to make a submission; • Newspaper advertising; and • Website update. **Key stakeholder briefings:** • On request. **Public comment period (28 days):** • Optional interactive online community information session/s, via Teams/Zoom.	**Close out communication.** **Communication materials:** • Project update letter; • Project factsheet #4 (updated project overview); and • Website update. **Proactive key stakeholder briefings:** • Meetings with Government agencies if required based on submissions received on the EIS; and • Meetings with other stakeholders if required, including landholders, based on submissions received on the EIS. **Response to Submissions Report**
Ongoing activities	**Monitor:** • Local media and social media; • Stakeholder and community enquiries received via project 1800 number, email and web page; and • Issued raised to technical teams in the field.	**Update communication materials:** • Key messaging, FAQs and website updates; and • Activity-specific communication and engagement action plans.	**Engagement with Registered Aboriginal Parties about the cultural heritage assessment.** **Record keeping and reporting:** • All key stakeholder and community interactions to be documented in Consultation Manager; and • Consultation summary reports to be prepared at key project milestones EIS.		

6 Roles and responsibilities

An overview of the project delivery team and their roles and responsibilities for communication and engagement is provided in Table 7.1. The approved project key messaging and frequently asked questions will inform communication materials and verbal interactions required as part of all EMM technical team interactions with key stakeholders and the wider community (eg as part of undertaking the social impact assessments and undertaking field studies).

Table 6.1 Roles and responsibilities

Name	Role	Responsibility
Cédric Bergé	Project Manager, UPC\AC	• Review and approve CEP; and • CEP implementation lead.
Michael Zippel **Alexandra Hall**	Project Developer and Community Engagement Coordinator, UPC\AC	• CEP implementation; • record key stakeholder and community interaction (ie communication and engagement activities) in Consultation Manager.
Joey Chalk	Corporate Communication, UPC\AC	• review CEP; and • strategic communication advice and issues management.
Nicole Armit	Project Director, EMM	• review; – communication materials; and – submissions report; • participate in consultation with key stakeholders, including government agencies and landholders, as required by UPC.
Katie Ward	Project Manager, EMM	• coordinate technical inputs into communication materials and enquiry responses; • review communication material for technical accuracy; • support Government agency/ regulator and key stakeholder briefings, from a technical perspective; and • author of Response to Submissions report.
Sharon Suzor	Communication & Engagement Lead, EMM	• draft CEP; and • strategic communication advice and CEP delivery support, if required;
Sam Ezzy	Communication & Engagement Consultant, EMM	• CEP delivery support, if required.

References

ABS 2016a, *2016 Census QuickStats*, Australian Bureau of Statistics, accessed 19 July https://www.abs.gov.au/websitedbs/D3310114.nsf/Home/2016%20QuickStats

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

Annexure A

Project key messages

Birriwa Solar Farm and Battery Energy project
Key messages
August 2021

The project

- 600-megawatt solar farm and battery energy storage project
- Located within the New South Wales Government's Central West Orana Renewable Energy Zone
- Life span of 30 years, with equipment with can be safely removed and the land returned to its original farming use.

Benefits

- Up to 500 construction jobs
- Local workforce and business participation
- Rental income for project landowners
- Agricultural and solar energy production
- Replace ageing coal fired power stations in NSW
- Enough energy to power about 240,000 homes

About UPC\AC Renewables Australia

- We've been active in Central Western NSW since 2019
- The first stage of our 400 MW New England Solar Farm and Battery Energy project, near Uralla in the New England Region of NSW, is now under construction
- We're an Australian based company

Consultation and engagement

- Project will be assessed as a State Significant Development under Part 4 of the NSW Environmental Planning and Assessment Act 1979.
- Assessments will include technical, environmental and social impacts. The outcome of this consultation and assessment will inform the final plans for the proposed development.
- We will work closely with host landowners, neighbours, traditional owners, the wider community and government agencies to understand benefits and impacts
- Where COVID-19 controls allow, we'll seek to meet face to face. Where we can't we'll offer on-line virtual sessions
- We'll be seeking inputs from community to build a community benefit sharing program to support local projects and initiatives

Keep up to date or get in contact with us:

Website www.birriwasolarfarm.com
Facebook page, Birriwa Solar Farm
Email info@birriwasolarfarm.com.au
Project information line 1800 290 995

Appendix D

Scoping summary table

D.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 2020) • Commonwealth EPBC 1.1 Significant Impact Guidelines – Matters of National Environmental Significance (Commonwealth of Australia, 2013); • Commonwealth EPBC 1.2 Significant Impact Guidelines – Actions on, or Impacting upon Commonwealth Land and Actions by Commonwealth Agencies (Commonwealth of Australia, 2013); • Commonwealth Department of the Environment – Survey Guidelines for Nationally Threatened Species (various);	Section 6.3
	Traffic	Yes	Specific	• Guide to Traffic Management – Part 3 Traffic Studies and Analysis (Austroads, 2013)	Section 6.6
	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); • Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010);	Section 6.4.1

Level of assessment	Matter	Cumulative Impact Assessment	Engagement	Relevant policies and guidelines	Scoping report reference
	Hazards and risks	No	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);	Section 6.7
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
	Social	Yes	Specific	• Social Impact Assessment Guideline for State Significant Projects 2021 (DPIE 2021)	Section 6.5
	Heritage - Historical	Yes	General	• Historical Archaeology Code of Practice (Heritage Council 2006)	Section 6.4.2
	Land resources	No	General	• Land Use Conflict Risk Assessment Guideline (DPI 2011) • 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
	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) • Guidelines for watercourse crossings on waterfront land (NOW 2012)	Section 6.9

Level of assessment	Matter	Cumulative Impact Assessment	Engagement	Relevant policies and guidelines	Scoping report reference
	Air quality	No	General	• N/A	Section 6.10

Appendix E

SIA scoping worksheet

Social Impact Assessment (SIA) Worksheet Project nam Birriwa Solar Farm and Battery Project Date: 6 October 2021

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.	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		
livelihoods	Increased employment opportunities in the local community	Positive	Yes - other project	Stubbo Solar Farm, New England Solar Farm (NESF)	Yes	Projects - Tallawang Solar, Barneys Reef Wind Farm, Valley of the Winds, Stubbo Solar Farm, CWO REZ transmission line.	Yes	Yes	Yes	Yes	Unknown	Detailed	Required	Broad consultation	Targeted research	No	Use of local labour and local suppliers where possible
livelihoods	Disruption to farming activity could see reduction in productivity during construction	Negative	Yes - other project	Stubbo Solar Farm and NESF	Yes	Tallawang Solar, Stubbo Solar Farm, CWO REZ transmission line	Yes	Yes	Yes	Yes	Unknown	Standard	Required	Broad consultation	Potentially targeted research	Yes	Investigation area identified based on landholders willing to be involved in the project.
way of life	Perceived changes to agricultural and farming way of life with loss of productive farming land.	Negative	Yes - other project	Stubbo Solar Farm and NESF	Yes	Tallawang Solar, Stubbo Solar Farm, CWO REZ transmission line	Yes	Yes	Yes	Yes	Unknown	Standard	Required	Broad consultation	Targeted research	Yes	Investigation area identified based on landholders willing to be involved in the project.
way of life	Diversify the local economy through direct and indirect economic benefits to local communities in the region, including increased spending in local communities, community	Positive	Yes - other project	Stubbo Solar Farm and NESF	Yes	Tallawang Solar, Barneys Reef Wind Farm, Valley of the Winds, Stubbo Solar Farm, CWO REZ transmission line	Yes	Yes	Yes	Yes	Unknown	Detailed	Required	Broad consultation	Targeted research	No	Use of local labour and local suppliers where possible
way of life	Increased traffic movements, possibly causing delayed travel and increased commute time for nearby residents	Negative	Yes - other project	Stubbo Solar Farm and NESF	Unknown		No	No	Yes	No	Unknown	Standard	Required	Broad consultation	Potentially targeted research	No	A number of options for site access are being considered, and will be assessed in the traffic impact assessment and EIS. Construction schedules and routes for other projects will be reviewed as part of the traffic impact assessment and construction traffic management plan.
culture	Possible changes to the dynamics of the local community due to a short term increase in population as a result of the construction workforce presence.	Negative	Yes - other project	Stubbo Solar Farm and NESF	Yes	Tallawang Solar, Barneys Reef Wind Farm, Valley of the Winds, Stubbo Solar Farm, CWO REZ transmission line	Unknown	Unknown	Unknown	Unknown	Unknown	Detailed	Required	Broad consultation	Targeted research	N/A	To be determined during assessment
access	Restricted access to properties	Negative	Yes - other project	Stubbo Solar Farm and NESF	No		No	No	No	No	Unknown	Minor	Required	Limited, if required	Not required	No	Traffic management measures will be developed as part of the traffic impact assessment. On-going consultation with neighbours if construction activities temporarily restrict access to their property (during road upgrades for instance)
access	Upgrade to local roads, required for access of construction vehicles, will benefit local users also.	Positive	Yes - other project	Stubbo Solar Farm and NESF	No		Yes	Yes	No	No	Unknown	Minor	Required	Limited, if required	Not required	No	
access	Possible short term capacity constraints on local social infrastructure such as housing and accommodation	Negative	Yes - other project	Stubbo Solar Farm and NESF	Unknown		Unknown	Unknown	Unknown	Unknown	Unknown	Detailed	Required	Broad consultation	Targeted research	N/A	Will be considered as part of the social impact assessment. Accommodation strategy for construction workers will be developed as part of the SIA.
health and wellbeing	Increased noise (construction noise)	Negative	Yes - other project	Stubbo Solar Farm and NESF	No		Unknown	Unknown	Unknown	Unknown	Unknown	Detailed	Required	Broad consultation	Targeted research	No	Construction to be generally undertaken during standard construction hours. Noise management measures will be developed as part of the noise impact assessment.
health and wellbeing	Increased traffic causing perceived increased road safety risks for local users	Negative	Yes - other project	Stubbo Solar Farm and NESF	Unknown		Yes	Yes	Yes	Yes	Unknown	Detailed	Required	Broad consultation	Targeted research	No	Traffic management measures will be developed as part of the traffic impact assessment and construction traffic management plan.
livelihoods	Perceived potential for change in property prices	Negative	Yes - other project	Stubbo Solar Farm and NESF	Unknown		No	No	No	Yes	Unknown	Standard	Required	Broad consultation	Targeted research	N/A	To be determined during assessment

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.	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		
health and wellbeing	Potential for increased stress and anxiety regarding scale of development and perceived inability to control one's surroundings or future	Negative	Yes - other project	Stubbo Solar Farm and NESF	Unknown		Unknown	Unknown	Unknown	Unknown	Unknown	Detailed	Required	Broad consultation	Targeted research	N/A	To be determined during assessment
surroundings	Changes to landscape and visual amenity	Negative	Yes - other project	Stubbo Solar Farm and NESF	Yes	Tallawang Solar, Barneys Reef Wind Farm, CWO REZ transmission line	No	Yes	Unknown	Unknown	Yes	Detailed	Required	Broad consultation	Targeted research	Yes	Visibility was considered during the site selection process. Viewsheds will be assessed in detail and mitigation measures will be discussed with affected landholders.
livelihoods	Generation of employment	Positive	Yes - other project	Stubbo Solar Farm and NESF	Yes	Tallawang Solar, Barneys Reef Wind Farm, CWO REZ transmission line	No	Yes	No	No	Unknown	Minor	Required	Limited, if required	Not required	No	Use of local labour and local suppliers where possible
way of life	Reduction in land available in the project area for agricultural production	Negative	Yes - other project	Stubbo Solar Farm and NESF	No		No	No	No	Unknown	Unknown	Minor	Required	Limited, if required	Not required	No	Infrastructure will be designed so that grazing can be trialed within the project site.
community	Community division could occur as a consequence of multiple nearby projects and cumulative overall amenity impacts.	Negative	Yes - other project	Stubbo Solar Farm and NESF	Yes	Tallawang Solar, Barneys Reef Wind Farm, Valley of the Winds, Stubbo Solar Farm, CWO REZ transmission line	Unknown	Unknown	Unknown	Unknown	Yes	Detailed	Required	Broad consultation	Targeted research	N/A	To be determined during assessment